

SOUTHERN PACIFIC COMPANY

(PACIFIC SYSTEM)

RULES AND REGULATIONS

JULY 1, 1892.

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No.

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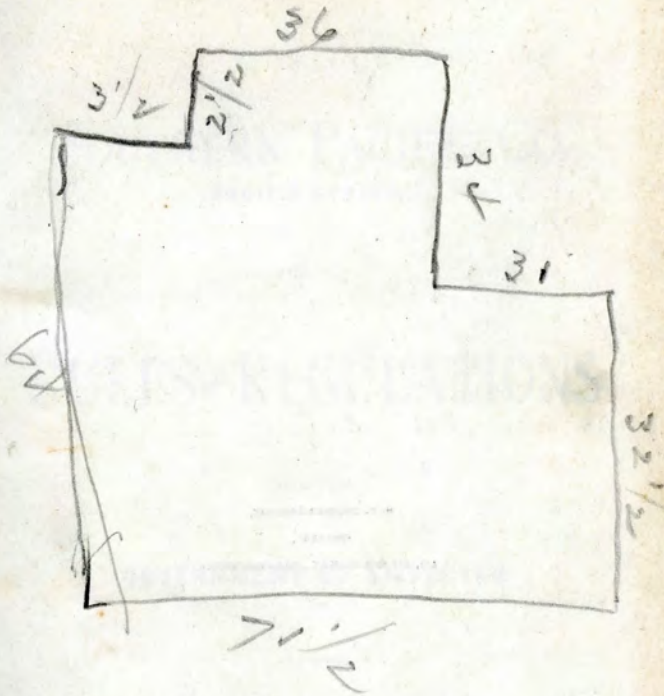
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SOUTHERN PACIFIC CO.
(PACIFIC SYSTEM.)

RULES^{AND} REGULATIONS

FOR THE

GOVERNMENT OF EMPLOYÉS

OF THE

OPERATING DEPARTMENT.

JULY 1ST, 1892.

H. S. CROCKER COMPANY,

PRINTERS,

215, 217 219 BUSH ST., SAN FRANCISCO.

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SOUTHERN PACIFIC CO.

(PACIFIC SYSTEM.)

RULES AND REGULATIONS

FOR THE
GOVERNMENT OF EMPLOYÉS
 OF THE
OPERATING DEPARTMENT.

To take effect July 1, 1892,

AT 12:01 A. M.

GENERAL NOTICE.

It is of the utmost importance that proper rules for the government of employés of this company should be literally and absolutely enforced, in order to make such rules efficient. If they cannot or ought not to be enforced, they ought not to exist. Officers or employés whose duty it may be to make or enforce rules, however temporary or unimportant they may seem, should keep this clearly in mind. If in the judgment of any one whose duty it is to enforce a rule, such rule cannot or ought not to be enforced, he should at once bring it to the attention of those in authority.

All persons entering or remaining in the service of this Company are warned that their occupation is hazardous; that they do so with the full knowledge of the dangers incident to the operating of railroads; that in accepting or retaining employment they must assume the ordinary risks attending it; that they are required to exercise great care in the performance of their duties to prevent accident to themselves or others; and before using tools or apparatus of any kind, they should **know** that they are in a safe condition to perform the service required, and report to the Superintendent, in writing, defects in tracks, cars, machinery and appliances of any kind, liable to cause accidents. The Company does not wish nor expect its employes to incur any risk whatever, from which, by the exercise of their own judgment and by personal care, they can protect themselves, but enjoins upon them to take time in all cases to do their duty in safety, whether they may be, at the time, acting under the orders of superiors or not.

In dealing with the public, especially with the Company's patrons, it is often necessary that employes should observe much patience and self-restraint; always endeavoring to follow the dictates of good sense and prudence, in order to make the most favorable impression, and treating them as any good business man would treat his customers, with the view of making the road popular.

Approved :

A. N. TOWNE,
Gen. Manager.

J. A. FILLMORE,
Gen. Supt.

GENERAL RULES.

1. The rules herein set forth apply to and govern all roads operated by the Southern Pacific Company (Pacific System).

Supersede all previous Rules.

They shall take effect June 1, 1892, and supersede all prior rules and instructions in whatsoever form issued, which are inconsistent therewith.

2. In addition to these rules, the time-tables will contain special instructions, as the same may be found necessary. Special instructions, whether in conflict with these rules or not, which may be given by proper authority, whether upon the time-tables or otherwise, shall be fully observed while in force.

Special instructions.

3. The head of each department must be conversant with the rules, supply copies of them to his subordinates, see that they are understood, enforce obedience to them, and report to the proper officer all violations and the action taken thereon.

Enforcement of obedience.

4. Every employe of this Company whose duties are in any way prescribed by these rules must always have a copy of them at hand when on duty, and must be conversant with every rule. He must render all the assistance in his power in carrying them out, and immediately report any infringement of them to the head of his department.

Copy of Rules at hand.

a. No employe will be permitted to continue in train service without passing a satisfactory examination on these rules.

Examination.

Violation.

5. The fact that any person enters or remains in the service of the Company will be considered as an assurance of willingness to obey its rules. **No one will be excused for the violation of any of them, even though not included in those applicable to his department.**

If in doubt.

6. If in doubt as to the meaning of any rule or special instructions, application must be made at once to the proper authority for an explanation. Ignorance is no excuse for neglect of duty.

Promotion.

7. All employés will be regarded as in the line of promotion, advancement depending upon the faithful discharge of duty and capacity for increased responsibility.

Gratuity for lost time.

8. If an employé should be disabled by sickness or other cause, the right to claim compensation will not be recognized. An allowance, if made, will be a gratuity justified by the circumstances of the case, and the employé's previous good conduct.

Superintendent's authority.

9. Every employé while on duty connected with the trains on any division of the road, is under the authority, and must conform to the orders, of the Superintendent of that division.

a. Enginemen and firemen are at all times under the direction of the Superintendent of the division on which they are working after crossing the turn-table for service.

b. Employés of all departments must promptly obey the orders of the Superintendent.

10. Employés must wear the prescribed badges or uniforms while on duty. Uniforms.

11. Mail agents, express messengers, parlor and sleeping-car conductors and porters, news agents, and persons in charge of individual cars, are subject, while on duty, to the rules governing employés of the Company. Messengers,
Mail Agents
etc.

12. Pacific, or 120th Meridian, is the only recognized Standard Time. Standard
time.

13. The Standard Time will be telegraphed to all points from the Lick Observatory at 12 o'clock, noon, each day except Sunday.

a. "Time" has absolute right to the circuit between 11:58 A. M. and 12 M. Operators at relaying offices will watch carefully and see that there is no delay or interruption.

14. The Standard Time for each division is that of the clock in the office of the train dispatcher, and such clocks at junction and terminal stations as may be designated. Standard
clocks.

15. Where station clocks are provided, station agents must see that they show correct time; but trainmen and enginemen must not take time from such clocks unless they are also designated as Standard Clocks. Station
clocks.

a. Agents and operators must see that their clocks agree with the time sent by telegraph, and immediately at the close of sending time will O. K. the same to their division office, commencing at the most distant office and responding in turn.

Standard watches.

16. Each Conductor and engineman must have a reliable watch which has been examined and certified to on the prescribed form by a responsible watchmaker, and must file such certificate with the Superintendent before he is allowed to take charge of a train or engine. Watches must be examined and certificates renewed in January and July of each year.

WATCHMAKER'S CERTIFICATE.

Form of certificate.

This is to Certify, that on.....189... the watch of employed as on the..... Division of the S P. Co., has been examined and found to be a reliable and accurate time-piece, and in such repair as will, in my judgment, with proper usage, enable it to run within a variation not to exceed thirty seconds per week. Name of Maker... Brand..... No. of Movement..... Gold or Silver..... Open or Hunting Case..... Stem or Key Winding.... Signed..... Watchmaker. Address.....

Regulating watches.

17. Each conductor and engineman must regulate his watch by the designated standard clock before starting on each trip, and record in the train register book his name and the time at which he regulated his watch.

Comparing watches.

18. Conductors and enginemen whose duties prevent them from having access to a standard clock must compare daily with, and regulate their watches by, those of conductors and enginemen who have standard time, and have recorded their names as above provided.

a. In the case of a work-train that does not reach a registering office, the record will

be placed upon the conductor's time and car report, stating with whom comparison was made.

TIME-TABLES.

19. A time-table is the general law governing the arriving and leaving time of all regular trains at all stations. Time-tables will be issued from time to time, as may be necessary. The times given for each train on the time-table is the schedule of such train.

Time-table defined.

a. Copies of time-tables will be furnished to all concerned; conductors and enginemen are forbidden to go upon the main track outside of the yards without a copy in their possession, and at the time of change of time-tables, Superintendents must know that they have a copy of the new issue before allowing them to occupy main track.

Who must have them.

20. Each time-table, from the moment it takes effect, supersedes the preceding time-table, and all special instructions relating thereto, and trains shall be run as directed thereby, subject to the rules. All regular trains on the road running according to the preceding time-table shall, **unless otherwise directed**, assume the times and rights of trains of corresponding numbers on the new time-table.

Taking effect.

a. Trains of numbers not represented on the new time-table, and trains of which the new time is later than the old, will report for and obtain orders before the new time-table takes effect.

b. All trains appearing on a new time-table, which were not shown on the previous time-table, must be regarded as being on the road from the time the new time-table takes effect, except in cases where the time of such a train at its originating point is earlier than the time at which new time-table takes effect; in such cases the train will not run on the date on which new time-table takes effect.

Meeting
and passing
trains.

21. Upon the time-table not more than two sets of figures are shown for a train at any point. When two times are shown the earlier is the arriving time, and the later the leaving time. When but one time is shown it is the leaving time.

Regular meeting or passing points are indicated on the time-table by figures in **full-faced type**.

Both the arriving and leaving time of a train are in **full-faced type** when both are meeting or passing times, or when one or more other trains are to meet or pass it between those times.

Where there are more trains than one to meet or pass a train at any point, attention is called to it thus, $\frac{11:15}{11:30}$

In all cases trains are required to clear and follow as per Rules 85 to 90 inclusive.

Signs and
characters.

22. On the employés' time-table the words "daily," "daily, except Sunday," etc., printed at the head and foot in connection with a train, indicate how it shall be run. The figures given at intermediate stations for

passenger trains shall not be taken as indicating that a train will stop unless the rules require it. The following signs indicate :

" s "—regular stop ;

" f "—stop on signal to receive or discharge passengers ;

" d "—day telegraph station ;

" dn "—day and night telegraph station ;

" n "—night telegraph station only ;

" w "—water station.

Trains are designated by numbers and their class is indicated on the Time-tables.

a. No signs will be placed opposite the figures of freight trains. Through freights will stop only where necessary, or when required to do so by the rules.

b. Way freight trains must stop at each siding, or at least must know that there is no work for them to do before passing any station or siding.

c. All trains proceeding **from San Francisco** will be designated by **odd numbers**; all trains proceeding **toward San Francisco** will be designated by **even numbers**.

Train
numbers.

d. Trains proceeding from San Francisco will be called **east bound**; trains proceeding toward San Francisco will be called **west bound**;—regardless of the points of the compass.

East bound
and west
bound.

SIGNAL RULES.

SIGNALS.

23. Conductors, enginemen, firemen, brakemen, station agents, telegraph operators, switchmen, switch tenders, track foremen, road and bridge watchmen, and all other employés whose duties may require them to give signals, must provide themselves with the proper appliances, and keep them in good order and always ready for immediate use.

24. Flags of the proper color must be used by day, and lamps of the proper color by night, or whenever from fog or other cause the day signals cannot be clearly seen.

25. **Red** signifies **danger**, and is a signal to stop.

26. **Green** signifies **caution**, and is a signal to go slowly.

27. **White** signifies **safety**, and is a signal to go on.

28. **Green and white** is a signal to be used to stop trains for passengers or freight at flag stations where agents are located.

29. **Blue** is a signal to be used by car inspectors.

30. An explosive cap or torpedo, placed on the top of the rail, is a signal to be used **in addition** to the regular signals.

The explosion of **one** torpedo is a signal to **stop** immediately ; the explosion of **two** torpedoes is a signal to **reduce speed** immediately and look out for a danger signal.

31. (Omitted.)

32. A flag or lamp swung across the track, a hat or any object waved violently by any person on the track, signifies danger, and is a signal to stop.

Danger signal.

TRAIN SIGNALS.

33. Each train, while running, must display two **green** flags by day and two **green** lights by night, one on each side of the rear of the train, as markers, to indicate the rear of the train. Yard engines will not display markers.

Markers.

34. Each train running after sunset, or when obscured by fog or other cause, must display the head-light in front, and two or more **red** lights in the rear. Yard engines must display two **green** lights instead of **red**, except when provided with a head-light on both front and rear.

Head and tail lights.

a. In addition to two **red** lights in rear, when running at night passenger trains will display a red tail light from center of platform, and freight trains will display a cupola light.

35. Each car on a passenger train, while running, must be in communication with the engine. In the absence of an equivalent appliance, a bell-cord must be attached to the signal-bell of the engine, passing through or over the entire length of the train, and secured to the rear end of it.

Bell-cord.

36. Two **green** flags by day and night and, in addition, two **green** lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the

Green.

Signal appliances.

Flags and lamps.

Colors.

Torpedoes.

train is followed by another train, running on the same schedule and entitled to the same time-table rights as the train carrying the signals.

White.

37. Two **white** flags by day and night and, in addition, two **white** lights by night displayed in the places provided for that purpose on the front of an engine, denote that the train is irregular. These signals must be displayed by all irregular trains, but not by yard engines.

a. **White** signals carried by an engine confer no time-table or other rights, but are simply for information of all interested.

b. When an engine is running backward, the signals provided for in Rules Nos. 36 and 37 must be displayed in the same **position** on the engine as when it is running forward, and, in addition, the engine must carry a **white** light on rear of tender over center of track.

Blue.

38. A **blue** flag by day and a **blue** light by night, placed on the end of a car, denote that car inspectors are at work under or about the car or train. The car or train thus protected must not be coupled to, or moved, until the blue signal is removed by the car inspectors.

When a car or train standing on a siding is protected by a blue signal, other cars must not be placed in front of it so that the blue signal will be obscured, without first notifying the car inspector, that he may protect himself, and not then until the signal is removed.

a. A **blue** signal will also be used at night by car inspectors when examining the automatic brakes to signal the engineman from the rear of the train to apply or to release the brakes. "Stop" signal meaning "apply;" "go ahead" signal meaning "release."

WHISTLE SIGNALS.

39. One **long** blast of the whistle is the signal for approaching stations, railroad crossings and junctions (thus, —). Whistle.

40. One **short** blast of the whistle is the signal to apply the brakes—stop (thus, -).

41. Two **long** blasts of the whistle is the signal to throw off the brakes (thus, — —).

42. Two **short** blasts of the whistle is an answer to any signal, except "train parted" (thus, - -).

a. This signal must be promptly given whenever two taps of the cab-bell are heard (see Rule 52) or any signal, and especially flag signals, are seen. (See Rule 68.)

b. Two **short** blasts of the whistle, sounded three times, (thus, - - - - -) is a signal that brakes are sticking.

43. Three **long** blasts of the whistle (to be repeated until answered as provided in Rule No. 62) is a signal that the train has parted (thus, — — —).

44. Three **short** blasts of the whistle, when the train is **standing** (to be repeated until answered, as provided in Rule No. 61, is a signal that the train will back (thus - - -).

45. Four **long** blasts of the whistle (thus, — — — —) is the signal to call in the flagman from the west.

Four **long** followed by one **short** blast of the whistle (thus, — — — — —) is the signal to call in a flagman from the east.

46. Four **short** blasts of the whistle is the engineman's call for signals from switch-tenders, watchmen, agents, trainmen and others (thus, — — — —).

47. Five **short** blasts of the whistle is a signal to the flagman to go back and protect the rear of the train (thus, — — — — —).

a. When a freight train is **running**, enginemen must give **three short** blasts of the whistle and repeat (thus, — — — — —) before entering tunnels, covered bridges, snowsheds, or passing under low bridges, to warn men on the train to keep clear of danger.

48. One **long** followed by two **short** blasts of the whistle is a signal to be given by trains on a single track, when displaying signals for a following train, to call the attention of trains of the same or inferior class to the signals displayed (thus, — — —).

[NOTE. This signal to be answered as per Rule No. 42.]

a. Conductors and enginemen must look for and take notice of all signals carried by other trains. Enginemen carrying **green** or **white** signals must see that their whistle is properly answered as per Rule No. 42; if it is not, they must stop at once and notify their conductor, who must ascertain the reason and report same

Observing
and answer-
ing signals.

to Superintendent at the next telegraph station. Conductors of trains carrying signals must stop, if necessary, and be certain that the signals are understood by others concerned. When two engines or trains meet, both carrying signals, each will give the whistle signal and the answer.

49. Two **long**, followed by two **short**, blasts of the whistle is the signal for approaching road crossings at grade (thus, — — — —).

a. Irregular trains, and regular trains behind time, must sound this signal repeatedly in obscure places to warn section and bridge men. The same precaution must be used in fogs and snowstorms.

50. A succession of **short** blasts of the whistle is an alarm for persons or cattle on the track, and calls the attention of trainmen to danger ahead.

BELL-CORD SIGNALS.

51. One tap of the signal-bell, when the train is **standing**, is the signal to start.

Bell-cord
signals.

52. Two taps of the signal-bell, when the train is **running**, is the signal to stop at once.

53. Two taps of the signal-bell, when the train is **standing**, is the signal to call in the flagman.

54. Three taps of the signal-bell, when the train is **running**, is the signal to stop at the next station.

55. Three taps of the signal-bell, when the train is **standing**, is the signal to back the train.

56. Four taps of the signal-bell, when the train is **running**, is the signal to reduce speed.

57. When one tap of the signal-bell is heard while a train is **running**, the engineman must immediately ascertain if the train is parted, and if so, be governed by Rule No. 103.

[NOTE to Rules Nos. 51, 53 and 55. These bell-cord signals must not be given by conductors except in cases of emergency.]

58. Signals of the same number of sounds shall have the same significance when given by other appliances than bell-cords and signal-bells.

LAMP SIGNALS.

Lamp.

59. A lamp swung across the track is the signal to stop.

60. A lamp raised and lowered vertically is the signal to move ahead.

61. A lamp swung vertically in a circle across the track, when the train is **standing**, is the signal to move back.

62. A lamp swung vertically in a circle at arm's length across the track, when the train is **running**, is the signal that the train has parted.

63. A flag, or the hand, moved in any of the directions given above, will indicate the same signal as given by a lamp.

FIXED SIGNALS.

64. Fixed signals are placed at junctions, railroad crossings, stations and other points that require special protection. Special instructions will be issued indicating their position and use.

Fixed signals.

RULES GOVERNING THE USE OF SIGNALS.

65. A signal imperfectly displayed, or the absence of a signal at a place where a signal is usually shown, must be regarded as a danger signal, and the fact reported to the Superintendent.

Imperfect signals.

66. The unnecessary use of the whistle is prohibited; when necessary in shifting at stations and in yards the engine-bell should be rung, and the whistle used only when required by rule or law, or when necessary to prevent accident.

Unnecessary use of whistle.

67. The whistle must not be sounded while passing a passenger train, except in cases of emergency or danger, or when required by the rules.

Sounding whistle.

68. When a danger signal (except a fixed signal) is displayed to stop a train, it must be acknowledged as provided in Rule No. 42.

Acknowledged signal.

69. The engine-bell must be rung before starting a train, and when running through tunnels and the streets of towns or cities.

Engine-bell.

70. The engine-bell must be rung for a quarter of a mile before reaching every road-crossing at grade, and until it is passed; and

the whistle must be sounded at all whistling-posts.

Displaying and calling attention to signals.

71. When two or more engines are coupled to the head of a train, each of the engines shall display the signals as provided in Rules Nos. 36 and 37; but the leading engine only shall call attention to and answer signals, as per Rule No. 48.

Classification signal.

72. One flag or light displayed as a classification signal will be regarded the same as if two were displayed; but conductors and enginemen will be held responsible for the proper display of all train signals.

White light in pushing trains.

73. When a train is being pushed by an engine (except when shifting and making up trains in yards) a **white** light must be displayed on the front of the leading car (over the center of the track) at night, or when the train is obscured by fog or other cause.

Turning markers and tail-lights.

74. When a train turns out to meet or pass another train, the **red** lights must be removed and **green** displayed as soon as the track is clear; but the **red** must again be displayed before returning to its own track.

Covering head-lights.

Head-lights on engines, when on side-tracks, must be covered as soon as the track is clear and train has stopped, and also when standing at the end of double track.

a. In case there is more than one train to take the siding, the engineman of the first train must not cover his headlight until all trains are on the siding and the switches set for the main track. The conductor of the

train last taking the siding must see that the engineman of the head engine is duly notified, and in such a manner as not to be misunderstood, when his train is all in and the track clear, so that the headlight may be covered without delay. The main track will be considered obstructed while the headlight is shown, but this will not relieve conductors from protecting their trains by flag.

Signals at flag stations

75. The combined **green and white** signal is to be used to stop a train only at the flag stations (where there are agents) designated by the schedule of that train. When it is necessary to stop a train at a point that is not a flag station for that train, a red signal must be used.

a. Any train that by rule should stop at a station where there is no agent, on passenger or freight business, will do so upon seeing **any signal designed to attract attention** like the displaying of a **white** light at night, the waving of a handkerchief, or hat, or hand in the daytime; or the appearance of persons standing about at the stopping place, seemingly waiting to transact business with the train. A **red** light, the signal of danger, is not necessary, and its use for such a purpose is prohibited.

Watchmen's signals.

76. **White** signals must be used by watchmen at public road and street crossings, to prevent persons and teams from crossing when trains are approaching. Danger signals must be used only when necessary to stop trains.

Placing
torpedoes.

77. Torpedoes must not be placed near stations or road crossings, where persons are liable to be injured by them.

Lookout for
signals.

78. All signals must be used strictly in accordance with the rules, and trainmen and enginemen must keep a constant lookout for signals.

TRAIN RULES.

CLASSIFICATION OF TRAINS.

Designation
of trains.

79. All trains are designated as regular or irregular. Regular trains are those represented on the time-table, and may consist of one or more sections. All sections of a train, except the last, must display signals, as provided in Rule No. 36. Irregular trains are those not represented on the time-table. An engine without cars, in service on the road, shall be considered a train.

Classifica-
tion.

80. All regular trains are classified on the time-table with regard to their priority of right to the track; trains of the first-class being superior to those of the second and all succeeding classes, and trains of the second-class being superior to those of the third and all succeeding classes, and so on indefinitely. The terms passenger, freight, or mixed, are descriptive and do not refer to class.

Irregular
trains.

81. Irregular trains shall be distinguished as:

Passenger Special, or Special.
Freight Extra, or Extra.
Work Train.

82. All irregular trains are of inferior class to all regular trains of whatever class. Rights.

MOVEMENT OF TRAINS.

83. A train of inferior class must in all cases keep out of the way of a train of superior class. Classification rights.

84. All west-bound trains have the absolute right of track over all trains of the same class running in the opposite direction. (See Rule 22-d.) Right to track.

85. When trains of the same class meet on single track, the train not having right of track must take the siding and be clear of the main track before the leaving time of the opposing train; but such a train must not pass the switch to back in on a siding until after the arrival of the opposing train, unless otherwise directed by special instructions, or protected by danger signals. When necessary to back in on the siding, before passing the switch a flagman must be sent out in the direction of the opposing train, as per Rule No. 99. Taking siding.

a. West-bound irregular trains will hold the main track against east-bound irregular trains at meeting points unless otherwise directed in their orders.

86. When a train of inferior class meets a train of superior class on single track, the train of inferior class must take the siding Clearance.

and clear the train of superior class **five minutes**. A train of inferior class must keep **ten minutes** off the time of a train of superior class following it.

87. A freight or work train must not leave a station to follow a passenger train until **five minutes** after the departure of such passenger train, unless some form of block signal is used.

88. Passenger trains running in the same direction must keep not less than **ten minutes apart**, unless some form of block signal is used.

89. Freight trains following each other must keep not less than **ten minutes apart**.

a. When freight trains are run in two or more sections the sections must be kept **ten minutes** apart, except at meeting points, where they may close up to allow following sections to come in, but always with great care and train under perfect control. At such points the responsibility for a collision rests with the following train. **The following train must approach all stations carefully, expecting to find the leading train at the station.** When fog, darkness, dangerous places, or other circumstances render it necessary, the forward train, as an extra precaution, will send out a flagman, **but it must be distinctly understood that this does not relieve the following train from responsibility for a collision.**

90. No train must leave a station expecting to meet or to be passed at the next station

by a train having the right of track, unless it has ample time to make the meeting or passing point, and clear the track by the times required by Rules Nos. 85 and 86.

91. A train not having right of track must be entirely clear of the main track by the time it is required by rule to clear an opposing train, or a train running in the same direction; failing to do so, it must be immediately protected, as provided in Rule No. 99.

92. Except at meeting or passing points, as provided in Rules Nos. 85 to 91, inclusive, no train must arrive at a station in advance of its schedule arriving time, when shown.

No train must leave a station in advance of its schedule leaving time, except upon special order from the Superintendent.

93. All trains must **stop** at schedule meeting or passing points on single track, if the train to be met or passed is of the same class, **unless the switches are plainly seen to be right, and the track clear.** The point at which a train should **stop** is the switch (which it must clear) used by the train to be met or passed in going on the siding.

When the expected train of the same class is not found at the schedule meeting or passing point, the train having right of track must approach all sidings prepared to stop, until the expected train is met or passed.

94. (Omitted.)

Clearing
main track.

Ahead of
time.

Caution at
meeting
points.

Time
between
trains, and
responsi-
bility.

Clear
superior
trains.

a. All trains must come to a **full stop** before crossing drawbridges, or the track of another railway at grade, or entering upon the track of another railway, or division (unless the drawbridges, crossings or junction switches are protected by interlocking signals and derauling switches); they must then sound one long blast of the whistle, and shall not proceed until the signal is set right for them to pass, as per rules governing each crossing. When the signal at any crossing or junction cannot be seen, the engineman will send the fireman ahead, and shall not proceed until the way is known to be clear.

b. When two trains of the same class approach a crossing at the same time, the one nearest the crossing shall be given the preference. If of different class, the superior train shall be given the preference, except that the crossing signal, once set, shall not be changed until the train to which the signal is given has passed, or proper signals have been sent out a sufficient distance to stop the same to avoid accident.

c. All trains must approach the limits of established yards under full control.

d. Enginemen are required to try the air-brakes to ascertain if they are in working order, one mile from drawbridges, railroad crossings at grade, junction switches, meeting points or limits of established yards, and if not in order must signal the brakemen to apply the brakes. Brakemen are required to be out and at the

brake-wheels on approaching such places, ready to apply the brakes by hand in case the air-brakes fail to work.

95. No train must leave a junction, a terminal, or other starting point, or pass from double to single track, until it is ascertained that all trains due which have the right of track against it have arrived.

Leaving
terminals
and junc-
tions.

a. Conductors of all trains and enginemen of light engines, immediately before starting from, and upon arrival at, terminals will go in person to the telegraph office to inquire if any special orders are awaiting them, and at junction or terminal stations must enter in train-register book, or, if at a non-register station, must telegraph to the Superintendent's office, the time of their arrival or departure; and, if their train be irregular, the direction it is going, the signals carried, the number of the engine, and give all other information called for by the register.

Light
engines.

b. Yard engines working within the limits of any established yard may use the main track day and night, keeping out of the way of all regular trains; but they must not occupy the main track on the time of a due or delayed train except when under proper protection.

Yard
engines.

96. When a passenger train is detained at any of its usual stops more than five minutes, a flagman must go back with danger signals and protect his train as provided in Rule No. 99; but if it stops at an unusual point, a

Protecting
passenger
trains.

flagman **must immediately go back** far enough to be seen from a train moving in the same direction when it is at least one-half mile (ninety rails or fifteen telegraph poles) from the rear of his own train, and if the stop is over five minutes he must be governed by Rule No. 99.

When it is necessary to protect the front of the train, the same precautions must be observed by the fireman. If the fireman is unable to leave the engine, the front brakeman must be sent in his place.

a. When necessary to protect the front end of the train, the front brakeman will be subject to the orders and instructions of the engineman if the conductor be not at hand.

97. When a freight train is detained at any of its usual stops more than ten minutes, where the rear of the train can be plainly seen from a train moving in the same direction at a distance of at least one-half mile (ninety rails or fifteen telegraph poles), the flagman must go back with danger signals not less than one-eighth of a mile (twenty-three rails) or four telegraph poles, and as much farther as may be necessary to protect his train; **but if the rear of his train cannot be plainly seen** at a distance of at least one-half mile (ninety rails or fifteen telegraph poles), or, if it stops at any point that is not its usual stopping-place, the flagman must go back far enough to be seen from a train moving in the same direction when it is at least

Protecting
freight
trains.

one-half mile (ninety rails or fifteen telegraph poles) from the rear of his own train.

If his train should be detained until within **ten minutes** of the time of a passenger train moving in the same direction, he must be governed by Rule No. 99.

When it is necessary to protect the front of the train, the same precautions must be observed by the fireman. If the fireman is unable to leave the engine, the front brakeman must be sent in his place.

98. When it is necessary for a flagman to go back to protect the rear of his train the next brakeman must immediately take the flagman's position on the train, and remain there until relieved by the flagman; and on passenger trains the baggageman must take the place of the front brakeman whenever necessary.

Flagmen.

99. When a train is stopped by an accident or obstruction, a flagman must immediately go back with danger signals to stop any train moving in the same direction. At a point one-half mile (ninety rails or fifteen telegraph poles) from the rear of his train, he must place **one torpedo** on the rail. He must then continue to go back at least three-quarters of a mile (one hundred and thirty-five rails or twenty-three telegraph poles) from the rear of his train and place **two torpedoes** on the rail ten yards (or one rail-length) apart, when he may return to a point one-half mile (ninety rails or fifteen telegraph poles) from

Protecting
trains by
flagging
and tor-
pedoes.

the rear of his train, and he must remain there until recalled by the whistle of his engine; but if a passenger train is due within **ten** minutes, he must remain until it arrives. When he comes in he will remove the torpedo nearest to the train, but the **two** torpedoes must be left on the rail as a caution signal to any following train.

If the accident or obstruction occurs upon single track, and it becomes necessary to protect the front of the train, or if any other track is obstructed, the fireman must go forward and use the same precautions. If the fireman is unable to leave the engine, the front brakeman must be sent in his place.

a. When a flagman is recalled, and there is not a clear view for one half-mile in the rear of train, the train must start immediately on sounding the whistle recalling the flagman, and be moved ahead at a speed of not less than four miles per hour until it reaches a point where the track is straight for at least one-half mile in its rear.

b. When a flagman is sent out to signal any approaching train, he must avoid stopping on a curve, or behind any obstruction, and must endeavor to reach a position where he can be clearly seen from the approaching train for at least one-quarter of a mile.

c. When a following train picks up a flagman of a delayed train, the following train, of whatever class, must run with train under full control around all curves and obscure places, to the first side track. This will not, how-

ever, relieve the forward train from again protecting itself if necessary after leaving its flagman; trainmen of both trains will be held equally responsible should collision result.

d. In case a train under danger signals or flag meets another train on the main track, such action must be taken by both as will cause the least delay to the train having the right of track. By running under danger signals or under flag is meant to always run with caution, and when the train is within not less than one-half mile of any point where the view of the track is obstructed it shall be stopped, and remain standing until a flagman sent ahead disappears from view at the point before mentioned. It may then proceed at a speed not greater than five miles per hour, until the obscure places are passed, when it may overtake and pick up the flagman, and proceed until the next obstruction to the view is met. Looking out for danger at curves and obscure places from a position on the engine or train **is not flagging** and will not be tolerated as such.

e. If necessary to stop between stations, the engineman must see that rear end of train is not in an obscure place.

100. Freight trains having work to do on any other track may cross over if no passenger train is due, provided no approaching freight train is in sight; and also provided that a flagman has been sent with danger signals, as provided in Rule No. 99, not less than one-

Crossing on
double
track.

half mile (ninety rails or fifteen telegraph poles) in the direction of the expected train.

Crossing on
double
track and
passing
trains.

101. When a freight train on double track turns out onto the opposite track to allow a passenger train running in the same direction to pass, and while waiting a passenger train from the opposite direction arrives, the freight train may cross back and allow it to pass, provided the other passenger train is not in sight, and also provided that a flagman has been sent with danger signals, as provided in Rule No. 99, not less than one-half mile (ninety rails or fifteen telegraph poles) in the direction of the expected train.

102. When it is necessary for a freight train on double track to turn out onto the opposite track to allow a passenger train running in the same direction to pass, and a passenger train running in the opposite direction is due, a flagman must be sent back with danger signals, as provided in Rule No. 99, not less than one-half mile (ninety rails or fifteen telegraph poles) in the direction of the following train, and the freight train must not cross over until one of the passenger trains arrives. Should the following passenger train arrive first, a flagman must be sent forward on the opposite track with danger signals, as provided in Rule No. 99, not less than one-half mile (ninety rails or fifteen telegraph poles) in the direction of the overdue passenger train before crossing over. Great caution must be used, and good judgment is required to prevent de-

tention to either passenger train. The preference should always be given to the passenger train of superior class.

103. If a train should part while in motion trainmen must use great care to prevent the detached parts from coming in collision. Enginemen must give the signal as provided in Rule No. 43, and keep the front part of the train in motion until the detached portion is stopped.

Train
parted.

The front portion will have the right to go back, regardless of all trains, to recover the detached portion, first sending a flagman with danger signals one-half mile (ninety rails or fifteen telegraph poles) in the direction in which the train is to be backed, and running with great caution, at a speed not exceeding four miles per hour. On single track all the precautions required by the rules must also be taken to protect the train against opposing trains. **The detached portion must not be moved or passed around until the front portion comes back.** This rule applies to trains of every class.

An exception will only be made to the above when it is known that the detached portion has been stopped, and when the whole occurrence is in plain view, no curves or other obstructions intervening, so that signals can be seen from both portions of the train. In that event the conductor and engineman may arrange for the re-coupling, using the greatest caution.

Flagging
when push-
ing train.

104. When a train is being pushed by an engine (except when shifting and making up trains in yards), a flagman must be stationed in a conspicuous position on the front of the leading car, so as to perceive the first sign of danger, and immediately signal the engineman.

a. In such cases trainmen must station themselves on the train in such a way that the signals may be promptly passed to the engineman.

Overdue
trains.

105. A train starting from its terminal station, or leaving a junction when a train of the same class running in the same direction is overdue, will proceed on its own time and rights, and the overdue train must run as provided in Rule No. 88 or 89.

On other
trains' time.

106. A train which is delayed, and falls back on the time of another train of the same class, does not lose its rights.

a. Under this rule a train overtaking a delayed train of the same class cannot pass it without special orders, except as provided for by Rule 108.

Twelve-
hour rule.

107. Regular trains twelve hours or more behind their schedule time lose all their rights.

a. Orders held by or issued for a regular train are to be considered as annulled when the train has lost its rights, under this rule, and other trains will be governed accordingly.

108. A train overtaking another train of the same or superior class, **disabled so that it cannot move**, will run around it, assuming the rights and taking the orders of the disabled train, to the next telegraph office which is open, where it will report to the Superintendent. The disabled train will assume the rights of the last train passing it, with which it exchanged rights or orders, till the next telegraph office is reached.

Passing
disabled
train.

a. A train being disabled, and the Superintendent having been notified that it requires help to be moved, must not be moved if repairs are effected before relief arrives except under danger signals or flag to the next telegraph station.

109. All messages or orders respecting the movement of trains or the condition of track or bridges must be in writing.

Orders in
writing.

110. Trains must not display signals for a following train without an order from the Superintendent.

Orders for
signals.

a. The following is an exception to Rule 110:

Where a train is held at a non-telegraph station, a train having right of track may carry signals for it to the next telegraph station, and the train so held may run to the next telegraph station on the rights of the signals so carried, provided it is ready to follow immediately as a section of said train. Conductor of train carrying the signals will be governed by Rule No. 112 when taking them down.

Irregular
trains.

111. Irregular trains must not be run without an order from the Superintendent.

Taking
down
signals.

112. When signals displayed for a following train are taken down at any point before the following train arrives, the conductor must inform the Superintendent promptly by wire, and also the operator or switchtender; and the latter, unless there is some other provision for the purpose, must notify all opposing trains of the same or inferior class leaving that point before the train arrives for which signals were displayed.

If signals are taken down at a point where there is no operator, switchtender, or other provision for the purpose, the conductor must notify all opposing trains of the same or inferior class until he reaches the next telegraph office, when he must inform the Superintendent; and the operator, unless there is some other provision for the purpose, must notify all opposing trains of the same or inferior class until directed otherwise by the Superintendent.

If the train for which signals were displayed leaves the main line at a point where there is no operator, switchtender, or other provision for the purpose, a flagman must be left to notify opposing trains that it has arrived.

Work
trains.

113. Work trains will be run under special orders, and will be assigned working limits.

a. Work trains will not use main track before 5:30 A. M. nor after 7 P. M., except by

special orders; they must be kept *ten minutes* out of the way of passenger trains, but they may occupy the main track when protected by proper signals until regular freight trains approach, and run ahead of them to first siding.

114. Great care must be exercised by the trainmen of a train approaching a station where any train is receiving or discharging passengers (coming to full stop if necessary to avoid accident).

Approach-
ing stations.

115. Enginemen must observe trains on the opposite track, and if they are running too closely together call attention to the fact. (See Rule 50.)

Observing
trains on
opposite
track.

116. No person will be permitted to ride on an engine (or in baggage, mail or express cars) except employes in the discharge of their duties, without a written order from the Superintendent.

Riding on
engines, etc.

117. Conductors will be held responsible for the proper adjustment of the switches used by themselves and their trainmen, except where switchtenders are stationed.

Respon-
sibility for
position of
switches.

Whoever opens a switch shall remain at it until it is closed, unless relieved by some other competent employé.

When there is more than one train to use a switch, it must not be left open unless one of the trainmen of the following train is at the switch and takes charge of it.

a. At meeting or passing points, the employé attending the switch will, after locking it to main track, take position on opposite side of track from the switch-stand, and remain there until the expected train has passed. Except to prevent accident, switches must never be turned when an engine or car is on slide rail.

b. At stations where yardmasters are employed they will be held responsible for the proper position of switches. All main line switches in yards must invariably be set and locked for main track. Inside switches may be left as used.

c. At stations where yardmasters are not employed, agents will be held responsible for the proper security and position of switches, which must be set for the main track and locked; they will in no case allow them to remain turned from the main track, except when in actual use, and they must know personally, at least 10 minutes before regular trains are due, and before leaving the station at night that switches are secure, and that everything is right for the safe passage of trains. They will also be held responsible for the proper position of derailing switches.

118. Accidents, detention of trains, failure in the supply of water or fuel, or defects in the track or bridges, must be promptly reported by telegraph to the Superintendent.

a. In case of accident, conductors of passenger trains may, if necessary, command the

services of any train or engine, and of all employés in the vicinity.

b. In case of an extraordinary rainstorm or high water, trains must be brought to a stop and a man sent to examine bridges, trestles, culverts, and other points liable to damage, before passing over. Conductors and enginemen must make careful inquiry at all stopping places, and when thought advisable, make extra stops to ascertain the extent and severity of storms, protecting themselves as provided by the rules, and taking no risk. In case of doubt as to the safety of proceeding they will place their train upon a siding and remain there until certain it is safe to proceed.

c. When a conductor discovers anything wrong with the track, bridges or culverts, which would be likely to cause an accident to a following train, he must not rely wholly upon the telegraph to notify other trains, but must leave a flagman.

d. It is the duty of every employé in the service, regardless of departments, to report defects in road or bridges, or obstructions of any kind wherever met, to the Superintendent, and, if possible, to the nearest section or bridge foreman. When necessary flags and torpedoes must be left to notify approaching trains; and when there is any reason to believe that the safety of the track or of any structure is endangered through floods, fires or other causes, every employé, before attempting its use, must make a personal in-

spection, using all precautions in the interest of life and property.

e. All accidents must be reported by wire from the nearest telegraph station to the Superintendent, and a written report must be forwarded to him on the proper form as soon as possible. In making such reports the facts must be fully, clearly and precisely stated with all the particulars necessary to a clear understanding of the situation, as known to the person making the report, without necessity for inquiries to extract such information. Exaggeration must be avoided. Care must be taken to secure the names and addresses of all witnesses of any accident involving injury to persons or property, or other occurrences where their evidence may be necessary; written statements should also be obtained of witnesses when possible.

f. In cases of emergency, or obstruction of the road by accident or other causes, suggestions, based on observation of the actual situation, are useful and are required, and frequent reports of progress must be made by wire to the Superintendent. In such cases prompt action is required of all employes; and in the absence of designation, the employé on whom the responsibility most naturally falls will assume authority to direct the work. Conductors may call on section-men or any other convenient force for any needed assistance, which must be promptly rendered.

119. No train will leave a station without a signal from its conductor.

Starting
signal.

a. Enginemen must invariably start with care, first ringing the engine-bell, and see that they have the whole of the train before going beyond the station limits.

120. Conductors and enginemen will be held equally responsible for the violation of any of the rules governing the safety of their trains, **and they must take every precaution for the protection of their trains, even if not provided for by the rules.**

Conductor
and engine-
man equally
responsible.

a. Trains will be run under the control of the conductors. Although the conductor has charge of a train, the engineman will not therefore be considered blameless if he proceeds in violation of instructions or orders, even should the conductor, from negligence or misapprehension, direct him to do so.

121. In all cases of doubt or uncertainty, take the safe course and run no risks.

Take safe
course.

122. Any rule which does not fully meet the requirements of any particular division, under any particular time-table, may be annulled or modified by a special rule on the time-table, but such rules will remain in force only during the life of the time-table on which they appear.

Special
rules on
time-tables.

SPECIAL INSTRUCTIONS.

ALL EMPLOYÉS.

200. The habitual use of intoxicating drinks by employés is strictly forbidden, and will be considered sufficient cause for dismissal. Total abstinence in this particular, as well as in the use of opium and other narcotic drugs, is necessary to safety in operating the road.

Any employé drinking intoxicating liquors, or smoking on passenger trains, or among passengers at stations while on duty, or when in uniform among passengers, will be dismissed from the service of the Company, and all employés are required to report immediately to the Superintendent any violation of this rule.

201. Persons employed in any capacity, who frequent places where liquor is sold, or gambling-houses, will not be retained in the service.

Smoking by employés is not allowed about the shops, station-buildings, or warehouses.

202. When a person is discharged for cause from any department or division of the Company's service, he must not be employed in another place without the written approval of the General Superintendent.

203. No employé, whatever may be his rank, will be allowed to absent himself from duty without permission from the head of the department in which he is engaged; nor will any employé be permitted to engage in other business without the consent of his immediate

superior, approved by the General Superintendent.

204. All persons in the employ of the Company must devote themselves exclusively to its service, attending during the prescribed hours of the day or night, and residing wherever required, and must promptly obey instructions of executive and general officers, also orders of heads of departments, in matters pertaining to their respective branches of the Company's service.

205. Unless appointed to do so, employés must not receive nor pay out money on the Company's account. To use the credit of the Company is forbidden, unless special authority is given by the proper official.

206. All employes, especially those in places of trust, are required to report any misconduct or negligence affecting the interest or safety of the Company, and withholding such information will be considered a proof of negligence or indifference and will be treated accordingly.

207. Every employé is required to take such an interest in the welfare of the Company as will prevent persons from carrying off coal, wood, material or other property, and will promptly report any petty thieving to the heads of their respective departments.

208. Employés will be held responsible for the prudent and economical use of all supplies and material furnished them. Order, cleanliness, faithfulness and economy are enjoined

Exclusive service required.

Reporting negligence.

Reporting pilfering.

Use of Company's property.

Total abstinence.

Re-employment.

Absence.

upon all in the care and use of the property, tools, material, etc., entrusted to them.

209. Employés leaving the Company's service, or at any time when required to do so by proper authority, must deliver up any property entrusted to their care in good order.

210. Civil deportment and proper conduct on the part of all, especially those having control of men, is required. Abusive, boisterous, profane or vulgar language is forbidden. Employés on duty must not enter into altercations with any person, no matter what provocation may have been given, but will make note of the facts and report to their immediate superior.

211. Employés are forbidden to offer testimonials to their superiors, either directly or indirectly ; and those in authority must not accept such presents or testimonials. The acceptance of gratuities or rewards from passengers or other patrons of the Company is forbidden.

212. Minors must not be employed in train service without written consent of parents or guardians, which must be filed with personal records.

213. Employés are warned not to attempt to get on the front or rear end of an engine, nor on the end of a car as it approaches them, nor to jump on or off trains or engines in rapid motion, nor to go between cars in motion to uncouple them; these and all similar acts of imprudence are forbidden.

Every employé is required to exercise the utmost caution to avoid injury to himself or to others, especially in the switching or other movement of trains.

No person who is careless of the safety of himself or of others will be continued in the service of the Company.

214. Enginemen must exercise great care in handling their engines while yardmen or others are making couplings, and must give close attention to signals. Conductors and yardmen must report to the Superintendent any enginemen who fail to obey this order.

215. Great care must be exercised by all persons when coupling cars. Inasmuch as the couplers of cars or engines cannot be uniform in style, or strength, and are liable to be broken from various causes, so as to render it dangerous to expose the hands, arms or persons of those engaged in making couplings, all employés are **enjoined** before coupling cars or engines, to **examine** and to **know** the kind and condition of the drawhead, drawbar, link and coupling apparatus, and are prohibited from placing in trains any car with a defective coupling until they have first reported the defect to the conductor or yardmaster. Sufficient time is allowed, and may be taken by employés in all cases to make the examination required. Coupling by hand is strictly forbidden in all cases where a stick or proper implement can be used to guide the link, and each yardmaster, switchman, brakeman, or

Caution in coupling.

Condition of couplers must be known.

Surrendering property.

Deportment

Minors.

Warning.

other employé who may be expected to couple cars, is required to provide himself at all times with a stick for that purpose.

In coupling Miller hook with other styles of drawbars, first insert the link in the hook, using the pin chained to the Miller platform.

Three-link drawheads must be connected by the two outside, or the one center link; an outside link must not be used to couple with a single drawhead.

Employés must not remove any appliances of engines or cars for the sake of convenience in switching, thereby endangering those who are required to make couplings.

216. It is dangerous to **assume** that signals given to the engineman or fireman have been seen, or, if seen, that they will be obeyed, when obedience to those signals on the part of the engineman or fireman is essential to the safety of an employé in the performance of his duty. He must **know** that the signal has been seen, understood and obeyed before placing himself in a dangerous position. Otherwise, without such knowledge, he assumes all risk of danger arising from any misunderstanding or disregard of signals.

217. Yardmen, trainmen, and other employés are directed to communicate with the Superintendent, if they are aware of any defects in the construction of the yard tracks whereby an accident might happen while the men are in the discharge of their duties.

218. Conductors must give particular attention to the safety and comfort of their passengers, the heating, lighting, and ventilation of cars and to the supply of water in the tanks. Brakemen and train porters will be required to assist ladies, children and infirm persons off and on the cars. Conductors will perform this duty themselves when necessary.

219. Shortly before reaching a station at which the train stops, the conductor or brakeman must pass through each car, except the sleeping-cars, stop twice, and announce each time distinctly, with closed doors, the name of the station they are approaching, invariably using the words "**next station is**" preceding name of station; as for example: "Next station is Sacramento;" and at junction stations must announce the names of the principal stations where connecting trains stop. If any stop is made before station announced is reached, notice must be given to passengers in each car. Train conductors will see that employés of sleeping or parlor cars keep their passengers advised as to when they are to leave the train.

At junction stations and crossings, where trains leave in different directions, the conductor of each train must cause to be announced distinctly, in each passenger-car before starting, the direction the train is to go, and the principal stations on the route.

220. Conductors will prevent unnecessary noise about passenger trains, particularly at night, and not allow employés to enter or pass through sleeping-cars, except when necessary

Safety and comfort of passengers.

Announcing stations.

Preventing noise about passenger trains.

Avoid misunderstanding of signals.

Defects in yard tracks.

in the discharge of their duties. Care must be taken in switching to disturb the inmates as little as possible.

221. No gunpowder, dynamite, nitro-glycerine, or similar explosive article, must be transported in any car attached to a passenger train.

222. News agents must not be allowed to discharge their duties unless equipped with the cap and badge designated for them to wear. Neatness in personal appearance is required. Conductors will be held responsible for the good conduct of the news agents while on duty, and are authorized to prevent them acting in that capacity for insubordination, violation of rules, or any improper action, and will see that nothing improper is offered; should there be, they will suppress it, and promptly report the facts to the Superintendent. News agents must not be allowed to leave their wares with passengers unsolicited, nor to annoy them in any manner. In case of misbehavior by any news agent, the conductor must report it to the Superintendent; or should the case be such, in his judgment, as to warrant it he may put the news agent off the train at the first station, and report his action to the Superintendent.

223. Conductors must look out for confidence men, monte players, prize package vendors and other swindlers, and when they are known to be on the train must have them watched, personally warn passengers and otherwise prevent their operating on the train, and

report the case by wire to the Superintendent. They must not permit beggars, gamblers or unauthorized peddlers to practice their vocations on the train, nor allow advertising matter to be distributed.

224. No person will be allowed to ride free except as provided in the circular relating thereto. Conductors must collect fare from all persons traveling without a ticket, and are allowed no discretion in the matter.

225. Circumstances under which passengers may be ejected from trains are fully covered below. The law provides that a railroad company may demand the fare of passengers, either at starting or at any subsequent time. A passenger who refuses to pay his fare, or to conform to any lawful regulation of the carrier, may be ejected from the vehicle by the carrier. But this must be done with as little violence as possible, and at a usual stopping-place or near some dwelling-house. A passenger upon a railroad train who has not paid his fare before entering the train, if he has been afforded an opportunity to do so, must, upon demand, pay ten per cent in addition to the regular rate. A railroad company has a lien upon the luggage of a passenger for the payment of such fare as it is entitled to from him.

In case a person is by reason of any infirmity unable to travel, or find his way from the point where he is put off to a dwelling-house or town, or if the weather is so inclement as to render it unsafe or inhuman to eject a person at a point other than a station,

Free travel.

Ejection of passengers.

Explosive articles.

News agents.

Confidence men and swindlers.

then such person should be ejected from the train at a station where suitable accommodations can be procured for his safety and comfort.

Drunken or disorderly persons, or others whose conduct and appearance is such as is calculated to operate as a serious annoyance to other passengers, or a passenger who is guilty of gross misconduct, either by insulting or assaulting other passengers or train employes, who uses vile or profane language in the car, or who threatens to assault other passengers or train employes, may lawfully be expelled from the train at any usual stopping-place, or near a dwelling-house or station, provided the place is not such as to cause want or injury; this may be done whether fare has been paid or not.

226. Agents and ticket-sellers must familiarize themselves with the current time-tables of their respective divisions, and must not sell tickets to stations at which trains do not stop, nor for trains that do not carry passengers.

227. Depots must be opened, ventilated and warmed, and waiting-rooms and platforms properly lighted as early and as late as the business of the Company requires. Ticket offices must be opened at least thirty minutes before train time.

228. Conductors and enginemen must consult bulletin-boards daily, and always before leaving terminal stations.

Selling tickets for proper trains.

Care of depots and waiting-rooms.

Consulting bulletin boards.

229. Conductors and trainmen of all trains are required at terminal stations to be with their trains at least thirty minutes before the time of departure. They must see that their train is in proper order and everything in readiness to start. Passenger train men at arriving terminal will remain by their trains to assist passengers and answer inquiries until passengers have departed.

Requirements of trainmen.

230. All irregular trains must pass into and through all stations, and must approach side tracks, water-tanks and fuel stations with train under full control, expecting to find trains at such points. Speed must be reduced; enginemen and trainmen must commence to get their train under control one mile from such points, so that under no circumstances whatever shall it be possible for them to strike any train, engine or car that may be within the station switches, or that may be taking fuel or water. In such cases the responsibility for safety rests on the approaching train. When fog, darkness, snow or other circumstances render it necessary, trains occupying main track at stations must, as an additional precaution, protect themselves by danger signals. This will not, however, relieve the approaching train of responsibility for accidents.

Approaching stations and water-tanks carefully.

231. Conductors and brakemen of all trains meeting or passing, or when leaving or approaching a station, **must be out** looking for signals, and be prepared to do anything required for safety or expedition.

Looking out for signals.

Engineman
as conduc-
tor.

232. In case an engine is run over any portion of the road unaccompanied by a conductor, the engineman must act as conductor, and perform all the duties and make all the reports required of a conductor in addition to his own.

Flying
switches.

233. Running or flying switches must not be made except where they are necessary or where it would cause great delay to do the work in any other manner; but whenever they are made, the train must first be stopped, and before the engine is again started the switch and also the brakes on the cars to be set out must be tested, and great care must be used.

234. Cutting off the engine, with or without part of the cars in the train, before a train has stopped at a station, and allowing the remainder of train to follow, is dangerous and is forbidden. Every train must be brought to a full stop before the engine is uncoupled.

Filling out
trains.

235. Conductors and enginemen are required to fill out their trains to the full capacity of their engines. Enginemen must not refuse to take the assigned number of cars in their trains, but must use their best efforts to haul them. Should enginemen think that the capacity of their engines is overestimated, their proper course is to report the matter to the Superintendent.

Controlling
speed of
trains.

236. When trains are equipped with air-brake, enginemen will be held responsible for the rate of speed; but when trains are not so

equipped, or when the air-brake fails to work, conductors must see that speed is controlled by brakemen using hand-brakes when descending grades. When hand-brakes are used they should not be applied so as to cause the wheels of cars to slide, nor kept on so long as to heat the wheels; to avoid this brakes should be frequently changed from one car to another.

237. On all grades, when stopping on the main line or on a siding, when cutting an engine off a train at stations to do work, and at any stops of unusual length, the air must be released and a sufficient number of hand-brakes set to hold the train. Both conductors and enginemen will be held responsible for failure to comply with this rule.

Hand-
brakes must
be set.

238. In leaving cars at sidings, care must be taken to leave the streets and wagon-roads, in daily use by the public, unobstructed their entire width. When trains remain at stations to exceed ten minutes, the train must be cut to open a passage or roadway, if there be any persons who desire to cross. Agents will see that this is done and report any failure to the Superintendent. In no case must a train be backed over a public crossing or highway, unless there is a man on rear car to see that the way is clear; nor must a car be cut loose and allowed to run over a public crossing or highway, unless there is a man on the car. At night the man referred to must display a light.

Crossings
must not be
obstructed.

Going to meals.

239. Conductors and enginemen are prohibited from going to meals, or delaying their trains from any cause, without permission from the Superintendent. If permission is received, the conductor must report for further orders when ready to go.

Engine and train supplies.

240. Engines, cars, cabooses and train-boxes must always be fully supplied with stores, tools and equipment designated in the lists, **and conductors and enginemen must know at all times that their trains are provided with everything necessary to enable them to comply with the regulations of the company.**

"Sawing-by."

241. In cases where several trains meet at stations where it is necessary to "saw by," the senior conductor in the service of the Company present will take full charge for that particular occasion, and all interested will obey his orders.

Freight trains carrying passengers.

242. Freight trains will not carry passengers, except as designated in the time-tables. When a freight train is composed of two or more sections running on the same time, the rear section must do the local work, and if allowed to take passengers, is the only one on which they will be carried, except that employes with passes, traveling on business of the Company, may be carried on all freight trains between stations at which such trains stop. Persons accompanying live stock, or other freight requiring man in charge, may be carried on same train with stock (or

freight) when provided with proper transportation. Freight conductors will allow none but the freight crew to ride on freight cars, and when persons in charge of stock are forward looking after the same, notice must be given in time to enable them to reach the caboose before the train starts.

243. Conductors of freight trains will be held responsible for the faithful performance of duty by the brakemen on their trains. They must require the doors of all **box cars** in their trains **to be closed**, whether loaded or empty, and must in all cases, when ascending or descending grades, station themselves where they can see that their brakemen are at their proper places on top of the train.

Conductors responsible for work of brakemen.

244. Conductors when leaving cars on side tracks must see that the hand-brakes are set, and that they are properly secured against running or being blown out on main track by the wind; also, that they are far enough from the main track to clear all passing trains safely. If a car is set out without a brake, conductors must securely block the wheels, and in addition immediately notify the agent. Care must be taken to leave derailing switches turned so as to prevent cars from running out on main track.

Securing cars on siding.

245. Freight conductors must see personally to the loading and unloading of way freight at all stations, and know that all freight billed is loaded or unloaded, as the case may be. At stations without agents they

Loading and unloading way freight.

are also required to see that the way-bill is properly checked, and that any discrepancy or damage to property, whether handled by them or not, is noted on the way-bill, and that proper reports are made. Should they find freight in any car for which they have no way-bill, they must unload it at the station marked on the package if discovered in time; if not, they must unload it at the next regular station, calling the attention of the agent at that station to it, and report the same to the Superintendent by wire. Agents must tally the freight as it is unloaded from the cars, and advise the conductor at the time of unloading of any short, over or damaged freight.

246. After unloading property from a car containing freight for other stations, conductors must see that articles left in the car are properly secured, so that they cannot fall down or become damaged in any way, and will strictly observe the special rules printed in conductors' train book. Trainmen will be held responsible for the proper handling, care and protection of goods and property while in transit in their trains.

247. Conductors must comply with instructions of agents in placing cars, loading and unloading freight, and doing other station work. If necessary to disturb cars placed for loading or unloading, they must be replaced in the same position as found. It is the duty of agents to report violations of this rule, and all cases where conductors refuse cars that are

Trimming
loads in
cars.

Placing cars
and station
work.

ready to go. In case agents' orders are unreasonable, the work should be done and the facts reported to the Superintendent.

248. Conductors must enter the initials and numbers of all cars in their train-book, and, as far as practicable, in the order in which they stand in the train. They will receive from the yardmaster or agent all way-bills for their cars, and must check them with the cars in their train, and see that they have a way-bill for each car. No car must be taken without a way-bill except by special order in each case. At the end of their run, or at stations where they leave cars or freight, they must give the way-bills to the yardmaster or agent.

249. Conductors will examine the destination, car number and initials on the inside and outside of all way-bills to see that they agree, and will look for any notations requiring them to weigh cars, etc.

250. In making up trains, except when otherwise ordered by the Superintendent, cars with straight loads for the same destination must be kept together; those for the most distant station at the rear of the train (except as per rules governing placing of live stock and inflammable freight), and so on, working ahead as the stations come nearer, with the way cars ahead of all. Conductors picking up cars must be particular to put them into the train with others of the same destination.

Entering
cars in
train-book.

Examining
way-bills.

Making up
trains.

Reporting
delays.

251. All conductors, or enginemen acting as conductors, must report promptly by wire to the Superintendent all delays and irregularities of any kind, giving full particulars. Delays of five minutes or more for passenger or through freight trains, and fifteen minutes or more for way freight trains, at any station from whatever cause, must be explained. They must be particular to give the number of the engine or cars which may have caused any delay or trouble, or to which any accident may have occurred, with the reason therefor so far as known. Enginemen must make a similar report of delays, in writing, to their Master Mechanic.

Responsi-
bility for
delays.

252. Conductors, enginemen and agents will be held to strict account for delays resulting from bad management, ignorance, or carelessness on their own part, or on the part of those for whom they are responsible. Promptness and dispatch are enjoined in transacting business at stations, taking water, oiling, etc. Station work should be done immediately on arrival.

Economy
in use of
cars.

253. Care must be taken to economize in the use of cars, and a car must never be forwarded with less than 5,000 pounds, and small lots should be loaded into passing trains. Exceptions may be made in case of perishable freight, when passing trains have no room for it. At junction points, if cars contain less than 10,000 pounds, the freight should be unloaded, consolidated with other lots, and forwarded without unreasonable delay. Conductors must

not take cars containing less than 5,000 pounds from way stations, if room can be found for the freight in cars already in their train. When way-freight cars are partly unloaded to less than 5,000 pounds, the freight should be transferred to other cars, and the empty cars be set out. Generally, every effort should be made to reduce unnecessary mileage. Special exceptions to this rule may be made by the Superintendent.

254. Foreign cars must not be loaded with local freight without permission from the Superintendent, except to points on the home-ward route of such cars, and then only when it is impracticable to secure a through load to or beyond the terminal where the car was received from connecting line.

Loading
foreign cars.

255. Agents are required to see that cars are properly loaded, and in case they find them overloaded, or improperly loaded, will at once notify the shipper and have the excess weight taken off or the load properly secured. If there is any delay on the part of the shipper in doing this, report the fact at once to the Superintendent. The defects in loading that must be especially guarded against are excess weight, uneven distribution of the load on the car, loads insecurely staked or fastened; and it is of the utmost importance that all cars loaded with lumber, long timber, iron pipe, posts, etc., or other freight liable to project beyond ends of cars, be carefully examined before being received for shipment, to see that no part of the load extends beyond the

Properly
loading
cars.

end of the car or interferes with the free access to, and working of, the brakes and draw-heads.

In case of very long material requiring two cars, the brake-wheel and staff may be removed if necessary, but must be carefully secured to and forwarded with the car. Whenever it is possible to do so flat cars to be loaded double must be switched with the brake-wheel on the outer end.

Conductors must examine all cars before taking them into their trains, and refuse to take any cars not properly and safely loaded, reporting the number of the car and fault in loading, by wire, to the Superintendent.

256. Cars containing **perishable** or **time** freight must have precedence over other cars, and must not be left at any station short of destination (except for rest in the case of live stock, as per rule 93), unless for repairs; and when so left the conductor must report it to Superintendent by wire. If repairs cannot be made promptly, the freight must be transferred and forwarded. This rule applies to all cars left at stations for repairs.

257. Freight must not be mixed in loading. Each lot must be kept separate if practicable. If goods are loaded in a car for more than one station, the freight to be unloaded first must be put into the car last. Goods for each station must be kept together, and each lot by itself. Conductors are required to report neglect on the part of any agent in this particular to the Superintendent.

258. Agents and conductors are required to see that all freight in their charge is carefully handled, and loaded in such manner that no damage can occur while in transit, by leakage of liquids, chafing of bales, etc. Casks containing oil (other than coal oil), turpentine, tar, molasses or liquors, must be loaded on **the bilge**, and carefully blocked, **bung up**, and as far as possible from other freight likely to sustain damage by any leakage which may occur while in transit. Agents and conductors must use **great care** in the handling and loading of **coal oil**, and under no circumstances should it be loaded with other substances that can be damaged by it. So far as possible, it should be loaded in stock cars, **and must never be loaded in the better class of box cars.** Kerosene, coal oil, naphtha, benzine, or any other similar substance of an inflammable nature, must never be loaded or unloaded through freight houses, except in the daytime. **Lights must not, under any circumstances, be allowed near such packages;** and such freight must be taken away by consignees as soon after arrival as practicable.

259. In examining oil cars care must be used not to take a lighted lamp into or near the car.

260. Agents are required to use every effort to secure prompt dispatch in loading and forwarding or unloading cars. Way bills must be ready promptly, so that trains will not be delayed, and in case cars placed on

Careful handling and proper loading of freight.

Examining oil cars.

Dispatch in loading and unloading cars.

Perishable or time freight.

Mixing freight in loading.

private sidings or on team tracks are not promptly handled and serious detention is liable to occur, the Superintendent must be notified by wire.

Company
freight.

261. Whenever any Company material in carloads is received at any station for which there is no disposition, agent will report to the Superintendent at once by wire, giving contents and any other information he may have, so that it may be arranged to have the cars unloaded promptly.

Handling
live-stock.

262. Agents will give particular attention to the loading and unloading of live-stock, render all assistance, see that cars are in proper condition, and doors securely fastened before leaving the station. Such cars must be placed in the rear of trains.

Live-stock
law.

The attention of agents and conductors is called to the law regulating transportation of live-stock, which imposes a heavy penalty in case of confinement of carloads of stock on interstate trips for a longer period than twenty-eight consecutive hours without unloading for rest, water and feeding for a period of at least five consecutive hours; and on trips wholly within any state or territory for a period of not longer than thirty-six consecutive hours without being unloaded as above for a period of at least ten consecutive hours. Agents must see that way-bills for carloads of live-stock bear notation showing date and hour at which same was loaded.

263. In loading hay, straw, and similar freight that is liable to take fire, care must be used to select good cars, and see that all openings are closed and securely fastened. Cars loaded with such freight must be placed in the rear of trains, as near the caboose as possible (in preference to stock), and never placed ahead near the engine.

Inflamma-
ble freight.

264. Conductors must see that the words "bad order" and the date are written with chalk on both sides of disabled cars, that defective parts are marked with a cross, and report to the Superintendent by wire, giving the initial and number, and if loaded, contents and destination and state where set out.

"Bad order"
cars.

265. In weighing cars they must in all cases be uncoupled at both ends, and stand alone and motionless upon the scale. When the weight of an empty car varies 200 pounds from the weight marked on the car, agents will telegraph at once to the Freight Auditor, giving full particulars (number of car, number of train, weight marked on car, weight as shown by scales, etc.)

Weighing
cars.

266. Agents at stations where car repairers are not employed must report all disabled cars at their station, giving initial and number, and if loaded, contents and destination, state what is needed to make repairs, and by what train set out. Way-bills for disabled cars must be kept separate from other way-bills to prevent car being taken away by mistake before repairs are made.

Reporting
disabled
cars.

Leaving cars where no agent.

267. Should a loaded car from any cause be left on a siding short of destination where there is no agent, the conductor will endorse on the way-bill where, when and why the car was left, will leave the way-bill at the next regular station and report the facts by wire to the Superintendent.

Unnecessary damage to cars.

268. When cars are derailed, they must not be turned over, thrown down embankments, broken up or otherwise damaged unnecessarily, merely to get them out of the way. Every effort must be made by trainmen and wrecking crew to put them on the track with as little damage as possible, and take them to a siding.

Cars on sidings.

269. Station agents are required to see that doors of all loaded cars on side tracks are closed and securely fastened, that brakes are set and cars far enough from the main tracks not to endanger passing trains, and when necessary to secure perfect safety wheels of all cars on side tracks must be properly blocked. Cars must **never be allowed to stand on the main track** for loading or any other purpose, without special permission from the Superintendent in each case.

Handling engines.

270. Enginemen must allow no one to handle their engines except their firemen, the engineman remaining upon the engine and being responsible, and this only by consent of the Master Mechanic.

271. Great care must be taken to prevent killing live stock, bringing the train to a full stop if necessary. If any stock be killed, or struck, the engineman must report the same in writing, on the prescribed form. If stock is killed when it is apparent that it might have been avoided, the value of the stock so killed will be deducted from the engineman's pay.

Killing stock.

272. Engine fires must not be drawn, ash-pans or front-ends must not be cleaned, in front of stations or buildings, nor on crossings, frogs or switches. All fire must be extinguished before leaving.

Drawing fires.

273. Enginemen must use every precaution to prevent their engines setting fires along the line. They must carefully and frequently inspect nettings or other apparatus provided for arresting sparks, and see that they are in good order. They must not throw out any burning waste, clinkers or similar material along the line. Dampers of ash-pans must in all cases be closed while engines are crossing bridges and passing wood-yards.

Setting fires.

274. In case of fires on or near the right of way that are likely to cause damage to property, when fences are down or stock is discovered on the right of way, when the telegraph line is down, or otherwise obstructed, conductors and enginemen under whose observation such incidents may come must report same to the Superintendent from the first telegraph station, and must also stop and notify

Reporting fires.

the first sectionmen whom they may pass. In dry and windy weather, trainmen must keep a careful watch for fires, and should a fire be set by their engine will stop the train and extinguish it if possible, protecting their train meanwhile by danger signals.

Tank
spouts.

275. Enginemen and firemen must be careful in the use of tank discharge spouts, which must never be pulled down while the engine is in motion. The spouts must always be allowed to empty themselves before being thrown off the tender, and must also be properly secured before they are left.

Leaving
engines.

276. The engineman and fireman must not, at the same time, absent themselves from the engine while on duty, except in cases of great necessity. When a light engine is running over the road it must not be left by the engineman and fireman until placed upon the side track and properly secured.

Throwing
fuel from
tender.

277. Enginemen and firemen are particularly directed not to throw any fuel from the tender while in motion. If any is found to be unfit for use, it should be thrown off at engine-house yard at end of run. Wood must not be piled on tenders in such manner or quantity as to be liable to fall off.

Attention of
enginemen
to signals
when start-
ing.

278. Before starting from a station, the engine and fire must receive the necessary attention, so that neither the engineman nor the fireman need be occupied therewith im-

mediately after starting, but shall be at liberty to attend to all signals which may be given by the conductor or from the station, in consequence of anything being discovered wrong with the train. Both the engineman and fireman must, after starting, look back, one on each side, to see if any signal is given, and between stations must look back frequently to see that all is right. Enginemen must use great care in starting and stopping, and in increasing speed, doing so gradually and steadily, so as not to break the couplings, or cause sudden jerks. When two engines are attached to a train, the first is to take all the slack it can get, starting the train if possible. The second engine shall then begin to work.

In starting and stopping, enginemen must pay particular attention to the grades, state of the weather and condition of the rails, and to the length and weight of their trains, and must give due consideration to those circumstances in judging when to shut off steam and when to apply brakes. Enginemen will be held responsible for breaking trains apart in starting on descending, or in stopping on ascending, grades.

279. Yardmasters will have charge of and direct the movements of all trains and engines while at their stations. They must see that all trains are properly made up before time of leaving, as per time-table. Before going on duty, yardmasters must report for and receive in writing all instructions regarding incoming and outgoing trains.

Require-
ments of
yard-
masters.

280. Yardmasters will receive instructions from the Superintendent and Trainmaster. They must obey the proper orders of station agents.

281. Yardmasters must see that yards are always neat and clean, that employes working under them faithfully discharge their duties, and that the working force is so organized that systematic and effective work may be done at a minimum expense.

282. Yardmasters must make themselves familiar with the rules of the Company, especially those for the passenger and freight service, and with detailed duties of car inspectors and trainmen, and with the object and use of all signals. They must report any violation of the rules or neglect of duty that may come under their observation. They must see that trains before leaving the yards have been properly inspected and are thoroughly supplied, and that cars have been carefully loaded, that doors are closed and securely fastened, **and those of loaded cars locked and sealed;** and that the conductors, enginemen and brakemen are at their posts ready for duty at the appointed time.

283. Train baggagemen are under the immediate charge of the conductors of their respective trains, and must obey them accordingly. They must provide themselves with a book of the rules and regulations issued by the General Baggage Agent, and observe all instructions given therein.

Require-
ments of
train bag-
gagemen.

284. Train baggagemen are required to be at their cars at terminal stations in ample time to receive baggage and finish work required of them before the train is due to leave, and must perform the duties of head brakeman in his absence.

285. Unless ordered by conductor to perform other duties, baggagemen must remain in their cars while on duty, and must not leave the car at stations on the road, or at the end of their run, until all baggage has been received from or delivered to the station agent or station baggagemen; and they must not leave their car, unless the doors are securely locked and fastened so as to prevent any damage to, or theft of, baggage.

286. Baggagemen must not receive for transportation any baggage or articles not checked, except Company's supplies with proper way-bills, unless they are directed to receive them by the General Baggage Agent or the Superintendent.

287. The greatest care must be used in the handling and delivery of baggage, train mail and Company's supplies. Train baggagemen will be held responsible for any loss or damage resulting from their carelessness.

288. Employes are forbidden to forward any letters or packages containing money, whether registered or not, in the baggage cars of this Company; and train baggagemen must refuse to receive from any employe such

money-letter or package for transportation as "railway business." Any train baggageman who discovers after he has left a station that a money-letter or package has been given him with other mail for transportation, must forward it to the Superintendent of the Division with explanation.

U. S. Mail.

289. Whenever the duties of employés of this Company require them to handle United States mail in any way, great care must be used to see that it is safely and promptly handled and correctly delivered as per marks on sacks or pouches. When the latter are without marks, or improperly marked, to show destination, they must not be received. If, however, they are in this Company's charge before the error is discovered, they must be turned over to the nearest postmaster at once, and the facts be reported to the Superintendent by wire.

Protecting freight, baggage, mail, etc.

290. Freight, baggage or other articles must not be allowed to stand on the depot platforms where they might cause accident or inconvenience to passengers or employés, receive damage from the weather or be subject to theft. U. S. mail-pouches must not be left unprotected upon the platforms, or in the waiting-rooms or other exposed places at stations.

Agents and operators.

291. Agents and operators are responsible to, and receive their instructions from, the Superintendent, so far as concerns the Operating Department.

292. Agents and operators must keep the public outside of their office railings. They must prevent lounging, drunkenness, disorderly conduct or other nuisance in or about the Company's stations and grounds. **They must transact their business over the counter or through the ticket window.** They must not use their own property in connection with that of the Company. They must make themselves familiar with and observe all the rules of the Company. They must make themselves familiar with the business interests of the people among whom they are situated. They must keep the Superintendent informed of the probable effect on the business of the station of changes made or proposed in connection with the train service; with the views and requests of the patrons of the Company; with the method of transacting the station business; with such local news as it may seem important for the Superintendent to be advised of, whereby the amount of traffic may be increased, and which in their opinion would be for the mutual benefit of the Company and the community.

293. Operators must familiarize themselves with the Western Union Telegraph Company's rules, and obey them.

W. U. T. Co. rules.

294. Station agents who also act as agents of any express or other company must give preference to such of their duties as pertain to the business of this Company.

Preference to railroad business.

Reporting delays, irregularities, neglect of duty, etc.

295. Agents must at once report, in writing, to the Superintendent, all matters interfering with the interests of the Company, or prompt dispatch of business, and all irregularities of conduct or neglect of duty on the part of employés. They will be held particularly responsible for accidents to persons, freight or other property, occurring through deficient facilities that they may have failed to report to the Superintendent.

Inspection and care of Company's property.

296. Agents are required to make daily inspection of yards, platforms, offices, buildings and surroundings, and to co-operate with roadmasters in maintaining them in a neat and tidy appearance, and must see that all grass, straw, or other combustible material is promptly removed, that stockyards are kept in good order and ready for use, and that closets receive the same careful and daily attention as waiting-rooms and offices.

Office hours.

297. Office hours at stations will be fixed by the Superintendent, and must be strictly observed. Day operators must keep the location of their residence posted up inside bill-boxes at stations where there are no night operators, so that trainmen may know where they can be found.

298. Under the system of running trains by telegraph, agents and operators must not be absent from the office without permission from the Superintendent.

299. All who have authority to employ assistants, or laborers, are required to **keep their force down to conform to the amount of business done.** This they are expected to do without waiting for a special order from the Superintendent. Every one who fails in this respect neglects his duty.

Station force.

300. All property found on the road must be promptly forwarded to the Superintendent, or notice be given him at once of its being found.

Lost property.

301. Sending personal packages or letters on private business by trains is strictly forbidden. Communications by trains must be exclusively on company's business.

Private business.

302. The use of the telegraph must be restricted to actual necessity, and only resorted to in matters of importance, or where an immediate answer is necessary; messages should be brief.

Use of telegraph.

303. Every precaution must be taken to prevent loss or damage by fire. No rubbish, oily waste, rags, straw or waste paper must be allowed to accumulate in the cars, offices, depots, tracks or buildings of the Company. Matches, oil and lamps must be kept separate and in secure and safe places. Chimneys, pipes and stoves must be known to be safe and secure, and for that purpose should be examined frequently.

Precaution against fire

TRACKMEN, BRIDGEMEN AND WATCHMEN.

Require-
ments of
sectionmen.

304. Sectionmen must make themselves familiar with the meaning of signals of all kinds, and regulations relating thereto. They must report to the roadmaster any and all violations of the rules that come to their notice, giving full particulars in order that the responsibility for the same may be ascertained and a repetition prevented.

Signals.

305. The signals to be used by section and bridge men are **red** and **green** flags by day and **red** and **green** lights by night, and **torpedoes**.

A **red** flag by day, or a **red** light by night, or the explosion of a **torpedo**, is a signal to stop.

A **green** flag by day, or a **green** light by night, is a signal to run slowly and look out for defective track.

Particular attention is called to Rules 25, 26, 27 and 30, and to all other rules governing signals.

Watches.

306. Each foreman must provide himself with a reliable watch, and daily, if possible, compare time with the clock in the telegraph office at his station, and must know that he has correct time.

307. Section foremen will be held responsible for the proper condition of the track of their respective sections, for the proper use and safekeeping of all section and hand cars, and for all tools, lamps, signals, etc., belonging to their respective sections; and they will be required to pay for any damage to the same resulting from the carelessness of themselves or their men. They will also be held responsible for the safekeeping and proper use of all Maintenance of Way material of every kind, (rails and trimmings, lumber, nails, bridge material, etc., etc.), that may be within the limits of their section.

Responsible
for track,
tools, signals
and mate-
rials.

They must work with their men personally, unless, on account of their having a large number of men under them, they are excused from this duty by the Roadmaster.

Foremen to
work with
their men.

308. Each foreman (or his track walker) must pass over the section or sections under his charge every day, taking with him a track-wrench, two **red** flags and four **torpedoes**, and carefully examine the track to see if it is safe for the passage of trains; and if any place is found unsafe he must at once fix red signals on both sides of such place, at a distance of ninety (90) rails (or fifteen telegraph poles). The flag-sticks must be firmly driven into the ground, and a torpedo fixed on the rail on the engineman's side. If a train is expected before he can get help to repair the track, he must place himself on the side of the expected train and give signals to stop. If the train is not expected before he can get

Track to be
inspected
daily.

help, he may, after he is satisfied that the flags and torpedoes are properly fixed, go for assistance.

309. At all times when work is going on which renders it necessary for trains to reduce speed, a **green** flag must be set at side of track at least one-half mile (ninety rails or fifteen telegraph poles) from the spot, on engineman's side, in each direction, as a caution to approaching trains to run slowly. After severe rains or a thaw, a hand car must be sent over the road before the passage of regular trains, for the purpose of ascertaining if track is safe. Flags or lamps must always be placed where they can easily be seen from the train.

310. The foreman must have his track walker or wood piler pile up the wood left scattered in front of woodsheds and wooding-places, and clean up all bark and rubbish in front of the same. This must be attended to daily.

311. The track must not be disturbed in such a manner as to make it unsafe for the passage of trains within twenty minutes of the time train is due, nor until after it has passed. All such work must be done between the regular running hours, unless, where trains are behind time, the Superintendent gives permission in writing or by telegraph.

312. Track must not be disturbed, neither must hand-cars nor section-cars be used nor run upon the track until after men have been

sent out to a distance of at least ninety rails (or fifteen telegraph poles) with danger signals, or until proper danger signals have been placed as prescribed in Rule 308.

313. Section or hand cars must not be left standing on sidings, main track nor on public crossings, and must not be used except in the prosecution of the work.

314. In no case, except when the track is unsafe, is any work which will obstruct the passage of trains to be done during a fog or snow-storm.

If, during a fog or snow-storm, the track is found unsafe, a torpedo must be fixed on the rails, on the engineman's side, and a man stationed on each side of the unsafe place with a red light at a distance not less than provided for in Rule 308.

If shorthanded, red lights must be hung in plain sight and torpedoes used, as provided for in Rule 308.

315. In case of accidents to trains or engines, sectionmen must give all the help in their power, when called upon by trainmen or others for assistance, without waiting for orders. They must go at once to the obstruction, whether on their section or on the one adjoining, render such assistance as may be needed, and place the track in repair as soon as possible. Notice must also be given to the roadmaster; and, if more help is needed, one foreman may call on another.

Hand and section cars.

Work during fog or snow-storm.

Assisting trainmen.

Position of danger signals.

Care of wood.

Times to make repairs.

Must first place signals.

316. The track must be kept clear; and it is the duty of foremen to turn out with all their men and remove any obstruction, whenever notified by trainmen or others, without waiting for special orders.

317. All sectionmen must be particular in watching all trains that pass, to see if any signals are carried by them to show that another train is following, as a special or section of the passing train, or if any notices are thrown off. (See Rules 36 and 37.)

318. During heavy storms, whether by day or night, whereby the track, or any portion of the Company's property, becomes liable to sudden damage, foremen and sectionmen must be on duty; and at such times they are required to go over their sections to make sure that the track is safe, taking danger signals with them. The points most liable to damage must be first visited.

319. Foremen must look after water stations, and see that the supply is kept up, and promptly report any failure or defect by telegraph to the Superintendent and Roadmaster.

320. Sectionmen must pay particular attention to the telegraph lines. In case the wires are found broken or on the ground, crossed or in any way obstructed, they must be **repaired** in a temporary manner **immediately**; and, where such repairs cannot be made, notice must at once be given to the nearest telegraph office. They must inform

themselves of location of the **division wire** on poles or cross-arms; and, when all the wires are down or broken, the **division wire** must be repaired first.

321. Foremen must examine the cuts and tunnels as they pass along, to see whether there is anything likely to fall on the track.

They must report to the Roadmaster if any of the water-ways or ditches are too small, and such points must be watched during any severe rain or snow storm.

Culverts must be examined frequently, and kept clear.

They must keep the earth cleared away from the sills of trestle bents and bridge piers or abutments, and must also see that all grass, weeds or other combustible material is cleared away from all wooden structures.

During dry weather no fires must be started unless they can be kept under control.

322. It is also the duty of trackmen and all employes to extinguish fires set by engines, or otherwise, and to guard the property, whether of this Company or of others, exposed to such fires, without regard to the responsibility which may attach to the Company. Report of same must be made by telegraph to the Superintendent as well as to the Roadmaster.

323. All bolts, pins, links, nuts, castings, and other material, which belong to and have dropped from the trains, must be picked up, taken to the section-houses daily and put in boxes for that purpose.

Cuts, tunnels and trestles.

Extinguishing fires.

Taking care of scrap.

Observing signals.

On duty during storms.

Water supply.

Telegraph lines.

Rails kept for repairs, or taken from the track, must be neatly piled and sorted. On no section will more than three different places to pile such material be allowed.

Track bolts (except a small number kept out on section for convenience of track-walker) and spikes must be kept in kegs or boxes inside the tool houses, and not left scattered along the sections or around the buildings.

All wrought-iron scrap, excepting railroad bars, must be piled in the tool-houses.

Ties not intended for immediate use must be piled with spaces of at least one inch between them, to allow free circulation of air.

All wornout or useless tools must be sent to the Roadmaster at end of each month.

No wood or material of any kind must be piled within eight feet of the center line of track.

No frogs, rails, ties or other track material must be left between tracks at stations longer than is necessary while making repairs.

324. While to keep the track in perfect repair is their most important duty, foremen must not fail to keep the Company's grounds along the line and at stations and section-houses neat and clean. An untidy section will be considered evidence of the foreman's incompetency.

325. Foremen or sectionmen must not sell or allow any track material or other property of any kind belonging to the Company to

be removed from their sections, except upon a written order from the Roadmaster.

326. All wagon-roads and farm crossings must be looked after, being particular to see that the planks are securely spiked to the ties, and are not above the top of the rails, and have three inches flange-room. Crossings.

327. Track foremen must inform themselves of special State and Territorial laws, and strictly follow the same, in respect to disposition of animals killed or injured by trains or otherwise on the Company's right-of-way or other grounds. When not inconsistent with such laws, they must notify the owner of the stock, and if he does not take charge of the animal within reasonable time the foreman will slaughter it and bury the carcass, or he may sell the meat and hide to the best advantage, and send the money to the Treasurer, notifying the owner of the stock of his action. Stock killed or injured.

Foremen must investigate every case of injury to stock and make a full report of the same to the Superintendent and Roadmaster on the blank form provided for that purpose, and will be held responsible for any damage that may be caused by their neglect to keep fences and cattle-guards in proper repair.

328. All articles of clothing, or anything that may belong to passengers or trainmen, found on the track must be sent to the Superintendent, noting when and where found and the day each article was sent to him. Articles found.

Any freight that has fallen from cars must be sent to the nearest station at which there is an agent or telegraph operator, and a receipt taken therefor.

If it is too heavy for hand car the Superintendent must be notified by wire.

329. Every foreman must keep a copy of these rules and the proper time-table on his person while on duty, and must produce them when required to do so by the Roadmaster or Resident Engineer.

330. When men are discharged the foreman must give them a time check or order on the Roadmaster for their time, stating name, occupation, time worked, amount due for board, and to whom board is due; and instruct them to present this check in person to the Roadmaster, who will issue a time voucher in exchange.

331. No payments will be made except upon the regular monthly payroll, or a "time voucher," issued by the Roadmaster or Resident Engineer.

332. All employés, after five days' service, are expected to contribute fifty cents to the hospital fund each month.

333. Foremen, or others, leaving their work or the limits of their section (except as provided in Rule 315) without permission will be subject to dismissal therefor.

Rules and time-table.

Time check.

Payments.

Hospital fund.

334. All switches on the main track must be thrown at least once every day, to see that they are in good order and good line.

Switches.

335. All cars loaded with track material of any kind must be unloaded without delay, as soon as it is known to be on the siding and intended for that station, unless distinctly ordered otherwise.

Unloading track material.

336. All foremen will, without delay, report by telegraph (in as few words as they can), to Resident Engineer, any injuries to themselves or their men received while on duty.

Reporting injury.

337. Every man at work on the track or bridges must bear in mind that, in operating the road under telegraphic orders, a train may pass at any moment. They must keep a sharp lookout for trains from either direction, and **must not assume that a train may not come for any certain time, nor act on the assurance of any person to that effect, but will at all times protect themselves with proper signals, as per Rules Nos. 308 and 309.** Roadmasters, Foremen and others will be held responsible for the proper understanding and strict observance of these rules by themselves and those under them. Foremen must know that their gangs are always supplied with the proper signal flags, lanterns, torpedoes, etc., and thoroughly instructed as to their use.

Looking out for trains.

RULES FOR THE MOVEMENT OF TRAINS BY TELEGRAPHIC ORDERS.

Special
orders.

500. Special orders, directing movements varying from, or additional to, the time-table, will be issued by the authority and over the signature of the Superintendent. They are not to be used for movements that can be provided for by rule or time-table. They must not contain information or instructions not essentially a part of them.

They must be brief and clear, and the prescribed forms must be used when applicable; and there must be no erasures, alterations or interlineations.

a. Transfers of orders from one dispatcher to another must be in writing in a book provided for that purpose, dated and timed, with complete list, referring to numbers, of unexpired orders; or, if done by telegraph, the above must be transmitted, an understanding returned, and "complete" given, before the authority is exercised by another person.

b. An operator at a station, going off duty and having unexpired orders in hand, will transfer them, referring to numbers, to the relief operator, taking his receipt therefor.

Duplicate
orders.

501. Each order must be given in the same words to all persons or trains directly affected by it, so that each shall have a duplicate of what is given to the others. Preferably an order should include but one specified movement.

502. Orders will be numbered consecutively for each day as issued, beginning with No. 1 at midnight.

How
numbered.

503. Orders must be addressed to those who are to execute them, naming the place at which each is to receive his copy. Those for a train must be addressed to the conductor and engineman, and also to a person acting as pilot (should there be one). A copy for each person addressed must be supplied by the operator.

To whom
addressed.

504. Each order must be written in full in a book provided for the purpose at the Superintendent's office, and with it must be recorded the names of trainmen and others who have signed for the order, the time and signals, showing when and from what offices the order and responses were transmitted, and the train dispatcher's initials. These records must be made at once on the original copy, and not afterward from memory or memoranda.

Dispatch-
er's record.

505. The terms "superior right" and "inferior right" in these rules refer to the rights of trains under the time-table and train rules, and not to rights under special orders.

Definition
of rights.

506. When an order is to be transmitted, the signal "31" (as provided in Rule 509), meaning "Train Order," will be given to each office addressed, followed by the word "copy," and a figure indicating the number of copies to be made, if more or less than three,—thus, "31 copy 5."

Signal "31."

"X" re-
sponse.

a. When an operator receives the signal "31" from the train-dispatcher he must **first** personally see that the red signal is properly displayed, and **then** reply "X," signing his name and office call,—"X," meaning, "My train-order signal is properly displayed; I pledge myself to hold the train or trains, and, when 'complete' is given, to deliver the order."

Simultane-
ous trans-
mission.

507. An order to be sent to two or more offices must be transmitted simultaneously to as many as practicable. The several addresses must be in the order of superiority of rights of trains, and each office will take only its proper address. When not sent simultaneously to all, the order must be sent first for the train having the superior right of track.

Manifold
copies.

508. Operators receiving orders must write them out in manifold during transmission and make the requisite number of copies at one writing or trace others from one of the copies first made.

Repeating.

509. When an order has been transmitted, preceded by the signal "31," operators receiving it must (unless otherwise directed) repeat it back at once **from the manifold copy**, and in the succession in which their several offices have been addressed. Each operator repeating must observe whether the others repeat correctly. After the order has been repeated correctly by the operators required at the time to repeat it, the response "O K," authorized by the train-dispatcher,

will be sent simultaneously to as many as practicable, naming each office. Each operator must write this on the order, with the time, and then reply "i i O K," with his individual and office signal.

Reading
orders
aloud.

Those to whom the order is addressed, except enginemen, must then sign their names to the copy of the order to be retained by the operator, and he will send their signatures to the Superintendent. The response "complete," with the Superintendent's initials, will then be given, when authorized by the train-dispatcher. Each operator receiving this response will then write on each copy the word "complete," the time, and his last name in full, and will then deliver a copy to each person included in the address, except enginemen, and each must read his copy aloud to the operator. The copy for each engineman must be delivered to him personally by the conductor, and the engineman must read it aloud and understand it before acting upon it.

510. For an order preceded by the signal "31," "complete" must not be given to the order for delivery to a train of inferior right until "O K" has been given to and acknowledged by the operator who receives the order for the train of superior right. Whenever practicable, the signature of the conductor of the train of superior right must be taken to the order and "complete" given before the train of inferior right is allowed to act on it.

"Complete"
to superior
train first.

Treated as holding order.

After "O K" has been given and acknowledged, and **before** "complete" has been given, the order must be treated as a holding order for the train addressed, but must not be otherwise acted on until "complete" has been given.

Void if line fails.

If the line fails **before an office has received and acknowledged** "O K" to an order preceded by the signal "31," the order at that office is of no effect, and must be there treated as if it had not been sent.

511. (Omitted.)

512. (Omitted.)

Preceded by signal "31."

513. The order, the "O K" and the "complete" must each, in transmitting, be preceded by "31," and the number of the order, thus, "31, No. 10." In transmitting the signature of a conductor, it must be preceded by "31," the number of the order, and the train number, thus, "31, No. 10, Train No. 5." After each transmission and response, the sending operator must give his individual and office signal.

Operator's copy.

514. The operator who receives and delivers an order must preserve the lowest copy. On this must appear the signatures of those who sign for the order, and on it he must record the time when he receives it, the responses, the time when they are received, his own name, the date and the train number, for which places are provided in the blanks. These copies must be sent to the Superintendent.

515. (Omitted.)

516. Enginemen will place their orders in the **clip** before them until executed.

Enginemen's copy.

517. For orders delivered at the Superintendent's office, the requirements as to record and delivery will be the same as at other points.

Delivered at Supt's office.

a. In case conductors or enginemen are required to change off before the completion of their trip, they must carefully exchange or transfer any special orders which they may have. Conductors will be held responsible for proper transfer, and will notify Superintendent from next telegraph office.

Exchanging orders.

518. Orders to persons in charge of work requiring the use of track in yards or at other points, authorizing such use when trains are late, must be delivered in the same way as to conductors of trains.

519. An order to be delivered to a train at a point not a telegraph station, or while the office is closed, must be addressed to

Orders to non-telegraph offices.

"*C. and E., No. — (at —), care of —,*" and forwarded and delivered by the conductor or other person in whose care it is addressed. "Complete" will be given upon the signature of the person by whom the order is to be delivered, who must be supplied with copies for the conductor and engineman addressed, and a copy upon which he shall take their signatures. This copy he must deliver to the first operator accessible,

who must preserve it, and at once advise the train-dispatcher of its having been received, giving number of same.

Orders so delivered to a train must be compared by those receiving them with the copy held by the person delivering, and acted on as if "complete" had been given in the ordinary way.

Orders must not be sent in the manner herein provided, to trains the rights of which are thereby restricted.

Orders for each section.

520. When a train is named in an order all its sections are included, unless particular sections are specified, and each section included must have copies addressed and delivered to it.

Meeting orders.

521. Meeting orders must not be sent for delivery to trains at the meeting point, if it can be avoided. When it cannot be avoided, special precautions must be taken by the train dispatchers and operators to insure safety.

There should be, if possible, at least one telegraph office between those at which opposing trains receive meeting orders.

Orders should not be sent an unnecessarily long time before delivery nor to points unnecessarily distant from where they are to be executed. No orders (except those affecting the train at that point) should be delivered to a freight train at a station where it has much work, until after the work is done.

a. Conductors and enginemen must not pass a definite meeting point without knowing

positively that the train or trains met are the same as those referred to in the order.

522. A train, or any section of a train, must be governed strictly by the terms of orders addressed to it, and must not assume rights not conferred by such orders. In all other respects it must be governed by the train rules and time-table.

Governed by orders.

523. Orders once in effect continue so until fulfilled, superseded or annulled. Orders held by or issued for a regular train which has lost its rights, as provided by Rule 107, are annulled, and other trains will be governed accordingly.

Orders in effect until annulled.

524. A fixed signal must be used at each train-order office, which shall display red when trains are to be stopped for orders. When there are no orders the signal must display white.

Fixed signals.

When a semaphore is used the arm means **red** when horizontal and **white** when in an inclined position.

Semaphore.

When an operator receives the signal "31" he must **immediately** display red, and **then** reply "X" (as per rule 506a). The signal must not be changed to white until the object for which red is displayed is accomplished.

While red is displayed all trains must come to a full stop, and any train thus stopped must not proceed without receiving an order addressed to such train, or a clearance card on form specified below, stating over the operator's signature that he has no orders for it.

Clearance cards.

CLEARANCE CARD.

Dover, 9:15 A. M., March 25, 1887.

Conductor and Engineman No. 12:

I have no orders for your train. Signal is out for No. 16.
John Smith,
Operator.

This does not interfere with nor countermand any orders you may have received.

Conductor MUST SEE that the number of HIS TRAIN is entered in the above form correctly.

Conductor and engineman must each have a copy.

Failure of
fixed signal.

Operators must be prepared with other signals to use promptly if the fixed signal should fail to work properly. If a signal is not displayed at a night office, trains which have not been previously notified must stop and inquire the cause, and report the facts to the Superintendent from the next open telegraph office.

a. It will be the duty of agents and operators to see that their train-order signals are kept in good working order, and ready for use at all times, and when necessary oil them, using kerosene oil, so as to make them work freely. Should the signals become disabled and out of order, and repairs be needed, prompt notice must be sent to the Superintendent by wire, giving cause of trouble and stating what material is required for repairs. (See Rules Nos. 87, 88 and 89.)

b. Conductors and enginemen must promptly report all cases of absence of station signal where one is usually shown, and agents and operators must report any cases of running by or disregard of signals on the part of enginemen.

c. Signal lamps at stations must be lighted just before dark and kept burning until clear daylight.

Lighting
signal
lamps.

d. As soon as the object for which a signal has been displayed at red has been accomplished, operators must restore the signal to white to avoid delaying other trains for which the red signal was not intended.

Restoring
signals.

525. Operators will promptly record and report to the Superintendent the time of arrival and departure of all trains, and the direction in which extra trains are moving.

Reporting
trains.

a. Freight conductors must fill out registering tickets in the prescribed form, leaving one at every telegraph station not provided with train registers, being particular to state whether carrying signals or not. Operators must report such tickets to the Superintendent promptly. Passenger conductors will fill out a registering ticket giving the number and kinds of cars in their trains before leaving terminals.

Registering.

526. Regular trains will be designated in orders by their schedule numbers, as "No. 10," or "2d No. 10," adding conductor's name and engine numbers, irregular trains by engine numbers, as "Special 596," or "Extra 798;" and all other numbers by figures. The direction of the movements of irregular trains will be added, when necessary, as "East" or "West." Time, and train numbers, will be stated in figures and words.

Designation
of trains.

527. Operators must time and date all telegrams as received; and the following signs and abbreviations may be used:

Initials for Superintendent's signature.

Such office and other signals as are arranged by the Superintendent.

C. & E.—for Conductor and Engineman.

O K—as provided in these rules.

Min.—for Minutes.

Junc.—for Junction.

Fr. —for Freight.

No.—for Number.

Eng.—for Engine.

Sec.—for Section.

Opr.—for Operator.

9—To clear the line for train orders, and for operators to ask for train orders.

31—for train order as provided in the rules.

X—For meaning of this, see Rule No. 506 a.

The usual abbreviations for the names of the months.

FORMS OF TRAIN ORDERS.

Form A.—Fixing Meeting Point for Opposing Trains.

_____ and _____ will meet at _____

EXAMPLES.

No. one (1), Jones, Engine 40, and No. two (2), Brown, Engine 50, will meet at Bombay.

No. one (1), Jones, Engine 40, and 2d No. two (2), Brown, Engine 25, will meet at Siam.

No. one (1), Jones, Engine 40, and Brown, Extra Engine 95, will meet at Hong Kong.

Jones, Extra Engine 652 West, and Brown, Extra Engine 231 East, will meet at Yokohama.

Trains receiving this order will, with respect to each other, run to the designated point, and having arrived there will pass in the manner provided by the rules.

When necessary to send an order to a train having the right to the track, at a station named as the meeting point, the following addition to the order will be made, and is notice to the train to approach the meeting point with care, and under flag, as the train having the right to the track will come in without expectation of a meeting, viz.: "This order will be delivered to train No. _____ at the meeting point."

An additional example under form "A," known as the "Continuous Order," may be used as follows:

(5) — will meet — at — and — at —

EXAMPLE.

No. one (1) will meet No. two (2) Brown, Engine 40, at Sinbad and Jones, Extra 34 at Tokio.

Example (5) must be sent to all trains affected, and must be understood as an order for such trains to meet No. 1 at the designated points.

Form B.—Authorizing a Train to Run Ahead of or Pass Another Train Running in the Same Direction.

(1.) — will pass — at —

(2.) — will run ahead of — from — (to —).

EXAMPLES.

(1.)—*No. one (1), Jones, Engine 40, will pass No. three (3), Brown, Engine 36, at Khartoum.*

(2.)—*No. four (4), Jones, Engine 90, will run ahead of No. six (6), Brown, Engine 42, from Bengal to Madras.*

When under this order a train is to pass another, both trains will run according to rule to the designated point, and there arrange for the rear train to pass promptly.

Form C.—Giving a Train of Inferior Right the Right of Track Against an Opposing Train of Superior Right.

[NOTE.—This form of order must not be used when Form A can be used.]

— has right of track against — — to —

EXAMPLES.

(1.) *No. one (1), Jones, Engine 96, has right of track against No. two (2), Brown, Engine 37, Mecca to Mirbat.*

(2.) *Jones, Extra Engine 37, has right of track against No. three (3), Brown, Engine 14, Natal to Rattlam.*

This order gives a train of inferior right the right of track against one of superior right, to a designated point.

If the trains meet at the designated point, the train of inferior right must take the siding, unless the rules or orders otherwise indicate.

Under this order as illustrated by example (1), if the train of superior right reaches the designated point before the other arrives it may proceed, provided it keeps clear of the schedule time of the train of inferior right as many minutes as the inferior train was before required by the Train Rules to keep clear of the superior train.

If the train of superior right, before meeting, reaches a point beyond that named in the order the conductor must stop the other train where it is met and inform it of his arrival.

Under example (2) the train of superior right cannot go beyond the designated point until the extra train arrives.

When the train of inferior right has reached the designated point the order is fulfilled, and the train must then be governed by Time Table and Train Rules or further orders.

The following modification of this form of order will be applicable for giving a work-train the right of track over all other trains in case of a wreck or break in the track.

EXAMPLE.

Jones Work Train Engine 275 has right of track over all trains between Stockholm and Edinburgh from 7 p. m. ———.

This gives the work train the exclusive right of the track between the points designated.

Form D.—Giving All Regular Trains the Right of Track Over a Given Train.

All regular trains have right of track against ——— between ——— and ———.

EXAMPLE.

All regular trains have the right of track against No. one (1), Jones, Engine 40, between Moscow and Berlin.

This order gives to any regular train of inferior right receiving it the right of track over the train named in the order, and the latter must clear the schedule times of all regular trains, the same as if it were an irregular train.

Form E.—Time Orders.

(1.) ——— will run ——— late from ——— to ———.

(2.) ——— will wait at ——— until ——— for ———.

EXAMPLES.

(1.) *No. one (1), Jones, Engine 40, will run twenty (20) minutes late from Joppa to Mainz.*

(2.) *No. one (1), Jones, Engine 40, will wait at Muscat until ten (10) a. m. for No. two (2), Brown, Engine 36.*

Form (1) makes the schedule time of the train named, between the points mentioned, as much later as the time stated in the order; and any other train receiving the order is required to run with respect to this later time, the same as before required to run with respect to the regular schedule time. The time in the order should be such as can be easily added to the schedule time.

Under Form (2) the train of superior right must not pass the designated point before the time given unless the other train has arrived. The train of inferior right is required to run with respect to the time specified the same as before required to run with respect to the regular schedule time of the train of superior right.

Form F.—For Sections of Regular Trains.

— will carry signals — to — for —.

EXAMPLES.

(1.) *No. one (1), Jones, Engine 40, will carry signals Astrakhan to Cabul for Brown, Eng. 85.*

(2.) *2d No. one (1), Brown, Engine 85, will carry signals London to Dover for White, Eng. 90.*

This may be modified as follows :

Jones, Engine 40, Brown, Engine 85 and White, Engine 90, will run as 1st, 2d and 3d sections of No. one (1), London to Dover.

For annulling a section:

Brown, Engine 85, is annulled as second section of No. one (1), Jones, Engine 40, from Dover.

If there are other sections following, add:

Following sections will change numbers accordingly.

The character of train for which signals are carried may be stated. Each section affected by the order must have copies, and must arrange signals accordingly.

Form G.—For Arranging a Schedule for a Passenger Special Train.

(1.) — Eng. — will run as passenger special leaving — on — on the following schedule, and will have the right of track over all trains.

Leave —.

—.

Arrive —.

EXAMPLE.

(1.) *Jones, Eng. 77, will run as passenger special, leaving Turin on Thursday, Feb. 17th, on the following schedule, and will have the right of track over all trains:*

Leave Turin eleven thirty (11.30) p. m.

Pekin twelve twenty-five (12.25) a. m.

Canton one forty-seven (1.47) a. m.

Arrive Rome two twenty-two (2.22) a. m.

Example (1) may be varied by specifying particular trains over which the special shall or shall not have the right of track; and any train over which the special train is thus given the right of track must clear its time as many minutes as such train is required to clear the schedule time of a first-class train.

(2.) — Eng. — will run as passenger special leaving — on — with the rights of a — class train, —, on the following schedule, which is a supplement to Time-table No. —.

Leave —.

—.

Arrive —.

EXAMPLE.

(2.) *Jones, Eng. 75, will run as passenger special, leaving Geneva Thursday, Feb. 17th, with the rights of a first-class train east, on the following schedule, which is a supplement to Time-table No. 10.*

Leave Geneva ten (10) a. m.

Pekin ten thirty (10.30) a. m., passing No. 12.

Canton eleven (11) a. m., meeting No. 7.

Arrive Athens eleven thirty (11.30) a. m.

Example (2) creates a regular train, and the specified meeting and passing points are to be regarded as if designated in the same manner as on the Time-table. Such trains will be governed by all rules which affect regular trains.

Form H.—Extra Trains (Freight and Work).

— will run extra — to —.

EXAMPLE.

(a.) *Jones, Eng. 99, will run extra, Berber to Gaza.*

A train receiving an order to run as an irregular train is not required to guard against opposing irregular trains, unless directed by order to do so, but must keep clear of all regular trains as required by rule.

A "work train" is an extra, for which the above form will be used for a direct run in one

direction. The authority to occupy a specified portion of the track, as an extra while working, will be given in the following form:

(b.) *Jones, Eng. 292, will work — (date), between Berne and Turin.*

The working limit should be as short as practicable, to be changed as the progress of the work may require. The above may be combined thus:

(c.) *Jones, Eng. 292, will run extra, Berne to Turin, and work — (date), between Turin and Rome.*

When an order has been given to "work" between designated points, no other irregular train must be authorized to run over that part of the track without provision for passing the work train.

When it is anticipated that a work train may be where it cannot be reached for meeting or passing orders, it may be directed to report for orders at a given time and place, or an order may be given that it shall clear the track for a designated extra (or special), in the following form:

(d.) *Jones, Work Train 292, will keep clear of Smith, Extra 223, east, between Antwerp and Brussels, after two ten (2.10) p. m.*

In this case, Extra 223 must not pass either of the points named before 2.10 p. m., at which time the work train must be out of the way between those points.

When the movement of an (extra or special) train over the working limits cannot be anticipated by these or other orders to the work train, an order must be given to such extra (or special) to protect itself against the work train, in the following form:

(e.) Smith, Extra 223, will protect itself against Jones, Work Train 292, between Lyons and Paris.

This may be added to the order to run extra.

a. Under this form of order an irregular train can only move over limits of a work train by flagging against it.

A work train, when met or overtaken by an extra, or special, must allow it to pass without unnecessary detention.

When the conditions are such that it may be considered desirable to require that work trains shall at all times protect themselves while on working limits, this may be done under the following arrangements. To example *(b)* add the following words:

(f.) protecting itself against all trains.

A train receiving this order must, whether standing or moving, protect itself within the working limits (and in both directions on single track) against all trains, in the manner provided in Rule 99.

When an irregular train receives orders to run over working limits, it must be advised

that the work train is within those limits by adding to example *(a)* the words:

(g.) Jones, Eng. 292, is working between Berne and Turin.

A train receiving this order must run expecting to find work train within the limits named.

Form J.—Holding Order.

Hold _____.

EXAMPLES.

(1.) Hold No. two (2), Jones Eng. 96.,

(2.) Hold all trains east.

As any order for which "O K" has been given and acknowledged operates as a holding order for the train to which it is addressed, this form will only be used in special cases, to hold trains until orders can be given, or for some other emergency. The reason for holding may be added, as, "for orders."

This order is not to be used for holding a train while orders are given to other trains against it, which are not at the same time given to it in duplicate. It must be respected by conductors and enginemen of trains thereby directed to be held, as if addressed to them. Conductors when informed of the order must sign for it, and their signatures must be sent and "complete" obtained.

When a train has been so held, it must not go until the order to hold is annulled, or an order is given in the form:

"— may go."

This must be addressed to the person or persons to whom the order to hold was addressed, and must be delivered in the same manner.

Form K.—Annuling a Schedule Train.

— of — is annulled.

EXAMPLES.

- (1.) *No. one (1) of Feb. 29th is annulled.*
 (2.) *No. three (3), due to leave Naples Saturday, Feb. 29th, is annulled.*

Adding "*from Alaska,*" or "*between Alaska and Halifax,*" when appropriate.

This order takes away all rights of the train annulled, and authorizes any train or person receiving it to use the track, as if the train annulled were not on the Time-table.

If a train is annulled to a point named, its rights beyond that point remain unaffected.

The train dispatcher may direct any operator to omit repeating back an order annulling a train, until he has occasion to deliver it.

When a train has been annulled it must not be again restored under its original number by special order.

Form L.—Annuling or Superseding an Order.

- (1.) "Order No. — is annulled."
 (2.) "Order No. thirteen (13) to C. & E. No. five (5) is annulled."

This will be numbered, transmitted and signed for as other orders.

If an order which is to be annulled has not been delivered to a train, the annulling order will be addressed to the operator, who will destroy all copies of the order annulled but his own, and write on that :

Annulled by Order No. —.

An order superseding another may be given adding: "*This supersedes Order No. —,*" or adding, "*instead of —.*"

EXAMPLE.

No. (one) 1 and No. two (2) will meet at Sparta instead of Thebes.

An order which includes more than one specified movement must not be superseded.

An order that has been annulled or superseded must not be again restored by special order under its original number.

In the address of an order annulling or superseding another order, the train first named must be that to which rights were given by the order annulled or superseded, and when the order is not transmitted simultaneously to all concerned, it must be sent to the point at which that train is to receive it, and the required response first given, before the order is sent for other trains.

Form M.—Ordering a Regular Train to Run in Advance of its Schedule.

EXAMPLE.

No. one (1), Jones, Engine 40, will run ahead of time, Moscow to Paris.

A regular train receiving this order may immediately proceed in advance of its scheduled time, with only the rights of an extra until it resumes its time.

Form N.—Advance Order, Directing a Train to Get Orders at a Specified Point.

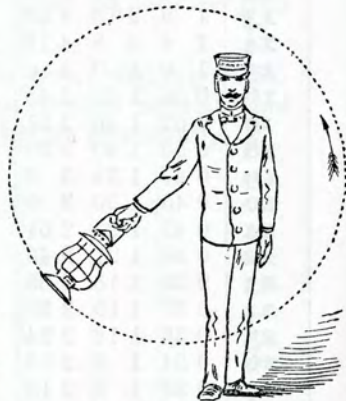
EXAMPLE.

No. one (1), Jones, Engine 40, will not pass Sparta without orders.

A train receiving this order will report immediately on arrival at station named, and will get further orders before proceeding.

SPEED TABLE.

Speed per Hour.	Time of performance.			Speed per Hour.	Time of performance.		
	$\frac{1}{2}$ Mile	$\frac{1}{4}$ Mile	1 Mile		$\frac{1}{2}$ Mile	$\frac{1}{4}$ Mile	1 Mile
MILES.	M. S.	M. S.	M. S.	MILES.	M. S.	M. S.	M. S.
1	15 03	0 30	0 60	31	0 29	0 58	1 56
2	7 30	15 03	0 30	32	0 28	0 56	1 52
3	4 00	10 02	0 20	33	0 27	0 54	1 49
4	3 45	7 30	15 00	34	0 26	0 53	1 45
5	3 00	6 00	12 00	35	0 25	0 51	1 42
6	2 30	5 00	10 00	36	0 25	0 50	1 40
7	2 8	4 17	8 34	37	0 24	0 48	1 37
8	1 52	3 45	7 30	38	0 23	0 47	1 34
9	1 40	3 20	6 40	39	0 23	0 46	1 32
10	1 30	3 00	6 00	40	0 22	0 45	1 30
11	1 21	2 43	5 27	41	0 21	0 43	1 27
12	1 15	2 30	5 00	42	0 21	0 42	1 25
13	1 9	2 18	4 37	43	0 20	0 41	1 23
14	1 4	2 8	4 17	44	0 20	0 40	1 21
15	1 0	1 0	4 0	45	0 20	0 40	1 20
16	0 56	1 52	3 45	46	0 19	0 39	1 18
17	0 52	1 46	3 31	47	0 19	0 38	1 16
18	0 50	1 40	3 20	48	0 18	0 37	1 15
19	0 47	1 34	3 9	49	0 18	0 36	1 13
20	0 45	1 30	3 0	50	0 18	0 36	1 12
21	0 42	1 25	2 51	51	0 17	0 35	1 10
22	0 40	1 21	2 43	52	0 17	0 34	1 9
23	0 39	1 18	2 36	53	0 17	0 34	1 7
24	0 37	1 15	2 30	54	0 16	0 33	1 6
25	0 36	1 12	2 24	55	0 16	0 32	1 5
26	0 34	1 9	2 18	56	0 16	0 32	1 4
27	0 33	1 6	2 13	57	0 15	0 31	1 3
28	0 32	1 4	2 8	58	0 15	0 31	1 2
29	0 31	1 2	2 4	59	0 15	0 30	1 1
30	0 30	1 0	2 0	60	0 15	0 30	1 0

LAMP AND HAND SIGNALS.*See Rules 59 to 63, page 16.***STOP.****GO AHEAD.****BACK UP.****TRAIN HAS PARTED.**

INDEX

INSTRUCTIONS

GOVERNING THE USE AND CARE OF THE

Westinghouse Automatic Air Brakes

— AND —

BAKER HEATERS.

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SOUTHERN PACIFIC COMPANY,

R U L E S

FOR THE USE OF

THE WESTINGHOUSE AUTOMATIC AIR BRAKE.

GENERAL INSTRUCTIONS.

The Air-brake system in use on the Southern Pacific Company's lines is that known as the **New Automatic** or "**Quick-action**" brake.

It should always be kept in mind that this brake cannot be changed to, and used as, "straight air." Owing to the addition of the quick-action valve, a four-way cock cannot be placed in the triple; consequently nothing but the automatic can be used with this style triple valve.

1. In making up trains, all couplings must be united so that the brakes will apply throughout the entire train. The cocks in the brake pipe must be opened, except that on the rear of the last car, which must be closed.

In coupling hose, place the coupling shoulders near the stop pin firmly together; then roll the heads in place as if they turned on a pivot, firmly pressing the heads toward each other, until both heads strike the stop pins.

2. In detaching engines or cars, the coupling must invariably be parted by hand. The stop cocks in brake pipes

must always be closed **before** separating the couplings, to prevent application of brakes. Before detaching the engine, or any cars, the brakes should be fully released on the whole train, except on heavy grades. The air should be fully released from cars to be set out from trains on sidings, and hand brakes used.

3. When air hose is not coupled between cars, they must, in every case, be coupled to the dummy couplings provided for that purpose, to prevent injury to the hose, or admission of dirt to train pipe. This is very important, and must not be neglected.

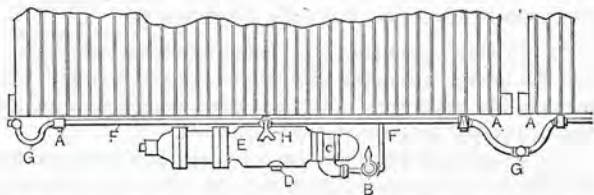
4. If the brakes become set, when engine is not attached to train, or brakes should "stick" in train, they can be released, on **passenger cars**, by opening the air-release cock in each auxiliary reservoir; and, on **freight cars**, by opening release cock (*h*) in auxiliary reservoir (see cut).

5. The following cuts show the different positions for handle of triple valve, when brakes are being used "Automatic" or "Cut-out."

PERPENDICULAR POSITION, HANDLE UP.

"AUTOMATIC."

The new style air brake for freight cars,—“Automatic.”

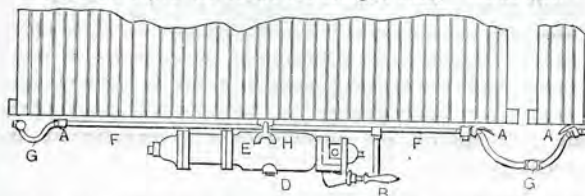


EXPLANATION.—*A*, stop cocks in main-brake pipe. *B*, cut-out cock handle; *C*, triple valve; *D*, drain plug in auxiliary reservoir; *E*, auxiliary reservoir; *F*, main-brake pipe; *G*, hose and couplings; *H*, release valve in auxiliary reservoir.

HORIZONTAL POSITION, HANDLE LEVEL.

"CUT-OUT."

The new style air brake for freight cars,—“Cut-out.”

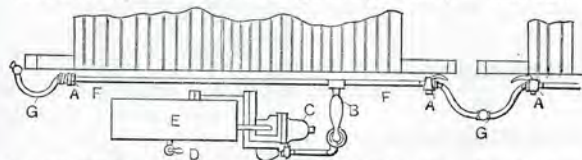


EXPLANATION.—*A*, stop cocks in main-brake pipe; *B*, cut-out cock handle; *C*, triple valve; *D*, drain plug in auxiliary reservoir; *E*, auxiliary reservoir; *F*, main-brake pipe; *G*, hose and couplings; *H*, release valve in auxiliary reservoir.

PERPENDICULAR POSITION, HANDLE UP.

"CUT-OUT."

The new style air brake for passenger cars,—“Cut-out.”

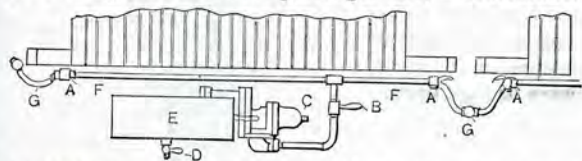


EXPLANATION.—*A*, stop cocks in main-brake pipe; *B*, cut-out cock handle; *C*, triple valve; *D*, release cock in auxiliary reservoir; *E*, auxiliary reservoir; *F*, main-brake pipe; *G*, hose and couplings.

HORIZONTAL POSITION, HANDLE LEVEL.

"AUTOMATIC."

The new style air brake for passenger cars,—“Automatic.”



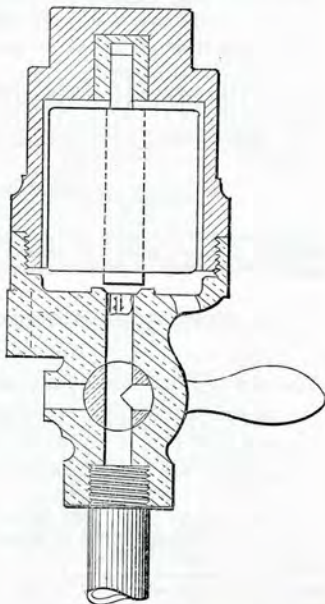
EXPLANATION.—*A*, stop cocks in main-brake pipe; *B*, cut-out cock handle; *C*, triple valve; *D*, release cock in auxiliary reservoir; *E*, auxiliary reservoir; *F*, main-brake pipe; *G*, hose and couplings.

PRESSURE-RETAINING VALVES.

6. This valve is attached to each car, and connected by a small pipe to the release port side of the triple valve, and is used only when descending mountain grades. The object of this valve is to retain a portion of the pressure in brake cylinder while the auxiliary reservoirs are being recharged in descending heavy grades, thus keeping the speed of the train under control, and allowing the engineer sufficient time to recharge.

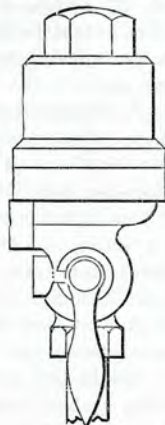
7. In operating the pressure-retaining valves, the handle of same must be placed horizontally (see cut); and ten pounds pressure of air is retained on the brakes by means of the weighted valve contained in the valve case, which has to be lifted whenever any of the air pressure is exhausted.

SECTIONAL VIEW
- OF -
PRESSURE-RETAINING
VALVE.



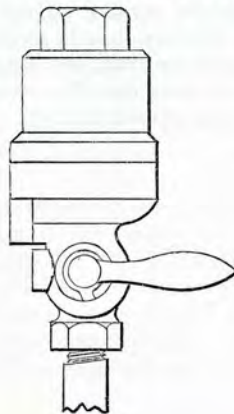
The small openings in the body of the pressure-retaining valves serve as air-exhaust passages, and must always be kept open.

PRESSURE-RETAINING VALVE *open*.
~~Closed.~~



8. Cut out the pressure-retaining valve by placing the handle down, or in perpendicular position, which allows the entire pressure to escape from the brake cylinder, **in which position it must always remain** on level track, or when ascending grades (see cut).

PRESSURE-RETAINING VALVE *Closed.*
~~Open.~~



9. The adjustment of brake gear should be such that, when brakes are full on, the pistons of brake cylinders will not have traveled to exceed eight inches nor less than five inches; this will allow for wearing of shoes, stretching of rods, springing of beams, etc.

Great care must be exercised, when taking up the slack in the brake connections, to have the levers and pistons *pushed back in their proper places* and the slack taken up by the under connections, or dead levers. If the pistons have a uniform travel, the working of each brake in train will be practically the same, insuring the best general results. Besides, if the piston travel greatly exceed the larger limit, there would be danger of the piston striking cylinder head; or, should the travel be much less than the smaller limit, the pressure would leak off through leakage groove in cylinder; or, should the piston be adjusted on a loaded freight car having brakes hung from body, even a little less than the lower limit, the brakes would drag on the wheels as soon as the car was emptied.

10. In cold weather, the triple valve should be drained frequently, to admit of discharge of condensation that may have collected.

11. Uniform air pressure must be carried by all engines, and thus avoid trouble at division terminals, which will certainly follow where the retiring engine leaves the train charged at greater pressure than is carried by the engine that is to proceed with the train, resulting in brakes being set on train. In such cases, open the release cock on auxiliary reservoirs until air releases through the triple valves in natural manner.

BREAK-IN-TWO OF TRAIN.

12. In case a train breaks in two, the brakeman should **close the stop cock on the rear car** of the part of train remaining attached to the engine, when he reaches it, and then give the engineer signal to let the brakes off. When cars are again properly coupled up, before opening the air into the rear end of train, the brakeman should give the engineer signal to set brakes, which should be done strong, and left on until brakeman opens the air cocks into the rear section of train; when this is done, the engineer will have regained control of the air in entire train, as before the break-in-two. This action will save valuable time, which otherwise may be lost in releasing the air on each car by hand.

DESCRIPTION OF ENGINEER'S BRAKE AND EQUALIZING DISCHARGE VALVE.

13. The engineer's brake and equalizing discharge valve, sectional cuts of which are herein shown, is a device designed especially to assist the engineer in operating train brakes in a more perfect manner than has heretofore been possible with the three-way cock or brake valves formerly used for this purpose, without much personal skill from the operator.

14. It is of the greatest importance to perfect train braking that a gradual exhaust or discharge of air pressure from the train pipe in applying the brakes should be made under ordinary conditions of station stopping, and a gentle closing or stopping of this exhaust in order to thoroughly equalize the pressure that may yet remain in the train pipe, thus preventing the release of some of the front brakes of the train, which may occur by the abrupt opening and closing of the three-way cock, causing a violent surge of air from the rear to the front end of the train, affecting the

brakes as stated. The brake valve here illustrated entirely prevents this, and *mechanically measures the required volume of air to be discharged from the train pipe when applying the brakes for ordinary stoppages*, and is equally efficient on short or long trains. Large openings are provided in its construction for the instantaneous application of the brakes in an emergency.

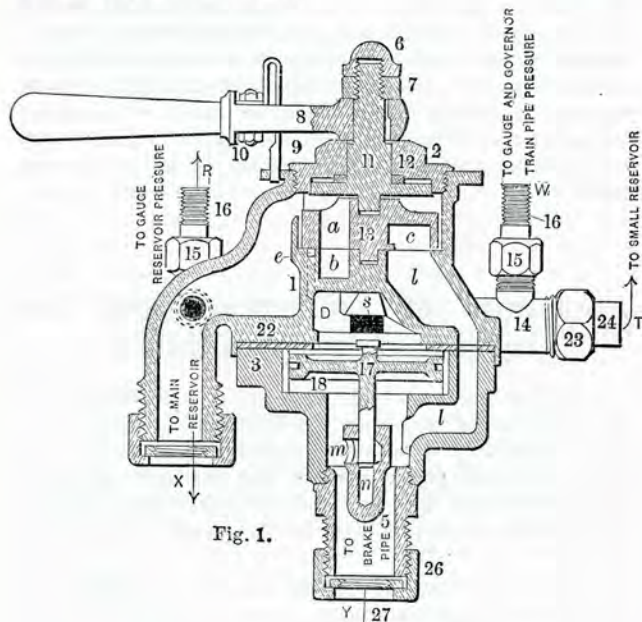


Fig. 1.

15. It is absolutely essential in operating the brakes upon long trains, and is of great importance on short ones, to store a pressure of air in the main reservoir on the engine of from twenty to twenty-five pounds greater than the train-pipe and auxiliary-reservoir pressure, that will, when discharged into the train-pipe, insure the prompt discharge of all the brakes. The absence of "excess" pressure in the

main reservoir, or improper handling of the brakes, will sometimes retard their release, necessitating the partial "bleeding" of auxiliary reservoirs.

16. A full set of engine-brake fixtures includes a pressure gauge having two sets of works, and two indicators on a single dial, which show at a glance the pressure in the

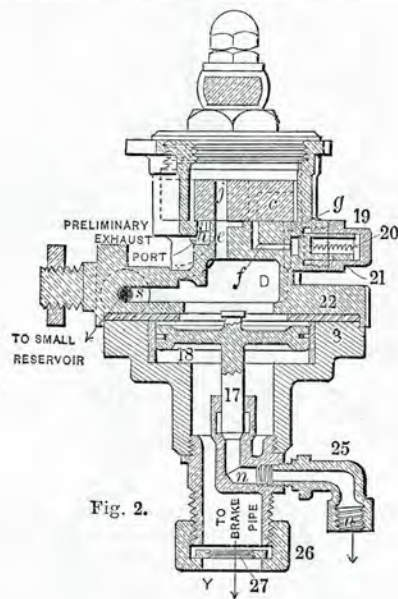


Fig. 2.

main reservoir and train pipe, the connecting pipes being attached to the brake valve at *r* and *w*. The air pipe to the pump governor should also be connected at *v*, the main reservoir pipe at *x*, and the train pipe at *y*.

17. By preparing a diagram similar to Figure 4, representing the rotary valve *13* and handle *8*, of tracing cloth or other transparent material, cutting the ports *a* and *j* out

of the diagram on their boundary lines to show *through* openings, and then reversing same and placing it upon the seat of the valve, Figure 3, where it may be rotated at will on a center, the explanation following will be clear.

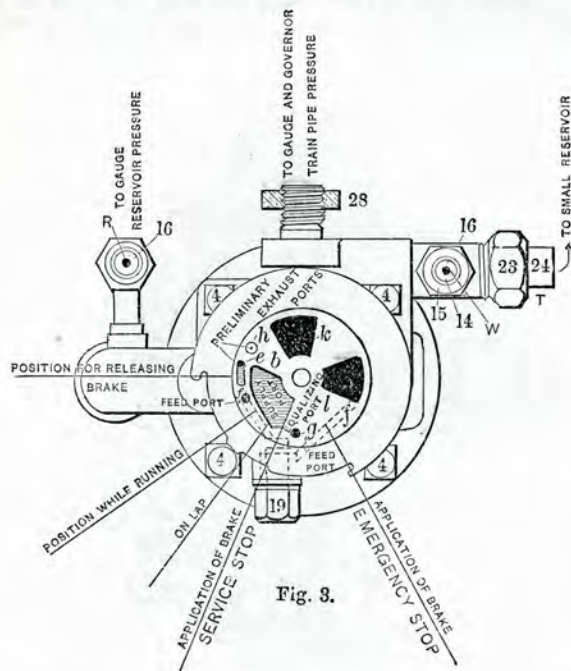


Fig. 3.

18. By reference to cuts of the valve on a preceding page, it will be seen that movement of handle 8, on which is located a spring 9, for guiding it to position, operates "rotary valve" 13 upon its seat, opening and closing the various ports as required.

19. When the handle 8 is in "position for releasing brake," air pressure from the main reservoir entering the

brake valve at *x* passes through "supply ports" *a* and *b*, thence upward into cavity *c*, in the under surface of the rotary valve 13, thence through "direct application and supply port" *l* to the train pipe at *y*.

While yet in this position, port *j* in the rotary valve, and port *e* in its seat, are in communication, the air passing into chamber *d*, above piston 17, thence through port *s* to a small reservoir, which is usually suspended under the right running board of the engine, pipe connections being made therewith at *l*. This reservoir serves the purpose of increased volume of space to chamber *d*.

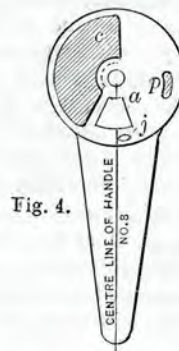


Fig. 4.

20. The handle 8 now being placed in "position while running," direct communication with the train pipe ceases; and port *j* is brought opposite feed port *f*, through which main-reservoir pressure now passes to the under side of the "feed valve" 21, which is held to its seat by "feed-valve spring" 20, having a resistance of about twenty pounds. When this additional pressure is accumulated in the main reservoir, "feed valve" 21 is forced open, the pressure passing thence through port *f* to port *l* and the train pipe, while train-pipe pressure is maintained in chamber *d* through port *l*, cavity *c* and "equalizing port" *g*, thus equalizing the pressure on top and under piston 17, the stem of which, forming a valve, is seated in the position shown in "bottom cap" 5,

and permits the escape of air from the train pipe to the atmosphere through ports *m* and *n* when raised from its seat.

21. When applying brakes for ordinary or station stops, move handle *δ* to "on-lap" position. This blanks all ports in the rotary valve and seat. Then moving the valve handle to the position, "application of brakes, service stops," the small exhaust cavity *p*, in the lower surface of the rotary valve *13*, establishes communication between the two "preliminary-exhaust ports" *e* and *h*, the latter leading to the atmosphere; and, after discharging about eight pounds pressure, as shown by the gauge, restore the handle to "on-lap" position. This preliminary discharge of air from chamber *d* will cause the piston *17* and its stem to rise, which operation is followed by a discharge of air from the train pipe to the atmosphere through ports *m* and *n*, applying the brakes gently. This discharge of air from the train pipe continues after the valve handle is carried to "on-lap" position (gradually equalizing train-pipe pressure), and until the train-pipe pressure has been reduced slightly lower than that yet remaining in the chamber above the piston, when the latter is forced downward, and its stem to its seat, closing the outlet *n*, and preventing the further escape of air until the operation is repeated, which may be necessary to apply the brakes with the desired degree of force.

22. To throw off brakes, push handle *δ* to "position for releasing brakes," causing the excess of air pressure in main reservoir to be discharged into the train pipe, insuring their prompt and certain release.

23. For an "emergency" application of the brakes, push the handle to the extreme right, to position, "application of brake, emergency stop." This operation establishes direct communication between the train pipe and the atmosphere, through the "direct application and supply port" *l*, cavity *c* and the "direct application and exhaust port" *k*, applying the brakes with full force instantly.

24. When handling trains on down grades, let the brake-valve handle remain in full release position, except when

applying brakes, which will insure the full and prompt recharging of auxiliary reservoirs under cars.

25. If the engineer's brake valve is to be located against the boiler head, make the bracket of sufficient length to prevent injury to gaskets by heat.

26. It is of the utmost importance that *direct connections be made from the engineer's brake valve to the main reservoir*, instead of tapping the discharge pipe leading from the air pump to main reservoir. The latter practice is dangerous, as a great deal of moisture and oil is discharged into the train-brake system that would otherwise be deposited in the main reservoir, from which it can be drained.

27. A one-inch stop cock should be placed in the train pipe, a short distance below the engineer's brake valve, within convenient reach of the engineer, and should be closed upon all but the head engine of a train where two or more engines are coupled in the same train, in order that the head engine may operate the train brakes.

28. It is important that the pipe connections to the brake valve be perfectly air tight, and that the valve should occasionally be cleaned. The feed valve *21* can be readily removed for cleaning by the engineer by unscrewing cap nut *19*.

ENGINEERS.

29. Engineers of all trains must avoid making exhibition stops, and must never, except on heavy grades, or in case of necessity, hold the brakes fully applied until the train comes to a full stop, as this causes a reaction in motion of train which is very disagreeable to passengers. This can be avoided ordinarily, on passenger trains, by releasing brakes gradually before a full stop, so that all the air will be off at the moment stop is made.

No man is fully competent in the use of air brakes who does not study and practice this point; and especially is he incompetent to handle passenger trains.

30. Frequent breaking, or pulling out drawheads, will, as a rule, be evidence of incompetency or carelessness of engineers handling the train.

31. All engines must carry air pressure of eighty pounds in train pipe, no more nor no less; and engineers must see that air-pump governors are constantly adjusted to this pressure.

32. Engineers must know, from personal inspection of engines before leaving round-house, that the air pumps, connecting hose and couplings on engine and tender are all in perfect working order. The air pump is then to be started and lubricated for the trip, and maximum pressure pumped up with which to charge the brakes, before engine is coupled to train.

33. After coupling to train, and before leaving a terminal or car-inspection station, the engineer must apply the brakes by gradual reduction to full force, and hold them on while the inspectors go over the train to make sure that all the brakes are set. Upon signal from the inspectors, the brakes may be released; then wait for the inspectors' report regarding condition and number of brakes before starting out. Similar precautions must be taken where trains are made up, or cars are taken in or set out of trains at intermediate stations (see rules 70 and 71).

34. When starting air pumps, engineers must allow water of condensation to escape gradually, and not force it out by running the pump with full steam pressure. Start up slowly; increase speed gradually.

35. Steam cylinder of air pump must be kept lubricated with cylinder oil, and air cylinder sparingly lubricated with engine oil. Tallow and lard oils must not be used in the air cylinders.

36. It is important to drain water out of the main reservoir,—in summer, once a week, and, in winter, daily. Open drip cups in train pipes under tenders frequently. This is especially important in case of engines equipped with the "Sweeney" device.

37. It is of very great importance that every engineer should bear in mind that the air pressure may sometimes reduce slowly, owing to the steam pressure getting low, or from the stopping of the pump, or from a leakage in some of the pipes when one or more cars are detached for switching purposes, and that in consequence it has been found absolutely necessary to provide each brake cylinder with what is called a leakage groove, which permits a slight pressure to escape without moving the piston, thus preventing the application of the brakes when the pressure is slowly reduced, as would result from any of the above causes.

38. It is thus very essential to discharge enough air in the first instance, and with sufficient rapidity, to cause all the leakage grooves to be closed. For ordinary stops, the brakes should be applied lightly by opening the engineer's valve and closing again slowly until the pressure has been reduced on the gauge from four to eight pounds.

39. The brakes are **fully applied** when the pressure as shown on the gauge is reduced thirty pounds. Any further reduction is a waste of air.

40. When descending heavy grades, regulate the force of brakes so as to maintain a regular and steady speed; also make as long a distance as possible to each application

of the brakes. A greater time for recharging is obtained by considerably reducing the speed of the train just before recharging, and by taking advantage of the variations of the grades.

41. Keep the engineer's brake valve in releasing position while recharging, thereby giving the brakes the greatest advantage in recharging quickly. Make no new application of brakes until the full amount of pressure consumed in previous application has been restored. Reduce the pressure as shown on gauge not more than fifteen to twenty pounds from one recharging to another, as it would be difficult to replenish a greater amount in so short a time.

42. Engineers, upon finding that brakes have been applied by the train men, or by bursting of hose, or by break-in-two of train, must at once aid in stopping the train by placing the engineer's brake valve to "lap" position, thus preventing the escape of air from main reservoir, and be prepared to release brakes immediately on receiving signal.

43. In releasing brakes, the handle of the brake valve must be moved quite *against the stop*, and be kept there for five seconds, and then moved back against the intermediate stop, which is the feed position, and where it must remain while train is running.

44. On a long train, if an engineer's brake valve be opened suddenly and wide, allowing the pressure to escape quickly, the brakes will be set on front end some time before those on rear end, causing a severe shock on train; then, if engineer's valve be closed quickly without giving time for the pressure to become equalized throughout the entire train, the forward brakes will become released, causing further severe shocks to the train. This mode of handling brakes almost invariably results in drawheads being pulled out and broken (see rule 30).

45. When two engines are coupled to a train, the engineer of the head engine alone must operate and control the train brakes, except in case of accident to brake appa-

ratus on leading engine, when, on signal from the leading engineer, the second engineer will assume control of the train brakes, or assist in recharging, for which contingency the second engineer must at **every moment be prepared to act instantly**; and, having assumed control of the brakes, the second engineer will retain entire charge of same to end of trip, except in case of necessity, which may reverse the operation.

46. Two short, full blasts, followed by one long blast, of the whistle (thus, — — —) is signal that, for some cause, the air on leading engine has failed, and it is desired to give up control to the second engineer, who, by repeating the signal, signifies that he understands and has control of the air brakes. Two short, full blasts of the whistle repeated three times (thus, — — — —) is signal that head engineer desires the second engineer's assistance in recharging the train with air.

47. **Have always in mind, on mountain grades, to keep control of the train.**

DRIVER BRAKES.

48. **Driver brakes** must be used daily at points to be named by the Master Mechanic of the respective divisions, and sufficient to insure their being in good working order.

49. Adjust the driver-brake shoes so that the piston will have a motion of from one and a half to two inches, never more than the latter figure. This is done by adjusting the screws provided for that purpose.

50. Any defect in the working of the driver brake must be reported by engineer promptly.

51. **It is not designed to use driver brakes in stops of trains, except in case of necessity**, as their use causes a shock on the cars disagreeable to occupants of passenger trains.

52. When driver brakes are used, they should be released gradually, and before a final stop is made.

53. **Engines must not be reversed with driver brakes set.**

54. A too free use of driver brakes on mountain grades heats the tires of driving wheels, expands and loosens them on wheel centers, and thus not only destroys their brake efficiency, but renders the engine unfit for draught purposes also.

WATER BRAKES.

55. The "Le Chatelier," or water brake, is, on this road, intended to be used as an auxiliary to other brakes, and, when used with discretion, is a valuable aid in steady-ing a train down mountain grades. It is most effective on a steady motion of from three to twelve miles per hour, above which latter speed it is of lessened value. It should not be used at a greater speed than eighteen miles per hour, **and is for mountain work only.**

OPERATION OF WATER BRAKE.

56. Water is led by a small pipe connected to the boiler, below water line of same, to the exhaust-pipe cavity and through to the cylinders. This affords a counter pressure on pistons when engine is reversed, which should be just back of the center notch of quadrant. The act of forcing compressed moist vapor—which the water jet drawn into the cylinders with engine reversed supplies—back into the boiler, causes the retarding force on pistons, operating through the connections on the crank pins, and gives the desired brake power. Only a very small amount of water is used, a portion of which, except that converted into vapor and returned to boiler, passes through the open cylinder cocks. **The amount of brake power exerted depends upon the position of the reversed lever.**

57. In operating the water brake, first have the engine in slow motion without steam, have cylinder cocks wide open and keep them open, with reverse lever placed one notch back of the center, and throttle securely shut. Give the small water cock one-eighth of a full turn open, and notice that steam water passes the cylinder cocks freely.

58. The speed may now be regulated by placing the reverse lever back as required, and should be done without any change in the water cock. A too free use of water is dangerous to cylinder heads; and water may be forced out of the smokestack, and does not produce any useful effect.

59. In shutting off water brake, throw the reverse lever ahead slowly, **first closing the water cock**, to avoid throwing water from the stack.

60. It must be remembered that the water brake acts on the drivers, and that the combined use of water and driver brakes will be too great, causing the sliding of wheels; hence the combined use of water and driving brakes must not be made, except as provided in rule 62.

61. Light engines, when fitted with air and water brakes, are best controlled by setting the water brake moderately and using the air brake to regulate speed.

62. In case of necessity, the water brake, the air brake and all other available means may be used together.

NOTE.—When two engines are coupled to trains descending mountain grades, the engineer not operating the air brake must assist in retarding speed by using the water brake to some extent, with the view of preventing flat and heated wheels. The water brake should not be used at a greater speed than eighteen miles per hour.

THE SWEENEY AIR COMPRESSOR.

63. The Sweeney Air Compressor is a device attached to engines as an auxiliary, to enable engineers to maintain air pressure in train pipes in case of failure of air pump, or in recharging when descending mountain grades.

64. This device consists of a valve and spring to resist a pressure of ninety pounds, attached to top or side of steam chest, as most convenient to suit style of engine; a globe valve placed between safety valve and steam chest, this valve being operated from the cab of engine; a discharge pipe connecting steam chest and main air reservoir, and in discharge pipe is placed a check valve, preferably close to main reservoir.

65. When it is necessary to use the device, *steam being shut off*, the reverse lever is placed slightly back of center notch, and the cylinder cocks left open for three or four revolutions of the engine to allow water that may be in the cylinders to escape; then open the globe valve and place the brake valve in charging position.

The reverse lever must be left back of center notch at least fifteen seconds after full pressure has been indicated on the air gauge.

66. Then, before the reverse lever is moved forward, place the brake valve on the lap; and, in case the air pump is not working, the globe valve should be closed, as the pistons will draw air from the main reservoir before the check valve will close.

67. By placing the brake valve on the lap, and closing the globe valve before moving the reverse lever forward, sufficient pressure will be retained in the main reservoir to release the brakes.

68. After the air compressor has ceased to work, the brake valve should be left on the lap at least five seconds, so that the air in the train will have time to equalize. If air is used immediately after moving lever ahead, there being a higher pressure in the train pipe than in auxiliary reservoirs, air will be wasted, as the air in train pipe must be reduced to a lower pressure than that in auxiliary reservoirs to set the brakes; but, if time be allowed to let the air equalize, all air that has been forced back may be used to advantage.

69. Steam must never be used through the Sweeney device; and engineers must use great care to prevent opening of globe valve when working steam, and promptly report any leakage of globe valve.

This device to be used only in case of emergency, or as provided by rule 62. It must be tested by all engineers immediately after leaving terminals to ascertain if it is in proper working order, and if not the fact must be reported by wire from the first telegraph office reached.

TRAIN MEN.

70. Either the conductor or the rear brakeman will station himself opposite the rear car and note from personal inspection that the brakes are applied by the engineer, as provided in rule 33.

After making up, setting out cars from or adding cars to the train, or after change of engines between terminal stations, train men shall ascertain whether the brakes are connected throughout the train, and see that stop cocks in train pipe are all open, except the stop cock on rear of the last car, which should be closed. Car inspectors will make this test at all terminal stations. The rear brakeman will then proceed to apply the brakes by opening the cock at rear end of last car in train gently, allowing only enough air to escape to apply the brakes slowly and firmly, *but without making the emergency application*. Having thus applied the brakes, he will close the cock, and if the brakes are at once released it is plain that all cocks between the rear of train and the engine are open. If the brakes do not release promptly, it indicates that there is some obstruction which prevents the air from flowing back through the train pipe. This must be remedied before the train starts. This test must also invariably be made by the rear brakeman at stations, at the summit and foot of all mountain grades (whether any switching is done at such station or not); and, in case a train passes over a division without change in its make up, this test must also be made at two or more intermediate stations between terminals, whether on grades or levels, such intermediate stations to be designated by the division superintendent.

The conductor must not give the starting signal at such stations until assured by the rear brakeman that the brakes have been applied and released properly.

71. Brakemen must, at each station (and between stations on grades, where trains are moving under control of the air brake), listen for the exhaust of air from the brake cylinder when the brakes are released by the engineer; and, if they

fail to hear this on any car, an immediate examination should be made of the brakes.

In addition to all other rules and instructions relative to the automatic brake, it is hereby ordered that the rear brakeman at every station on mountain grades, and at each alternate station on other parts of the road, shall get out and observe whether or not the brakes apply properly in making the stop and release properly before starting. If he finds the brakes do not apply and release properly, he must immediately report the fact to his conductor, who will take necessary action to remedy the defects.

72. Before starting up or down mountain grades, the train men must examine brakes and air apparatus carefully. When it is found necessary to cut out brakes on cars, the engineer should be notified of all cars so cut out.

73. Before descending mountain grades, the handles of retaining-pressure valves must be turned up (see rule 7) on all cars, except mail and express cars without end doors. Watch the wheels closely to prevent heating or sliding. At foot of grade, the handles of all retaining-pressure valves must be turned down (see rule 8).

74. Train men will be held responsible for sliding and flattening of wheels.

75. The conductor's valve must be used to stop trains only in case of emergency. By use of the conductor's valve, the brakes are applied suddenly and with full force, causing the wheels to slide, and disarranging adjustment of brakes.

76. The conductor must note, on cards provided for the purpose, all defects of air brakes on his train, and hand the card to the car inspector at the end of the trip; when no defects to report, note on card, "Brakes O. K."

77. It is the duty of train men and yard men, when detaching air hose between cars, to properly couple hose to the dummy coupling (see rule 3).

CAR INSPECTORS.

78. Inspectors must be prompt and regular in the discharge of their duties, and allow no defects in air brakes to go unheeded.

79. Cylinders and triple valves must be cleaned and oiled once thoroughly every two months.

80. Packing should be examined carefully each time cylinder is oiled. If the leather is found broken or worn thin, it should be removed and replaced with a new one. Where leather is found in good order, or only slightly worn, give the piston a half turn (bottom side up), so as to allow an equal wear on both sides of packing.

81. In oiling triple valves use mixture of one part of headlight oil and one part of lard oil. For cylinders, use car oil; clean all parts thoroughly, and note that all passages are open and clear of dirt. See that leakage groove in cylinder is clear of dirt before replacing piston. Before replacing cylinder head, move piston back and forth full stroke, to insure that it works freely.

82. Note with chalk, in proper place on cylinder, date of cleaning and oiling.

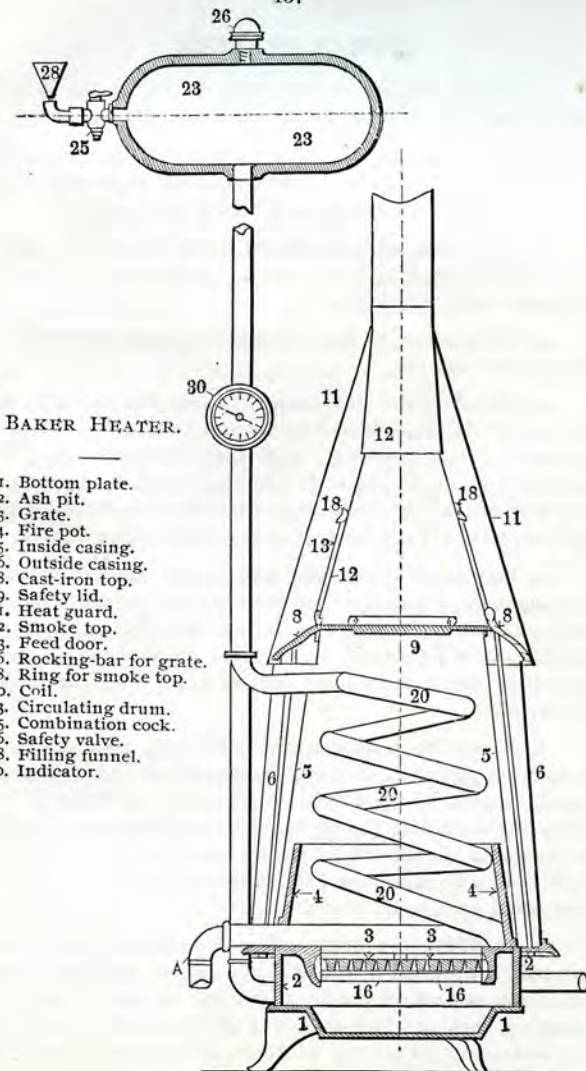
83. Water of condensation must be drained from auxiliary reservoirs and triple valves frequently, especially in cold weather.

84. Inspectors must see that all air-brake cars are supplied with dummy couplings, properly located as not to kink hose when coupled to it. Dummy couplings must be secured to cars rigidly, and not attached to chains.

85. It is the duty of the car inspectors to receive defect cards from conductor at end of trip, repair defects, sign card and return to division superintendent.

86. Inspectors must not allow trains to depart from terminal points until brakes are applied from the engine, and they have satisfied themselves that all brakes in the train are in good order; then report to engineer regarding condition and number of brakes in train (see rule 33).

Car inspectors will make the test from rear of train at all terminal stations, as provided in rule 70.



BAKER HEATERS.

To insure satisfactory results in the use of the heater, the following instructions must be strictly observed:

1. The heater should be kept half full of coal at all times. The coal should never be allowed to get below top of worm. This will give about fifteen inches of fire.

2. The inside safety lid should never be opened except to build the fire or to put in coal. (Never force the fire by opening inside safety lid.)

3. To increase the heat, open inside lower damper, and close upper damper.

4. To reduce the heat, close the lower damper and open the upper damper about two inches, or according to the amount of heat required. With both dampers closed, the car will not be too warm at any time; and, by proper working of the lower and upper dampers, and watching the indicator, the car can be kept at any temperature desired.

5. Failure of the heater arises from neglect or mismanagement, generally from allowing fire to run too long without putting in coal, then filling them full and opening drafts, producing a rapid fire, which, instead of warming the car, stops the circulation and creates gases, which are liable to explode.

6. It will be readily understood that, with the large amount of piping in the cars, the circulation (which is principally caused by the weight of the column of water falling from the drum into the pipes, and the difference in weight of a column of cold and hot water) must be necessarily slow, and that a forced fire will do no good, but will only cause the effect mentioned above.

7. In filling the heater pipes, be sure that the water contains all the salt it will hold in solution, and that no undissolved salt enters the drum (except in case of Pullman sleeping cars, in which no salt should be used). Open the combination cock on end of drum, on top of car, and pour

in water until it runs freely from same. The water should always stand at height of combination cock, which may be tried by opening the cock, but only when the fire is very low and no pressure on. Pipes should be warm all round before passengers enter the car. It takes from three to four hours to get up a good circulation.

H. J. SMALL,
Supt. M. P. & M.,
Sacramento, Cal.

APPROVED:

J. A. FILLMORE,
General Supt.

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