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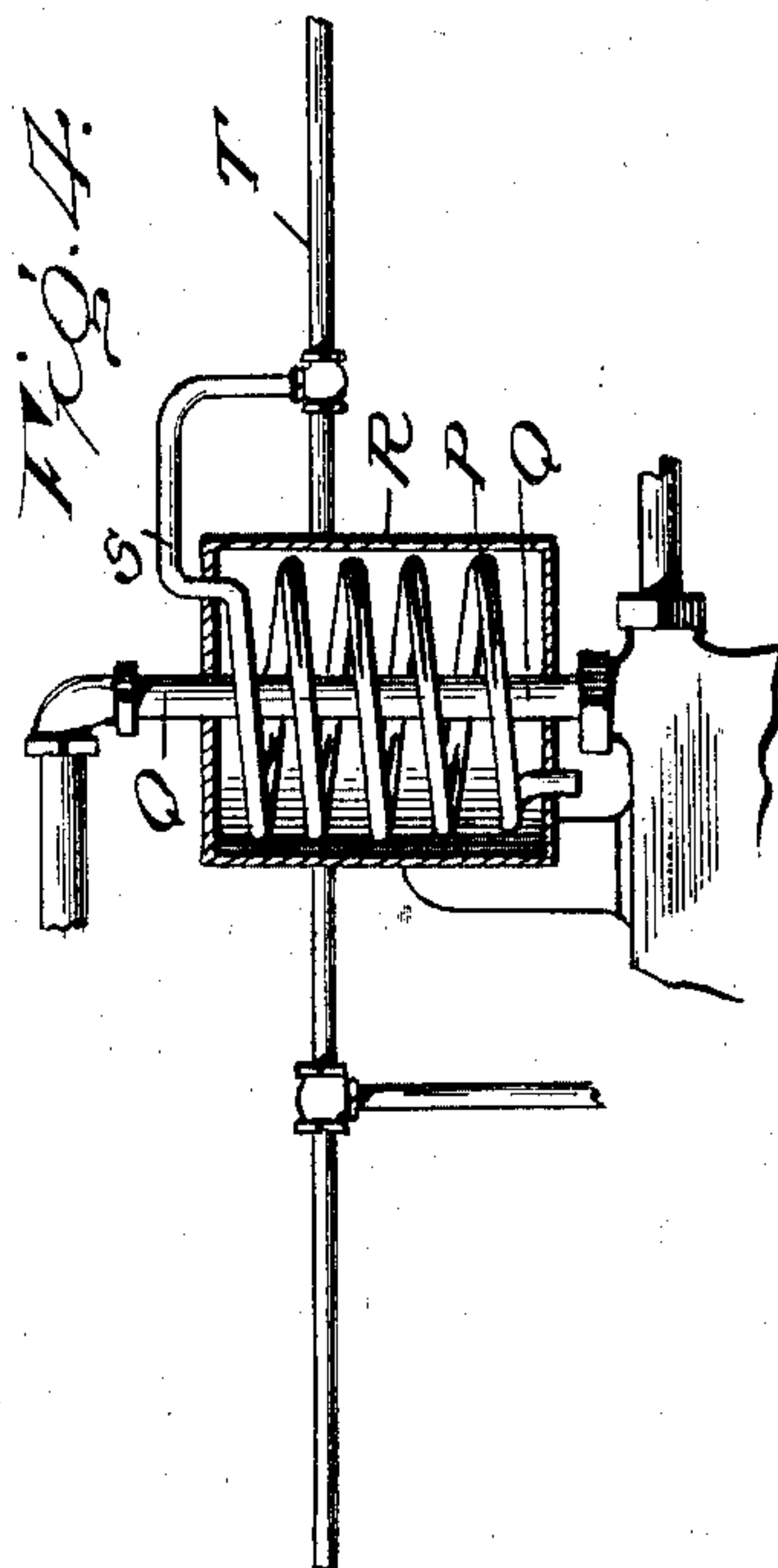
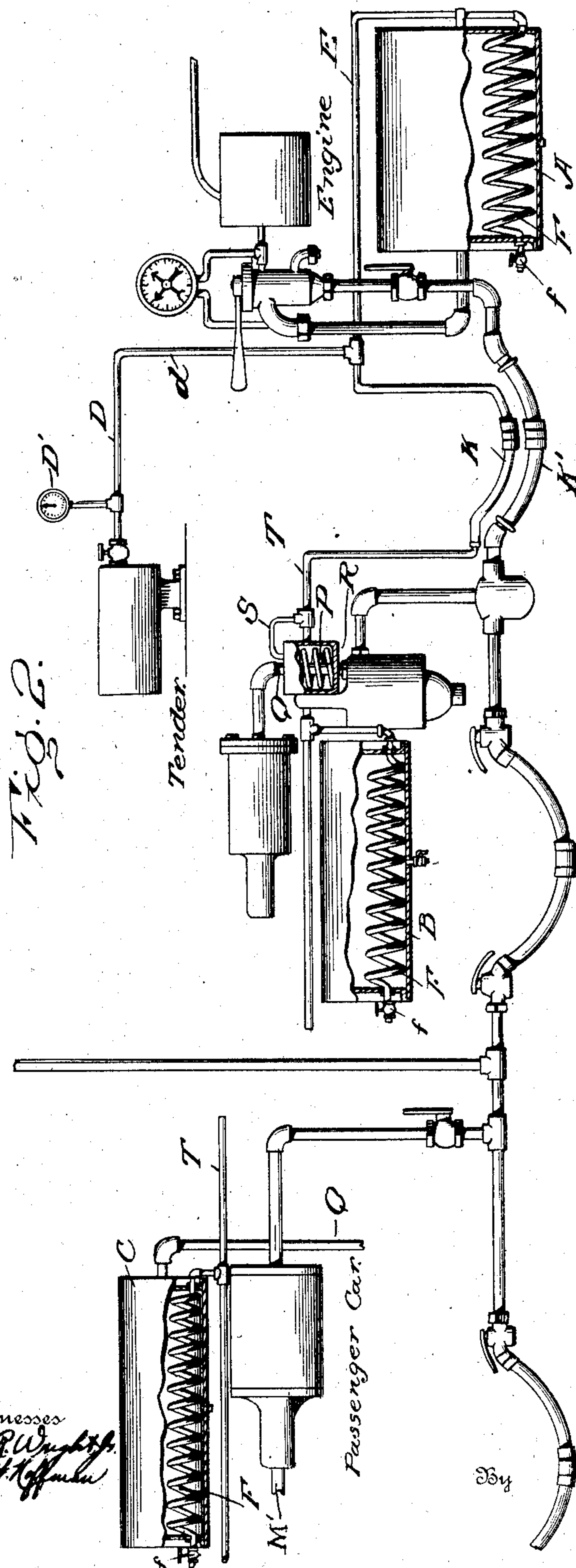
J. W. GEARY.

DEVICE FOR HEATING AIR BRAKE SYSTEMS.

APPLICATION FILED APR. 25, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



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DEVICE FOR HEATING AIR-BRAKE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 736,840, dated August 18, 1903.

Application filed April 25, 1903. Serial No. 154,363. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. GEARY, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented new and useful Improvements in Devices for Heating Air-Brake Systems, of which the following is a specification.

My invention relates to an improved device for heating air-brake systems, and pertains more particularly to a device for preventing the same from freezing.

In the ordinary usage of air-brake systems it has been found that the air therein under compression condenses to a certain extent and that all air contains more or less moisture, which would condense in the pipes, and thus freeze in cold weather and often cause the brakes to fail to work. This is caused more frequently in the freezing in the couplings, and not only makes the brake system inoperative, but also often gives trouble in the uncoupling of cars, &c.

The object of my invention is to provide a steam-heating system within the main reservoir and also adjacent the driver, tender, and car-brake cylinder, and to thus keep the air system heated throughout its length and to absolutely prevent any freezing of the pipes or other parts. The said heating system may obtain the steam, which I preferably use for such purpose, either directly from the engine or from the car-heating steam system, whichever is the most convenient or desirable, as this forms no part of my invention.

In the accompanying drawings, Figure 1 is a side elevation of an air-brake system, showing my improvement applied thereto. Fig. 2 is an enlarged plan view of the same, showing more fully the application and construction of my device. Fig. 3 is a sectional view of the main reservoir, showing the coil therein. Fig. 4 is a sectional view showing the coiled pipe and casing around the pipe leading from the reservoir to the brake-lever cylinder. Fig. 5 is an enlarged sectional view showing the means for securing the coils in the cylinder.

Referring now to the drawings, A represents the main reservoir, which is carried in the usual manner by the side of the engine and has connected therewith the usual pump-

ing mechanism, which is operated by the engine in any well-known manner.

B represents the auxiliary reservoir carried by the tender, while C represents the auxiliary reservoir carried by the passenger-car, and said reservoirs A, B, and C are connected by pipes in the usual manner, and my application is more particularly applicable to the Westinghouse air-brake system, but, as will be readily seen, can be applied to any air-brake system. In my device as shown applied I connect a pipe D to the boiler or dome of the engine in any desired manner, and connected to said pipe D is a steam-gage D' in order to determine the amount of steam within said pipe D. The said pipe extends downwardly at *d* and is connected to a horizontal pipe E, which has one end extending forwardly and is connected to the main reservoir A, herein described. The said pipe E is connected to a coil-pipe F, which passes through the reservoir A, and the opposite end of said coil on the outside of the reservoir is provided with a cock *f*, through which the water caused by condensation may be drawn, and thus afford a more effective device. The said coil F is secured in the tank as herein described—that is, the ends of the tank are provided with openings G and G', which are screw-threaded, and the pipe or coil F is inserted by turning or, in other words, screwing the same through the opening in one end. Said openings are considerably larger than the size of the pipe from which the coil F is made, and thus after it has been inserted the two outwardly-extending straight portions *g* and *g'* fit loosely in said openings G and G'. The said straight portions *g* and *g'* are screw-threaded, but in an opposite direction from that of the openings G and G'. Fitting on said straight portions of coil are bushings H, which have openings *h* therethrough, which are internally threaded and also have external threads, and said bushing is provided with a squared portion H', by means of which the bushing is turned. The turning of said bushing H screws the same on the threads on the straight portion of the coil, and external threads also screw into the threads of the openings in the ends of the reservoir. The outer enlarged portion of the bushing H has an enlarged

opening into which is inserted a packing I, and screwed into said enlarged opening is a bushing J, and thus it will be seen that a tight connection is made between the two and the air-reservoir is made perfectly air-tight and at the same time provided with means for removing the coil when desired. The opposite end of the pipe E extends rearwardly and is connected to a flexible coupling K, which extends along the side of the coupling K' of the air-brake system, and thus the same can be readily coupled or uncoupled with the tender of the engine. The said coupling might, if desired, be carried by the air-brake coupling and one lever could be made to operate the two. Thus the coupling and uncoupling of one necessarily couples or uncouples the other.

It is understood to those skilled in the art that the brake-lever on the engine is operated by a piston L, which is operated by the compressed air from the main reservoir, and in order to provide means for more thoroughly heating the compressed air, and thus absolutely preventing the condensation from freezing in the driver, tender, and car-brake cylinder, I provide the pipe M, leading from the main reservoir to the brake-cylinder K² and adjacent thereto with a coiled pipe N, which has one end secured to the air-pipe E, and said coils surrounds the said pipe M, and surrounding that portion of the pipe and coil N is a casing O, which will retain the heated air around the pipe M, and thus more effectively prevent freezing.

The tender and each succeeding passenger-car are provided with an auxiliary reservoir B and C, supplied with compressed air in any desired manner from the main reservoir carried by the engine, and each car carries a brake-lever piston M', operated by the air from its reservoir B or C. Each of said reservoirs is provided with a coiled pipe F, inserted in precisely the same manner as the coil in the main reservoir, and is supplied with steam from the pipe or flexible connection between each car. Each car is also provided with a separate brake-lever piston M', and between said piston and the auxiliary reservoir is a steam-pipe P, coiled around the air-supply pipe Q, and which has one end secured to a pipe S, which is connected to the train-pipe T, and surrounding said coil is a casing R, which confines the heat and more thoroughly heats the air within the pipe, thus absolutely preventing the condensation from freezing within the brake-lever cylinder.

It is understood that instead of having the steam-pipe extending directly from the engine it might be connected to the car-heating system when steam is used, and my device, as readily seen, is duplicated throughout the entire train and can be readily attached to any car or cars, and I do not care to limit myself to any specific arrangement of the connecting-pipe, &c., as this forms no part of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A device of the character described, the combination with an air-brake system having a steam-pipe passing through the main reservoir. 70
2. A device of the character described, the combination with an air-brake system having a steam-pipe passing through the main and auxiliary reservoirs. 75
3. A device of the character described, the combination with an air-brake system having a coiled steam-pipe passing through the main reservoir. 80
4. A device of the character described, the combination with an air-brake system having a coiled steam-pipe passing through the main and auxiliary reservoirs. 85
5. A device of the character described, the combination with an air-brake system having a steam-pipe surrounding the air-brake pipe.
6. A device of the character described, the combination with an air-brake system having a steam-pipe surrounding a portion of the air-brake system and having a casing surrounding the steam-pipe. 90
7. A device of the character described, comprising an air-brake system having a steam-pipe passing through the main and auxiliary reservoirs and surrounding a portion of the pipe adjacent the brake-lever cylinder. 95
8. A device of the character described, comprising an air-brake system having a steam-pipe passing through the main and auxiliary reservoirs and coiled around a portion of the pipe adjacent the brake-lever cylinder and a casing surrounding the said coiled pipe. 100
9. A device of the character described, comprising an air-brake system having a coiled steam-pipe passing through the main and auxiliary reservoirs and a coiled pipe surrounding a portion of the air-brake pipe adjacent the brake-lever cylinder, and a casing surrounding the said coiled pipe. 105
10. A device of the character described comprising an air-brake system having a steam-pipe leading from the engine or steam-heating systems and coiled within the main and auxiliary reservoirs and coiled around a portion of the air-brake pipe adjacent the brake-lever cylinder and a casing surrounding said coiled pipe. 110
11. A device of the character described, comprising an air-brake system having the main and auxiliary reservoirs, coiled pipes passing through said reservoirs, cocks carried by one end of said coiled pipes on the outside of said reservoir and steam-pipes connected to the opposite ends of said coiled pipes. 115
12. A device of the character described, an air-brake system comprising the main and auxiliary reservoirs, coiled pipes passing through said reservoirs and detachably secured thereto and having at one end a cock and a steam-pipe attached to the opposite 120 125 130

end and extending to the heating system or the engine.

13. A device of the character described, an air-brake system comprising a main and auxiliary reservoirs, coiled pipes detachably inserted therein and having at one end on the outside of the reservoirs a steam-pipe attached to the opposite end of said coil and extending to the engine or steam-heating system, a pipe leading from said steam-pipe and coiled around the air-brake pipe, and a casing surrounding said coiled pipe and air-pipe.

14. A device of the character described, an air-brake system comprising a main and auxiliary reservoirs having openings in the ends, coiled pipes within said reservoirs and extending out through said openings, bushing screwed onto the ends of said coiled pipes into the openings in the reservoirs, a cock carried by one end of said pipes, steam-pipes attached to the opposite ends and extending to the car-heating system or engine, a pipe connected to said steam-pipe and coiled around the air-brake pipe adjacent the brake-lever cylinder, and a casing surrounding said coiled pipe.

15. A device of the character described, the combination with an air-brake system and means for heating the same.

16. A device of the character described, the combination with an air-brake system and means for heating the same by steam.

17. A device of the character described, the combination with an air-brake system, and means for heating the main reservoir.

18. A device of the character described, the

combination with an air-brake system, and means for heating the main and auxiliary reservoirs.

19. A device of the character described, comprising an air-brake system and a heating-pipe passing through the reservoirs.

20. A device of the character described, comprising an air-brake system and a heating-pipe surrounding the air-brake pipe.

21. A device of the character described, comprising an air system and a heating-pipe passing through the reservoirs and surrounding the air-brake pipe.

22. A device of the character described, comprising an air-brake system and means for heating the air-brake pipe.

23. A device of the character described, comprising an air-brake system, and means for heating the reservoirs and the air-brake pipe.

24. A device of the character described, comprising an air-brake system for heating the main and auxiliary reservoirs and means for heating the air-brake pipe.

25. A device of the character described, comprising an air-brake system, a heating-pipe passing through the main and auxiliary reservoirs and a heating-pipe adjacent the air-brake pipe.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. GEARY.

Witnesses:

HERMAN H. NORTH,
S. E. VANTINE.