F. H. DUKESMITH.

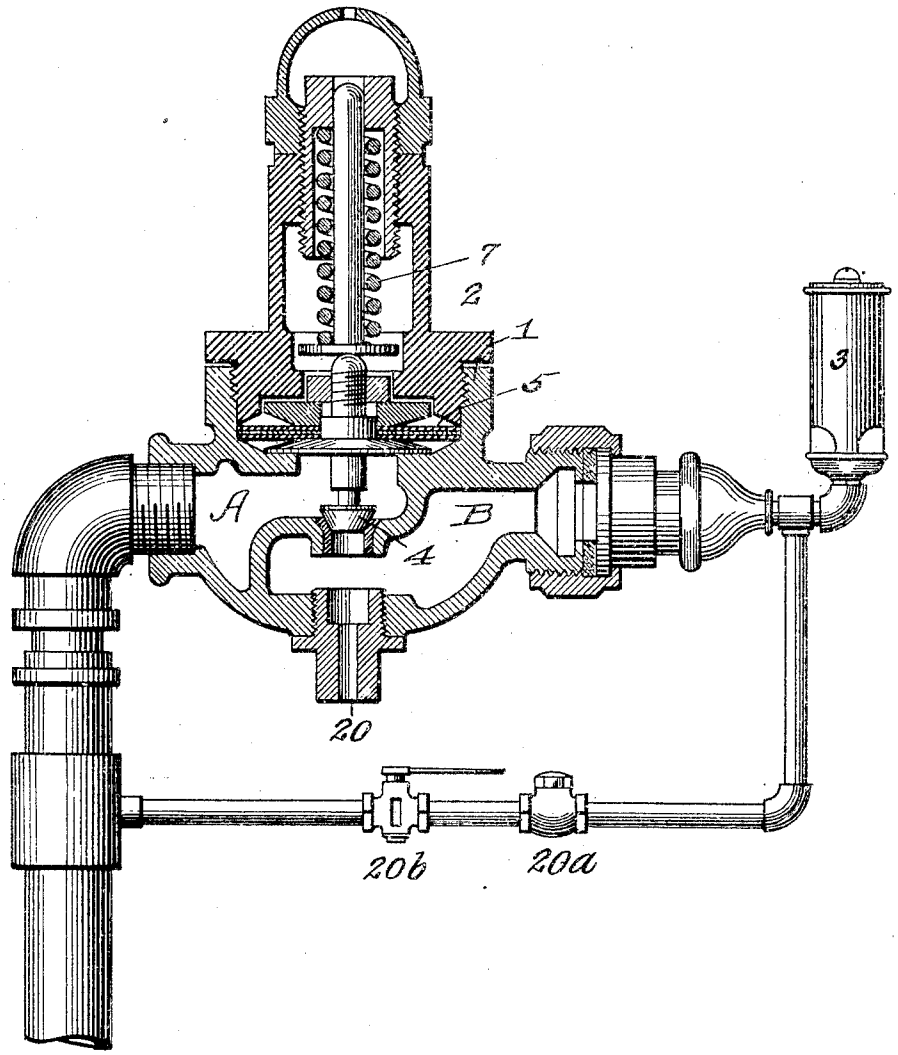
AIR BRAKE TESTING SYSTEM.

APPLICATION FILED MAY 13, 1909.

959,209. Patented May 24, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

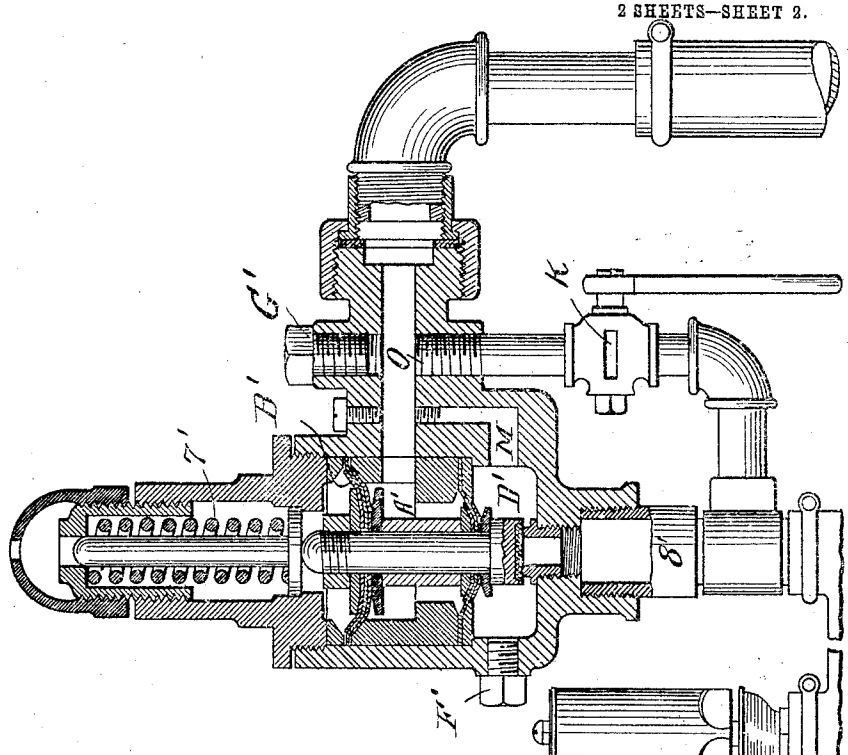
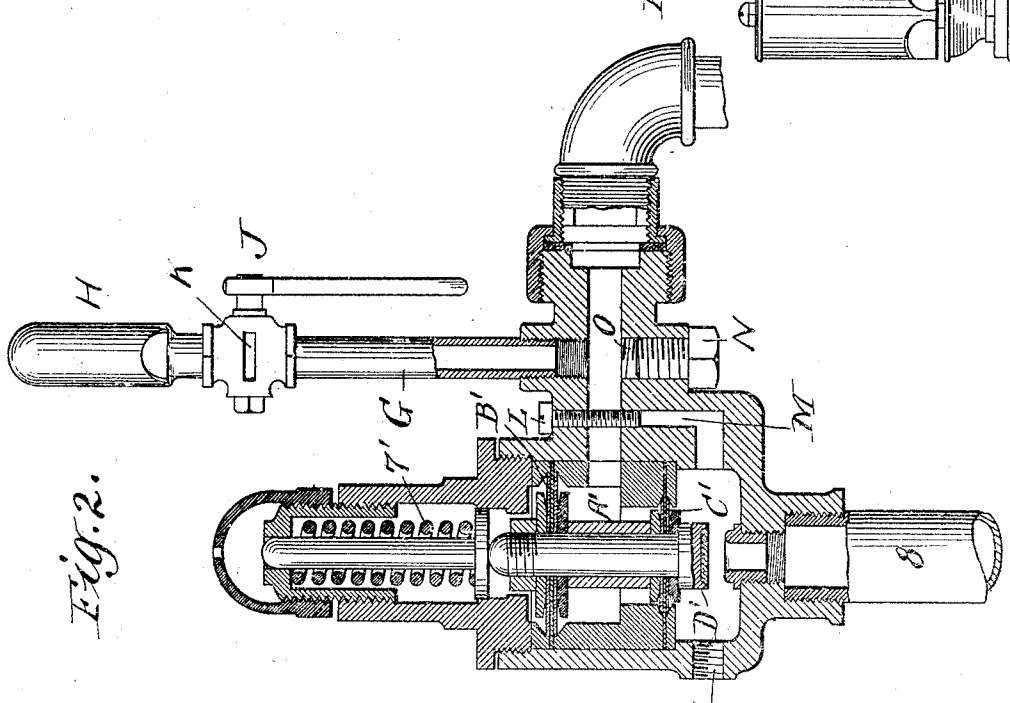


Fig. 2.



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AIR-BRAKE-TESTING SYSTEM.

959,209. Specification of Letters Patent. **Patented May 24, 1910.**

Application filed May 13, 1909. Serial No. 495,615.

To all whom it may concern:

Be it known that I, FRANK H. DUKESMITH, a citizen of the United States, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented new and useful Improvements in Air-Brake-Testing Systems, of which the following is a specification.

The invention relates to air brake testing mechanism, and one object thereof is to provide a device which may be used either with freight or passenger air brake signaling and testing mechanism.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings Figure 1 is a sectional view of one form of the air brake testing and signaling apparatus adapted for freight service. Figs. 2 and 3 are sectional views of an apparatus adapted for either passenger or freight service by varying the passages and ports thereof, and supplying certain attached devices in the one case and removing them in the other, according to the particular service to which the apparatus is to be applied.

Certain of the features of this invention are not claimed in this application as they are described and claimed in applicant's copending application, Serial Number 506,759, filed July 9th, 1909.

Referring to Fig. 1, A is a chamber connected with the train pipe and having also a chamber B with a valve 4 interposed between the said chambers. The chamber B is in communication with a whistle 3. The valve 4, in the casing A, is controlled by a diaphragm 5 and by a spring 7, the latter being designed to seat the valve and the diaphragm being intended to receive the pressure from the train pipe when this pressure is raised above the normal, so that the valve 4, under these circumstances, will be opened and the pressure from the train pipe will pass through the chamber B to the whistle 3, causing the same to be sounded. The sounding of the whistle serves to show that the system is in working order. The pressure in the train pipe is now reduced to normal, and then the spring 7 will force the diaphragm 5 downwardly to seat the valve 4, the air which remains in the chamber B, and the connection between this chamber and the whistle, escaping through the small port 20 and the whistle 3. The diaphragm 5 comprises rubber material, or the like, securely held in place by screwing down the cover portion 2 of the main casing or chamber into connection with the annular flange 1 of said casing.

Besides assisting in allowing the pressure to escape, as above described, the port 20 in connection with the whistle 3 also serves the purpose of automatically reducing any excess pressure that may be accumulated in the brake pipe above the tension of regulating spring 7. This function is very important, as it avoids the danger of accidentally over charging the brake pipe, which would cause the brakes in the train to apply (on account of train pipe leaks) and thereby either stall the train or pull the train in two.

The apparatus thus far described is intended to be manipulated by the engineer from the cab. In order that the signal may be operated by a brakeman at the rear of the train, a by-pass is provided extending between the train pipe and the whistle 3. A three way valve 20^b is interposed in the by-pass by means of which when the valve is moved into one of its alternate positions the whistle will be sounded and when it is moved into the other of its alternate positions the air from the brake pipe will be exhausted, thereby applying the brakes. The check valve 20^a prevents the pressure from flowing back out of the cut out cock 20^b when the device is operated by the engineer.

In Fig. 2 I show a form of apparatus for use in passenger service, in which the train pipe is connected with a chamber A′. In this chamber there is a valve D′, the stem of which has connected thereto diaphragms B′ and C′, the former of which is of greater area. The valve stem is also pressed upon by a spring plunger 7′. An exhaust port is shown at F leading from the casing, and a whistle signal pipe 8 also leads from the casing. When the pressure in the train pipe increases, the diaphragm B′ is raised, the valve D′ is lifted, and the whistle signal pressure escapes through the port F. A pipe G is also shown in this figure leading to a whistle H controlled by a valve J having an opening K. In one position of the valve, the whistle H is sounded, and in an-

other position the brake-pipe pressure is exhausted in order to set the brakes. A by-pass passage M extends through the wall of the casing from the train pipe port to the chamber in which the valve D′ is located, but as this by-pass is not employed for operating the whistle signal when the apparatus is used in passenger service, the port is shown as being closed by a screw plug L. A port is also shown at O leading from the train pipe port, but as this is not used when the apparatus is employed in passenger service, it is shown as being closed by a screw plug N.

In Fig. 3 an apparatus is shown similar to that in Fig. 2 with respect to the arrangement of the train pipe, the valve D′, the diaphragms, and the various ports and passages formed in the main casing, but as this form of the apparatus is employed in freight service, some of the ports which are shown as being closed in Fig. 2 are open in this figure, and the reverse is true, namely: that some of the ports which are open in Fig. 2 are shown as being closed in this figure. By the construction of the main casing with its valve, diaphragm, cover and the spring for seating the valve constructed as shown in Figs. 2 and 3, it will be observed that the one form of main casing, with its attached parts just mentioned, may be used for either freight or passenger service by closing certain of the ports in the one case, and leaving them open for connection with attached devices, where necessary, in the other case. In this Fig. 3 the train pipe connects with the chamber A′ and the pressure raises the diaphragm B′, thus raising the valve D′ from its seat, but in this form of the device adapted for freight service, no exhaust from a whistle pipe is employed, but the pressure from the train pipe is allowed to pass directly to the whistle through the by-pass passage M and the pipe 8′. In this form of the apparatus a by-pass pipe is used from the train pipe to the pipe 8′ leading to the whistle. This may also be used for the emergency application of the brakes, the air being exhausted through the opening K. In this form also the discharge port F, which is open in Fig. 2, is closed by a plug F′, as in this form of Fig. 3 the whistle is not operated through an exhaust whistle connection but by direct pressure. The by-pass M is left open, and the opening O of Fig. 2 is used for the purpose of connecting the by-pass. The opening for the hand operated whistle of Fig. 2 is closed in Fig. 3 by a plug G′. It will be seen from the above that one important feature of the invention is its adaptation to freight train service in which there is no whistle pipe running to the cab. A second feature of importance is the constructions by which the one casing may be employed for either passenger or freight service by simply altering a few connections and closing some of the ports.

I claim:—

1. In combination with a train, a train brake pipe extending between the engineer's cab and a distant point of the train, signaling means at said distant point, means responsive to an increase in pressure in the train brake pipe for controlling the operation of said signaling means, and manually actuated means for controlling the operation of said signaling means.

2. In combination with a train, a train pipe extending between the engineer's cab and a distant point of the train, signaling means at said distant point, means responsive to an increase in pressure in the train pipe for controlling the operation of said signaling means, and manually actuated means at said distant point for controlling the operation of said signaling means.

3. In combination in an air brake testing mechanism, the train pipe, a chamber connected therewith, a valve therein, a whistle signal controlled by the valve, and a by-pass between the train pipe and the whistle signal, substantially as described.

4. In combination in an air brake testing mechanism, the train pipe, a chamber connected therewith, a valve therein, a whistle signal controlled by the valve and a by-pass between the train pipe and the whistle signal, said by-pass having a valve by which the whistle may be sounded or the pressure in the train pipe reduced to set the brakes, substantially as described.

5. In apparatus of the class described, a chamber connected with the train pipe, a whistle signal, a valve and diaphragm in the chamber for controlling the whistle signal from the train pipe pressure, a by-pass passage which may be opened or closed according to whether the apparatus is to be used on a freight or passenger train, a connection to receive a whistle exhaust pipe or whistle pressure pipe having also a connection for a hand controlled by-pass which also may be closed, an escape port for the pressure in the whistle signal pipe, which may be closed when used on a freight signal system and having finally a connection for a hand controlled whistle which may be closed.

6. In combination in a testing apparatus for air brake systems of freight trains, a chamber connected with the train pipe having a valve and a diaphragm therein, a whistle connected with the said chamber, a by-pass from the train pipe to the whistle, and a hand operated valve therein.

7. In combination in an air brake system, a chamber connected with the train pipe, a whistle connection, a valve controlling the said connection, a pair of diaphragms in the chamber of unequal area and connected with

the valve for operating the same, and a spring for seating the valve, substantially as described.

8. In combination with a train, a train pipe extending between the engineer's cab and a distant point of the train and adapted to convey a fluid from the cab to the distant point, a fluid operated signaling device associated with said pipe and adapted to be operated by the fluid flowing therefrom, a normally closed valve interposed between said pipe and said signaling device, and means responsive to an increase in pressure in the train pipe for opening said valve, whereby said signaling device will be operated.

9. In combination with a train, a train pipe extending between the engineer's cab and a distant point of the train and adapted to convey a fluid from the cab to the distant point, signaling means at said distant point adapted to be operated by the fluid flowing through said train pipe, and means responsive to an increase in pressure in the train pipe for controlling the operation of said signaling means.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK H. DUKESMITH.

Witnesses:
VANCE S. MANSON,
FLORA M. JOHNSTON.