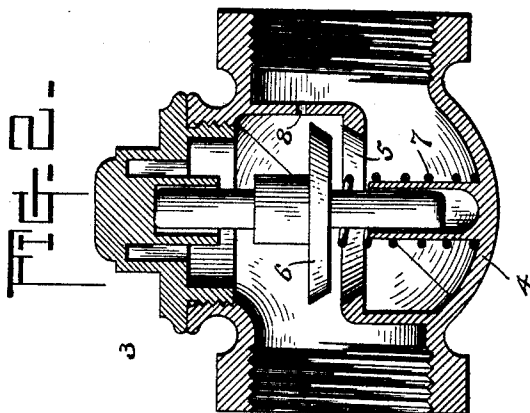
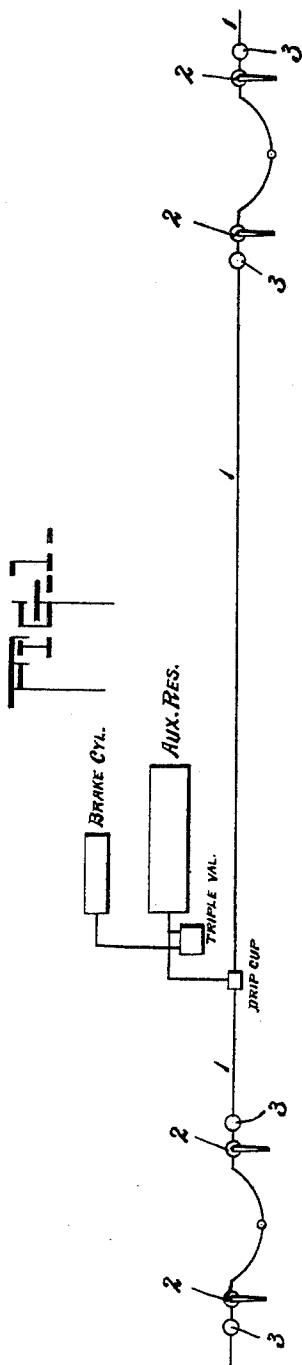


(No Model.)

O. B. MOSHER.
FLUID PRESSURE BRAKE MECHANISM.

No. 586,561

Patented July 20, 1897.



Witnesses

[Handwritten signatures of witnesses]

By *his* Attorneys,

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FLUID-PRESSURE BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 586,561, dated July 20, 1897.

Application filed July 8, 1896. Serial No. 598,452. (No model.)

To all whom it may concern:

Be it known that I, ORIN B. MOSHER, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have invented a new and useful Fluid-Pressure Brake Mechanism, of which the following is a specification.

My invention relates to fluid-pressure brake mechanism, and particularly to a safety-valve for use in connection therewith to guard against accidents resulting from the dividing of a train, the separation of a hose-coupling, or the bursting of a hose.

My invention relates particularly to that class of fluid-pressure brake mechanisms wherein the application of the brakes is accomplished by the reduction of pressure in the train-pipe and wherein the reduction due to the dividing of a train, the disconnection of the members of a coupling, or the bursting of a hose causes the immediate setting of the brakes at the risk of causing the rear portion of the train to crowd the front portion, especially when the break occurs near the forward end of the train, and hence first applies the brakes at that point, and the object in view is to provide means for maintaining a continuous train-pipe and for "bleeding" the same slowly after disconnection or breakage in order to allow the brakes to be set gradually upon the disconnected portion of the train, or that portion which is in rear of the break, and thereby avoid crowding by allowing the front portion of the train or that portion in front of the break to maintain its speed by preventing the break from affecting the brakes upon said front portion.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 represents a diagram of a portion of a fluid-pressure brake mechanism provided with safety-valves constructed and arranged in accordance with my invention. Fig. 2 is a detail sectional view of the safety-valve.

Similar numerals of reference indicate corresponding parts in both the figures of the drawings.

1 designates a train-pipe provided with the usual stop-cocks 2, which are arranged at the ends of each car, and 3 represents the safety-valve embodying my invention, one of which is arranged contiguous to each stop-cock. The improved valve consists of a casing 4, having a valve-seat 5 and an inwardly-opening valve 6, which is normally held unseated by a spring 7, which I have found in practice should be made of such a tension approximately as to resist pressure of forty-five pounds, whereby in operation the application of pressure to the train-pipe by the engineer will not seat the valve against the tension of said spring. By "inwardly opening" is meant a valve which is adapted to be seated against the tension of its actuating-spring by pressure in the portion of the train-pipe which is carried by each car, whereby a division or breakage of the hose or coupling between cars and a consequent reduction of pressure at that point or outside of or beyond the safety-valves upon the contiguous ends of connected cars will cause the valves upon each side of the break to be seated by the pressure in the portions of the train-pipe upon each side of the break, and thus prevent the reduction of pressure on the cars which respectively carry said valves and hence will prevent the reduction of pressure through the train.

Each valve is further provided with a relief or "bleed" perforation or opening 8, which is in communication with the portion of the train-pipe inside of the valve or between the valves carried by each car, and the object of such perforation or opening is to allow a gradual reduction of pressure in said portion of train-pipe carried by the car, and thus allow a gradual setting of the brakes and a consequent gradual reduction of speed in that portion of the train in rear of the break or point of reduction. The reduction of pressure in the portions of the train-pipe carried by the cars in front of the break is maintained at such a tension as to prevent the setting of the brakes by the operation of the pump carried by the engine, for the reason that the operation of the pump is such as to supply pressure as fast as or faster than it is allowed to leak through the relief-vent in the rear-

most valve carried by the front portion of the train.

Hence when a train divides or any accident occurs which results in breaking the continuity of a train-pipe or other continuous fluid-pressure conductor the safety-valves contiguous to and upon opposite sides of the break are immediately seated by the sudden reduction of pressure outside thereof, and while the leakage through the relief-valve at the front end of the rear or disconnected portion of the train allows the brakes upon such rear or disconnected portion to be gradually set, thereby causing the gradual reduction of speed in such rear portion, the setting of the brakes upon the front portion of the train or that portion in advance of the break is prevented by the supply of fluid-pressure being in excess of the leakage through the vent in the rearmost valve of said front portion of the train.

From the above description it will be understood that the valve-opening when the valve is unseated is larger than the exhaust-opening in the engineer's valve, whereby the valves cannot be seated by the reduction of pressure in the train-pipe due to the opening of the engineer's valve. A more rapid exhaust than can be obtained by means of said valve must be provided, as by the breakage or disconnection of the train-pipe, in order to cause the seating of the safety-valves or those safety-valves which are upon opposite sides of the break. Furthermore, even when a safety-valve is closed the perforation in the valve-casing establishes communication and thus provides a continuous train-pipe, whereby when two cars are connected or coupled, thus bringing two closed valves (respectively into the train-pipe, no time is lost in equalizing pressure throughout the train-pipe as connected. The openings in the valve-casings immediately establish communication and enable the engineer to manipulate the brakes as though the valves were open.

A further advantage of the construction described herein resides in the fact that the casing of the safety-valve is reversible and is adapted to be arranged at any point throughout a train-pipe, with the valve-opening in either direction, as may required, according to the position in the train-pipe which said valve occupies with relation to the point of connection of the auxiliary reservoir with the train-pipe. Obviously these safety-valves are disposed upon opposite sides of this point of connection of the auxiliary reservoir with the train-pipe, and I preferably arrange the same contiguous to the ends of a portion of the train-pipe carried by a car. The first advantage derived from thus disposing the safety-valves is that it enables them to be reached with facility, and the second advantage is that the casing may be arranged between the main portion of the train-pipe and a short joint or section which is usually lo-

cated at each end of the main portion of the train-pipe carried by a car, in order to enable the couplings at the extremities of a car to be replaced when damaged or worn without replacing the entire train-pipe. In other words, the portion of the train-pipe which is carried by a car is usually jointed contiguous to its extremities, and it is in this joint that the reversible casing of the improved safety-valve is disposed, whereby it may be readily applied to any car equipped with a fluid-pressure brake mechanism now in use.

A further advantage of the construction herein described resides in the fact that the opening by which a continuous train-pipe is established is formed in the casing instead of in the valve, whereby the area of the valve is not reduced, and by disposing the valve in a plane parallel with the axis of the valve-casing, and hence of the train-pipe, the opening which is formed in the web or partition of the casing is in line with the axis of the train-pipe, whereby air-pressure in passing through the opening does not meet with any appreciable obstruction.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A safety device for fluid-pressure brake mechanisms having a reversible casing adapted to form a union between contiguous extremities of train-pipe sections, and to be arranged in reversed positions upon opposite sides of the point of connection of the auxiliary reservoir with the train-pipe, an inwardly-opening valve arranged in the casing and yieldingly held unseated, and a permanently-open relief-vent maintaining a continuous communication throughout the train-pipe and adapted, after the valve is seated at the front end of a detached train-section, to bleed the contents of the portion of a train-pipe carried by the detached train-section, and apply the brakes gradually, substantially as specified.

2. A fluid-pressure brake mechanism having a train-pipe section carried by each car, in combination with reversible safety-valve casings in communication with the train-pipe section upon opposite sides of the point of connection of said train-pipe with the auxiliary reservoir of the brake mechanism, inwardly-opening valves seated in said casings, the casings being provided with relief-vents whereby a continuous communication is established between the portions of a train-pipe upon opposite sides of each valve-casing, and yielding means for normally holding the valves unseated, substantially as specified.

3. A safety device for fluid-pressure brake mechanisms, the same comprising a reversible casing provided with a fixed valve-seat and a contiguous relief-vent, and a valve adapted

to fit said seat and yieldingly held unseated, said relief-vent being permanently open and the opening through the valve-seat, when the valve is unseated, being greater in area than the exhaust-opening of the engineer's valve, substantially as specified.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in the presence of two witnesses.

ORIN B. MOSHER.

Witnesses:

ROBERT T. KELLY,
LANSING J. RAYNOR.