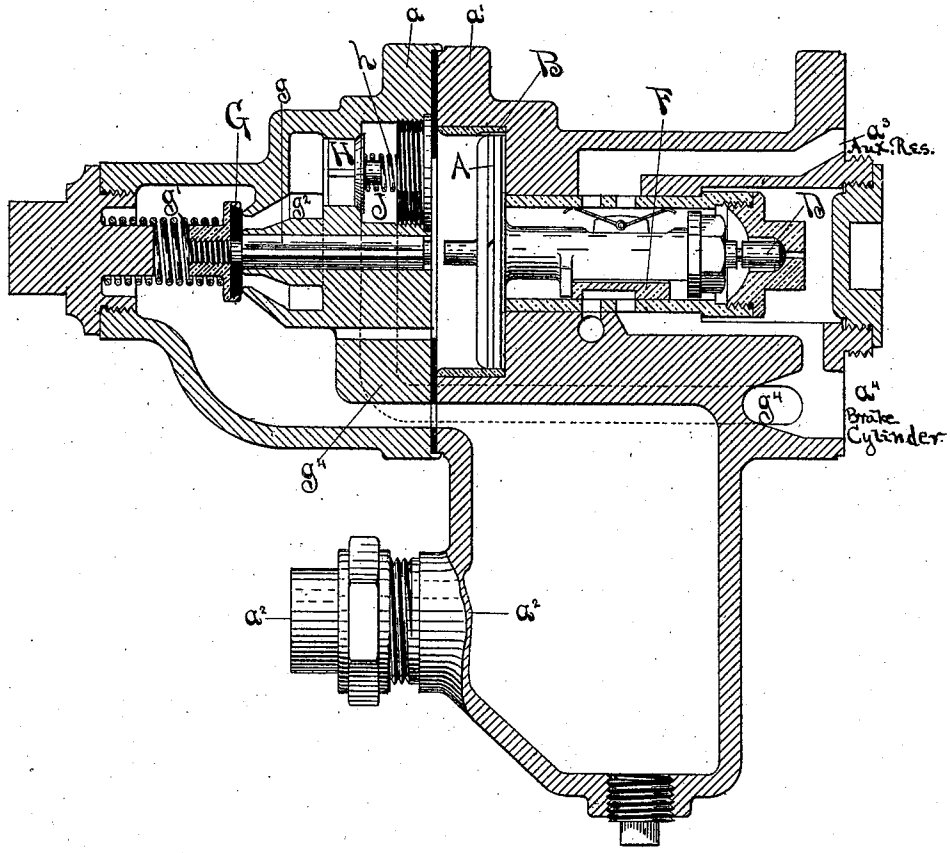
(No Model.)

A. P. MASSEY.

TRIPLE VALVE FOR BRAKE SYSTEMS.

No. 503,095. Patented Aug. 8, 1893.



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TRIPLE VALVE FOR BRAKE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 503,095, dated August 8, 1893.

Application filed April 29, 1892. Serial No. 431,123. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. MASSEY, a citizen of the United States, and a resident of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Triple Valves for Brake Systems, of which the following is a specification.

The accompanying drawing which is a sectional elevation showing my invention, is made part of this specification.

My invention is the same in principle as other quick action triple valves, that is it comprises a charging port, an application valve and a release valve, constituting the triple valve proper, and in addition an emergency valve; the triple valve being used for service stops, and for graduation, while the emergency valve is opened only on occasion; as will be clear to all skilled in the art. But while the combination of a triple valve and an emergency valve opened by the excess stroke of the triple valve piston is not new with me (see Patent No. 360,070, referred to below), yet my construction is an improvement over any other form of quick action triple valve known to me; and my invention consists in this improved construction, the main feature being that the triple valve chamber and the emergency valve chamber are separated by a chambered partition, through which the stem of the emergency valve passes, the seat for the emergency valve being formed on one face of that partition, so that the chambered partition is between the emergency valve and the piston of the triple valve.

In the drawing, a, is the triple valve casing and a' the emergency valve casing; and these two casings are connected together air tight. The triple valve piston A, charging port B, application valve D, and release valve F need no description, and may be of any suitable construction, as will be clear to all skilled in the art. The triple valve chamber is separated from the emergency valve chamber by the partition at the mouth of casing a'. This partition has a hole through it for the stem g of emergency valve G, and the seat of valve G is formed on the outer face of this partition. The emergency valve G is held to its seat partly by a spring g', but mainly by train-pipe pressure in the emergency valve chamber, which is always open to the train pipe, as is also the triple valve chamber on the left of piston A.

I have shown the train pipe as connected at a^2 with casing a, and a passage leading from the lower part of casing a, into the emergency valve chamber, formed by casing a', and a hole through the partition at the mouth of casing a'; which leads from the emergency valve chamber to the left of piston A; but it will be obvious that these are mere details, the essential matter being that air pressure from the train pipe shall enter both chambers, for when the brakes are off, the pressure in the train pipe should be the same as the pressure in both chambers and in the auxiliary reservoir, which connects by passage a^3 with the triple valve chamber.

Chamber g^2 formed in the partition at the mouth of casing a' is closed on the train pipe side by emergency valve G; and this chamber communicates through check valve H and by port J with passage a^4 which leads to the brake cylinder.

The operation of the triple valve for service stops and graduation will be plain without description, except that on a moderate reduction of train pipe pressure the excess of pressure on the right of piston A, will not be sufficient to move it after it is arrested by contact with the stem g of emergency valve G; for train-pipe pressure is then acting on valve G to hold it to its seat. It is only therefore, on a sharp reduction of pressure in the train pipe that the auxiliary reservoir pressure on the right of piston A so far exceeds the train pipe pressure on the left of piston A, as to enable that excess pressure to move piston A still farther to the left after it comes in contact with stem g; piston A in that case carrying stem g and valve G with it; and throwing valve G wide open; for the moment valve G is moved away from its seat a small fraction of an inch, the train pipe pressure tending to hold it on its seat is made ineffective; and hence the valve G in practice jumps, as it were, away from its seat, as soon as piston A comes in contact with stem g, provided piston A is moved to the left by a sharp reduction of train pipe pressure; for spring g' need never be made stout enough to

afford any appreciable resistance; but only sufficient to make it sure that valve G will be seated when piston A is moved to the right, as it is when the brakes are pumped off. When valve G is thus thrown suddenly off its seat the air flows past it through chamber g^2 raising valve H, and passing by port J and passage a^4 into the brake cylinder; thereby applying the brakes much more suddenly and forcibly than can be done by application valve D, and also reducing the pressure in the train pipe, so that the brakes are sooner applied in the next car. While all this, is in some degree, true of all quick action triple valves, yet my improved valve is more simple in construction and more rapid in action than any other known to me. Moreover, I am the first to arrest the motion of piston A by train pipe pressure acting to hold valve G on its seat and this is highly important, for it enables me to so proportion valve G and piston A that there is no danger of piston A moving valve G off its seat on the usual moderate reduction of train pipe pressure to operate the triple valve, and yet make sure of the extremely quick action of valve G on a sharp reduction of pressure in the train pipe.

The check valve H prevents any back flow of air through port J.

I am aware of Patent No. 360,070, dated March 29, 1887, and disclaim all that is shown in it; for in my invention the emergency valve itself serves as a stop to the triple valve piston, instead of relying upon the friction of a slide valve and the resistance of a stout spring as in Patent No. 360,070; and the triple valve piston and emergency valve are separated by a chambered partition; these being important practical differences in mode of operation and construction.

What I claim as my invention is—

In a quick action triple valve the combination of a chambered partition between the triple valve piston and the emergency valve; the emergency valve held to its seat on the train pipe side of that partition, by train pipe pressure; the stem of the emergency valve extending through the partition, and in the path of the triple valve piston; the triple valve piston; and ports connecting the chamber in the partition on one side with the train pipe, and on the other side with the brake cylinder; all the parts being arranged to operate substantially as and for the purpose specified.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 25th day of April, 1892.

ALBERT P. MASSEY.

Witnesses:

ROBERT C. AUGUR,

MICHAEL J. MORKIN.