

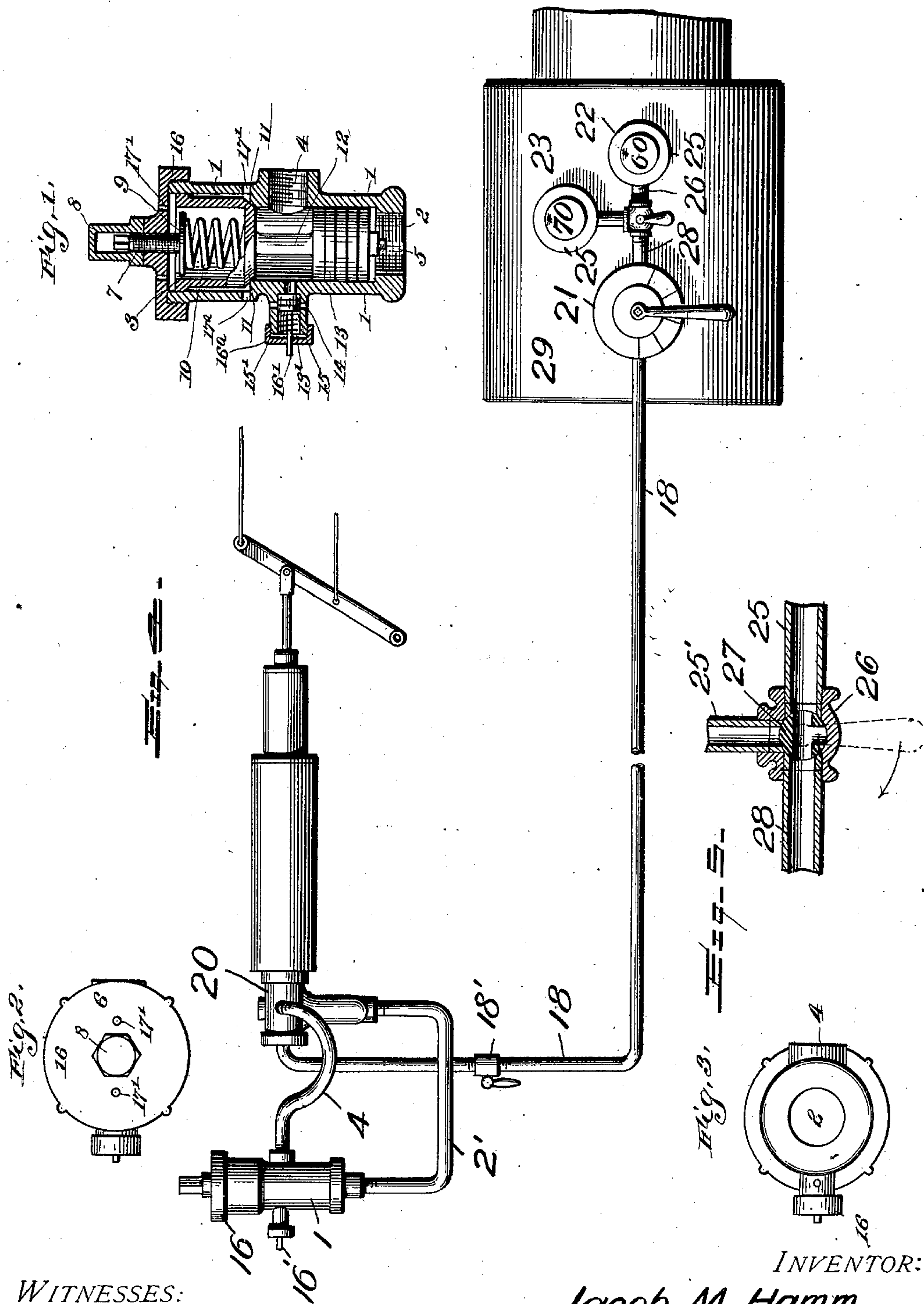
No. 674,335.

Patented May 14, 1901.

J. M. HAMM.
AUTOMATIC RETAINING VALVE.

(Application filed Mar. 9, 1899.)

(No Model.)



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JACOB M. HAMM, OF PITTSBURG, PENNSYLVANIA.

AUTOMATIC RETAINING-VALVE.

SPECIFICATION forming part of Letters Patent No. 674,335, dated May 14, 1901.

Application filed March 9, 1899. Serial No. 708,321. (No model.)

To all whom it may concern:

Be it known that I, JACOB M. HAMM, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Retaining-Valves; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to an improved air-brake appliance, and embodies the employment of a retaining-valve of peculiar construction, which is connected to the exhaust of the triple valve and to the train-line, by the aid of which the engineer may set the brakes and maintain a constant even pressure within the brake-cylinders while descending long grades.

In the practical application of air-brakes as applied to freight-cars it has been found necessary to provide each car with what is known in the art as a "retaining" valve or cock, which when closed will retain a constant pressure within the brake-cylinder without leakage. This retaining valve or cock requires the service of a brakeman both to close and open the same and is used when the train is passing down a long steep grade, the said valve or cock being in no wise under the control of the engineer. When the train is thus moving down a grade and a constant application of the brakes is required, the brakemen set or operate the retaining valves or cocks upon the several cars, so as to retain the constant pressure, and when it is necessary to release the brakes all of such retaining valves or cocks must be opened. This opening and closing of these valves is a constant source of hard and dangerous labor to the trainmen, as it necessitates the climbing of the men over box, flat, and other cars to open or close the various valves; and the main object of my invention is therefore to construct a device or apparatus by means of which the engineer may at will operate the said retaining-valves either to open or close the same when the brakes are applied or released, thus obviating the necessity of the dangerous and difficult work of the trainmen and placing the control of the entire train

under the hands of the engineer under all circumstances.

In describing the invention in detail reference will be had to the accompanying drawings, forming a part of this specification, and wherein like numerals will be employed to designate like parts through the several views, in which—

Figure 1 is a vertical sectional view of my improved apparatus adapted to be employed in lieu of the retaining-valve, such as is now generally employed on all freight-cars. Fig. 2 is a top plan view of the same. Fig. 3 is an underneath plan view. Fig. 4 is a diagrammatical view showing the device coupled up to the controlling-valve, the train-line, and triple valve. Fig. 5 is a horizontal sectional view of the two-way cock of the controlling-valve.

In the accompanying drawings, 1 indicates the valve-casing, having at one end a threaded opening 2, by means of which the same may be connected by a pipe 2' to the train-pipe chamber in the triple valve 20, with which valve the train-line 18 also connects. This valve-casing has a similar opening 4 in one side for connection with the exhaust-pipe 4' of the triple valve 20. Arranged within this casing 1 is a piston 13, which has a vertical movement and is connected to a valve 11 by a stem 12. The piston 13 and valve 11 are arranged within the casing intermediate on the threaded opening 4 in a manner that one will balance the other. The valve 11 is of a particular construction, consisting of an annular cylindrical integral body capable of moving within the casing 1 and inclosing a spiral spring 10, used to keep the valve tightly seated. This spring 10 is of a strength to overcome any given pressure used in the train-pipe 18 and can be regulated as to tension by means of a plate 9 and a screw 7, together with a cap 8, covering said screw and acting as a lock to set or retain the screw in any position, as is obvious. A threaded cap 16 is used to close the open end of the casing 1 and to confine the spring 10 and the other parts in position. The casing 1 has formed integral with one side thereof an outwardly-extending collar 15', in which is arranged a valve 15. This valve is adapted to close the exhaust 14 through the collar 15'. The col-

lar 15' is closed at its outer end by a threaded cap 16^a, through which the stem 16' of the valve operates, said stem having the tension-spring 13' arranged thereon between the valve and the cap. The casing 1 is provided above the opening 4 and the exhaust-port with vent-openings 17' for a purpose as will be hereinafter described.

In order to permit the engineer to have control of the retaining-valves, I provide in the engine two governors or feed-valves 22 23, the former set for a pressure of, say, sixty pounds and the latter set for an increased pressure—say, for example, seventy pounds. The train-pipe 18 is connected to the engineer's valve 21, and this valve is connected by pipe 28 to a two-way valve-casing 26, the latter connected by a pipe 25 to the governor 22 and by a pipe 25' to the governor 23. A two-way valve or cock 27 is arranged in this casing and controls the passage of air from and to the two governors. These governors or feed-valves are connected to the air-reservoir 29 in the engine. I may provide the train-line 18 with a cock 18', by means of which the air may be cut out from each triple valve.

In practice the spring 10 is set for seventy pounds pressure, and in an application of the brakes when it is desired to hold the brakes for a certain period the cock 26 is opened, so as to pass the pressure from governor 22, set at sixty pounds, and this pressure utilized for the application of the brakes, the spring 10, having a tension of seventy pounds, serving to maintain the sixty pounds pressure and prevent any exhaust from the triple valve. When it is desired to release the brakes, the engineer operates the cock 27 so as to close the port to the governor 22 (sixty pounds) and open the port to the governor 23, (seventy pounds.) This pressure—i. e., seventy pounds—will overcome the tension of the spring 10, lift the valve 11 from its bed, and permit the exhaust to pass out through the vent-openings 17', formed in the casing 1, these vent-openings being normally closed by the valve.

The small release-valve on the side of the casing may be set so as to normally retain any pressure desired in the retaining-valve. Ordinarily a train-line pressure of seventy pounds is employed, this being the standard train-line pressure, when, therefore, in making a full application of the brakes but fifty pounds braking power is obtainable; but by the use of my device I start with the seventy pounds train-line pressure, then cut in the

sixty-pound train-line governor, still retaining the seventy pounds in the train-line, and make a full application, which will run the train-line pressure down to fifty pounds and give fifty pounds braking power. I then place the brake-handle in running position, so as to increase the train-line pressure to sixty pounds, and make another application, the sixty-pound governor preventing the pressure being increased above that point, and in order to release it becomes necessary to cut in the seventy-pound governor or place the handle of the engineer's valve on full release. This obviates the necessity of the engineer ever placing his brake-valve on lap. It will also be observed that a gradual release may be obtained by such device. For instance, when passing down a grade in which a dip occurs I cut in the seventy-pound governor after the train has passed the dip and becomes slower, so as to run the train-line pressure up to, say, sixty-five pounds, and the valve will release gradually until the train moves faster, when I cut in the sixty-pound feed and make a slight application to close the valve, there being thus no danger of running short of air, as is now sometimes the case.

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

1. In a device of the character described, the combination with the engineer's valve, and the two governors connected thereto, said governors being set at different pressures, of the triple valve, the train-line connected thereto and to the engineer's valve, and a retaining-valve connected to the triple valve and controlled through the engineer's valve, substantially as described.

2. In a device of the character described, the combination of the triple valve, the train-pipe, the retaining-valve connected to the triple valve, the engineer's valve connected to the train-pipe, and a pair of governors connected to the engineer's valve, one of said governors being set at greater pressure than the other, with means intermediate the governors and the engineer's valve whereby the retaining-valve may be controlled through the medium of the engineer's valve.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JACOB M. HAMM.

Witnesses:

JAS. J. MCAFEE,
JOHN REED.