

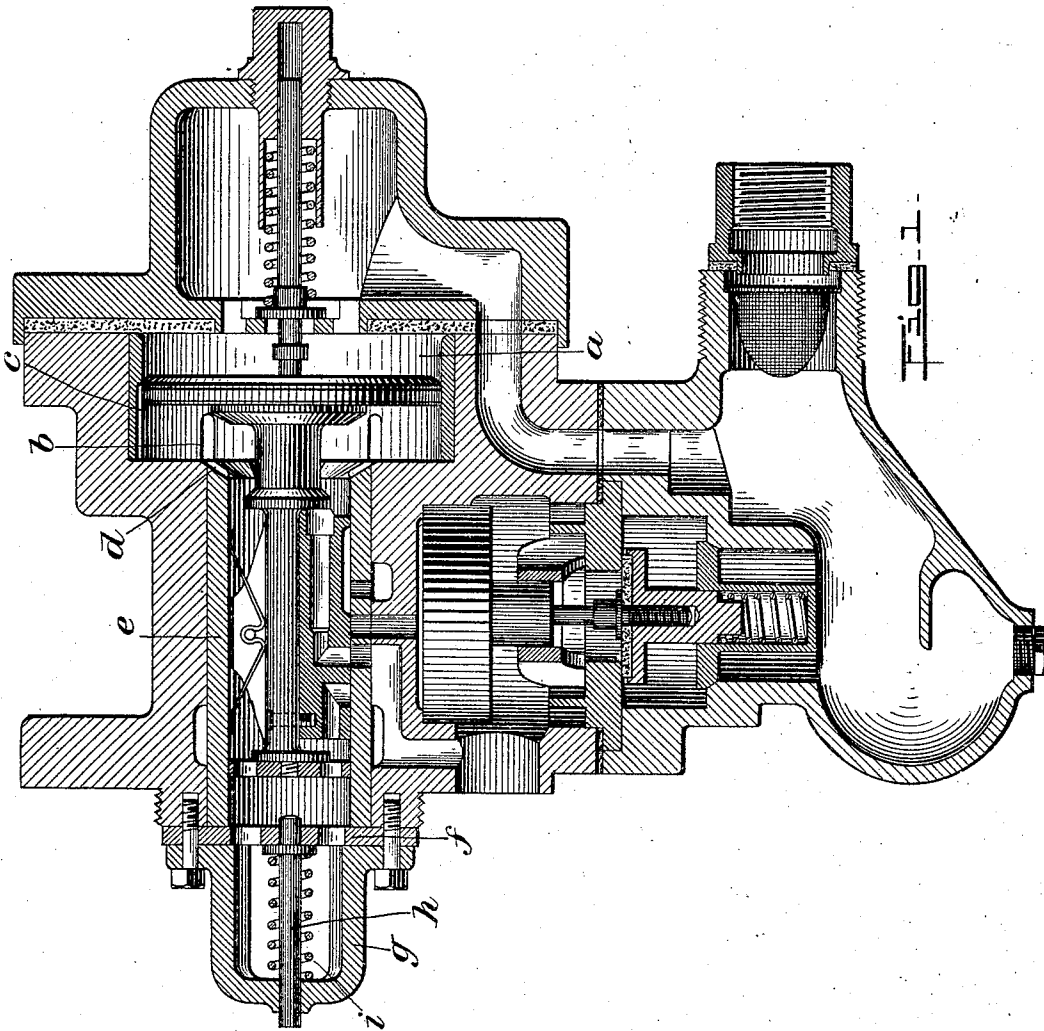
No. 787,695.

PATENTED APR. 18, 1905.

J. B. PURDY.  
TRIPLE VALVE.

APPLICATION FILED AUG. 9, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

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INVENTOR

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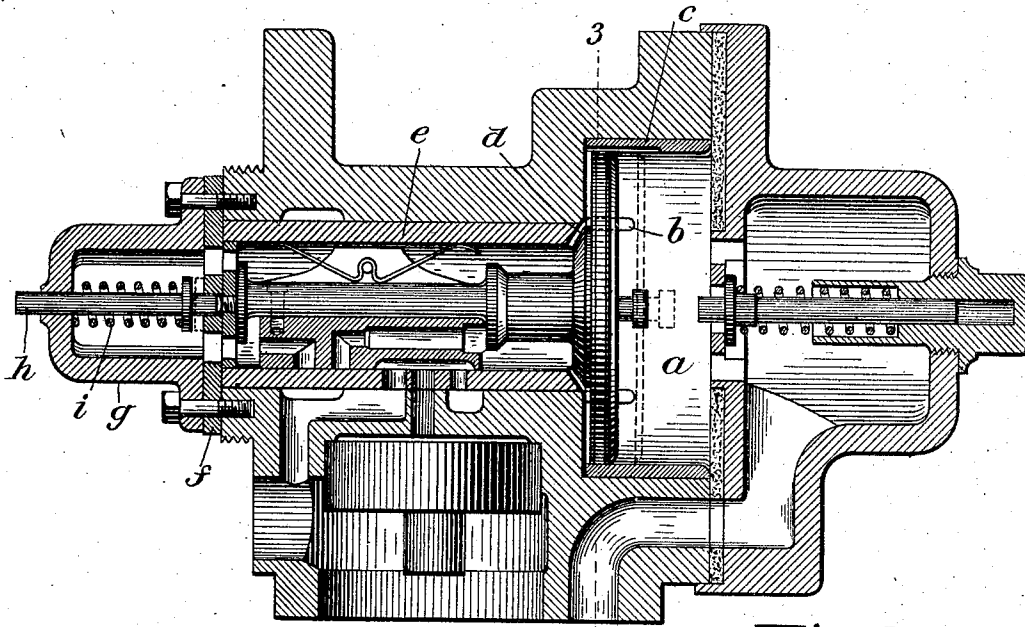


Fig. 1.

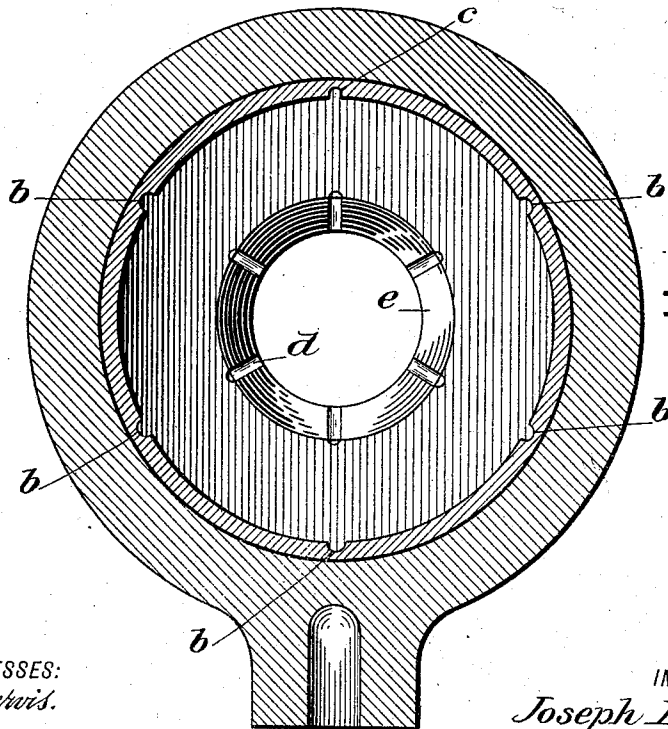


Fig. 2.

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# UNITED STATES PATENT OFFICE.

JOSEPH BROWNLOW PURDY, OF HILO, TERRITORY OF HAWAII.

## TRIPLE VALVE.

SPECIFICATION forming part of Letters Patent No. 787,695, dated April 18, 1905.

Application filed August 9, 1904. Serial No. 220,086.

*To all whom it may concern:*

Be it known that I, JOSEPH BROWNLOW PURDY, a citizen of the United States, and a resident of Hilo, Territory of Hawaii, have invented a new and Improved Triple Valve, of which the following is a full, clear, and exact description.

The invention relates to a triple valve for fluid-air-brake systems, by means of which the auxiliary reservoir may be recharged almost instantly with the restoration of the normal train-line pressure, thus allowing any number of brake applications to be made in rapid succession and without the delay which ordinarily takes place owing to the time required to recharge the auxiliary reservoir in the brake systems as now equipped. According to the form of the invention here shown I attain this result by providing the triple valve with one or more main recharging-grooves of such capacity that they will carry approximately the same volume of pressure as that carried in the train-line, so that the normal auxiliary pressure will be restored almost instantly with the restoration of the train-line pressure, and I provide a means for moving the triple slide and piston or the piston so as to cover this main groove or grooves upon the equalization of the train-line pressure in the auxiliary reservoir, the piston when in this position leaving uncovered but a relatively minute feed-groove, through which leakage from the auxiliary reservoir may be replenished, and the slide-valve being so arranged that when it is moved with the piston to cover the main feed groove or grooves the slide-valve will assume running and release position. With this arrangement, therefore, upon a reduction of the train-line pressure the brakes will be applied as usual, and upon the restoration of the train-line pressure the triple piston and slide will be moved over to, let it be assumed, slightly past running and release position, thus uncovering the main feed groove or grooves, and owing to the large capacity thereof the pressure in the auxiliary reservoir will be almost instantly restored. When the pressure in the auxiliary and train-line equalize, the triple slide and piston will be automatically moved out suf-

ficiently to cover the main feed groove or grooves, the slide then taking and retaining a strictly running and release position, and this being maintained until a second reduction of the train-line pressure. When the valve is in running and release position, the relatively small or secondary feed-groove will be open, so that any leak from the auxiliary will be replenished from the train-line.

The invention resides in certain features of structure and organization, which will be fully set forth hereinafter and pointed out in the claims.

Reference is had to the accompanying drawings, which form part of this specification and which illustrate, as an example, one form of my invention, and in which drawings like characters of reference indicate like parts, and in which—

Figure 1 is a sectional view of the triple valve, showing it in service-application position. Fig. 2 is a sectional view of the upper part of the triple valve, showing the slide and piston in recharging position and indicating by dotted lines the position which the piston assumes when in running and release position; and Fig. 3 is a section on the line 3 3 of Fig. 2.

The piston-cavity *a* of the triple valve is formed with a plurality of main feed-grooves *b* and with a single and relatively small secondary or leak feed-groove *c*. A number of feed-grooves *d* are formed in the outer end of the main-cavity bushing *e* of the valve to correspond with the grooves *b*. At the inner end of the valve a stop-plate *f* is fastened across the slide or main cavity of the valve, and at this point a cage *g* is also arranged, the parts *f* and *g* being open to permit the free passage of fluid to and from the auxiliary reservoir. Held in the cage *g* and stop *f* is a rod *h*, pressed inward in the position shown in Fig. 1 by a spring *i*. In other respects the structure of the valve is not modified by my invention.

Assuming the parts to be in the service-application position shown in Fig. 1, upon increasing the train-line pressure the piston will be thrown over to the position shown by the full lines in Fig. 2, thus uncovering all of the grooves *b* and *c*, and since these grooves are ca-

pable approximately of carrying into the auxiliary reservoir a volume equal to that passing through the train-line the auxiliary-reservoir pressure will be almost instantly restored.

5 As the triple piston and slide move over to the position shown in Fig. 2 the rod *h* will be thrown back from its normal position, and as the pressure of the train-line equalizes in the auxiliary reservoir and the main cavity of the  
10 triple valve the spring *i* will assert itself and impart a slight outward movement to the triple piston and slide, causing the former to take a position essentially corresponding with that indicated by the broken lines in Fig. 2.  
15 This will cover the main feed-grooves *b*, but will not cover the leak feed or secondary groove *c*, and consequently communication between the train-line and auxiliary is kept up sufficiently to supply leakage from the  
20 auxiliary, but not to such an extent as to interfere with the prompt outward movement of the piston upon a subsequent train-line reduction.

The precise proportionment of the ports in  
25 the triple valve is not important in the present invention, it being only sufficient to have such an arrangement as will insure a release of the brake-cylinder pressure when the triple slide and piston are moved over either to the  
30 position shown in full or dotted lines in Fig. 2 and will bring about service, emergency, or other forms of brake applications upon the outward movement of the piston and slide due to subsequent train-line reduction.

35 Various changes in the form, proportions, and minor details of my invention may be resorted to at will without departing from the spirit and scope thereof. Hence I consider myself entitled to all such variations as may  
40 lie within the terms of my claims.

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

1. A triple-valve device having two feed-grooves in the bushing of the cavity for the piston thereof, one being longer than the  
45 other, and also having correspondingly-located grooves in the adjacent end of the bushing for the valve-chamber.

2. A triple-valve device having two feed-grooves in the bushing of the cavity for the  
50 piston thereof, one being longer than the other, and also having correspondingly-located grooves in the adjacent end of the bushing for the valve-chamber, and means tending to move the piston outward past the shorter  
55 of said grooves.

3. A triple-valve device having a plurality of feed-grooves in the bushing of the cavity for the piston thereof, together with an additional groove of greater length, and also hav-  
60 ing a plurality of correspondingly-located grooves in the adjacent end of the bushing for the valve-chamber.

4. A triple-valve device having a plurality of feed-grooves in the bushing of the cavity  
65 for the piston thereof, together with an additional groove of greater length, and also having a plurality of correspondingly-located grooves in the adjacent end of the bushing for the valve-chamber, and means tending to move  
70 the piston outward past said first-named grooves.

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

JOSEPH BROWNLOW PURDY.

Witnesses:

W. H. LAMBERT,  
JOHN W. KELKER.