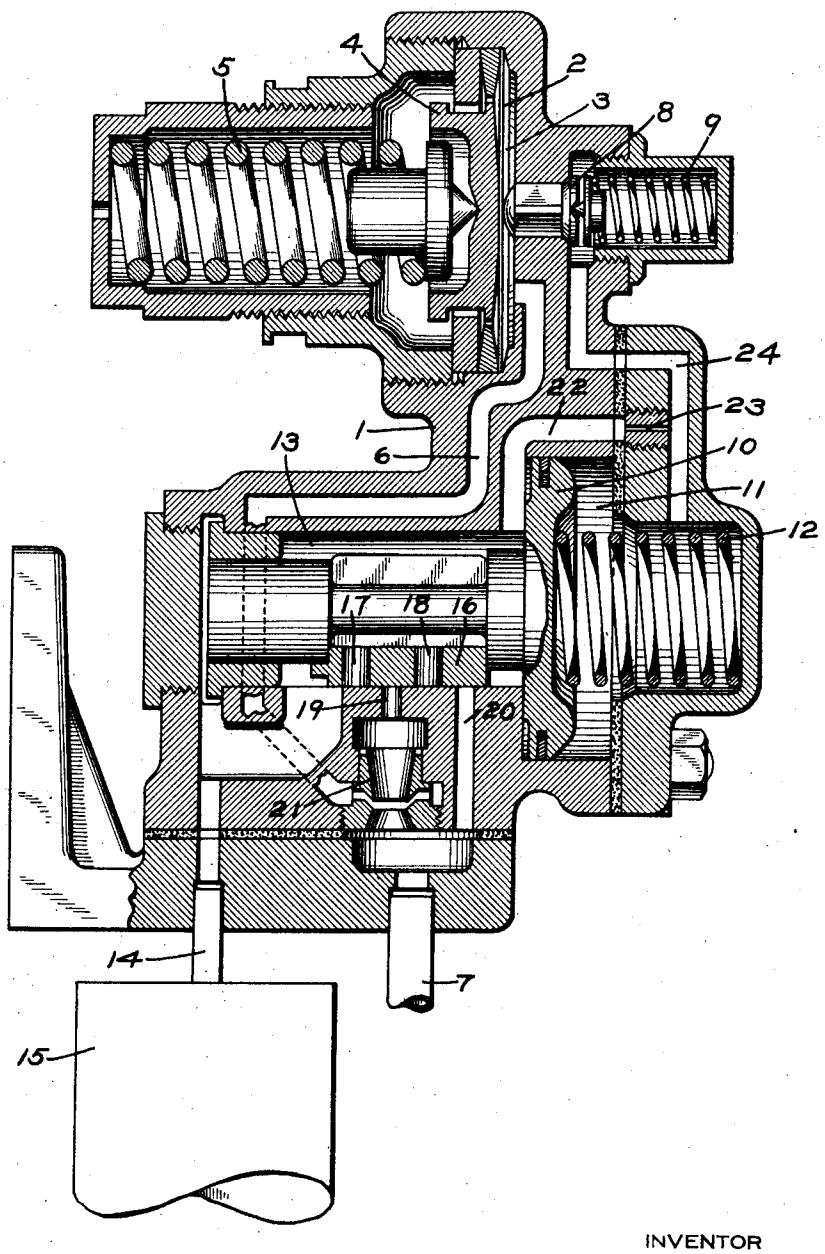
Oct. 29, 1929. W. E. DEAN 1,733,183

FEED VALVE DEVICE

Filed Nov. 13, 1925



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Patented Oct. 29, 1929 1,733,183

UNITED STATES PATENT OFFICE

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FEED-VALVE DEVICE

Application filed November 13, 1925. Serial No. 68,852.

This invention relates to fluid pressure regulating valve devices and more particularly to a feed valve device adapted to maintain the pressure in the brake pipe of a fluid pressure brake or other receptacle.

The ordinary standard feed valve comprises a supply portion having a piston operable by a reduction in fluid pressure to actuate a supply valve and a regulating portion which operates to reduce the fluid pressure acting on said actuating piston when the pressure in the brake pipe or other receptacle falls below a predetermined degree.

It has been proposed to provide means for accelerating the action of the regulating portion, such for example as the construction shown in my pending application, Serial No. 723,069 filed June 28, 1924. According to the above patent application, a Venturi tube is disposed in the path of flow from the supply valve of the feed valve device to the brake pipe or other receptacle, and the regulating portion is connected to said tube so that the suction action of the tube operates to accelerate the reduction in pressure on the regulating portion.

There is a tendency in feed valve devices of this construction, for the supply portion to remain in open position after the brake pipe or other receptacle, the pressure in which is to be maintained, has been charged to the predetermined degree for which the regulating portion has been set, and there cause an undesired overcharging of the brake pipe or receptacle.

The principal object of my invention is to provide improved means for controlling the action of a feed valve device of the above character so that the brake pipe or other receptacle will not be overcharged.

In the accompanying drawing, the single figure is a sectional view of a feed valve device embodying my invention.

As shown in the drawing, the feed valve device may comprise a casing 1 containing a regulating portion and a supply portion. The regulating portion may comprise a flexible diaphragm 2 contained in a chamber 3 and subject on one side through the medium of a follower plate 4 to the pressure of a coil spring 5, and on the opposite side to the pressure of fluid in chamber 3 which is connected by passage 6 to the brake pipe 7. The diaphragm 2 is adapted to operate a poppet valve 8 for venting fluid under pressure from the supply portion, said valve being normally held seated by a coil spring 9.

The supply portion may comprise a piston 10 contained in a piston chamber 11 and subject on one side to the pressure of fluid in piston chamber 11 and the pressure of a coil spring 12, and on the opposite side to the pressure of fluid in valve chamber 13, said valve chamber 13 being connected by pipe 14 to main reservoir 15 and containing a slide valve 16 operable by piston 10.

The slide valve 16 is provided with two ports 17 and 18 which are adapted to register respectively with passages 19 and 20 in the slide valve seat according to movement of piston 10, both of said passages being connected to the brake pipe 7.

A Venturi tube 21 is interposed between passage 19 and the pipe 7, so that flow of fluid through said passage will create a suction action through passage 6, leading to chamber 3 of the regulating portion. Passage 20 has no connection to the Venturi tube 21, so that fluid is supplied therethrough to the brake pipe without creating a suction action.

In operation, fluid under pressure from main reservoir 15, or other source of supply, flows through pipe 14 to valve chamber 13 of the supply portion, thence through passage 22 and restricted port 23 to piston chamber 11, so that if valve 8 is seated, fluid pressures on opposite sides of piston 10 will equalize and permit spring 12 to shift said piston to its innermost position.

If the brake pipe pressure should fall below the point for which spring 5 of the regulating portion is set, the fluid pressure acting on diaphragm 2 will be correspondingly reduced through passage 6, permitting spring 5 to move the diaphragm 2 so as to unseat valve 8. With valve 8 unseated, fluid from piston chamber 11 flows through passage 24 past said unseated valve and through passage 6 to the brake pipe 7.

The reduction of pressure thus effected in piston chamber 11 permits the higher pressure in valve chamber 13 acting on the opposite side of piston 10 to shift said piston and slide valve 16 to a position so that port 17 will register with passage 19 and port 18 will register with passage 20 to an extent corresponding with the movement of the slide valve, so that fluid under pressure is supplied to the brake pipe for recharging the same.

By providing the by-pass passage 20, through which fluid under pressure is supplied to the brake pipe 7 without passing through the Venturi tube 21, the Venturi tube action is correspondingly reduced to the desired extent, depending upon the size and positioning of the ports 17 and 18 and the passages 19 and 20.

As a result, by means of my invention, the Venturi tube action is tempered to provide only the desired degree of accelerated action of the feed valve regulating portion, and no more.

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

1. The combination with a source of fluid under pressure and a brake pipe, of a feed valve device comprising a supply valve having two ports through which fluid is supplied from said source to the brake pipe, a piston for operating said valve, a regulating valve for venting fluid from said piston, a diaphragm for operating said valve, a Venturi device disposed in the passage connecting one of said supply ports to the brake pipe, and connected to vent fluid from said diaphragm.

2. The combination with a source of fluid under pressure and a brake pipe, of a feed valve device comprising a supply valve having two ports adapted to register respectively with two passages leading to the brake pipe and through which fluid under pressure is supplied from said source to the brake pipe, a piston operated upon a reduction in fluid pressure for actuating said valve, a regulating valve for venting fluid from said piston, a diaphragm operated by a reduction in fluid pressure for actuating said regulating valve, and means operated by the flow of fluid through one of said passages only for venting fluid from said diaphragm.

3. The combination with a source of fluid under pressure and a brake pipe, of a feed valve device comprising a supply valve having two ports through which fluid is supplied from said source to the brake pipe, each port registering with a separate passage leading to the brake pipe, whereby the flow of fluid through one passage is always proportional to the flow of fluid through the other passage, a piston for operating said valve, a regulating valve for venting fluid from said piston, a diaphragm for operating said regulating valve, and a Venturi device disposed in one of said passages for venting fluid from said diaphragm.

In testimony whereof I have hereunto set my hand.

WILLIAM E. DEAN.