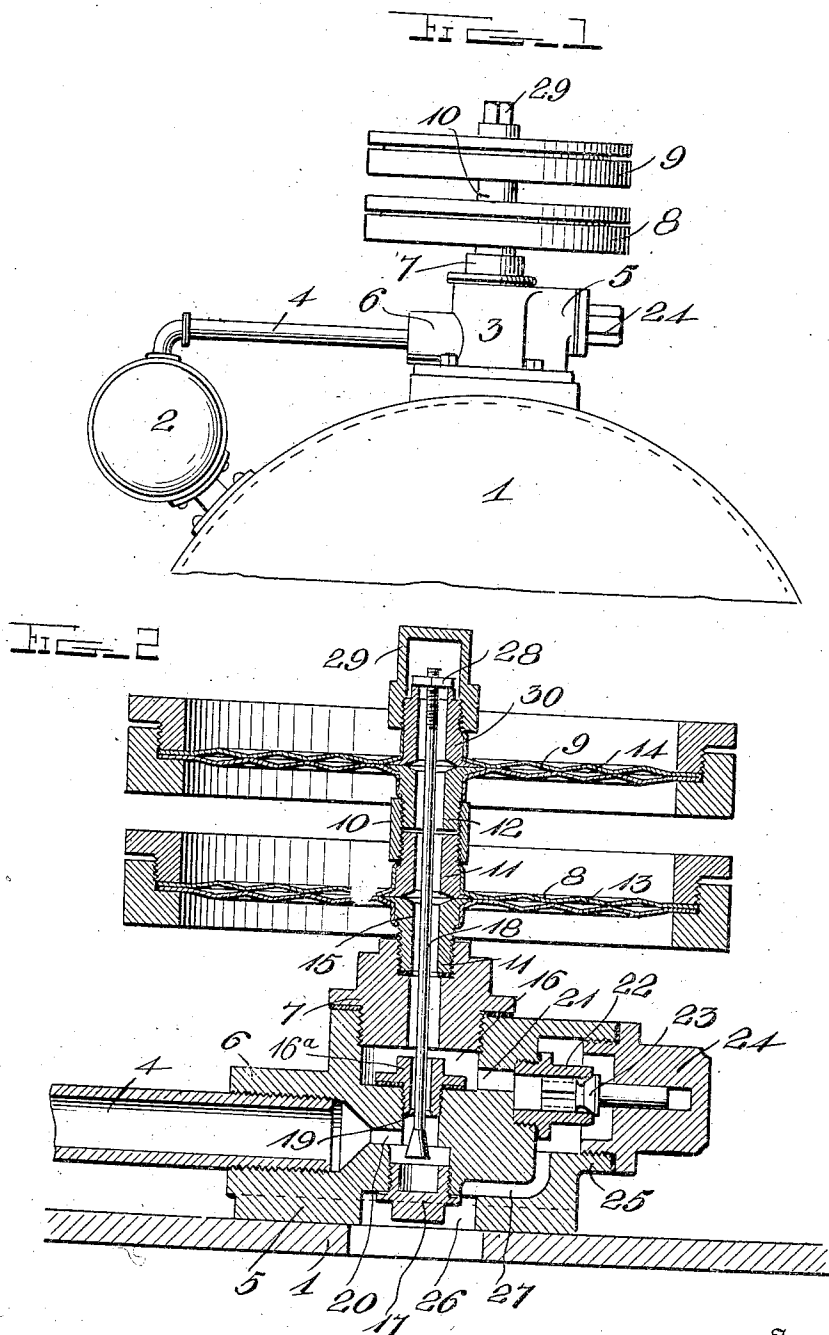


930,121.

J. O. BANNING.
REDUCING VALVE.
APPLICATION FILED OCT. 14, 1908.

Patented Aug. 3, 1909.



Witnesses
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UNITED STATES PATENT OFFICE.

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REDUCING-VALVE.

No. 980,121.

Specification of Letters Patent.

Patented Aug. 3, 1909.

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To all whom it may concern:

Be it known that I JOSEPH O. BANNING, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Reducing-Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to pressure regulating devices, and particularly to that type of device adapted for use in connection with chemical fire extinguishers.

The invention has for its object to provide a novel, simple and reliable means for reducing the pressure of compressed air employed for expelling a fire extinguishing fluid. The use of said device is not limited to the fire extinguishers, but may be employed for any other purpose for which it may be found expedient in application.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of the device, and Fig. 2 is a vertical longitudinal section of the same.

In the application of the device the reducing valve is connected directly to the fluid tank, which contains the chemical used in extinguishing fires. The inlet end of the valve is connected directly to the pressure tank and controls the pressure to the chemical tank. The chemical tank is shown at 1, and the pressure tank is shown at 2, with the inlet pipe to the reducing valve 3, shown at 4, and connected directly to the tank 2. While this is not possible in practice it is shown here for simplicity of illustration and convenience.

The reducing valve comprises a casing 5, having the inlet nipple 6, connected to the pipe 4, and the outlet nipple 7 threaded into the casing at its upper part and supporting the regulating diaphragms 8 and 9, which are connected together by a suitable coupling 10, screwed upon nipples 11 and 12, projecting from the adjacent halves of the diaphragms. These diaphragms are double

and form between themselves pressure chambers 13 and 14, which communicate with the interior of the casing through the nipple 15, which is screwed into the outlet nipple 7. A suitable central channel 16, projects through the entire casing and connects with the nipple 6, so as to permit the air from the inlet pipe to enter the chambers formed by the diaphragms. This central channel has its lower end closed by a plug 17, which holds the valve rod 18, in position and prevents the air from entering directly from the inlet nipple 6 to the tank 1 and causes its passage around the rod to the chambers 13 and 14. A guiding plug 16^a is also threaded into the channel 16, and guides the rod in its movement through the casing and insures a proper seating of the same against the valve seat 19. Leading from the inlet 6 to the main channel 16 is an inlet port 20, and communicating with the interior of the casing by an outlet port 21, is a check valve plug 22, which has seated therein a check valve 23, held in alignment with the plug by a casing plug 24, seated in the end of a lateral projection 25, formed on the casing. This lateral projection forms a chamber which surrounds the check valve and communicates with the space 26, by a port 27, which is governed by the check valve 23. The valve rod 18 passes directly through the diaphragm or chambers 13 and 14, and has secured to its upper end an adjusting nut 28, which is covered by a hollow plug 29, threaded to the nipple 30, projecting from the upper part of the diaphragm 9.

In the operation of the device, the valve rod with its accompanying valve is normally suspended above the plug 17 with the diaphragms inactive and unexpanded. When the air is turned on from the pressure tank 2 in any suitable manner, preferably by automatic mechanism, the air rushes through the port 20 into the main chamber around the rod 18 and up into the chambers 13 and 14. When the proper predetermined pressure has been injected, which is regulated by the adjustment of the nut 28, the chambers are expanded to their proper size and the valve rod is lifted against the seat 19, thereby closing off all pressure from the tank to the diaphragms and also to the chemical tank. Until the pressure is at its maximum height in the chemical tank the air passes through the port 21 and forces the check valve 23 from its seat and passes out

of the port 27 into the space 26, and thence into the chemical tank. It will readily be seen that the check valve prevents any back action upon the part of the pressure in the chemical tank. The diaphragms constituting the chambers 13 and 14 are supported upon the nipple 7 and are in constant communication with the casing whereby as the pressure is reduced in the chemical tank 1 it is replenished in the manner described. Once the pressure is reduced sufficiently to permit the valve rod 18 to drop the pressure in the tank 2 forces its way through the valve 3 to the chemical tank and restores the maximum amount of pressure therein.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

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

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a device of the class described, the combination with a casing, of an inlet port therefor, another port for said casing, a pair of tandem operated communicating pressure chambers mounted on the casing, a source of

pressure adapted to be connected to the pressure chambers, a valve mounted in the casing, a rod connected to said valve and passing through said chambers, and a nut adjustably mounted on the rod and resting freely on the upper chamber whereby the action of the valve may be adjusted to control the pressure through said casing.

2. In a device of the class described, a source of pressure, a chemical tank, a valve connecting the tank and the source and comprising, a casing having a central channel running therethrough, a plug closing one end of said channel, an apertured plug at the opposite end, tandem operated pressure regulated diaphragms supported on the latter plug and having communication with said channel, a valve adapted to control said channel, a rod adjustably connecting said valve to the diaphragms and passing therethrough, a channel connecting the central channel and the chemical tank, a plug having an aperture forming a part of the latter channel, a check valve seated in said last plug, and a plug for guiding said check valve in said apertured plug.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH O. BANNING.

Witnesses:

E. EDMONSTON, Jr.,
J. P. DUFFIE.