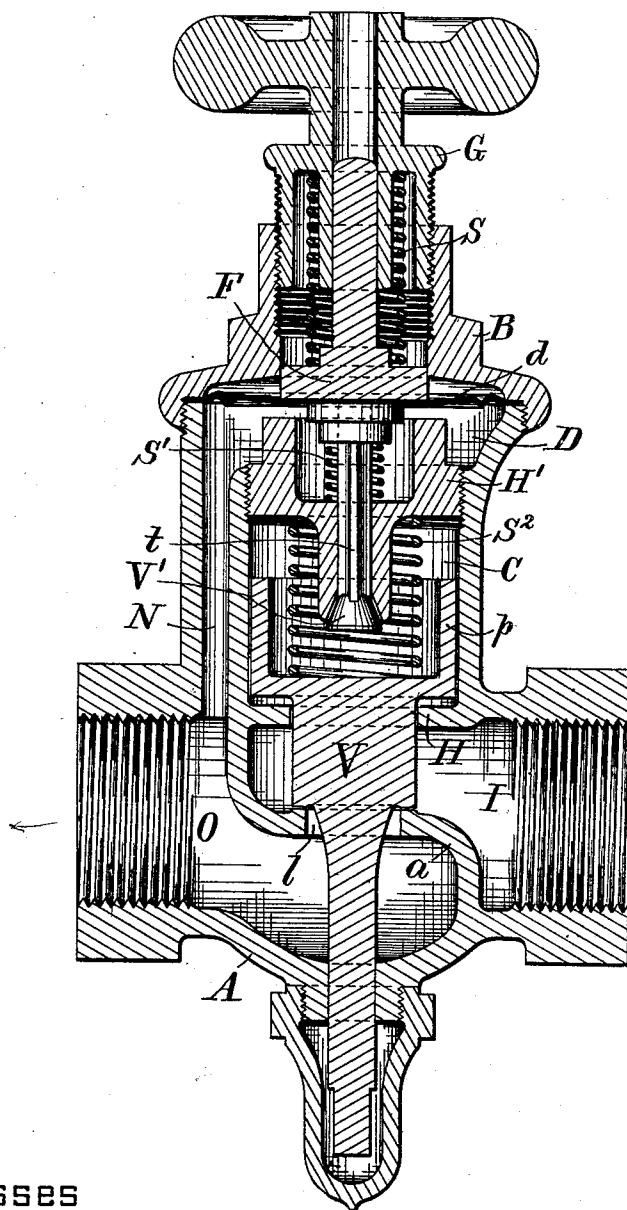


(No Model.)

E. WEBB.
FLUID PRESSURE REGULATOR.

No. 479,234.

Patented July 19, 1892.



Witnesses

Wm. S. Rogers.
Abbie L. Porter

Inventor

Edward Webb

UNITED STATES PATENT OFFICE.

EDWARD WEBB, OF READING, ASSIGNOR TO NELSON CURTIS, OF BOSTON,
MASSACHUSETTS.

FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 479,234, dated July 19, 1892.

Application filed May 2, 1892. Serial No. 431,525. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WEBB, of Reading, in the State of Massachusetts, have invented a new and useful Improvement in Fluid-Pressure Regulators, of which the following is a specification.

The improvement relates to the cushioning of the main valve in that class of fluid-pressure regulators in which the action of the main or high-pressure valve is regulated by an auxiliary valve, which in turn is controlled by the pressure of the fluid on the low-pressure side of the said main valve; and it consists in a detail of construction hereinafter fully set forth, whereby the piston of the main or high-pressure valve is directly cushioned in its own cylinder against the full pressure of the operating fluid without the aid of a dash-pot.

The single figure of the drawing represents in section a pressure-regulator embodying my said improvement.

A is a shell or casting provided with threaded hollow arms I and O, serving, respectively, as the inlet and outlet passage-ways of the regulator, and a cylindrical projection C, serving as the cylinder for the piston *p* of the main valve V, the said piston portion of which *p* fits the interior of said cylinder with a loose fit. A partition *a* separates the said inlet passage-way I from the said outlet passage-way O, and a cylinder-head H separates said inlet passage-way I from the interior of said cylinder C. A hole *l* in said partition *a* serves as the port for said main valve V, while the said main valve or its stem connecting it with its piston portion *p* works through a hole in the said cylinder-head H with a loose fit.

H' is the upper cylinder-head, screwing into the cylinder C, as shown, while B is a cap clamping a flexible diaphragm *d* to the upper rim of the cylinder C and forming, as shown, a chamber D, with a flexible side above said upper cylinder-head H'. F is a follower confined within and guided by the said cap B and a projection of the screw-handle G, screwing into said cap, as shown. A spring S, coiled about said follower, keeps the follower in contact with the diaphragm *d* and

tends to press the said diaphragm into the said chamber D.

N is a passage-way cast in the shell A, leading from said outlet passage-way O to the said chamber D.

V' is a valve with a fluted stem *t*, contained within the upper cylinder-head H' and opening downward. A projection from the upper portion of said fluted stem in chamber D presses against the under side of the diaphragm *d* by force of a spring S', coiled around said projection, and thus tends to keep the valve V' upon its seat; but the said valve V' is normally open by force of the above-mentioned spring S, which is greater than that of spring S'. There is thus normally a minute passage-way open from the inlet passage-way I on the high-pressure side of the regulator to the low-pressure side or outlet passage-way O through the space caused by the loose fit of the valve V in the cylinder-head H, the space caused by the loose fit of the piston *p* in the interior of the cylinder C, the passage about the fluted stem *t* of valve V' in the cylinder-head H', chamber D, and passage-way N. The passage-way N, however, is much larger than the thread-like passage-ways formed by the before-mentioned loose fits of the valve V and its piston *p*, and when in the operation of the regulator the back or low pressure in the arm O is sufficient to overcome the force of the spring S, which has been determined by turning the handle G, the valve V' closes upon its seat, thereby causing the interior of the cylinder C above the piston *p* to fill with high-pressure fluid. The pressure upon the two sides of the piston *p* thus tends to equalize, and the valve V falls to its seat, assisted by a spring S² above the piston. Too rapid motion of the valve V to its seat is prevented by the cushion formed by the fluid at high pressure in the cylinder between the piston *p* and the lower cylinder-head H, the escape or passage of said fluid from said cylinder being slow through the minute passage-way from said cylinder to the inlet passage-way I, due to the loose fit of the valve V in cylinder-head H.

I claim—

In a pressure-regulator, the combination, 100

with the inlet and outlet arms I and O, partition *a*, provided with port *l* and piston-valve V, of the cylinder C, provided with the two cylinder-heads H and H', cap B, dia-
5 phragm *d*, passage-way N, and valve V', having its seat in said cylinder-head H', and a suitable regulating device located in said cap

B, the said piston-valve V having its piston between said cylinder-heads H and H', substantially as described.

EDWARD WEBB.

Witnesses:

WM. S. ROGERS,

ABBIE L. PORTER.