

(No Model.)

B. F. & H. F. HADLEY.
FLUID PRESSURE REGULATOR.

No. 557,811.

Patented Apr. 7, 1896.

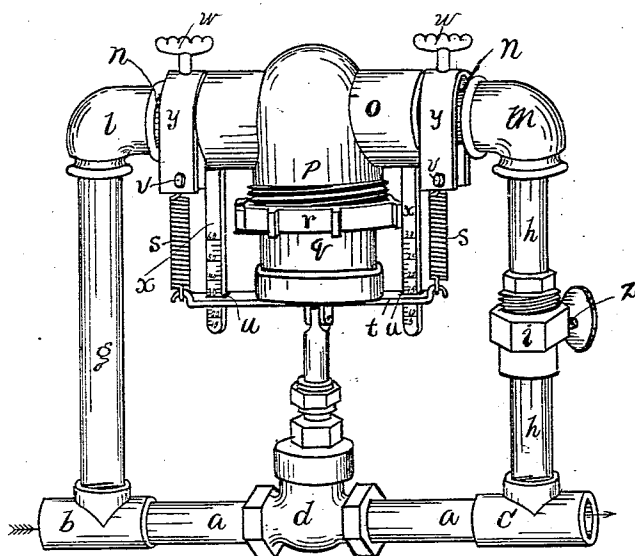


Fig. 1

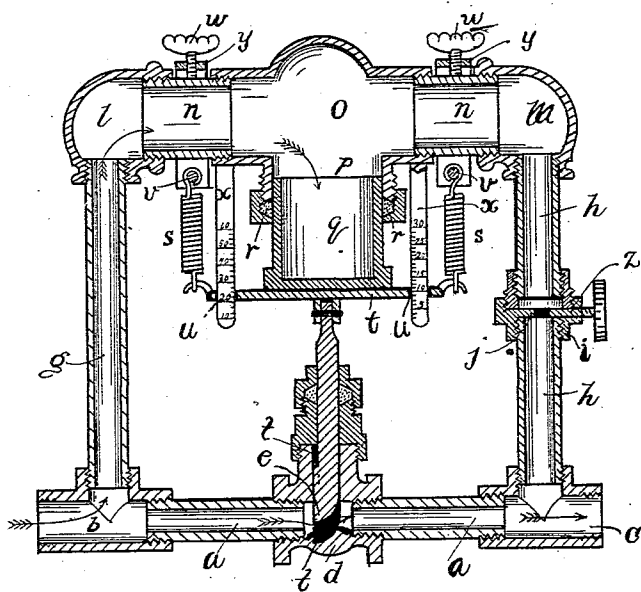


Fig. 2

Witnesses

C. Horton

Geo. R. Hamlin

Inventors:
Benjamin F. Hadley
Halsey F. Hadley
By Attorney
Robt. D. Boies

UNITED STATES PATENT OFFICE.

BENJAMIN F. HADLEY AND HALSEY F. HADLEY, OF DUNDEE, NEW YORK.

FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 557,811, dated April 7, 1896.

Application filed September 21, 1895. Serial No. 563,228. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN F. HADLEY and HALSEY F. HADLEY, citizens of the United States, residing at Dundee, in the county of Yates and State of New York, have invented certain new and useful Improvements in Fluid-Pressure Regulators; and we 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, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to those automatic steam or water pressure regulators adapted to be applied to steam or water heating-pipes for the purpose of automatically admitting only a predetermined amount of steam or water to the radiators.

The object is to construct a more simple, easily regulated, and cheaply constructed mechanism than those heretofore in use.

To this end our invention consists of the peculiar features and combinations of parts more fully described hereinafter, and pointed out in the claim.

In the drawing, *a* represents a steam or water pipe intersected and joined by the three-way unions *b* and *c*, and again intermediately between said unions by a screw-threaded coupling *d*, which is contracted at the middle to partially restrict the flow of steam or water through it and provided with a slide-valve *e*, arranged to move transversely across the interior of the pipe *a* and seated in groove *t* formed in the coupling. Into the top way of the union *b* is joined the tube *g* and into the top way of the union *c* is joined the tube *h*, which is intersected and joined by a cut-off-valve coupling *i*. The threaded stem *z* of the cut-off valve is arranged to move transversely across the interior of the pipe *h* within the coupling and open or close the valve on its seat *j*, thus regulating the flow of steam or water through the tube, which in turn regulates the activity of the other valves of the device. The tubes *g* and *h* are extended upward equal distances, and at their upper ends provided with quarter twin couplings *l* and *m*, into which is unioned the pipe *n* in a lateral

direction or parallel with the pipe *a*, and is also intermediately intersected by the three-way union *o*, the lower way of which is provided with a tube *p*, extended in the direction of the valve in the pipe *a*, and within which loosely operates an inverted-cup-shaped piston *q*, suitably packed against the escape of steam or water by a stuffing-box *r* and adapted to govern the movement of the valve in the pipe *a* by having direct action upon the valve-stem against the action of the springs *s*, secured to the ends of a bar *t*, which is pivoted in lateral direction to the top of the valve-stem and upon which the piston rests. Suspended from the body of union *o*, on either side of the piston, and to extend down through a slot *u* in the ends of the bar *t*, are graduated blades *x*, that register the movements of the piston against the action of the springs. One of these blades is graduated to denote measure when steam is used and the other when the device is used to gage hot or cold water. The upper ends of the springs *s* are attached to the bolts *v* of a clevis or U-shaped device *y*, hung inverted astride of the pipe *n* between its union with its couplings. The bridge part of the clevis is provided with the adjusting-screw *w*, seated on the top side of the pipe. The turning of the screws raises or lowers the clevis and thus regulates the tension of the springs and their resistance to the piston. It will also be seen that the registry on the blades can be thus adjusted in proper accord to denote the pounds pressure on the valve, and consequently the temperature given thereby.

Briefly described, our invention operates as follows: Assuming the cut-off valve to be closed, when steam or water is admitted to the union *b* a portion enters pipe *a* and a portion is shunted into pipe *g* and then into pipe *n*, exerting pressure on the piston *q* and moving it against the retractive action of springs *s* to actuate the slide-valve *e* and regulate the amount of fluid passing through pipe *a* to the radiators. The springs *s* may now be adjusted to a tension requisite to properly limit the movement of the piston and hence the slide-valve and allow the required pressure or quantity of fluid to pass through pipe *a*. The movement of the valves may be regulated by opening or closing the cut-off valve.

Having thus fully described our improvements, what we claim, and desire to secure by Letters Patent, is—

5 In an automatic steam or water pressure regulator, the combination of a main pipe, a regulating-valve therefor, a secondary pipe forming a shunt around the said regulating-valve, and being also provided with a cut-off
10 valve, an inverted-cup-shaped piston connected to the regulating-valve in the main pipe and operating in the secondary pipe, retracting or counteracting springs adjustably

connected to the secondary pipe, and to the piston by a bar, and graduated blades upon which fluid-pressure is indicated by the 15 movement of the said bar.

In witness whereof we affix our signatures in presence of two witnesses.

BENJAMIN F. HADLEY.
HALSEY F. HADLEY.

Witnesses:

J. W. PRATT,
CLAY MILLER.