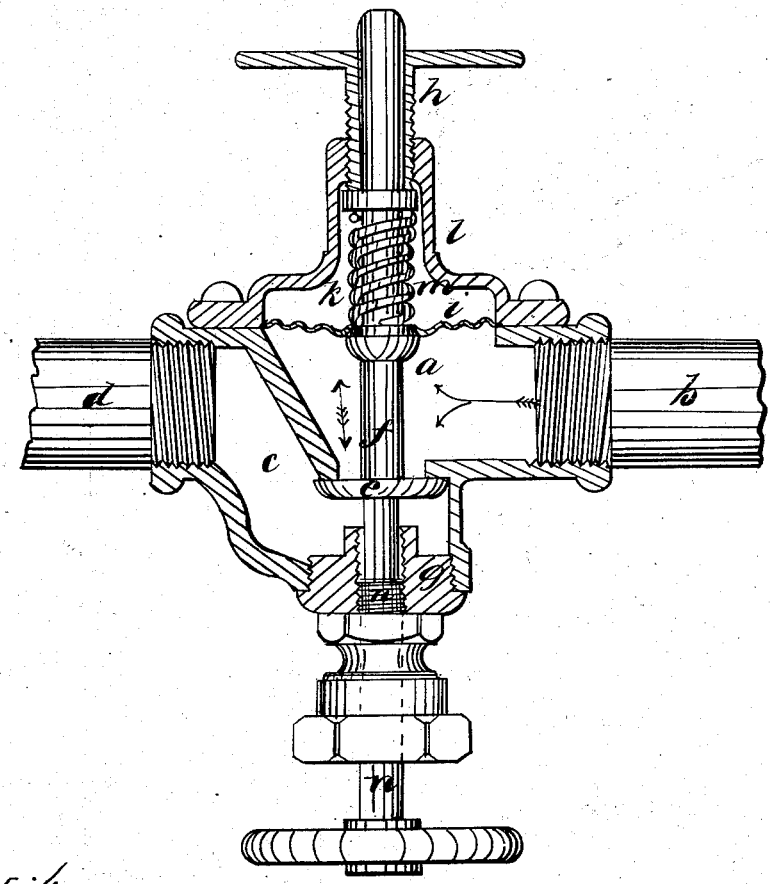
G. H. FOX.

REGULATOR VALVE.

No. 48,166. Patented June 13, 1865.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE H. FOX, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STEAM-REGULATOR VALVES.

Specification forming part of Letters Patent No. 48,166, dated June 13, 1865.

To all whom it may concern:

Be it known that I, GEORGE H. FOX, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Regulator-Valve; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In the employment of steam-blowers in connection with and to increase the draft of furnaces of steam-boilers much difficulty is experienced in regulating the pressure of the steam-jets. If the cock is open too wide the pressure of steam in the boiler will be raised too high, and if not open sufficiently the pressure will be much reduced, thereby requiring the engineer or fireman to be constantly on the alert to keep it at the proper point.

The object of my invention is to remedy this difficulty by the employment of a steam-regulator, and it is this construction and adaptation that constitute my invention, though it will be obvious that the valve may be employed in other similar circumstances where it may be necessary to automatically regulate the pressure of the steam at a given point of delivery.

The drawing represents a steam cock or valve embodying my invention, being a view partly in elevation and partly in section, as will be readily understood from inspection.

a denotes the main chamber of the cock, into which opens the steam-boiler pipe *b*; *c*, the eduction-chamber leading into the steam-blower pipe *d*.

e is the valve by which communication between the induction and eduction pipe is opened or closed. This valve is fixed upon a stem, *f*, sliding in a screw-cap, *g*, at its lower end and in a hollow screw, *h*, at its upper end.

At the upper part of the chamber *a* is a diaphragm or disk spring, *i*, fixed upon the stem *f* and extending across the top of the chamber *a*, there being a space, *k*, above this diaphragm formed by a chambered cap, *l*. Over the diaphragm and resting upon it or upon a shoulder or collar formed on the stem is a spring, *m*, surrounding the stem *f*, pressure being brought to bear upon this spring by the screw *h*, which bears upon the top of the spring or upon a loose ring or washer placed on the spring. By feeding this screw up or down it will be obvious that resistance to the upward movement of the diaphragm may be diminished or increased at pleasure. A screw, *n*, at the bottom of the cock serves to carry the valve against its seat, to shut off communication between the inlet and outlet chambers.

In the use of the invention the screw *n* is turned so as to allow the valve to drop down from its seat to the extent required. If, now, the valve be opened it will be evident that the pressure upon the diaphragm may be so regulated by the screw *h* that when the pressure of the steam rises above a certain point the diaphragm will be forced up thereby and will shut off the steam from the eduction-chamber, and that as this steam-pressure diminishes the diaphragm will again descend, opening the valve, thus automatically regulating the current of steam through the blower-pipe at any required pressure of the steam. To shut off the steam entirely the valve is raised by the screw *n*, the parts being then in position, as seen in the drawing. By these means it will be obvious that no attention is required in regulating the valve other than that of such occasional adjustment as may be necessary under such uniform changes of pressure as may be at different times required in the action of the blower upon the fire. This change of pressure, however, is never created with this invention in the blower, except by the intelligence of the attendant, the valve itself maintaining a uniform pressure in the blower (according as it may be adjusted) whatever may be the pressure from the boiler.

I claim—

The combination of the valve *e*, diaphragm *i*, and inlet and outlet chambers, when arranged to operate together and with reference to each other, substantially as set forth.

In witness whereof I have hereunto set my hand this 7th day of April, A. D. 1865.

GEO. H. FOX.

Witnesses:

FRANCIS GOULD,

W. B. GLEASON.