

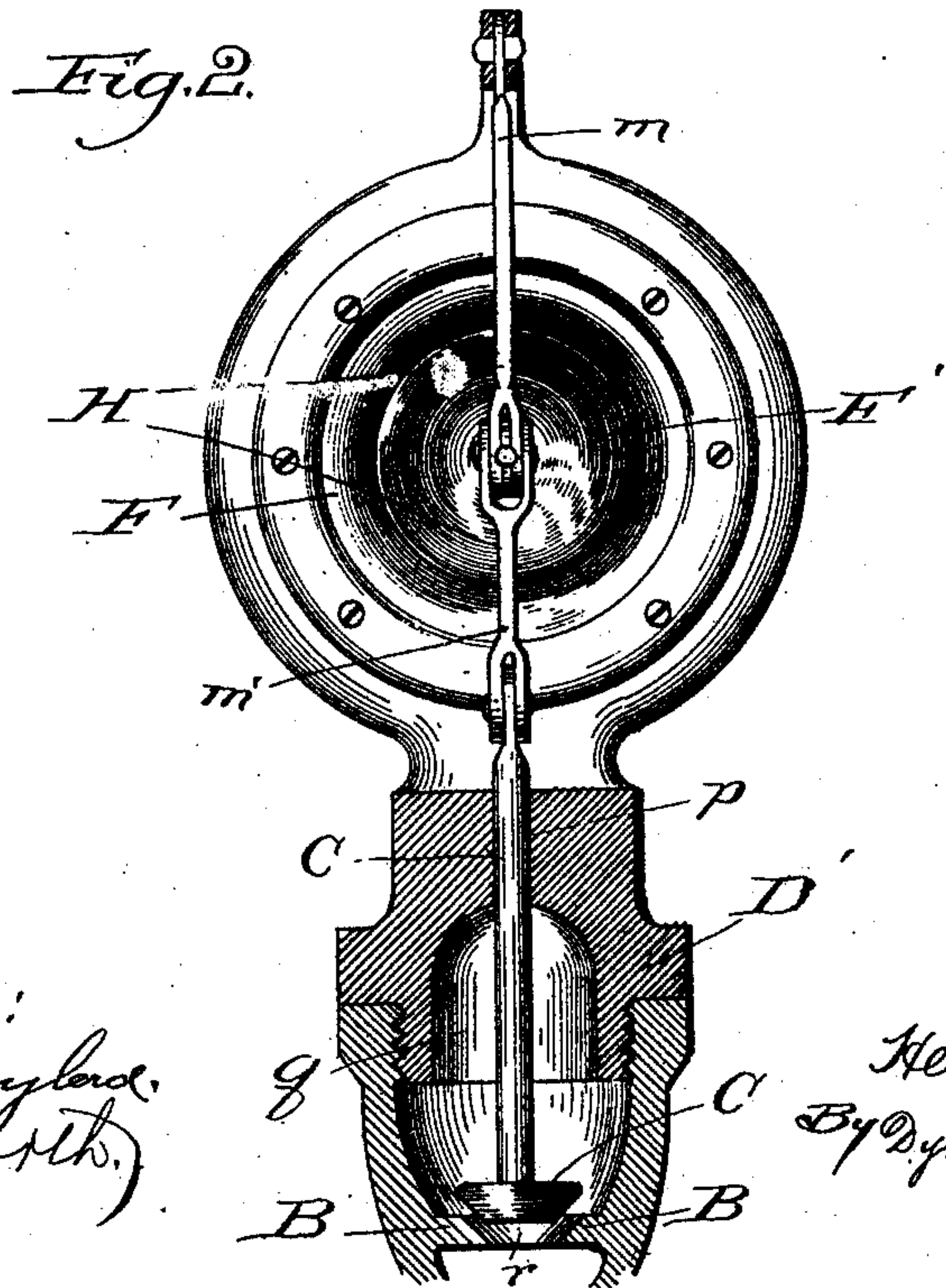
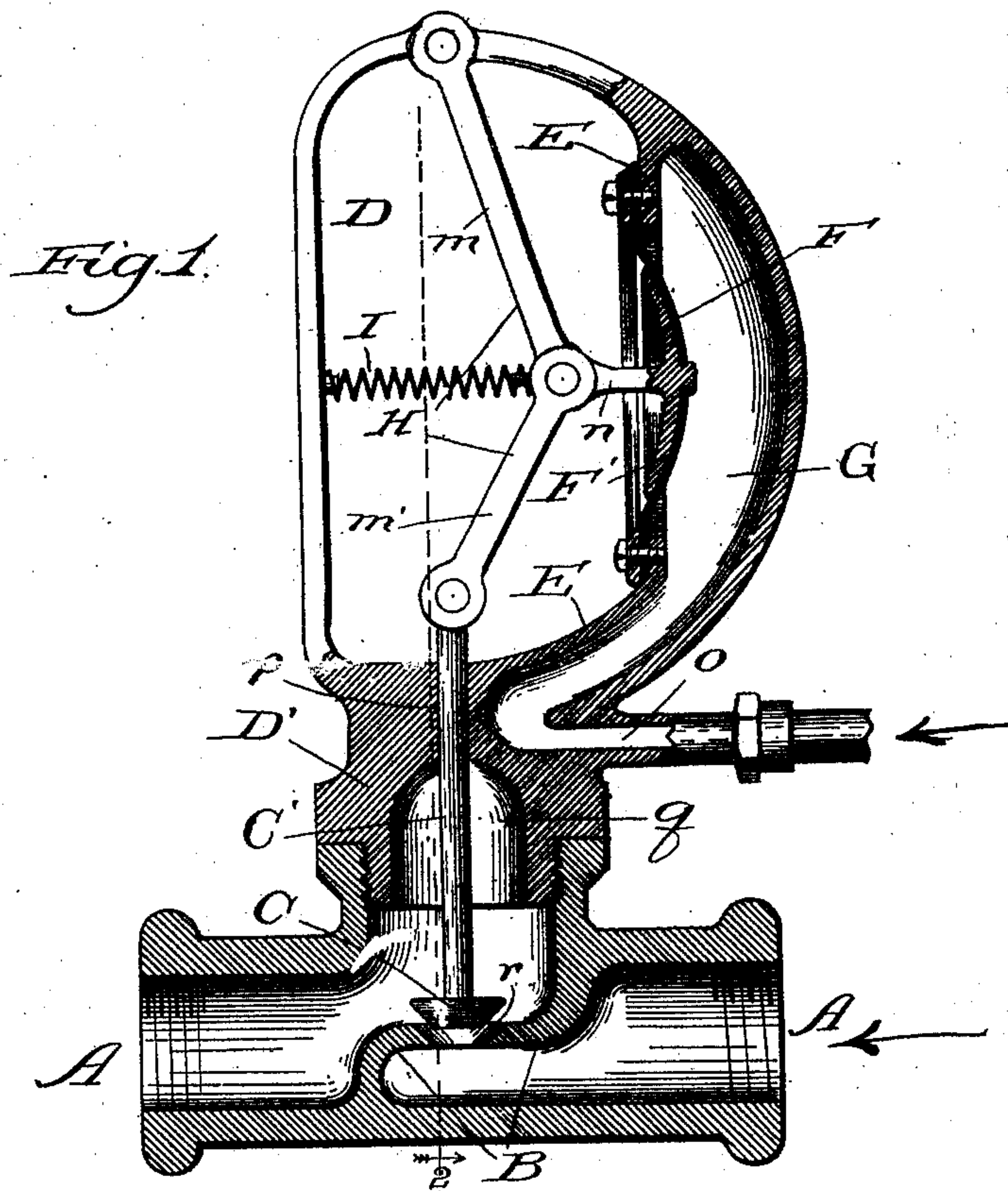
(No Model.)

H. E. JACOBS.

VALVE.

No. 363,643.

Patented May 24, 1887.



Witnesses:

Chas. E. Gaylord.
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UNITED STATES PATENT OFFICE.

HENRY E. JACOBS, OF FOND DU LAC, WISCONSIN.

VALVE.

SPECIFICATION forming part of Letters Patent No. 363,643, dated May 24, 1887.

Application filed August 9, 1886. Serial No. 210,423. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. JACOBS, a citizen of the United States, residing at Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Valves, and I hereby declare the following to be a full, clear, and exact description of the same.

My improvement relates particularly to a valve for use in connection with electric temperature-controlling devices, to serve the purpose of opening and closing automatically the passage through which the medium affecting the temperature—*i. e.*, hot or cold air, steam, or the like—is introduced into contact with the apartment or inclosure the temperature of which it is designed to regulate.

A valve of the general nature of the present device, but of a construction devoid of novelty, is shown in my pending application, Serial No. 209,057, for an improved electric temperature-controlling device.

It is my object to provide a valve of novel construction for automatically controlling the passage through which the temperature-affecting medium enters the apartment to be heated, which shall be simple and effective and thoroughly reliable in its operation; and to this end my invention consists in the construction of the device, as hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 shows my improved device in sectional elevation, and Fig. 2 a similar view on the line 2 2 of Fig. 1.

A denotes the passage for the hot or cold air or steam or other medium for affecting the temperature of an apartment or inclosure into which it is introduced; and B is a dividing-wall in the passage, containing a valve-seat, *v*, for the valve C on the stem C'.

The features of my device thus far described are old.

D is a casing approximating in shape the segment of a hollow hemisphere, and provided on one end with a threaded extension, D', to permit its being connected with the passage A, as shown. The extension D' has a chamber, *g*, formed in the casting of the device to economize metal, and an opening, *p*, leading from the chamber *g* into the casing D, to admit into the latter the valve-stem C' and serve

as a guide for the same. The inner or straight wall, E, of the casing D has a large circular central opening, and the opening is covered by a flexible diaphragm, F, preferably of rubber, secured at its edge or edges in position, as shown. The wall E and diaphragm F afford in the casing a chamber, G, which communicates through an opening, *o*, with the compressed-air supply admitted into and exhausted from the chamber G, in the manner fully shown and described in my other application referred to, by opening and closing a valve which controls an inlet and exhaust passage by means of a heat-measuring device which automatically opens and closes an electric circuit.

The diaphragm is re-enforced by means of a concavo-convex plate, F', secured at its center to the center of the diaphragm on the side thereof outside of the chamber G, the plate serving to afford an extended surface of contact and pressure upon the diaphragm, diminishing the liability of rupture and causing the pressure on and tension of the diaphragm to be distributed equally all around it.

H is a toggle-lever, comprising the links *m* and *m'*, pivoted, respectively, at their opposite extremities to the casing and end of the valve-stem C' which enters the casing, and at their adjacent extremities to the inner end of the arm *n* of the plate F'.

I is a spiral spring, serving mainly to keep the toggle from making a "dead-point" at any time by remaining in a perfectly straight line.

From the foregoing description of the parts their operation will be readily understood without elaborate explanation of the same. An increase in the volume of compressed air or other fluid under pressure pushes out the diaphragm and straightens the toggles *m m'*, forcing the valve C down and closing the passage A. Diminution of pressure in the chamber G permits the pressure of the atmosphere and of the spring I to force the diaphragm inward, thus throwing the links *m m'* out of line, shortening the connection and permitting the fluid in pipe A to force the valve C up and flow through.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a passage, A, a valve,

C, in the passage, a casing, D, provided with an opening, *o*, a wall, E, in the casing and open near its center, a flexible diaphragm, F, covering the opening in the wall E and affording a close chamber, G, a plate, F', upon one face of the diaphragm, and a toggle-lever, H, connected at its joint with the plate F' and at its opposite extremities, respectively, to the case D and stem of the valve C, substantially as and for the purpose set forth.

2. The combination of a passage, A, a valve, C, in the passage, a casing, D, provided with an opening, *o*, a wall, E, in the casing and open near its center, a flexible diaphragm, F,

secured at its edge to cover the opening in the wall E and afford a close chamber, G, a plate, F', upon one face of the diaphragm, and provided with an arm, *n*, a toggle-lever, H, connected at its joint with the arm *n* and at its opposite extremities, respectively, to the case D and stem of the valve C, and a spring, I, secured at one end to the case and at its opposite end to the toggle-lever, substantially as and for the purpose set forth.

HENRY E. JACOBS.

In presence of—

J. W. DYRENFORTH,
HENRY HUDSON.