

No. 705,329.

Patented July 22, 1902.

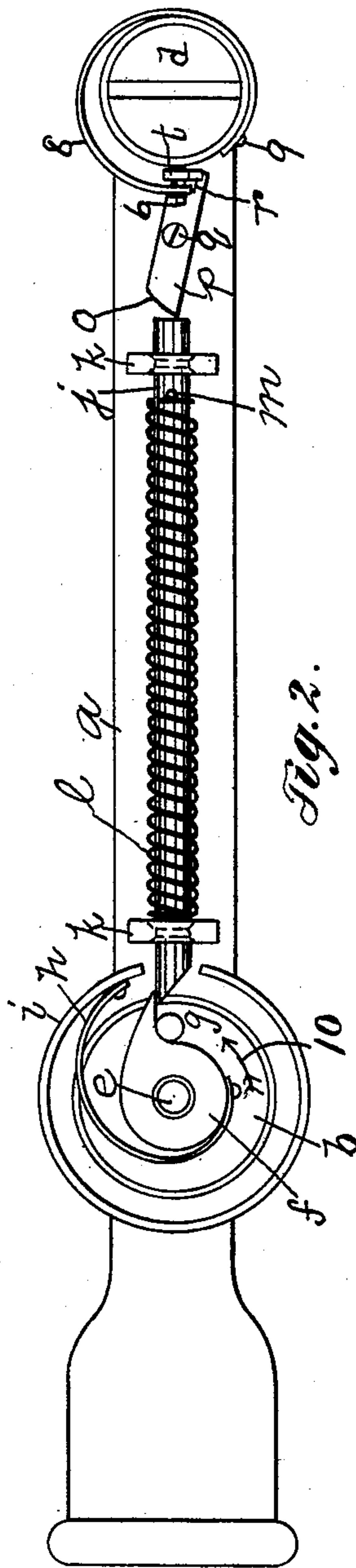
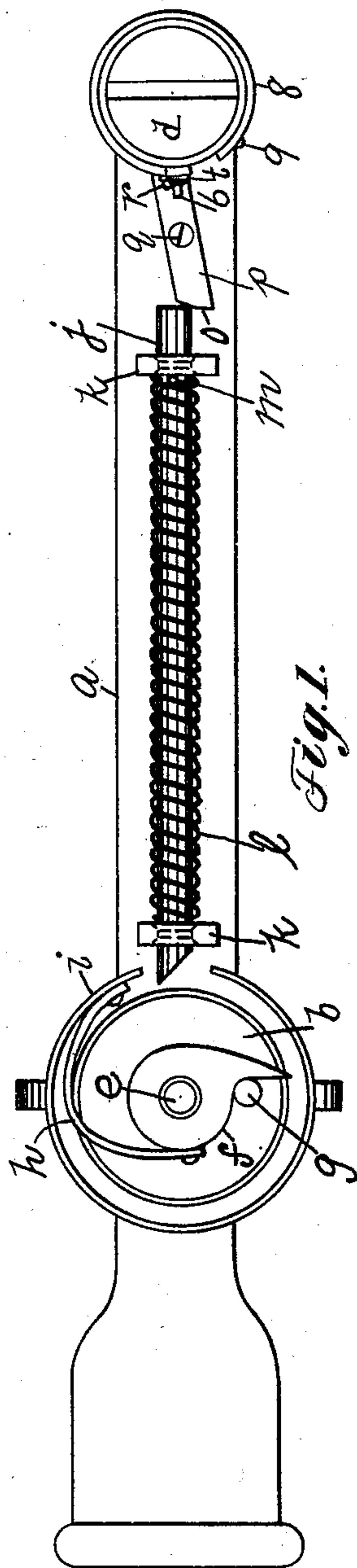
L. F. DUCKER.

AUTOMATIC CUT-OFF FOR GAS BURNERS.

(Application filed Apr. 24, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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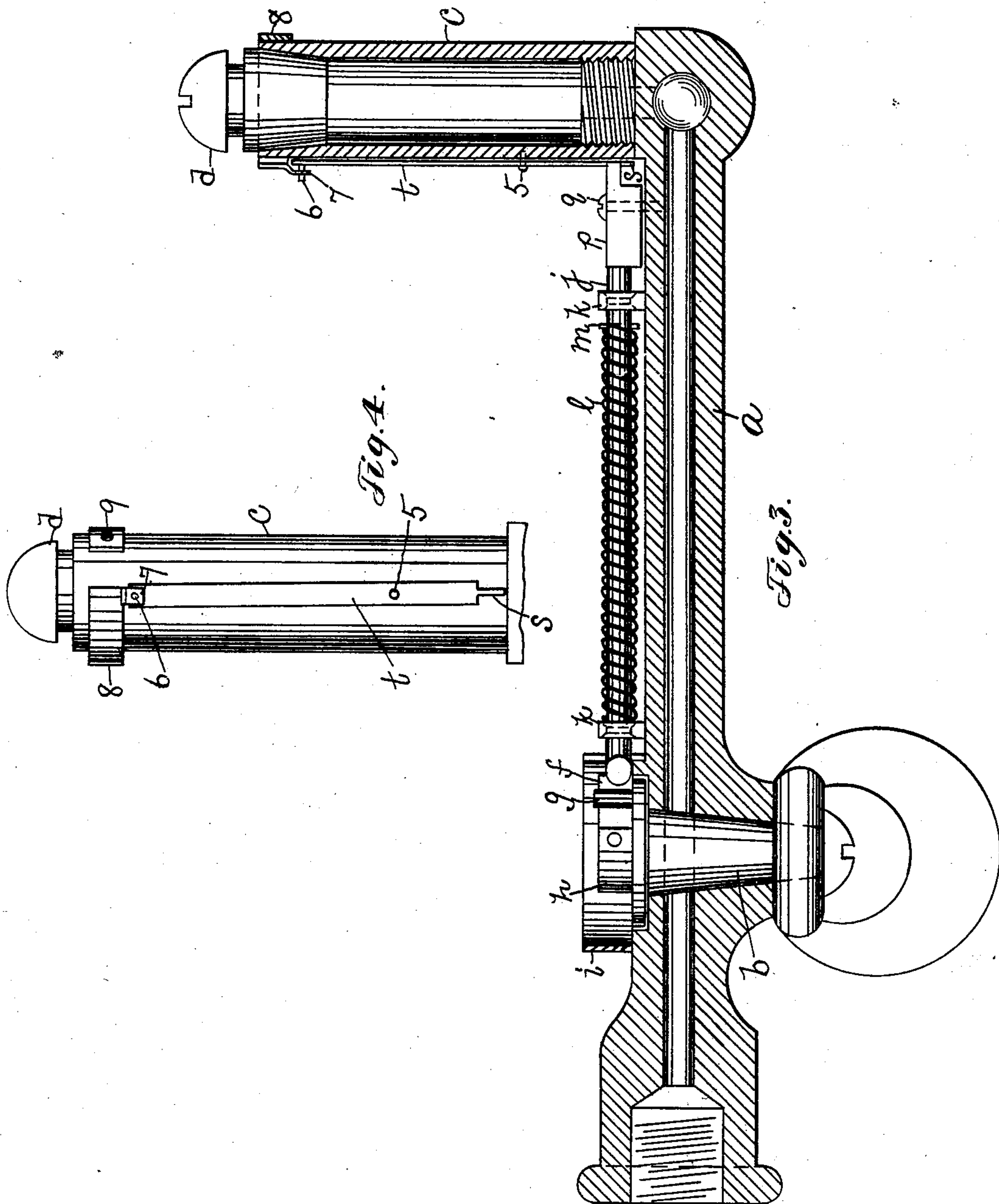
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

LOUIS F. DUCKER, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO DUCKER AUTOMATIC GAS CUT-OFF COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

AUTOMATIC CUT-OFF FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 705,329, dated July 22, 1902.

Application filed April 24, 1902. Serial No. 104,475. (No model.)

To all whom it may concern:

Be it known that I, LOUIS F. DUCKER, a subject of the German Emperor, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Automatic Cut-Offs for Gas-Burners, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to an automatic cut-off for gas-burners, and has for its object to provide a simple and efficient device with which the valve controlling the supply of gas to the burner may be automatically closed in case the flame is extinguished or the flow of gas is interrupted. The device is also constructed so as to permit of the valve being closed by hand, as will be described. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a plan view of a gas-bracket provided with an automatic shut-off embodying this invention, the valve and attachment being shown in their normal position; Fig. 2, a plan view with the parts in their operative position; Fig. 3, a longitudinal section and elevation of the bracket and attachment shown in Fig. 2, and Fig. 4 a detail in elevation to be referred to.

Referring to the drawings, the gas bracket or arm *a*, provided with the valve *b* and burner *c*, having the tip *d*, are and may be of any suitable or usual construction.

The valve *b* has loose on its stem *e* a dog or arm *f*, with which coöperates a stud or pin *g* on the valve to turn said dog or arm from the position shown in Fig. 1 to that shown in Fig. 2 when the valve *b* is turned into its open position. (Shown in Figs. 2 and 3.) The dog or arm *f* is moved in the reverse direction by a spring *h*, herein shown as secured at one end to said dog or arm and at its other end to a flange *i*, attached to the bracket *a*.

The dog or arm *f* in accordance with this invention is restrained from movement under the influence of the spring *h* by a sliding bar or bolt *j*, suitably supported by the gas-

bracket to move longitudinally thereof, and in the present instance the said bolt is extended through uprights or guides *k*, attached to the bracket *a*, and is moved in one direction by a spring *l*, encircling the bolt between the front guide *k* and a pin *m*, extended through the said bolt.

The spring *l* acts to move the bolt out of the path of movement of the dog or arm *f*, so as to release the same and permit it to be returned to its normal position (shown in Fig. 1) by the spring *h*. The bolt *j* is moved into the path of movement of the dog or arm *f* by means under the influence of a thermostat, which is operated by the heat from the burner.

In the present instance the bolt *j* is shown as engaged by the cam-shaped or curved end *o* of a lever *p*, pivoted at *q* to the gas-bracket substantially in line with the bolt, which lever is operatively connected to a thermostat, and in the present instance the lever *p* is provided at its rear end with a slot *r*, into which projects a finger *s* on the end of a vertically-arranged lever *t*, pivoted, as at *5*, to the burner *c* and provided at its upper end with a stud or pin *6*, which extends through a suitable hole in a finger or lug *7* on a thermostatic strip or band *8*, which is passed about the burner *c* near its upper end and has one end secured thereto, as by the screw *9*, leaving the other end free to expand and contract under the influence of heat and cold.

The bolt or rod *j* may be beveled or inclined on its front end, as herein shown.

The operation of the automatic cut-off may be readily understood by reference to Figs. 1 and 2. In Fig. 1 the parts are shown in the position they occupy when the valve *b* is closed. If now it is desired to light the gas, the cock or valve *b* is given substantially a quarter-turn in the direction indicated by the arrow *10*. During this movement of the valve *b* the dog or arm *f* is turned with the valve by the pin *g*, and when the valve has reached its open position (represented in Fig. 2) the gas is ignited at the burner-tip and immediately the heat acts upon the thermostat, which expands, and its free end moves substantially into the

position indicated in Fig. 2, which movement of the thermostat is transmitted through the lever *t* to the cam-lever *p*, which latter is turned on its pivot from substantially the position shown in Fig. 1 to that shown in Fig. 2, with the result that the cam-shaped end of the lever *p* moves the bolt *j* forward against the action of the spring *l* and projects the front end of the bolt into the path of movement of the dog or arm *f*, thus locking the latter against movement by its spring *h*, and consequently permitting the valve *b* to be left in its open position. If, however, for any reason the gas at the burner should cease to burn—as, for instance, by the flame being blown out or by the pressure of the gas falling below the point required to supply the gas to the burner—the thermostat contracts and turns the lever *p* in the opposite direction, which permits the bolt to be forced backward by its spring *l*, thus releasing the dog or arm *f*, which is immediately turned by its spring *h* into its starting position. The arm or dog *f* carries with it the pin *g*, and thus turns the valve *b* into its closed position. When the arm or dog *f* is in its locked position, (shown in Fig. 2,) the valve may be turned back, so as to partially close the same, if so desired, independent of the movement of the cam or dog.

I claim—

1. The combination with a gas bracket or arm provided with a valve controlling the flow of gas to the burner, a dog or arm loose on said valve, means on said valve to engage said dog or arm, a spring to move said dog or arm, of a thermostatically-operated sliding bolt to engage said dog or arm, and means to withdraw said sliding bolt from engagement with said dog or arm, substantially as described.

2. The combination with a gas bracket or arm provided with a valve controlling the flow of gas to the burner, a dog or arm loose on said valve, means on said valve to engage said dog or arm, a spring to move said dog or arm, of a sliding bolt to engage said dog or arm, a lever provided with a cam-shaped surface coöperating with said bolt, thermostatic means to turn said lever and move the bolt

into the path of movement of the arm or dog, and means to withdraw the said bolt from the path of movement of said dog or arm, substantially as described.

3. The combination with a gas bracket or arm provided with a valve controlling the flow of gas to the burner, a dog or arm loose on said valve, means on said valve to engage said dog or arm, a spring to move said dog or arm, of a sliding bolt to engage said dog or arm, a cam-lever coöperating with said bolt, a second lever in engagement with said cam-lever, a thermostat to act on said second lever, and means to withdraw the sliding bolt from the path of movement of the dog or arm, substantially as described.

4. The combination with a gas-burner provided with a valve controlling the supply of gas to the burner, of a device movable in one direction with said valve and independent thereof to permit the valve to be moved in the opposite direction without moving said device, a sliding bolt coöperating with said device, a thermostat to effect movement of said bolt into the path of movement of said device, and means to move said bolt in the opposite direction, substantially as described.

5. The combination with a gas-burner provided with a valve controlling the supply of gas to the burner, means to automatically return said valve from its open to its closed position, a sliding bolt coöperating with said means, and a thermostat to effect movement of said bolt to engage said means, substantially as described.

6. The combination with a gas-burner provided with a valve controlling the supply of gas to the burner, means to automatically return said valve from its open to its closed position, a sliding bolt coöperating with said means, a cam-lever to actuate said bolt, and a thermostat to actuate said cam-lever, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS F. DUCKER.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.