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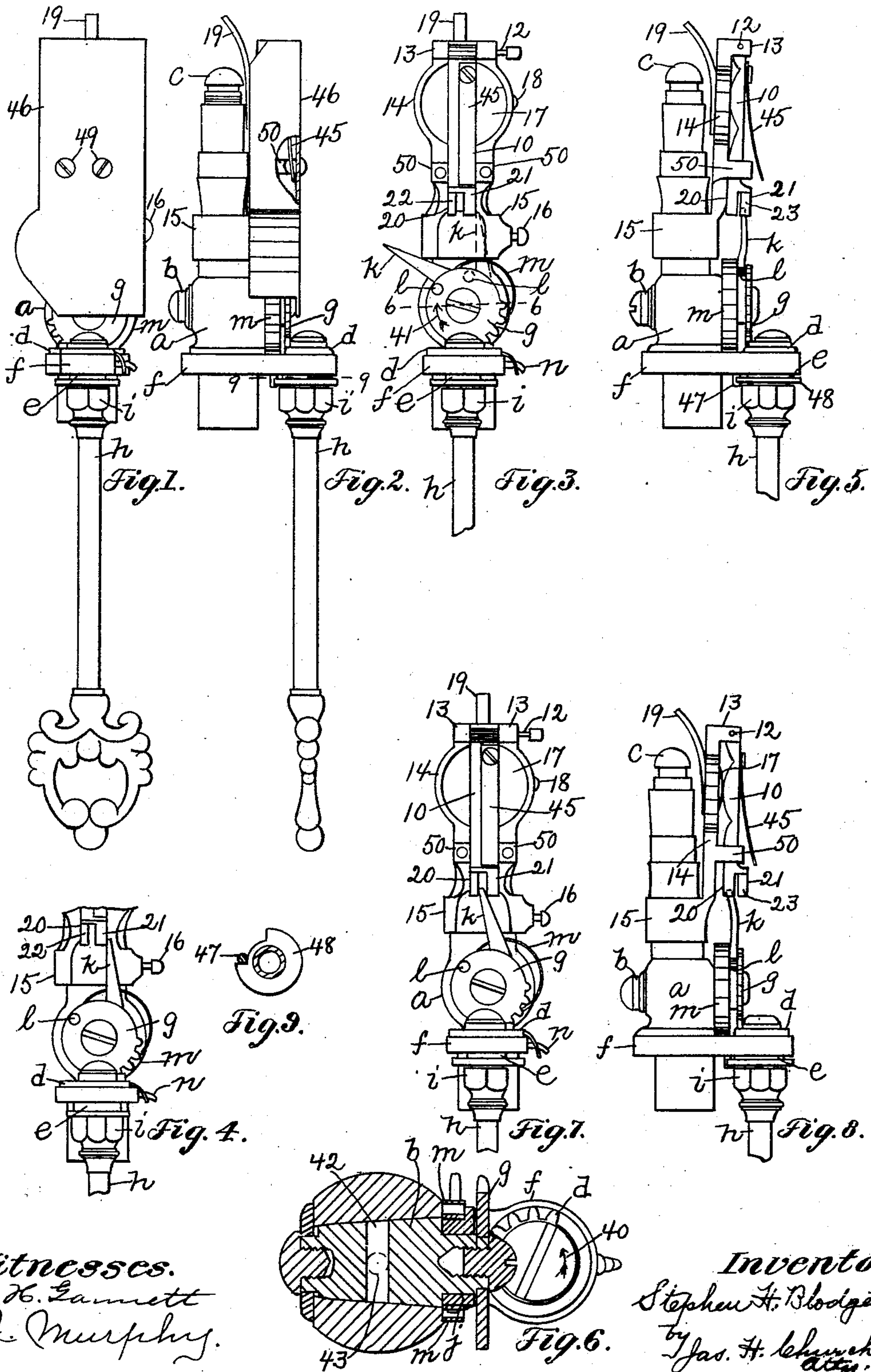
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S. H. BLODGETT.

SAFETY ATTACHMENT FOR GAS BURNERS.

(Application filed June 24, 1901.)

(No Model.)



Witnesses.

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SAFETY ATTACHMENT FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 705,315, dated July 22, 1902.

Application filed June 24, 1901. Serial No. 65,756. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN H. BLODGETT, a citizen of the United States; residing in Lincoln, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Safety Attachments 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 a safety attachment for gas-burners, and has for its object to provide a simple, cheap, and efficient device which is rendered effective to automatically close the valve or cock controlling the flow of gas to the burner-tip in case the flow of gas is interrupted accidentally or otherwise and which permits the said valve to be operated independent of the said automatic device to wholly or partially shut off the gas. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a front elevation of a gas-burner provided with a safety attachment embodying this invention; Fig. 2, a side elevation of the burner shown in Fig. 1, with part broken away; Fig. 3, a front elevation of the burner with the protecting-cap removed and showing the device in its initial operative and inoperative positions; Fig. 4, a detail in elevation showing the device in its initial operative position; Fig. 5, a side elevation of the burner with the device in its operative position; Fig. 6, a section on the line 6 6, Fig. 3; Figs. 7 and 8, front and side elevations to be referred to; and Fig. 9, a sectional detail on the line 9 9, Fig. 2.

Referring to the drawings, the gas-burner *a*, provided with the cock or valve *b* and tip *c*, is and may be of any suitable or usual construction. The valve *b* is adapted to be turned, as herein shown, by means of a segmental gear *d*, fast on a shaft *e*, having bearings in a bracket or arm *f*, attached to the burner *a*, the said gear meshing with a segmental gear *g*, secured to the valve *b* to rotate therewith. The shaft *e* may be provided with a handle *h*, detachably secured thereto by a nut *i*.

The valve *b* has loose on it a sleeve *j*, (see Fig. 6,) provided with a crank or arm *k*, adapt-

ed to be engaged by a pin or projection *l* on the segmental gear *g* to move said arm and its sleeve from the normal or starting position (shown in Fig. 3) to the position shown by dotted lines in said figure and by full lines, Fig. 4.

The sleeve *j* and its attached arm are moved in the opposite direction, when permitted so to do, by a spiral spring *m*, one end of which is attached to said sleeve and the other end to a stationary support, shown as a pin *n*, projecting from the bracket or arm *f*. The arm *k* constitutes an actuating device by which the valve or cock *b* may be turned into its closed position. (Shown in Fig. 6.) This actuating device is governed in its operation by means of a holding device, which is governed in its operation by a thermostat. The holding device herein shown consists of a substantially vertical lever 10, mounted on a pivot pin or shaft 12, supported by lugs or ears 13 on a frame 14, attached to the burner, and in the present instance the said frame is provided with a lug 15, having an opening which permits it to be slipped over the burner *a* and adjustably secured thereto by a set-screw 16.

The frame 14 has soldered or otherwise secured to it a flexible diaphragm 17, forming with said frame a chamber which is adapted to contain a volatile medium, such as naphtha, ether, &c., which may be admitted through a suitable opening, which is closed by a cap or plug 18. The frame may have attached to it a heat-conducting arm 19, which may project over the mouth of the burner-tip *c*, as herein shown, or said arm may be omitted; but I prefer to use the heat-conducting arm, as the thermostat is rendered more sensitive.

The lever 10 is provided at its lower end, as herein shown, with two holding arms or catches 20 21, preferably provided, as shown, with opposing beveled inner faces 22 23 and substantially straight outer faces, the said arms being out of line with each other, as shown in Fig. 5, for a purpose as will be described.

In operation, with the valve closed and the flow of gas to the burner-tip interrupted, the arm *k* occupies the position indicated by full lines in Fig. 3, while the valve *b* occupies sub-

stantially the position indicated in Fig. 6. If it is desired to light the gas, the operator turns the handle *h* in the direction indicated by the arrow 40, Fig. 6, which movement turns the valve *b* in the direction indicated by the arrow 41, Fig. 3, so as to bring the port or passage 42 into line with the gas-supply opening 43 in the burner. As the segmental gear *g* is moved in the direction indicated by the arrow 41, the arm *k* is moved in the same direction by means of the pin or projection *l*. As the arm *k* is thus moved it passes by the catch or locking-finger 20 and engages the beveled face 23 of the second locking-finger 21, thereby moving the lower end of the lever 10 outward or to the right (viewing Fig. 3) until the arm *k* has been moved beyond and out of engagement with the said lever, whereupon the said lever will be restored to its normal position by means of the spring 45, attached at one end to the lever 10 and having its other end bearing against the inner face of the cap or cover 46, as shown in Fig. 2. The movement of the valve in the direction indicated by the arrow 41 is limited by a stop or projection 47 on the under side of the bracket or arm *f*, being engaged by one wall of a slot in a disk 48, attached to the shaft *e*. When the lever 10 is restored to its normal position after the arm *k* has been carried beyond it, the operator may release the operating-handle, and the valve will be held from closing by the engagement of the said arm with the flat or smooth face of the holding-finger 21, as represented in Figs. 4 and 5. When in such position, the gas has been fully turned on and may be ignited at the burner-tip. As soon as the gas is ignited the heat from the flame acts on the thermostat, which effects movement of the lever 10 toward the right (viewing Fig. 5) against the pressure of the spring 45. As the lever 10 is moved toward the right the holding arm or finger 21 is removed from engagement with the spring-actuated arm *k*, and the latter is then moved a short distance by its spring into engagement with the beveled face 22 of the holding finger or arm 20 and is prevented from further movement by reason of the fact that the lever is held from moving toward the left (viewing Fig. 8) by the thermostat, which at such time has imparted to it substantially its maximum movement. This brings the arm *k* into the position represented in Figs. 7 and 8, and it remains in this position while the burner remains lighted. If for any reason the flow of gas to the burner should be interrupted or the flame extinguished, the thermostat contracts, allowing the spring 45 to move the lever 10 toward the left, (viewing Fig. 5,) which movement is assisted by the spring *m*, acting on the arm *k*, which latter passes over the inclined or beveled face 22 of the holding arm or finger 20, thus forcing the lever 10 back to its normal position and permitting the arm *k* to be restored by its spring to its normal po-

sition. (Shown by full lines in Fig. 3.) As the arm *k* is moved to its normal position it carries with it the valve *b* by reason of its engagement with the pin *l* and moves the said valve into its closed position, as represented in Fig. 6.

By reason of the fact that the arm *k* is loose on the valve the latter may be turned to completely or partially shut off the flow of gas without movement of the arm, so that after the gas has been lighted and the arm *k* is brought into what may be termed its "active" position (represented in Fig. 7) the operator, if he so desires, can turn down or completely shut off the flow of gas by rotating the handle so as to bring the valve into its closed position, (represented in Fig. 6,) which position is determined by the opposite wall of the slot in the disk 48 engaging the pin 47.

With the apparatus herein shown it is to be noted that the safety device is placed in active or operative position and condition when the gas is turned on and ignited and that the said device remains in its operative position and is out of the influence of the valve, so that the latter can be positively turned to partially or completely shut off the supply of gas, and when the gas is completely shut off and the thermostat restored to its normal position the valve-actuating device becomes active and is restored to its normal or starting position. The cap 46 may be fastened, as by screws 49, to lugs 50, projecting from the frame 14, and is so shaped as to cover the arm *k*, the lever 10, and the thermostat, and thus protect these parts from accidental derangement.

I claim—

1. The combination with a gas-burner provided with a valve controlling the flow of gas, of an arm loosely mounted on said valve, means to turn said valve in one direction and move said arm, a thermostat, a lever operated by said thermostat and provided with holding-fingers, one of which acts to hold said arm from closing the valve while the gas is being lighted and the other of which engages said arm after it is released from the first-mentioned finger and holds the said arm from closing the valve while the gas remains lighted, means to release said arm from said second finger when the gas-flame is extinguished, and means to return said arm to its normal position, substantially as described.

2. The combination with a gas-burner provided with a valve controlling the flow of the gas, of an arm loosely mounted on said valve, means to turn said valve in one direction and move said arm, a thermostat, a lever operated by said thermostat and moved into engaging position with said arm to hold the latter from returning to its normal position until released, means to disengage said lever from said arm when the gas-flame is extinguished, and means to return said arm to its normal position, substantially as described.

3. The combination with a gas-burner pro-

vided with a valve controlling the flow of gas from said burner, of means for automatically closing said valve, comprising a thermostat, a valve-actuating device operatively connected with said valve to move therewith in one direction when the valve is opened and to permit said valve to be moved in the opposite direction without corresponding movement of said actuating device, and means cooperating with said thermostat and with said valve-actuating device to hold said device while the gas is being lighted and to release said device and again engage it when the gas is lighted, substantially as described.

4. The combination with a gas-burner provided with a valve controlling the flow of the gas, a sleeve loosely mounted on said valve and provided with an arm, a thermostat, a lever actuated in one direction by said thermostat to place said lever into engaging position with said arms to hold the latter from moving in a reverse direction with said valve, and means independent of the thermostat for disengaging said lever from said arm, substantially as described.

5. The combination with a gas-burner provided with a valve for controlling the flow of gas, of an arm loose on said valve, means to turn said valve in one direction and move said arm, a thermostat, a substantially vertical lever pivoted at its upper end and acted upon by said thermostat to move the lower end of said lever into engaging position with the said arm, substantially as described.

6. A gas-burner having in combination a valve, a pin *l* on said valve, an arm *k* cooperating with said pin, a spring *m* to move said arm in a direction to close said valve, a lever cooperating with said arm to hold it against the action of said spring, and a thermostat controlling the movements of said lever and effecting the disengagement of the said lever from said arm, substantially as described.

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

STEPHEN H. BLODGETT.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.