

No. 662,082.

Patented Nov. 20, 1900.

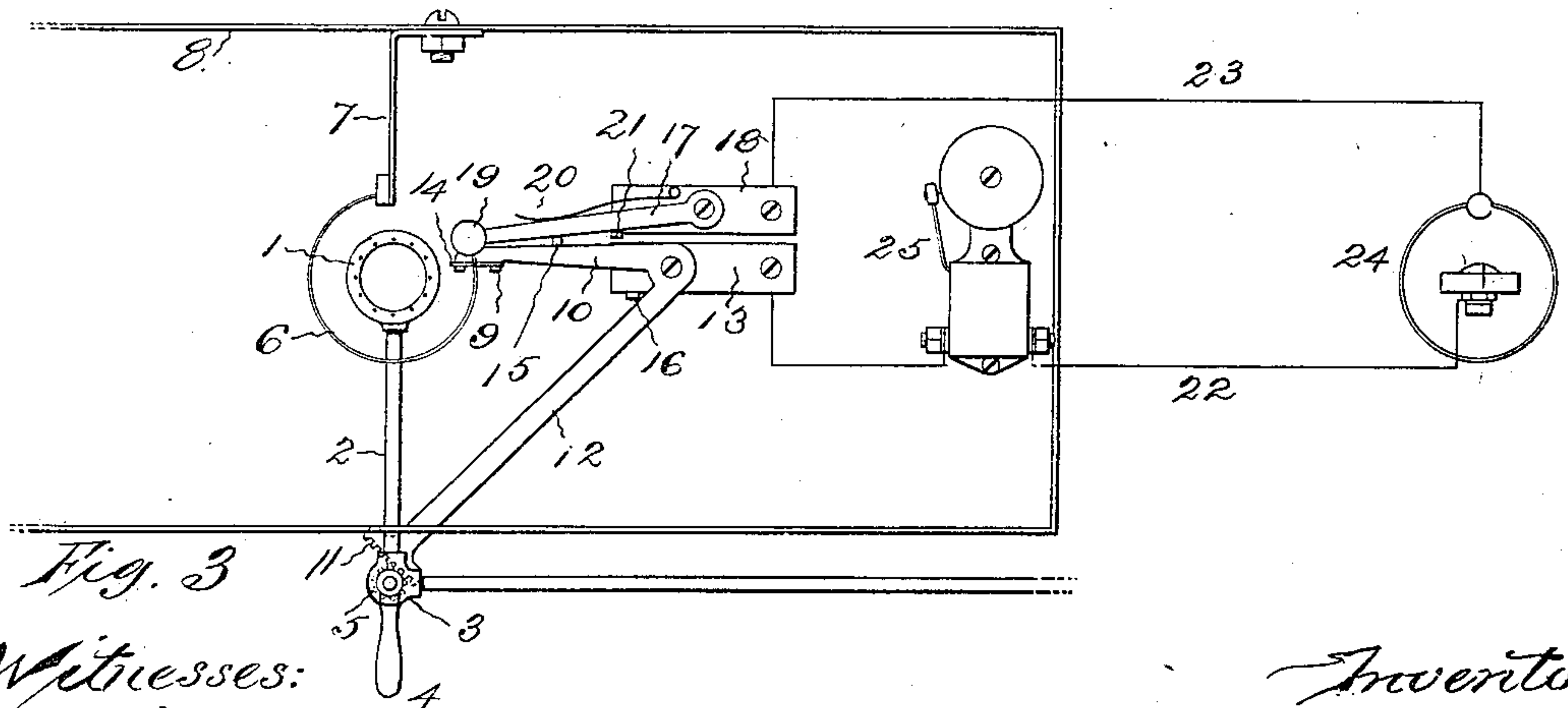
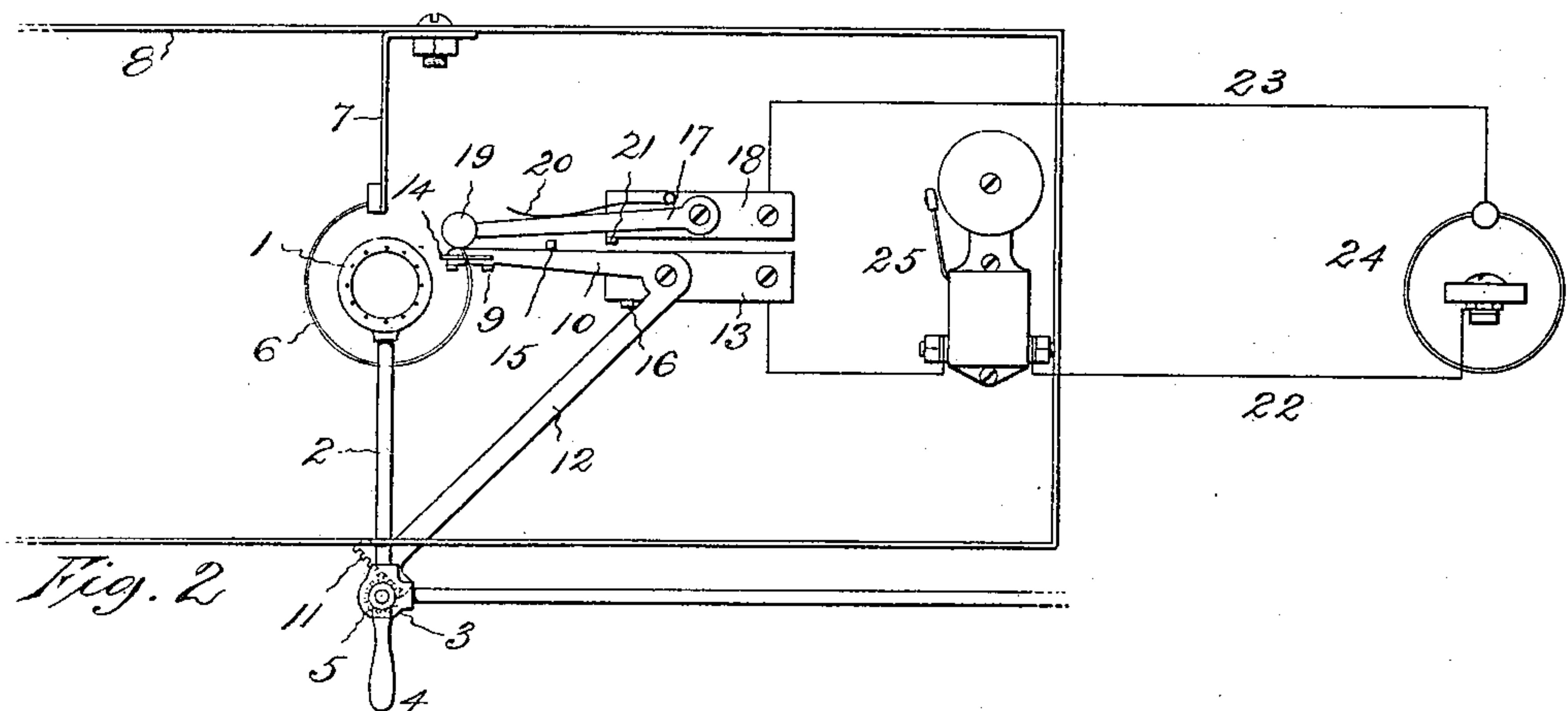
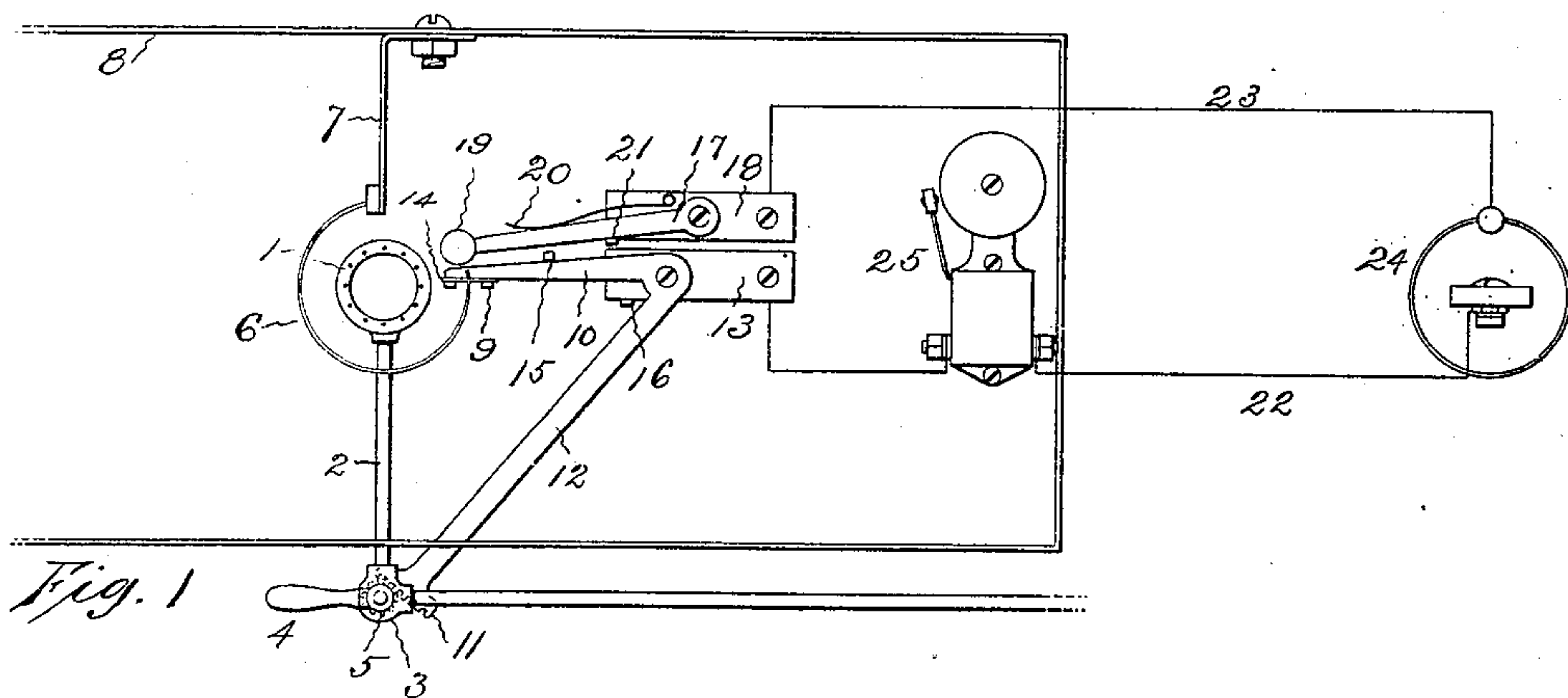
J. G. McALPINE, JR.

AUTOMATIC SHUT-OFF AND ALARM FOR GAS BURNERS.

(Application filed July 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

V. R. Hokomb.

C. E. Burtland.

Inventor:

James G. McAlpine, Jr.
Harry P. Williams
att.

No. 662,082.

Patented Nov. 20, 1900.

J. G. McALPINE, JR.

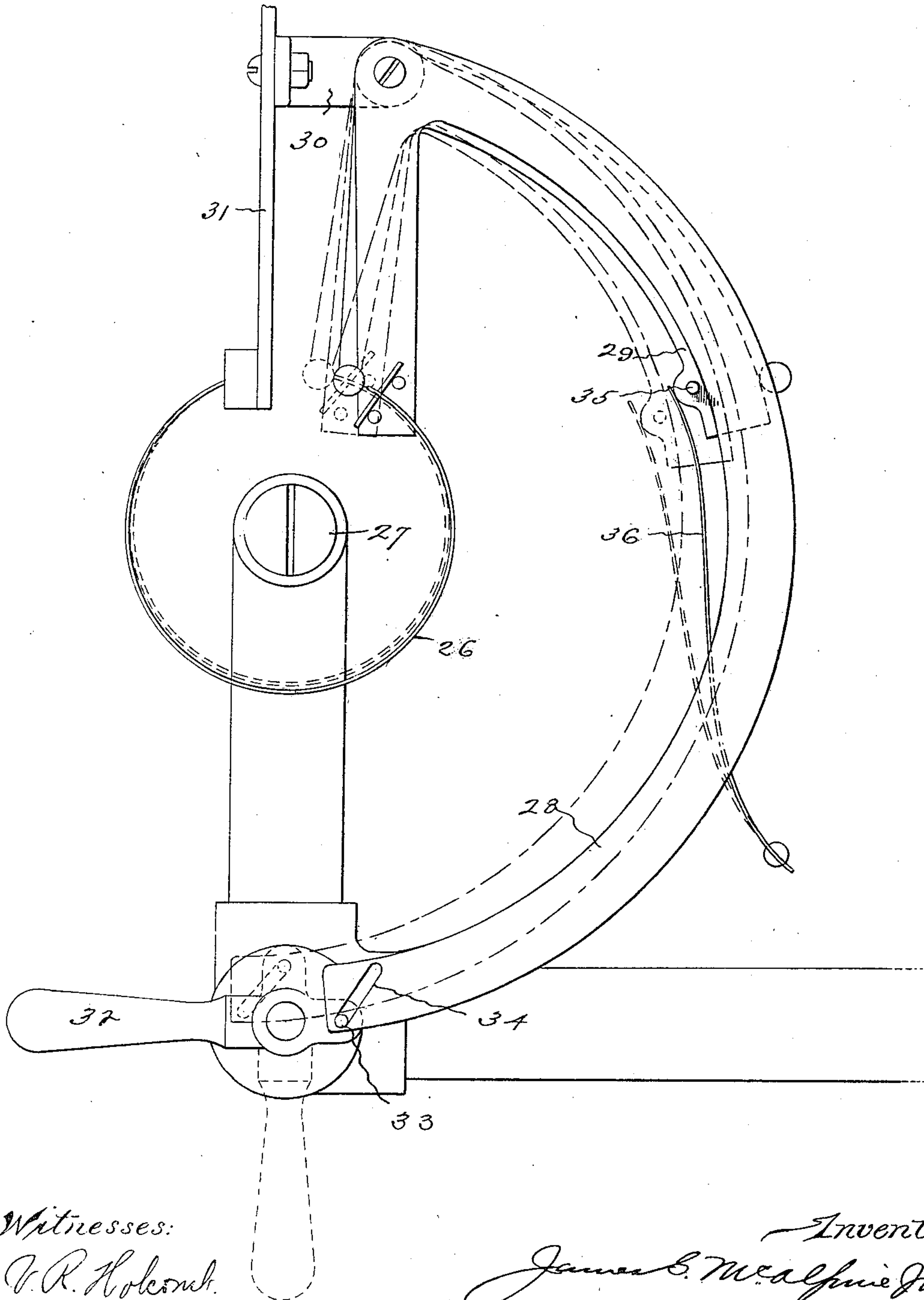
AUTOMATIC SHUT-OFF AND ALARM FOR GAS BURNERS.

(Application filed July 27, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 4



Witnesses:

V. R. Holcomb.

C. E. Burtland.

Inventor:

James G. McAlpine, Jr.
by
Harry P. Wierman
att.

UNITED STATES PATENT OFFICE.

JAMES G. McALPINE, JR., OF GILROY, CALIFORNIA.

AUTOMATIC SHUT-OFF AND ALARM FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 662,082, dated November 20, 1900.

Application filed July 27, 1900. Serial No. 25,010. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. McALPINE, Jr., a citizen of the United States, residing at Gilroy, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Automatic Shut-Offs and Alarms for Gas-Burners, of which the following is a specification.

This invention relates to a safety device designed to be arranged adjacent to a gas or oil burner for giving warning and shutting off the supply of combustible material whenever either accidentally or maliciously the flame becomes extinguished and the stop-cock in the supply-pipe is open.

The object of the invention is the production of a simple, durable, and sure device of this nature which may be arranged with any lighting or heating burner so as to either close the stop-cock or give an audible signal, or do both, when the flame becomes extinguished otherwise than by closing the stop-cock.

Each of the embodiments of the invention illustrated in the accompanying drawings has a thermostatic ring designed to be located adjacent to the burner the device is to protect, a lever arranged to be moved into such position by the opening of the cock that the contraction of the ring will cause the lever to close the cock, a lever arranged to be held out of metallic contact with the cock-lever when the cock is open and the fuel is burning and emitting heat and adapted to engage the cock-lever when the cock is open and the fuel is escaping unconsumed, and a battery and magneto-bell connected in an electric circuit the terminals of which are the plates to which the cock-lever and alarm-lever are attached.

Figure 1 of the views illustrates a form of the device arranged for shutting off the cock and ringing a bell should the flame at a gas-stove burner become extinguished. In this view the parts are shown in the positions occupied when the flame is extinguished and the cock is closed. Fig. 2 is a view of the same, showing the positions of the parts when the cock is open and the fuel is ignited at the burner. Fig. 3 is a view showing the positions occupied by the same parts with the stop-cock open and the flame extinguished.

Fig. 4 is a plan of a modified form of the device, showing in full lines the parts in the positions occupied when the cock is closed and in dotted outline the positions when the cock is open and the fuel is properly burning.

The circular gas or vapor stove burner 1 (shown in Figs. 1, 2, and 3) is joined to a pipe 2, that may be connected with any source of fuel, which may be natural gas, water-gas, gasolene, kerosene, or naphtha. In this pipe is a common stop-cock 3. The plug of this cock has the usual handle 4, by means of which it may be turned manually for opening or closing the cock, and it also has a pinion 5, through the medium of which the plug may be automatically turned for closing the cock. A thermostatic ring 6 is held by any suitable support 7, attached to the walls 8 of the stove-frame in proximity to this burner, so as to be effected by the heat of the flame of the fuel ignited at the burner. This ring may be made of a strip of brass and a strip of steel or any other combination of metals which will cause the ring to forcibly contract or expand as the temperature at the burner changes.

A bent lever having a fork 9 at the end of the arm 10 and a rack 11 at the end of the arm 12 is pivoted to a plate 13, so attached to the stove-frame that the rack 11 will engage with the pinion 5 and the arms of the fork 9 will project in front of the pin 14, that is fastened to the end of the expansible and contractile ring 6. The arms of the fork 9 are so located with relation to the pin 14 that when the ring is cold and is expanded to its largest diameter the pin by engagement with the arms of the fork will draw the arm 10 of this bent lever in such manner as to cause the rack 11 at the end of the arm 12 to turn the pinion and close the cock, as shown in Fig. 1. A lug 15 projects from the edge of the arm 10 of the cock-lever, and a pin 16, projecting from the plate 13, by engagement with the arm 12 limits the movement of this lever.

A lever 17 is pivoted to a plate 18, attached to the stove-frame in any suitable manner. This lever preferably has an insulated tip 19, adjacent to the free end of the ring. Spring 20 normally thrusts the alarm-lever toward the arm 10 of the cock-lever, and a pin 21,

projecting from the plate 18, limits the movement of this alarm-lever.

Wires 22 and 23 connect the plates 13 and 18 with poles of a battery 24. An electric bell 25, that may be attached to the stove-frame or to any other support, is connected in the battery-circuit.

When the cock is closed, the cock-lever is moved away from the alarm-lever, which by its stop-pin is prevented from following, and as there is no heat at the burner the ring will be expanded to its greatest diameter, Fig. 1. When the cock is opened, the cock-lever is moved toward the alarm-lever, and if the fuel passing through the burner is ignited the ring will be contracted in diameter by the action of the heat and the end of the ring will engage the insulated tip and push the alarm-lever against its spring away from the cock-lever, Fig. 2. If when the cock is opened the fuel at the burner is not ignited or if the flame become extinguished, the ring will expand in diameter and allow the alarm-lever to make contact with the stud projecting from the cock-lever and close the electric circuit and cause the bell to ring, Fig. 3. The bell will sound until the ring is expanded in diameter sufficiently for its pin to move the cock-lever and cause the cock to be closed.

In Fig. 4 the thermostatic ring 26 is shown as located adjacent to an illuminating-burner 27. In this form the cock-lever 28 and alarm-lever 29 are pivoted upon a lug 30, projecting from the ring-support 31, the levers being properly insulated to prevent electrical contact except under the proper conditions. The handle 32 of the stop-cock of this form is provided with an extension, from which a pin 33 projects through a slot 34 in the end of the cock-lever. When this cock is open and the ring is contracted in diameter by burning luminant, the alarm-lever is held so that its stud 35 is at a distance from the cock-lever. Should the flame become extinguished without closing the cock, the ring will expand in diameter and allow the alarm-lever to be moved by its spring 36, so that the stud 35 will engage the cock-lever and close the circuit, sounding the alarm until the ring has moved sufficiently to close the cock. If, however, the cock is first closed, then the alarm will not be sounded as the ring expands.

The expansion and contraction device, which closes the cock and causes the alarm to sound if the cock is not closed, may be made

in other shapes than a ring, and equivalent forms of alarm may be employed without departing from the invention.

These devices may be applied for the protection of the heating-burners of stoves and the like or may be applied for the protection of luminating-burners. Several of the devices could be placed adjacent to burners in various localities, as in the rooms of a hotel, and be connected with a single alarm, as in the office of a hotel, for sounding the alarm should the flame at any burner become extinguished either accidentally or maliciously without closing the cock.

I claim as my invention—

1. A burner-protector consisting of a cock located in the supply-pipe to the burner, a thermostatic device located adjacent to the burner, a lever connected with the cock and having a part arranged to be engaged and moved by a part of the thermostatic device, as that device is cooled, a lever connected with one of the terminals of an electric circuit and held by the thermostatic device from closing the circuit when that device is heated, but allowed by the thermostatic device to close the circuit when that device is cooled and the cock-lever has not closed the cock, and an alarm connected in the electric circuit, substantially as specified.

2. A burner-protector consisting of an annular thermostatic device located adjacent to the burner, a lever forming the terminal of an electric circuit, adapted to be connected with a gas-cock and having a part arranged to be engaged and moved by a part of the thermostatic device as the latter contracts in diameter, a lever forming the other terminal of the electric circuit and adapted to be engaged by the other lever and an alarm connected in the electric circuit, substantially as specified.

3. A burner-protector consisting of a thermostatic device located adjacent to the burner, two levers connected with the terminals of an electric circuit, and having parts arranged to be engaged and moved by parts of the thermostatic device as the latter contracts and expands, a cock connected with one of the levers, and an alarm connected in the electric circuit.

JAMES G. MCALPINE, JR.

Witnesses:

O. H. DOBBS,

W. A. WHITEHURST.