

(No Model.)

C. H. KEENEY.
SELF CLOSING GAS BURNER.

No. 452,140.

Patented May 12, 1891.

Fig. 1.

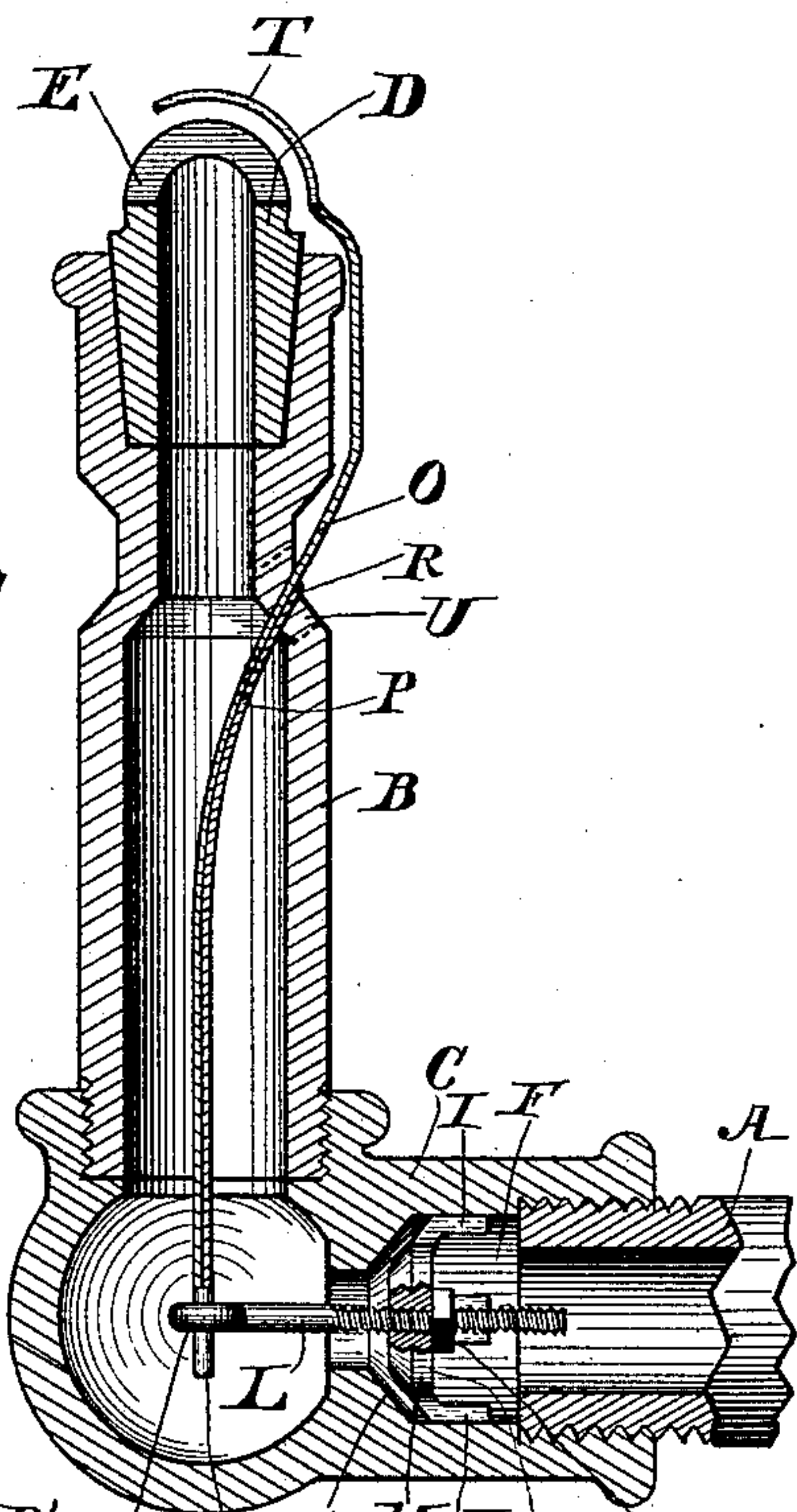


Fig. 2.

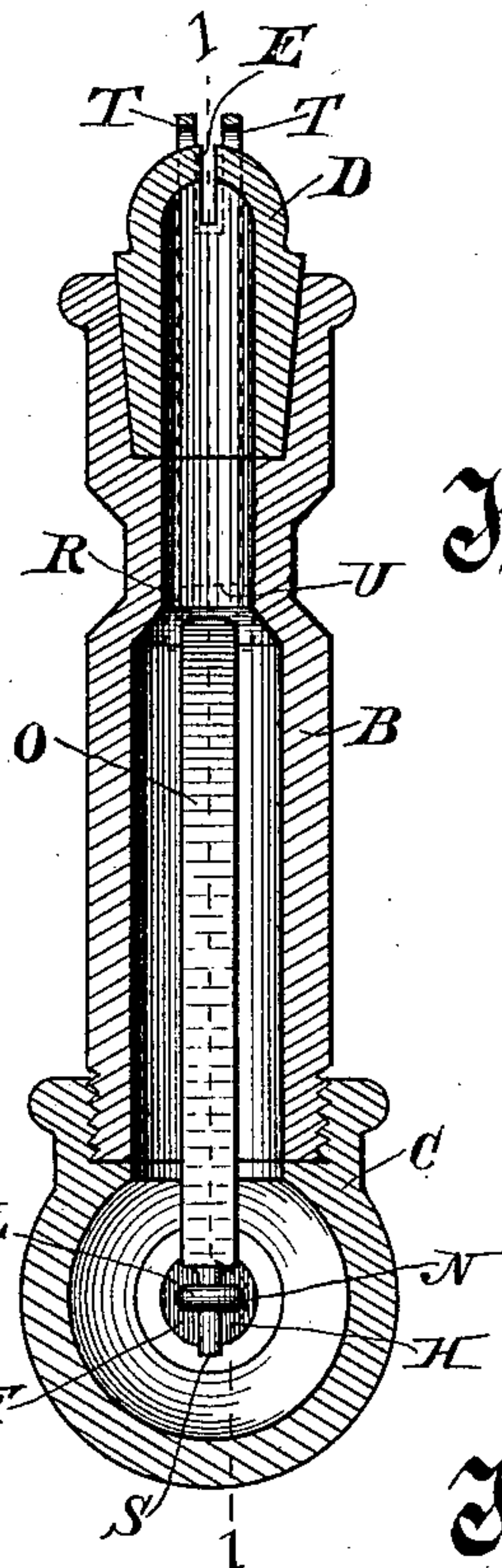


Fig. 5.

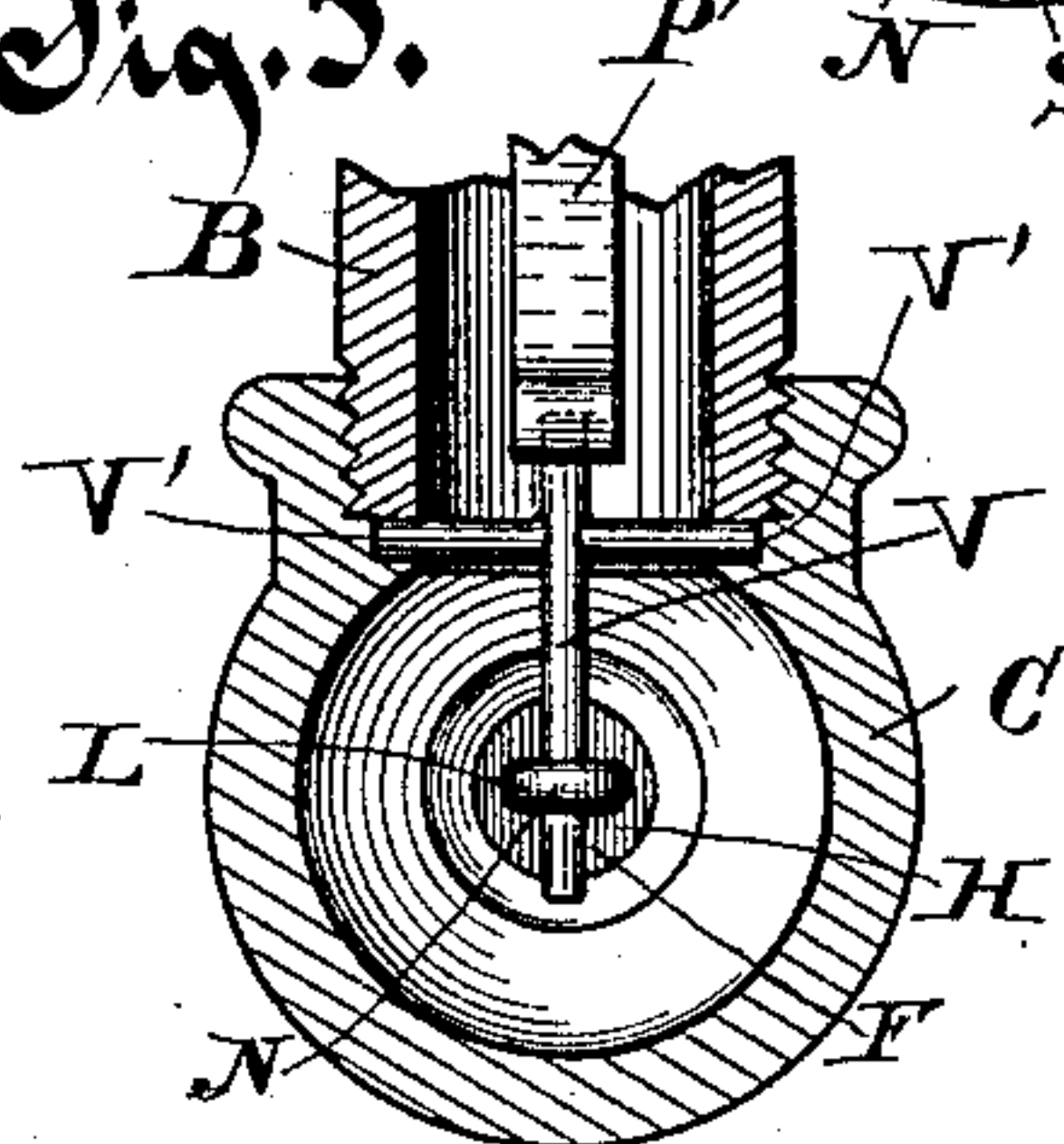


Fig. 3.

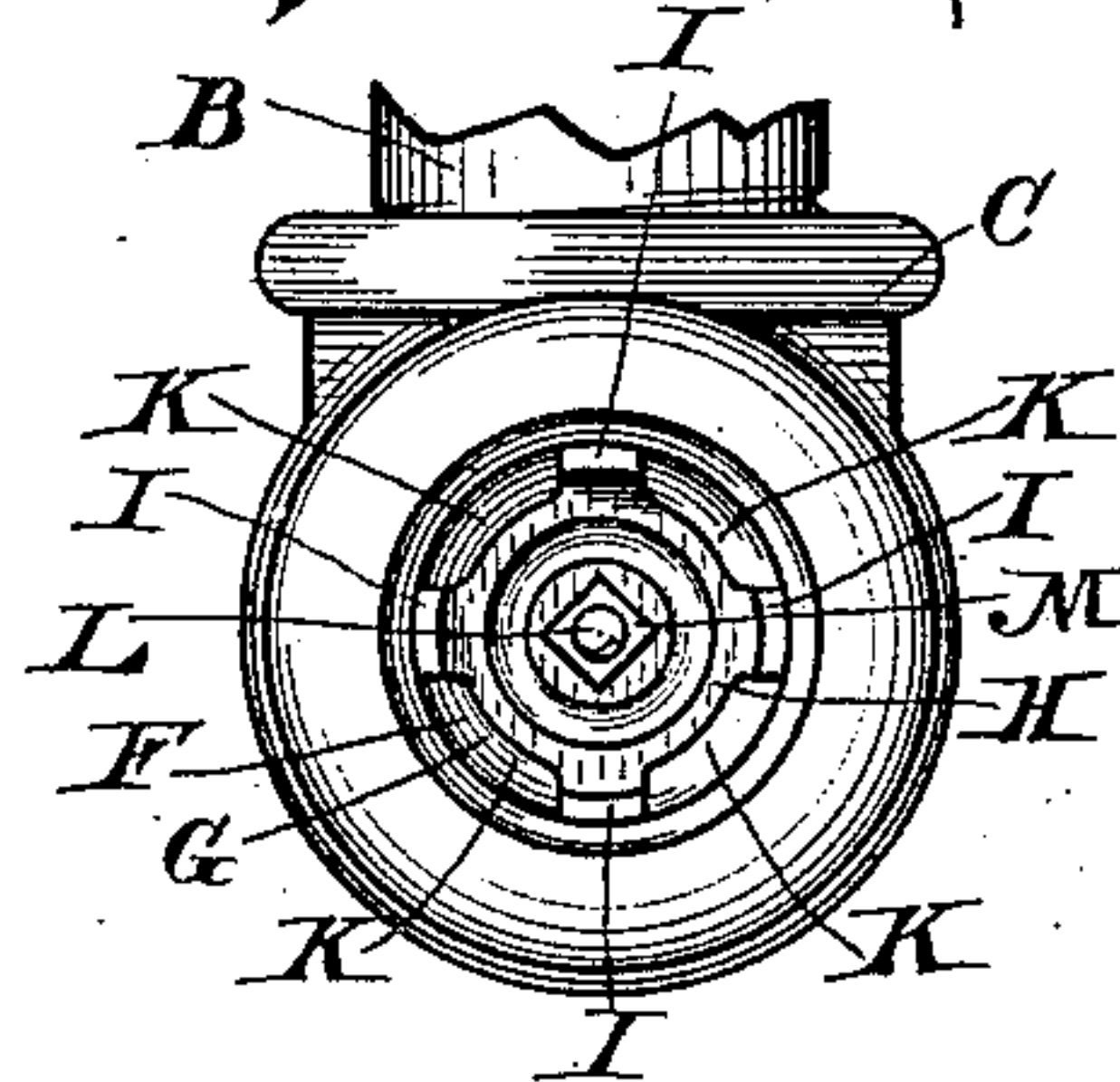
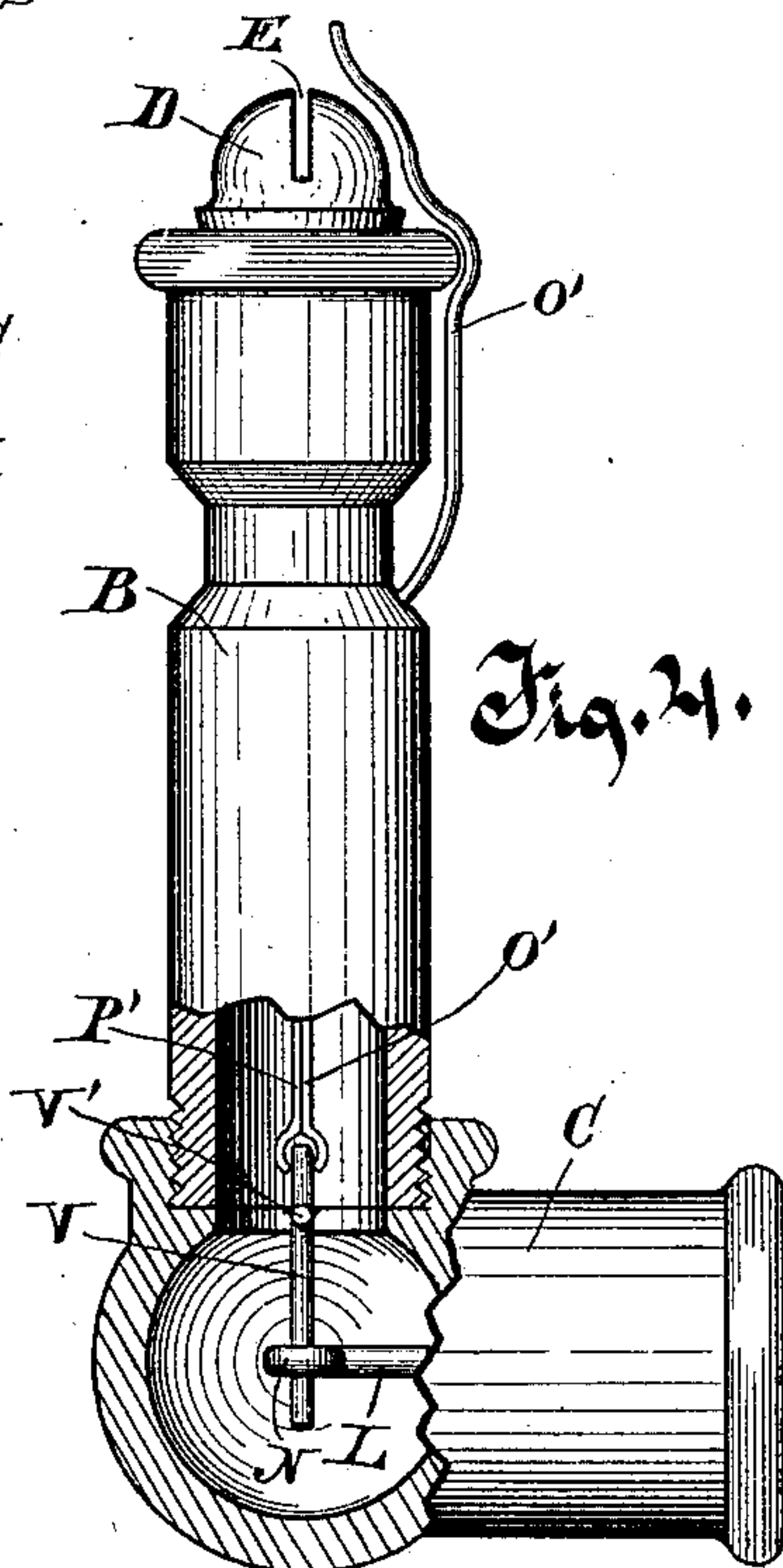


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES H. KEENEY, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF TWO-THIRDS TO COLWERT K. PIER AND ISIDOR LEISER, BOTH OF SAME PLACE.

SELF-CLOSING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 452,140, dated May 12, 1891.

Application filed June 4, 1890. Serial No. 354,246. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. KEENEY, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Self-Closing Gas-Burners, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in devices constructed and arranged for automatically closing the pipe and cutting off the supply of gas from a burner such as is commonly used for lighting purposes when the light has been extinguished. My device will close the gas-pipe when the heat of the burning gas ceases to exist, whether the flow of gas has or has not been otherwise stopped, though the particular object of my device is to automatically close the pipe, and thereby stop the flow of gas when the light has been accidentally extinguished without the supply of gas being otherwise stopped.

In the drawings, Figure 1 is a vertical section of a gas-burner on line 1 1 of Fig. 2 with my automatic device connected thereto. Fig. 2 is a central vertical section of the tube and tip of a gas-burner with my automatic device shown in connection therewith. Fig. 3 is an end view of the valve for closing the pipe, looking at it toward the left of Fig. 1. Fig. 4 is an elevation of a gas-burner, parts being broken away for showing the interior construction, with which a modified form of my device is shown. Fig. 5 is a detail of the modified form of device shown in Fig. 4.

A is the pipe for supplying the gas to the burner.

B is the burner-tube, and C is a coupling by which the burner-tube B is secured to the gas-pipe A.

D is the burner-tip, which is commonly made of clay or earth material properly formed and baked. The burner-tip D in this form of device is provided with a slit E for discharging the gas therethrough, at which place the gas is lighted and burned in the method in common use.

The stop-cock which is usually in the pipe A, for closing that pipe, is not shown in the drawings, as it is a device of common construction.

The forms of burners shown in the illustration are such as are in common use, and I have selected this form of burner for the illustration of my device and its operation; but the device can be readily attached to other forms of burners with such slight modification in its construction as would be suggested to any mechanic, and could be readily made.

In the construction of my device a valve-chamber F is formed, preferably, in the coupling C, which has a valve-seat G, preferably beveled for convenience of construction and to furnish greater surface for the bearing of the valve. A valve H in the chamber F is fitted to the valve-seat G, and is adapted to close the passage through the coupling. The valve is provided with laterally-projecting guides I I, which bear loosely against the sides of the chamber F and retain the valve in position as it travels from and toward the valve-seat G. The valve H is less in diameter than the diameter of the chamber F, whereby openings K K are provided for the passage of gas through the pipe A and coupling C into the burner-tube B at the sides of the valve when it is forced away from the valve-seat G, and occupies the position in the chamber F shown in Fig. 1. The valve is provided with a stem L, which passes centrally through the valve, and is provided with a screw-thread and nut M, turning thereon, whereby the length of the stem may be increased or diminished as desired for adjusting it properly with reference to other parts of the device. The stem L is provided at its front end with an eye N.

The valve H is opened and closed by the action of a metal thermostat constructed and arranged substantially as follows: A metal wire or strip O extends from the top of the burner-tip D down into and through the passage in the burner-tube B into the passage through the coupling C, where it enters the eye N of the stem L of the valve. Another strip of metal P is placed against and secured rigidly to the strip O throughout a considerable portion of its length. These two strips of metal are secured fixedly to the wall of the burner-tube B at a distance from the stem L and preferably at a point R, where the strip O passes from the outside into the burner-tube. The two strips of metal O and P, being

thus secured fixedly to the burner-tube at a distance from the stem L, are secured also to the stem L conveniently by inserting the projecting end S into the eye N. This form of construction provides for inserting and removing the burner-tube B from the socket C readily by rotating it on its screw-thread therein. The strip O is formed of metal having great expansibility under heat, preferably of brass, copper, or similar metal, and the strip P is constructed of metal having less expansibility under the same degree of heat, preferably of steel or iron or similar metal. The strip O is also preferably made bifurcate at its upper ends, its two arms T T being constructed and arranged to have position on each side of and just above the slit E of the burner-tip, so that these arms T T will be near to or in contact with the combustion of the gas when it is lighted and burning at the slit in the tip. If the burner-tube B is constructed of metal that unfavorably affects the thermostat, an earthen plug U may be inserted in the wall of the burner B, and the strip O may be carried through the wall in the plug, and the two strips O and P may be secured directly to the plug, which in turn is fixed in the wall of the burner. The result of this form of construction of the thermostat is that when heat is applied by the burning of the gas at the tip D to the arms T T the heat will be therefrom transmitted to the part of the strip O that is alongside of and opposite the strip P, and as the strip O has greater expansibility than the strip P it will curve inwardly and force the stem L and valve H rearwardly away from the valve-seat, so that the gas may freely flow around the valve to the burner, and as long as heat continues to act on the strip O the valve H will be held open; but when the combustion ceases at the tip D the strip O will cool and contract, thereby straightening the thermostat and closing the valve H, thus stopping the flow of gas through the burner. When the gas is turned onto the burner by opening the stop-cock in the pipe A, the match or taper used for lighting the gas must be held for a moment against or near to the arms T T of the strip O to sufficiently heat the strip to cause such a movement of the thermostat as to properly open the valve H, whereupon the gas will flow, and, being lighted, will by its combustion and the action of the thermostat hold the valve open.

In the modified form of device shown in Figs. 4 and 5 a short lever V is pivoted medially in the coupling C conveniently by journals V'. The lower arm of this lever is inserted in the eye N and the upper arm is connected to the lower end of the strips O' and P'. In this modified form of device the strips O' and P' are arranged in the reverse position to that of the strips O and P shown in the other form of device, so that by the greater expansion of the strip O' the top of the lever V will be thrown outwardly, thereby forcing

the lower end of the lever and the valve H rearwardly away from its seat. In this form of device the strip O' is shown as a round wire, which may be used, if desired, and its upper end is carried over the burner-tip D at its side or at right angles to the slit E; but in this case the end of the strip O' is extended upwardly a little, so as to be sufficiently within the field of the combustion above the slit.

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

1. In a device for automatically closing the passage in a gas-burner, a thermostat consisting of a strip of metal having considerable expansibility under the action of heat, one end of which is located in or near the point of combustion, and another strip of metal of less expansibility under the action of heat placed alongside and secured to the first strip of metal for a considerable distance, both which strips at their free ends are connected within the passage in the burner to a movable valve, and at a distance therefrom are secured rigidly to the burner-tube, substantially as described.

2. The combination, with a gas-burner tube, of a thermostat constructed of two strips of metal of different expansibility under heat, the strip of metal of lesser expansibility being located entirely within the burner-tube and the other strip within the tube being located alongside of and secured to the strip of lesser expansibility, both strips being secured to the tube at a distance from their free ends, the strip of greater expansibility passing through the wall of the burner-tube and extending on the outside of the tube into the field of combustion above the burner-top, and a laterally-movable valve located in the passage for the gas and connected to the inner free end of the thermostat, but so as to be moved by the action of the thermostat, substantially as described.

3. The combination, with a gas-burner tube, of a thermostat consisting of two strips of metal of greater and lesser expansibility placed alongside and secured together, being at a distance from their free ends fixed to the burner-tube, the strip of greater expansibility being continued into the field of combustion, a laterally-moving valve located in a chamber formed at the side of the burner-tube, the valve being arranged to seat itself in the direction of the flow of gas, and a means of positive connection of the valve with the free end of the thermostat, whereby the valve is moved toward and from its seat by the motions of the free end of the thermostat, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. KEENEY.

Witnesses:

C. T. BENEDICT,
ANNA FAUST.