

W. S. STAPLEY.
GAS CUT-OFF FOR BUNSEN TUBES.
APPLICATION FILED JULY 22, 1905.

Fig. 1.

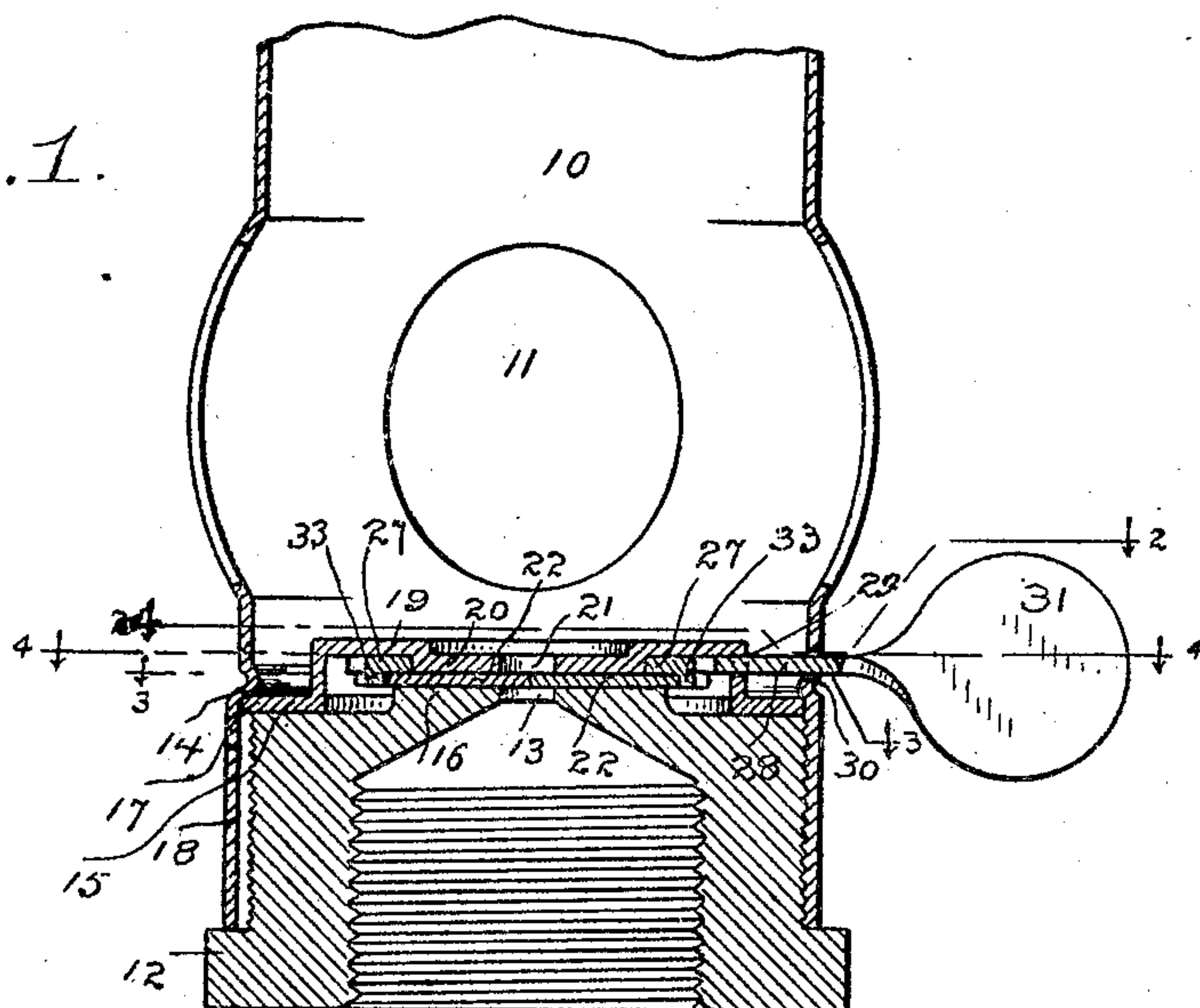


Fig. 2.

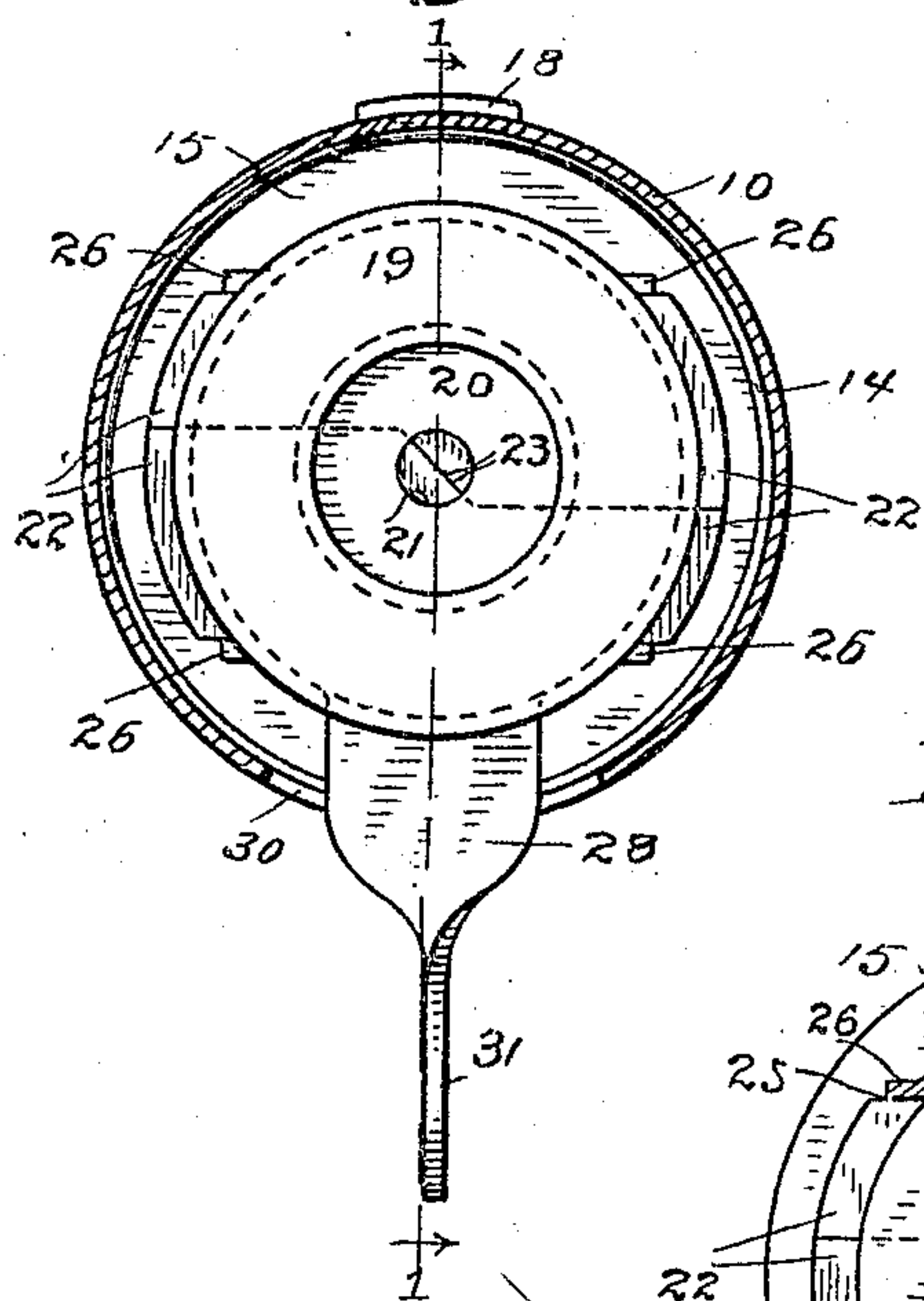


Fig. 3.

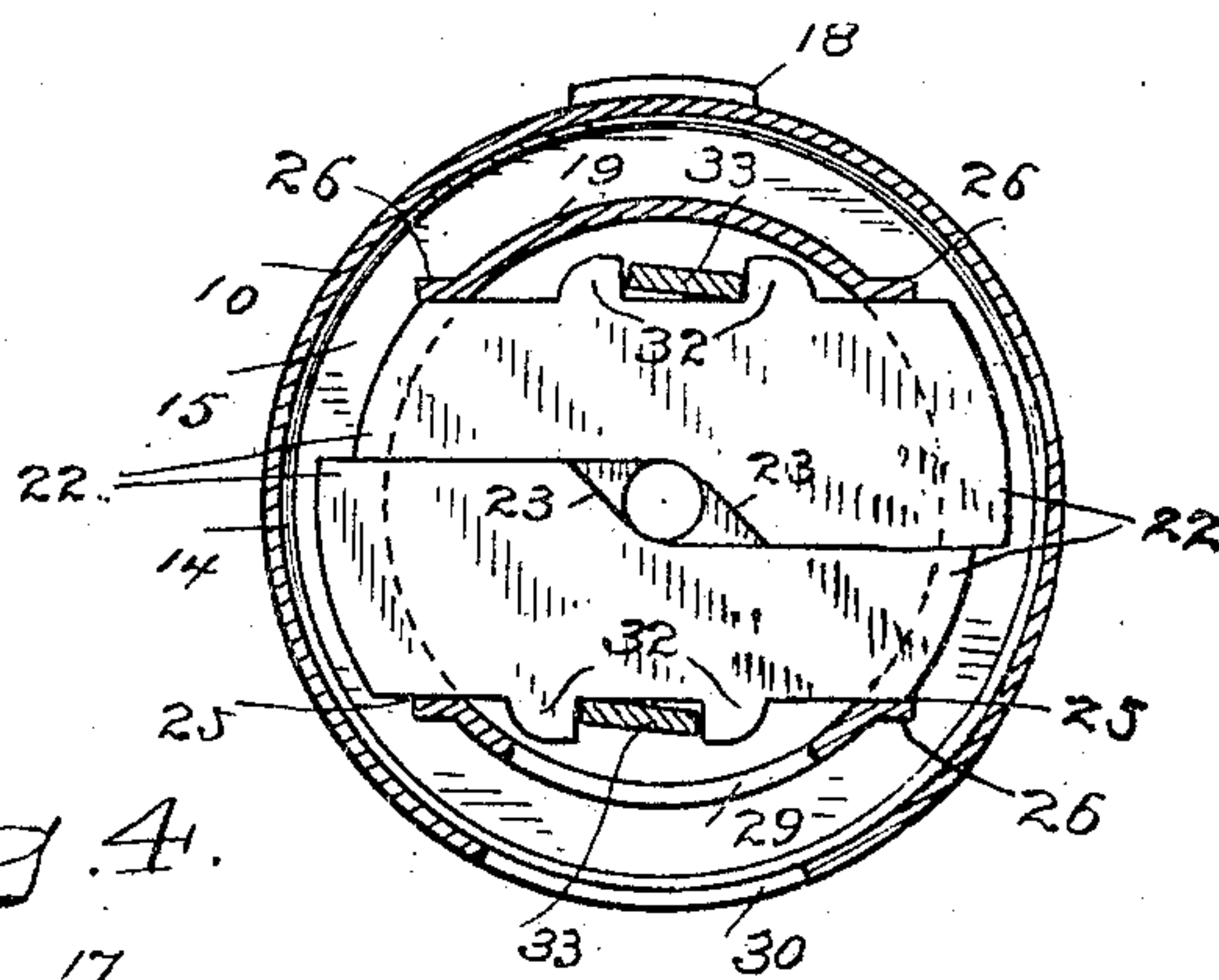
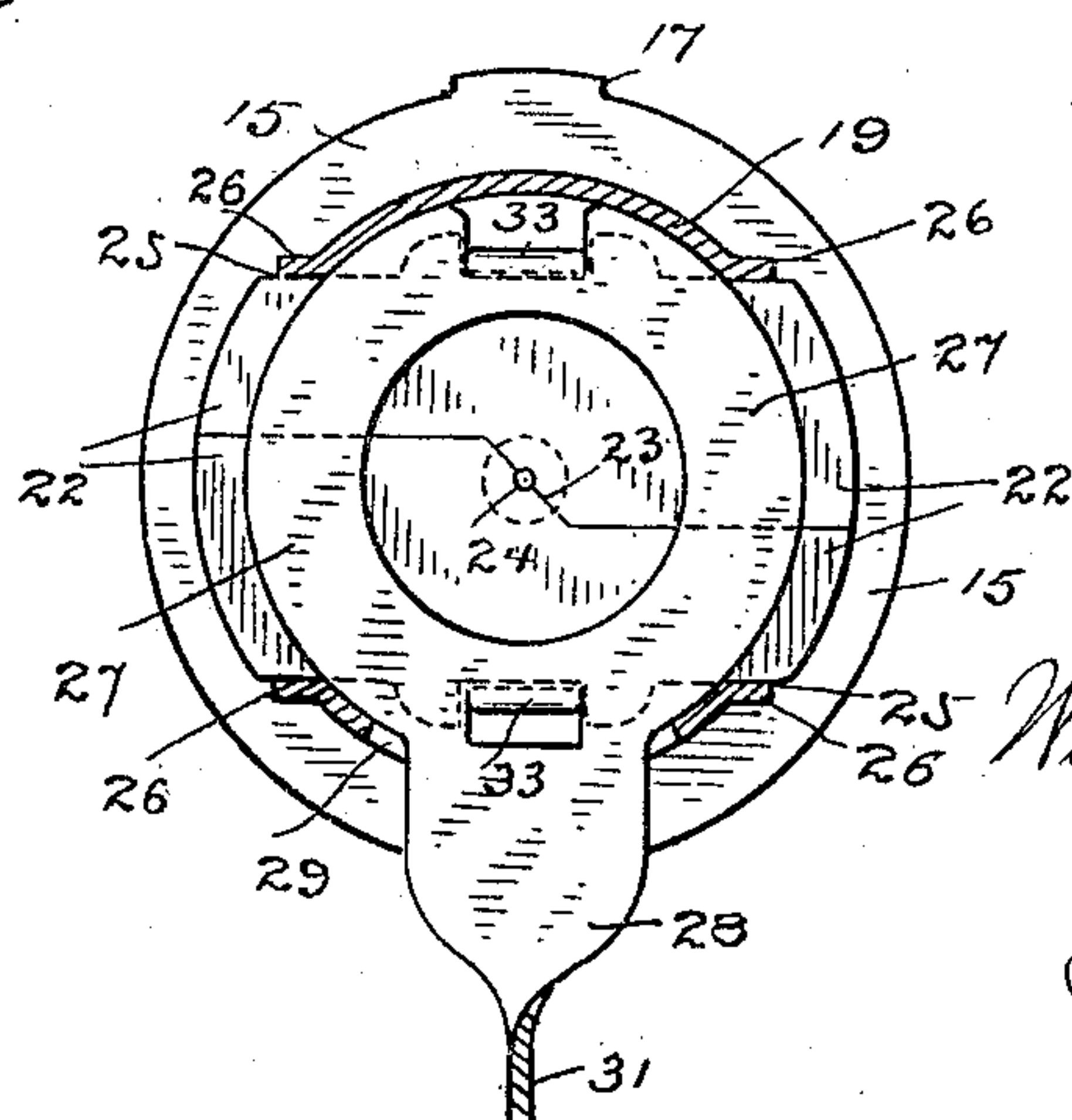


Fig. 4.



WITNESSES

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GAS CUT-OFF FOR BUNSEN TUBES.

No. 799,580.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed July 22, 1905. Serial No. 270,835.

To all whom it may concern:

Be it known that I, WILLIAM S. STAPLEY, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Gas Cut-Off for Bunsen Tubes, of which the following is a specification.

This invention has for its object to produce a gas cut-off for Bunsen tubes which shall be simple and inexpensive to produce, shall be adapted for use in burning either natural or artificial gas and with any degree of pressure, either high or low, my present cut-off being adapted to work equally well with a pressure varying from one and one-half to twenty inches and being especially adapted to give the best possible results with an extremely low pressure, for the reason that the delivery of the gas is at all times central and straight, spiral movement of the current of gas being wholly prevented and it being impossible in any position of the shutters to throw the current of gas against the side of the tube. I am thus enabled to produce at all times a perfect mixture of gas and air in the Bunsen tube and an even regular flame without waving, fluttering, or rising and falling, the incandescence of the mantle being at all times uniform and the consumption of gas reduced to the minimum.

With these and other objects in view I have devised the simple and novel gas cut-off of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to indicate the several parts.

Figure 1 is a longitudinal section, on a greatly-enlarged scale, illustrating a Bunsen tube and base and showing my novel cut-off in cross-section; Fig. 2, a transverse section of the Bunsen tube on the line 2 2 in Fig. 1 looking down, my novel cut-off appearing in plan; Fig. 3, a transverse section of the Bunsen tube and the inverted cup on the line 3 3 in Fig. 1, the shutters appearing in plan; and Fig. 4 is a transverse section on the line 4 4 in Fig. 1 looking down, the Bunsen tube being removed and the shutters and operating-ring appearing in plan.

10 denotes a Bunsen tube having the usual air-openings 11, and 12 a base having a central opening 13 for the passage of gas. The base and the tube are provided with corresponding

external and internal screw-threads by which they are secured together, and the tube is provided with an internal circumferential rib 14 below the air-openings, between which and the top of the base a disk 15 is gripped. The base is provided with a central hub 16, surrounding the gas-opening, the surface of which is flat and smooth. The disk is held against rotation by means of a peripheral lug 17, which engages a vertical groove 18 in the tube. The disk is provided with a central inverted cup 19, which in turn is provided with a central hub 20 on its under side (shown in the present instance as made by depressing the metal of the bottom of the cup) and with a central gas-opening 21, which registers with gas-opening 13 in the base.

22 denotes the shutters, which lie side by side and are adapted to reciprocate in opposite directions between hub 16 on the base and hub 20 on the cup. The disk is made of spring metal and is held only at its edge, so that it, in fact, acts as a spring, causing hub 20 to press upon the shutters and grip them closely between itself and hub 16 on the base, leaving the shutters free to be moved, as I shall presently explain, but holding them tightly enough to make perfectly gas-tight joints, so that when the shutters are closed no gas can escape and when they are open it can only pass between the edges of the shutters and through gas-opening 21 in the hub on the cup. The exact shape of the shutters is not of the essence of the invention. I have shown the shutters as made widest at their opposite ends and as provided with corresponding meeting edges 23, which meet at the center of gas-opening 21 and fit closely together, thus preventing the passage of gas, as clearly shown in Fig. 2.

If preferred, the shutters may be provided at the center of their meeting edges with small corresponding recesses, which together form a small opening 24 to permit the continuous passage of a small quantity of gas, as when required for a pilot-light.

In Fig. 3 I have shown the position of the shutters when in the fully-open position. The cup is provided on opposite sides with slots 25, through which the ends of the shutters pass, and preferably with guide-wings 26, formed from the metal struck out to form the slots, which form additional bearings for

the outer edges of the shutters, as shown in Fig. 3. The shutters are reciprocated by means of an operating-ring 27, which oscillates on hub 20 on the cup and is provided with an operating-lever 28, which passes through a slot 29 in the cup and a slot 30 in the tube and is provided with a finger-piece 31, turned at right angles to the plane of the lever for convenience in operation. The operating-ring is caused to engage the shutters in any convenient manner. I have shown the outer edges of the shutters as provided with ears 32 and the operating-ring as provided with lugs 33, which may be struck out from the metal of the ring and which engage between the ears, respectively, so that when the operating-ring is oscillated the shutters will be reciprocated in opposite directions and opened or closed to regulate or shut off the passage of gas, the quantity of gas that can pass being determined by the distance the meeting edges of the shutters are placed from each other.

Having thus described my invention, I claim—

1. A gas cut-off comprising a disk having a central inverted cup with a central gas-opening, shutters having corresponding edges adapted to meet centrally of said gas-opening and means for reciprocating the shutters in opposite directions to regulate or cut off the passage of gas.

2. A gas cut-off comprising a disk having a central inverted cup with a central hub on its under side and a central gas-opening, shutters having meeting edges adapted to meet centrally of said gas-openings and an operating-ring which engages the shutters and is adapted to be oscillated on the hub whereby the shutters are reciprocated, for the purpose set forth.

3. A gas cut-off comprising a disk having a central inverted cup with a central hub on its under side and a central gas-opening, shutters having meeting edges adapted to meet centrally of said gas-opening, and ears on their outer sides, and an operating-ring which is adapted to oscillate on the hub and is provided with lugs engaging the ears on the shutters, whereby the latter are reciprocated to regulate or shut off the passage of gas.

4. A gas cut-off comprising a disk having a central inverted cup with a central hub on its under side, a central gas-opening, opposite slots provided with central guide-wings, and on one side an intermediate slot, shutters hav-

ing meeting edges adapted to meet centrally of said gas-opening, and whose ends extend through the opposite slots in the cup and whose outer edges bear against the guide-wings and an operating-ring adapted to oscillate on the hub and to engage the shutters to reciprocate them and provided with an operating-lever passing through the intermediate slot in the cup.

5. In a device of the character described the combination with a Bunsen tube, a base having a central gas-opening and a disk having a central inverted cup and a central gas-opening, of reciprocating shutters lying between the inverted cup and the base and having corresponding meeting edges adapted to meet centrally of said gas-openings and means for reciprocating the shutters in opposite directions to regulate or shut off the passage of gas.

6. In a device of the character described the combination with a Bunsen tube having an internal circumferential rib, a base having a central hub and a central gas-opening and a spring-disk clamped between the base and the rib and having a central inverted cup with a central hub on its under side and a central gas-opening, of shutters held between the hubs on the base and the cup and having meeting edges adapted to meet centrally of the gas-openings and an operating-ring mounted to oscillate on the hub on the cup and engaging the shutters to reciprocate them in opposite directions to regulate or shut off the passage of gas.

7. In a device of the character described, the combination with a Bunsen tube, a base having a central hub and a central gas-opening and a spring-disk having a central inverted cup with a central hub on its under side and a central gas-opening, of shutters held between the hub on the spring-plate and the base and having meeting edges adapted to meet centrally of the gas-opening, and an operating-ring which oscillates on the hub and engages the shutters to reciprocate them in opposite directions and is provided with an operating-lever extending through the cup and the tube.

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

WILLIAM S. STAPLEY.

Witnesses:

A. M. WOOSTER,
S. W. ATHERTON.