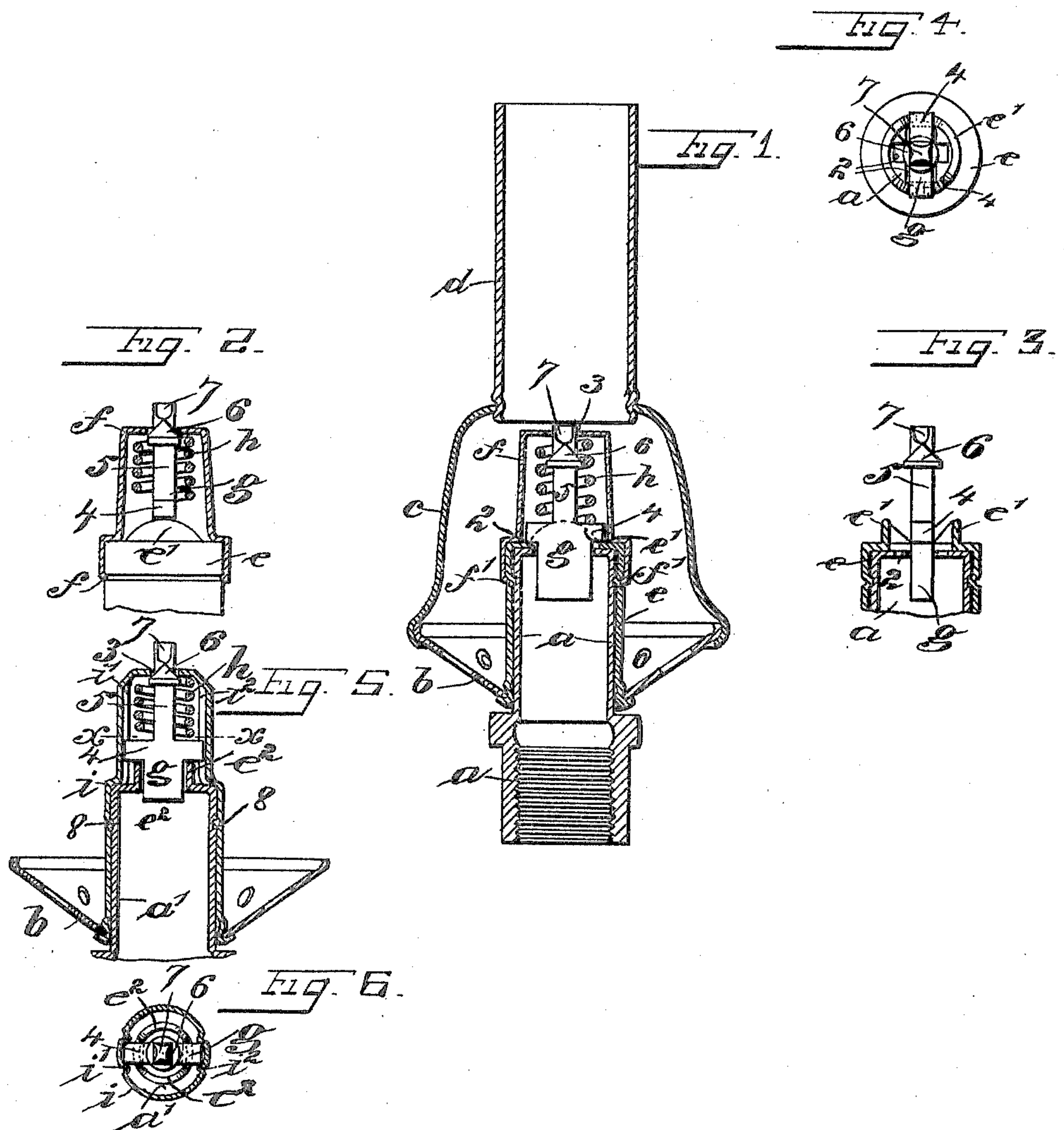


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C. E. WIRTH.
GAS REGULATING BUNSEN BURNER.
APPLICATION FILED AUG. 5, 1905.



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UNITED STATES PATENT OFFICE.

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GAS-REGULATING BUNSEN BURNER.

No. 811,989.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES E. WIRTH, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented an Improvement in Gas-Regulating Bunsen Burners, of which the following is a specification.

My invention relates to a gas-regulating valve device for the Bunsen burners of incandescing mantles with the object of providing a device acting in the axial center of the burner to regulate the flow of gas through a centrally-placed hole, it requiring an appreciable extent of turning movement of the burner to entirely close off or open up the gas-passage. In the device of my invention I provide a member revoluble about the nipple to be secured upon the gas-pipe. The top of the revoluble member has a central hole and the upper end of the nipple an elongated perforation, and between and at its ends passing into these parts is a valve positioned by the nipple and raised and lowered by means employed in connection with the revoluble member and returned to place by a spring. In its initial position this valve leaves the opening in the revoluble member free for the discharge of the maximum supply of gas to the burner, while in its elevated position and according to the size of the valve the opening may be entirely closed or only opened for a minimum flow of gas, and between these positions the valve may be placed to regulate the flow of gas as desired by turning the revoluble member and raising or lowering the valve.

In the drawings, Figure 1 is a vertical central section through my improved gas-regulating Bunsen burner and an elevation of the valve in its lowermost position. Fig. 2 is a vertical section and partial elevation of the operative parts of the device, showing the valve in its elevated position. Fig. 3 is a partial vertical section and elevation at the upper end of the nipple and sleeve portion of the revoluble member at right angles to the position Fig. 1, with an edge view of the valve in elevation. Fig. 4 is a plan of the parts shown in Fig. 3. Fig. 5 is a vertical section and partial elevation showing a form or modification of my invention, and Fig. 6 is a sectional plan at about the dotted line x

x of Fig. 5 with the parts in a position at right angles thereto.

a represents the nipple to be secured upon the end of a gas-pipe, the same being shown heavy in the lower portion and of thinner cylindrical form in the upper portion and provided with an elongated perforation 2 in the upper end, which, as will be seen from Figs. 3 and 4, is not only elongated, but provided with opposite gas-passages.

b is the air-distributor, c the hood, and d the Bunsen tube, which parts are of usual or well-known construction connected together substantially as shown in Fig. 1, so as to form the principal external portions of the revoluble member.

A sleeve e with a closed-in upper end extends around the upper portion of the nipple a , and is provided with an open center and with opposite vertically-disposed circular cams e' . A cap f with a stepped exterior at its lower end surrounds the upper end of the sleeve e and is connected thereto by an inturned rib f' at its lower end, and above the upper end of the sleeve e the cap at its narrowest diameter rises an appreciable distance, and in its upper end there is a circular opening 3. Within the cap and between the same and the upper end of the nipple is located the valve, of which g represents the valve-body, and 4 opposite shoulders made therewith. 5 is the stem of the valve, 6 its conical head, and 7 its square and recessed upper end, which parts by preference are stamped up out of metal and are integral. Within the cap and surrounding the valve is a helical spring h , one end of which bears against the under surface of the cap and the other end upon the shoulders 4 of the valve. The valve-body g extends down into the elongated perforation 2 in the top of the nipple, and as this perforation freely receives the valve-body it locates the valve so that the same cannot turn, but is free to receive a vertical movement. Meanwhile the shoulders 4 extend across so that their ends rest upon the upper end of the sleeve e and come between the circular cams e' . The conical head 6 when the valve is in the position Fig. 2 provides for entirely or approximately closing off the opening 3. The square and recessed upper end 7 normally remains in the

opening 3 and by the recessed construction thereof provides ample space for the discharge of the maximum flow of gas through the said opening.

5 In the operation of the device and considering the parts to be in the position Fig. 1 the connected air-distributor *b*, hood *c*, Bunsen tube *d*, sleeve *e*, and cap *f* are turned together. This causes the cams *e'* to underrun
10 the shoulders 4 of the valve and raise the same. To obtain the full rising movement requires a quarter-turn of the parts enumerated, at which time the valve will be in the position Fig. 2 and according to the length of
15 the valve, or, in other words, the proportions thereof, so the opening 3 will be entirely closed off, or so nearly so that only a minimum quantity of gas can escape—just enough to simply keep the mantle of the burner glow-
20 ing instead of being incandescent. Between these two points the valve will be supported by said cams and will remain in whatever position it is placed, because the valve-body cannot turn, and there is sufficient friction
25 between the sleeve *e* and the nipple to prevent the same turning except by the exercise of some force.

I have shown and prefer to provide a recess in the nipple *a* and a rib and recess in the
30 sleeve *e*, the rib thereof fitting the recess of the nipple and the recess thereof receiving the inturned rib *f'* of the cap. Thereby the revoluble member in its entirety is connected to the nipple and longitudinal movement
35 prevented, and at the same time a gas-tight joint is formed both during the revoluble movement of the connected parts *f e b c d* and when said parts are in a state of rest.

In the modification or form of my invention shown in Figs. 5 and 6, *a'* represents the
40 nipple provided with a circular axial opening and on opposite sides of which opening are formed circular cams *e²*, similar to the cams *e'*, heretofore described, except that the cams in
45 this instance are formed on the nipple or stationary member instead of on the revoluble member. *i* represents the revoluble member of offset portions, the same being the equivalent of the sleeve *e* and cap *f*, hereinbefore described, and shown in the other figures.
50 The upper portion of the revoluble member in the present instance is formed with parallel internal ribs *i' i²*, forming guides, the same being placed longitudinally of the revoluble member and on opposite sides and receiving
55 between the same the ends of the shoulders 4 of the valve. The valve is the same as hereinbefore described, and illustrated in the other figures of the drawings, as
60 is also the spring *h*, and the functions thereof in the modified form are identical. In the operation of the modification the valve turns with the revoluble member and is raised and lowered by the cams *e²*, being guided and also
65 held in a fixed relation to the revoluble mem-

ber by the ribs *i' i²*. The other parts of the Bunsen burner (not shown in Fig. 5) are to be the same as shown in Fig. 1. The parts *a'* and *i* are connected by a groove in *a'* and rib 8 in *i*, preventing longitudinal movement, 70 permitting revoluble movement, and forming a gas seal.

I claim as my invention—

1. In a gas-regulating Bunsen burner, the combination with the nipple, of a revoluble 75 member surrounding the upper end thereof and within the Bunsen burner and revoluble therewith, an internal valve-spring actuated in one direction and guided by the nipple, and means actuated by the movement of the 80 revoluble member for actuating the valve in the other direction for controlling the supply of gas.

2. In a gas-regulating Bunsen burner, the combination with the nipple, of a revoluble 85 member surrounding and extending above the upper end thereof so as to form an internal chamber, and which revoluble member is within the Bunsen burner and is revoluble therewith, an internal valve contained within 90 said chamber and guided by the nipple, and means actuated by the movement of the revoluble member for actuating the valve for controlling the supply of gas.

3. In a gas-regulating Bunsen burner, the 95 combination with the nipple, of a revoluble member surrounding the upper end thereof and within the Bunsen burner and revoluble therewith, an internal valve guided by the nipple and located between the same and the 100 said revoluble member, and means actuated by the movement of the revoluble member for imparting a longitudinal axial movement to the valve for controlling the supply of gas.

4. In a gas-regulating Bunsen burner, the 105 combination with the nipple having an elongated perforation in its upper end, of a revoluble member surrounding and extending beyond the upper end thereof and having a central hole and forming an internal chamber, a 110 valve located therein and having a body extending down into the perforation of the revoluble member, and means for actuating the valve.

5. In a gas-regulating Bunsen burner, the 115 combination with the nipple having an elongated perforation in its upper end, of a revoluble member surrounding and extending beyond the upper end thereof and having a central hole and forming an internal chamber, a 120 valve located therein and having a body extending down into the perforation of the nipple and up into the perforation of the revoluble member, and opposite vertically-disposed circular cams for actuating the valve with the 125 turning of the revoluble member.

6. In a gas-regulating Bunsen burner, the combination with the nipple having an elongated perforation in its upper end and a revoluble member surrounding and extending be- 130

yond the upper end thereof and having a central hole and forming an internal chamber, of a valve comprising a body portion *g*, shoulders 4, stem 5, conical head 6 and a square and recessed upper end 7.

7. In a gas-regulating Bunsen burner, the combination with the nipple having an elongated perforation in its upper end and a revoluble member surrounding and extending beyond the upper end thereof and having a central hole and forming an internal chamber, of a valve comprising a body portion *g*, shoulders 4, stem 5, conical head 6, and a square and recessed upper end 7, and a helical spring in said chamber around the upper end of said valve with one end bearing on the under surface of the revoluble member and the lower end on the shoulders of said valve.

8. In a gas-regulating Bunsen burner, the combination with the nipple having an elongated perforation in its upper end and a revoluble member surrounding and extending beyond the upper end thereof and having a central hole and forming an internal chamber, of a valve comprising a body portion *g*, shoulders 4, stem 5, conical head 6 and a square and recessed upper end 7, and opposite vertically-disposed circular cams formed with the revoluble member and adapted to come beneath the shoulders of the valve.

9. In a gas-regulating Bunsen burner, the combination with the nipple having an elongated perforation in its upper end and a revoluble member surrounding and extending beyond the upper end thereof and having a central hole and forming an internal chamber, of a valve comprising a body portion *g*, shoulders 4, stem 5, conical head 6 and a square and recessed upper end 7, opposite vertically-disposed circular cams formed with the revoluble member and adapted to come beneath the shoulders of the valve, and a helical spring *h* surrounding the valve at one end bearing upon the shoulders thereof and at the

upper end bearing upon the upper side of the revoluble member and acting to keep the valve down to its seat or against the surfaces of said cams.

10. In a gas-regulating Bunsen burner, the combination with the nipple, of a revoluble member surrounding the upper end thereof and extending above the same so as to form a valve-receiving chamber, a spring-retained valve inclosed and surrounded by the revoluble member and located between the same and the upper end of the nipple and coacting devices for actuating the valve for controlling the supply of gas.

11. In a gas-regulating Bunsen burner, the combination with the nipple, of a revoluble member surrounding the upper end thereof and extending above the same forming a chamber between the upper ends of said parts, an internal valve within said chamber having a lower portion received in an aperture of the nipple and having shoulders contacting with the revoluble member and means for guiding the said internal valve so that the same is raised and lowered by the turning movement of the revoluble member controlling the supply of gas.

12. In a gas-regulating Bunsen burner the combination with the nipple, of a revoluble member surrounding and extending beyond the upper end thereof and having a central hole and forming an internal chamber, of a valve comprising a body portion, shoulders, a stem, conical head and upper end, a helical spring in said chamber around said valve, means for moving the valve axially of the burner and means for preventing the valve turning with such movement.

Signed by me this 31st day of July, 1905.

CHAS. E. WIRTH.

Witnesses:

B. L. NETTLETON,
C. W. NORTHROP.