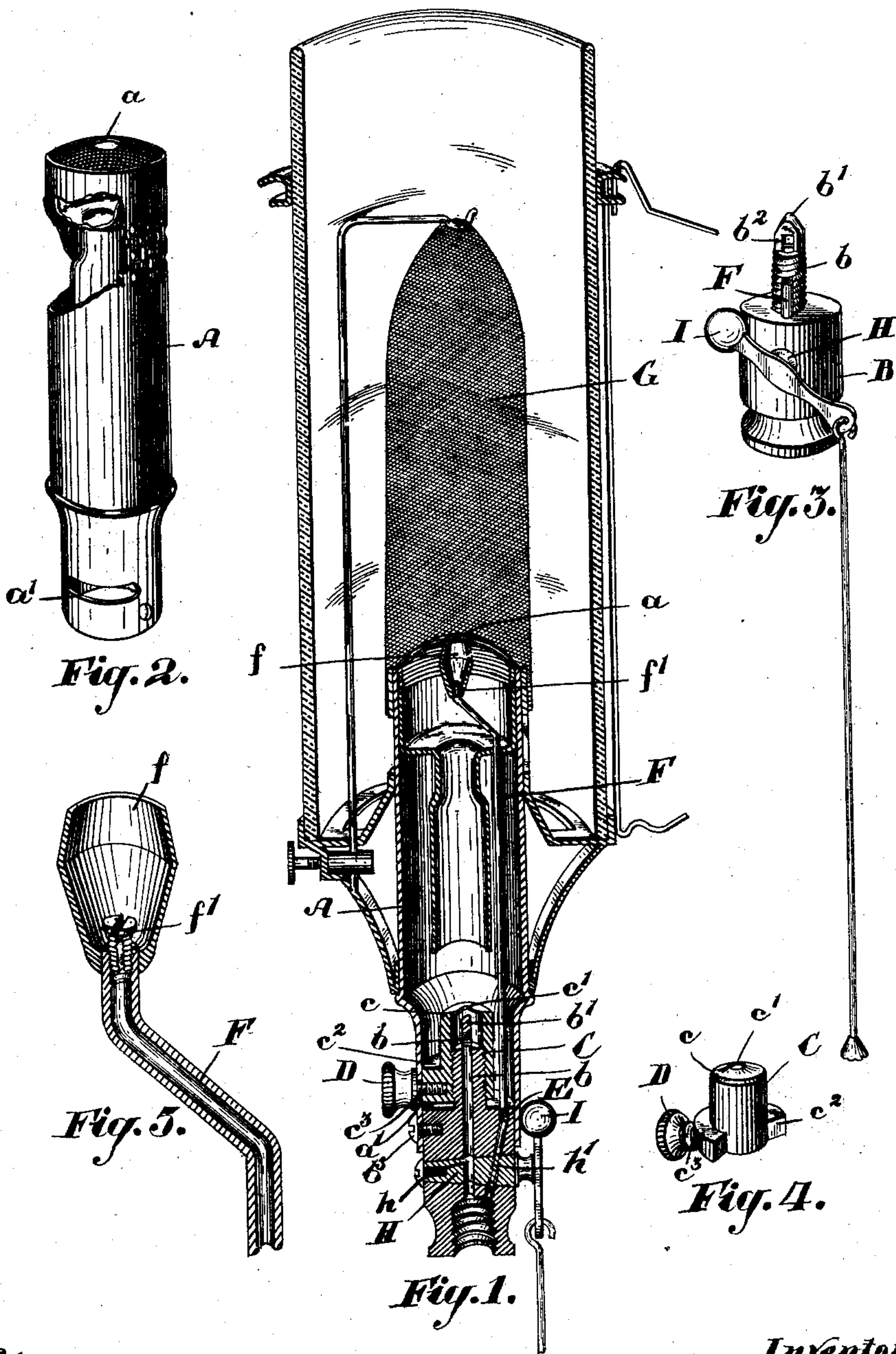


E. W. PHELPS.
INCANDESCENT GAS BURNER.

(Application filed Dec. 9, 1901.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

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INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 706,686, dated August 12, 1902.

Application filed December 9, 1901. Serial No. 85,212. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WILBUR PHELPS, a subject of the King of Great Britain, residing at Montreal, in the district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Incandescent Gas-Burners, of which the following is a specification.

My invention relates to improvements in incandescent gas-burners; and the object of the invention is to devise a burner which will accomplish a great saving in gas and provide a simple means of igniting, whereby any one unaccustomed to the use of gas can light the same with safety and prevent the explosion usually incident when lighting incandescent burners, and consequently save the mantle from destruction; and it consists, essentially, of a burner of the Bunsen type with a circumferential slot toward its lower end in which is inserted a set-screw attached to a cap designed to regulate the supply of gas from the main pipe, a secondary burner with an opening for the ingress of gas entirely separate from the main burner, and a cut-off key provided with separate orifices designed to open and close the supply of gas to the main and secondary burners alternately, the various parts being constructed in detail, as herein-
after more particularly described.

Figure 1 is a sectional perspective view of my device. Fig. 2 is a detail of the burner. Fig. 3 is a detail of the nosepiece. Fig. 4 is a detail of the regulating-cap. Fig. 5 is an enlarged detail of the secondary burner.

Like letters of reference indicate corresponding parts in each figure.

A is the burner.

B is the nosepiece attached to the gas-supply pipe. The nosepiece has a reduced upper end b threaded, and at the top of the portion b is the tapered portion b' , which has openings b^2 in its side for the escape of the gas.

C is a cylindrical cap closed at its top end and open at the lower end and having its inner periphery threaded. The top head c of the cap has an orifice c' in the center. The cap C has the arc-shaped projection c^2 partially surrounding it at its lower end and attached or forming part thereof. The set-screw D is designed to fit into a correspond-

ingly-threaded orifice c^3 in the cap through the ring c^2 .

The nosepiece B has an orifice E to one side of the reduced upper end b , into which is inserted the tube F. The tube F is designed to reach up inside the burner, and at its top end is a secondary burner f , preferably cup-shaped and just protruding through an orifice a in the center of the top of the main burner. The secondary burner f has a split screw f' at the bottom and inside the bowl of the cup, which is designed to act as a regulator as to the quantity of gas allowed to pass to be consumed.

The burner A is set on the nosepiece B and fixedly attached thereto by the screws b^3 , and the cap C, which is screwed on the upper end of the nosepiece, has the orifice c^3 in line with the circumferential slot a' near the lower end of the burner A. The mantle G is set over the top end of the burner A. The gas-key H in the nosepiece B has two orifices h and h' bored through its diameter at positions directly under the ingress of the supply for the main burner and the ingress for the supply for the secondary burner, respectively. The passages or orifices h and h' are each diametrically direct through the key, but not parallel or on the same plane with one another. The lever I is intended to control the key H in a limited rotatory movement each way.

Having described the various parts in detail, I shall now explain the use of the device.

The various parts are attached together, as described in the foregoing, and the main cock of the supply-pipe is turned on, allowing a full head of gas to pass into the nosepiece B. The passage h has been brought in line with the ingress to the main burner in turning the key H by means of the lever I. The burner is ignited in the ordinary manner, and immediately the user turns the set-screw D circumferentially in the groove a , so that the cap is turned up or down on the threaded upper portion b , the pointed upper end b' protrudes either more or less through the orifice c' , as the case may be, thus allowing as small a quantity of gas to escape, to be consumed in the main burner as may be desired. When the user wishes to turn off the light, he pulls one end of the lever I down, bringing in line with the

gas-supply pipe the orifice h' , which is also in line with the ingress to the secondary burner. This will allow a minimum quantity of gas to rise to the burner, where the outlet for the
 5 gas is controlled by the split screw f' . This may be screwed down to limit materially the outflow of gas. The adjustment of the regulating devices for both burners is of course the first operation in using, and after that has
 10 been performed the turning off of the main burner will leave a tiny flame in the bowl of the burner f . This flame is used for igniting the main burner, as the instant the lever I is turned and the passage h opened the said
 15 flame lights the burner A at the very bottom of the mantle G and is at once turned off itself by the closing of the passage h' .

It will be seen that the main burner and the secondary burner are never burning for more
 20 than an instant at the same time, as the moment one is ignited the supply of gas for the other is cut off.

The importance of having regulating devices for both burners can hardly be overestimated, for as well as I am aware the combining of regulating devices with a burner of the type described has heretofore been unknown.

The ease with which a child may operate
 30 my device is an important factor in my burner. There is absolutely no danger to the user, as the lighting and extinguishing are practically automatic. The ignition of the gas at the bottom of the mantle materially saves its destruction, as there is no explosion, so common
 35 to all incandescent burners. The danger of constantly using matches or vestas is to a large extent avoided, and the quantity of gas consumed by the secondary burner hardly
 40 exceeds the ordinary leakage from the meter. Therefore in the matter of expense I have reduced such a convenience to a minimum.

What I claim as my invention is—

1. The combination with the mantle-supporting double-cylinder burner having openings in the outer wall thereof, of a secondary burner substantially cup-shaped in form and extending up within the main burner, a pipe extending down through the cylinder-burner
 50 and connecting by a passage-way to the main gas-supply, the said pipe having extending into the upper end thereof, within the cup, a slotted set-screw capable of being turned from the top as specified.

55 2. The combination with the mantle-supporting double cylinder having openings in

the outer wall thereof, of a nose-piece having a central orifice and fitted onto the upper end of the gas-supply pipe and receiving the lower end of the outer wall of the cylinder-burner
 60 and having a reduced threaded upper end suitably tapered and flattened at the top and provided with an opening therein, a cylindrical cap internally threaded and provided with a central opening at the top designed to
 65 fit over the reduced upper end of the nose-piece and means for circumferentially adjusting such cap and holding it in position when adjusted as specified.

3. The combination with the mantle-supporting double-cylinder burner having openings in the outer wall thereof, and a circumferential slot formed at the lower end thereof, of a nose-piece fitting the central orifice, and fitted onto the upper end of the gas-supply
 75 pipe and receiving the lower end of the outer wall of the cylinder and having a reduced threaded upper end suitably tapered and flattened at the top and provided with an opening therein, a cylindrical cap internally
 80 threaded and provided with a central opening at the top designed to fit over the reduced upper end of the nose-piece, and an arc-shaped projection formed on the cap and fitting the interior of the lower portion of the cylinder,
 85 and a set-screw extending into the arc-shaped projection and through the slot as specified.

4. The combination with the mantle-supporting cylinder-burner having openings in the outer wall thereof, of a nose-piece having a
 90 central orifice and fitted onto the upper end of the gas-supply pipe and having the top tapered and an opening extending therethrough, a cap provided with a central opening suitably fitted onto the nose-piece, means for adjusting
 95 said cap, a side passage-way extending through the nose-piece to the gas-supply, a tap having the central orifice designed to communicate with the central orifice of the nose-piece, and a side orifice at right angles to the central orifice
 100 of the tap and designed to communicate with the side passage-way, a pipe extending upwardly from the side passage-way in the nose-piece and bent at the top so as to have the top centrally disposed and a suitable burner
 105 at the top, as and for the purpose specified.

Signed at Montreal this 13th day of September, 1901.

EDWARD WILBUR PHELPS.

Witnesses:

FRANK C. HALL,
 GRAHAM W. CURTIS.