

No. 737,030.

PATENTED AUG. 25, 1903.

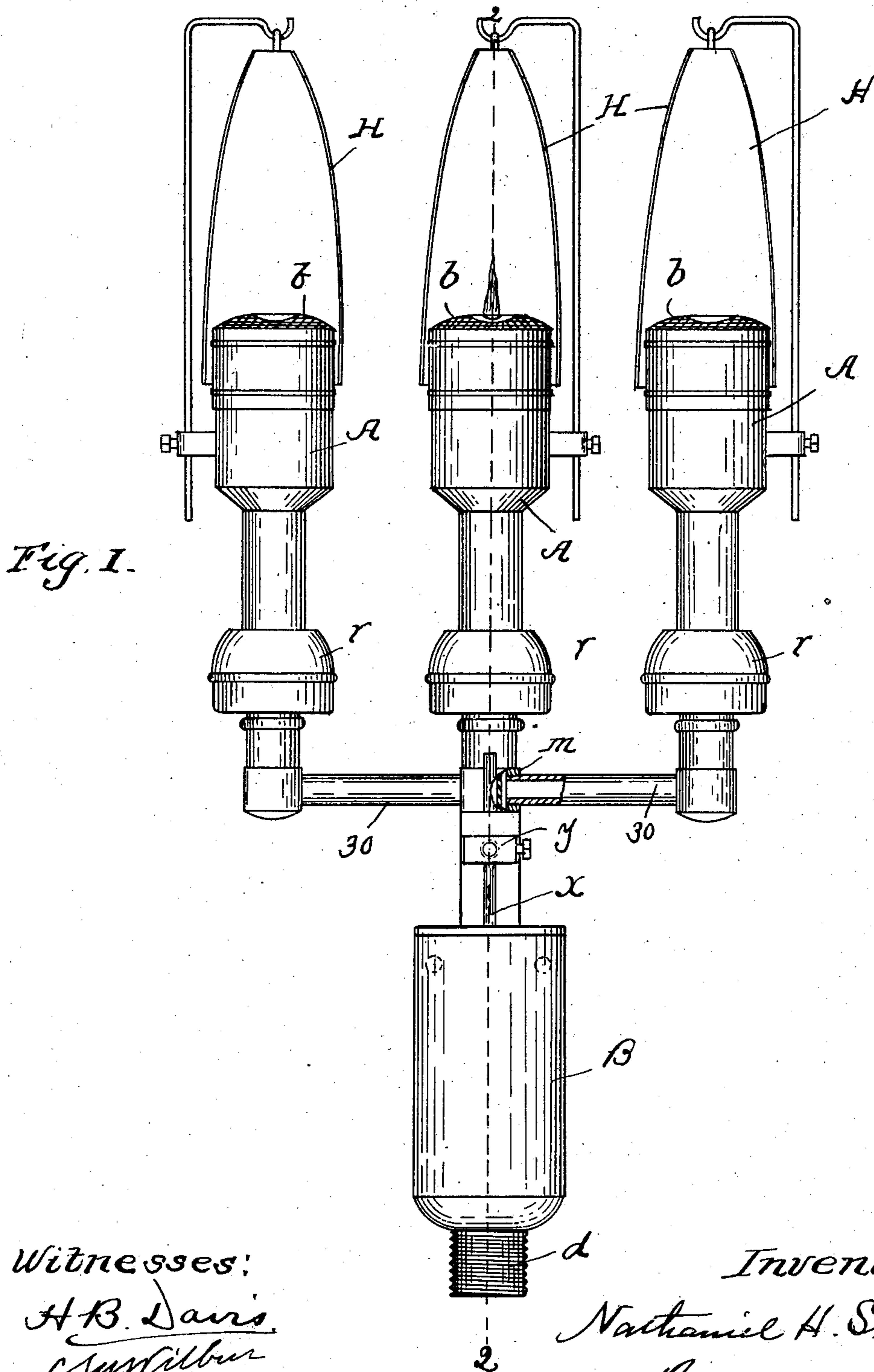
N. H. SHAW.

AUTOMATIC LIGHTER OR EXTINGUISHER FOR GAS LAMPS.

APPLICATION FILED JAN. 30, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
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C. W. Wilbur

Inventor:
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3 SHEETS—SHEET 2.

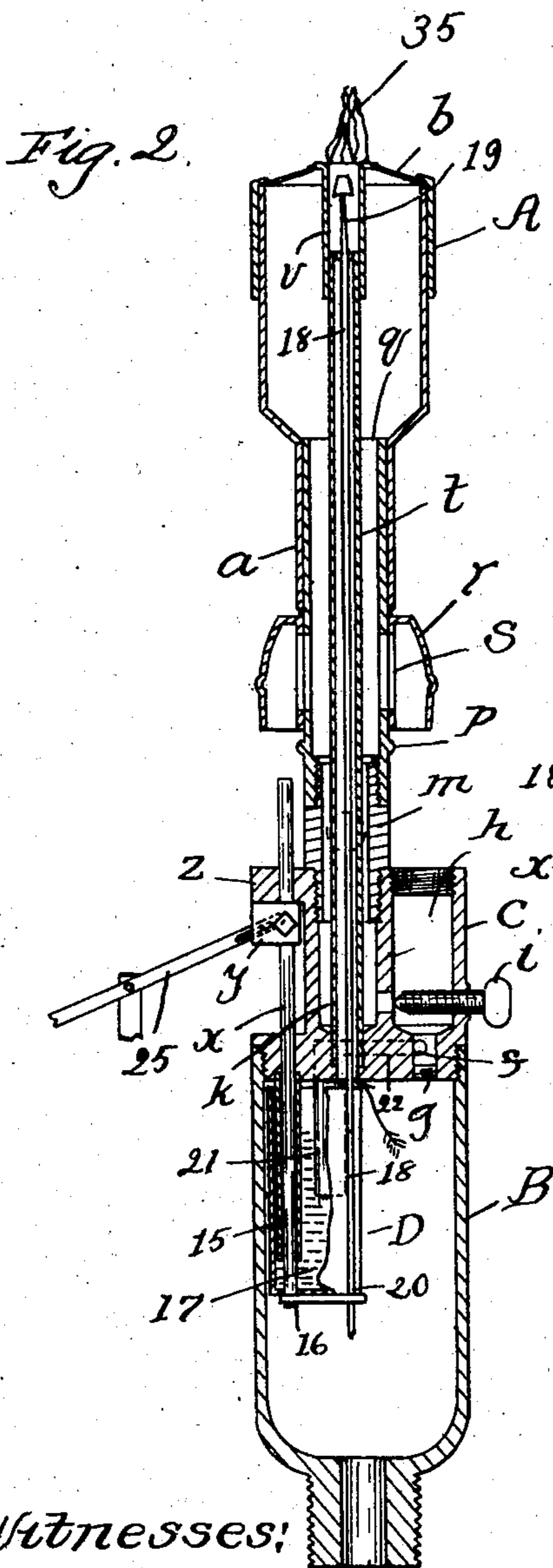
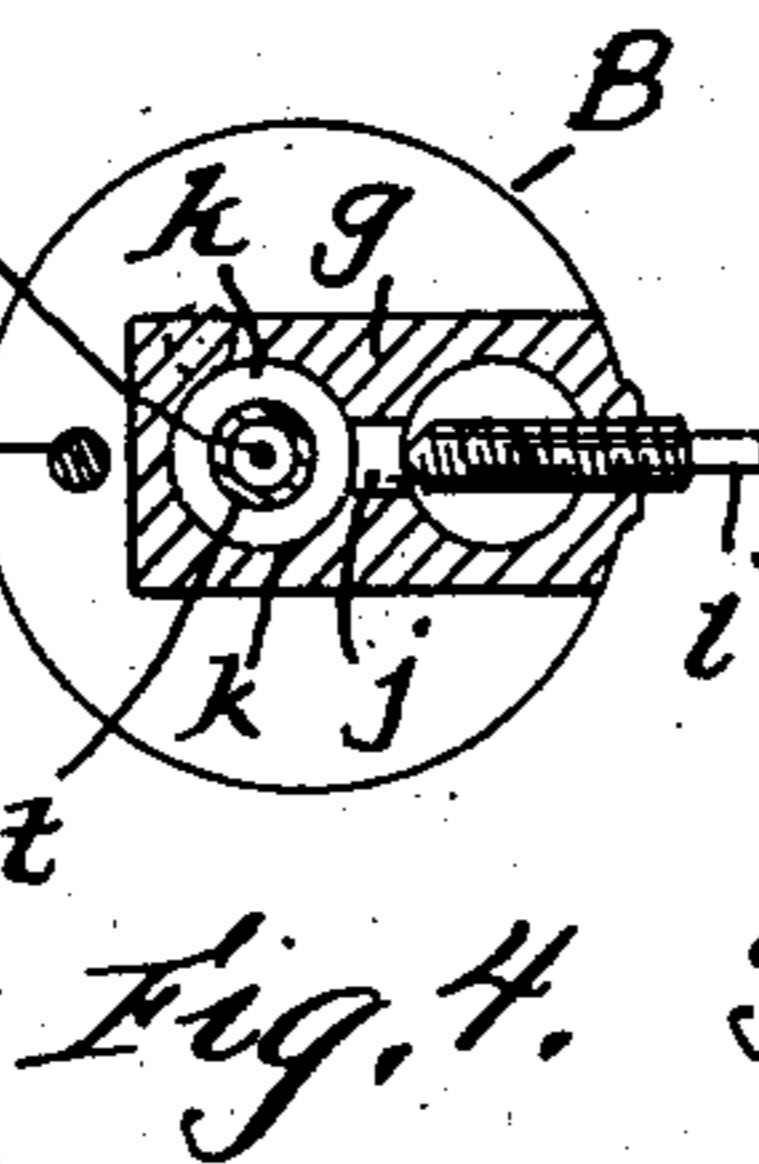
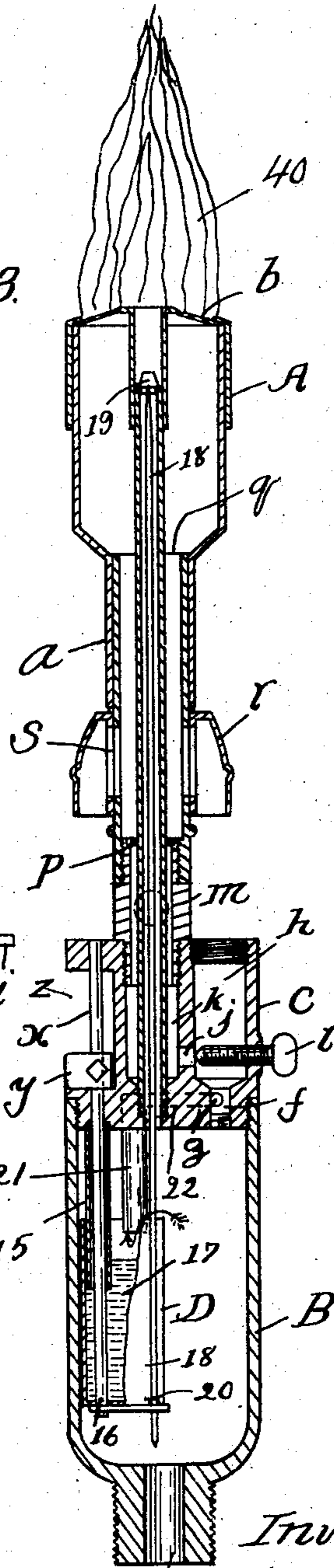


Fig. 3.



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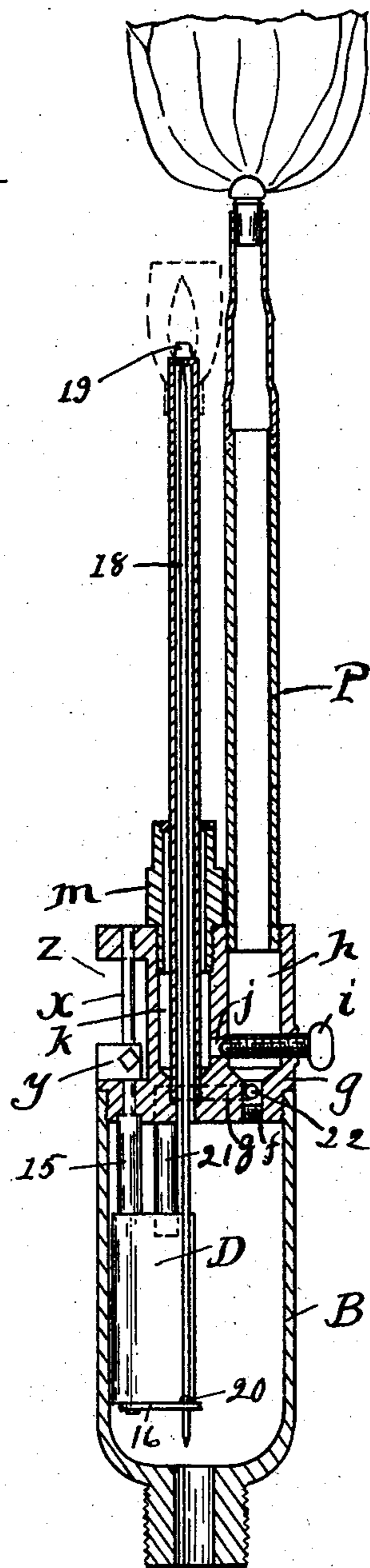
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3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC LIGHTER OR EXTINGUISHER FOR GAS-LAMPS.

SPECIFICATION forming part of Letters Patent No. 737,030, dated August 25, 1903.

Application filed January 30, 1902. Serial No. 91,886. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL H. SHAW, of Boston, county of Suffolk, State of Massachusetts, have made certain new and useful Improvements in Automatic Lighters or Extinguishers for Gas-Lamps, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation showing a plurality of burners mounted on my improved lighting and extinguishing device; Fig. 2, a vertical transverse section through the main burner; Fig. 3, a like view showing the burner in full operation with the pilot-valve closed; Fig. 4, a horizontal section in Fig. 2, and Fig. 5 a vertical section showing pilot in use with a plain burner.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to a burner for gas of the class known as "Welsbach" or "mantle" burners and others wherein the gas-supply to the main burner may be automatically turned on and off and conjointly and alternately therewith a pilot-light may be extinguished and ignited, the object being particularly to simplify such device, cheapen construction, render it more accurate in working, and enable a plurality of burners to be operated conjointly from a single pilot-light.

The nature and operation of the device will be understood by those conversant with such matters from the following explanation:

In the drawings, A represents the burner proper, which is constructed on the Bunsen principle and has the usual screened mouth or outlet *b* and a central port or aperture *v* for the pilot-flame 35, (see Fig. 2,) a tubular shank *a*, whereby it is fitted to be rotated on a rigid supply-tube *q*, opening into the head of said burner, said burner being provided with air-ports *S*, registering with similar ports in said tube and hooded at *r*, so that the supply of oxygen to the flame may be regulated in a manner readily conversant to those familiar with such devices.

The support or main portion of my burner consists of a metallic chamber B, provided in its bottom with a nipple *d*, through which the gas is admitted to the chamber and whereby it is connected with the main gas-supply. Into the top of this chamber a head C is turned, provided centrally with a chamber *k*, into the mouth of which a tubular plug *m* is turned. The rigid supply-tube *q* of the burner is supported on this plug.

The pilot-light mechanism comprises a vertical tube *t*, having its upper end slipped into the top burner-port *v* and projecting down through the supporting-tube *q* through chamber *k* of the head C, its lower end being fast in the bottom of said chamber and opening therethrough. Around this pilot-tube the top of the head-plug *m* is provided with a series of small ports or perforations *p*.

Fitted to slide vertically through the top and bottom of a recess Z in the outer wall of the head C there is a lifter-rod *x*, on which within said recess is secured an adjustable cross-head *y*. This rod projects into the gas-chamber B and has its lower end inclosed in a tube 15, turned into head C. Carried by this rod there is a mercury tank or seal D, the rod *x* and tube 15 projecting down through the mouth of said tank or cup and said rod fast at 16 in the bottom thereof. The lower end of said tube is always immersed in the mercury 17 with which the cup is filled and prevents the escape of gas from chamber B around rod *x* as it slides in head C.

The pilot-rod 18 plays vertically in the pilot-tube *t* and carries on its upper end a valve 19, which may set on the upper end of said tube and shut off the gas-supply for said pilot. The lower end of the pilot-rod projects downward through a projection on the side of the cup D and is provided with a rib or flange 20, resting on said projection, whereby when the cup is elevated, as hereinafter described, the rod will be carried by it and open the pilot-valve.

A pipe 21, pendent from the head C, projects into the cup D and connects at its upper end with a lateral port 22, formed in the body of the head C and opening at *g* into a vertical duct *f*, connecting the chamber B with a supplemental gas-chamber *h*, formed in said head. The bottom of the duct is

closed by a screw-plug, as is also the top of chamber *h*. This is to admit of cleaning the ports. Through the inner wall of chamber *h* a port *j* connects it with the central feed-chamber *k*, and through its outer wall a gage-screw *i* is turned, its point registering with port *j*, whereby the flow of gas through said port may be regulated.

One arm of a lever 25 connects with the cross-head *y*. This lever is designed to be actuated by a clock mechanism, whereby the rod *x* may be elevated and lowered at determined intervals after the usual manner of devices of this class. As regards the mechanism for effecting this result I make no specific claims, as any of the well-known devices in use will accomplish it.

In Fig. 1 a plurality of burners *A* is shown. By means of horizontal branch tubes 30, tapping the head *m* into the supply of the central burner in which the pilot is located, direct gas-supply is obtained. These burners are all supplied with mantles *H* of the ordinary construction and supported in the usual manner.

In the use of my improvement, the parts being in the position shown in Fig. 2, the pilot-light valve 19 is open, the light aflame at 35, and the cross-head of the lifter-bar *x* elevated, as shown. In this position gas contained in the chamber *B* passes in direction indicated by arrow in Fig. 2 over top of cup *D* into pilot-tube *t* and supplies this flame. Meanwhile supply-tube 21 is submerged in mercury 17 in cup *D*, and the supply thus shut off from main burner. When the lever 25 is operated by the actuating mechanism indicated and the cross-head *y* lowered to position shown in Fig. 3, the cup *D* is carried down by *x*, the pilot-stem 18 drops with it, seating valve 19 and extinguishing light 35; but simultaneously, or rather an instant prior to this seating, the supply-tube 21 has become disengaged from the mercury. The gas in chamber *B* flowing through said tube enters chamber *h* through port *j* and the supporting-tube *q*, where it supplies the burner *A* and is ignited by the pilot at 40, following which the pilot is extinguished by the subsequent or con-

tinued dropping of the lifter-rod. When the series of burners are employed, as in Fig. 1, the main gas-supply reaching the side burners direct is ignited from the action of the pilot on the central burner, thus providing a group of burners which may be controlled by a single pilot-light, an unusual element in lamps of this class.

It will be seen that by admitting gas continuously to a what might be called "storage-chamber," as *B*, and supplying the main burner therefrom, regulated as to opening and shutting by a movable seal, and the residue of gas left in said chamber being utilized to supply the small pilot-light, a saving in construction and in consumption and a gain in efficacy are effected.

In Fig. 5 an ordinary burner *P* is turned into the top of chamber *h* and is fed directly from main chamber *B*, the port *j* being closed by the screw *i*. In this the supply is automatically regulated by the seal, and the pilot-light mechanism is utilized, as before, to ignite the gas. In this form I preferably screen the pilot to prevent it being accidentally extinguished.

Having thus explained my invention, what I claim is—

1. In a device of the class described a main burner; a pilot-burner therefor; a seal comprising a movable carrier containing material for closing the gas-inlet for said main burner; mechanism for operating said seal; and devices controlled by said carrier for operating the pilot-valve.

2. In a device of the class described a movable vessel carrying a liquid seal in combination with an actuating-rod therefor.

3. In a device of the class described, a pilot-burner and a closing-valve therefor in combination with a main gas-burner; a valve therefor; a carrier for operating said valves; a sealed rod for actuating the carrier; and mechanism for operating said rod substantially as described.

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