

No. 729,158.

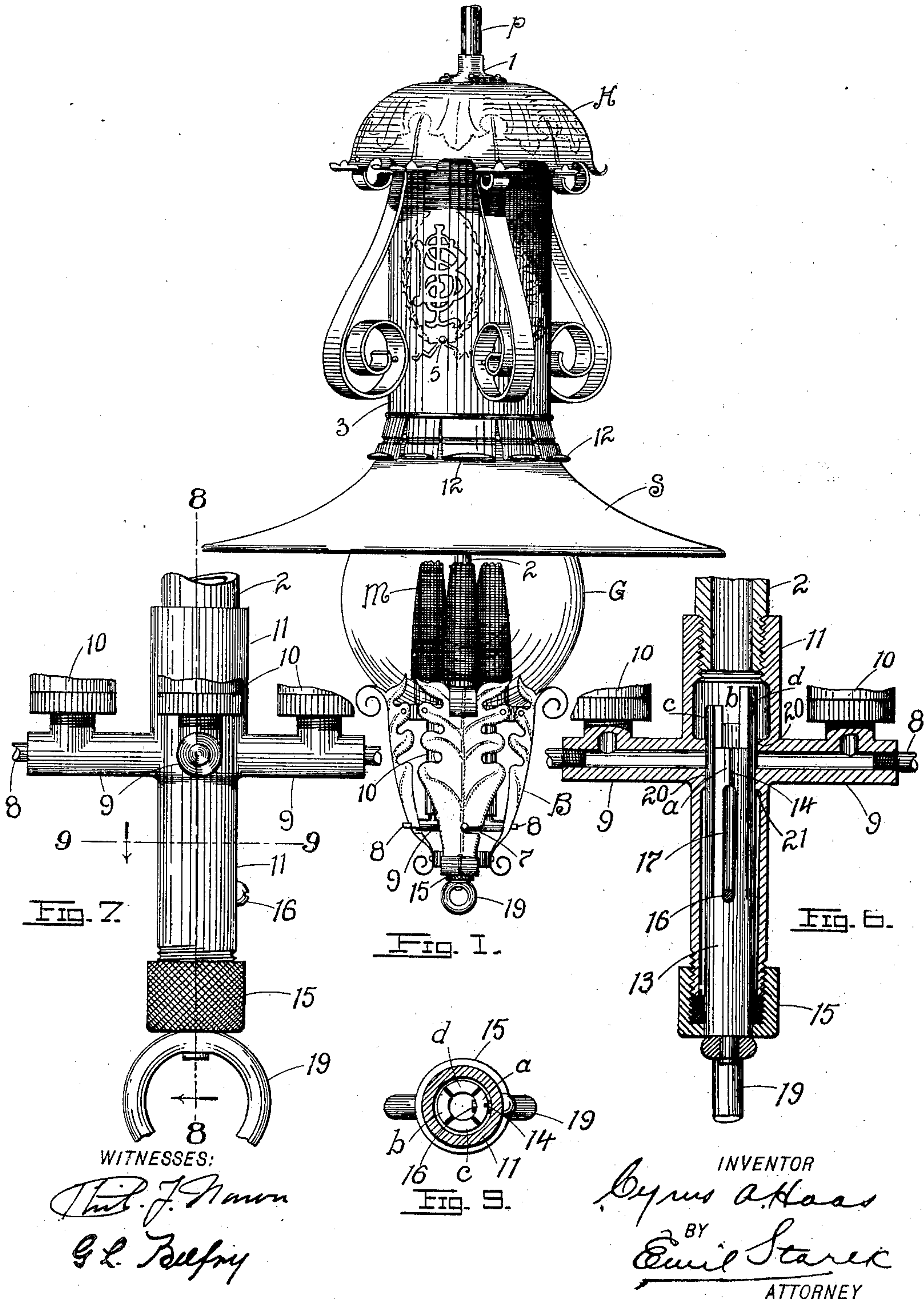
PATENTED MAY 26, 1903.

C. A. HAAS.  
GAS ARC LAMP.

APPLICATION FILED FEB. 14, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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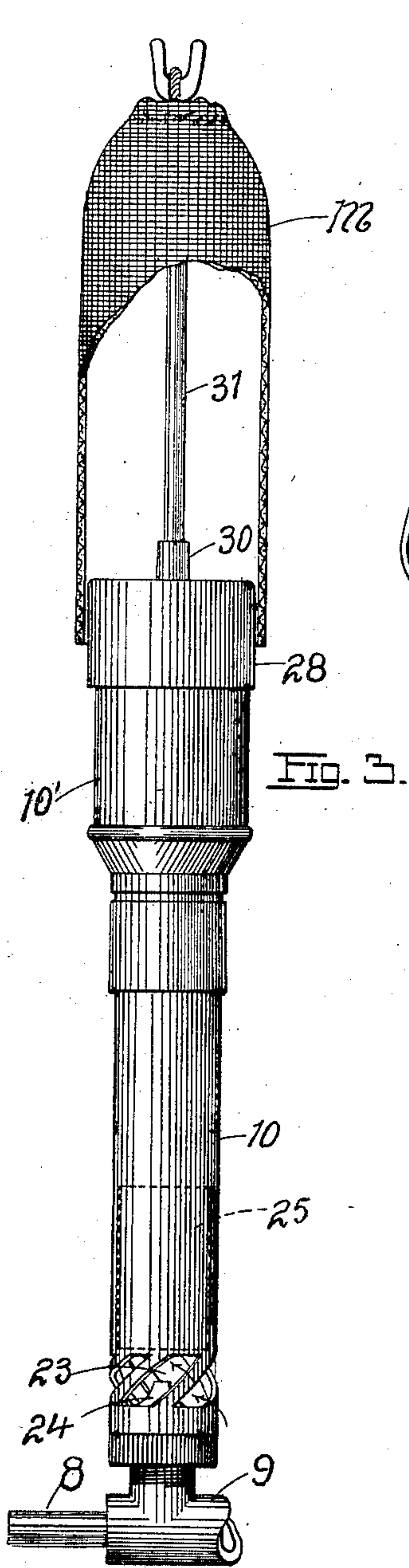


FIG. 3.

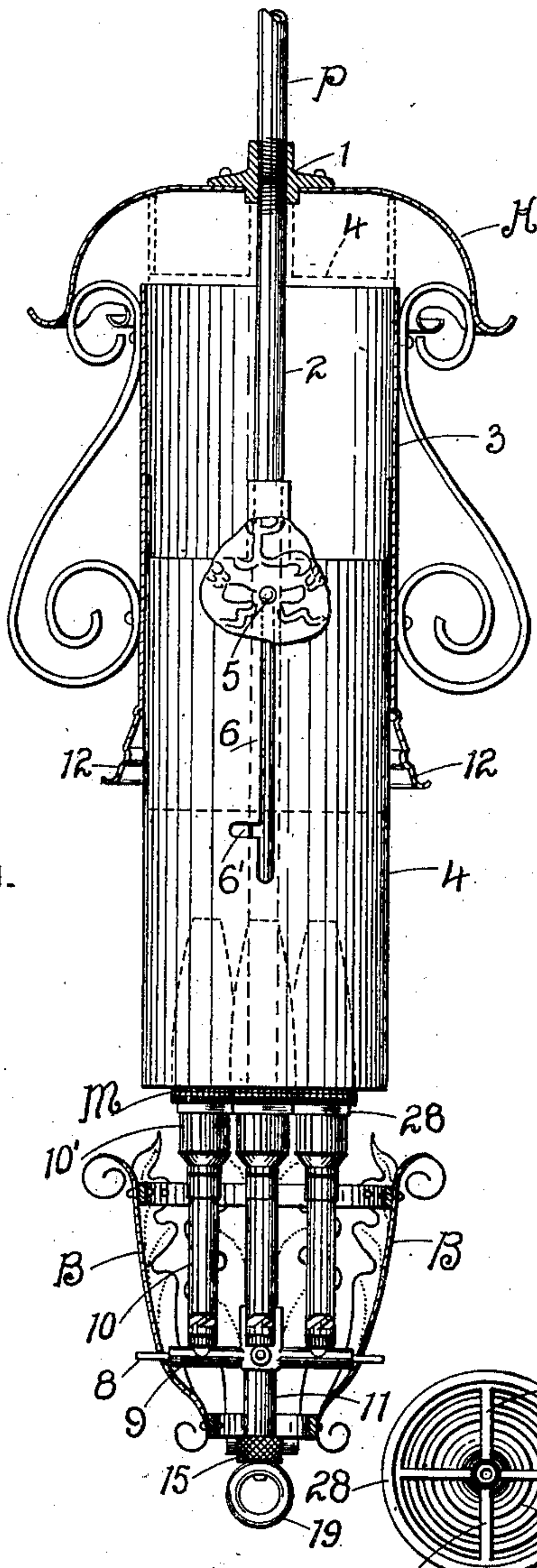


FIG. 2.

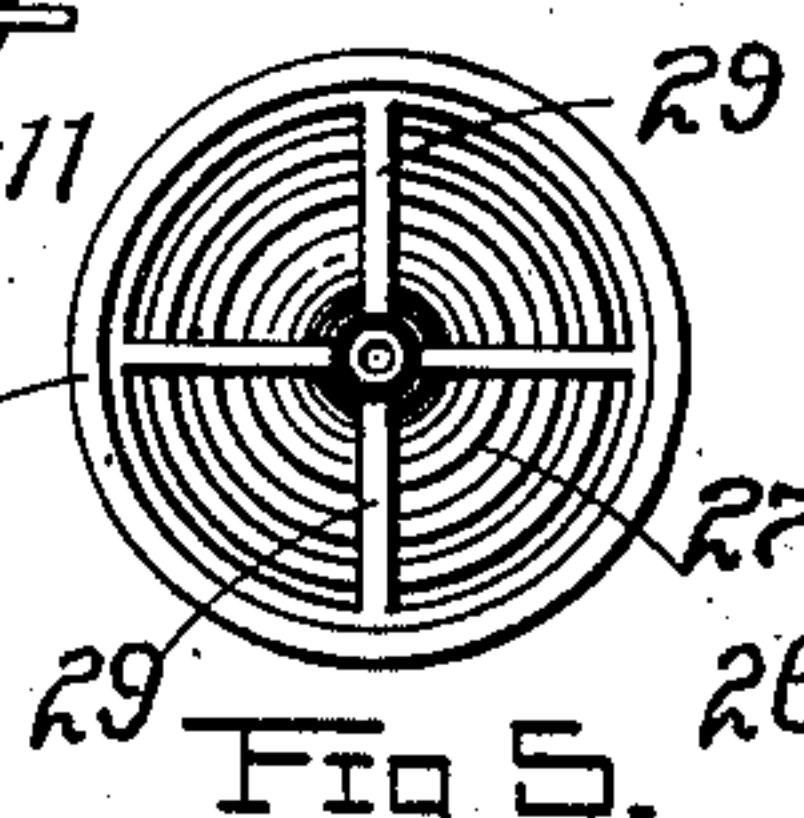


FIG. 5.

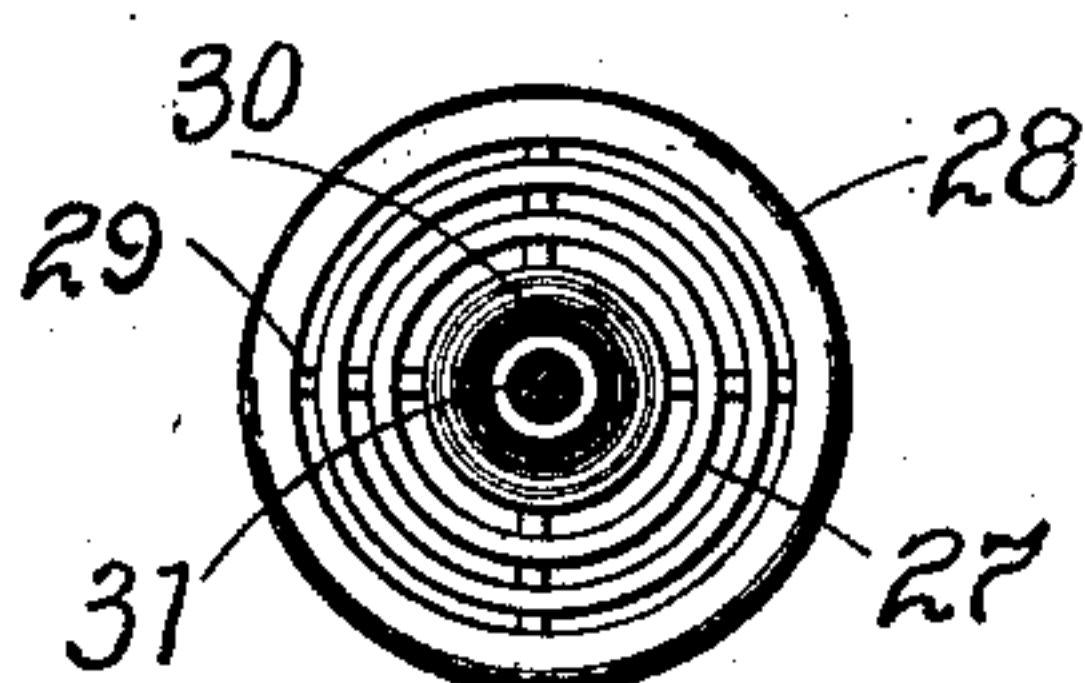


FIG. 6.

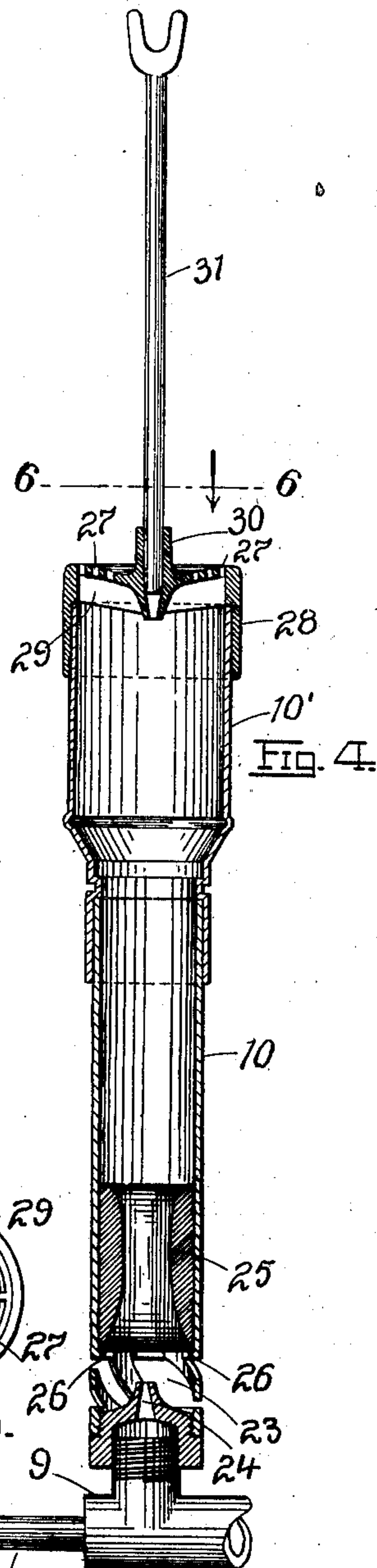


FIG. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

CYRUS A. HAAS, OF ST. LOUIS, MISSOURI.

## GAS ARC-LAMP.

SPECIFICATION forming part of Letters Patent No. 729,158, dated May 26, 1903.

Application filed February 14, 1903. Serial No. 143,372. (No model.)

*To all whom it may concern:*

Be it known that I, CYRUS A. HAAS, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Gas Arc-Lamps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in gas arc-lamps; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a general elevation of the lamp. Fig. 2 is a middle vertical section taken through the body portion. Fig. 3 is an elevation of one of the Bunsen tubes, showing mantle mounted thereon. Fig. 4 is a middle vertical section taken through the Bunsen tube. Fig. 5 is an inside plan of the cap-piece carried by the Bunsen tube. Fig. 6 is a section on line 6 6 of Fig. 4. Fig. 7 is an elevation of the valve-casing carried at the lower end of the gas-pipe of the lamp. Fig. 8 is a vertical middle section on line 8 8 of Fig. 7, and Fig. 9 is a cross-section on line 9 9 of Fig. 7.

The object of my invention is to construct a gas arc-lamp which may be readily cleaned by the removal of a single screw; one in which the valve serves as a collector of any impurities condensed or deposited from the gas; one in which the heat in no wise affects the free movement or operation of the valve; one in which the prevailing "pilot" or lighting-burner is dispensed with, thus making it impossible to leave the gas turned on when the pilot goes out; one in which any desired number of lights can be turned on by the simple up-and-down movement of the valve; one containing a minimum number of parts, the body of the lamp being made of a single casting and facilitating the retention of the Bunsen tube perfectly in line; one in which the force of the draft is developed to a maximum velocity, thereby supplying a corresponding quantity of oxygen to the flame; one having a telescopic section specially adapted to protect the mantles when the globe is removed for cleaning purposes and guiding the globe during its removal; one which is complete as assembled at the factory, requiring no build-

ing up on top of the step-ladder; one having elastic tongues for the support of the shade, such tongues eliminating the danger of breakage of the shade by reason of undue expansion or contraction from changes of temperature; one having a dome preventing drafts from electric fans or wind and preventing access of dirt, rain, snow, or sleet into the lamp; one having a special basket for the support of the globe, thereby doing away with thumb-screws and similar contrivances; one devoid of objectionable adjustment-screws; one which is cheap, yet ornamental and massive in appearance; one in which the pilot-flame is inclosed in the Bunsen tube, thereby insuring ignition, since with the lighting of one mantle the others will naturally follow; one in which the pilot-flame is removed from any possible contact with impurities and water; one in which the pilot-flame is a perfectly blue one, thereby obviating any smoking and giving no light; one in which the cap and gauze are made of a single piece, such piece permitting the mantle-stick holder to be perfectly true with the Bunsen tube; one in which the mantle-stick-holder socket is self-adjusting to any-sized stick, at the same time permitting the ready dislodgment of the stick when broken; one in which the Bunsen flame is of the exact shape of the mantle, thereby filling it thoroughly and increasing the efficiency of the light; one in which the gas is delivered in thin sheets, producing a stiff flame and dispensing with the prevailing intermediate gauze; one in which the Bunsen tubes insure a more intimate mixture of the air with the gas and a maximum supply of air to the gas, and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, P represents the service-pipe, which is coupled to the cap-piece 1, secured to the hood H of the lamp, the pipe P communicating with the central gas-pipe 2. The hood surmounts and envelops the upper end of the body portion 3 of the lamp, the latter being provided with a telescoping section or follower 4, between whose lower end and the basket B the globe G is held. When the latter is removed, (such removal being effected by lowering the basket and



globe together,) the section 4 follows after it, dropping down to a point where the mantles M are thoroughly protected, Fig. 2. The section 4 is guided in its movements by a pin 5, operating in a longitudinal slot 6 in the said follower, the slot 6 having a lateral offset or extension 6', which the pin 5 enters, (by giving the section 4 a slight turn in the proper direction when fully elevated,) by which operation the section is held supported in its highest position when necessary for introduction of fresh mantles or any other reason. The basket is formed of a series of lobes, each having a horizontal recess 7, whose base is enlarged for the reception of a pin 8, by which the basket is supported, the pins 8 being inserted into the ends of the cluster of arms 9, forming the horizontal passages for the gas conveyed to the Bunsen-burner tubes 10 from the bottom valve-casing 11, the latter being secured to the lower end of the pipe 2. To attach the basket, the same (with the globe resting on top thereof) is inserted from the bottom, the arms 9 and pins 8 fully passing between the lobes thereof, when by a slight turn the several recesses 7 are passed over the pins 8, the latter finally entering the enlarged bases of the recesses when the basket is firmly supported, Fig. 1. The shade S is previously inserted with its upper edge under the resilient tongues 12, formed at the base of the body portion, said tongues frictionally holding the shade firmly to the section 4, it being apparent that any-sized shade may be accommodated.

The feed-valve mounted in the casing 11 and which successively controls the passages of the arms 9 may be described as follows: Referring particularly to Figs. 8 and 9, *a b c d* represent, respectively, the series of resilient arms or members of the tubular valve 13, said members being of progressively-increasing lengths and adapted in the reciprocation of the valve to successively close or open the several passages of the arms 9, the shortest member *a* being the last to shut off the supply of gas to its arm 9. When thus fully closed, a small quantity of gas is allowed to be fed to one of the burners through a port or slit 14, formed in the member *a*, whereby a small but imperceptible lighting-flame or pilot is allowed to burn continuously. In lieu of the port 14 the same result may be accomplished by slightly unscrewing the stuffing-box or gland 15, through which the valve operates, whereby the valve will be limited in its inner movement before the passage of the arm 9 (opposite the member *a*) is fully closed, thus allowing for a limited feed of gas therethrough. In its reciprocations the valve is guided and limited by a pin 16, operating in a longitudinal slot 17, formed in the wall of the valve and preferably in the member *a*. To prevent accidental turning of the valve by persons not acquainted with the operation thereof, the terminal ring 19, by which the same is seized, is preferably

swiveled to the valve, so that in the event an attempt is made to rotate the valve the ring will turn without straining the valve proper. When the valve is in its closing position, the several members thereof cover the passages of the several arms 9 along a lap area or surface 20, made by coring out the bore of the casing to a depth represented by the shoulder 21, Fig. 8, by which arrangement a better joint is effected between said valve members and such lap area than would be the case were the bore of the casing uniform.

The air-passages 23 at the base of the Bunsen-burner tube 10 are rhombic in form, the inclined side of one rhomb overlapping the corresponding side of the next adjacent rhomb, whereby the air which may fail to enter one passage will be intercepted by the overlapping portion of the next adjacent passage, so that a maximum quantity of oxygen will be fed into the tube. (See arrows, Fig. 3.) Furthermore, the sides of the rhombs being inclined to the vertical cause the air to be deflected as it enters the tube, imparting to it a gyratory movement, which movement insures a more thorough mixture between the air and the gas escaping from the tip 24 at the outer end of the arm 9. To impart or induce an increased velocity to the mixture through the tube, the air and gas pass through the contracted passage of a plug 25, (supported on the burs 26, resulting from the punching of the passages 23,) the contour of the longitudinal section of the walls of said plug being oval, (see Fig. 4,) the contraction being greatest near the upper end thereof. The mixture of air and gas thence escapes through a series of concentric annular passages 27, formed in the top wall of the burner-cap 28, said cap having formed along the inner surface of the top thereof a series of ribs 29, which distribute the mixture of air and gas evenly to the several sections of said passages 27, the flame issuing from said annular passages being not only stiff, (by reason of the uninterrupted pressure behind it,) but representing complete combustion, said flame being, furthermore, solid, issuing through the passages 27 in the form of cylindrical sheets, which jointly assume the form of the mantle M, by which they are encompassed. The burner-cap is provided with a central perforated socket 30 (having a conical bottom) for the proper centering and support of the mantle-stick 31, the latter being held in the center of the mantle and in line with the axis thereof at all times. In case the stick should break at the bottom the plug remaining in the socket 30 can be readily removed by forcing it out from the inside of the cap by means of a sharp instrument capable of free insertion into the opening of the socket. In the present instance the burner-cap is carried by an extension-chamber 10', which is mounted on the tube 10 proper.

I do not of course wish to be limited to the



precise details here shown, as these may be departed from in a measure without affecting the nature or spirit of my invention.

The advantages of the present lamp, as enumerated above, will be perfectly apparent to any one skilled in the art.

Having described my invention, what I claim is—

1. In a lamp, a suitable body portion, a hood 10 surmounting the same, a telescoping section mounted in the body portion, a suitable basket, means for securing said basket in position below the telescoping section, and retain between it and the telescoping section a suitable globe, and elastic tongues formed along 15 the lower edge of the body portion for the retention of a shade, substantially as set forth.

2. In a lamp, a suitable body portion, a gas-pipe disposed centrally within the same, a 20 telescoping section mounted in the body portion, a suitable basket, and means for retaining said basket in position below the telescoping section and retain between it and the telescoping section a suitable globe, substantially 25 as set forth.

3. In a lamp, a suitable gas-pipe, a valve-casing at one end of the same, a valve in said casing, a series of members composing said valve and being of progressively-increasing 30 lengths, a cluster of tubular arms radiating from the valve-casing the flow of gas therethrough being controlled by said members whereby one or more arms of said cluster are brought into service according to the position 35 of said valve, substantially as set forth.

4. In a lamp, a suitable gas-pipe, a valve-casing at one end of the same, a hollow valve in said casing, a series of resilient members at one end of the valve, said members being 40 of progressively-increasing lengths, a cluster of tubular arms radiating from the valve-casing the flow of gas therethrough being successively controlled by the several members of the valve, a slot formed in one of the mem- 45 bers, a pin carried by the valve-casing and operating in said slot whereby rotation of the valve is prevented, means for actuating the valve from the outside of the casing, an adjustable gland for the passage of the valve, 50 and a port formed in the shortest member of the valve, substantially as set forth.

5. In a lamp, a suitable gas-pipe, a valve-casing at the lower end of the same, a stuffing-box at the lower end of the valve-casing, 55 a hollow valve in said casing having one end operating in the stuffing-box, and a swiveled ring at the outer end of the valve, substantially as set forth.

6. In a lamp, a Bunsen tube having a cap- 60 piece surmounting the same, said cap-piece having a series of annular passages divided

into suitable sections, formed in the upper end of the cap-piece for the passage of the gas and air in the form of cylindrical sheets, and a mantle-stick-holder socket projecting 65 centrally from the cap-piece, substantially as set forth.

7. In a lamp, a Bunsen tube having a cap-piece surmounting the same, said cap-piece having a series of annular passages for the 70 escape of the flame, a series of ribs radiating from a center along the inside of the top of the cap-piece, and a mantle-stick-holder socket projecting from the center aforesaid a suitable distance above the cap-piece, sub- 75 stantially as set forth.

8. In a lamp, a Bunsen-tube cap-piece having a series of annular passages for the escape of the flame, a series of radiating-ribs along the inner surface of the wall in which 80 the slits are formed, a hollow socket projecting from the center of the cap-piece and having a conical open bottom, for gripping the mantle-stick, substantially as set forth.

9. In a lamp, a suitable body portion, a gas- 85 pipe centrally disposed within the same, a valve-casing, a cluster of arms radiating from said casing, a Bunsen tube at the outer end of each arm, a pin projecting from and forming a horizontal extension of each arm, and 90 a lobed basket having a series of recesses or notches adapted to engage said pins and be supported thereby, substantially as set forth.

10. In a lamp, a suitable gas-pipe, a valve- 95 casing at one end thereof, a reciprocating valve within the casing, a cluster of arms radiating from said casing, the valve being adapted to successively control the passages in said arms by a longitudinal movement 100 thereof, substantially as set forth.

11. In a lamp, a valve composed of a tube closed at one end, and open at the opposite end, and having a series of members formed by parallel slits cut in the walls of the valve, 105 said members being of unequal length, substantially as set forth.

12. In a lamp, a Bunsen tube having a cap-piece surmounting the same, said cap-piece having a series of annular passages formed 110 in the upper end thereof for the passage of the gas and air in the form of cylindrical sheets, and radial ribs for dividing the passages into sections, and distributing the gas evenly thereto, substantially as set forth. 115

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

CYRUS A. HAAS.

Witnesses:

EMIL STAREK,  
G. L. BELFRY.