No. 696,640. Patented Apr. 1, 1902.

A. H. HUMPHREY.

GAS LAMP.

(Application filed Jan. 6, 1902.)

(No Model.) 2 Sheets—Sheet 1.

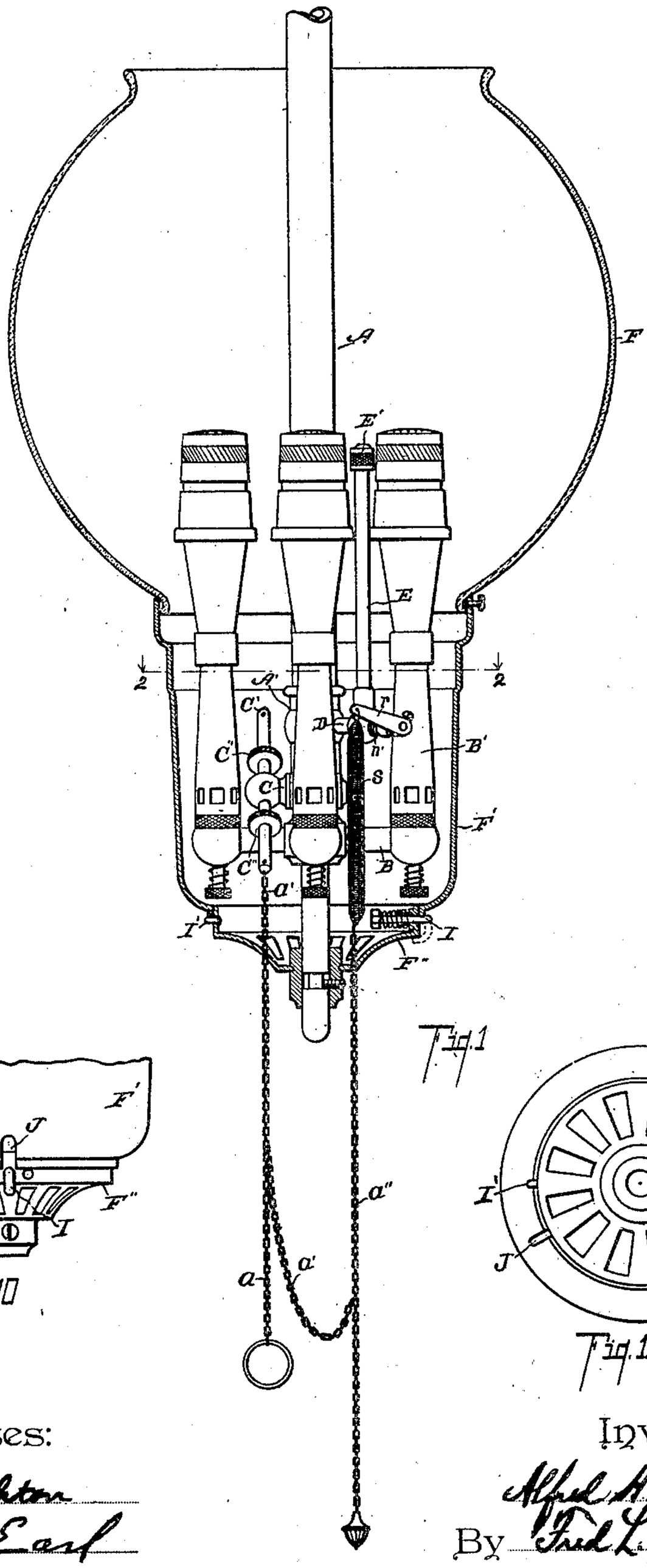

Fig. 1

Fig. 10

Fig. 11

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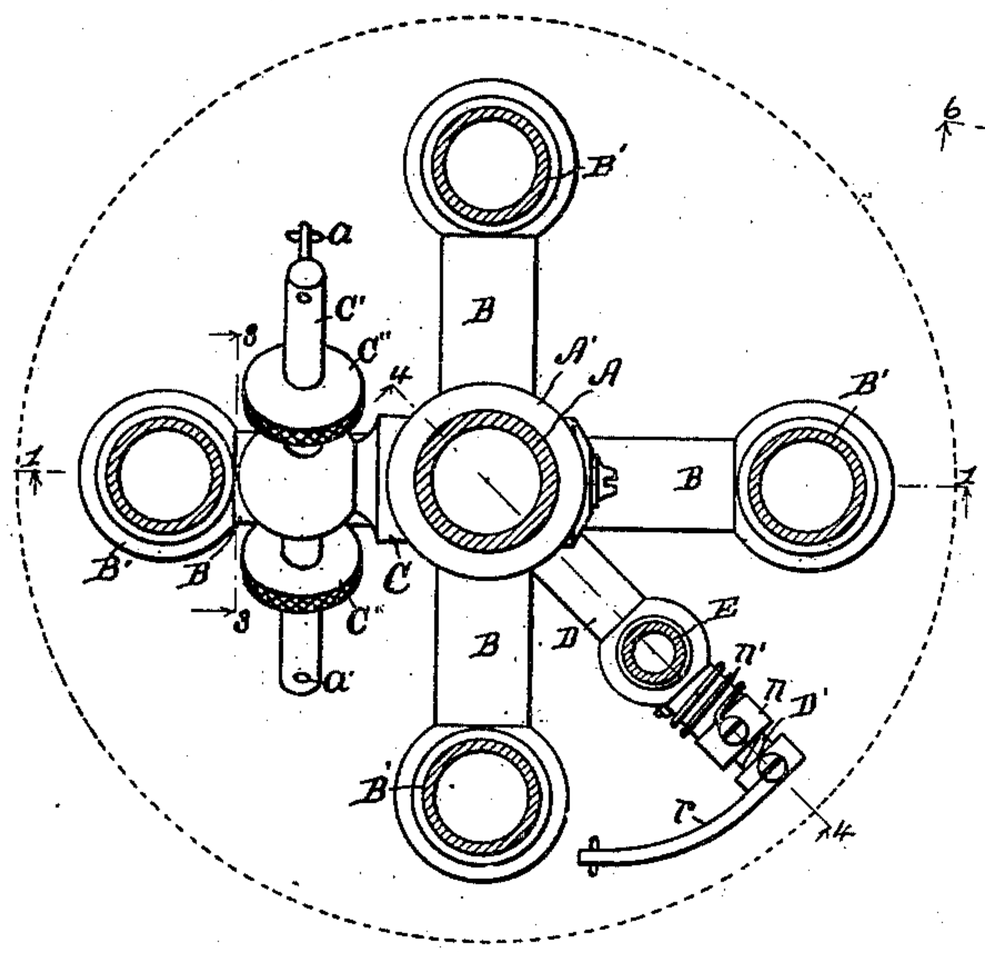


Fig. 2.

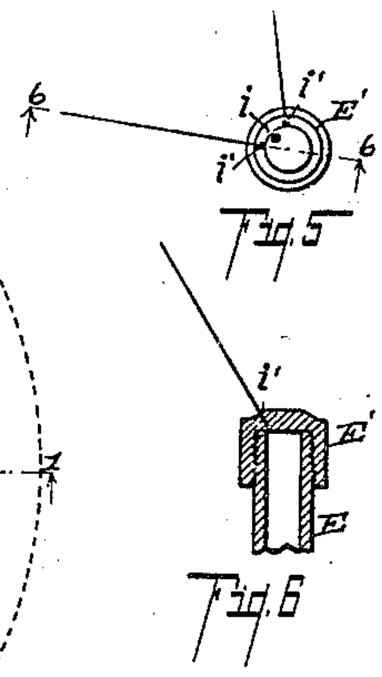
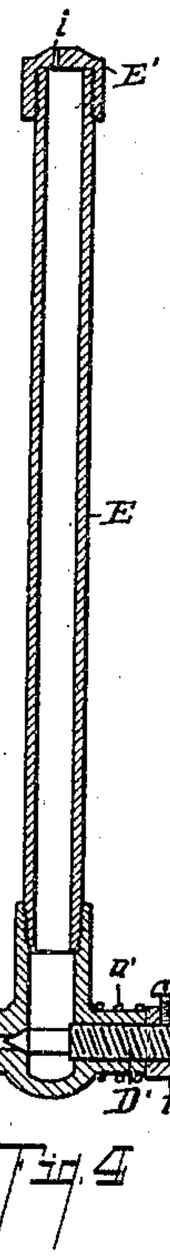


Fig. 5

Fig. 6



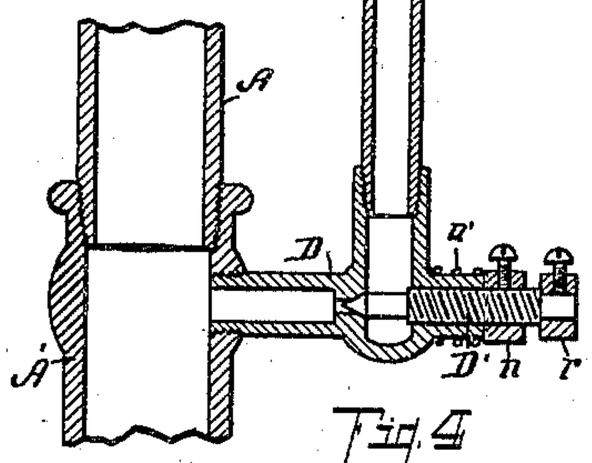


Fig. 4

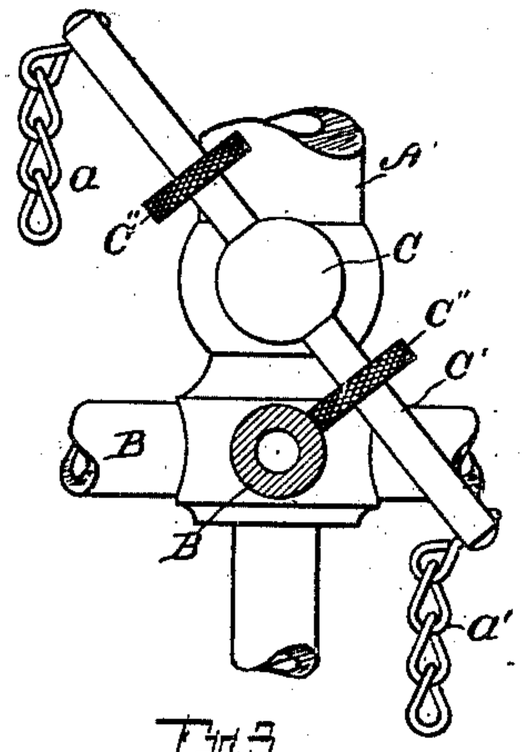


Fig. 3

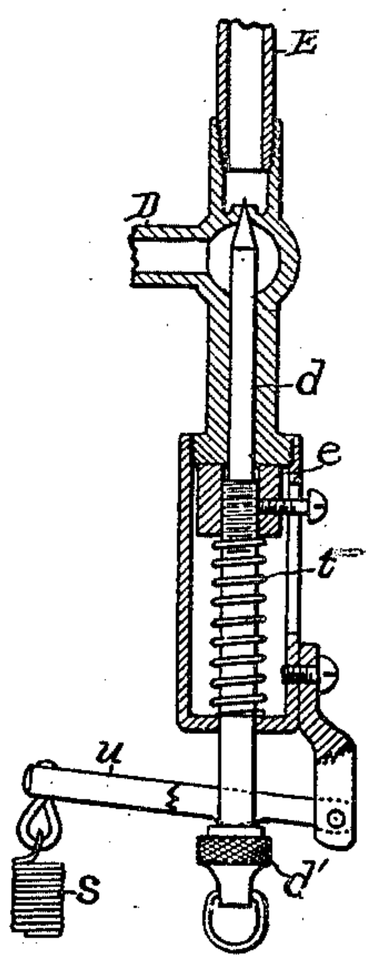


Fig. 7

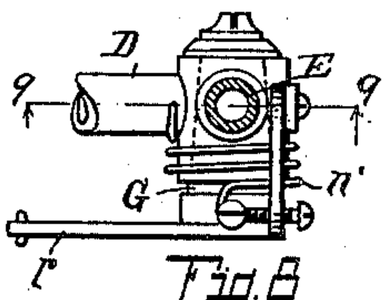


Fig. 8

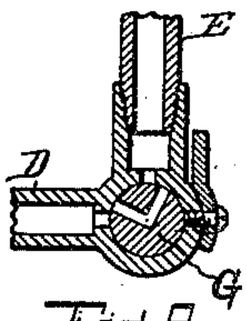


Fig. 9

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UNITED STATES PATENT OFFICE.

ALFRED H. HUMPHREY, OF KALAMAZOO, MICHIGAN.

GAS-LAMP.

SPECIFICATION forming part of Letters Patent No. 696,640, dated April 1, 1902.

Application filed January 6, 1902. Serial No. 88,604. (No model.)

To all whom it may concern:

Be it known that I, ALFRED H. HUMPHREY, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Gas-Lamps, of which the following is a specification.

This invention relates to improvements in gas-lamps.

It relates more particularly to an improved pilot-light, the construction of a globe-holder, and of a pilot-light construction especially adapted thereto.

The objects of this invention are, first, to provide an improved globe-holder construction in which the globe can be readily attached and detached from the lamp; second, to provide an improved pilot-light construction and means for operating same which are for use with burners that are embraced in a globe, although of course the pilot-light and its means of actuation are not necessarily confined to that class of lamps; third, to provide improved means of using a pilot-light in connection with a burner or plurality of burners.

Further objects will differently appear in detailed description to follow.

I accomplish the objects of my invention by the devices and means described in this specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail vertical view taken on a line corresponding to line 1 1 of Fig. 2, partially in section. Fig. 2 is a detail cross-sectional view taken on a line corresponding to line 2 2 of Fig. 1, the position of the casing or globe-holder being indicated by dotted lines. Fig. 3 is an enlarged detail view of the main valve with its levers and connections, taken on a line corresponding to line 3 3 in Fig. 2. Fig. 4 is a vertical detail sectional view taken on a line corresponding to line 4 4 of Fig. 2, showing details of construction of the pilot-light valve. Fig. 5 is a plan view of the tip of the pilot-burner. Fig. 6 is a detail sectional view taken on a line corresponding to line 6 6 of Fig. 5. Fig. 7 is an enlarged detail sectional view with a modified construction of valve for pilot-burner. Fig. 8 is a detail view of a second modification of valve for pilot-light, taken on a line corresponding to line 2 2 of Fig. 1, it being a similar view to that of this part appearing in Fig. 2. Fig. 9 is a detail sectional view taken on a line corresponding to line 9 9 of Fig. 8. Fig. 10 is a detail sectional view of the attaching means for supporting the globe-holder and casing. Fig. 11 is a view of the globe-holder and its connection to bottom plate F′.

In the drawings all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A is a gas-pipe, which also serves as a support for the lamp or burner. A depending pin is secured to the lower end of this pipe, and to this pin is secured a plate F″, which is perforated or has openings therethrough to permit the passage of air and the chains *a* *a′* *a″*, which operate the valves of the lamp. Plate F″ is also provided with a circular flange at the top.

F′ is a casing adapted to pass over the plate F″ and is formed at its lower end to embrace the flange thereon. This casing or globe-support is slotted at J J, and a pin I′ passes through the slot on the opposite side. This can be turned so as to clamp the edge thereof and hold it securely in position. The top of this casing is formed to receive the globe, as F. Within this casing F′ are arranged the burners B′, which may be of any desired pattern, being here illustrated as of the Bunsen type and intended to be used in connection with mantles. The burners are connected by lateral arms or pipes B, as clearly appears in Figs. 1 and 2. A valve C is provided in a coupling A′ at the bottom of the pipe A for controlling admission of gas to these burners. This valve is provided with a cross-arm C′, to which are secured the chains *a* *a″* (see Figs. 1 and 3) for the purpose of actuating the same.

The disks C C″ strike against one of the arms B and make very efficient stops, requiring no adjustment.

Above the main valve C is a connection D to the gas-pipe A through the upper part of the coupling A′. This is provided with a valve D′, and beyond this valve is a small vertical tube or pipe E, provided with a pilot burner-tip E′ at the top, this pilot burner-tip containing one or more perforations *i i′*, aimed toward the several burners B′ for the purpose of directing the flame of the pilot-light for the proper ignition of the gas escaping from such main burners. The valve D′ is provided with a stop, which prevents its complete closing, leaving a very small passage for the escape of gas, which passes up through the tube E and burns constantly in a very small flame at the top. A spring *n′* is on this valve to hold it normally in this position. A lever *r* is provided for turning this valve against the spring for the purpose of opening it wider, so that when it is desired to light the burners this pilot-light is opened wide, turns on an extra amount of gas, which has the effect of increasing the size of the flames of the pilot-burner and direct them to properly ignite main burners of the lamp. I have shown this valve in my preferred form in Fig. 4. The same, however, is capable of many modifications, one of which I illustrate in Fig. 7, which I have used to a large extent, where a needle-valve *d* reciprocates to control the passage to the pilot-light, the same being controlled by a stop *e* and held normally toward the closed position by the spring *t*. I show a lever *u* to control this valve, but will remark that the connection in place of being on this lever could be at the loop on the lower end of the valve-stem *d′*. In Figs. 8 and 9 I also show a modification, valve G, which is simpy a plug-valve, being so adjusted that a small amount of gas is allowed to pass up at all times, a spring holding the same in that position normally. The lever *r* is the same as appears in Fig. 2 and has the same connection for actuation.

The connection to the pilot-light valve consists of a spiral spring S and a chain, though of course the spring could extend all the way down. It is preferred, however, to put a coiled spring, as S, up within the casing for the burners and allow a chain, as *a″*, to depend downwardly as a pull to actuate the valve. The chain *a′* is connected to the chain *a″*, being looped up slightly at the lower end for that purpose. (See Fig. 1.)

I have fully described the details of the structure. To operate the device to light the burner, the chain *a″* at the right of Fig. 1 is pulled downward. This first puts tension on the spring S, which, being stronger than the spring *n′* on the lever *r* or other connection to the pilot-valve, opens the valve. This turns a full amount of gas into the pilot-light and thread-like flames project out to the burner or burners of the lamp. The pull continuing after the lever *r* and the pilot-light valves strike a stop, the spring S lengthens, which permits a pull on the chain *a′*, which operates the lever C′ to the position indicated in Fig. 3, which opens the valve and turns the gas into all of the burners of the lamp, where, owing to the projecting flames from the pilot-light, the same is immediately lighted without any danger of explosions. The chain is then released, the spring S closes, and the spring on the pilot-light valve being sufficient to overcome the weight of the chain and to actuate the valve closes the valve of the pilot-light to the minimum point determined by the stop. There is a little slack in the chain *a′* at this time, so that the two chains *a′* and *a″* will practically counterbalance each other. When it is desired to extinguish the light, the chain *a* is pulled, which closes the main valve. The pilot-light is still burning with a very low flame ready to repeat the operation at any time.

As I have already explained, this structure is capable of very many modifications. I have shown some of them; but undoubtedly many others would occur to persons skilled in the art to which my invention pertains.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a lamp, the combination of a central supply-pipe; lateral arms thereon carrying burners; a main gas-valve in the central supply pipe or passage to control the flow of gas to the said burners; a cross-arm C on said valve with suitable disk stops positioned to strike one of said lateral arms; chains *a*, *a′* connected to each end of said cross-arm; a pilot-valve connected above said main gas-valve; a tube extending upwardly therefrom containing small jet-perforations; a valve with stop thereon to hold the same a little off from its seat to permit a small flow of gas; a spring *n′* to hold the said valve normally toward its closed position; a lever with connection adapted to act against said spring consisting of chain *a″* and spring S being of greater strength than the valve-spring; and the chain *a′* being connected by a loop to the chain *a″*, all coacting substantially as described and for the purpose specified.

2. In a lamp, the combination of a central supply-pipe; lateral arms thereon, carrying burners; a main gas-valve in the central supply pipe or passage to control the flow of gas to the said burners; a cross-arm C on said valve with suitable stops; chains *a*, *a′*, connected to each end of said cross-arm; a pilot-valve connected above said main gas-valve; a tube extending upwardly therefrom containing small jet-perforations; a valve with a stop thereon to hold the same a little off from its seat to permit a small flow of gas; a spring *n′* to hold the said valve normally toward its closed position; a lever with connection adapted to act against said spring, consisting of chain *a″* and spring S connected to the

said lever, the said spring S being of greater strength than the valve-spring; and the chain a' being connected by a loop to the chain a''; all coacting substantially as described and for the purpose specified.

3. In a lamp, the combination of a main supply-pipe; burners connected thereto with a valve for controlling the supply of gas; stops for said valve for both its open and closed positions; and a pair of chains connected to control said valve; a pilot-light with an independent connection to the gas-supply; a pilot-light valve in such connection with a stop to hold it a little open to permit a small flow of gas; a spring, or other means, for holding the same automatically in this position; a connection to said pilot-valve containing a spring of sufficient strength to overcome the resistance of the valve and open the same, the main burner-chain or opening connection being connected thereto, whereby in operation, a pull on the pilot-light connection will first open the pilot-light valve wide and then open the main gas-valve, and when released, will permit the pilot-light to close automatically, for the purpose specified.

4. In a gas-lamp, the combination of a burner with a gas-valve in the main supply; a pilot-light independently connected; a valve for the pilot-light with a stop to hold it slightly open; a spring to throw the valve against the stop; a connection containing a spring of greater strength than the pilot-light-valve spring, the same being coupled with the connection to the main gas-valve, whereby the pilot-light will be opened to the full extent and the burner-valve then opened and the pilot-light will close when the tension is released, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

ALFRED H. HUMPHREY. [L. S.]

Witnesses:
A. E. HOUGHTON,
OTIS A. EARL.