

(No Model.)

L. H. A. DRUEDING.  
DEVICE FOR LIGHTING GAS BURNERS.

No. 559,888.

Patented May 12, 1896.

Fig. 1.

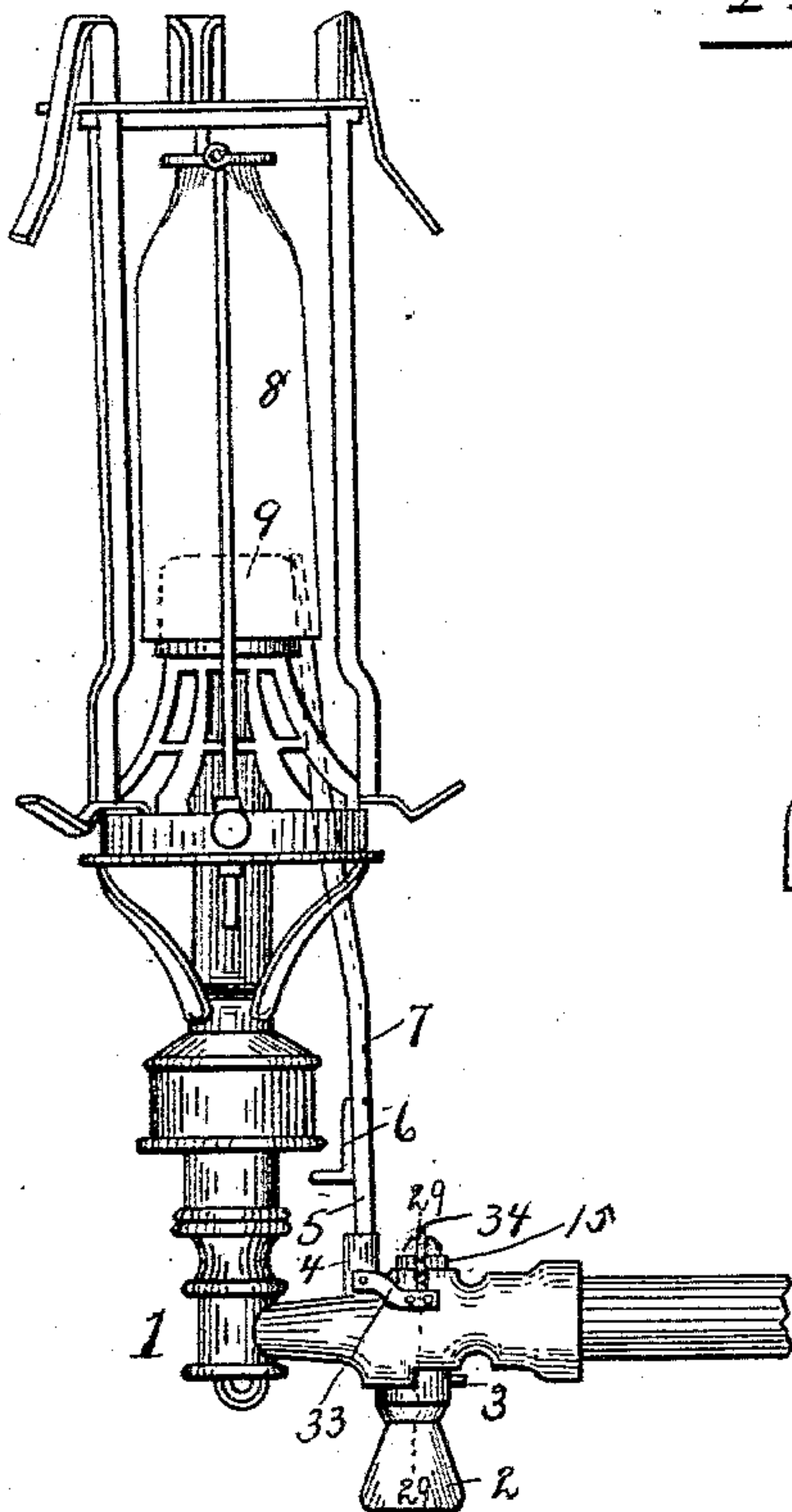


Fig. 2.

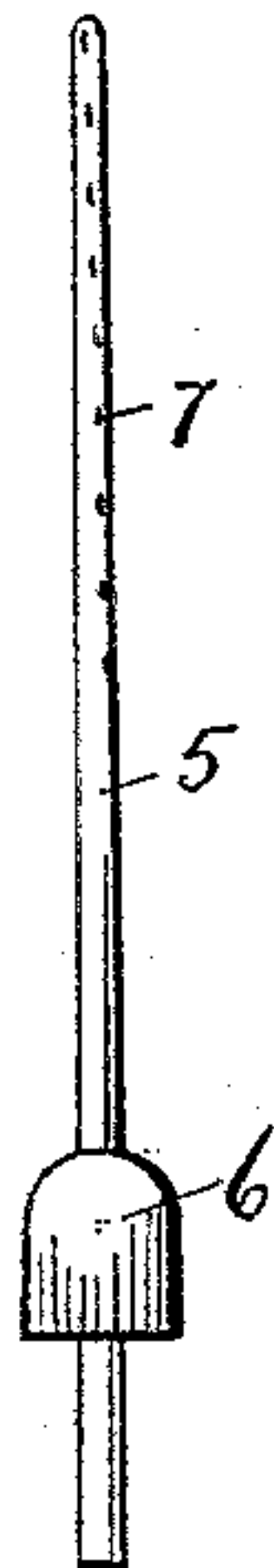


Fig. 3.

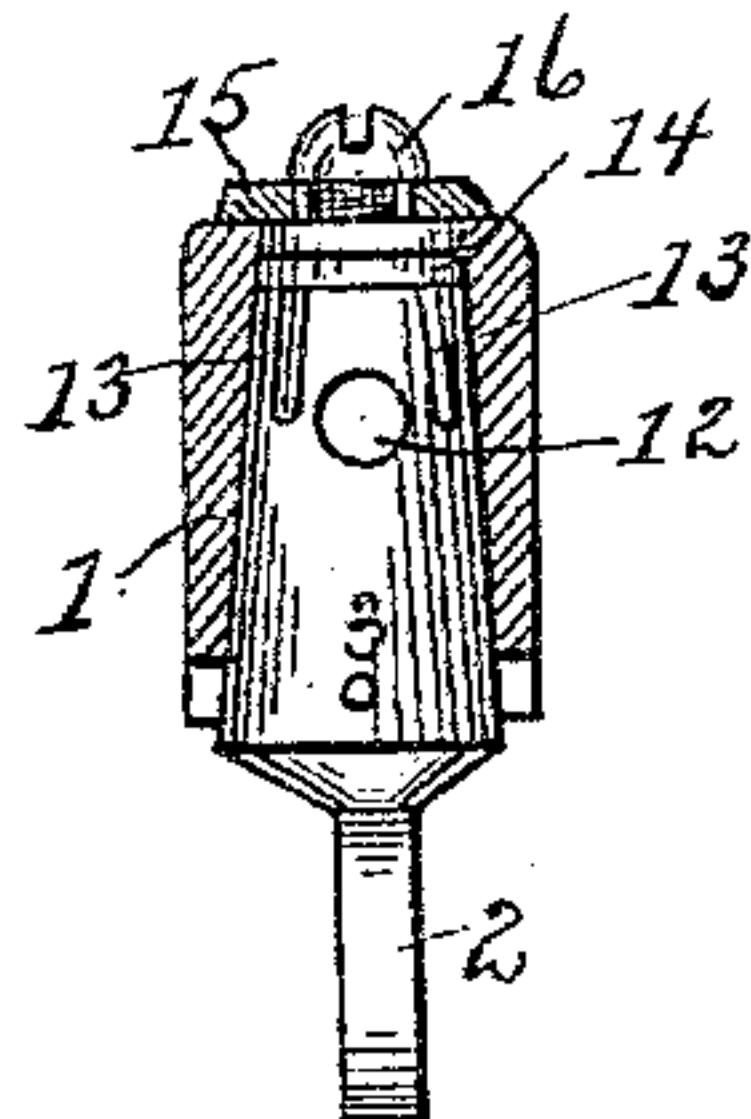


Fig. 4.

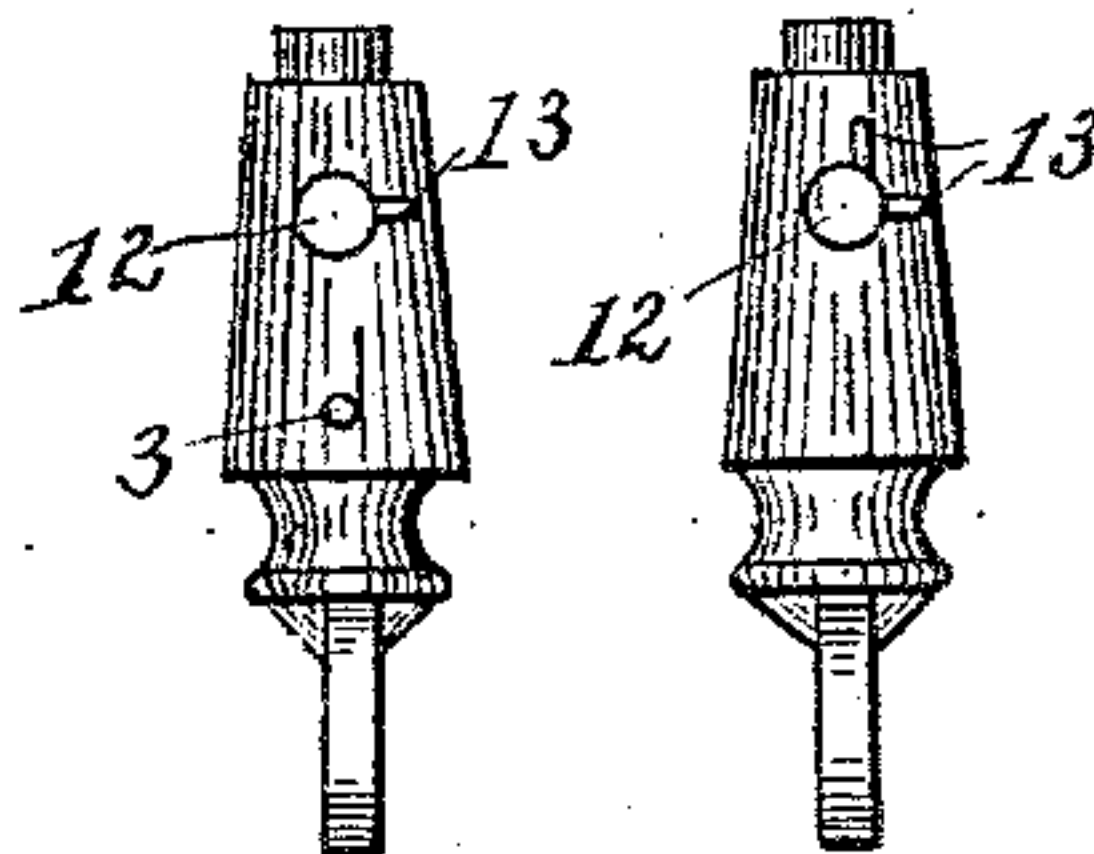


Fig. 5.

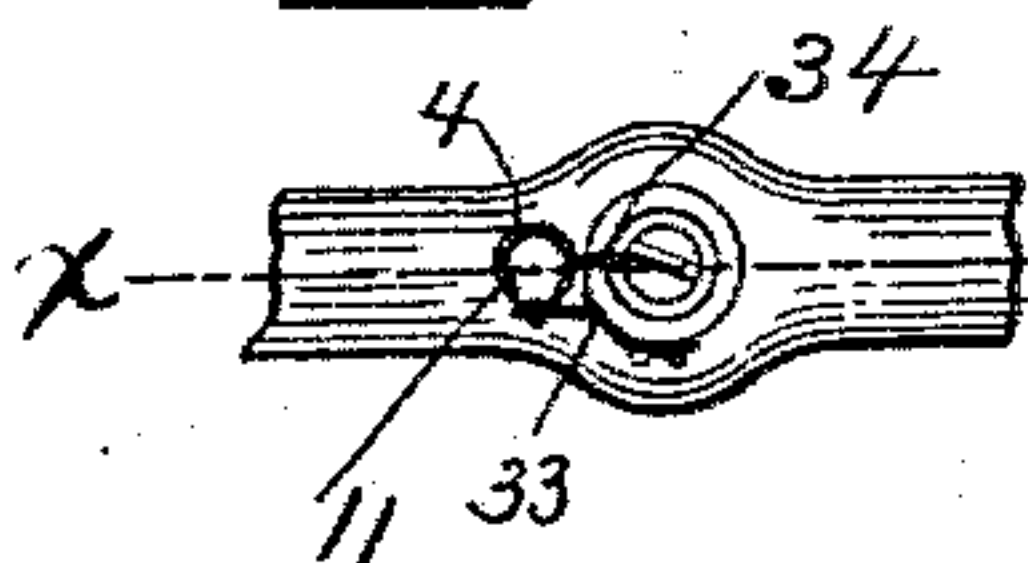


Fig. 6.

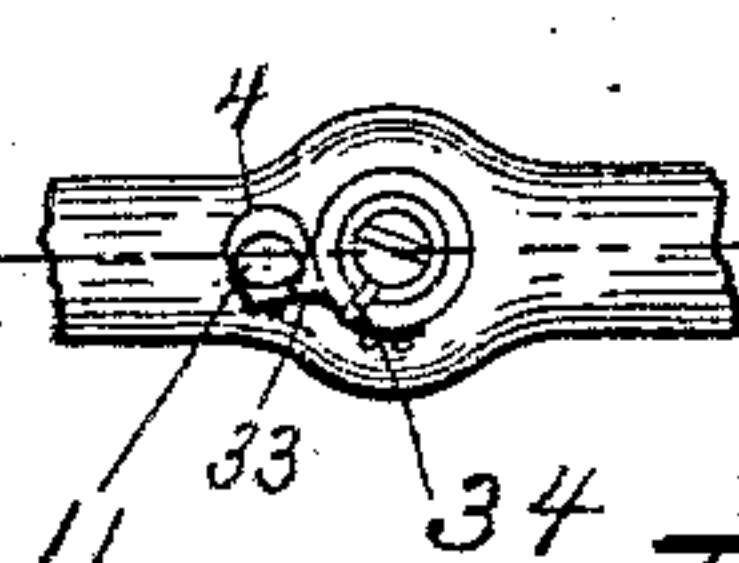


Fig. 7.

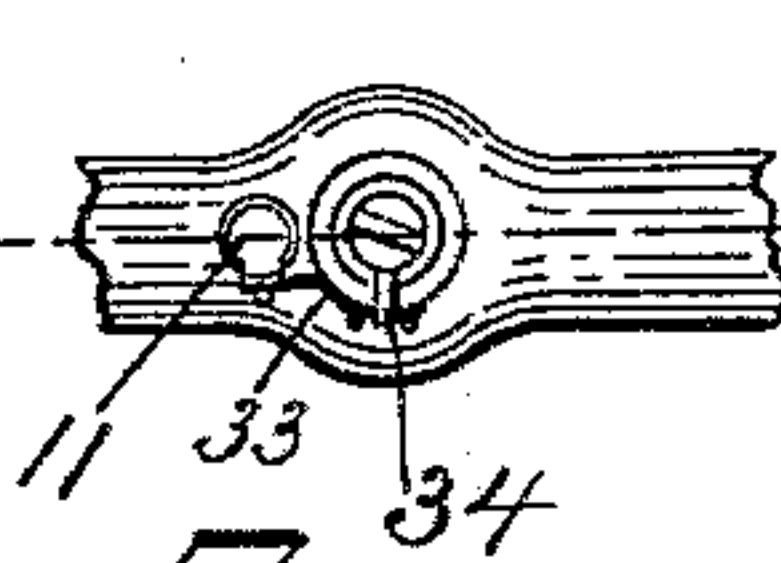


Fig. 8.

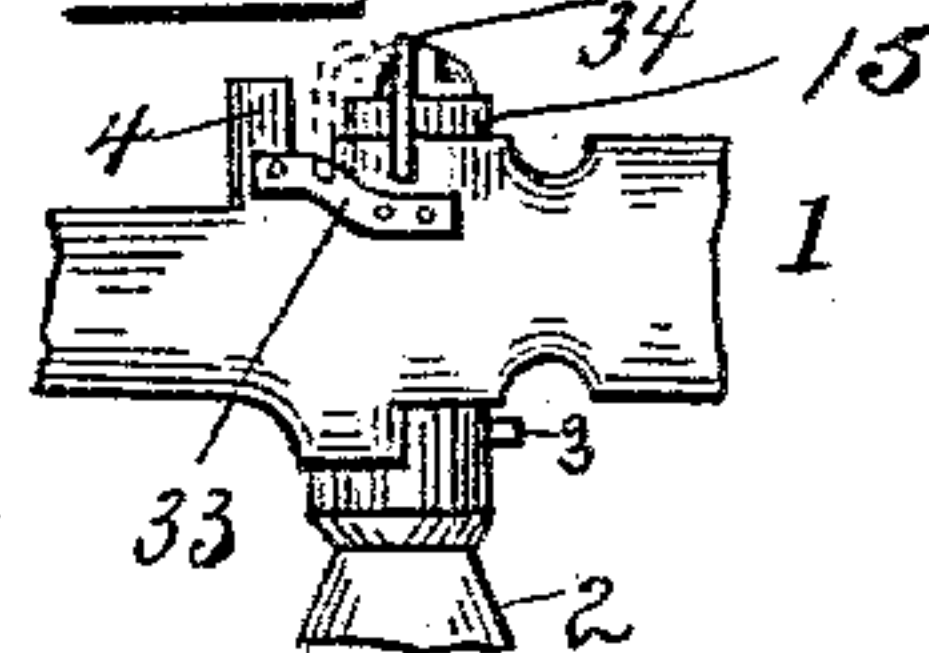
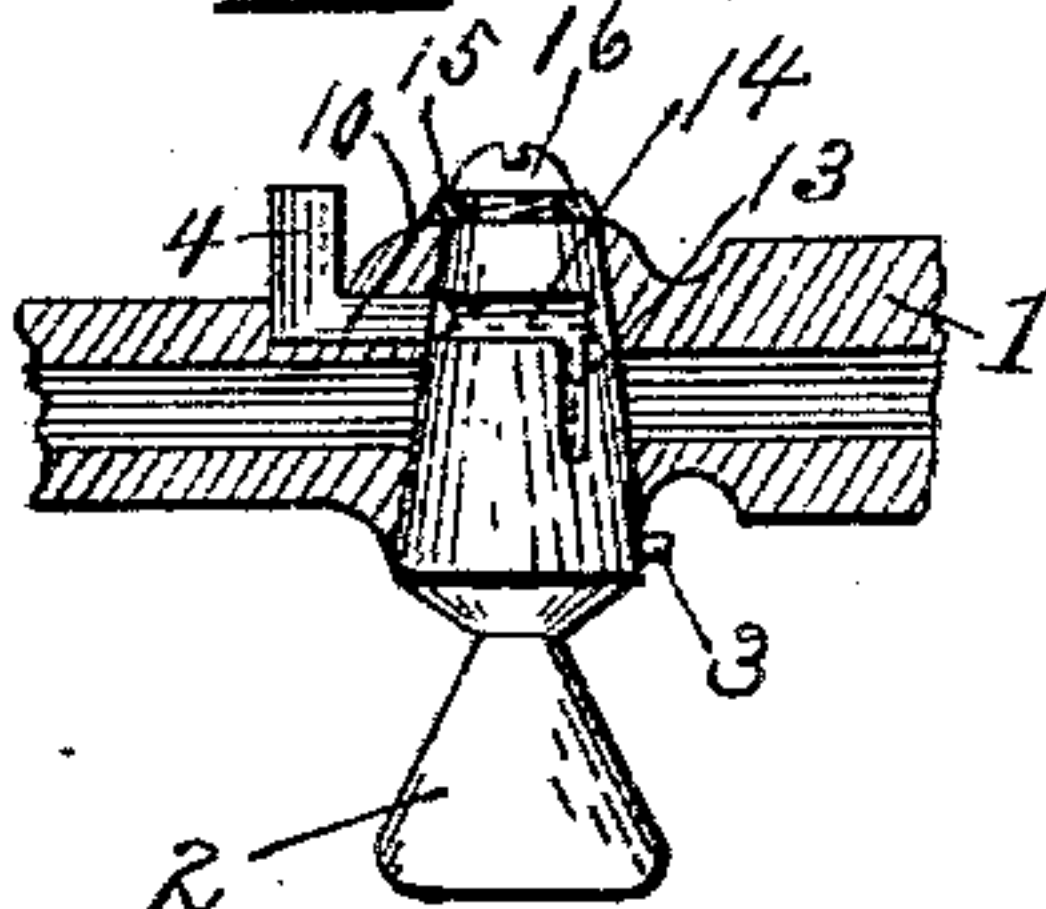


Fig. 9.



Witnesses

Albert Hopkins.  
John E. Wilson

Inventor

L. H. A. Drueding,  
by Whitman & Wilkinson,  
Attorneys



# UNITED STATES PATENT OFFICE.

LEONARD HENRY ARNOLD DRUEDING, OF NEW ORLEANS, LOUISIANA.

## DEVICE FOR LIGHTING GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 559,888, dated May 12, 1896.

Application filed May 6, 1895. Serial No. 548,361. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD HENRY ARNOLD DRUEDING, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Device for Lighting Gas-Burners, of which the following is a specification.

My invention relates to improvements in devices for lighting gas-burners; and it has for its object to provide a device for lighting a gas-burner—such, for instance, as the Welsbach burner—easily and instantaneously and without danger of breaking the frail mantle of the burner by avoiding the explosion of the gas in the cylinder.

My invention will be understood by reference to the accompanying drawings, wherein the same parts are indicated by the same numerals of reference throughout the several views.

Figure 1 is a side elevation of a Welsbach burner provided with my improved lighting device. Fig. 2 is a view of the lighting-tube shown in Fig. 1, as seen from the left in said figure and slightly enlarged. Fig. 3 is an enlarged detail sectional view taken through the plug-casing on the line 29 29 in Fig. 1, the plug itself being shown in elevation. Fig. 4 represents views of a gas-plug from opposite sides thereof, looking in the direction of the gas-passage therethrough, and showing a slight modification in the arrangement of the grooves or side passages therein. Fig. 5 is a top plan view showing the positions of the bent arm, spring, and blade when the main plug is in the position it will occupy when the valve is closed. Fig. 6 is a similar view showing the positions of the parts when the plug has been turned nearly to the open position. Fig. 7 is a similar view showing the positions of the parts when the plug has been turned entirely to the open position and the bent arm has passed over and has released the spring. Fig. 8 is a side elevation showing the parts in the position they occupy in Fig. 7, the plug being open, and the dotted lines in said figure indicating the position of the bent arm when the plug is closed. Fig. 9 represents a central longitudinal section through the plug-casing, showing the main passage therethrough and also the side passage and

outlet for the gas, the said section being taken on the line  $xx$  of Figs. 5, 6, and 7, the plug being shown in side elevation and illustrating the manner in which the passages in the plug communicate with the passages in the casing.

1 designates an ordinary gas-fitting to which the Welsbach burner is attached.

2 is a gas-plug provided with a pin 3 thereon to stop the movement of the plug in turning off the gas.

4 is a short tube or opening upon or into which the lighting-tube 5 is fitted. This tube or opening 4 connects, by means of a channel 10 in the plug-casing, with a groove 14 in the plug, as will be hereinafter more fully described. The tube 5, which fits on or into the tube 4, is to guide the gas and flame to the tip of the burner in lighting the gas, and is provided with small openings 7 to allow the gas to escape from the said tube. A shield 6 is secured to this tube 5 to designate the place to apply the flame and to prevent the gas in the burner from being accidentally ignited.

8 is the mantle of the burner, and 9 is the tip of the said burner.

In Fig. 3, 12 is the opening in an ordinary gas-plug. 13 13 are grooves made longitudinally in said plug, and 14 is a groove cut around said plug near its top to communicate with the grooves 13, and when the plug is in position the groove 14 also communicates with the channel 10 in the casing, which channel connects with the tube or opening 4, and which will allow gas to escape there-through when either of the vertical channels or grooves 13 communicates with the main opening in the casing through which the gas flows. The plug 2 is provided with the ordinary washer 15 and screw 16 to hold the same in position.

In Figs. 1, 5, 6, 7, and 8, 33 is a bent spring which is fixed at one end to the plug-casing, as shown, and which carries at its free end a blade 11, which blade works in a slot in the side of the tube 4 and opens or closes the passage therethrough, according to the action of the spring.

34 is a bent arm, which is attached at one end to the washer or screw on the top of the gas-plug and is free at its other end, and



which moves when the main plug turns. This bent arm is arranged to engage the said spring 33 at a certain point of its travel and to press said spring away from the tube 4 and thus draw out the blade 11, attached to the free end of the said spring, and open the passage in the tube 4 and allow gas to pass upward therethrough at the proper time. When the lever 34 releases the spring 33, the said spring will fly inward instantly, carrying with it the blade, which will stop the passage of gas through the tube 4. In turning off the gas the bent arm 34 will again press the spring out and return to its first position, and for an instant the gas will burn at the tip of the tube 5, but it will cease to burn as soon as the spring returns to its normal position.

To light the burner by means of my improved lighter, the plug 2 is turned into the position shown in Figs. 1, 7, and 8. As the plug turns one of the grooves 13 will first come opposite the channel in the gas-tube, and the gas will pass up into the groove 14, from whence it will enter the channel 10 in the plug-casing and pass therefrom up into the tube 4 and thence into the tube 5 and ascend this tube to the tip of the burner 9. Some of the gas will escape through the openings 7 in the tube 5, and if a flame be applied at the lower end of the tube 5, back of the shield 6, the gas escaping from the small openings 7 will be ignited and instantaneously the flame will be carried from hole to hole upward to the tip of the burner. As the motion of the plug continues the gas will also pass through the main opening 12 in the plug to the tip of the burner, where it will be ignited by the gas burning at the tip of tube 5. When the plug is now turned fully open, the grooves 13 will be shut off from the gas and no gas entering the tube 5 it will cease to burn in this tube. The grooves are so cut that when the gas is turned fully on or off the gas cannot escape to the side channel 10.

Should it be desired to turn the gas lower or off, the plug 2 may be turned either way. When one of the grooves 13 becomes exposed to the gas, the gas will flow up to the tip of the tube 5, where it will be ignited. The flame will not be communicated to the side holes of the tube 5, but will burn only at the top, and the tube will thus act as a Bunsen burner.

As above described, it will be seen that whenever the grooves 13 on the plug communicate with the main passage in the casing, and as long as they so communicate, gas will escape through the side channel up to the tube 5, but in order to prevent the gas from escaping through this side channel at all times when the grooves in the plug communicate with the main passage in the casing the cut-off devices above described may be used.

The operation of these cut-off devices is as follows: As the plug is turned toward the

open position the bent arm, which when the plug is closed occupies the position shown in Fig. 5, moves with the plug and at the desired point in its travel pushes the spring 33 aside, as shown in Fig. 6, drawing out the blade 11, and thus partially opening the passage in the tube 4 sufficiently to allow the gas flowing through the side passage 10 to pass up into the tube 5. When the bent arm 34 has passed over the spring to the position shown in Fig. 7, the spring 33 will return to the closed position, as hereinbefore described. Thus it will be seen that by the use of my cut-off devices the passage of the gas to the side tube will be cut off except at the instant desired.

If the plug be cut as shown in Fig. 4, the gas in the main burner will continue to burn after the gas in the side tube is turned off and until the main valve is completely closed.

By having the plug cut as shown in Fig. 3 the gas will be turned off at the main valve first, and afterward the gas in the side channel.

It will be seen that by the use of my invention the life of the mantle will be prolonged, inasmuch as the gas is lighted without explosion. It will also be seen that the ignition is almost instantaneous, thus saving time, and that the use of my invention brings the point for lighting the burner within easy reach, and thus does away with the necessity of any apparatus to reach the lighting-point.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a device for lighting a gas-burner, the combination with the burner, of the valve-casing provided with the main passage therein and a smaller side passage; the valve-plug fitting in said casing and provided with a groove or passage adapted to communicate with the main passage in the casing at a point between the open and closed positions of the plug, and also a groove which at all times communicates with said passage in the plug and with the side passage in the valve-casing; and a perforated tube leading from the outer end of said side passage in the casing to the tip of the burner, substantially as and for the purposes described.

2. In a device of the character described, the combination with a gas-burner, of the valve-casing provided with the main passage therethrough and a smaller side passage therein; the valve-plug fitting in said casing and provided with grooves or passages adapted to communicate with the main passage in the casing at a point between the open and closed position of the plug when turned in either direction, and also provided with a groove which at all times communicates with said passages in the plug and with the side passage in the valve-casing; and a perforated side tube leading from the outer end of said side passage in the casing to the tip of the burner, substantially as and for the purposes described.



3. In a device of the character described,  
the combination with a gas-burner, of the  
valve-casing provided with the main passage  
therethrough and a smaller side passage there-  
in; the valve-plug fitting in said casing and  
provided with grooves or passages adapted to  
communicate with the main passage in the  
casing at a point between the open and closed  
position of the plug when turned in either  
direction, and also provided with a groove  
which at all times communicates with said  
passages in the plug and with the side passage  
in the valve-casing; a perforated side tube  
leading from the outer end of said side pas-  
sage in the casing to the tip of the burner;  
and means for stopping the passage of gas  
from said side passage to said perforated side  
tube during the movement of the plug, sub-  
stantially as and for the purposes described.

4. In a device of the character described,  
the combination with a gas-burner, of the  
valve-casing provided with the main passage

therethrough and a smaller side passage there-  
in; the valve-plug fitting in said casing and  
provided with grooves or passages adapted to  
communicate with the main passage in the  
casing at a point between the open and closed  
position of the plug when turned in either  
direction, and also provided with a groove  
which at all times communicates with said  
passages in the plug and with the side passage  
in the valve-casing; a perforated side tube  
leading from the outer end of said side pas-  
sage in the casing to the tip of the burner;  
and means operated by the plug for opening  
the passage from said side passage in the cas-  
ing to the said perforated side tube during  
the movement of the plug to open the main  
valve, substantially as described.

LEONARD HENRY ARNOLD DRUEDING.

Witnesses:

J. B. LOOMIS,  
FRED. T. GREVE