

H. E. CAMPBELL.
SAFETY ATTACHMENT FOR GAS LIGHTING BURNERS.
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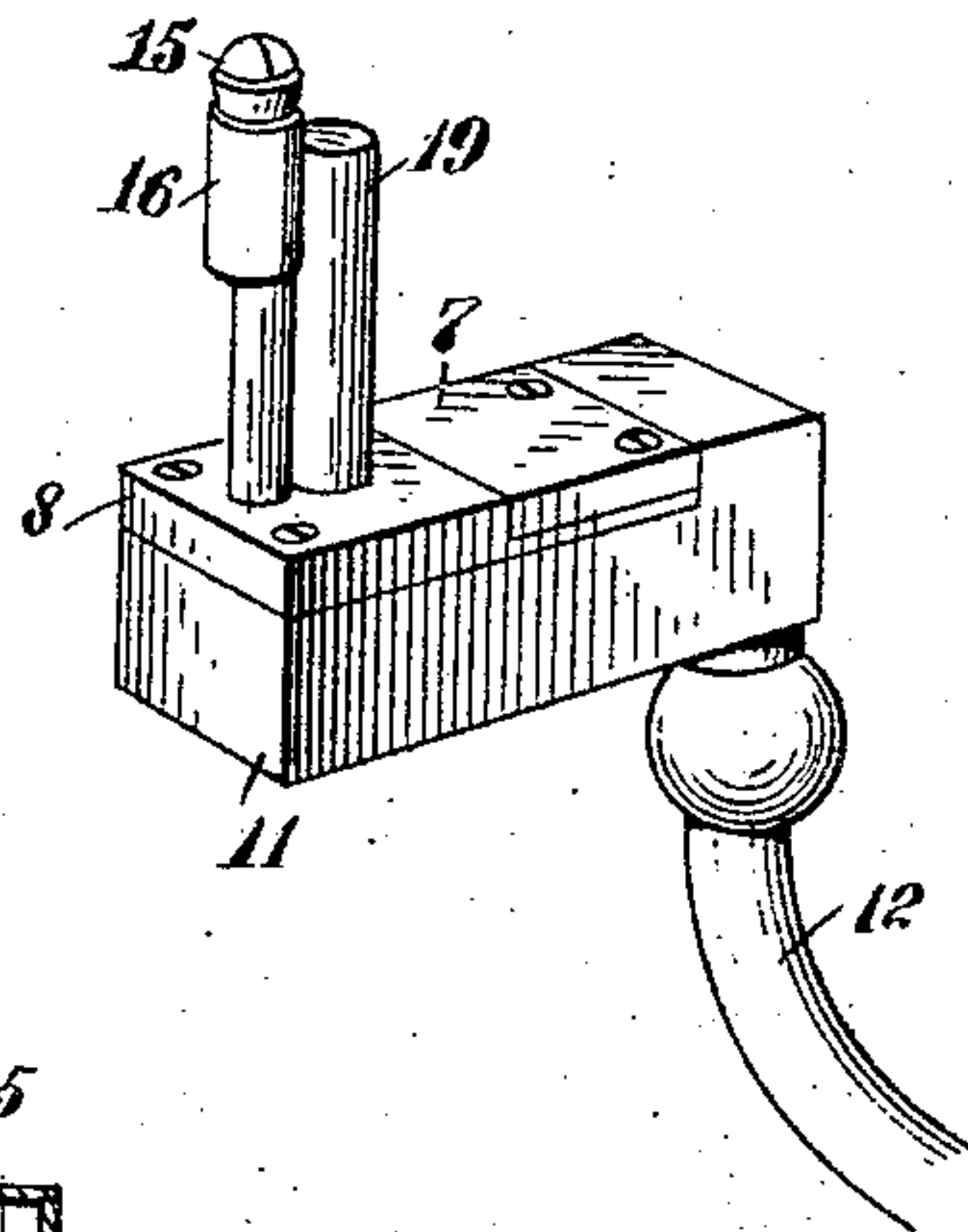


Fig. 1.

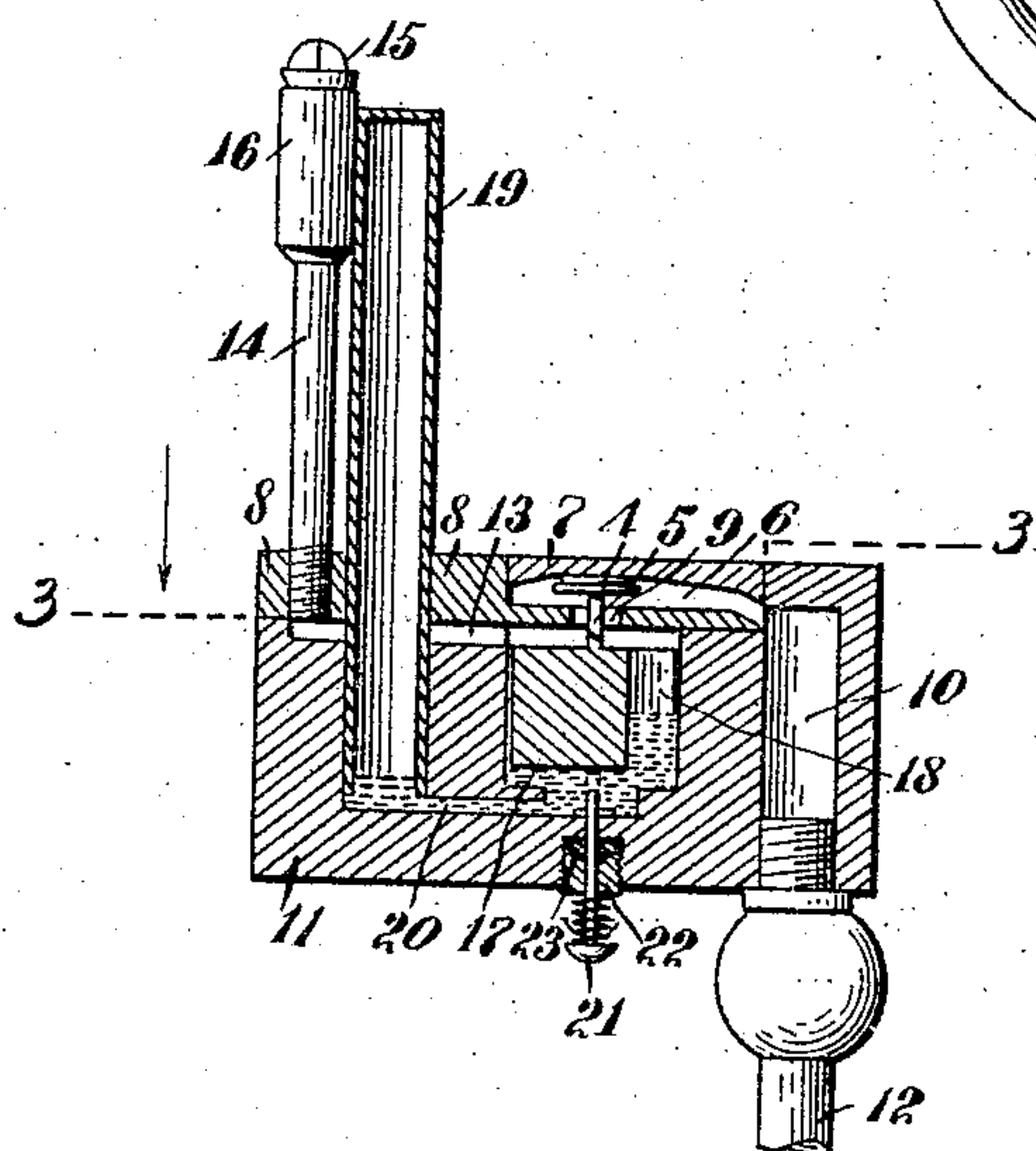


Fig. 2.

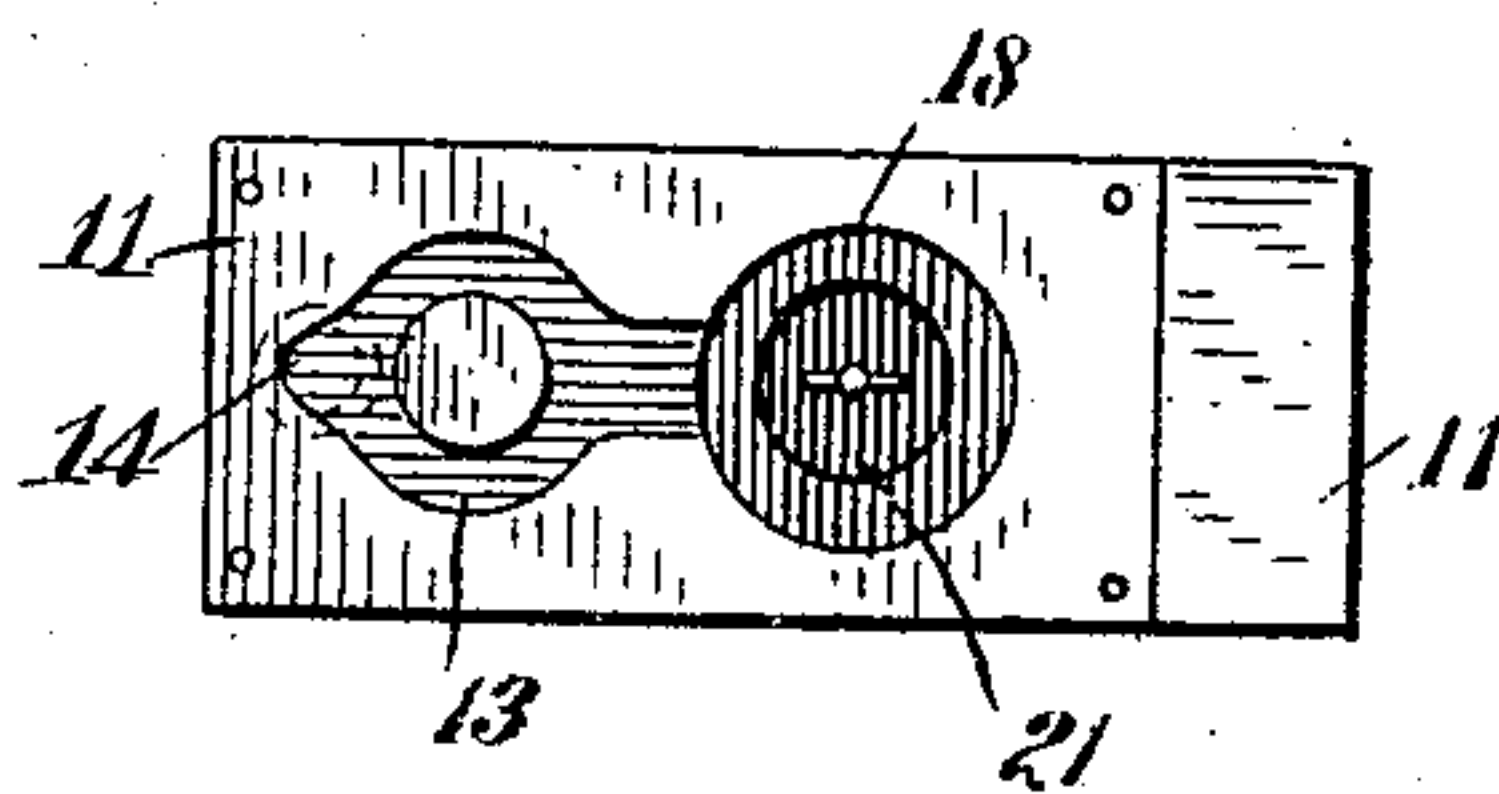


Fig. 3.

WITNESSES

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SAFETY ATTACHMENT FOR GAS-LIGHTING BURNERS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY E. CAMPBELL, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented a new and Improved Safety Attachment for Gas-Lighting Burners, of which the following is a full, clear, and exact description.

The principal objects which the present invention has in view are: to provide an attachment for gas burners wherein the heat of the flame maintains the flow of gas; to provide an operating medium which will not become frozen or lost by evaporation; and to provide a construction, simple and efficient in its operation.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a perspective view of a gas burner constructed in accordance with the present invention; Fig. 2 is a longitudinal vertical section of a gas burner constructed in accordance with the present invention; and Fig. 3 is a top view of the body of the attachment taken on the line 3—3 in Fig. 2.

The flow of gas in the present invention is controlled by a valve 4, which, in the present instance, is illustrated as a flat disk type, having dependent from the center thereof a valve stem 5. The valve 4 operates within a chamber 6, which is formed between a cover 7 and a top 8, as shown particularly in Fig. 2 of the drawings. The top 8 is perforated in the lower wall to form a port 9 for the flow of the gas. The channel 6 communicates with a passage 10 formed in the body portion 11. The passage 10 is suitably screw-threaded to receive the end of a pipe 12 of the gas fixture in screw threaded engagement, as shown at Figs. 1 and 2 of the drawings. The channel 6 is connected with a passage 13 through the port 9. The passage 13 is formed between the body portion 11 and the top 8, and communicates with a tube 14 leading to a gas tip 15, which is extended from a screen chamber 16. When the port 9 is open the flow of gas is uninterrupted from the pipe 12 to the tip 15, where it is consumed.

The stem 5 is connected at the lower end with a float 17, which is located within a chamber 18 formed in the body portion 11. Suitably mounted within the body portion

11 is a tube 19, the upper and outer end whereof is closed; the inner end being suitably mounted in a boring provided therefor in the body portion 11. The boring in which the tube 19 is inserted communicates with the chamber 18 by a passage 20. The upper end of the tube 19 is extended to within close juxtaposition with the tip 15 and the chamber 16 so that the heat of the burning gas is communicated to the upper end of the tube 19.

Within the chamber 18 and the tube 19 is contained a suitable fluid, such as mercury. The quantity contained is that which is insufficient to balance the float 17 and the valve 4 connected therewith. This operates to normally seat the valve 4 to close the port 9. The mercury operates to theoretically seal the air which is trapped in the upper end of the tube 19. When in the course of operation the gas is lighted and the heat is communicated to the tube 19, it expands the air contained therein, which forces downward upon the mercury within the tube 19, pushing it thence into the chamber 18 and raising the float 17 and the valve 4. The quantity of mercury is such as will resist the expansion of the air by the heat thus transmitted to an extent which would eject the mercury from the chamber 18.

The valve 4 is provided with a suitable gasket, preferably of a soft material as most suited to close the port 9 by the light pressure of the float 17 when the same is not floated.

With a device of the character mentioned, constructed as described and shown in the accompanying drawings, the operation is as follows: The gas having been lighted, as in the usual manner, the heat generated at the top and in the adjacent middle parts, is communicated to the tube 19, expanding the trapped air contained therein. This expansion presses downward on the mercury contained therein, forcing the same from the tube 19 by the passage 20 into the chamber 18, lifting therein the float 17 and with it the valve 4. As long as the gas is burned the heat is maintained in the tube 19, which produces the action as above described. When the gas is turned out the tip 15 and adjacent parts, together with the tube 19, cool, allowing the air in the tube 19 to contract, and in doing so to permit the column of mercury to resume its normal or equalized condition. This operates to lower the float

17 and the valve 4 until the latter is seated firmly over the port 9, tightly closing the same. If, by carelessness or intent, the gas is blown out, or by intent the gas is turned
 5 on without being lighted, the operation is such as to discontinue the flow. In the first instance, where the gas is blown out, the cooling of the tube 19 and the contracting of the contained air, would be such as to per-
 10 mit the column of mercury to reassume its normal position, closing the valve 4, and suspending the flow of gas. In the latter case, the valve being seated, the gas would not flow. When it is desired to light the gas
 15 the match is struck and held to the tip 15, preferably so as to impinge upon the tube 19. The gas having been turned on at the controlled valve of the fixture, the heat from the match expands the air within the tube
 20 19 sufficiently to lift the valve 4 slightly and thereby permit a limited supply of gas, which, on being lighted, gradually increases the heat and with it further expands the air until the valve 4 is completely raised, open-
 25 ing to the full limit the port 9.

In some instances it is preferred that an attachment should be provided whereby the flow of gas through the port 9 should be mechanically controlled, whereby the first sup-
 30 ply of gas would be at the full head. It is for this purpose that I have provided the push pin 21. This is secured in the gland 22. Between the gland 22 and the pin 21 is a spiral spring adapted to extend the said
 35 pin to its outermost limit. Within the gland at 23 is provided a suitable packing. The pin 21 is disposed directly beneath the float 17, so that when it is desired to light the gas upon this fixture, when the same is
 40 supplied with the pin 21, the pin 21 is raised to impinge on the said float to lift the valve from its port, admitting a full flow of gas therethrough. When the gas has been lighted there almost instantly is
 45 transmitted sufficient heat to the tube 19 to expand the air therein to prevent the fall of the valve 4.

Having thus described my invention, what I claim as new and desire to secure by Let-
 50 ters Patent is:—

1. A safety attachment for gas lighting burners comprising a horizontally extended body portion arranged to be connected with the gas supply pipe at the one end and provided with a gas burning tip at the other
 55 end and forming a gas passage communicating between the said supply pipe and said burner tip; a cup-shaped chamber formed in said body portion below said gas passage to hold mercury; an inverted air filled tube
 60 mounted in said body portion adjacent to said cup-shaped chamber the said tube having its closed end juxtaposed to the said burner; a lateral passage communicating between said inverted tube and bottom of
 65 said chamber; and a float valve supported by the mercury within said chamber and having a valve member to close said passage said valve member being arranged to operate on the pressure side of the closure of said
 70 passage to be held by the gas pressure in closed position.

2. A safety attachment for gas lighting burners comprising a horizontally extended body portion arranged to be connected with
 75 the gas supply pipe at the one end and provided with a gas burning tip at the other end, and forming a gas passage communicating between the said supply pipe and said burner tip; a cup-shaped chamber for the
 80 said body portion below said gas passage to hold mercury; an inverted air filled tube mounted in said body portion in open communication with said chamber, and having its closed end juxtaposed to said burning
 85 tip; and a float valve supported by the mercury within said chamber and having a valve member to close said gas passage, said valve member being arranged to operate on the pressure side of the closure of said pas-
 90 sage to be held by the gas pressure in closed position.

In testimony whereof I have signed my name to the above specification in the presence of two subscribing witnesses.

HARRY E. CAMPBELL.

Witnesses:

FREDERICK E. WHITAKER,
 CHARLES J. FOX.