(No Model.)

E. R. PRUITT.

SAFETY ATTACHMENT FOR GAS BURNERS.

No. 381,484. Patented Apr. 17, 1888.

Fig. 1.

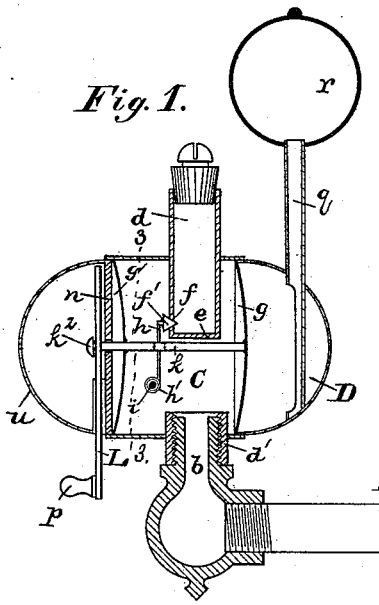
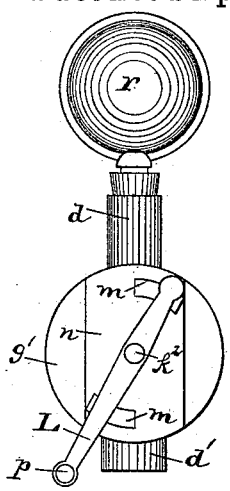


Fig. 2.



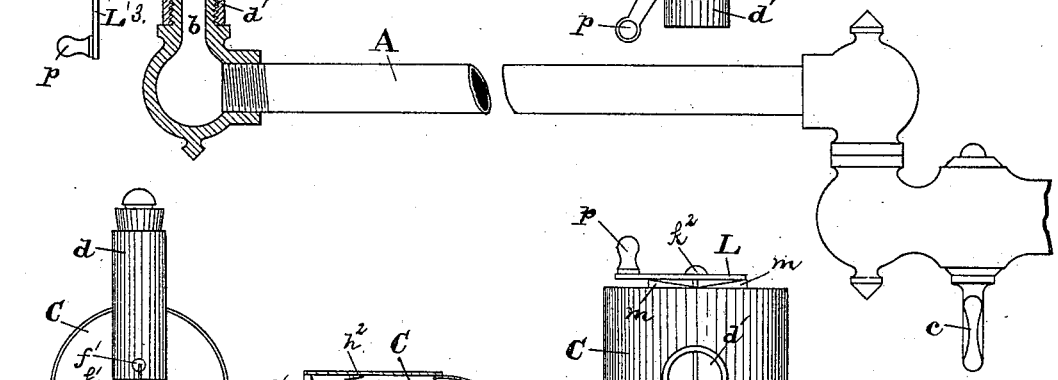


Fig. 3.

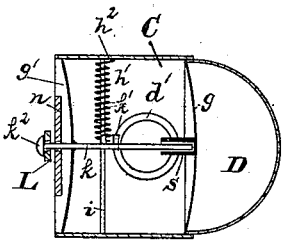


Fig. 5.

Fig. 4.

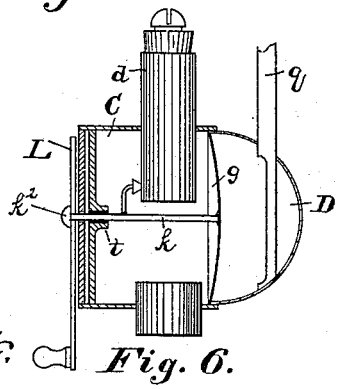


Fig. 6.

WITNESSES:

R. L. Clemmitt.

John E. Morris.

INVENTOR:

E. R. Pruitt,

BY Chas B. Mann

ATTORNEY.

UNITED STATES PATENT OFFICE.

EUGENE R. PRUITT, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO CHARLES W. JOHNSON, OF SAME PLACE.

SAFETY ATTACHMENT FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 381,484, dated April 17, 1888.

Application filed December 29, 1887. Serial No. 259,281. (No model.)

To all whom it may concern:

Be it known that I, EUGENE R. PRUITT, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Safety Attachments for Gas-Burners, of which the following is a specification.

My invention relates to a gas-burner attachment for preventing hurtful consequences in case the lighted gas is blown out, or preventing the escape of gas in case the cock be improperly turned when the gas is not lighted.

In the accompanying drawings, which illustrate the invention, Figure 1 is a vertical section of the gas-burner and attachment. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical cross-section on the line 3 3, Fig. 1. Fig. 4 is an inverted plan or bottom view of the gas-burner and attachment, as shown in Fig. 2. Fig. 5 is a central horizontal sectional view of Fig. 4, with a modification of some of the parts. Fig. 6 is a vertical section of the device, illustrating a modification.

A burner with this safety attachment may be used on any kind of a gas-fixture. It is here shown applied to a bracket.

The letter A designates the bracket, *b* the ordinary screw-nozzle to which the burner is usually attached, and *c* the stop-cock which controls the flow of gas.

The gas-burner is made in two separate parts—the upper or jet part, *d*, and a screw-neck, *d'*, which attaches to the fixture-nozzle *b*. These two parts of the burner are attached to a gas-drum, C, as shown. The lower end of the jet part *d* of the burner is closed at *e*, and is provided with an opening or port, *f*, which is controlled by a valve, *f'*. The gas-drum C may be cylindric or other shape, but must have at least one flexible concave head, *g*. An air-tight chamber, D, is attached to the gas-drum C at the end where the flexible concaved head is, the said head *g* comprising a flexible diaphragm, which separates the gas-drum and air-chamber. The convex side of the diaphragm *g* must be normally toward the air-chamber D. The gas-drum C may have two flexible concaved heads, and in Figs. 1 and 5 two plans of construction are shown, where two such heads are used, one designated by the letter *g* and the other by *g'*.

From the above description it will be understood that the gas-drum and burner are to be attached to the nozzle *b* of any gas-fixture by screwing the neck *d'* to the nozzle *b*. Thereby, when the stop-cock *c* is turned, gas may pass into the drum C freely. It will also be understood that when the valve *f'* is in position to close the port *f* in the jet part *d* of the burner, gas that may be in the drum C has no outlet or avenue of escape. Thus, if the stop-cock should be improperly turned, no gas can escape.

It is essential to provide means whereby the valve *f'* may be operated both manually and automatically. One form of construction to this end is shown in Figs. 1, 2, and 3. The valve *f'* is an ordinary stopper or plug to close the opening or port *f* in the burner *d*. This valve is carried on the end of a shank, *h*, which in the figures last named is one terminus of a spiral spring, *h'*, which is wound around a cross-bar, *i*, extending from side to side of the drum, and the other terminus, h^2, of the spring is made fast to the drum.

Of course the construction of the valve-shank *h* and spring may be varied from that here shown. The normal tendency of the shank *h* is to press the valve *f'* to the port *f* and keep it closed, and it has this position whenever the flexible concaved diaphragm *g* is in its normal position, as before stated.

A rod or wire, *k*, extends centrally through the gas-drum, and has position endwise with respect to the flexible diaphragm *g*, by which latter it is movable endwise. In the figures last named the central rod, *k*, is attached to the said flexible concaved diaphragm or head, and also to the flexible concaved head *g'*. A slight movement of the concaved heads moves the said rod *k* endwise. This rod *k* has a lateral lug, *k'*, which is immediately in front of and in contact with the shank *h* of the valve. Whenever the flexible concaved diaphragm *g* is forced away from its normal position—that is, when its convexity changes from the air-chamber side to the gas-drum side—it causes the central rod, *k*, to move endwise, and the lug *k'* on the said rod will act on the valve-shank *h* and lift the valve *f'* from the port *f*, whereupon gas may pass from the drum C to the jet part *d* of the burner and may be lighted at the tip.

The gas cannot be lighted at the tip of the burner until the central rod, *k*, and valve *f'* have been moved, as above described. To effect this movement a lever, L, acting on two inclines, *m*, is employed. A bridge or stiff plate, *n*, is fixed across the drum end outside of the head *g'*. One end of the central rod, *k*, passes through the said drum-head *g'*, where it is tight, and loosely through the bridge *n*, and has a head, k^2, on the projecting end. The lever L is pivoted on this end, and the head k^2 keeps the lever on. The bridge *n* is provided with two inclines, *m*, (see Figs. 2 and 4,) one each side of the said lever-pivot. The lever L has a weight, *p*, on its lower end, and when it hangs in a direct vertical position it is free of the two inclines; but when the lower end of the lever is moved a little to one side of a direct vertical position, as shown in Fig. 2, the lever is thereby forced onto both inclines, which results in drawing the central rod, *k*, and lifting the valve *f'* from the port *f*.

The air-tight chamber D has an upright tube, *q*, on which a hollow ball, *r*, is mounted. Air in the hollow ball has communication with the air in the chamber D through the tube. The hollow ball *r* is in proximity to the tip of the gas-burner, and the flame thereof will heat the ball and communicate heat to the air-chamber. Heat will thus expand the air in said chamber, and such expansion will cause pressure on the convex side of the flexible diaphragm *g* and force the latter away from its normal position—that is to say, its convexity will be changed from the air-chamber side to the gas-drum side. This movement of the flexible diaphragm *g* will push the central rod, *k*, and move the valve *f'* still farther from the port *f*.

The inclines *m* are so proportioned as to the extent of movement which the diaphragm *g* has that they will not have as great an effect on the central rod, *k*, and valve *f'* as the diaphragm.

The operation is as follows: To light the burner, first turn the stop-cock *c*, then move the lower end of lever L to one side, which will lift the valve *f'* slightly from the port *f*, and then light the gas. After the hollow ball *r* has become heated and the air in the chamber D expanded, the diaphragm *g* will thereby change its convexity from one side to the other and lift the valve *f'* farther from the port *f*. The movement of the diaphragm *g* will push the central rod, *k*, outward and thereby relieve the friction hold which the lever L has on the two inclines, whereupon the weight *p* on the lower end of the lever will cause the latter to take a direct vertical position where it is free of the inclines. Now, if the gas be blown out, instead of turning the stop-cock *c*, the ball *r* will soon cool, and the air in the chamber D also cool, and then the diaphragm *g* will resume its normal position—that is to say, it will change its convexity back to the air-chamber side—and thereby draw the central rod, *k*, and allow the valve *f'* to stop the port *f*, which will shut off the escaping gas.

In the modification shown in Fig. 5 the relation of the central rod, *k*, and the flexible diaphragm *g* differs from that shown in Fig. 1, in that, instead of being attached or connected together, as in Fig. 1, they are unattached. The diaphragm in Fig. 5 has a socket, *s*, and the end of the said rod *k* loosely occupies the socket. Thus a movement of the diaphragm *g* from its normal position, so as to have its convexity on the gas-drum side, would move the central rod endwise, change the convexity of the head *g*, and lift the valve *f'* from the port *f*. As long as the air in the chamber D is expanded, the rod *k* and valve *f'* will be so held as to keep the port *f* open. In Fig. 5 the rod *k* is attached to the concaved head *g'*, same as it is in Fig. 1, and therefore if the gas be blown out, the air in the chamber D will cool and the diaphragm *g* resume its normal position, the effect of which will be to allow the head *g'* to resume its normal position and thereby move the rod *k* and allow the valve *f'* to stop the port *f*.

In the modification shown in Fig. 6 the relation of the central rod, *k*, and the drum-head *g'* differs from that shown in Fig. 1, in that, instead of being attached or connected together, as in Fig. 1, they are unattached. The drum-head in Fig. 6 is stiff or inflexible and has a stuffing-box, *t*, and rod *k* passes loosely through said box. Thus a movement of the diaphragm *g* would produce the desired result. It will thus be seen that two flexible concaved heads may be used, but that one such head alone, with the central rod, *k*, attached to it, is sufficient to produce the result. The end of the drum where the inclines are located may be covered by a hood, *u*.

The particular hollow ball *r* and tube *q* are immaterial. They may be substituted by a solid metal device of any shape which will communicate or conduct heat from the flame of the burner to the air-chamber.

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

The combination of the gas-drum and air-chamber, an endwise-movable rod extending through the drum having two diaphragms, a burner having a port on the inside of the drum, a spring-shank provided with a valve to engage the port by the action of the rod, a lever connected to said rod, the inclines in connection with the lever, and means to conduct heat from the flame of the burner to the air-chamber, substantially as shown and described.

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

EUGENE R. PRUITT.

Witnesses:
JOHN E. MORRIS,
JNO. T. MADDOX.