

No. 770,830.

PATENTED SEPT. 27, 1904.

J. SPILLER.

SAFETY GAS BURNER.

APPLICATION FILED DEC. 30, 1903.

NO MODEL.

Fig: 3,

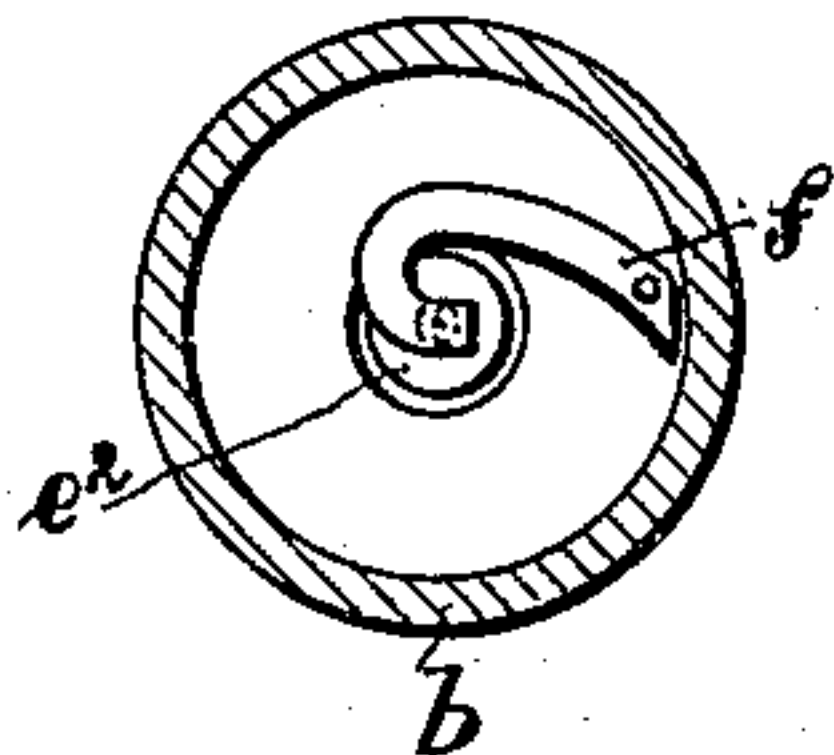


Fig. 4,

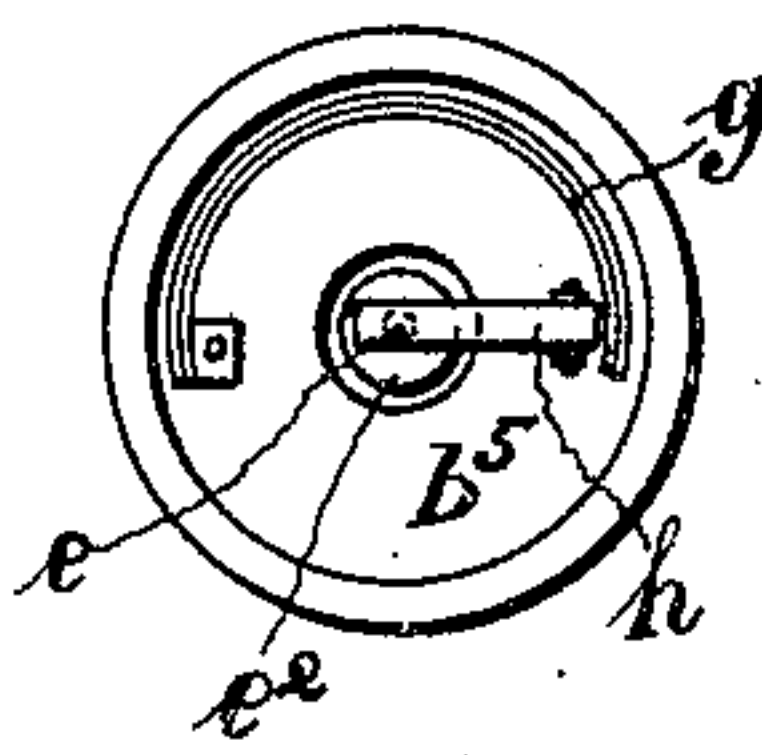


Fig: 5.

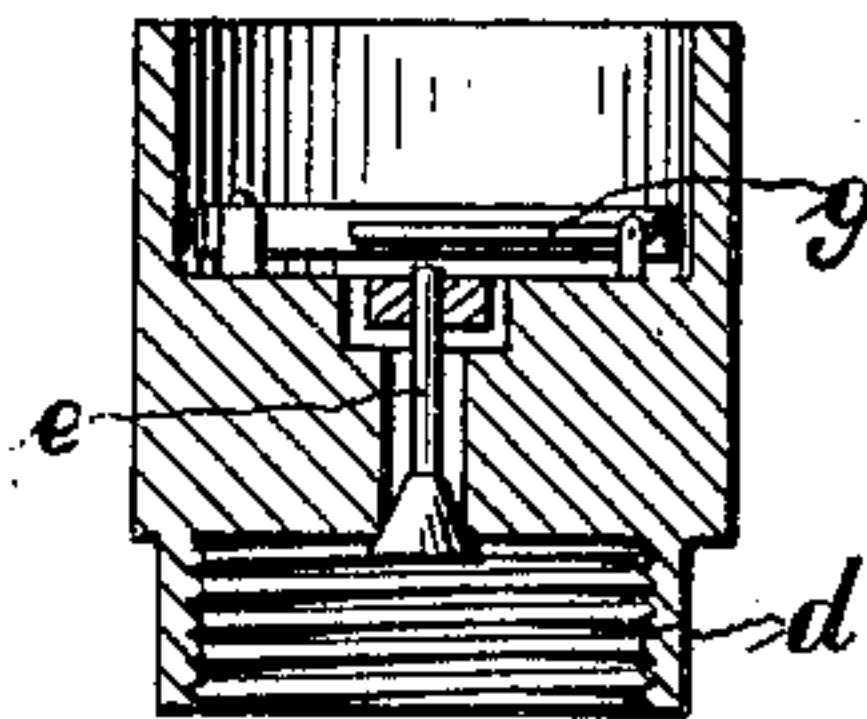


Fig. 1.

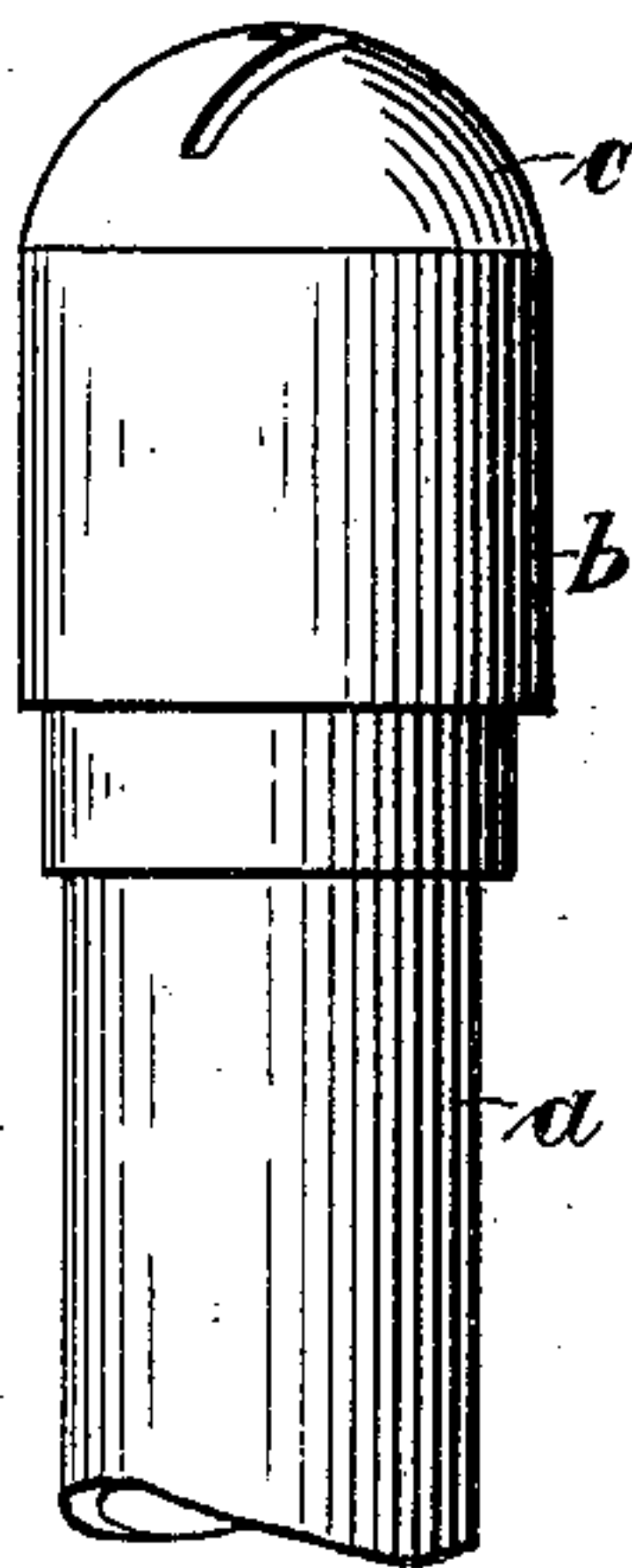
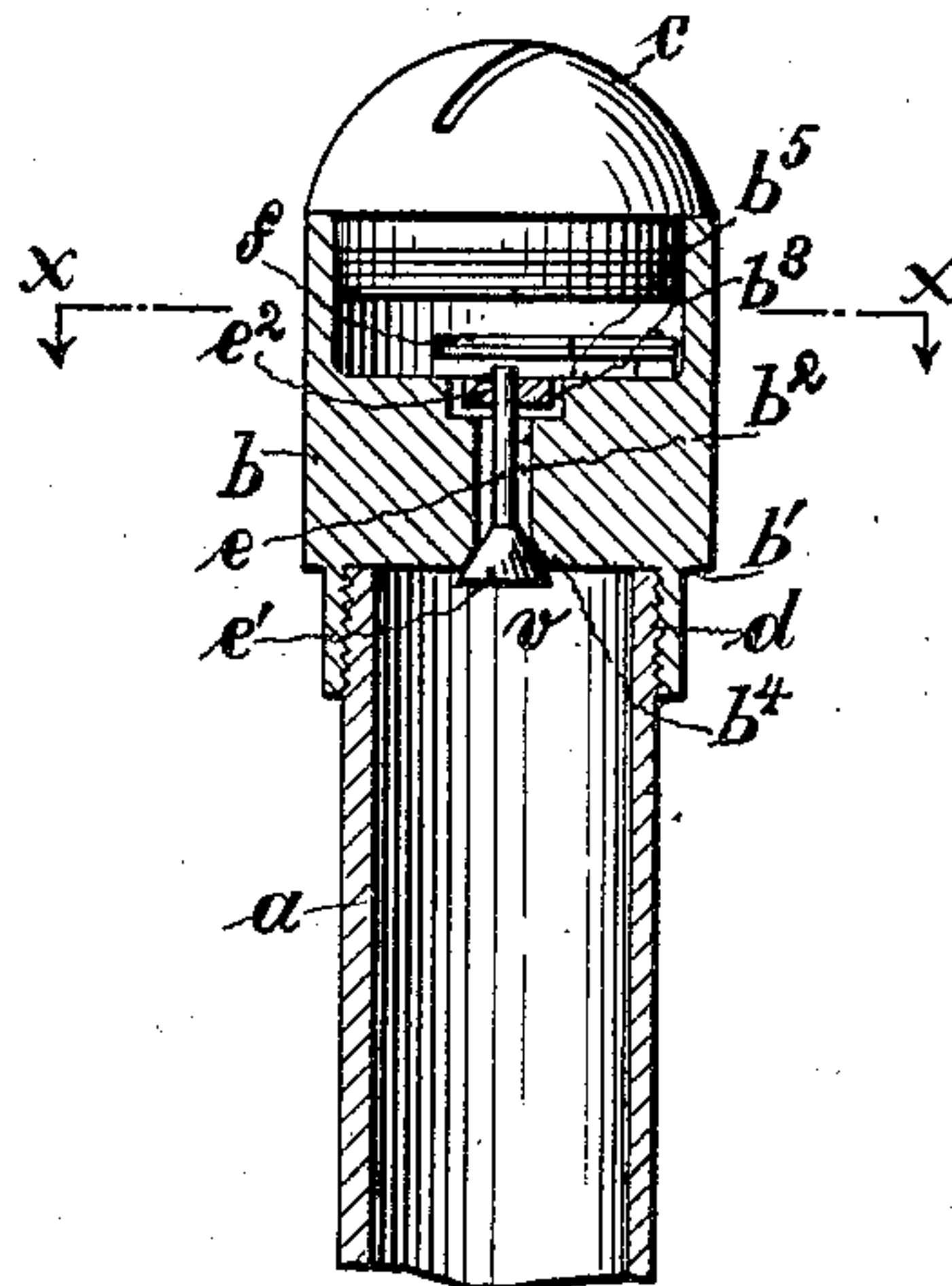


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH SPILLER, OF NEW YORK, N. Y.

SAFETY GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 770,830, dated September 27, 1904.

Application filed December 30, 1903. Serial No. 187,103. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SPILLER, a subject of the Emperor of Austria, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Safety Gas-Burners, of which the following is a specification.

This invention has reference to automatic gas-burners, and relates particularly to safety gas-burners.

It is the special object of this invention to produce a safety gas-burner which will automatically shut off the supply of gas when the flame is extinguished in any manner or form. If, for instance, the gas is blown out instead of being turned off, then no accident will happen when my novel safety-burner is employed. In this case the gas is automatically shut off as completely as if it had been turned off by means of the stop-cock.

In my novel safety-burner I make use of a device which embodies the principle of expansion and contraction, whereby an internal valve is opened and closed. Before lighting the gas the match is held for a fraction of a minute below the shell containing the safety device, whereupon one part therein will expand, and thereby open the inner valve. When the flame is extinguished, either by shutting off the stop-cock or by blowing out the flame, then the expansible portion of the safety device will cool off and contract, thereby closing the safety-valve. It is plainly understood that the expansion of the one element of the safety device will take place upon the application of heat. Likewise the contraction of said element will take place when the device cools off. As a consequence thereof no harm can be done if ignorant persons blow out the gas or if the stop-cock is accidentally opened without lighting the gas provided my safety device is employed.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 illustrates in side elevation a burner which embodies my invention. Fig. 2 is a longitudinal vertical section of same. Fig. 3 is a cross-section on line *x x* of Fig. 2. Fig. 4 illustrates in top plan view a modification of the device, and Fig. 5 is a vertical section of Fig. 4.

Similar characters of reference denote like parts in all the figures.

In the drawings, *a* represents the gas-supply tube, *b* the shell or central portion which contains the safety device, and *c* the burner proper. The central portion may be made of solid material and is secured to the gas-supply tube in any suitable manner, preferably by means of a screw-thread *d*, as is shown in Figs. 2 and 5. The central portion *b* is preferably somewhat enlarged above the screw-thread *d* and forms there a shoulder *b'*. Through the center of the part *b* there is a channel *b²*, which is enlarged on the top, forming there a space *b³*. In the channel *b²* there is a rod *e*, having on its lower end an enlarged funnel-shaped portion *e'*, which fits into the like-shaped end opening of the channel, the latter forming a valve-seat *b⁴*. Both constitute the valve *v*. The top portion of the rod *e* is secured to a block *e²*, which keeps the rod in the desired position. The block, however, permits of an upward and downward movement of the rod, whereby the valve is opened and closed. The inner top portion *e⁵* of the central part *b* has permanently fixed thereto a bar *f*, which is preferably curved, as shown in Figs. 3 and 2. The inner portion of the small bar *f* ends above the top end of the rod *e* and is adapted to open the valve by pressing down said rod. When not in use, then the bar *f* is at normal temperature and in the position shown in Fig. 2—*i. e.*, the inner end of the bar is located somewhat above the top end of the rod *e*. In the position shown in Fig. 2 the valve *v* is closed by the upward pressure of the gas, as is usually the case. The bar *f* is made of metal and is composed of two different metals welded together, one on top of the other. The top metal is so selected that it possesses a higher coefficient of expansion than the lower metal. Any two suitable metals having different coefficients of expansion may be employed. For instance, the bottom metal may be steel, while the top metal may be brass. Upon the application of heat the bar *f* will get warm and expand. By virtue of the high coefficient of expansion of the top metal same will expand quicker and to a larger extent than the lower metal, and thereby the bar *f* will be bent downward, striking the top end of the rod *e* and

pressing same gently down, whereby the valve is opened. The gas is thereby allowed to flow through the channel b^2 up to the burner proper, c , where the flame may be lighted.

5 The spring-power of the heated bar f is sufficient to overcome the upward pressure of the gas, and very little heat is necessary for producing this result.

The device is operated in the following manner: Assuming that the bar f is at normal temperature and the valve v closed, then heat is applied to the central portion—for instance, by means of a lighted match, which is held close to same. By the influence of heat the bar f is

15 affected in the above-described manner and the valve opened, whereupon the gas passes through the channel b^2 up to the burner proper, c , where it may be lighted with the same match. The flame keeps the apparatus warm, so that

20 the valve is not closed until the flame is extinguished, assuring thus a continuous burning of the flame. Assuming now that an ignorant person blows out the gas without turning off the stop-cock, then the bar f cools off

25 and returns to its original position, whereby the valve v is forced up by the pressure of the gas, and thereby closed. The rod e and the valve v are made of metal, preferably of a light metal—as, for instance, aluminium—

30 so as to offer little resistance to the upward pressure of the gas. In case the stop-cock for turning on and off the gas is accidentally opened, then no harm is done, because the valve v is closed by the upward pressure of

35 the gas. It is plainly seen that this safety gas-burner may be attached to any gas pipe or bracket. The device may be applied both to supply-tubes for heating and illumination.

A modification of the valve-actuating bar f

40 is illustrated in Figs. 4 and 5. In this instance the bar g is semicircular in shape and has one of its ends permanently fixed to the inner top surface b^5 , while its other end actuates a lever-arm h , which pushes the rod e

45 down, thereby opening and closing the valve. The rear end of the lever-arm where the bar g acts on same has a slanting surface, as shown in Fig. 5, and when the bar acts thereon the lever-arm naturally goes downward. The bar

50 g is also composed of two metals having different coefficients of expansion. The outside metal is the one having the higher coefficient of expansion, and therefore when heated the bar exerts a pressure toward the center, moving thereby the lever-arm and opening the

55 valve.

The sole difference between the two devices is that in one instance the bar f exerts a downward pressure and in the other a lateral

60 pressure, because the two metals are located side by side.

In the described manner a safety gas-burner

is produced which prevents a great many accidents and saves lives and property.

Having thus described my invention, I claim 65 as new and desire to secure by Letters Patent—

1. A safety device for closing off gas automatically comprising a shell, a channel therein, a valve in said channel, a rod on said valve extending somewhat above the channel, means 70 on said rod for supporting the valve, and an expansible bar composed of two metals of different coefficients of expansion so that upon heating the device the expansible bar will be bent actuating the rod and thereby the valve, 75 opening same, and upon cooling the expansible bar contracts whereby the valve is closed automatically.

2. A safety gas-burner comprising a burner proper, a shell below same having a channel 80 therein, a valve in said channel held in a closed position by the upward pressure of the gas, a rod secured to said valve extending somewhat above the channel, a valve-supporting block secured to the top end of the rod, and 85 an expansible bar adapted to actuate the rod and valve upon heating whereby the valve is opened.

3. A safety gas-burner comprising a burner proper, a shell below same, a channel therein, 90 a valve in said channel held in a closed position by the upward pressure of the gas, a rod secured to said valve extending somewhat above the channel, a valve-supporting block secured to the top end of said rod, and an ex- 95 pansible bar composed of metals arranged one on top of the other, the top metal having a higher coefficient of expansion than the lower one so that upon heating the device the expansible bar will be bent downward pushing 100 down the rod of the valve thereby opening the latter.

4. A safety gas-burner comprising a burner proper, a shell below same, a channel therein, 105 a valve in said channel held in a closed position by the upward pressure of the gas, a rod secured to said valve extending somewhat above the channel, a valve-supporting block secured to the top end of said rod, and an ex- 110 pansible bar arranged horizontally above said rod consisting of two metals of which the top one has a higher coefficient of expansion than the lower one so arranged that upon heating the expansible bar will be bent downward actuating thereby the rod and valve and upon 115 cooling the expansible bar will contract returning to its original position whereby the valve is automatically closed.

Signed at New York, N. Y., this 29th day of December, 1903.

JOSEPH SPILLER.

Witnesses:

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HATTIE B. LUEDERS.