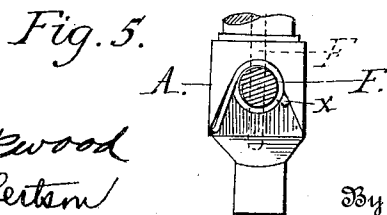
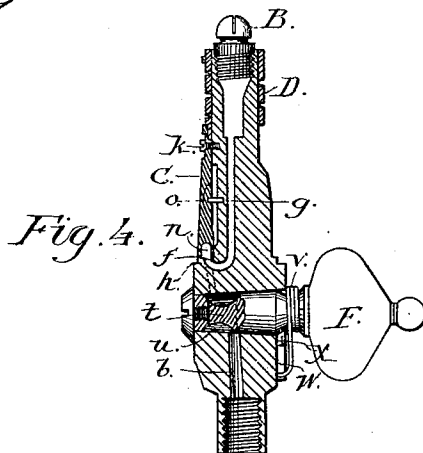
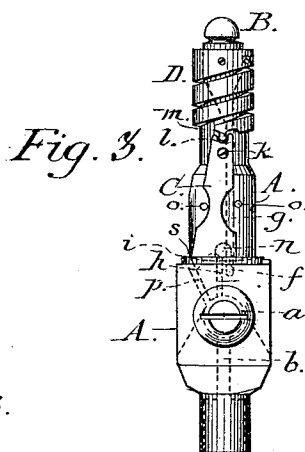
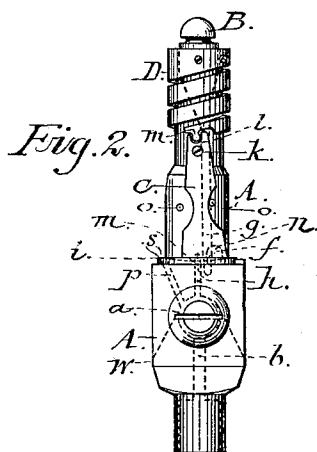
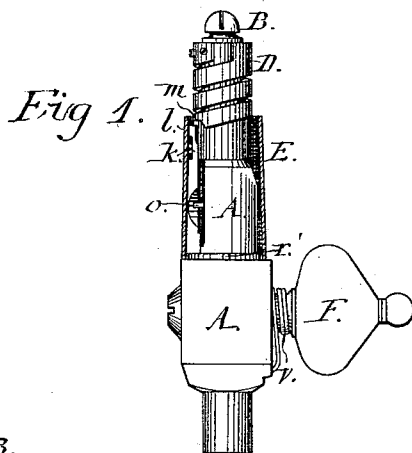


(No Model.)

B. SMITH.  
SAFETY GAS BURNER.

No. 546,941.

Patented Sept. 24, 1895.



Witnesses:

*Just H. Blackwood*  
*John E. Robertson*

Inventor:

*Benjamin Smith.*

By Attorney *John M. Down* & Co.

# UNITED STATES PATENT OFFICE.

BENJAMIN SMITH, OF UTICA, NEW YORK.

## SAFETY GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 546,941, dated September 24, 1895.

Application filed May 15, 1894. Serial No. 511,292. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN SMITH, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Safety Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in safety gas-burners; and it has for its object to provide a burner for gas which will automatically, through the agency of blaze heat and a thermostatic coil, open an auxiliary valve, which latter automatically closes through the cooling and contraction of said coil should the blaze of the burner proper by any accidental means be extinguished.

In the drawings illustrating the invention, Figure 1 is a side elevation of the burner. Fig. 2 is a rear elevation of the same, showing the face of the pivoted auxiliary valve in a closed position. Fig. 3 is a similar elevation showing the auxiliary valve open. Fig. 4 is a vertical section. Fig. 5 is a sectional view through the shank of the key to show the several parts related to the burner and key more fully.

Similar reference-letters of the drawings indicate like parts in all of the figures.

Referring to the drawings, A is the body of the burner, provided with the usual conical opening *a* for the cut-off key and a vertical opening *b*, leading from the gas-pipe to the said conical opening *a*. A passage-way *p* extends obliquely upward from the opening *a*, and another passage-way *h* extends vertically from opening *a* to a shoulder *i* at the base of the burner proper. From a point *f* is an opening or passage-way *g*, which runs first downward, then upward, extending to the top of the burner and seat of the tip B.

To one side of the body of the burner, at a point near its top, is pivoted at a screw *k* an auxiliary valve C, which latter has extending upward from it a slotted portion *l*, which engages a tongue *m* at the lower part of a coil D, which latter encircles the burner at its top, being thereto secured permanently.

The thermostatic coil D is composed of two

kinds of metal, one hard and the other soft—such, for instance, as iron and brass—so that the heat from the flame will cause the soft metal to expand rapidly and uncoil the spiral to effect the movement of the valve C. The valve C, being pivoted to a screw *k*, is capable of movement about this point as an axis, and the base of said valve C, which is curved convexly, bears upon a seat *m*, correspondingly curved. Cut out from the bottom end of valve C is a cavity *n*, which forms a port of entry and exit for gas entering from opening *h* and passing into opening or passage-way *g*. The valve C is limited in its swinging movement by pins *o o*, fixed in the body of the burner.

From the conical opening *a* is an opening or passage-way *p*, extending to a shoulder *i* of the body of the burner. A conical jacket E, provided with a notch at its base, fits around the burner and outside of the exit-opening *s* of the passage-way *p*, said notch engaging a pin *r'*, fixed in the body of the burner, whereby the said jacket is held to position for temporary purposes. The jacket E serves to confine the flame which springs from the jet of the opening or passage-way *p*.

F is a valve or key of the burner, adapted to fit into the conical opening *a*. It is provided with a groove *u*, formed partly around the cone. This groove is intended when key F is open to form a continuation of the passage-way for the escape of the gas upward to the top of the burner. The key F is kept to an open position by a spring *v*, one end of which is secured to said key, the opposite end being turned inward toward the body of the burner and bearing against a shoulder formed by a V-shaped slot *w*, cut from the body of the burner. This V-shaped slot serves, also, with pin *x* in valve or key F, to limit the arc of movement to the said key. Normally the valve C is closed, the thermostatic coil being then contracted to its natural length. When the key F is turned to admit gas to the body of the burner and so held, gas will find its way through passage-way *p* and circulate within the jacket E. A lighted match being now applied to the top of the said jacket the gas will ignite and the flame will immediately expand the thermostatic coil, thus opening the upright or auxiliary valve to allow the gas to

pass upward through passage-ways *h* and *g* to the burner-tip, when from the flame from the jacket the gas-jet proper will be forced to do its required service, and at the same time  
 5 keep the coil expanded and the upright valve to an open position. The key or valve *F* may now be released to close the passage-way *p* and the jacket, if preferred, removed from the burner. Now, if perchance at any time  
 10 the gas is extinguished the thermostatic coil will immediately begin to contract, the heat being removed, thus moving the upright valve *A* to a closed position and automatically cutting off the gas to prevent any danger attend-  
 15 ant upon escaping gas unconsumed in the apartment. The jacket *E* may be permanently fixed to the burner, if preferred.

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

1. A gas-burner-body provided with two passageways starting with the opening for the key, one passing obliquely upward, opening outward on the side of the burner, the other  
 25 extending upward to an opening, extending thence downward and again upward terminating at the burner's tip, a valve pivoted to the body of the burner provided with a notch at its upper end and a cavity at its base to  
 30 form a continuation of one of the said passageways, in combination with a thermostatic coil, fixed to the burner, provided at its free

end with a tongue to engage the notch of said valve, as and for the purpose set forth.

2. The combination with the body of the burner, passageways as described extending 35 from the opening for the key, the valve pivoted to the burner, provided with a cavity to connect with one of the passageways and the thermostatic coil connected to said valve as 40 described, of the key of the burner provided with a spring, abutting by its free end against a shoulder in the body of the burner, whereby the said key is controlled, as and for the purpose specified.

3. In combination: the body of the burner 45 arranged with passageways starting at the key, branching upward and opening outward, one of said passageways starting again and continuing thence through said burner, a 50 thermostatic coil fixed to said burner, a lever valve, arranged to connect with said coil, provided at its base with a notch or cavity to form a continuation of the main passageway, and the key of the burner provided with a spring, 55 a conical portion, and a groove formed partly around said conical portion, substantially as set forth.

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

BENJAMIN SMITH.

Witnesses:

JAMES G. JEWETT, Jr.,  
 THEODORE AVERY.