(No Model.)

W. TEN EYCK.

SELF CLOSING GAS BURNER.

No. 445,612. Patented Feb. 3, 1891.

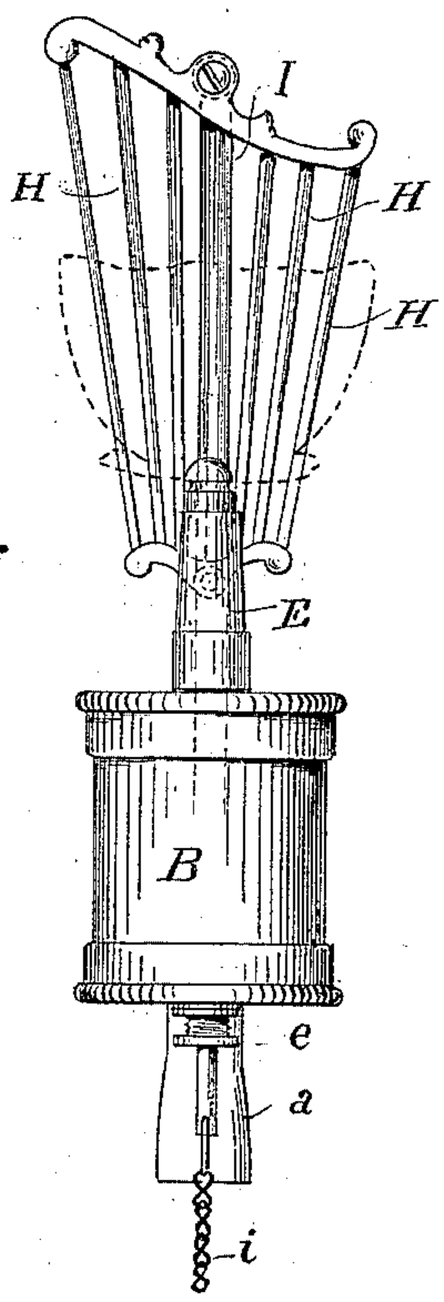

Fig. 1.

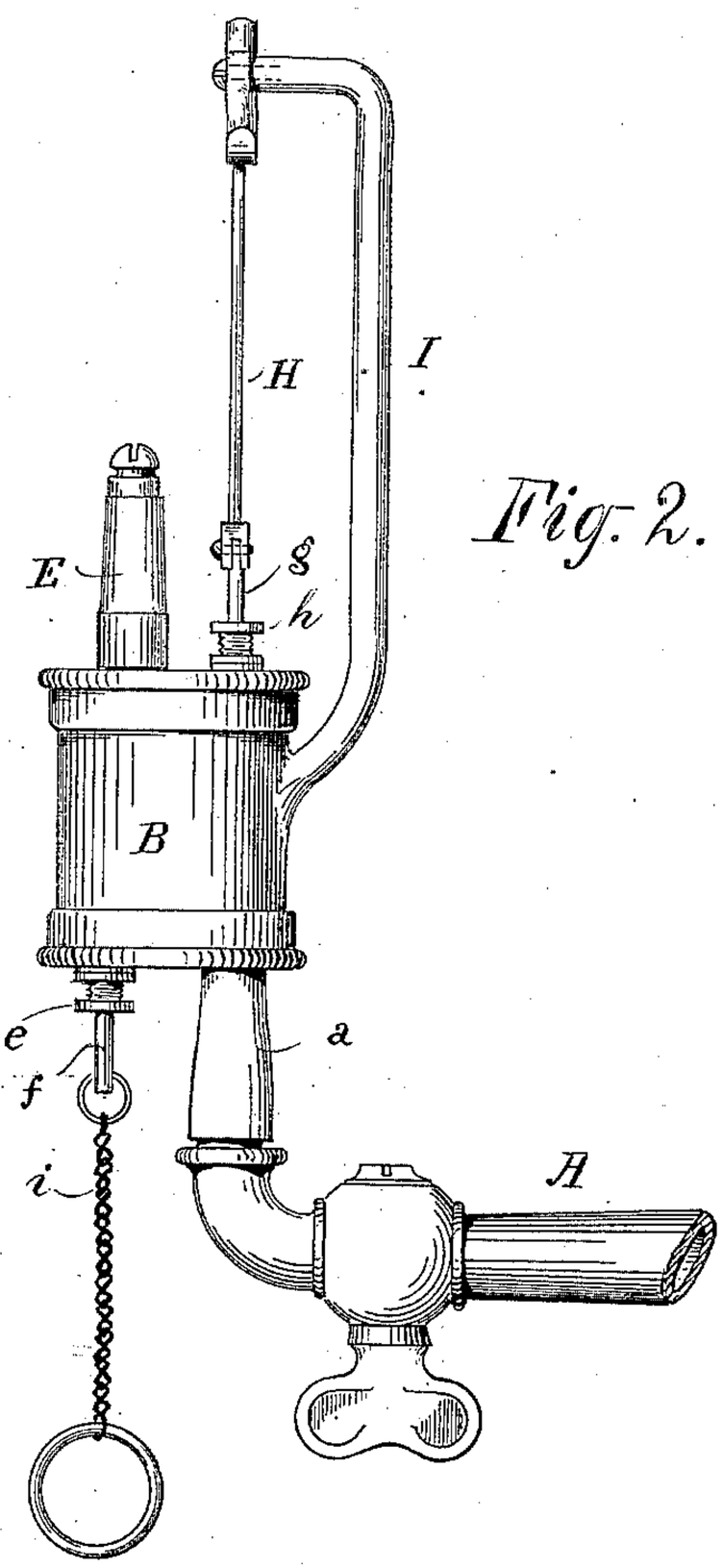

Fig. 2.

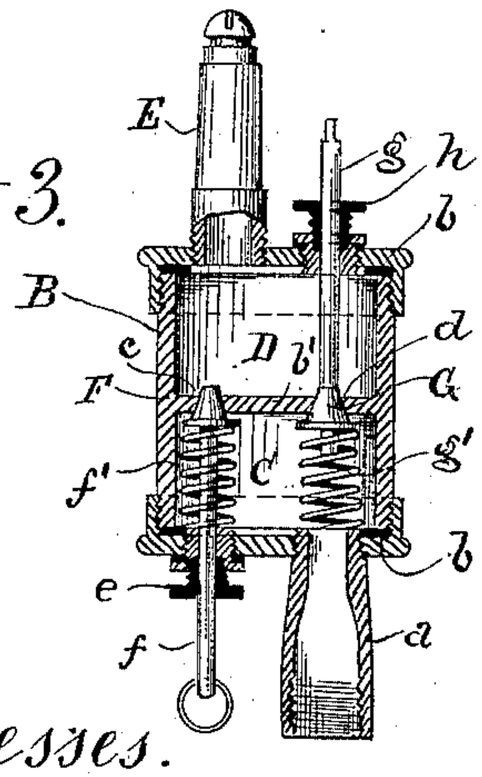

Fig. 3.

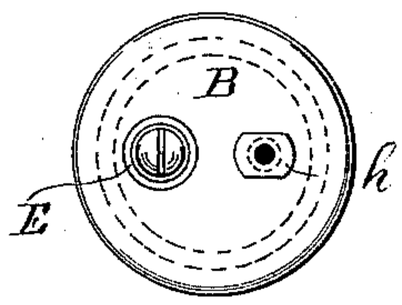

Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM TEN EYCK, OF OAKLAND, CALIFORNIA.

SELF-CLOSING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 445,612, dated February 3, 1891.

Application filed April 25, 1890. Serial No. 349,518. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM TEN EYCK, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented a new and useful Self-Closing Gas-Burner; and I do hereby declare the following to be a full, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in burners in which the outflow of gas is dependent upon the expansion under heat of certain valve attachments; and the object of my improvement is to provide simpler and more efficient means than have heretofore been devised for closing the burner in cases when the light is blown out, and thereby insure the accomplishment of the ultimate purpose of this class of devices, which is to prevent the accidents usually arising from the escape of gas.

Referring to the accompanying drawings, which form part of this specification, Figure 1 is a front elevation of my improved burner; Fig. 2, a side elevation of the same, showing it applied to a gas-bracket; Fig. 3, a broken sectional elevation taken from Fig. 2; and Fig. 4, a plan, also from Fig. 2, with some of the attachments removed.

Similar letters of reference indicate corresponding parts in all the views.

A represents an ordinary gas-bracket, and B a small cylindrical reservoir connected therewith by means of a short tube or gas-inlet *a*. The cylinder B is preferably made of metal, in three pieces, as shown, and it is rendered gas-tight. Gaskets *b*, located at the joints, may be used in this connection; but they are not deemed indispensable. B is divided in two compartments or chambers C D by a central partition *b'*, which keeps the gas confined in the lower chamber when the burner E, mounted upon the upper compartment, is not in use.

The gas is admitted from C to D, and thence to the burner through ports *c d*, formed in the partition *b'*. These ports are opened and closed by valves F G. The valve F has a stem *f*, which projects out of the lower end of the reservoir B through a stuffing-box *e*, and it is kept up to its seat by a spiral spring *f'*, coiled around this stem. The valve G also is provided with a stem *g*, which projects out of the upper end of B through a stuffing-box *h* similar to *e*, and it is normally held up to its seat through the medium of a series of expansible metal threads H, connecting the external end of this stem with the upper end of a non-expansible rod I, which rises from the outer side of the cylinder B. It will be seen that the opposite ends of the threads are connected by horizontal rods, through the medium of which connection is attained between the lower ends of said threads and the upper end of the valve-stem *g* and also between the upper end of the threads and the non-expansible rod I.

By preference the threads H are made of copper and the rod I of wrought-iron, though other materials might be substituted therefor. A spring *g'*, bearing against the bottom of B and the under side of the valve G, also helps to keep up the latter and close the port *d*.

The port *e* is opened by pulling down the valve-spindle *f* either directly or through a chain *i*, secured to its outside end. The use of this port, however, is but temporary, it being employed only at the time of lighting the gas, as will be explained farther on. As to the port *d*, it is not opened or the valve G unseated until after the gas has been lighted and the heat produced by the flame has expanded the threads H, which control the valve-stem *g*. To better effect this I set these threads in a plane parallel with the slit of the burner E and as close to the burner as is expedient in order to secure the full benefit of the heat emitted by the gas-light without injury to the heated parts. An expansible metal plate might be employed to operate the valve G; but I prefer the use of threads, as they present to the flame a larger surface in proportion to their size than a solid plate would, and they consequently expand more readily under the influence of the heat, as also they contract the sooner in cooling off when the lights are extinguished. They further lend themselves better to ornamental designs than simple plates.

My improved burner operates as follows: The port *c* is opened by pulling down the stem of the valve F, and the gas proceeding from the chamber C to the jet E lighted. The valve

F is kept down for a moment until the heat of the flame has begun to act upon the threads H, and then it is released to return to its seat under the action of the spring *f'*, which closes the port *c* and checks the exit of gas in that direction. The threads H, having been expanded in the meanwhile by the heat imparted them, push down upon the spindle of the valve G and open the port *d*, through which gas is henceforth fed to the burner. Supposing, now, the light is blown out by accident or purposely, the threads H quickly cool off under the influence of the surrounding air and contract to their normal length, carrying up with them the valve G. Thus the port *d* is closed and any undue escape of gas prevented; but should the threads H from any cause be broken and fail to work the spring *g'* would still be available and of itself return the valve to its seat.

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

1. In a self-closing gas-burner, the combination of a gas-reservoir provided with a horizontal dividing-partition, a spring-actuated valve working in the lower compartment of said partition, the valve-stem thereof passing through said lower compartment, a valve also working in the lower compartment and having its stem passing through the upper compartment, and expansible threads connected with the last-named valve-stem and adapted to control the same through expansion and contraction, substantially as set forth.

2. In a self-closing gas-burner, the combination of a gas-reservoir provided with a horizontal dividing-partition, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, said valves adapted to open and close appropriate ports in the partition, and expansible threads connected with the last-named valve-stem and controlling the same through expansion and contraction, substantially as set forth.

3. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom and provided with a horizontal dividing-partition, said partition provided with suitable ports, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, said valves adapted to open and close the ports in the partition, and expansible vertical threads connected with the valve-stem, which works in the upper compartment, said threads arranged on a plane parallel with the slit of the burner, substantially as set forth.

4. In a self-closing gas-burner, the combination of a reservoir provided with a horizontal dividing-partition having suitable ports, a valve and valve-stem working in the lower compartment and controlling one of the ports, a coiled spring encircling said valve-stem, a valve also working in the lower compartment of the reservoir and controlling the other port, the valve-stem thereof passing through the upper compartment and the upper end of said valve-stem passing through the reservoir, a coiled spring seated in the lower compartment and bearing against the valve of said stem, and vertical expansible threads connected with the upper end of the stem, substantially as set forth.

5. In a self-closing gas-burner, the combination of a gas-reservoir provided with a horizontal dividing-partition, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, a non-expansible rod secured to the reservoir and having its upper end bent inwardly, a horizontal rod secured to said inwardly-extending end, a horizontal rod secured to the external end of the upper valve-stem, and expansible threads connecting said horizontal rods, substantially as set forth.

6. In a self-closing gas-burner, the combination of a gas-inlet, a reservoir connected therewith, said reservoir provided with a horizontal dividing-partition having suitable ports therein, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, a burner secured to said reservoir, and vertical expansible threads connected to the upper valve-stem, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM TEN EYCK.

In presence of—
HORACE D. RANLETT,
JOHN M. RODGERS.