(No Model.)

F. F. CUSHMAN.

AUTOMATIC CUT-OFF GAS BURNER.

No. 590,003. Patented Sept. 14, 1897.

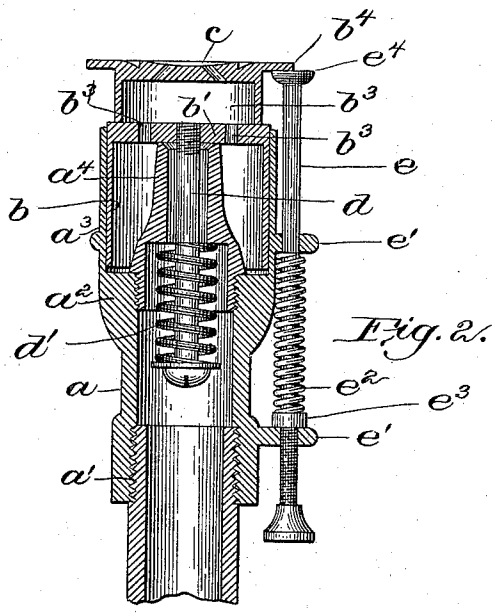


Fig. 2.

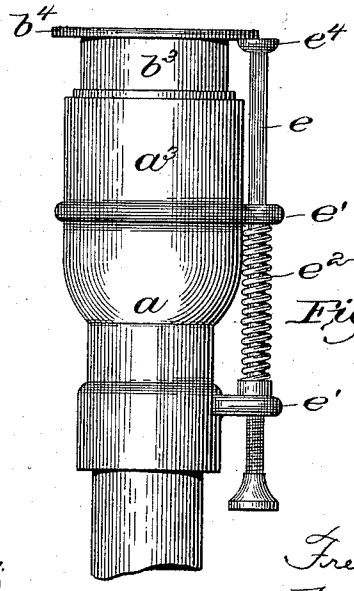


Fig. 1.

Witnesses:
Arthur W. Randall.
Mary E. Foster.

Inventor:
Fred F. Cushman
by P. J. Hayes
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRED F. CUSHMAN, OF BOSTON, MASSACHUSETTS.

AUTOMATIC-CUT-OFF GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 590,003, dated September 14, 1897.

Application filed July 6, 1897. Serial No. 643,525. (No model.)

To all whom it may concern:

Be it known that I, FRED F. CUSHMAN, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Automatic-Cut-Off Gas-Burners, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve and simplify the construction of automatic-cut-off gas-burners; and the invention consists of a case or body having a gas-passage through it, a valve-seat and a tubular portion, an expansible ring adapted to slide telescopically in said tubular portion when contracted, but to frictionally engage therewith when expanded, and a valve-plate carried by said expansible ring, which is adapted to close upon said valve-seat to cut off the gas. A gas-tip is also carried by said expansible ring, and a spring is provided, the action of which is to draw down the ring and valve-plate carried by it to cause the latter to close upon the valve-seat and thereby cut off the gas.

Means are provided for raising the ring and valve-plate sufficiently to allow the passage of gas, and as soon as the gas is lighted the heat therefrom will expand said ring and cause it to frictionally engage the tubular portion of the case or body in which it telescopically slides and to thereby hold the valve-plate in its elevated position. When the heat disappears, the expansible ring contracts and the valve-plate will be at once drawn down to close upon the valve-seat and cut off the gas.

Figure 1 is a side elevation of an automatic-cut-off gas-burner embodying this invention, and Fig. 2 a vertical section of the same.

The case or body a is formed or provided with an internally-screw-threaded portion a' for connecting it to the gas-pipe, and also with a diaphragm or partition-wall a^2, extending horizontally across it, dividing said case or body into two parts, and above said diaphragm or partition-wall a^2 said case or body is formed or provided with a tubular portion a^3, preferably made cylindrical, and rising centrally from the diaphragm or partition-wall a^2 is a projection a^4, having a hole through it for the passage of gas, and the upper end of said projection is formed as a valve-seat.

An expansible ring b is contained within the tubular portion a^3, which is made of a material which has a different ratio of expansion from the material of which the case or body a is composed, and said expansible ring b is made of a size to slide freely in said tubular portion a^3 when contracted, but to frictionally engage and firmly bind when expanded.

The expansible ring b carries a valve-plate b', which is constructed and arranged to rest upon the valve-seat a^4 and thereby shut off the gas, and said valve-plate is herein formed with holes b^2 through it for the passage of the gas into the chamber b^3 above it.

A tip c of any well-known or suitable construction is surmounted on the valve-plate b', or it may be the expansible ring b, and said tip is herein shown as having a circumferential flange b^4 projecting from it. The tip c, valve-plate, and expansible ring therefore rise and fall together, and a pin d passes up through the hole in the projection a^4, which is screwed into the valve-plate b', and a spring d' encircles said pin between its head and the diaphragm or partition-wall a^2, the action of said spring being to draw the valve-plate b' down and close it upon the valve-seat to shut off the gas.

A plunger e has its bearings in ears e', projecting from the case or body a, and said plunger is encircled by a spring e^2, one end of which bears against one of the ears and the other end against a nut or projection e^3 on the rod, the tendency of said spring being to normally hold the rod e in its lowermost position. The upper end of the rod e is formed with a projection or flange e^4, which occupies a position beneath the flange b^4 on the tip, and said plunger-rod is designed to be used by pressing it upward to thereby raise the tip and valve-plate connected therewith to allow the passage of the gas.

The operation of the device is as follows: The operator will press the plunger-rod e upward and thereby lift the tip and valve-plate and expansible ring connected with it, so that the valve-plate will be lifted off of its seat and the gas thus allowed to escape, and then the gas is lighted, and the heat generated is

sufficient to cause the expansible ring *b*, which is thus held in elevated position by the operator, to expand and bind firmly within the tubular portion a^3 and thereby hold the valve-plate in its elevated position with the gas-passage open. When the gas is turned off or blown out, the expansible ring *b* immediately contracts and will then be drawn down by the spring *d'* to close the valve-plate upon its seat.

I claim—

1. In an automatic-cut-off gas-burner, a case or body having a gas-passage, a valve-seat, and a tubular portion, an expansible ring sliding telescopically in said tubular portion when contracted, and adapted to frictionally engage therewith when expanded, a valve-plate carried by said expansible ring which closes upon said valve-seat to cut off the gas, substantially as described.

2. In an automatic-cut-off gas-burner, a case or body having a gas-passage, a valve-seat, and a tubular portion, an expansible ring sliding telescopically in said tubular portion when contracted, and adapted to frictionally engage therewith when expanded, a valve-plate carried by said expansible ring which closes upon said valve-seat to cut off the gas, and means for raising said valve-plate and ring, substantially as described.

3. In an automatic-cut-off gas-burner, a case or body having a gas-passage, a valve-seat, and a tubular portion, an expansible ring sliding telescopically in said tubular portion when contracted, and adapted to frictionally engage therewith when expanded, a valve-plate carried by said expansible ring which closes upon said valve-seat to cut off the gas, and a tip also carried by said expansible ring, substantially as described.

4. In an automatic-cut-off gas-burner, a case or body having a gas-passage, a valve-seat, and a tubular portion, an expansible ring sliding telescopically in said tubular portion when contracted, and adapted to frictionally engage therewith when expanded, a valve-plate carried by said expansible ring which closes upon said valve-seat to cut off the gas, and a spring for closing said valve-plate upon its seat, substantially as described.

5. In an automatic-cut-off gas-burner, a case or body having a gas-passage, a valve-seat, and a tubular portion, an expansible ring sliding telescopically in said tubular portion when contracted, and adapted to frictionally engage therewith when expanded, a valve-plate carried by said expansible ring which closes upon said valve-seat to cut off the gas, a tip also carried by said expansible ring, and a spring-actuated rod for engaging said tip and raising it together with the ring and valve-plate carried by it, substantially as described.

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

FRED F. CUSHMAN.

Witnesses:
B. J. NOYES,
ARTHUR F. RANDALL.