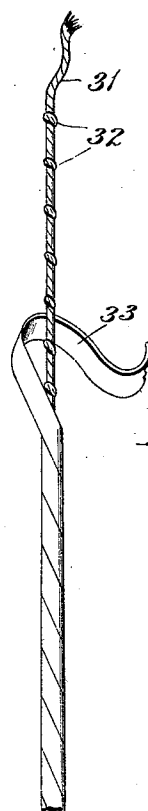
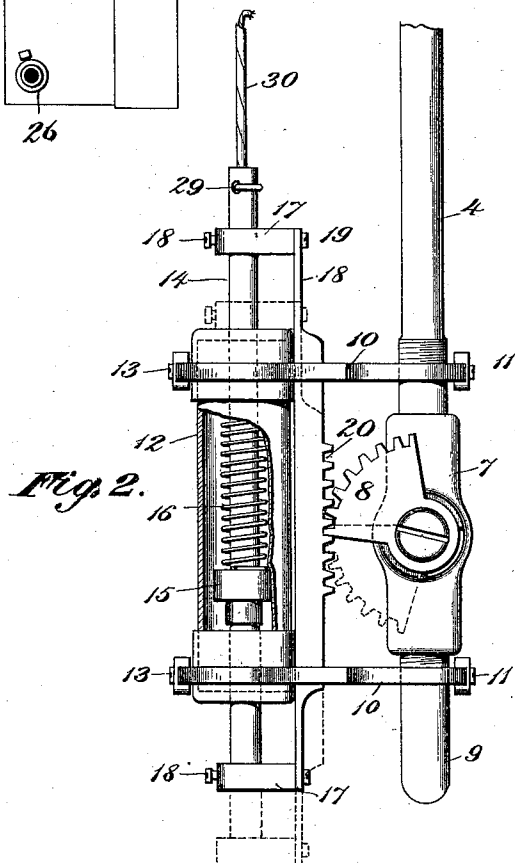
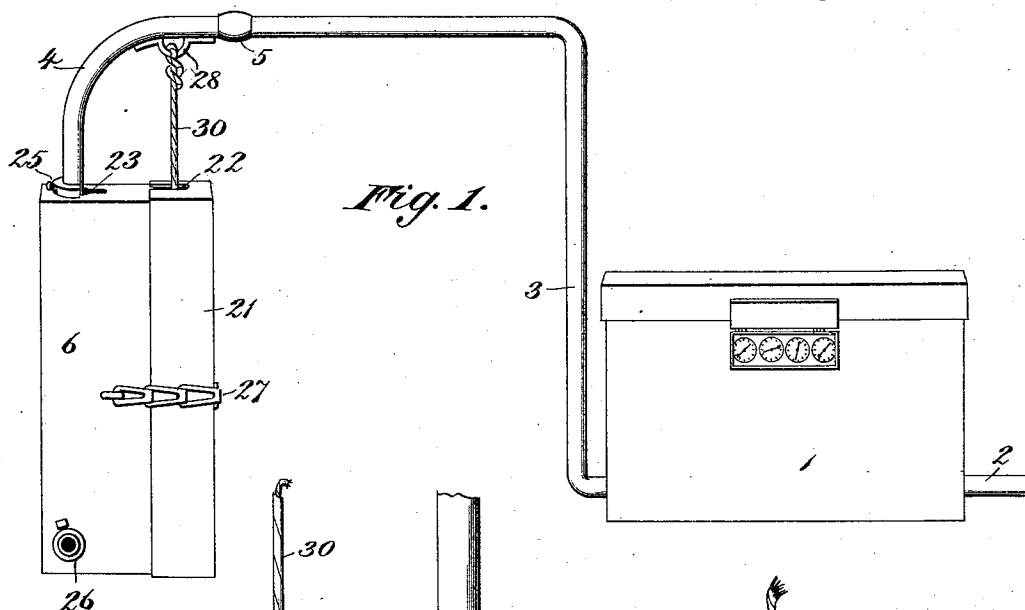


(No Model.)

F. L. COOK & J. F. CRANSTON.
AUTOMATIC CUT-OFF FOR GAS SYSTEMS.

No. 542,870.

Patented July 16, 1895.



Attest:

Edw. S. Duwall Jr.
W. S. Duwall

Inventors:

F.L. Cook & J.F. Cranston.

By *M. S. Duval* Atty.

UNITED STATES PATENT OFFICE.

FRANCIS L. COOK AND JAMES F. CRANSTON, OF SPRINGFIELD, MASSACHUSETTS; SAID CRANSTON ASSIGNOR TO SAID COOK.

AUTOMATIC CUT-OFF FOR GAS SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 542,870, dated July 16, 1895.

Application filed December 15, 1894. Serial No. 531,937. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS L. COOK and JAMES F. CRANSTON, citizens of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Automatic Cut-Offs for Gas Systems; and we 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.

This invention relates to improvements in automatic cut-offs for illuminating-gas systems, the object in view being to provide a cheap and simple device readily applicable to the present gas system commonly employed, the same being so constructed as to operate positively to shut off the supply of gas at the meter in the event of fire.

Various other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a general view of the gas-meter and the adjacent portion of the pipes, together with our device in position. Fig. 2 is an elevation in detail of the device. Fig. 3 is an exaggerated view of a portion of the fusible cord.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates an ordinary gas-meter, which communicates with the street-supply by means of the pipe 2. From the opposite end of the meter leads the usual service-pipe 3. Inserted within the length of the service-pipe 3 is the flexible pipe 4, the same being connected to the service-pipe by the usual joint 5.

Secured to the pipe 4 and located within a metallic casing 6 is a rotary cut-off or valve 7, to the stem of which beyond the valve-casing is secured a toothed segment 8. To the lower end of the valve or cut-off casing 7 is secured the pipe 9. Secured to the pipes 4 and 9 above and below the cut-off is a pair of plates 10, the same having openings for the passage of the pipes 4 and 9 and being adjustably secured thereto through the instrumentality of screws 11. These plates are enlarged toward their opposite ends and are provided with openings

which receive the upper and lower ends of a barrel or cylinder 12, which, like the pipes 4 and 9, are retained in position by set-screws 13 similar to the screws 11.

Arranged within the barrel 12 is a reciprocating rod 14, the same projecting beyond and through the opposite ends of the cylinder or barrel. This rod is provided between its ends within the cylinder or barrel with a head 15, and coiled upon the rod between the head 15 and the upper end of the cylinder is a spring 16, the tendency of which is to depress the rod and its head.

A pair of collars 17 are arranged upon the rod 14 above and below the barrel or cylinder, and these collars are held in position by screws 18 passing therethrough and bearing on the rod. The collars project toward the pipes 4 and 5 and to points slightly beyond the vertical plane of the cylinder 12.

The ends of the collars are connected by means of a rack-bar 18, screws 19 being employed to secure the rack-bar to the collars. The rack-bar passes through suitable openings formed in the two plates 10 and is provided at its outer edge with teeth 20, which correspond with and are designed to engage those of the segment 8. The device as thus described is inclosed within the metallic casing or box 6, and the same for convenience may be provided with a removable cover 21. The upper end of the box is at its end and one side of the same provided with openings 22 and 23 respectively, the latter being partially surrounded by a collar 24, through which passes a screw 25 that binds upon the pipe. The box also has near its lower end an opening 26, and through this passes the pipe 9 that is connected to the system of pipes that supply the burners of the house. The cover 21 may be locked in position by the chain 27 or any other desired device.

An eye or loop 28 is affixed to the under side of the pipe 4, and connected to the same and to a perforation 29, with which the upper end of the rod 14 is provided, is the fusible cord 30.

Any desired form of fusible cord, it will be understood, may be employed, but we prefer to employ the one shown in Fig. 3. This cord comprises an inner core 31, and the same may be flax, hemp, jute, or, in fact, any other fibrous

material, and is at intervals preferably knotted, as at 32. The core is provided with the wrapping or covering of soft metal 33, the same being capable of being fused at a very low degree of heat, and the same is aided in retaining its position by the presence of the knots in the core. By wrapping the core with metal the former is preserved against the action of the atmosphere.

In the event of fire the fusible cord becomes destroyed, thus releasing the rod 14, and the spring 16 expanding causes said rod to descend, carrying with it the rack-bar 18 and giving the segment 8, and consequently the cut-off, to which it is attached, a partial rotation, thus cutting off entirely from the burners the supply of gas.

It will be seen that our invention is very simple, is readily applicable to those forms of gas systems now employed, and is protected from any unauthorized tampering, and, finally, is positive in its action.

We do not limit our invention to the precise details of construction herein shown and described, but hold that we may vary the same to any degree and extent within the knowledge of the skilled mechanic.

Having described our invention, what we claim is—

1. The combination with the gas pipe, the valve or cut-off and the segmental arm connected to the same, of the adjacently located cylinder, the rod arranged for reciprocation within and extending beyond the ends thereof, the spring for actuating the rod and the rack bar carried by the rod and engaging the teeth of the segment and the fusible cord connected with the upper end of the rod and to the pipe there-above substantially as specified.

2. The combination with the pipe, the rotary cut-off and the toothed segmental arm connected therewith, of bracket-plates extending from the pipe above and below said cut-off, a cylinder arranged in said bracket-plates, a rod mounted for reciprocation within and extending beyond the ends of said cylinder, a spring for normally drawing the rod in one direction, and a fusible cord connected with the upper end, of the rod and with the pipe and serving to draw the rod in a direction against the tendency of the said spring, and

a rack bar carried by the rod and having its teeth engaging with those of the segment substantially as specified.

3. In a device of the class described, the combination with the cut-off mechanism and the pipe there-above, of a fusible cord consisting of an inner core of fibrous material knotted at intervals and an external of metal adapted to fuse at a low degree of heat.

4. In a device of the class described, a combination with a gas pipe having an intermediate valve case and rotary valve arranged therein, a toothed segmental arm connected to the stem of the rotary valve, perforated plates arranged above and below the valve case upon the pipe and having openings, a cylinder arranged in the openings and extending above and below said plates, a rod mounted for reciprocation within the cylinder and extending beyond the ends thereof, collars arranged on the rod above and below the cylinder, and extending toward the pipe beyond the vertical plane of said cylinder, a toothed rack bar connecting the collars and engaging the teeth of the segment and a fusible cord connected to the upper end of the rod and adapted to be connected to a fixed point above the same for suspending said rod, a head arranged upon the rod within the cylinder and a coil spring interposed between the head and upper end of the cylinder.

5. The combination with the pipe 4 having an eye 28, the pipe 9, the intermediate valve case 7, the rotary valve therein and segmental arm 8 of the casing 6 having the openings 23, 22 and 26, the plates 10 extending from the pipes 4 and 9 within the casing 6, the cylinder arranged within the casing, the rod arranged for reciprocation within the cylinder, the spring for depressing the rod, the collars 17 connected to the rod, the toothed rack bar 18 connecting the collars, and the fusible cord 30 substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANCIS L. COOK.
JAMES F. CRANSTON.

Witnesses:
W. R. HEADY,
J. W. FLANNERY.