

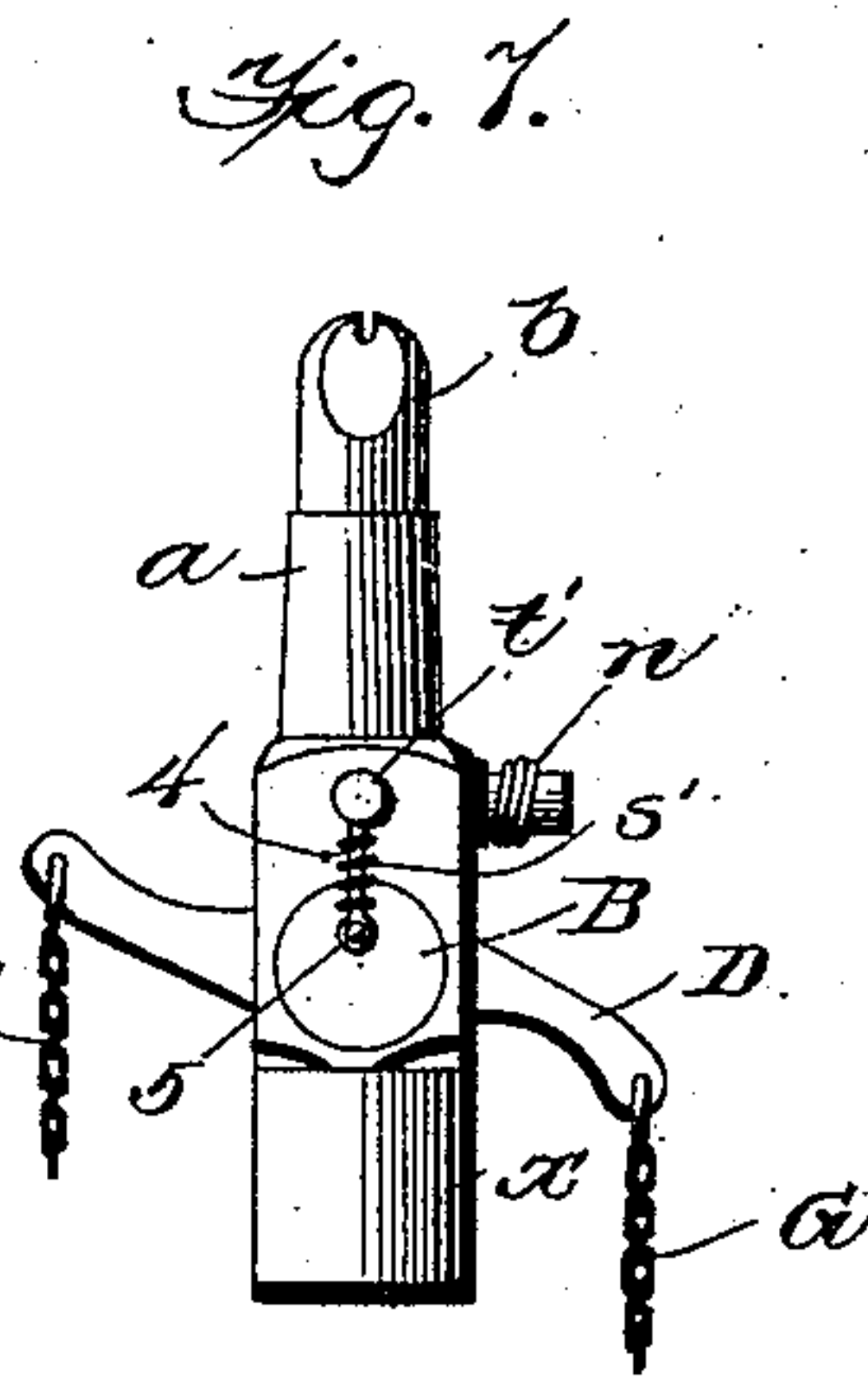
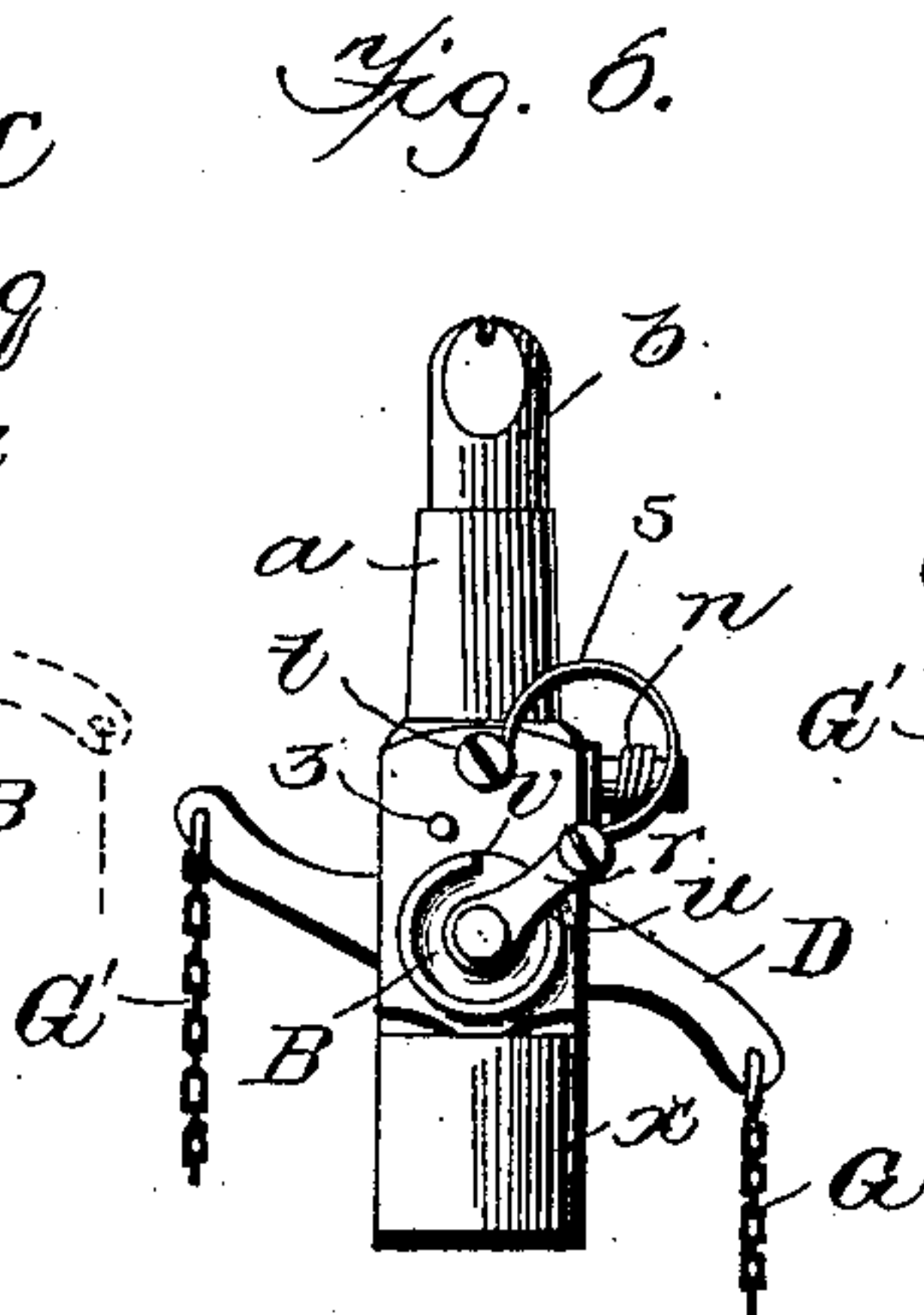
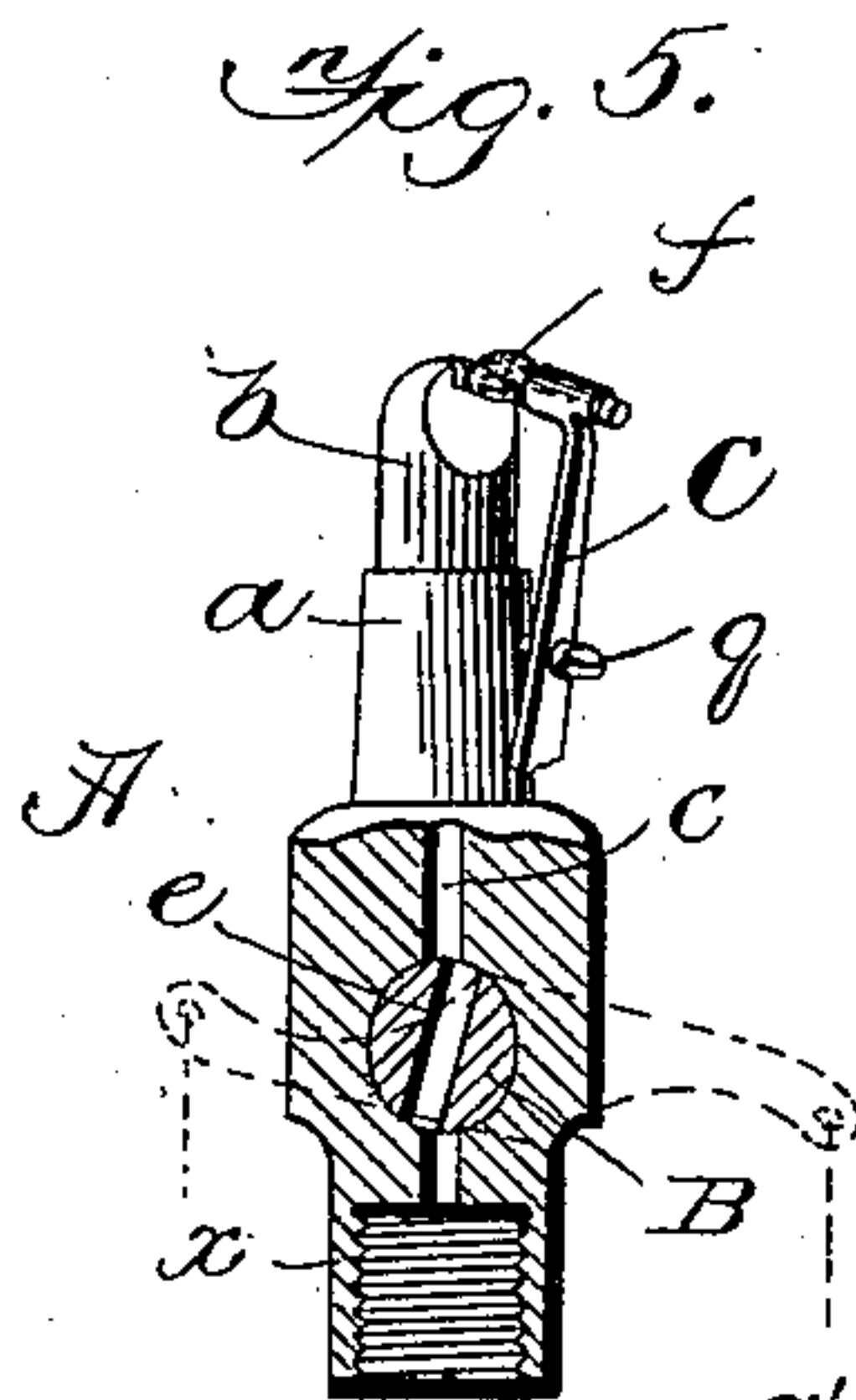
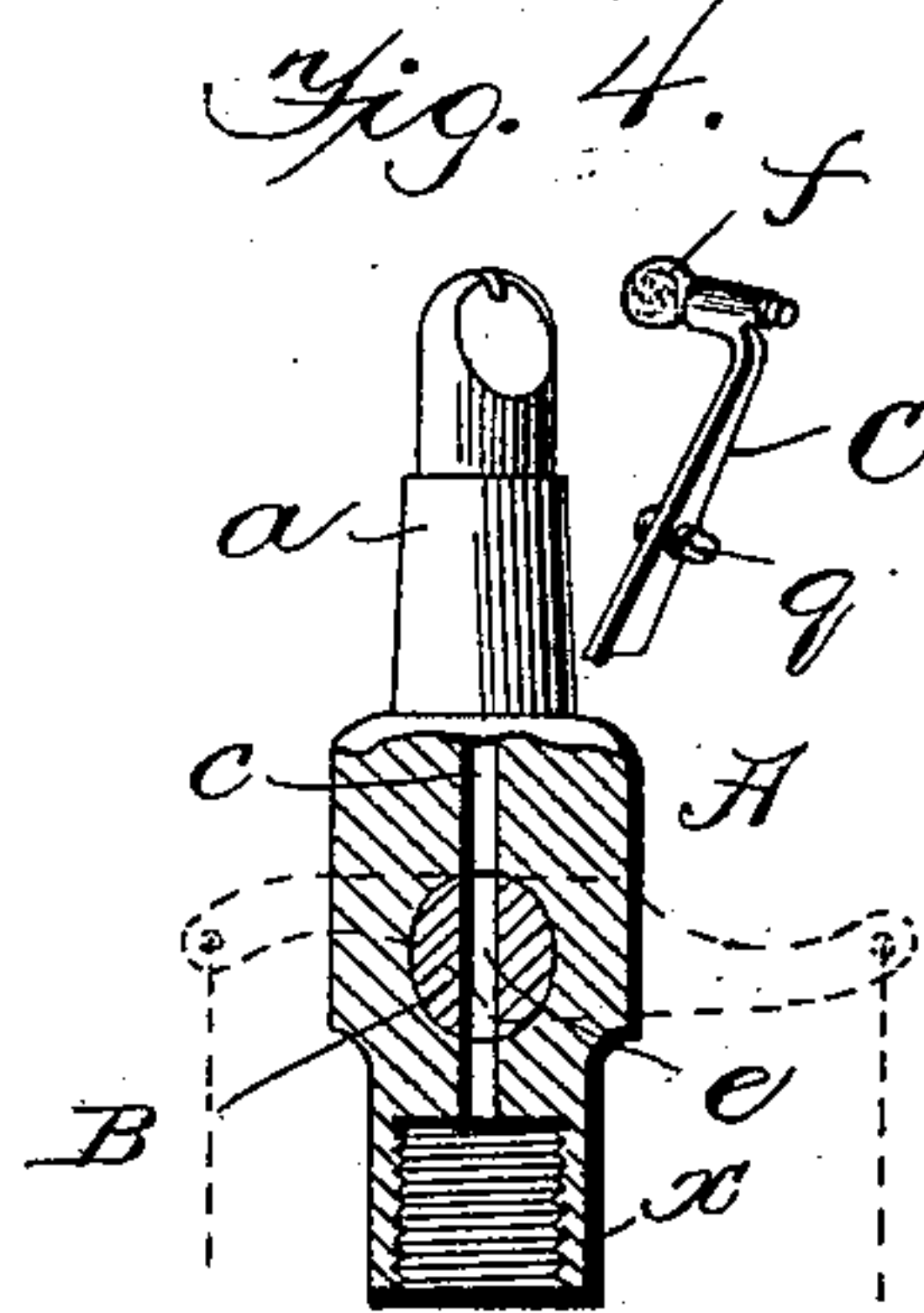
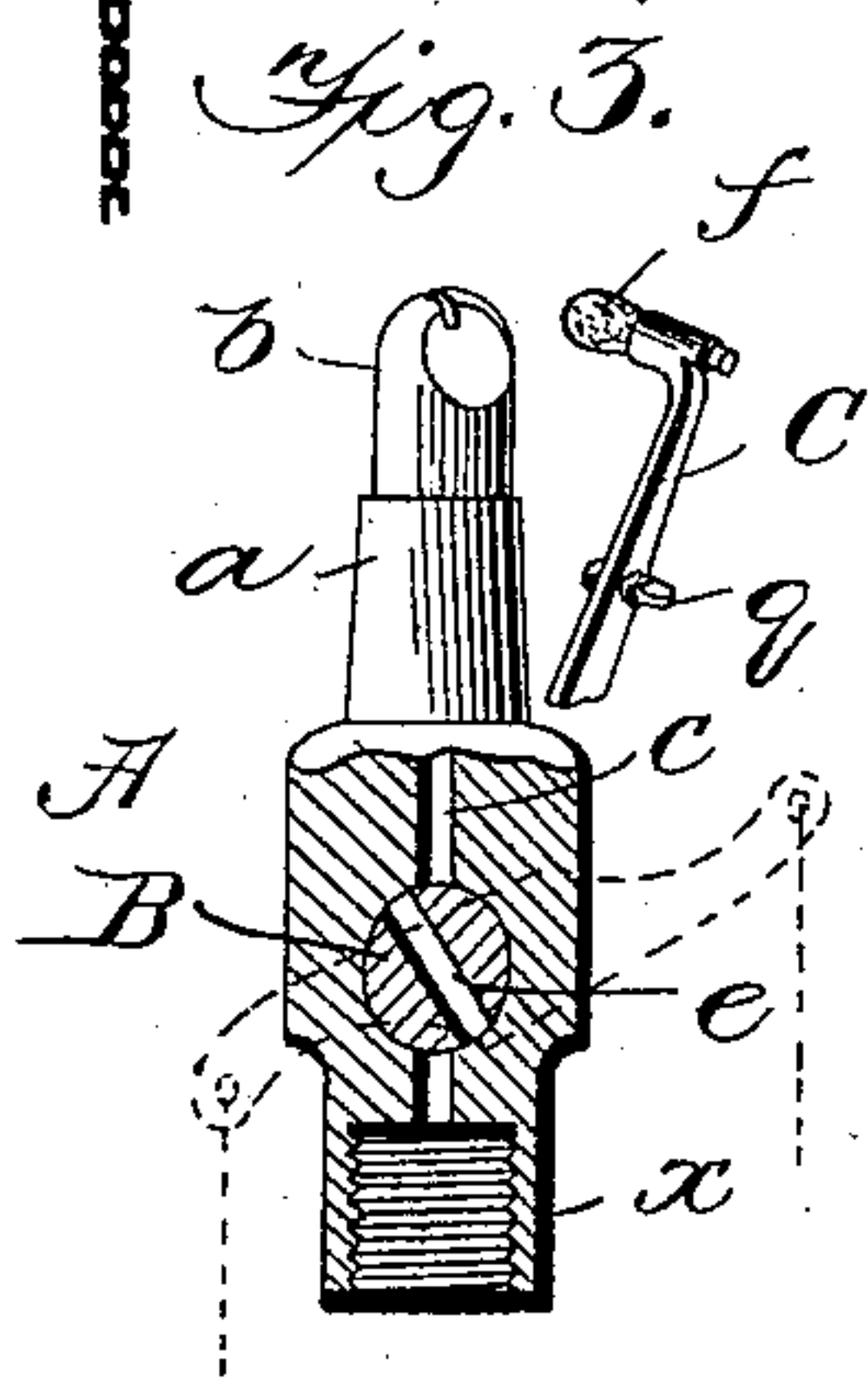
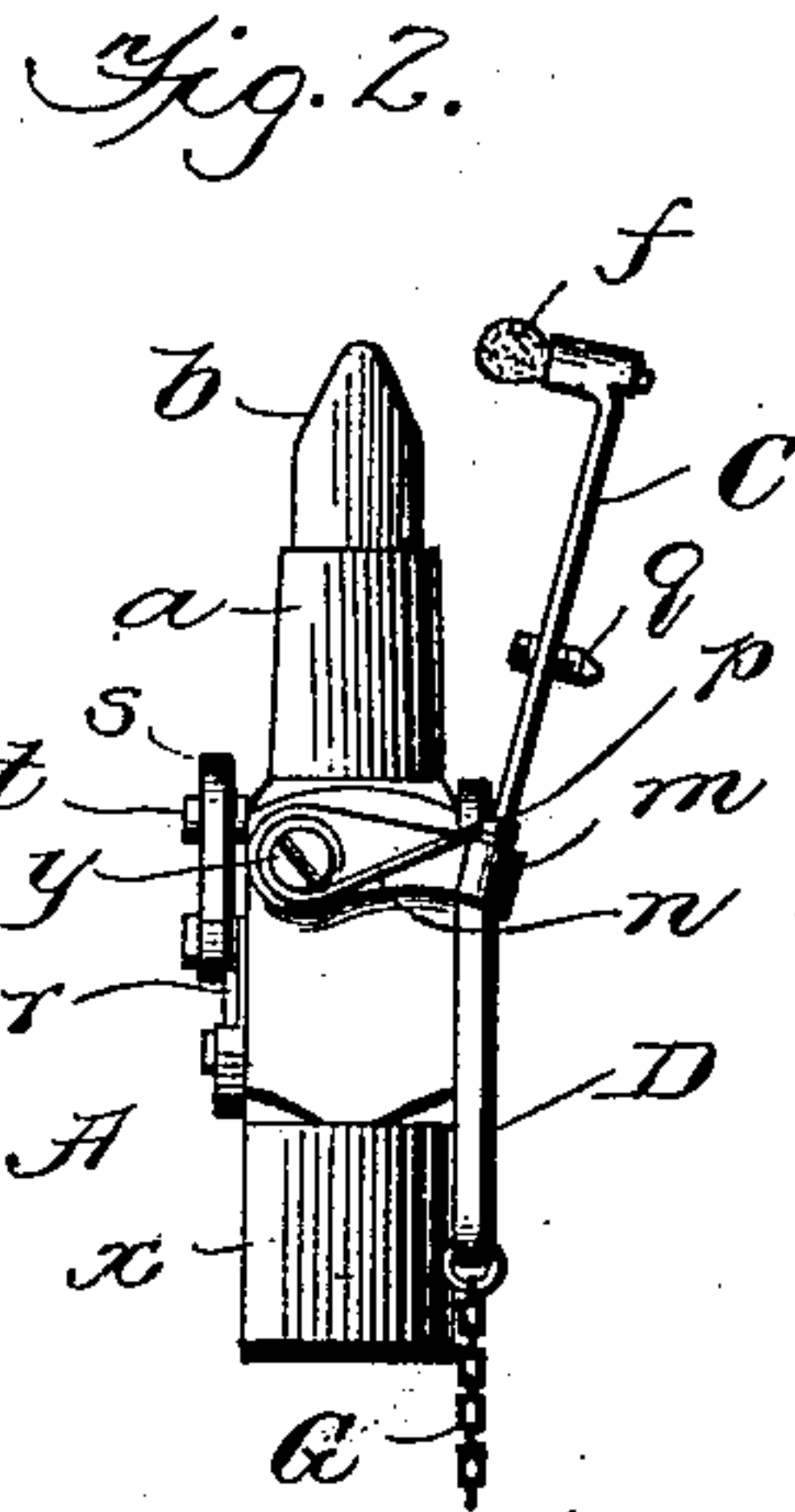
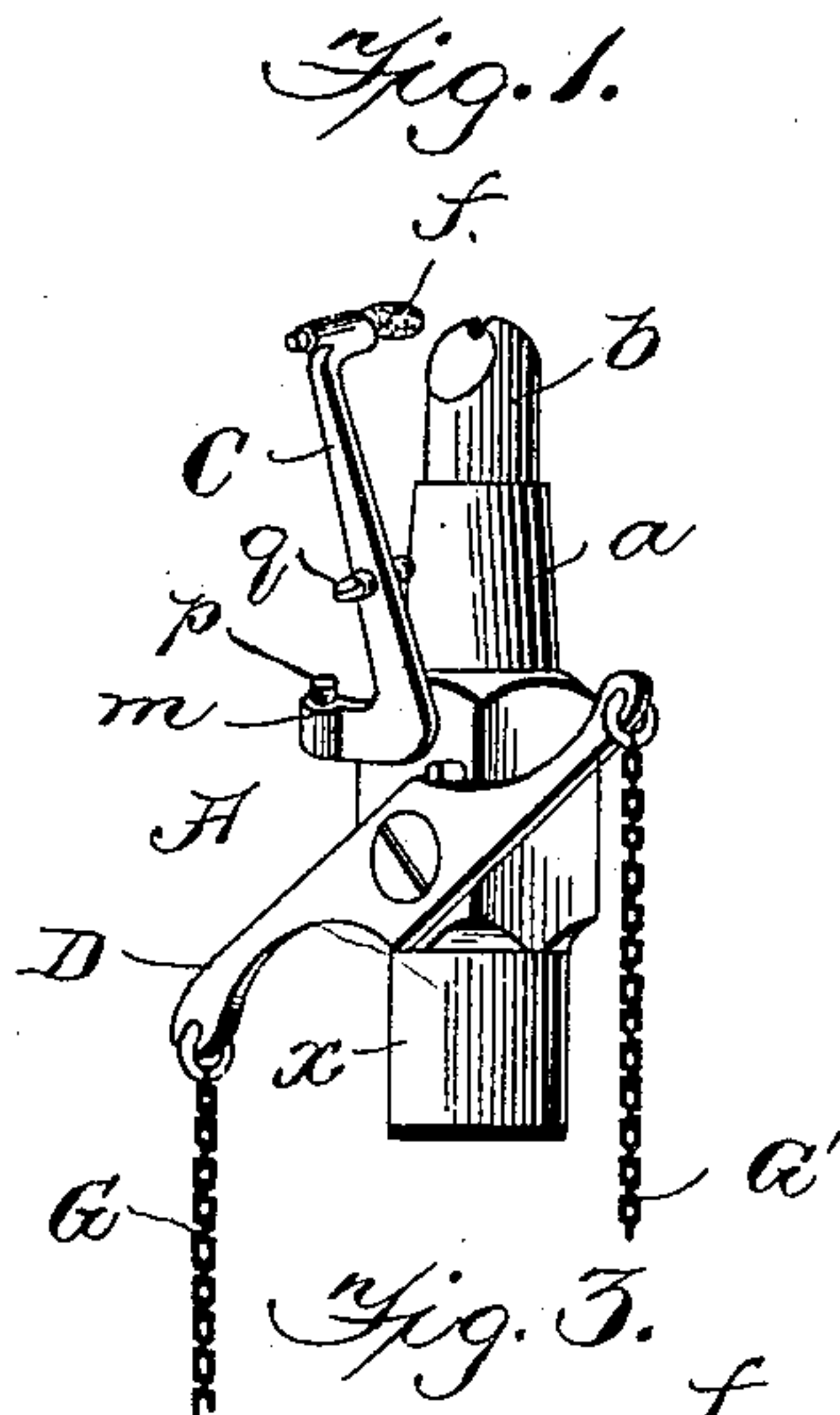
No. 689,486.

Patented Dec. 24, 1901.

H. E. GRAY.  
BURNER.

(Application filed June 1, 1900.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

HERBERT E. GRAY, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE GAS  
TIP & SELF LIGHTER COMPANY, A CORPORATION OF NEW YORK.

## BURNER.

SPECIFICATION forming part of Letters Patent No. 689,486, dated December 24, 1901.

Application filed June 1, 1900. Serial No. 18,757. (No model.)

*To all whom it may concern:*

Be it known that I, HERBERT E. GRAY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Burners, of which the following is a specification.

My invention relates to gas-burners provided with devices for igniting the gas; and it consists in the combination, with a burner having a valve and operating-lever, of a movable arm carrying the igniter arranged to be so operated by the lever that the ignition takes place only when the gas is partly turned on and the gas is fully turned on only after the igniter is carried away from the burner, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a perspective elevation of a burner provided with my improvement. Fig. 2 is a side view; Fig. 3, a view showing the valve and igniting devices as arranged when the gas is cut off; Fig. 4, a similar view showing the parts as arranged when the gas is fully on; Fig. 5, a similar view showing the parts as arranged when the igniter is in position to light the gas. Fig. 6 is a view at the rear side of the burner, and Fig. 7 a like view illustrating a modification.

The body of the burner is or may be of any of the usual constructions, with a socket  $x$  for attachment to the gas-pipe, a stem  $a$ , tip  $b$ , and port  $c$ , intersected by the plug-valve  $B$ , in which is the usual port  $e$ . When the plug-valve is turned to the position shown in Fig. 3, the gas is cut off, and by bringing the port of the plug-valve to coincide more or less with that of the body of the burner a passage for the gas is made through the burner and increased or diminished, as required. With these parts I combine an arm  $C$ , pivoted at the lower end at  $y$  to the body of the burner and the upper end in position to be carried to and from the tip, together with any suitable appliances whereby the gas may be ignited when the end of the arm is in position adjacent to the tip. These igniting devices may be electrical or otherwise; but, as shown, the end of the arm is provided with a body  $f$  of material which will become incandescent

in the presence of a stream of gas and ignite the latter.

To the plug-valve  $B$  is connected a lever  $D$ , from the end of which are pendent two cords or chains  $G$   $G'$ .

Upon a lug  $m$  on the arm  $C$  bears a spring  $n$ , or any other arrangement of spring may be adopted that tends to carry the arm  $C$  away from the tip, and the arm  $C$  is also provided with a bearing arranged to bear upon the upper edge of the lever  $D$ . As shown, this bearing is in the form of an adjustable screw  $p$ , extending through the lug of the arm and so set as to secure the desired movement of the arm in respect to the changing positions of the valve.

As the bearing of the arm  $C$  is arranged the swinging of the lever  $D$  to a position to fully open the valve  $B$  does not affect the position of the arm  $C$ , which remains away from the tip; but as the cord or chain  $G'$  is further drawn upon to carry the valve  $B$  toward the position shown in Fig. 5 the lever  $D$  makes contact with the bearing of the arm  $C$ , so that the latter is carried to its closest position to the tip as the lever reaches the position shown in Fig. 5, when the gas is almost wholly cut off. As a result the igniter is brought into action to ignite the gas only when there is a very light flow of the latter, so that the ignition is rendered more certain and instantaneous, while danger of smoking or burning the igniter or forming any deposit thereon is greatly obviated. When the gas is lighted, the pull upon the chain  $G'$  is released, when the force of the spring  $n$  will throw outward the arm  $C$  and also exert a pressure upon the lever  $D$ , that will bring the valve to its fully-open position. (Shown in Fig. 4.)

When it is necessary to turn off the gas, it is only requisite to pull upon the cord or chain  $G$ , when the valve will be carried to the position shown in Fig. 3.

It will be seen that the arrangement of the arm supporting the igniter is one which may be effected in connection with a gas-burner provided with a plug of ordinary construction and that my invention may therefore be utilized in connection with ordinary burners simply by applying thereto an arm  $C$  of proper form and with a proper bearing upon



the lever or cross-bar or other device which is connected with the plug-valve.

In some instances it may be desirable to limit the movement of the arm C toward the burner. For this purpose and to vary the extent to which the arm may be brought toward the burner I provide a set-screw *q*, extending through the arm, as shown.

It is desirable to avoid the turning on of the gas without ignition, which might result from bringing the controlling-lever to a central position, thus opening the plug-valve without igniting the gas; but it is also essential that the plug-valve should be retained after being turned to its fully-open position. To secure these results, I combine with the plug-valve or its operating-lever means whereby the valve is automatically thrown back to a closed position prior to ignition. One way of securing this result consists in combining with the plug-valve a spring so arranged as to resist the first movement of the valve toward its open position, but to retain it in that position after the gas has been ignited. In the construction shown the spring is a blade *s*, bent to a curve between an abutment *t* on the burner and the end of an arm *r*, which is pivoted to swing freely on the end of the valve. On the valve are two shoulders *u v*, so arranged that the arm *r* will bear against the shoulder *u* as the valve is turned toward a partially-open position, so that if the valve-controlling lever is then released the action of the spring will throw the valve closed. If, however, the valve is carried past its open position, the end of the arm *r* will be carried below and to the opposite side of the bearing *t*, when the action of the spring will throw the arm against the stop 3, and will there retain it while the valve takes its fully-open position. When the valve is turned to cut off the gas, the shoulder *v* makes contact with the arm *r* and swings the latter below the abutment *t*, when the spring will throw the arm over against the shoulder *u*, and thus fully close the valve. Another arrangement producing the same result is shown in Fig. 7, where the rod 4 is pivoted to a stud 5 on the end of the valve and slides in an opening in the abutment *t'*, and a coiled spring *s'*, inclosing the rod, bears on the abutment and

on the stud 5. As the valve is turned toward a central position the spring is compressed, and if the valve is turned to either side of the said center the action of the spring completes the movement, so that the valve must either occupy a fully-open or a fully-closed position.

Without limiting myself to the precise constructions and arrangement of parts shown, I claim as my invention—

1. The combination of a burner having a valve, and a movable arm carrying a material for igniting the gas, and means for carrying the arm to the burner and simultaneously turning the valve to a partially-closed position, substantially as described.

2. The combination with a burner having a valve and valve-controlling lever, of an arm pivoted to the burner and bearing on said lever in position to be carried to the tip as the valve passes from an open toward a partially-closed position, substantially as set forth.

3. The combination with a burner having a plug-valve and operating-lever D connected thereto, of an arm pivoted to the burner and provided with an adjustable bearing arranged to make contact with the lever D, substantially as set forth.

4. The combination of a burner, its valve and operating-lever, and arm C arranged to swing to and from the burner and provided with an adjustable stop *q*, substantially as set forth.

5. The combination with a plug-valve, igniter, and means for swinging the latter toward the burner as the valve is partially closed, of a spring, and connections arranged to throw the valve past its partially-closed position substantially as set forth.

6. The combination with a valve having shoulders *u, v*, of a pivoted arm *r*, an abutment *t*, and a spring extending between said abutment and the end of the said arm, substantially as set forth.

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

HERBERT E. GRAY.

Witnesses:

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WM. KRAMER.