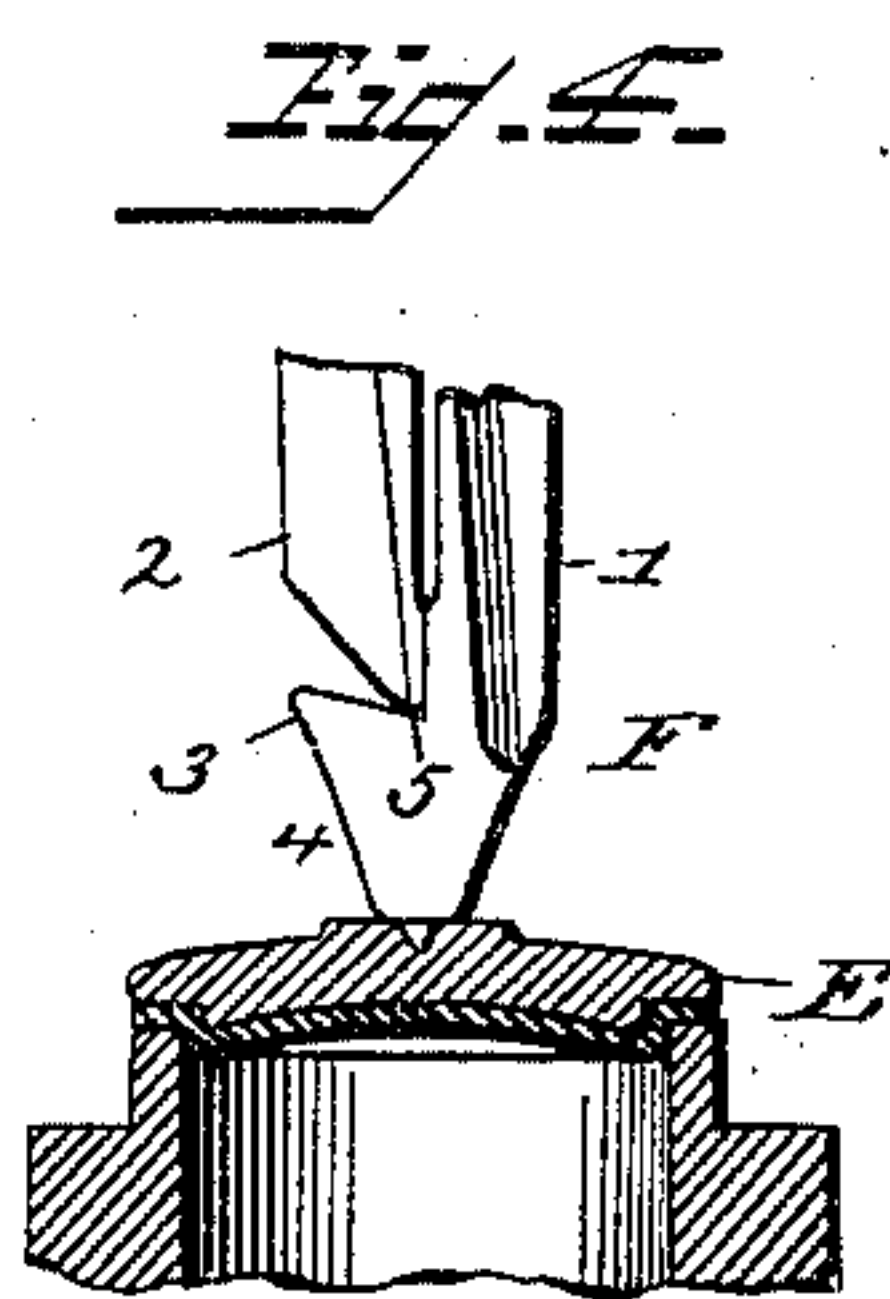
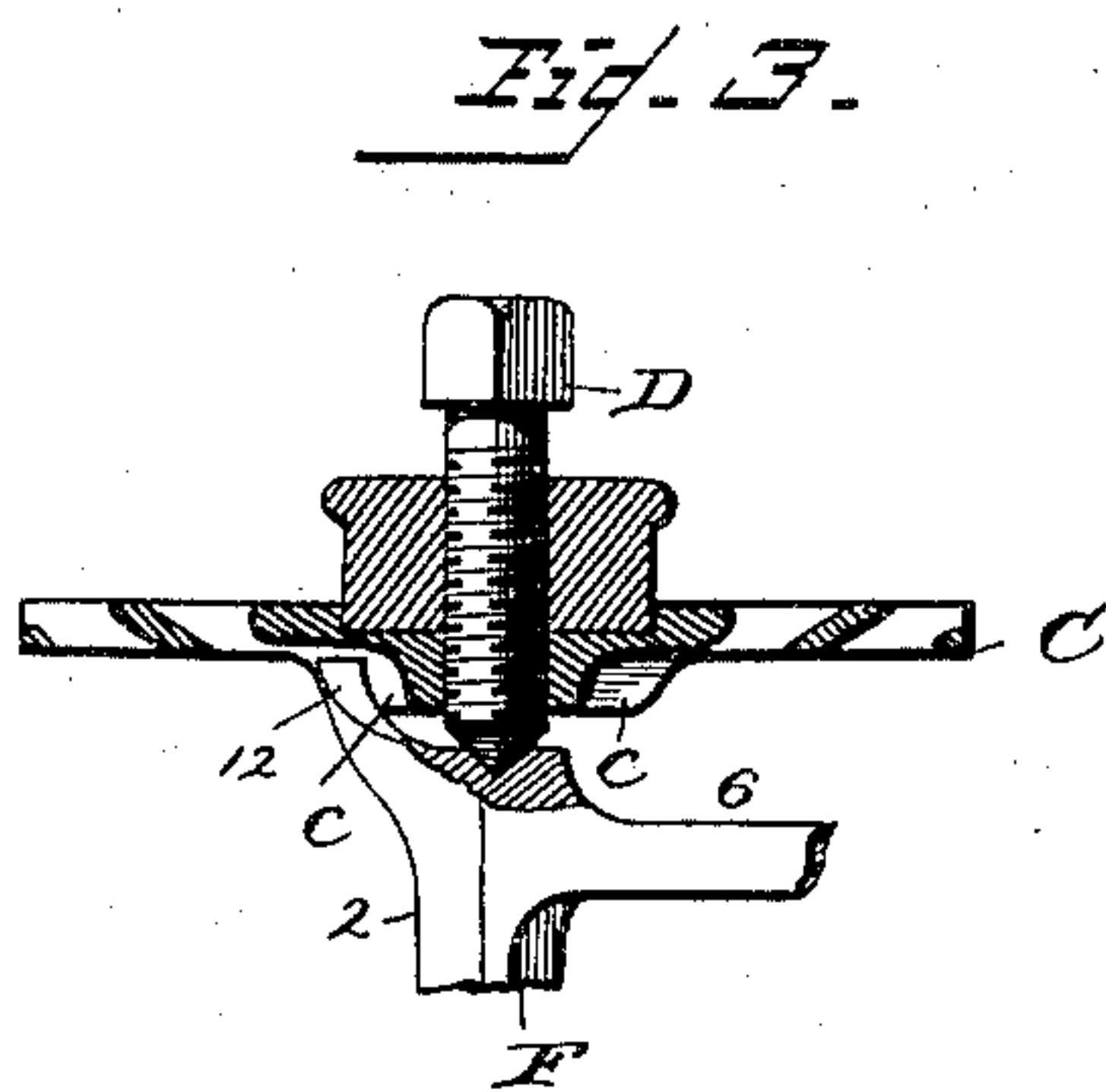
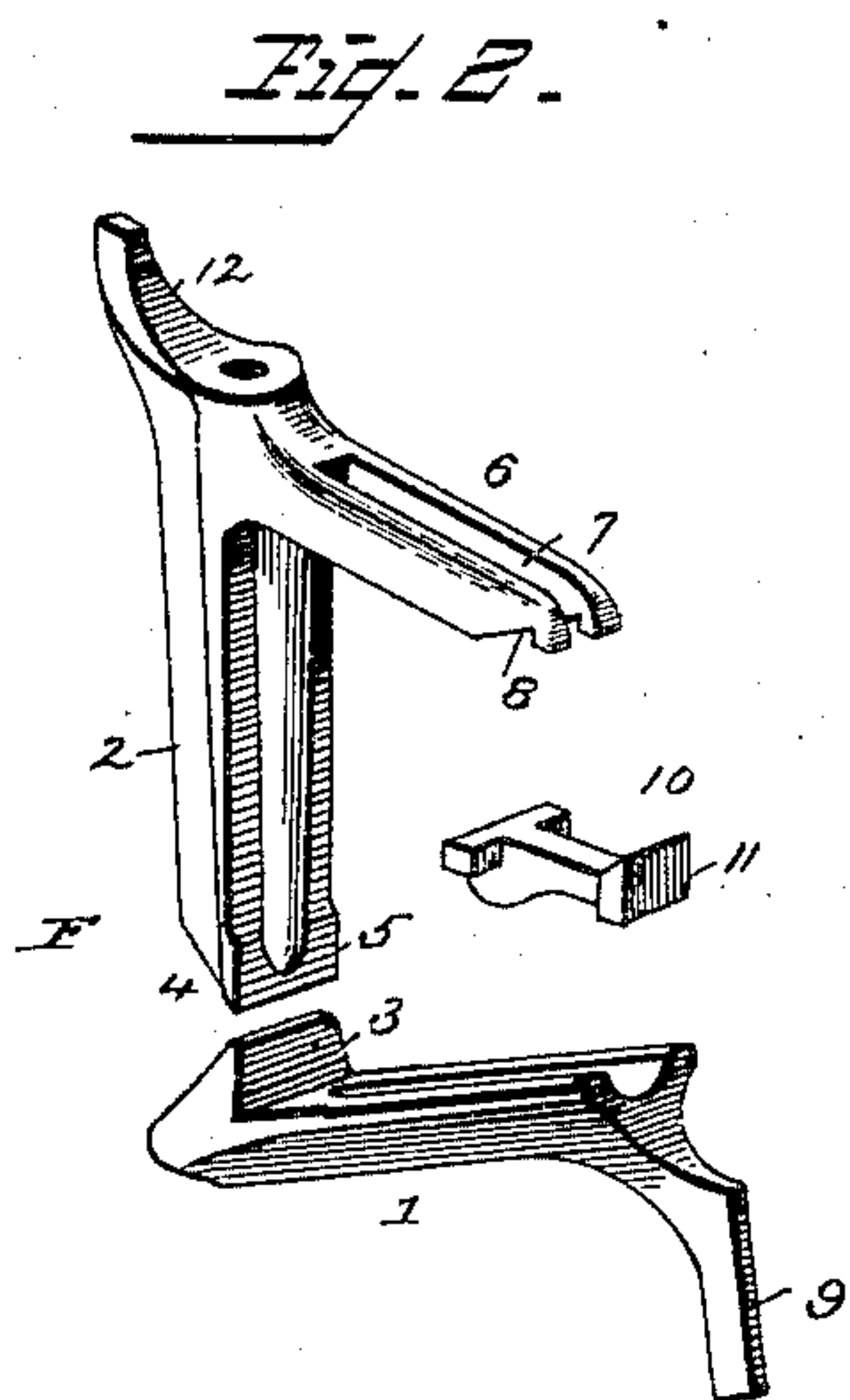
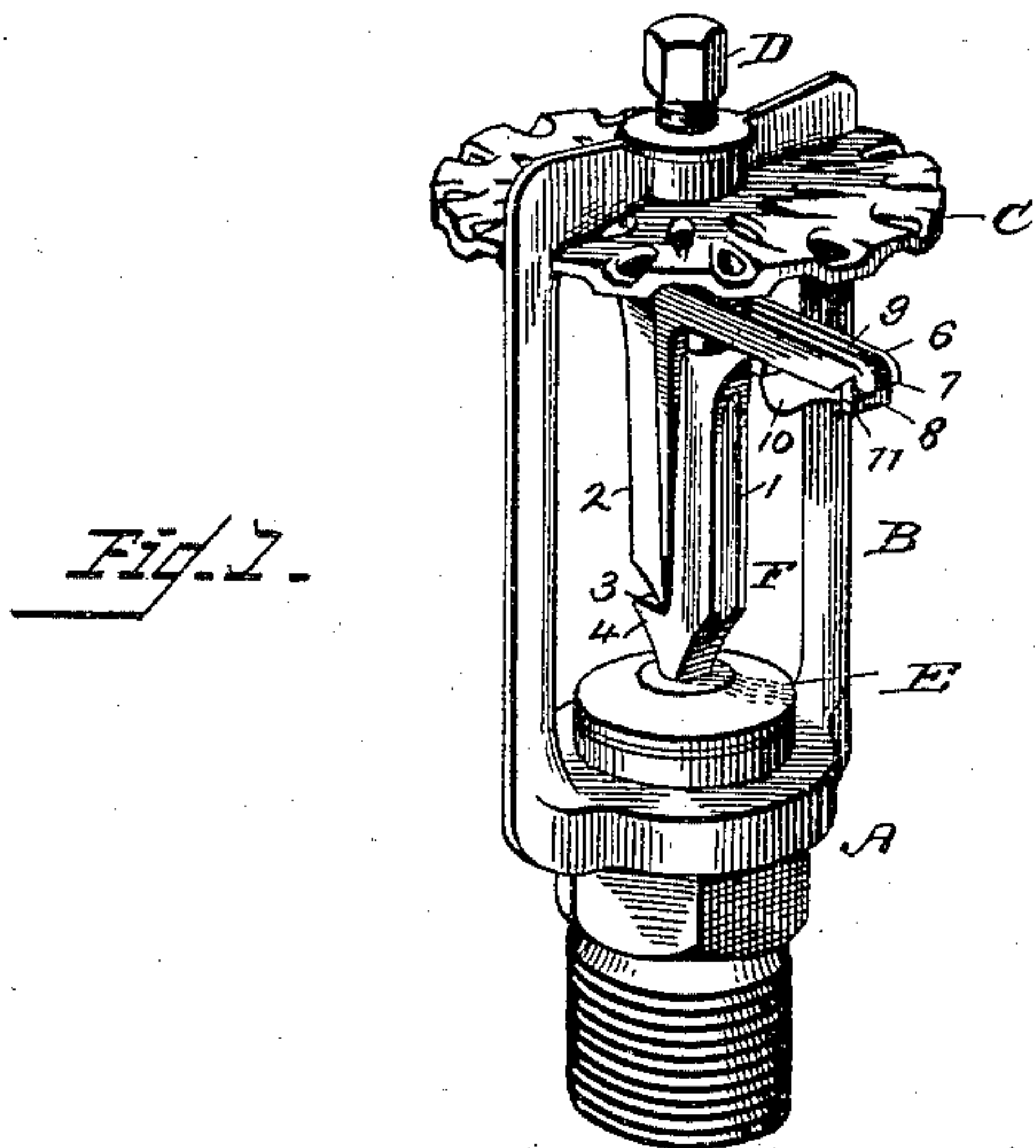


(No Model.)

V. LAPHAM.
AUTOMATIC SPRINKLER.

No. 433,477.

Patented Aug. 5, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

VALENTINE LAPHAM, OF CHICAGO, ILLINOIS.

AUTOMATIC SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 433,477, dated August 5, 1890.

Application filed August 17, 1889. Serial No. 321,068. (No model.)

To all whom it may concern:

Be it known that I, VALENTINE LAPHAM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Sprinklers; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of automatic fire-extinguishers in which a system of fixed pipes is placed in the building to be protected, and a series of automatic sprinkler-heads is placed upon these pipes for the purpose of discharging a quantity of water upon a fire which may start near one of said heads.

The object of my invention is to provide a sprinkler-head which will be certain in its action in the event of a fire, and will also be entirely free from danger of opening prematurely.

The ordinary method of constructing sprinkler-heads for the purpose named is to secure the cap which closes the pipe by means of a powerful lever which is held by soft solder. Great difficulty has been experienced in securing a form of construction which will not be in danger of premature action, because dependence has always been placed upon the solder to resist the pressure upon the long arm of the lever. Solder which is fusible at a low temperature will "creep" when under pressure, and hence is an untrustworthy agent. The purpose of my invention is to reduce to the minimum the pressure upon the fusible metal and to place the burden upon solid metal.

In the accompanying drawings, Figure 1 shows a perspective of my improved sprinkler-head. Fig. 2 shows the three parts of the link as they are separating after the fusing of the solder. Figs. 3 and 4 are details.

In my device the head A and arch B are not new.

My deflector C is fixed in the upper end of the arch B by the presser-screw D, which

passes through the crown of the arch and through the deflector.

The discharge-pipe is closed by means of the cap E, a fiber packing *e* being placed under it for greater security. This cap has the novel feature of being without external guide-lugs; but its adjustment is facilitated by a circular shoulder adapted to project within the water-pipe, the packing *e* being depressed or countersunk correspondingly, so that it becomes self-centering. In use it has been found that the outer guide-lugs are liable to prevent a complete collapse of the removable parts by becoming locked. This cap is held to its seat by means of the link F, which constitutes the essential feature of my invention, and communicates the pressure on the screw D to the cap. The link F consists of the post 1, which has a central bearing on the cap E, and post 2, which receives centrally the pressure-screw D, each of these elements being shorter than the entire link F. The post 1 is formed with a transverse ledge or step 3, extending beyond its central line near its lower end. The post 2 is beveled from one side at its lower end, as shown at 4, so as to form a transverse edge at its opposite side, (indicated by 5,) this edge being adapted to bear upon the inner side of the ledge 3, the upper portion of the post 1 lying along the side of the post 2, the contiguous surfaces conforming each to the other. It will be seen that as the bearing of the edge 5 upon the ledge 3 is off from the central line the pressure of the screw D tends to separate the two posts; but the upper end of the post 1 being relatively many times greater in height than the distance from the point of contact between 5 and 3 to the central line the leverage is very great, and a slight lateral resistance at the top of the post 1 will overcome very great vertical pressure from the screw D and cap E.

The post 2 is provided with a lateral arm 6, having a vertical slot 7 throughout its length, and a transverse groove 8 near its outer end and on its underside. That side of the groove 8 which is toward the link F is inclined. The opposite side is vertical.

The post 1 is provided at its upper end with a lateral arm 9, adapted to fit loosely within

the slot 7, and of sufficient length to reach to the inner side of the groove 8.

A trigger 10 is soldered to the under side of the arms 6 and 9, and is provided with a lug 11, conforming in shape to and fitting within the groove 8. The end of the arm 9 bears against the lug 11, which in turn bears upon the vertical side of the groove 8.

It will be seen that the pressure communicated to the link F is conveyed to the trigger 10 through the arm 9 and is met by the hard metal of the arm 6 at the vertical face of the groove 8, so that no dependence need be placed in the solder, except to sustain the trigger 10, and the device is operative if reliance is placed entirely upon the weight of this trigger to remove its resistance to the arm 9. I prefer, however, to so adjust the parts that a small portion of the pressure is borne by the solder, so that the trigger will be forced from its position when freed by the fusing of the solder. I accomplish this by removing a portion of the lower side of the outer end of the arm 6 beyond the groove 8, so that it does not cover the entire end of the arm 9. This form of construction becomes essential if the sprinkler-head extends downwardly from the pipe.

It is important that the direction of separation of the posts 1 and 2 should be at right angles, or nearly so, to the plane of the arch B, so that there may be no interference with the parts when they break away. I secure this position by forming pockets *c c* in the deflector C to receive a toe 12 on the upper end of the post 2.

By the use of the screw D for securing the deflector C, I am able to adjust the deflector without injuring any of the parts, and the sprinkler-head is rendered universal, so that it may be placed above or below the service-pipe, as the style of deflector may be readily changed.

I claim—

1. In an automatic sprinkler, the combination, with the cap, arch, and a pressure-link for securing the cap, of a trigger supported by one of the members of the link and secured thereto by a fusible material in a position to be engaged by the other member of the link, substantially as and for the purposes described.

2. In an automatic sprinkler, the combination, with the supporting arch or frame, of a fixed deflector secured thereto by a pressure-screw, a valve or cap, and an intermediate link against which said screw bears, substantially as set forth.

3. In an automatic sprinkler, the combination of a closing cap or valve having a concentric annular shoulder and having bearing on the cap, a link composed of two parts, and a trigger supported between said parts, with a supporting-frame and a pressure-regulating device, substantially as described.

4. In an automatic sprinkler, the combination, with the supporting-frame, the closing-cap, and pressure-screw, of an intermediate link comprising two main members having a common line of pressure respectively from the closing-cap and pressure-screw and having a bearing one upon the other in a plane outside of said line of pressure, each of said main members having a lateral arm, the one infolded within the other, said arms being under pressure in opposite directions, but in the same plane, and a third member interposed between suitable bearing-points in said arms and secured in place by a fusible solder, substantially as described, and for the purpose set forth.

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

VALENTINE LAPHAM.

Witnesses:

F. M. HUNTER,
S. SPENCER WARD.