

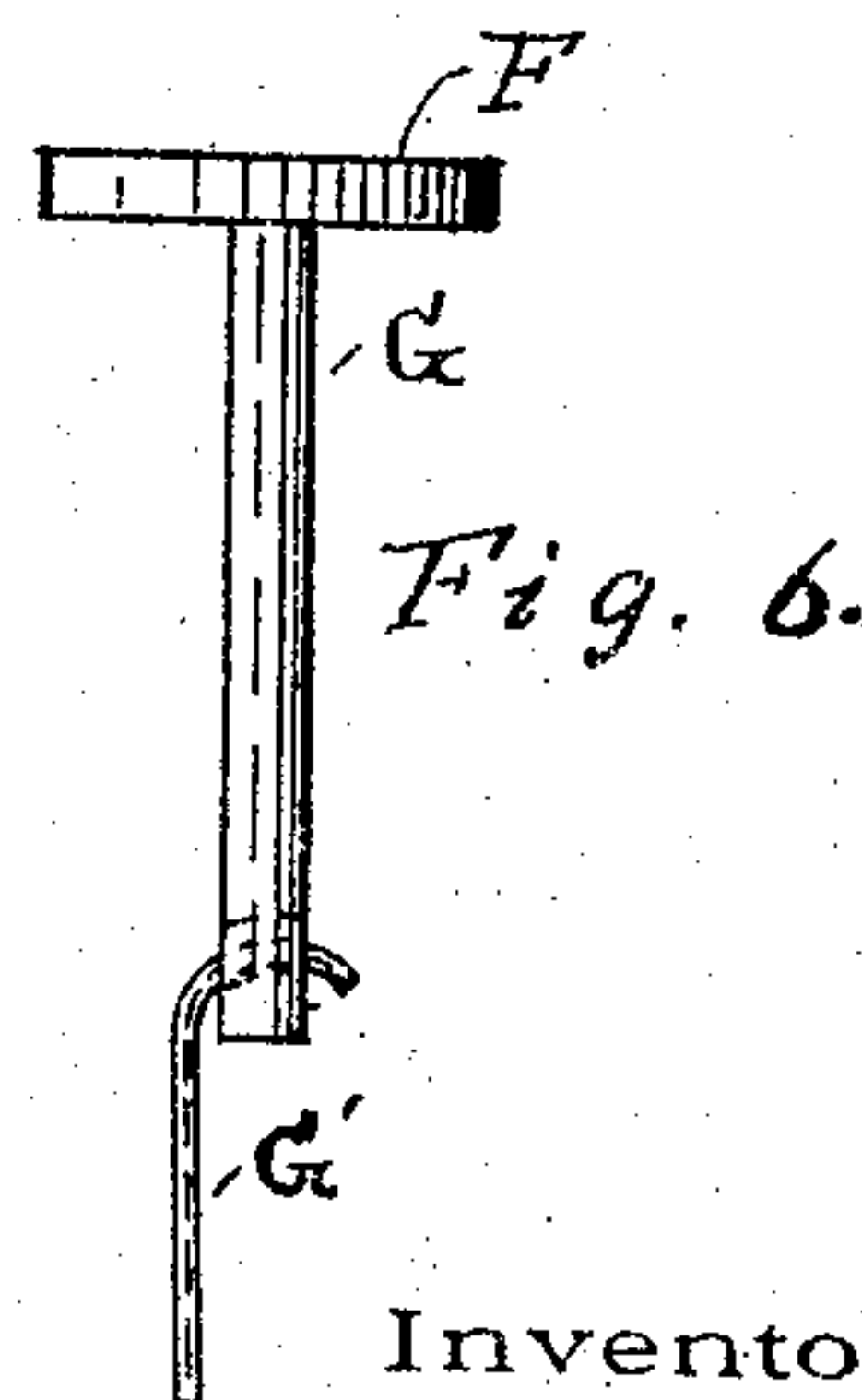
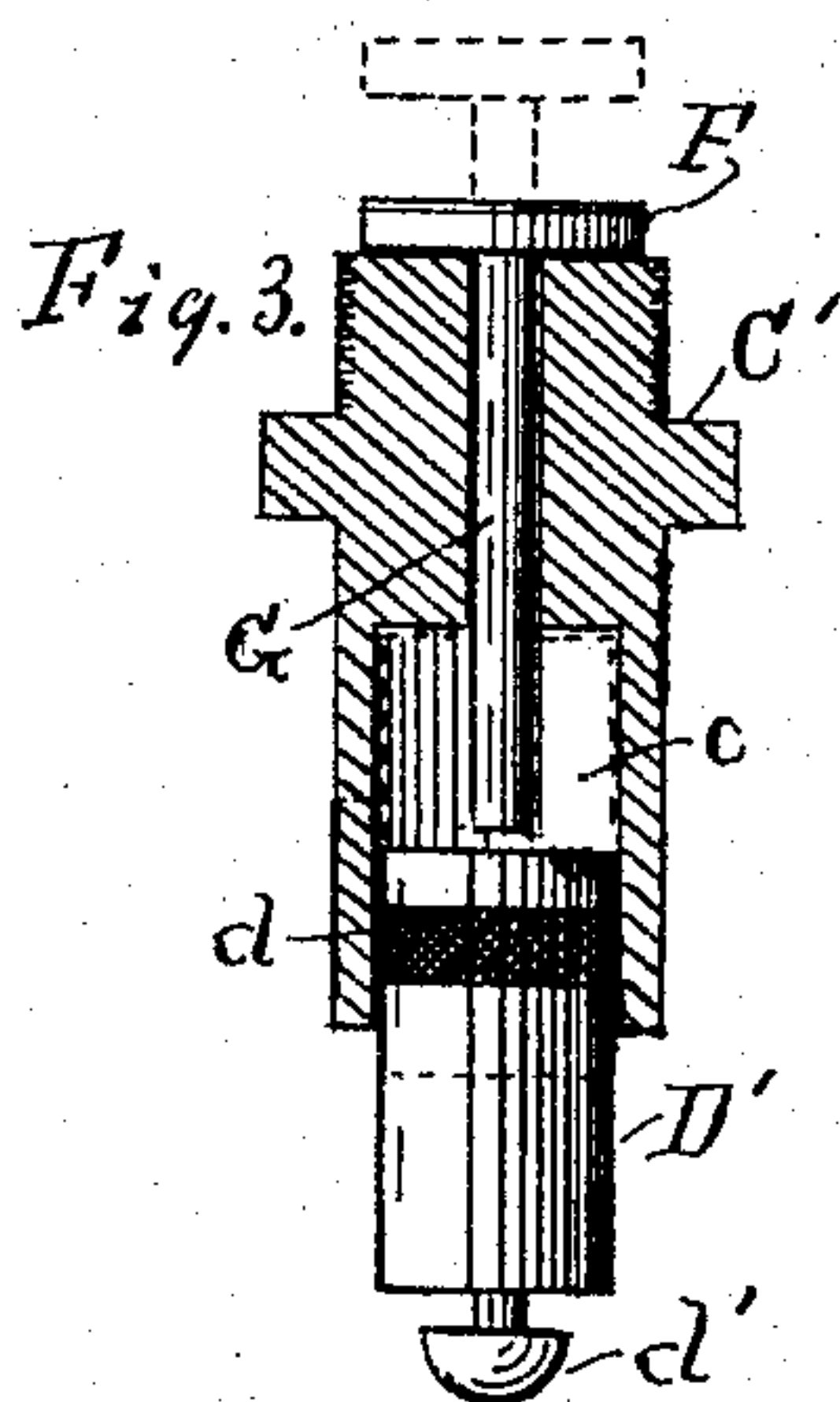
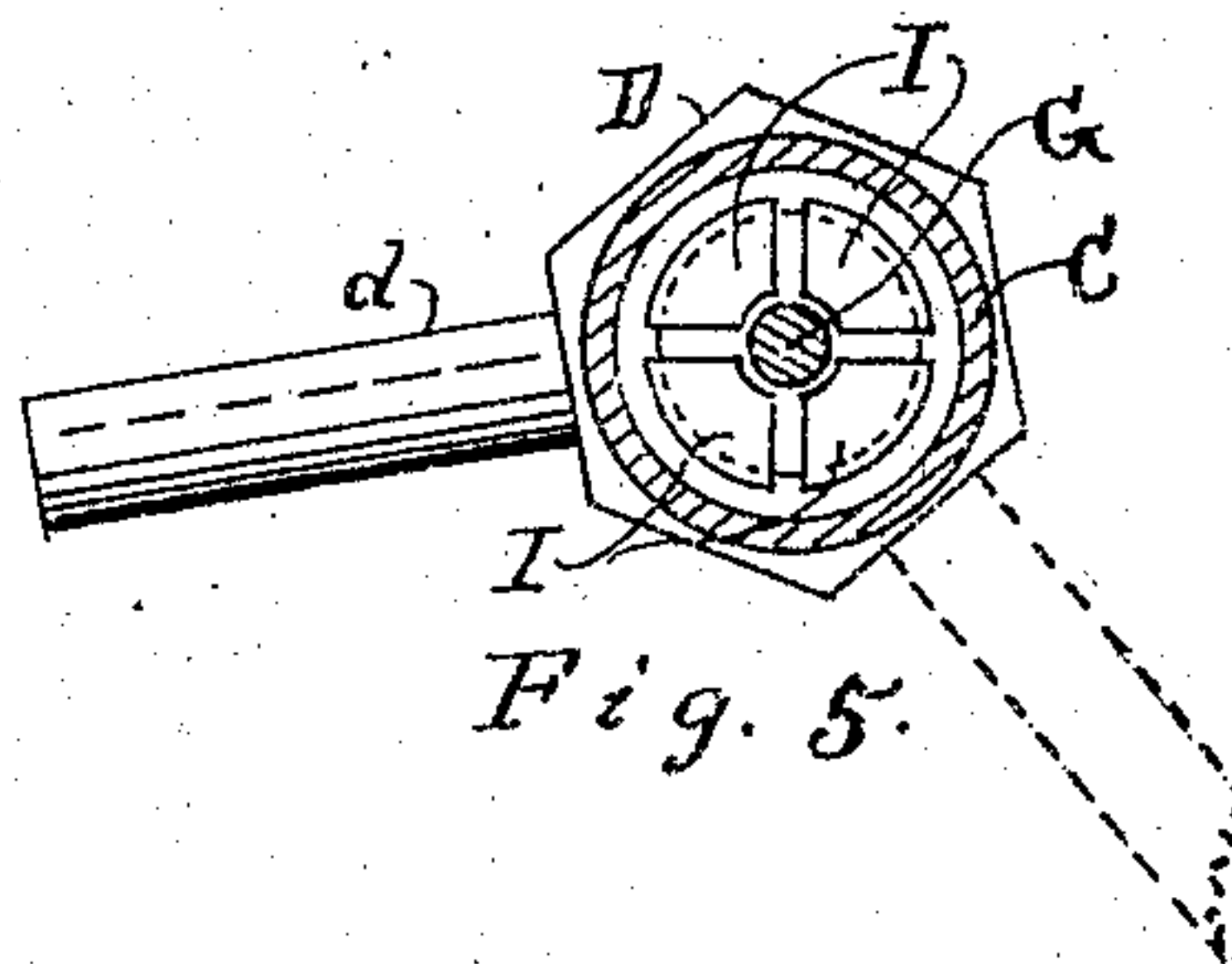
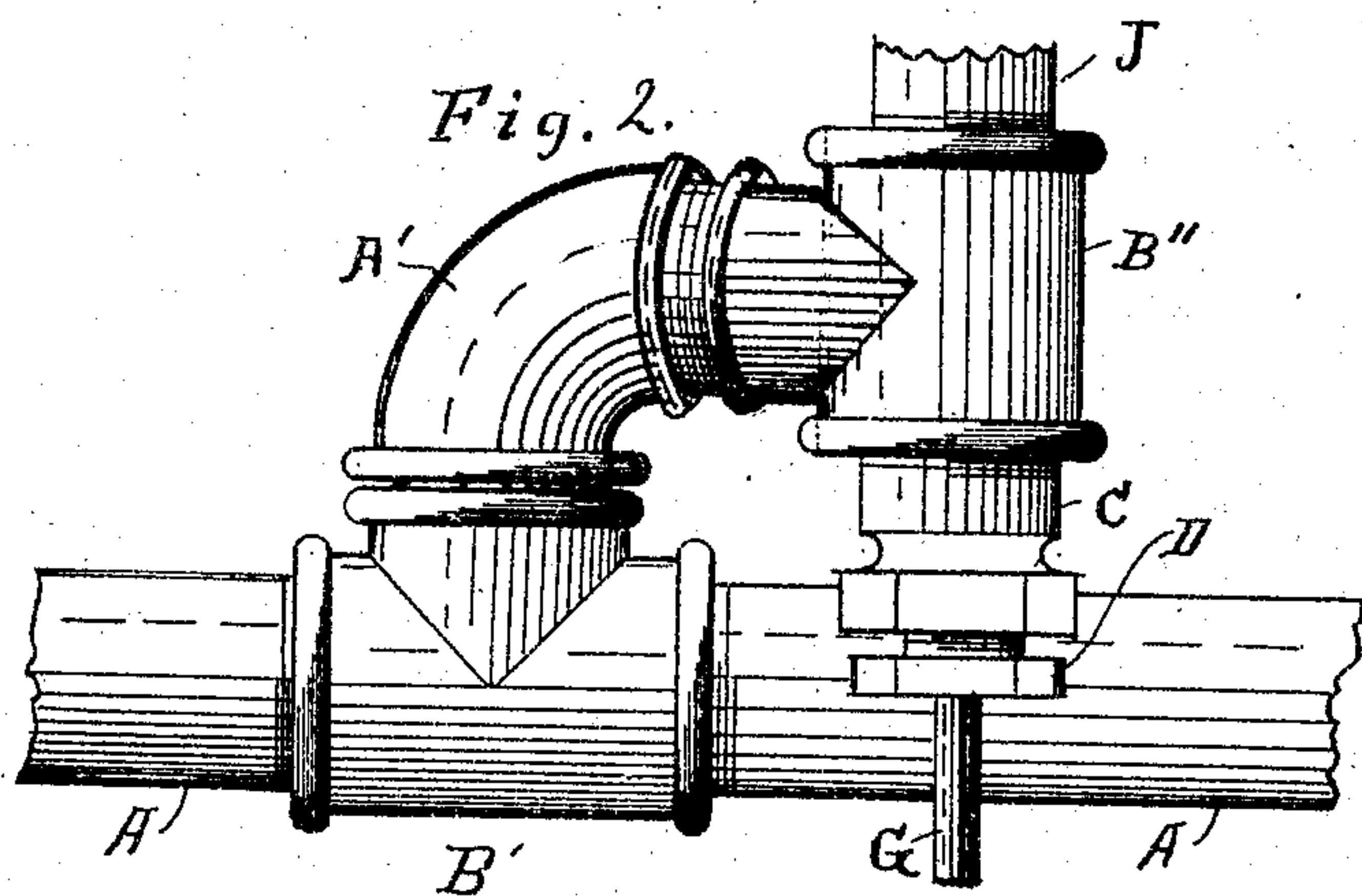
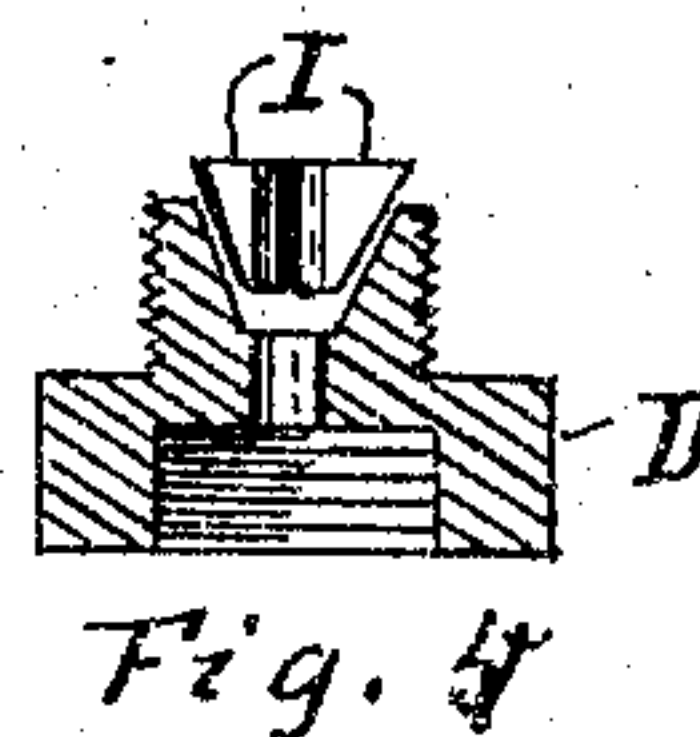
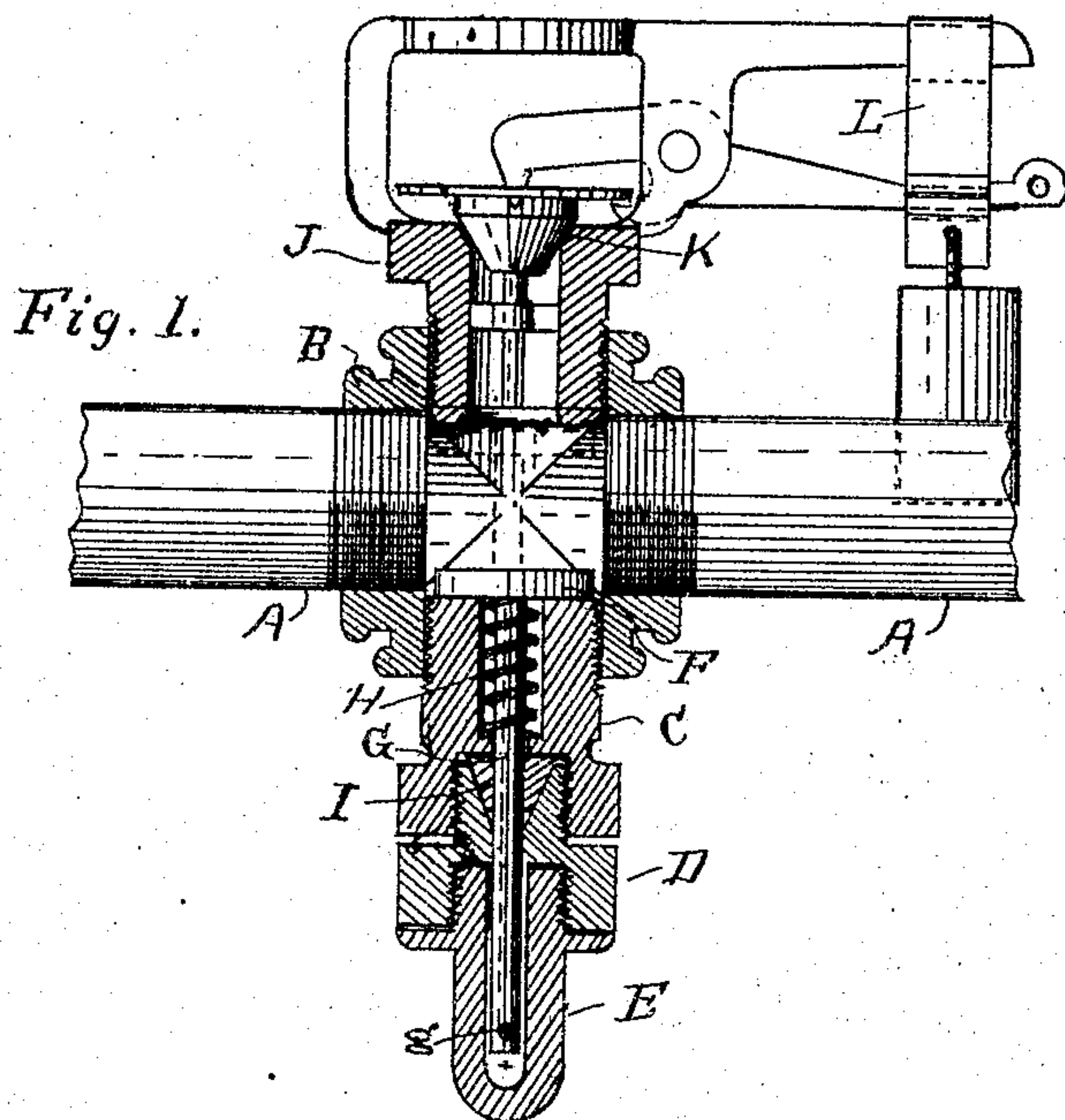
No. 780,802.

PATENTED JAN. 24, 1905.

A. D. LINN & I. J. CILLEY.

SPRINKLER HEAD FOR AUTOMATIC FIRE EXTINGUISHERS.

APPLICATION FILED AUG. 25, 1902. RENEWED MAY 12, 1904.



Witnesses.

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# UNITED STATES PATENT OFFICE.

ALLEN D. LINN AND ITHIEL J. CILLEY, OF GRAND RAPIDS, MICHIGAN.

## SPRINKLER-HEAD FOR AUTOMATIC FIRE-EXTINGUISHERS.

SPECIFICATION forming part of Letters Patent No. 780,802, dated January 24, 1905.

Application filed August 25, 1902. Renewed May 12, 1904. Serial No. 207,693.

*To all whom it may concern:*

Be it known that we, ALLEN D. LINN and ITHIEL J. CILLEY, citizens of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Sprinkler-Heads for Automatic Fire-Extinguishers, of which the following is a specification.

Our invention relates to improvements in the sprinkler-heads for use upon automatic fire-extinguishers disclosed in our application Serial No. 207,692; and its object is to provide a ready, convenient, and positive means of stopping the flow of water through the sprinkler-head when desired and to so construct the valve for shutting off the water that it may be used with any sprinkler-head and may be applied either to new piping or to an old system. We attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a sprinkler-head shown in its normal position in a line of piping and with a sectional elevation of our shut-off in position. Fig. 2 shows the shut-off attached to an old system of piping. Fig. 3 is a modified form of the several parts of our shut-off. Fig. 4 is a sectional detached view of the clamping device. Fig. 5 is a sectional plan of the valve-stem, barrel, and clamping device; and Fig. 6 is an elevation of the valve and stem, showing how a hook may be utilized for drawing the valve to place when desired or necessary.

Similar letters refer to similar parts through the several views.

A represents a line of piping in an automatic sprinkling system, and B represents a cross in said line for the reception of the sprinkler-head and the shut-off mechanism.

Our shut-off consists, primarily, of the base C, which is screwed into the cross B below the sprinkler-head J, and is designed to form a seat and support for the valve F, the stem G of which projects some distance below the lower end of the base. The base is chambered for the reception of the spring H, which is so arranged and designed that it will force the valve F upward toward and against the lower end of the sprinkler-head J when the

valve-stem is released. When the spring is used, it is necessary to provide a means for holding the valve F upon its seat at the upper end of the base C, and for this purpose we find the most available means to consist of a clamp consisting of a divided cone I, seated around the valve-stem G, as in Figs. 1 and 5, in a conical bearing in the end of the plug D in such a manner that when the plug is screwed to place in the base C it will force the several segments of the conical clamp I firmly against the sides of the valve-stem and hold it firmly in place. This arrangement is perhaps more clearly illustrated in Fig. 5, where *d* represents a handle or wrench for manipulating the plug D and represents the plug in position to allow the cone-segments I to disengage from the valve-stem, so that it is free to allow the valve to rise from its seat on the base C, and when it is desired to clamp the valve-stem in place the handle is carried around to the position of the dotted lines, which screws the plug into the base and forces the cone-segments against the stem, as hereinbefore suggested.

E represents a cap that is screwed into the plug D for the purpose, first, of rendering the whole structure water-tight, and, second, to protect the valve-stem from danger of being bent or otherwise injured by reason of a sudden or accidental sidewise contact with a hard substance, as stock being carried about the factory by careless operatives.

Fig. 1 of the drawings illustrates a line of piping installed expressly for the use of this shut-off. Ordinarily the sprinkler-head is placed upon an ordinary T-coupling, such as is shown at B' in Fig. 2. In the latter case it is necessary to wholly replace the entire system with crosses, as B, or to devise some means whereby the sprinkler-head may be removed from the T and a connection made whereby the old construction may be utilized, and for this purpose we provided for the use of a second T, B'', so attached by the use of an elbow A' or otherwise that the shut-off and the sprinkler-head may be brought in proper alinement for the practical operation of the shut-off, as hereinbefore indicated and as particularly shown in Fig. 2, though, if desired,



the elbow may be dispensed with and the auxiliary T, B'', with the sprinkler-head and shut-off, placed parallel with the main piping, though this is rarely necessary, as in instances  
 5 where the system is so close to the ceiling that there is no room for placing the sprinkler-head and shut-off vertical, as in Fig. 2.

In Fig. 2 we have shown the shut-off with the cap E removed. In well-protected places  
 10 this may be done to good advantage, as in case of extreme necessity the valve could be driven into place by striking the end of the stem a sharp blow with a hammer; but ordinarily it would be very undesirable, for the rea-  
 15 sons hereinbefore stated.

g represents a small hole through the valve-stem designed for the insertion of the hook G' (see Fig. 6) for the purpose of drawing the valve F into place when the valve of the  
 20 sprinkler-head has been replaced and it is desired to rearrange the sprinkler system.

In Fig. 3, C' represents a modified form of base for the support of the valve and its stem, and D' is simply a plain plug inserted into the  
 25 chamber c of the base in position so that a sharp blow from below will drive the plug against the end of the valve-stem and the valve up, as indicated by the dotted lines, thus  
 30 close the sprinkler-head. This form has several very desirable advantages, among which are cheapness of construction, perfect protection of the valve-stem from danger of being bent or injured by contact with outside objects,  
 35 the ready manipulation of the valve by the stroke of a hammer, and that, too, without danger of injury to the valve-stem, and the easy and ready means of providing a water-tight joint, which may be accomplished by the use of any  
 40 available gasket or packing around the plug, as indicated at d. With this construction the valve-stem should fit the aperture through the base close enough so that water will not pass through to the chamber readily, as too great  
 45 pressure against the end of the plug might force it out and cause inconvenience, though ordinarily it would be safe in this respect.

In this view d' represents a knob by means of which the plug may be drawn out of the chamber c.

K is the sprinkler-head valve, and L is a fusible link for freeing the valve by the application of heat.

Having thus fully described our invention, what we claim as new, and desire to secure by  
 55 Letters Patent of the United States, is—

1. In combination with the sprinkler-head of an automatic fire-extinguisher, a base placed in alinement with the sprinkler-head, a valve seated upon the end of said base, a valve-stem  
 60 passing from the valve longitudinally through the base, a plug entering the outer end of the base, and a clamp around the valve-stem and operated by the plug, substantially as described and shown.

2. In combination with the sprinkler-head of an automatic fire-extinguisher system, a base, a valve seated on said base, and valve-stem supported by said base directly below and in alinement with the sprinkler-head, and  
 70 a plug entering the outer end of the base directly below the end of the valve-stem and forming a water-tight joint with the base, substantially as and for the purpose set forth.

3. In combination with the sprinkler-head  
 75 of an automatic fire-extinguisher system, a base placed in alinement with the sprinkler-head, a valve seated upon the end of said base and a valve-stem passing longitudinally through the base, an actuating-spring around  
 80 the valve-stem within the base, a plug entering the outer end of the base contiguous to the valve-stem, a clamp contiguous to the valve-stem and actuated by the plug, and a protecting-cap, substantially as and for the  
 85 purpose set forth.

Signed at Grand Rapids, Michigan, July 11, 1902.

ALLEN D. LINN.  
 ITHIEL J. CILLEY.

In presence of—  
 NELLIE CILLEY,  
 LOUIE CILLEY.