

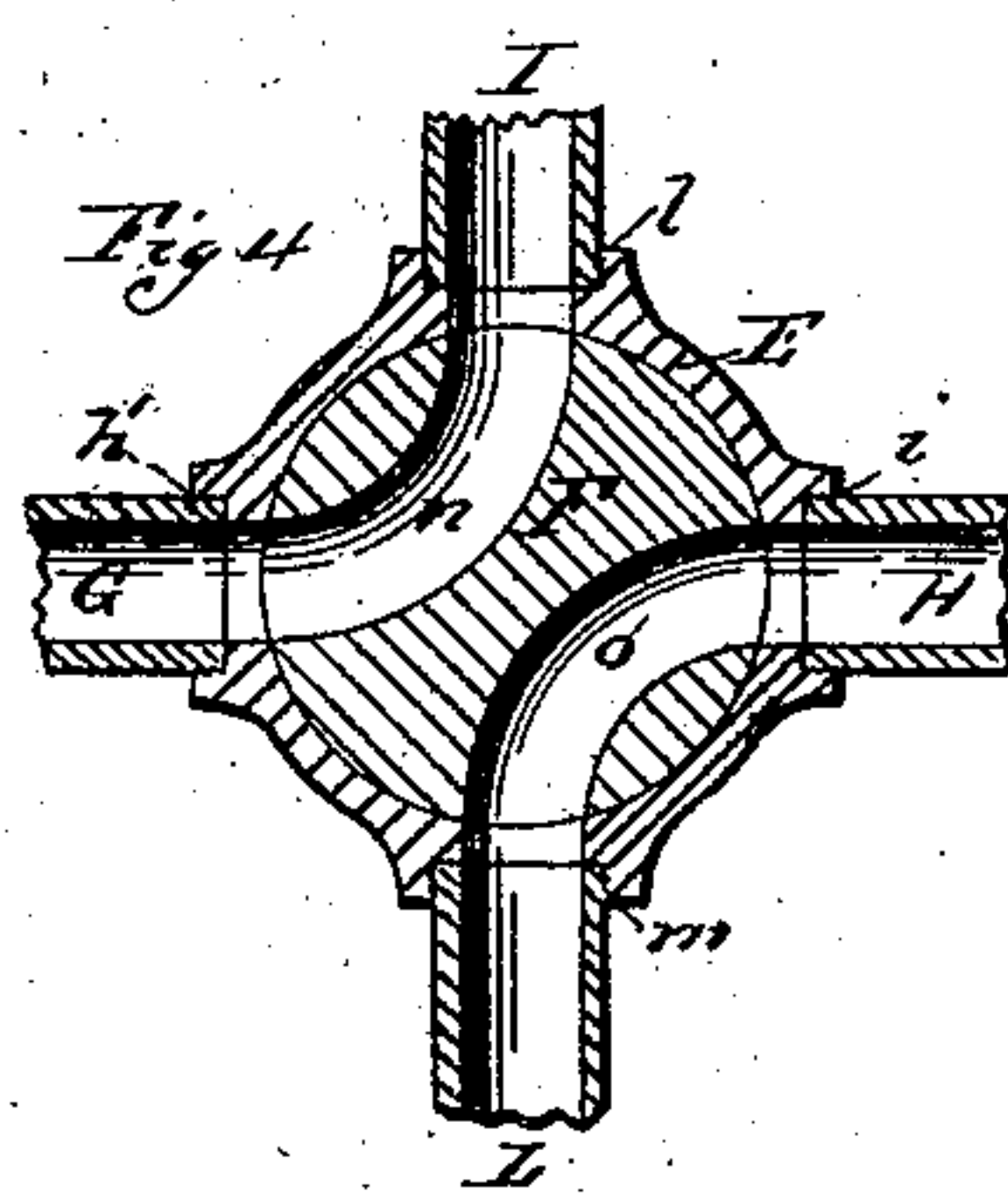
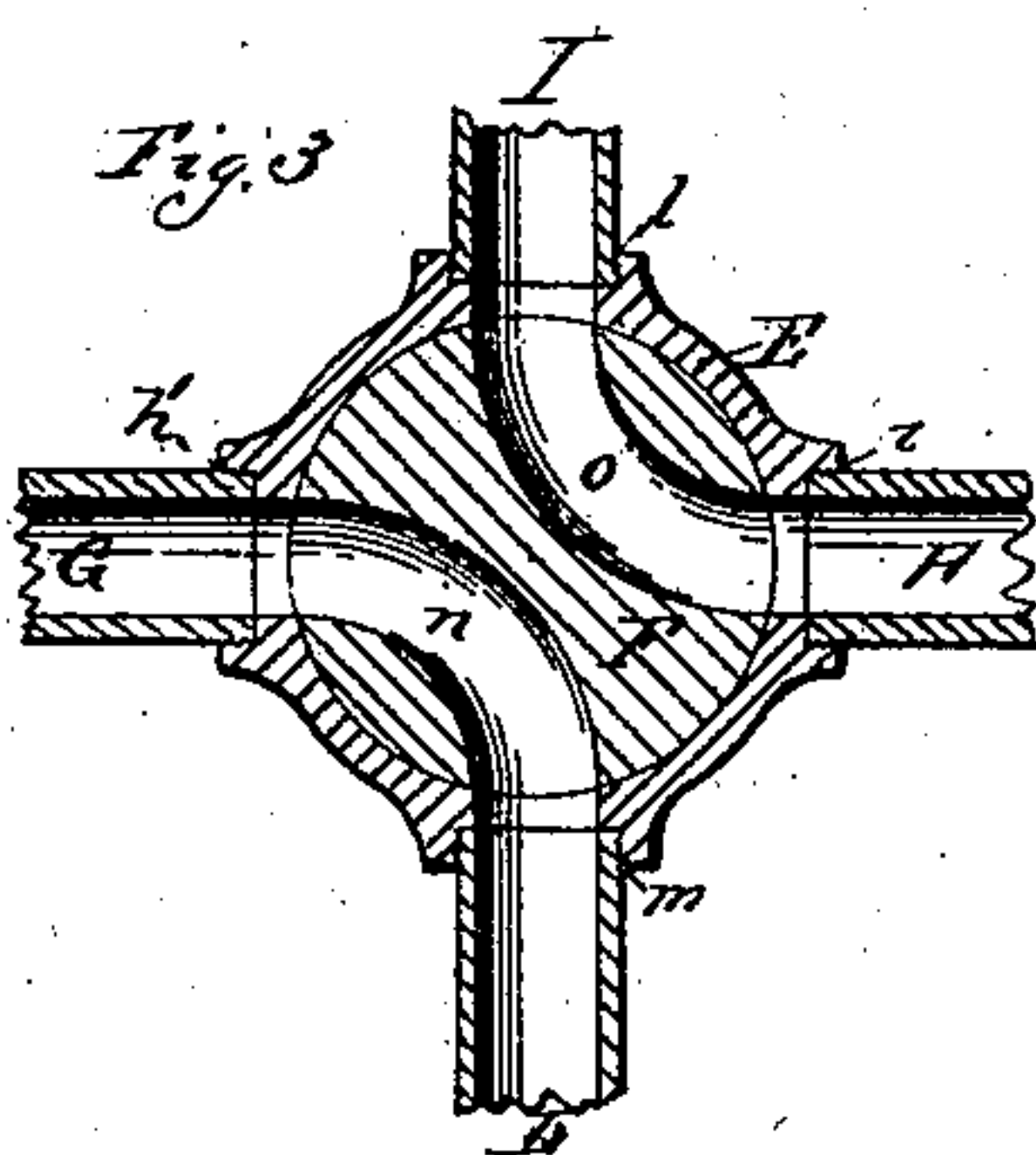
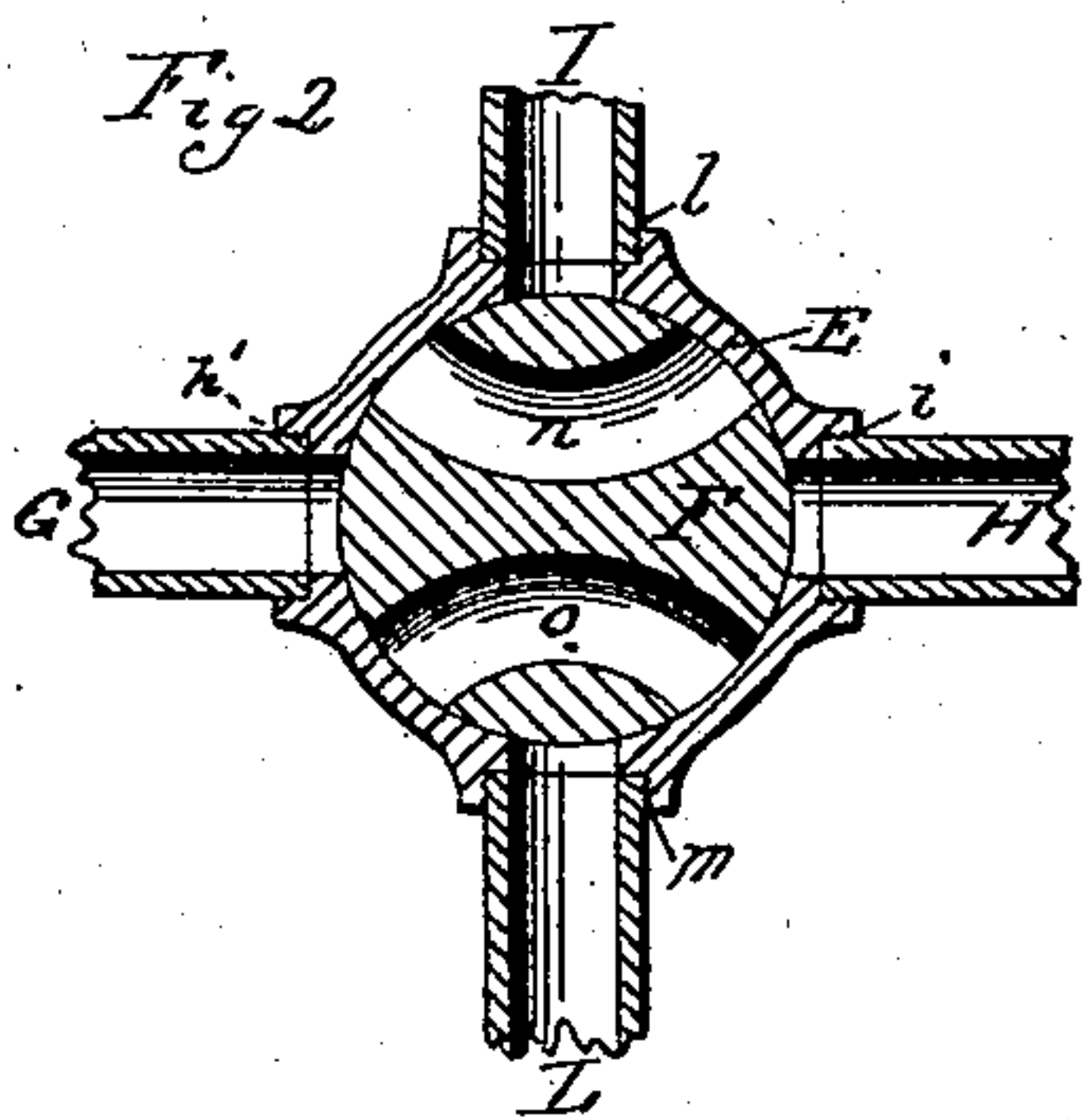
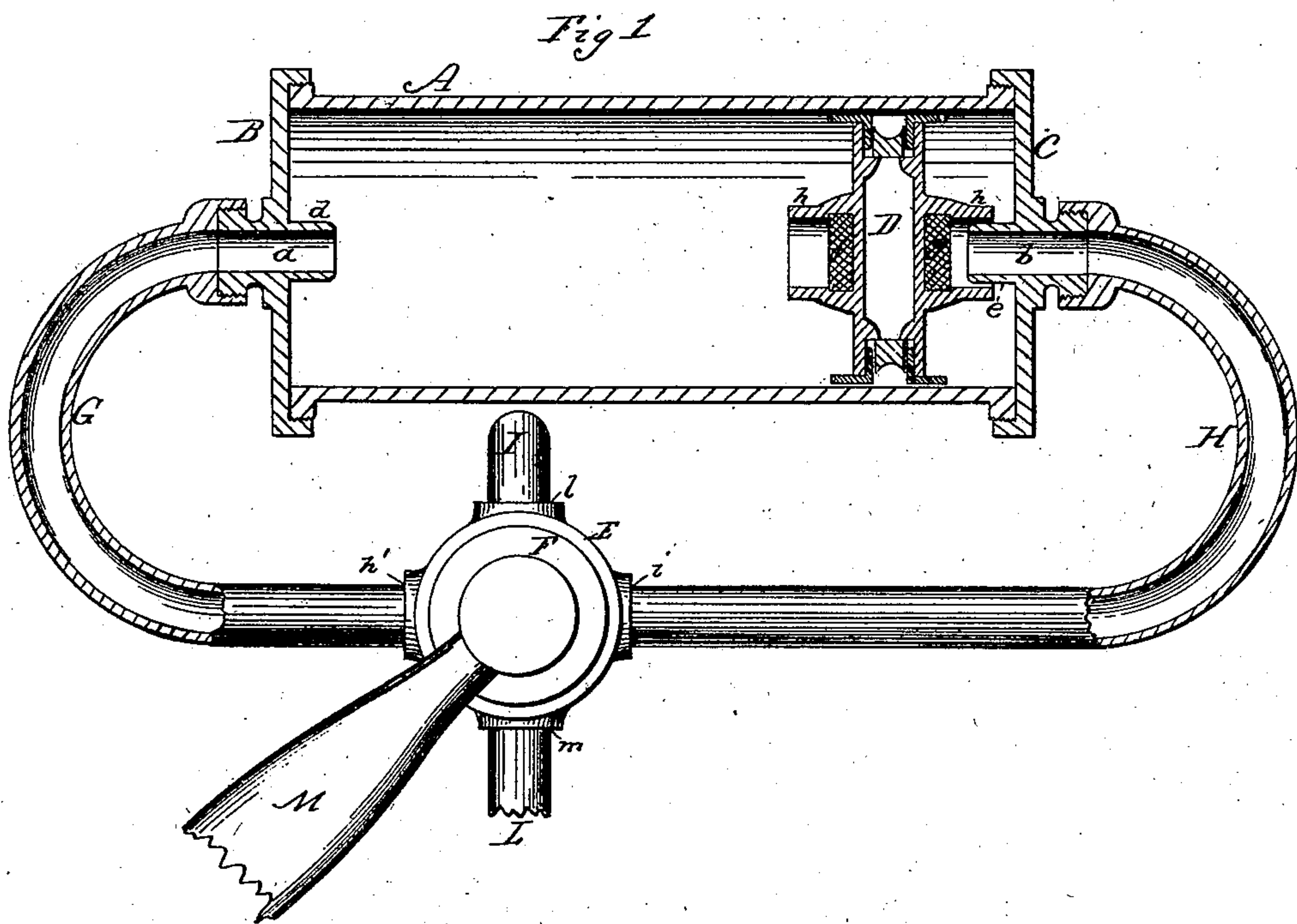
(No Model.)

H. S. LORD.

ATTACHMENT FOR WATER SUPPLY COCKS.

No. 312,872.

Patented Feb. 24, 1885.



Witness
L. S. Earle
L. C. Brooker.

Henry S. Lord
Inventor
By Atty
J. M. Earle.

UNITED STATES PATENT OFFICE.

HENRY S. LORD, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE HARTFORD GLASS WATER CLOSET COMPANY, OF SAME PLACE.

ATTACHMENT FOR WATER-SUPPLY COCKS.

SPECIFICATION forming part of Letters Patent No. 312,872, dated February 24, 1885.

Application filed August 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. LORD, of Hartford, in the county of Hartford and State of Connecticut, have invented a new Improvement in Attachments for Water-Supply Cocks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a longitudinal section; Figs. 2, 3, and 4, sections through the cock, showing the different positions of the plug in the working of the apparatus.

This invention relates to a valve arrangement for the supply of water to wash-basins, closets, and other purposes.

In the use of common faucets serious difficulties arise from leaving the valve open to permit a continuous flow of water. Not only does this cause injury to buildings, but a serious waste of water, it being a common practice to leave the faucets open in freezing weather. Attempts to overcome this difficulty have been made by providing self-closing faucets; but this does not accomplish the object, from the fact that it is an easy matter to apply some device to hold the faucet open.

The object of my invention is an apparatus whereby only a certain quantity of water can pass through the faucet without some personal attendance; and the invention consists in a cylinder having a free piston arranged therein to traverse from end to end, with an opening at each end of the cylinder to the respective sides of the piston, combined with a two-way cock, with a communication leading from two of its openings to the respective sides of the piston, the other two having the one the inlet and the other the outlet, the plug of the cock arranged to turn the supply first to one side of the piston and then to the other, and when turned in one direction for the supply will open to the opposite direction for the escape of water from the reverse side of the piston, the said piston provided with a cushion upon its opposite faces to come to an easy

bearing within the cylinder as the piston approaches the respective ends of its stroke, and as more fully hereinafter described.

A represents the cylinder, its ends closed by heads B C. In the head B is an opening, *a*, and in the head C a like opening, *b*. Around the opening *a* is a tubular projection, *d*, extending into the cylinder, and around the opening *b* is a like tubular extension, *e*.

D is the piston, fitted to move freely in the cylinder from end to end. Centrally on one side of the piston is a cushion, *f*. This may be of any flexible or elastic material. On the reverse side, and in the center, is a like cushion, *g*. These cushions stand in line with the tubular extensions *d e* in the respective heads of the cylinder. Around the respective cushions is a tubular projection, *h*, the internal diameter of which is larger than the external diameter of the tubular extensions *d e*, and also somewhat shorter than the said extensions *d e*.

E is the shell of a two-way cock, F being the plug. From the opening *a* in one end of the cylinder a pipe, G, leads to one opening, *h'*, in the shell E. From the opposite opening, *b*, in the cylinder, a like pipe, H, leads to an opening, *i*, diametrically opposite the opening *h'*. At right angles to the openings *h' i* in the shell are two openings, *l* and *m*, diametrically opposite each other, and so that said openings *h' i l m* are equidistant from each other. Through the plug two passages, *n o*, are made, one opening from the two quarter-points and the other from two opposite quarter-points, in the usual manner for a two-way cock. The inlet-pipe I leads to the passage *l*, L being the outlet from the opening *m*.

The plug F of the cock is arranged to be turned in the usual manner—say by a lever, M. The distance on the periphery of the plug of the cock between the openings of the passages *n o* is greater than the openings *h' i l m*, so that when the plug stands with the openings to the passages *n o* between the openings in the shell, as seen in Fig. 2, there is no communication through the openings in the plug. This is the normal condition of the apparatus. Suppose, now, that water be required through the outlet L, and that the cylin-

der upon the left-hand side of the piston is filled with water. Now, if the plug F be turned to the position seen in Fig. 3, so that the passage *o* registers with the opening *i l*, and the passage *n* with the openings *h' m*, water will flow from the pipe I through the pipe H and opening *b* into the right-hand end of the cylinder and against the piston and under pressure will force the piston toward the opposite end of the cylinder, causing the water therein to flow through the pipe G and the passage *n* to the outlet so long as the valve stands in that condition, or until all the water on the left-hand side of the piston shall have passed from the cylinder. Then the piston will come to a rest on the projection *d*, the cushion taking a bearing thereon, and so that, notwithstanding the fact that the passages through the plug register with the passages to and from the cylinder, no further flow of water can be produced while the plug stands in that condition. Now, suppose the plug to be turned to the position seen in Fig. 4, where the passage *n* registers with the openings *l h'*, and the passage *o* registers with the openings *i m*. The direction of the flow of water is reversed, and the water from the pipe I will flow through the pipe G and opening *a* to that side of the piston, causing pressure thereon to drive the water which had before passed into the cylinder out through the opening *b* and pipe H to the outlet, and will so continue until the piston arrives at the opposite end and takes its seat upon the projection *e*; and there comes to a rest, and so may continue, the plug being turned first to one direction and then to the other. Water may continue to be drawn; but if the cock remain open until the piston has traversed to the end of the cylinder opposite that from which the inflow comes, at that time the flow will be arrested, irrespective of the position of the plug of the cock; hence it is impossible to draw at a single opening anything beyond the contents of the cylinder upon that side of the piston from which the draft is made.

The cushion on the cylinder, combined with the internal projections on the heads of the cylinder, permits the piston to come to an easy bearing at the respective ends of the cylinder, under the pressure of water, so that if the pressure be very great there will be no thumping when the piston comes to a stand, the

cushions yielding sufficient to prevent its instantaneous or positive arrest.

It is not material that the piston shall traverse from one end to the other in order to make the discharge, for, suppose the water to be cut off when the piston stands midway of the cylinder, then the water may be drawn from either end; but no more can be drawn at one turning of the plug than happens to be in the cylinder on that side of the piston from which the draft is made.

The tubular flange *h* around the cushion being of less extent than the length of the tubular projections into the cylinder permits the respective cushions to yield until the flange shall strike the head of the piston, and when so resting the cushion is relieved from further strain or compression.

I claim—

1. The combination of the cylinder A, having an opening, *a*, at one end and *b* at the opposite end, each of the openings constructed with an internal tubular projection, the piston D, provided with a cushion upon its opposite faces corresponding, respectively, to the internal projections on the heads of the cylinder, and so as to seat thereon in the arrest of the piston, at the extreme of its stroke, a two-way cock with passages from the openings *a* and *b* thereto, and with an inlet, I, and outlet L to said cock, whereby the inflow may be turned to either end of the cylinder, at the same time opening an exit from the opposite end, substantially as described.

2. The combination of the cylinder A, having a central opening, *a*, at one end and *b* at the opposite end, the tubular projection extending into the cylinder around each of said openings, the piston D, provided with a cushion upon opposite sides corresponding to said tubular extension, and the piston constructed with a tubular flange, *h*, around said cushion, less in length than the said tubular extension, a two-way cock with a passage leading thereto from the respective ends of the cylinder, and an inlet and an outlet to and from said cock, substantially as described.

HENRY S. LORD.

Witnesses:

JOHN E. EARLE,

LILLIAN D. KELSEY.