

No. 659,644.

Patented Oct. 16, 1900.

W. BRADLEY.

CONSTRUCTION OF HIGH PRESSURE WATER TAPS.

(Application filed Apr. 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

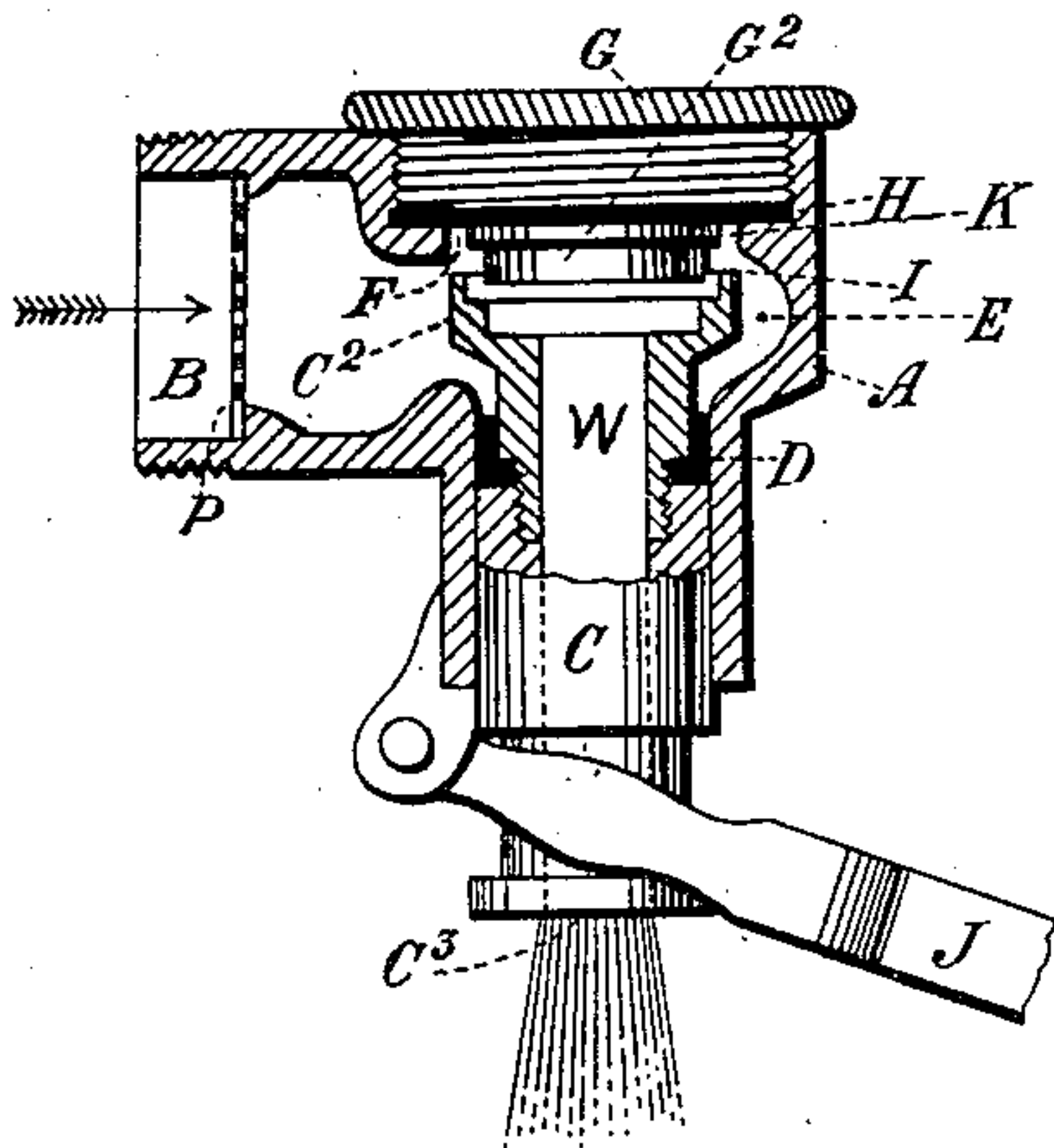
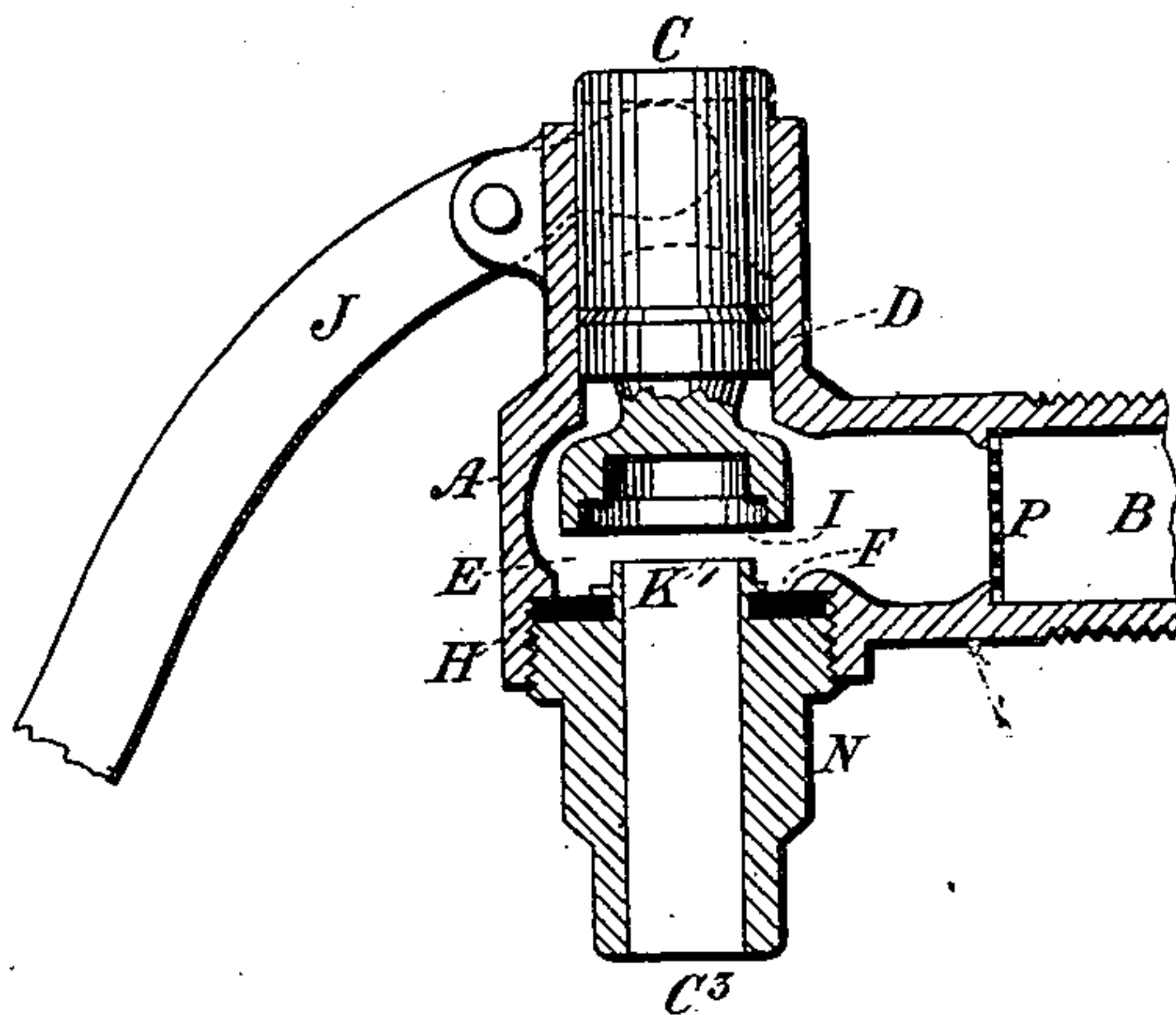


Fig. 2



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Fig. 3

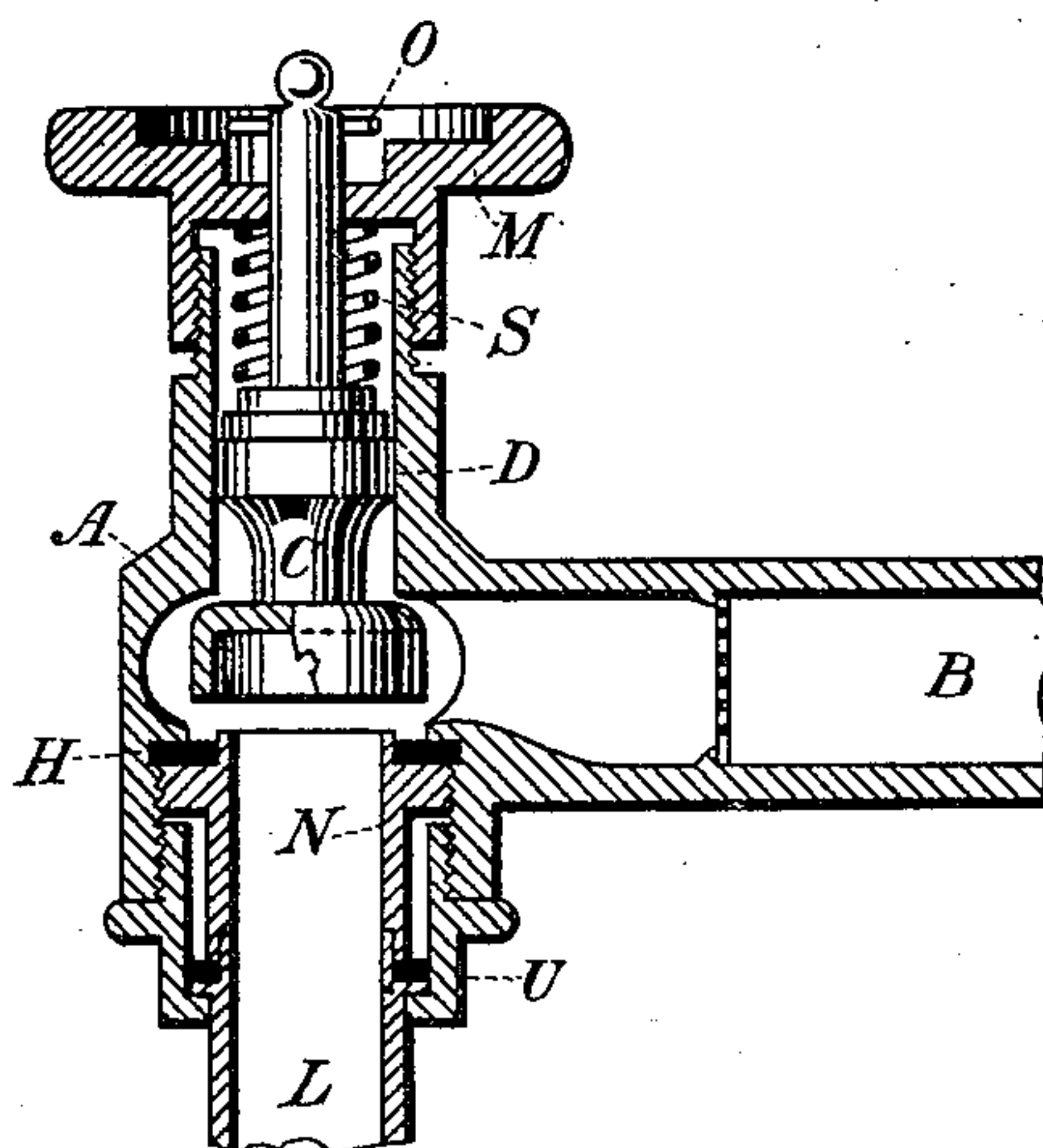
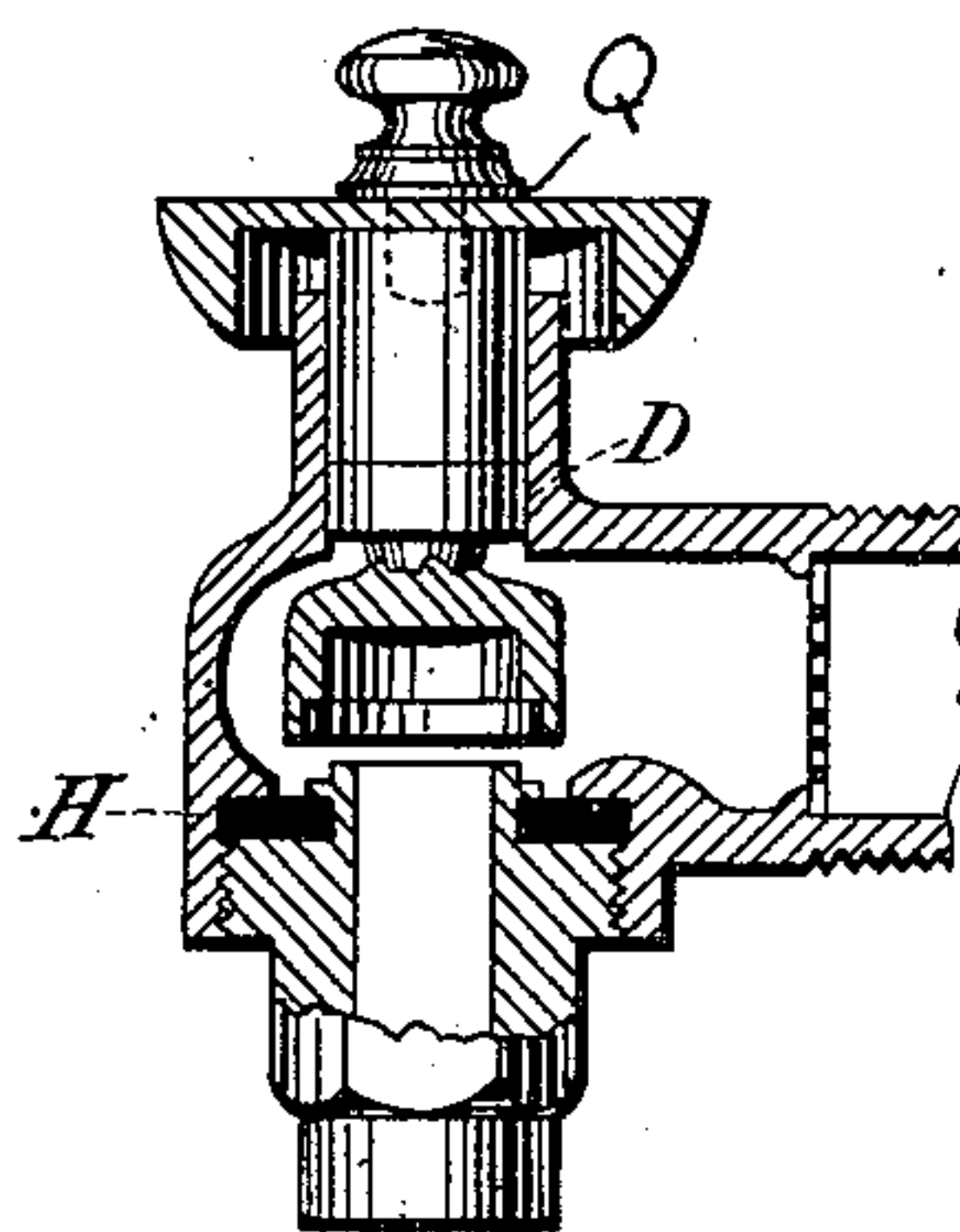


Fig. 4



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UNITED STATES PATENT OFFICE.

WILLIAM BRADLEY, OF SHEFFIELD, ENGLAND.

CONSTRUCTION OF HIGH-PRESSURE WATER-TAPS.

SPECIFICATION forming part of Letters Patent No. 659,644, dated October 16, 1900.

Application filed April 19, 1899. Serial No. 713,675. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BRADLEY, a subject of the Queen of Great Britain, residing at Sheffield, in the county of York, England, have invented Improvements in the Construction of High-Pressure Water-Taps, of which the following is a specification.

My invention relates to the construction of high-pressure water-taps, the object being to construct a tap which is able to shut off water at high pressure and practically without concussion, also without pulsation of the moving parts, and which is assisted both in opening and closing by the pressure of the water.

The invention is applicable to ball-taps, bib-taps, stop-taps, and the like, and the accompanying drawings clearly illustrate how the invention may be carried into practice in each case.

Like letters of reference indicate like parts in any of the figures in which they occur.

Figure 1 is an elevation, partly in section, of a ball-tap made according to my invention; Fig. 2, a similar view of a ball-tap with the valve reversed in position; Fig. 3, a screw-down tap constructed to act as a stop-tap according to my invention; Fig. 4, my invention applied to a bib-tap as an example only.

In the application of my invention to ball-taps the outlet may be made either through the valve itself or the valve may be reversed and the outlet be made through the seating.

In the ball-tap shown in Fig. 1, the outlet being through the valve, I make the front part of the body A vertical and at a right angle with the inlet-passage B, the lower portion of the front part forming a cylinder to receive the cylindrical part of the valve C, with its cup-leather D. The cylindrical part C of the valve is smaller in area than the head I of the valve and larger than the outlet C³. Above the cylinder is an annular chamber E, opposite the inlet-passage B, to permit water to flow freely around the head I of the valve C, which is located in this chamber. Above the chamber E is a circular opening F, surrounded by a flange and communicating with a screw-threaded recess, into which is screwed a cap G, provided with a seating H in the form of a washer, and preferably of rubber or leather, which is held by the cap firmly against the upper face of the before-men-

tioned flange. The central portion G² of the cap G, which is of smaller diameter, projects beyond the seating H into the annular chamber, leaving a circular opening F for the front edge of the valve-face C² to pass through and reach the seating H. The valve-seating is secured to the cap by passing it over a thin collar K, which holds it in position when the cap is removed. The projection G³ is of smaller diameter than the bore of the cylinder in which the valve C slides. The valve is made with a waterway W through its longitudinal center, its upper edge C² being the valve-face and its lower end C³ being the outlet. It is preferably made in two parts which are screwed together for the purpose of holding a cup-leather D, which fits the cylinder and bears against the shoulder on the lower part of the valve. The head of the valve is increased in diameter, and its face is recessed in two diameters, the larger one to allow the edge to pass over the collar K and bed upon the seating H and the inner recess to fit more closely over the projection G² when the valve is being closed by the action of the float-lever J. As the valve is closing the projection G² enters the recessed face of the valve, and when it reaches the edge of the smaller recess the flow of water passing through the narrow space to the outlet becomes so attenuated that the resisting forces, due in one direction to the water forcing its way to the outlet (tending to keep the valve open) and in the other direction to its action upon the larger area of the valve-head, (tending to close the valve,) eventually reach a point of equilibrium, and then the equilibrium being overcome by the increased pressure of the float the valve is instantly closed without concussion and is held closed by the pressure of the water. Sufficient play is allowed between the end of the float-lever and the valve to permit the valve to be closed automatically by the action of the water alone. When water is withdrawn from the cistern, the float, with its lever, falls, and when it has overcome the resistance of the water-pressure and opened the valve beyond the point of equilibrium the valve is forced open to its full extent by the water automatically.

According to the second arrangement (shown in Fig. 2) the valve C is reversed in

position and is made solid, the outlet being made through the nozzle N, the upwardly-projecting edge K' being the substitute for the projection G² of the former tap, (shown in Fig. 1,) the construction of the valve-face being the same. A perforated grating P may be used with advantage to prevent the entry into the tap of foreign substances.

In Fig. 3 the invention is illustrated as applied to a screw-down tap combined with a stop-tap. For this purpose I lengthen the lower part of the body, into which the outlet-nozzle N is screwed, so as to leave a recess with a screw-threaded interior below the nozzle, into which recess I screw a union-plug U, with a union-pipe L, constructed to make a joint with the end of the nozzle N. This junction can be used with other taps. This union can be connected or disconnected and a soldered joint made to a lead pipe at any time when the valve is closed. The screw M travels upon the screwed part of the body A and forces down the valve C through the medium of an interposed spiral spring S, and when turned in the opposite direction it raises it by means of a cross-pin O. The action of the valve is similar to those before described.

In the simple arrangement of a bib-tap (shown in Fig. 4) the construction of the valve and its parts is the same as in the others; but in this tap the valve is raised and lowered by hand, the cap Q being of any convenient configuration, or any other suitable attachment,

such as a short lever or cam, may be substituted for the cap Q, if desired.

In taps having a valve and its coacting parts constructed according to my invention, as hereinbefore described, the recoil of the water when the valve is closed cannot reopen it, and pulsation of the valve is therefore impossible.

Having thus described my invention with the manner in which it may be carried into practice, what I wish to claim is—

1. A tap in which is comprised a valve sliding in a cylinder, the head of the valve being of larger area than that of the said cylinder, and the cylinder being of larger area than the outlet, the valve-face having a recess and the edge of the recess made to fit closely over a projecting part at the valve-seat before finally closing as described and shown.

2. A tap comprising a body or casing having an inlet for the water located at a right angle or thereabout to the valve, a valve having its stem provided with a hydraulic cup-leather, the valve-face having a recess to fit closely over an annular projection in the casing before its outer edge reaches the valve-seat, substantially as described and shown.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM BRADLEY.

Witnesses:

GEO. H. SHIRLEY ROLLISON,
ENSOR D. DEWEY.