

(No Model)

R. N. PRATT.
PLUG COCK.

No. 583,122.

Patented May 25, 1897.

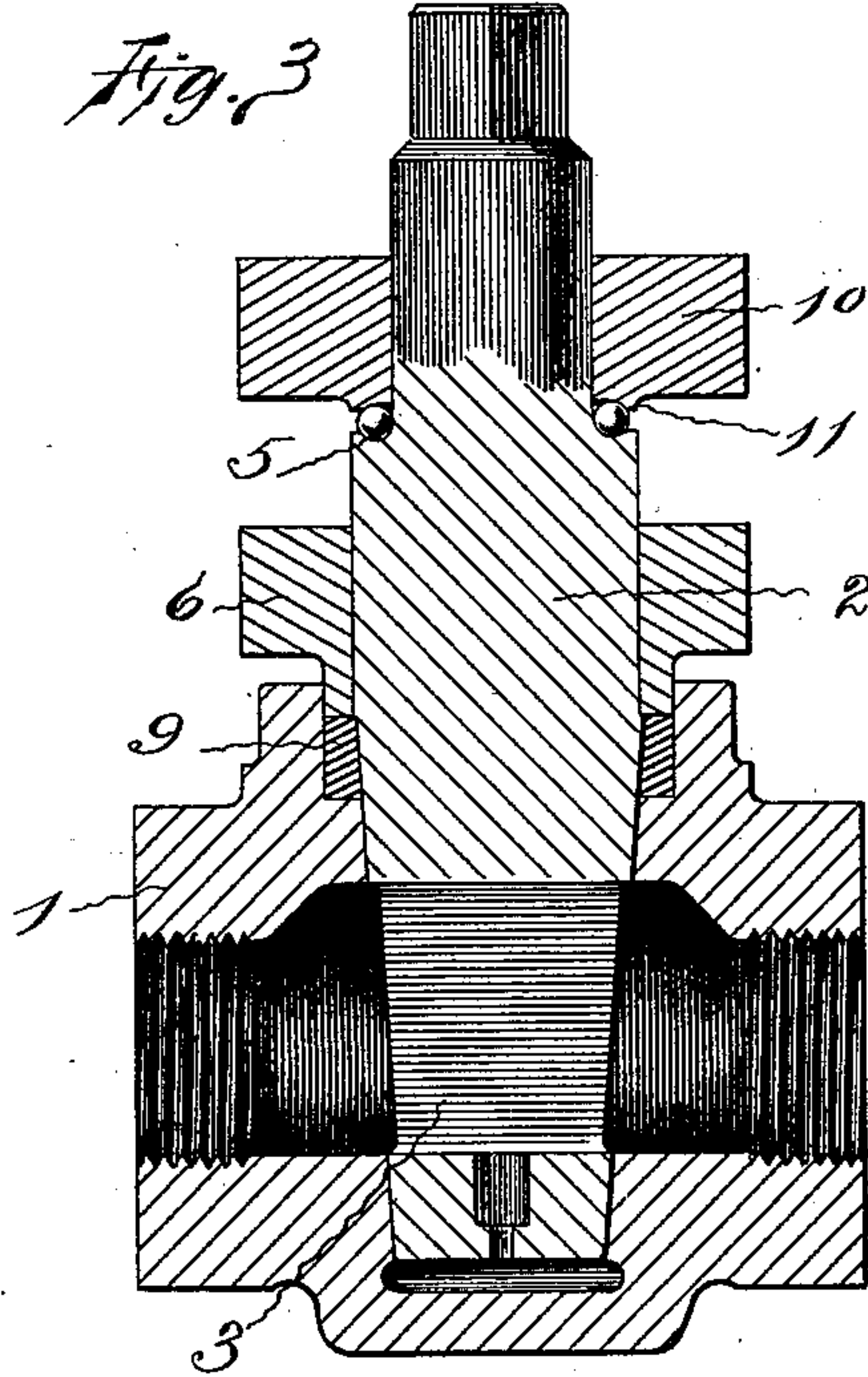
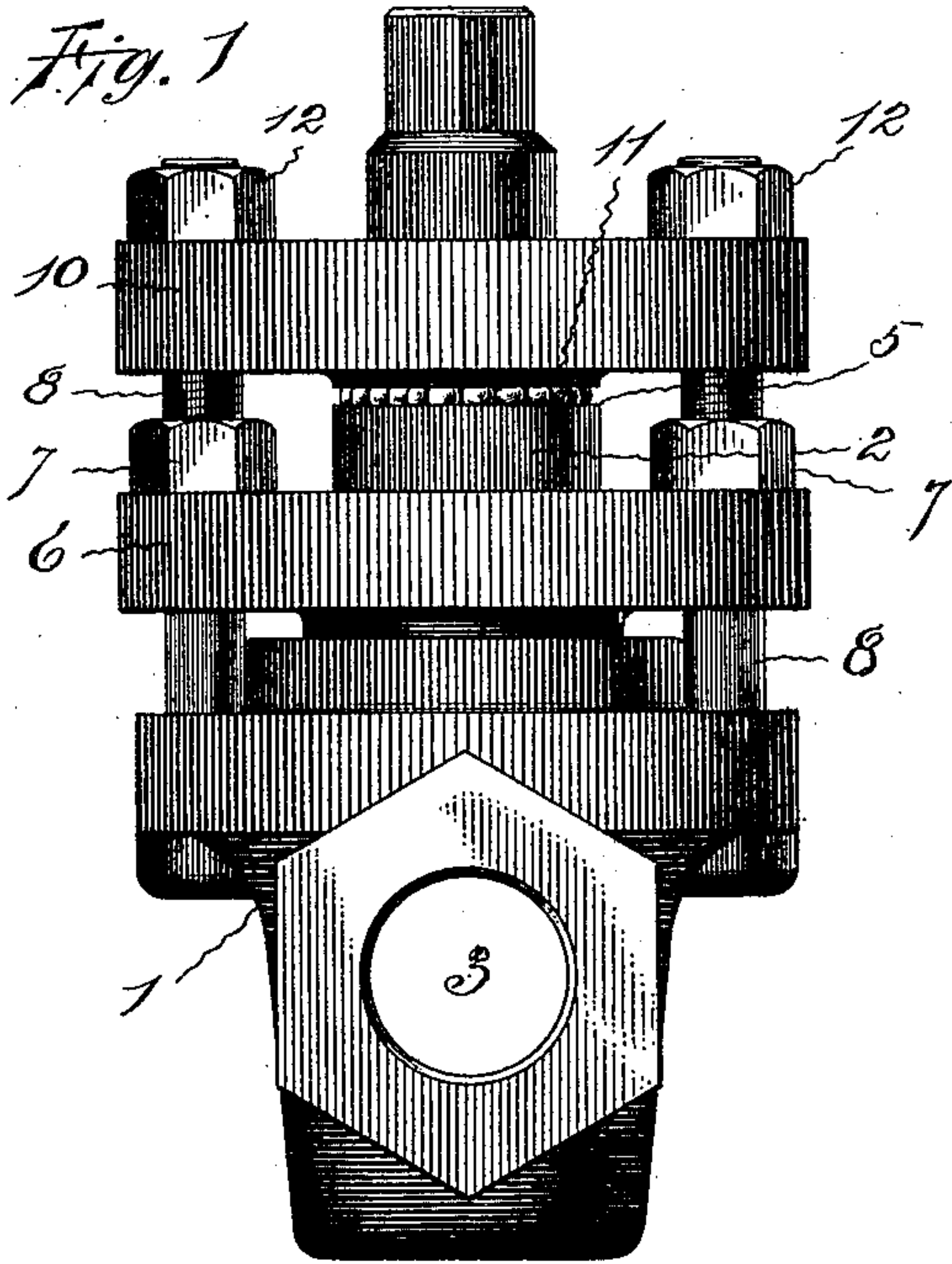
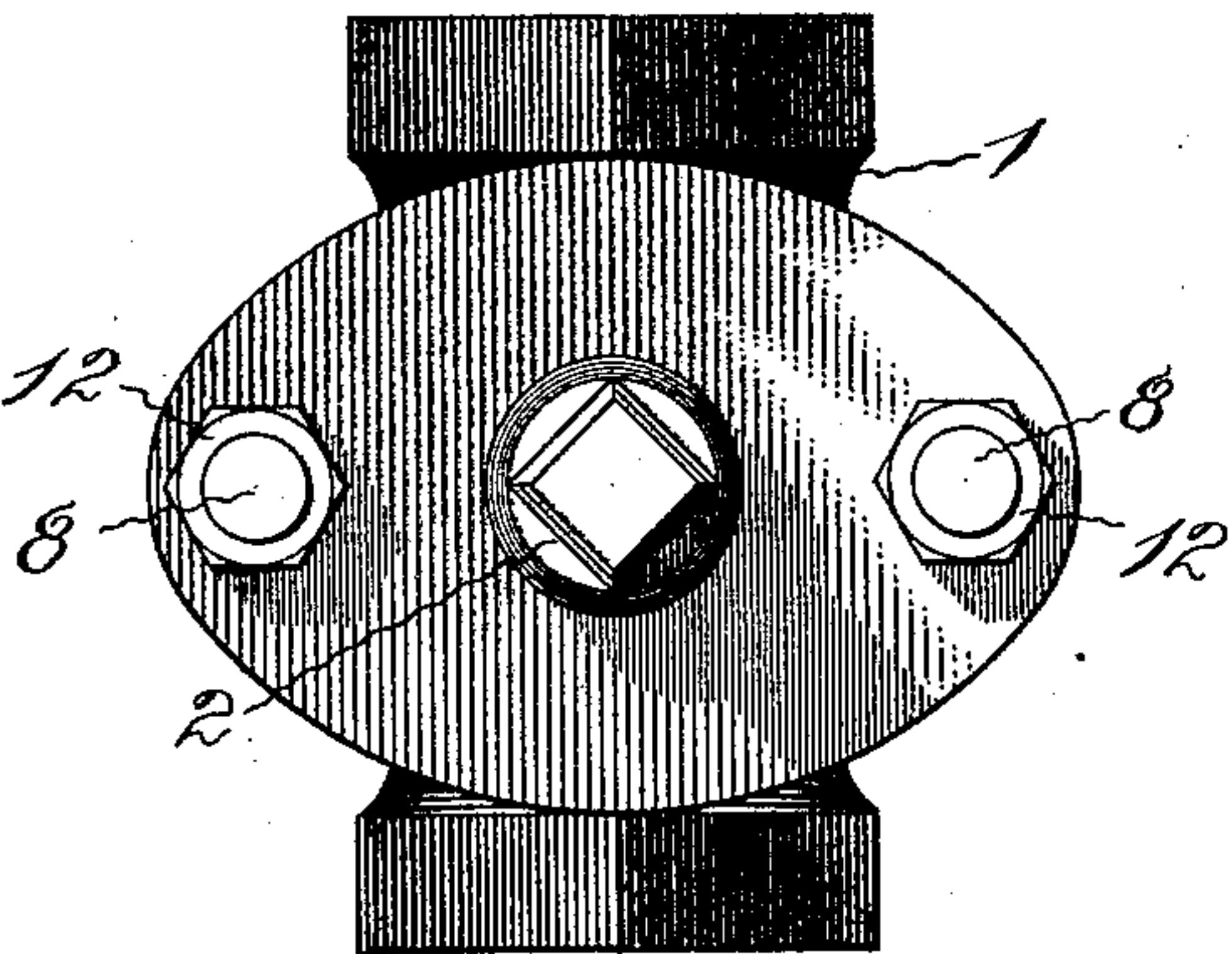


Fig. 2



Witnesses:

E. J. Hyde.

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Inventor:

Rufus N. Pratt, by
Harry P. Williams,
att'y.

UNITED STATES PATENT OFFICE.

RUFUS N. PRATT, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE PRATT
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PLUG-COCK.

SPECIFICATION forming part of Letters Patent No. 583,122, dated May 25, 1897.

Application filed December 9, 1895. Serial No. 571,473. (No model.)

To all whom it may concern:

Be it known that I, RUFUS N. PRATT, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Plug-Cocks, of which the following is a specification.

The invention relates to the class of rotary plug-cocks. It is necessary when such cocks are employed under high pressures that the plugs should be forced very tightly into the plug-chambers to prevent leakage, and this causes such friction between the plugs and the bodies and holding-down plates that much power is required to rotate the plugs for opening and closing. This is particularly so with cocks of large size in which the plugs are ground into the chambers; and the object of the present invention is to provide a very simple and inexpensive arrangement of the parts of such cocks which will insure the easy rotation of the plugs, although they may be set tightly into the bodies, allowing the plugs to be rotated easily either close at hand or at a distance by a handle or by rods and gears.

Referring to the accompanying drawings, Figure 1 is an end elevation of a plug-cock embodying the invention. Fig. 2 is a plan of the same, and Fig. 3 is a central vertical longitudinal section of the cock.

In the views, 1 indicates the body of the cock, which may be cast to shape, of iron, brass, or other suitable metal. This body has a circular plug-chamber tapering from one end to the other and either the common flanged or screw-threaded ends that are shown for attachment to the pipes with which the cock is to be used. Fitting in the chamber in this body is a tapering rotary plug 2, having the usual fluid-port 3. The body of the cock around the walls of the plug-chamber may be grooved and provided with a packing material, or the plug may be ground to its seat, as shown in Fig. 3. The shank of the plug is smaller in diameter than the body of the plug, so as to form a shoulder 5 outside of the body above the cover, and the outer end of the shank is shaped to receive a wrench, rod, or handle, by means of which it may be rotated.

The plug-chamber is shown as open from

the top of the body only, and this opening at the top, through which the plug is inserted, is closed by a cover 6, which is held tightly in place by nuts 7, that screw upon the studs 8. The cover has an opening for the plug, and a packing-ring 9 is placed in the recess in the top of the chamber to pack the joint between the cover and the plug and body. The compression of this packing and the tightness of the joints may be regulated by adjusting the nuts that hold the cover.

The plug is held down in the chamber by the adjustable holding-down plate 10. This holding-down plate is provided with a little projection or a shoulder 11 around the opening for the plug, in which is formed a groove that is adapted to fit upon balls that are placed in a groove in the shoulder 5 on the plug. The plate is held in place by nuts 12, that are adjustable upon the studs 8. When these nuts are screwed down hard, the plate, through the medium of the balls, forces the plug into the plug-chamber and causes it to make close contact with the walls of the chamber or with the packing therein, but by virtue of the balls even if this plate is held down firmly by screwing the nuts hard, so the plug is forced inward with great pressure to insure a very tight joint, the plug can be rotated easily, so that it may be turned to open and close either close at hand or at a distance through long rods or shafting and gearing, as is sometimes necessary.

If the plate is not drawn down evenly by the nuts—that is, if one side of the plate is drawn down lower than the other or if the parts expand unevenly when heated, so that one side of the plate holds tighter than the other—the plug does not bind in the plug-chamber, for with this condition the plate only bears on different surfaces of the balls, and this does not tend to throw or force the plug over to one side, as would a plate bearing directly on a smooth hard shoulder with greater force on one side than the other. Thus the balls compensate for any unevenness of this nature in the holding-down plate and insure an easy rotation of the plug at all times. This is particularly advantageous with large cocks which are subjected to varying temperatures and which are liable to ex-

pand considerably and bind when heated by high-pressure steam, for the joints must be made very close and tight, and when made thus will, under the expansion of the plug, 5 ordinarily cause such friction as to require the application of much power to rotate the plug for opening and closing. If the holding-down plates are adjusted loosely to allow an easy rotation of the plug when expanded, the 10 cock will leak, and if there is the slightest amount of leaking under high pressures the metal soon becomes so cut away that the cock is worthless. The balls can be inserted or removed from place between the shoulder on 15 the plug outside of and above the cover after the cover has been secured in place without interfering with the packing of any joint, and the balls when located in this position are some distance away from the fluid-way and 20 they are to some extent open to the atmosphere, as they are not as highly heated as they would be nearer to the fluid-way or if they were inclosed. Therefore they remain hard and in good condition for service. The balls are lo- 25 cated where they can be removed or new balls substituted for broken or damaged ones without removing the cover or tipping the cock upside down. The arrangement of the parts is simple, so they are not likely to get out 30 of repair, and they do not require any special skill to obtain the proper adjustment, and, furthermore, the holding-down plate held in this manner has more or less give, so that 35 forced out of the plug-chamber the balls will

not be crushed, as they would be between the perfectly rigid plate and the expanding plug.

I claim as my invention—

A rotary plug-cock having a body with a plug-chamber, a rotary plug located in such 40 chamber and provided with a grooved shoulder outside the body and above the cover, a cover for the plug-chamber removably secured to the body by threaded studs and 45 nuts, a packing between the body, plug and cover that is held compressed by the cover for making tight the joints, a holding-down plate independently adjustable with relation 50 to the cover, said plate being held on opposite sides of the plug by nuts that are threaded on the same studs that hold the cover whereby 55 the plate may be adjusted up and down on either side independently of the other and of the cover and said plate having a grooved shoulder outside of the body and above the 60 cover opposite the grooved shoulder of the plug, and antifriction-balls located partially in the groove in the shoulder of the adjustable holding-down plate which they support and partially in the groove of the shoulder of 60 the plug by which they are supported above and outside of the cover in position to be removed without disturbing the cover or any packing and partially exposed to the atmosphere, substantially as specified.

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Witnesses:

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