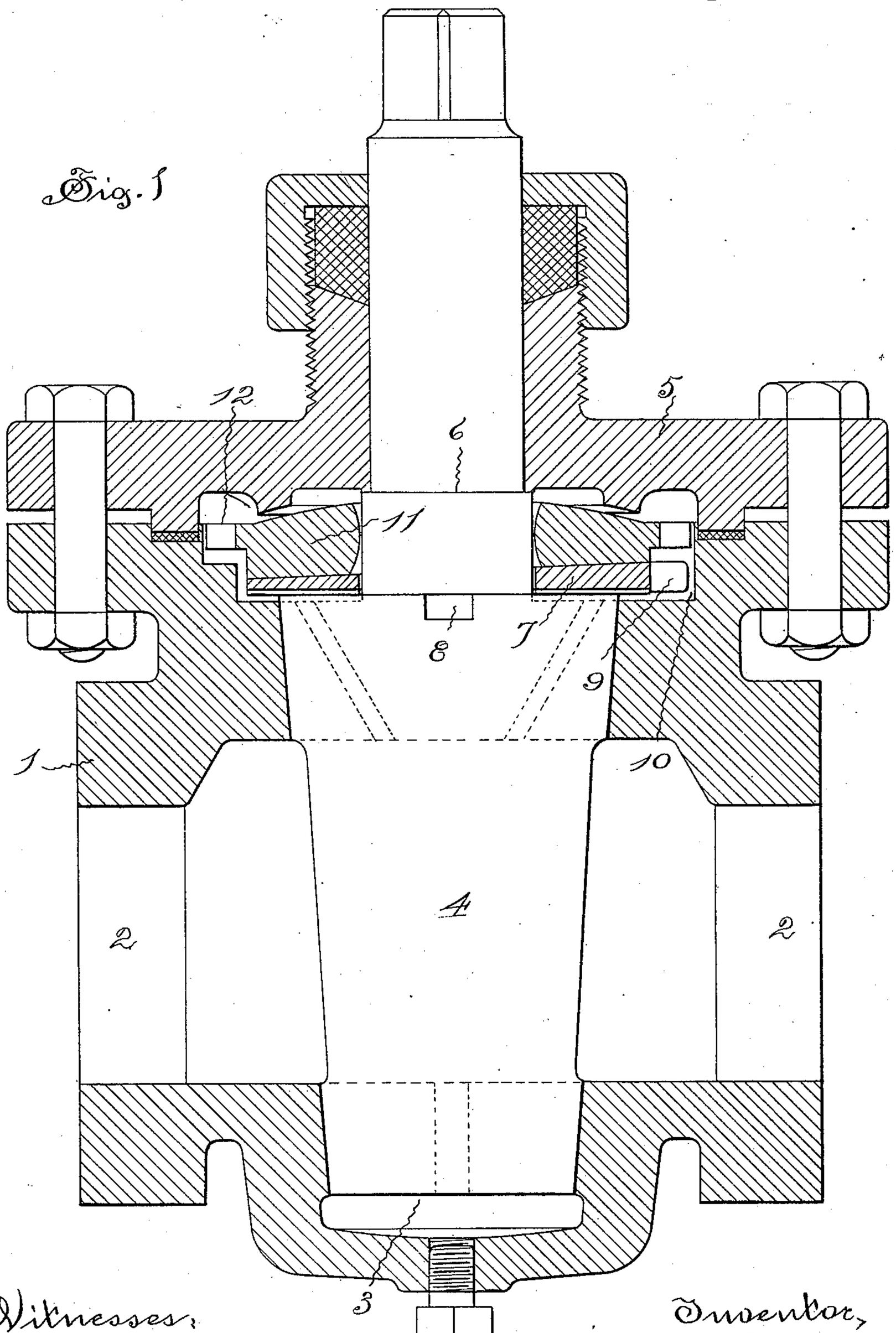
(No Model.) 2 Sheets—Sheet 1.

W. F. HARRISON.

ROTARY PLUG COCK.

No. 601,652. Patented Apr. 5, 1898.

Fig. 1



Witnesses:
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E. J. Hyde.

Inventor,
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(No Model.)

2 Sheets—Sheet 2.

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No. 601,652. Patented Apr. 5, 1898.

Fig. 2

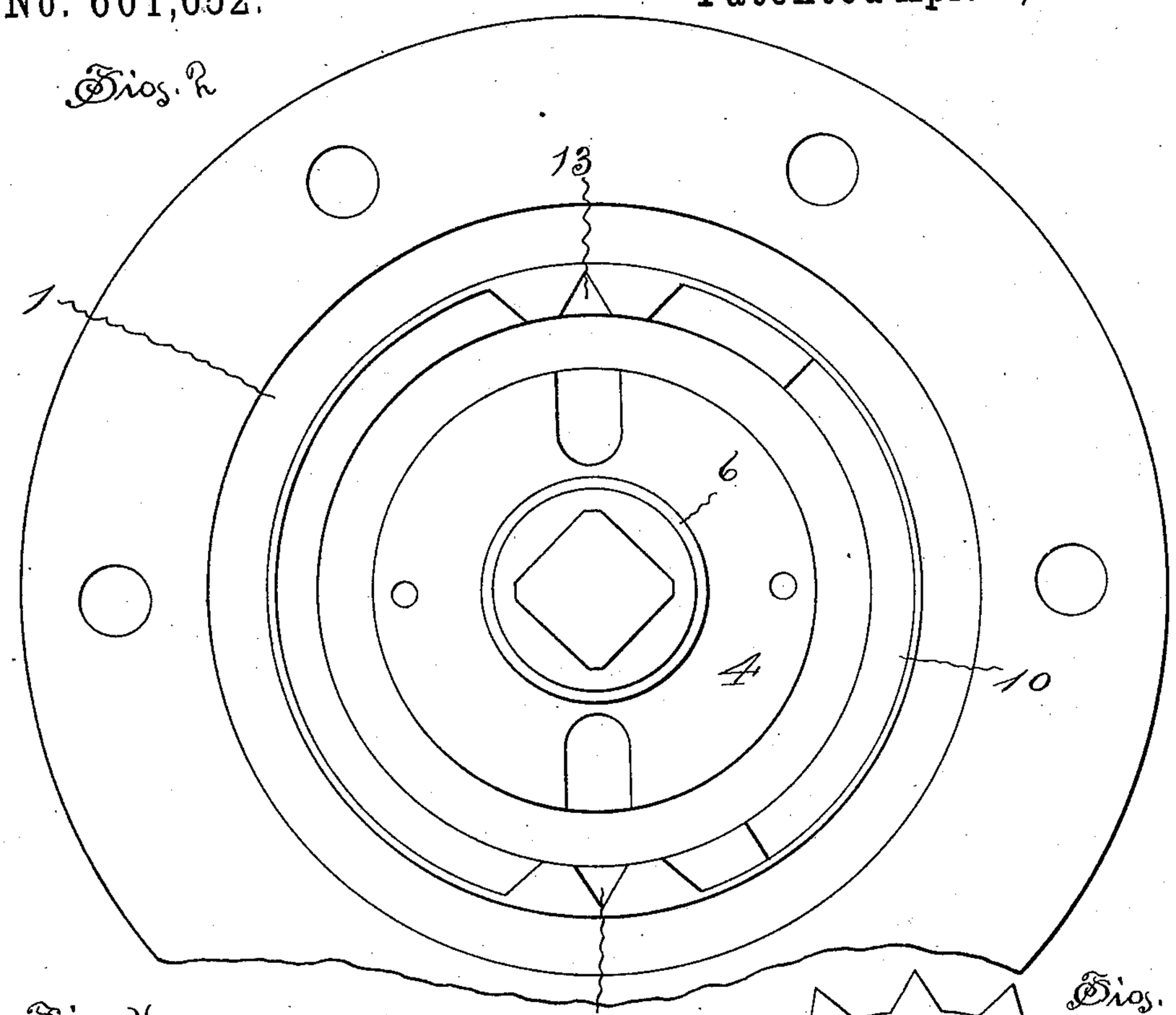


Fig. 4

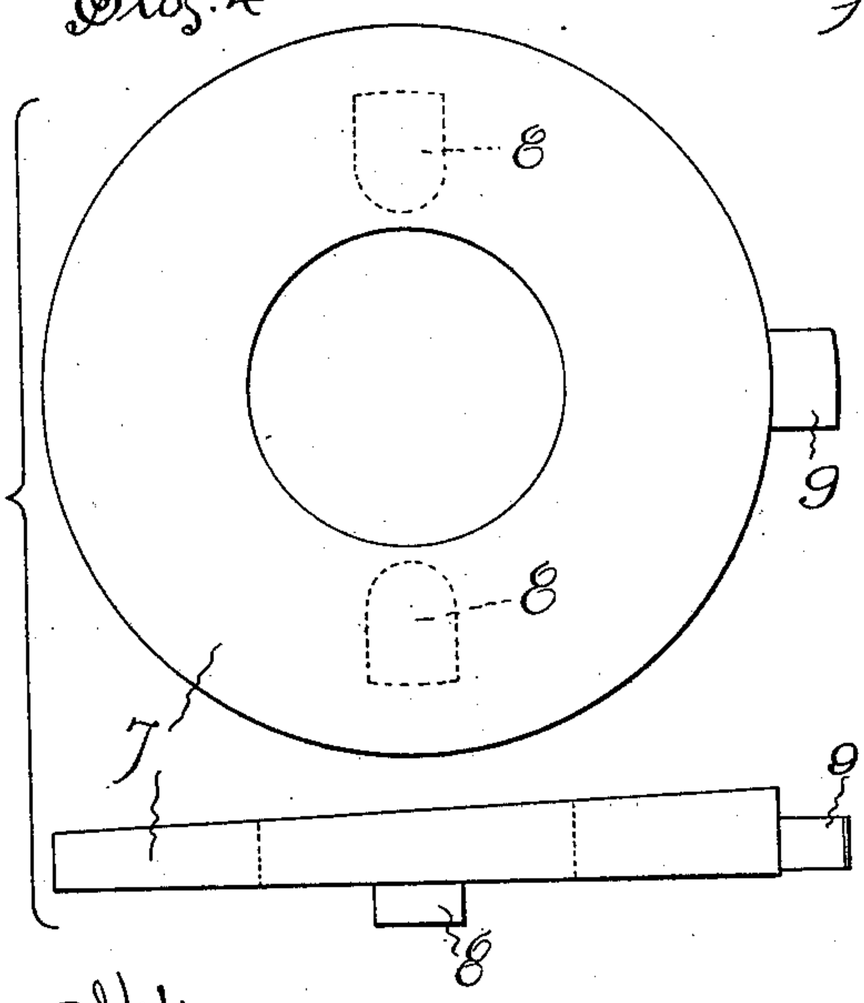
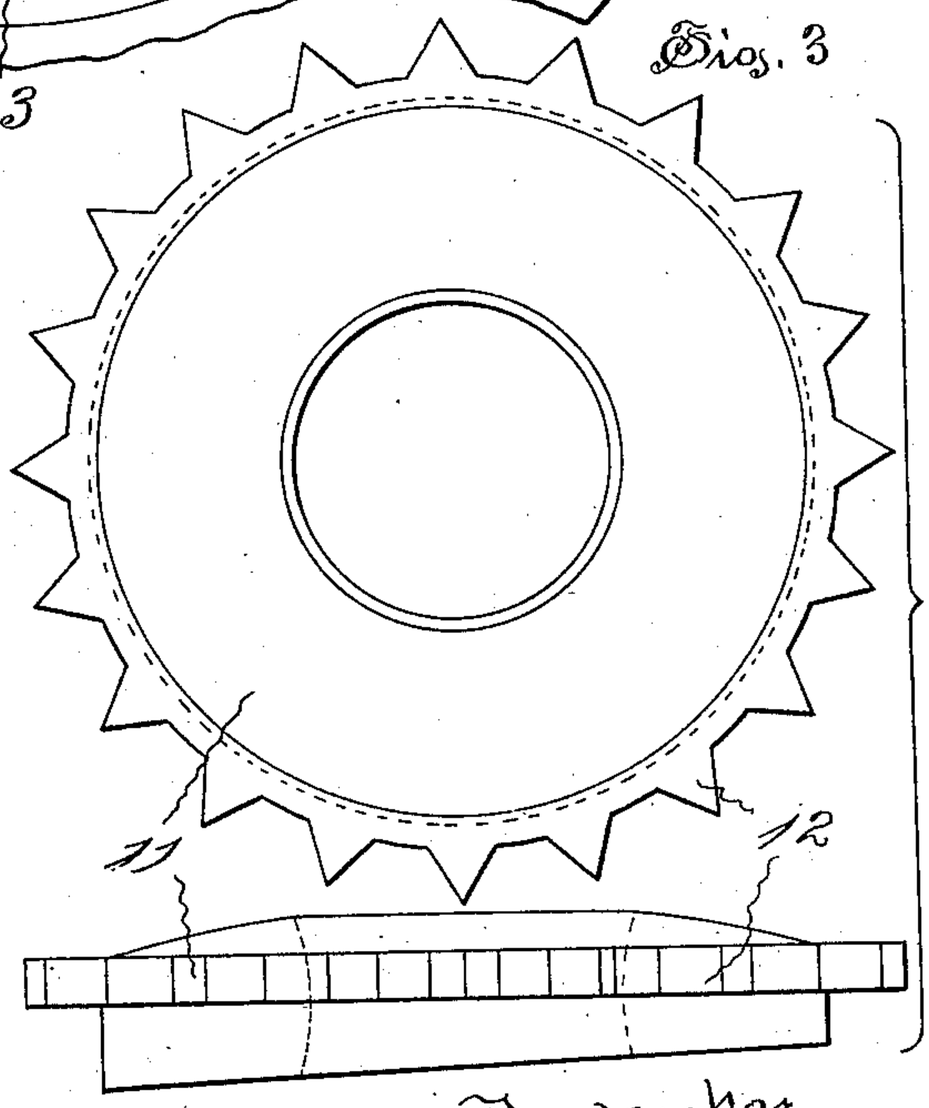


Fig. 3



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William F. Harrison, by
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UNITED STATES PATENT OFFICE.

WILLIAM F. HARRISON, OF WEST CHESTER, PENNSYLVANIA.

ROTARY-PLUG COCK.

SPECIFICATION forming part of Letters Patent No. 601,652, dated April 5, 1898.

Application filed May 26, 1897. Serial No. 638,189. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. HARRISON, a citizen of the United States, residing at West Chester, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Rotary-Plug Cocks, of which the following is a specification.

The invention relates to those cocks which have a rotary plug that is forced closely against seats in a tapering-plug chamber when turned to shut the cock, in order to insure very tight joints, and that is relieved sufficiently when turned to open the cock, so that the plug will move easily and close tightly.

The object of the invention is to provide a cock of this nature which will be inexpensive to manufacture and will open and close very easily and shut very tightly, the working parts being so arranged that they can be readily renewed when desired and adjusted to take up all wear when necessary.

The embodiment of the invention shown in the drawings has a body with fluid-ports and a tapering-plug chamber, a tapering plug with a fluidway, a cap with a suitable stuffing-box, and an adjustable wedge-disk located between the inside of the cap and the plug, as more particularly hereinafter described, and pointed out in the claims.

Of the accompanying drawings, Figure 1 shows a central section of a cock embodying the invention. Fig. 2 shows a plan of the same with the cap and wedge-disk removed. Fig. 3 shows a plan and an edge view of the adjustable wedge-disk, and Fig. 4 shows a plan and an edge view of a stop-washer that may be employed with this form of cock.

In the views, 1 indicates the body, which may be cast to shape, as usual, of iron, bronze, or any other suitable metal, with flanged or screw-threaded ends 2, as desired, for the attachment of the pipes of the system in which it is used, and with a tapering-plug chamber 3. The walls of the body around the plug-chamber may be formed in any common manner with smooth metal surfaces or with packed grooves for forming seats for the plug 4, which is made of any suitable metal with the proper taper to fit the seats around the ports and with the necessary fluidway.

The ordinary cap 5 may be secured by screws, bolts, or otherwise, as desired, to the body over the plug-chamber, proper packing, of course, being provided between the cap and body and between the cap and plug-stem. A shoulder 6 is formed on the stem of the plug, which shoulder is arranged to abut against the under side of the cap.

In the embodiment of the invention shown in the drawings, in a recess in the body between the larger end of the plug and the cap, there are located a stop-washer and an adjustable wedge-disk.

The stop-washer 7 has studs 8, that project from its under face into sockets in the end of the plug, and it has a lug 9, that projects from its edge into a groove 10, formed in the wall of the body. The groove 10 is of such length and the lug 9 is arranged in such manner that when the stop-washer rotates with the plug the lug 9 will engage with one end of the groove 10 and cause the plug to stop with its fluidway exactly coinciding with the ports in the body. The other end of the groove 10 is slightly beyond a position where the lug 9 will stand when the plug is turned to fully close the ports. If desired, of course, this stopping-lug can be formed integral with the plug instead of on a removable washer. The upper face of the washer 7 is formed on an incline.

The under face of the disk 11 is inclined, so that the disk acts as a circular wedge, and the upper face of the disk is rounded over or crowned, so that it will bear evenly and smoothly at all times against the inside of the cap or a rim that is formed on the inside of the cap.

The edge of the wedge-disk is provided with teeth 12, which teeth are arranged to fit into notches 13, formed in the wall of the body, so that the disk does not move when the plug is rotated. The wall of the wedge-disk around the central perforation through it is rounded so that the disk may rock without binding upon the stem of the plug. This disk is so placed in the recess in the top of the body, with its teeth engaging the holding-notches, that when the plug is turned to its open position the upper surface of the disk will be relieved from the inner surface of the cap; but when the plug is rotated to its closed position the inclining faces of the stop-washer and

the inclining faces of the wedge-disk rotate against each other, so that the combined thickness of these parts increases and forms a wedge between the inside of the cover and the end of the plug, which forces the plug tightly to its seat in the plug-chamber. This action of these parts binds the plug very tightly when it is closed, so that there can be no possible chance of leakage of fluid even under great pressures.

If the parts wear, so that the plug settles into the plug-chamber or the wedge-disk and washer do not turn enough to sufficiently crowd the plug to its seat when closed, the wedge-disk can, when the cap is removed, be lifted out of the recess in the body and rotated, so that the inclined faces of the disk and washer will lie in a relation that will increase the combined thickness of the two parts. There are a sufficient number of teeth on the wedge to allow much adjustment of the disk, so that the wedging effect can be always regulated according to the wear of the parts and according to the compression of the packings.

The body of this cock is easily formed in the ordinary manner and the cap connected as usual. All of the working parts are simple to manufacture, for there is but a very small amount of machine-work required for shaping them. The plug may be balanced or solid, as desired, and the stop-lug can be formed on the plug or on the independent washer. The washer, with its inclined face, can be formed as a part of the plug—that is, the plug can be formed with an inclined face at its upper end—or the washer and plug may be formed independently, as shown in the drawings, which is the preferred form, as it is sometimes desirable to make the washer of a harder metal than that of the plug. These parts are quickly assembled, the wedge-disk easily adjusted, and the cock will open and close very easily, for the plug is loosened the instant it begins to turn to open and yet is shut very tightly when closed on account of the action of the wedging parts described.

I claim as my invention—

1. A plug-cock having a body with a plug-chamber and ports, a plug located in the plug-chamber, a cap secured to the body over the plug-chamber, a stop-washer at the end of the plug and an adjustable wedge-disk located between the end of the plug and the inside of the cap, substantially as specified.

2. A plug-cock having a body with a plug-chamber and ports, a plug located in the plug-chamber, a cap secured to the body over the plug-chamber, and an adjustable wedge-disk located between the end of the plug and the inside of the cap, substantially as specified.

3. A plug-cock having a body with a plug-chamber and ports, a plug located in the plug-chamber, a cap secured to the body over the plug-chamber, a washer at the end of the plug, said washer having a part that is adapted to engage the walls of the body to determine the amount of rotary movement of the plug, and a wedge-disk between the washer and the inside of the cap, substantially as specified.

4. A plug-cock having a body with a plug-chamber and ports, a plug located in the plug-chamber, a cap secured to the body over the plug-chamber, a washer with an inclined face at the end of the plug, said washer having a part that is adapted to engage the walls of the body to determine the amount of rotary movement of the plug, and a wedge-disk between the washer and the inside of the cap, substantially as specified.

5. A plug-cock having a body with a plug-chamber and ports, a cap secured to the body over the plug-chamber, a stop-washer with lugs loosely projecting into sockets in the end of the plug and with an inclining face, and a wedge-disk with lugs loosely projecting into recesses in the walls of the body, located between the washer and the inside of the cap, substantially as specified.

6. A plug-cock having a body with a plug-chamber and ports, a plug located in the plug-chamber, a cap secured to the body over the plug-chamber, and a wedge-disk with one globular face and one inclined face and a serrated edge, substantially as specified.

WILLIAM F. HARRISON.

Witnesses:

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E. W. FOTHERGILL.