J. DEWRANCE & J. MALLINSON.
COCKS.

No. 195,707. Patented Oct. 2, 1877.

Fig: 1.

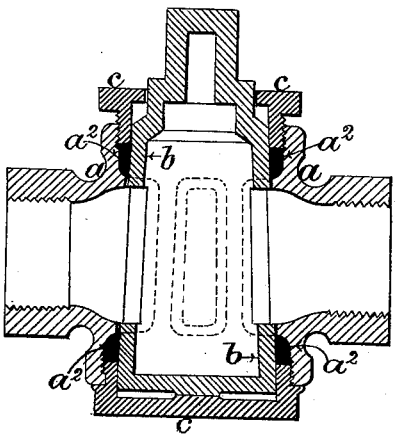


Fig: 3.

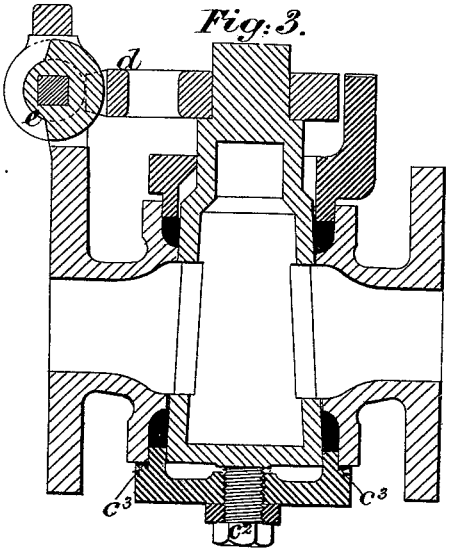


Fig: 2.

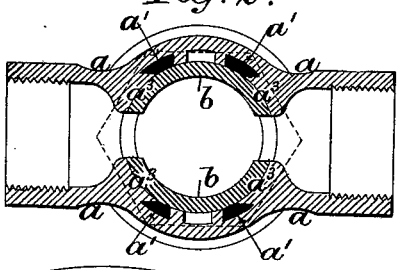


Fig: 4.

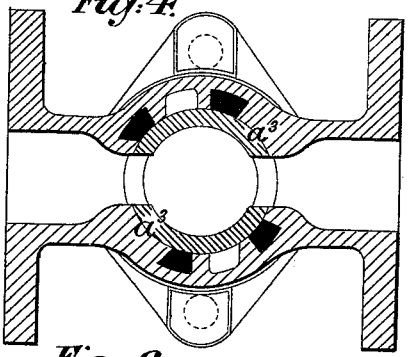


Fig: 5.

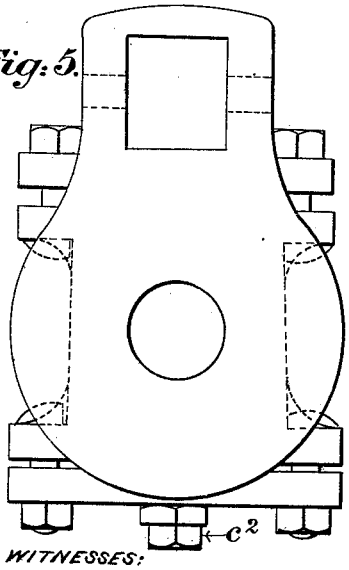
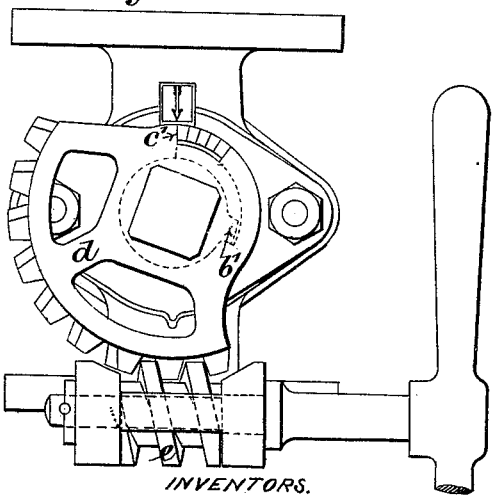


Fig: 6.



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UNITED STATES PATENT OFFICE.

JOHN DEWRANCE, OF 176 GREAT DOVER STREET BOROUGH, AND JAMES MALLINSON, OF WELWYN, ENGLAND.

IMPROVEMENT IN COCKS.

Specification forming part of Letters Patent No. **195,707**, dated October 2, 1877; application filed August 24, 1877; patented in England, November 22, 1876, for fourteen years.

To all whom it may concern:

Be it known that we, JOHN DEWRANCE, of 176 Great Dover Street Borough, in the county of Surrey, and JAMES MALLINSON, of Welwyn, in the county of Herts, England, have invented new and useful Improvements in Cocks, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

The object of our invention is to improve the construction of cocks the tightness of which is wholly dependent on the introduction of packing, and in no wise upon the fit of the metallic parts. English Letters Patent for this invention were granted us November 22, 1876, No. 4,540.

Figure 1 is a vertical section, and Fig. 2 is a horizontal section, of a cock constructed according to our invention.

a is the shell, *b* is the plug, and *c c* are glands.

The packing is applied in grooves a^1 a^1, formed in the shell at right angles to the direction of the flow of the fluid, and these grooves open into annular spaces a^2 a^2, running around the shell, one above and the other below the water-ways.

The plug *b* is taper in the opposite direction from that which is usual in plug-taps, the handle or instrument by which the plug is turned being applied at the smaller end of the plug. This arrangement is more convenient for applying the packing than if the taper were in the contrary direction.

We employ asbestus as the packing, although hemp or other packing may be used. The packing, after being well rammed into the grooves and spaces, is compressed by means of the glands *c c*. These glands compress the packing especially at the ends of the plug, and the packing, together with the form of the gland, prevents the plug from being forced into rubbing contact with the shell.

In order to prevent the current of steam, water, or other fluid rushing against the packing when the cocks are partly opened, we make the distance between the edge of the water-way and the edge of the recess in the shell a little greater than the width of the water-way. By this means the current is entirely cut off while the way in the plug is passing the packing. These wide marginal spaces or surfaces between the water-way and the packing-grooves are in the drawing marked a^3. As the way or peripheral opening in the plug, as shown, corresponds in width with that of the shell, it will be seen that it is also of a less width than said marginal spaces.

Fig. 3 is a vertical section of another cock constructed according to our invention. Fig. 4 is a horizontal section, Fig. 5 is an end elevation, and Fig. 6 is a plan, of the same.

In this cock, in order to reduce the enlargement of size which the provision of the wide marginal spaces a^3 entails, we make the plug with a stop, and to work backward and forward a little over a quarter of a revolution. The stop upon the plug is marked b', and there is a corresponding stop or shoulder, c^1, upon the gland.

It will be observed that in this cock the wide marginal spaces a^3 at the sides of the water-way are provided on one side only of the inlet and the outlet, respectively, being thus diagonally opposite each other at the sides of the water-way, so that for a given width of water-way the cock is of smaller diameter than when the plug is allowed to turn both ways, or all round. We also provide for the opening and closing of the cocks a toothed quadrant, *d*, fitted on the plug, and a worm, *e*, mounted on an axis carried by the shell, and actuated by a hand wheel or lever. By these means the plug may be turned as slowly as may be desired, and the shock which results from the sudden closing of cocks upon water-pipes is avoided.

To adjust the working of the larger sizes of cocks, we sometimes insert into the bottom gland a regulating-screw, c^2, with a lock-nut. The plug is supported upon the end of the screw, and as this is adjustable the plug can be eased off its bearing without slackening the gland. We sometimes introduce an india-rubber ring on the lower gland, at c^3, as an extra security against leakage.

It will be observed that in this cock the glands are applied with bolts, and in Figs. 1 and 2 they are shown screwed into their places. They may be made either way.

Having thus described the nature of our said

invention, and the manner of performing the same, we would have it understood that we claim—

1. The packed cock, constructed with the wide marginal spaces a^3 at the sides of the water-way, so that the packing may never be exposed to the current of the fluid, substantially as hereinbefore set forth.

2. The combination, substantially as hereinbefore set forth, of the plug, the shell, and the groove-packing at right angles to the flow of the fluid, arranged at a distance from the edge of the fluid-way in the shell greater than the width of said way, whereby the current is entirely cut off while the way in the plug is passing the groove-packing, and the packing thus protected.

3. A cock consisting of the shell provided with annular packing, groove-packing at right angles to the flow of the fluid, and wide marginal spaces separating the groove-packing from the fluid-way, the plug, having a water-way or peripheral opening of less width than said marginal spaces, and the compressing-glands, these parts being constructed and operating substantially as hereinbefore set forth.

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