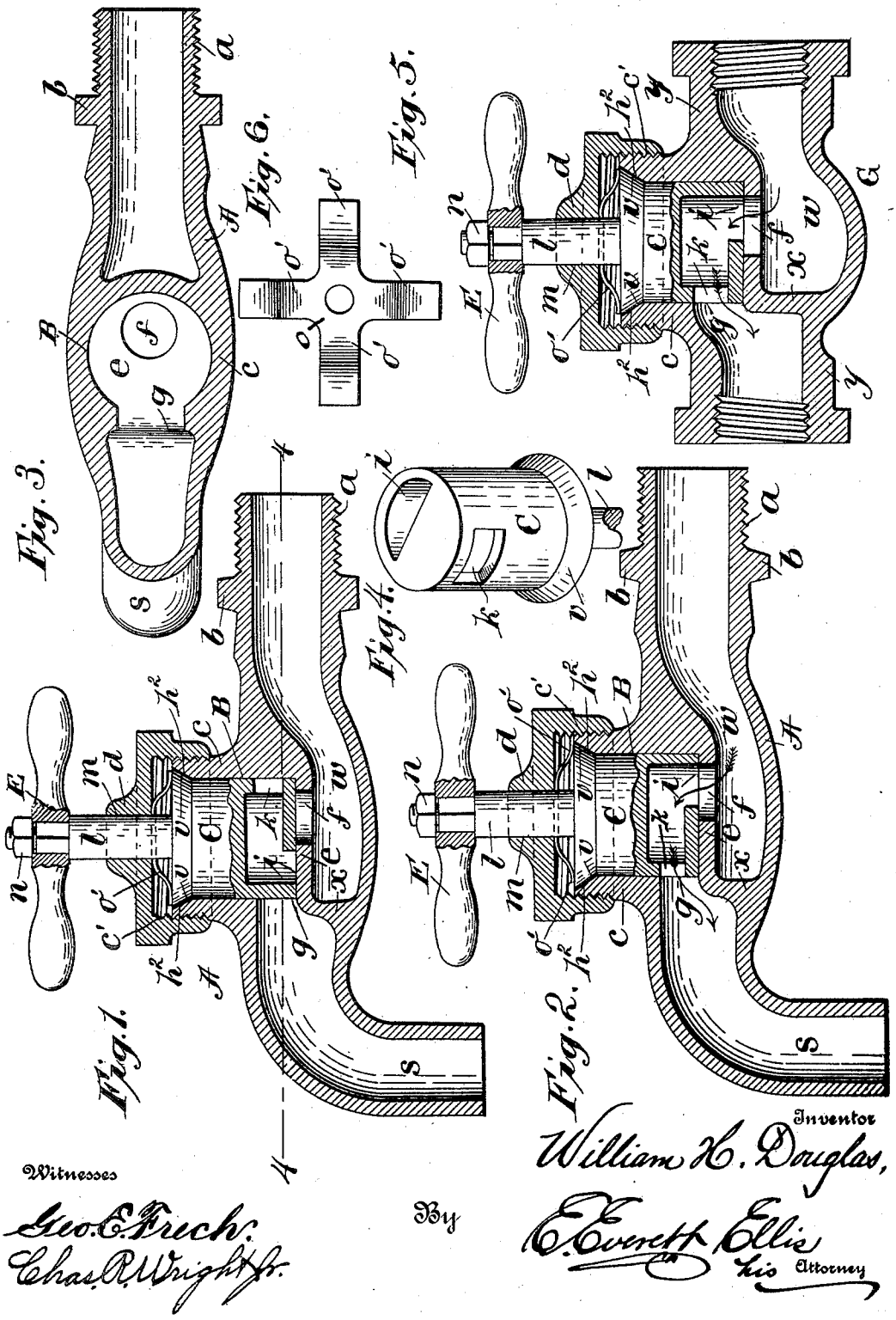
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W. H. DOUGLAS.

COCK OR FAUCET.

(Application filed Oct. 17, 1901.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

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COCK OR FAUCET.

SPECIFICATION forming part of Letters Patent No. 704,522, dated July 15, 1902.

Application filed October 17, 1901. Serial No. 78,991. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DOUGLAS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Cocks or Faucets; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to cocks or faucets; and it consists substantially in the improvements hereinafter more specifically described, and pointed out in the claims.

The invention has reference more particularly to that class or type of cocks or faucets denominated in the art as "turning plugs or valves;" and the principal object of the invention is to provide a device of this kind possessing the greatest degree of simplicity, as well as the greatest efficiency under all conditions of use.

A further object is to provide a device of the kind referred to which may be readily manufactured at small cost, and also to provide means whereby the valve may be easily and quickly removed for replacement or repair or for any other purpose desired.

A further object is to dispense with the use of packing or washers either at or about the valve and its casing or at or about the valve-stem and the opening through which it works.

A still further object of the invention is to render the valve self-compensating for any wear occurring between the same and its seat, and also to provide a construction whereby the valve is easily operated to be opened and closed while still maintaining a true and perfect fit upon its seat.

The above and additional objects I attain by means substantially such as are illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a cock or faucet constructed and arranged in accordance with my invention, the turning or rotatable plug or valve being shown in closed position; and Fig. 2 is a similar view showing the plug or valve in open position. Fig. 3 is a horizontal sectional view of the cock or faucet on the line 4 4, Fig. 1, minus the valve. Fig. 4 is a bottom perspective view of the valve or plug. Fig. 5 is a view similar to Fig. 2, representing a slight modification in the structure; and Fig. 6 is a plan view of the pressure-spring for the valve.

Before proceeding with a more detailed description it may be stated that in the practice of my invention I provide the cock or faucet of a single integral structure, which requires no disconnection or separation of parts or sections thereof either for access to the valve-seat or for the purpose of removing the valve, and my improvements are adapted to almost any of the well-known forms or types of faucets employed for drawing off liquids and fluids of different kinds either from casks or tanks containing the same or from supply-pipes of distributing systems therefor.

My said improved cock or faucet comprises a valve-chamber of proper dimensions, the bottom thereof constituting the seat for the valve. The valve is hollow and rotatable and practically fills the entire chamber, the bottom thereof closely fitting the valve-seat at all times. The said valve is provided with a stem passing through an opening in a removable cap or closure for the valve-chamber, and said stem is provided with any suitable operating device, preferably in the form of a handle. Both the valve and valve-chamber are provided with ports, which when they are made to register by the turning of the valve permit the withdrawal or outflow of the fluid or liquid through the faucet, as will hereinafter be more fully understood. The opening and closing of the valve may be effected in either direction, and, as will hereinafter be specifically described, I have provided an exceedingly simple and effective construction by which all wear between the valve and its seat is immediately taken up or compensated for as it occurs.

Other important features of the invention will also be brought out in the following detailed description.

Reference being had to the several parts by the letters or designating characters marked thereon, A represents a cock or faucet of the ordinary "bib" type or form, the same being externally threaded at one end, as at *a*, to

enable the said faucet to be fitted in a tank or other vessel or to be attached to the end of a liquid or fluid pipe, and at a suitable distance from this end the faucet is formed or provided with a flange or abutment *b* for an obvious purpose. About centrally thereof the said cock or faucet A is formed with a valve-chamber B, the wall *c* of which is extended somewhat above or beyond the upper surface of the faucet, and said wall is formed for a suitable distance from its upper edge or summit with an external screw-thread *c'* to receive a correspondingly internally threaded cap or closure *d*, which closes the valve-chamber at the top. The bottom *e* of the valve-chamber is located some distance within or beneath the upper surface of the faucet, and said bottom constitutes the seat for the valve C, which rests thereon with its own bottom closely and evenly fitting the same. The said valve-seat is formed or provided adjacent to or nearest the inlet end of the faucet with an opening or port *f*, and at a point diametrically opposite thereto the wall of the valve-chamber is also formed with an outlet-port *g*, located within the body of the faucet, at the edge of the valve-seat. The valve-chamber is of circular form or contour and is of equal diameter throughout its height, and it will be observed that the parts of the faucet described constitute an integral whole. The upper edge of said chamber is beveled internally all around at h^2, the said bevel extending inwardly and downwardly and being cut or ground perfectly smooth and true, so as to secure perfect operation of the valve or plug. The valve or plug is hollow and is also circular in plan view, it being substantially the same in height as the interior of the valve-chamber. Said valve is formed in its bottom, at a suitable point of the edge thereof, with an opening or port *i*, corresponding to port *f* in the valve-seat, and at a diametrically opposite point the valve is formed in its side at the edge with a port *k*, corresponding to the outlet-port *g* in the inner wall of the valve-chamber. The valve is of equal diameter for its full height, and it snugly fits the valve-chamber, although capable of being turned or rotated therein. It is formed centrally thereof at the top with a stem or spindle *l*, which passes through a central opening *m* in the cap or closure *d* for the valve-chamber and which may be provided at its upper end with any suitable means for turning said stem to operate the valve. In the present instance I have shown an operating-handle E attached to the stem and held thereon by means of a nut *n*. The said valve is brought to its open and closed positions by very short turns thereof and may be operated in either direction. In order to maintain the valve closely to its seat with a yielding pressure, I interpose a spring *o* (see detail Fig. 6) between the cap *d* and the upper surface of the valve, the said spring having a central opening for the valve-stem and having the spring-arms *o'* thereof bent or curved, so as to exert the desired pressure upon the valve. Any other preferred form of spring may be used in lieu of the one herein shown. It is evident that when the valve is turned to bring its ports into communication or registry with the corresponding ports in the bottom and side of the valve-chamber the fluid or liquid will be free to flow through the faucet and its valve (see arrows, Figs. 2 and 5) and be discharged at the nozzle *s*. The valve is somewhat enlarged at its upper edge, or it may be said to have an annular or circumferential flange, which is beveled inwardly all around at *v*, so as to snugly fit upon the upper beveled edge h^2 of the wall of the valve-chamber B. From this construction it is evident that as any wear takes place between the bottom of the valve and valve-seat said valve will be caused to assume a lower position exactly in proportion thereto, since the same amount of wear is at the same time taking place correspondingly between the beveled portions h^2 and *v* of the chamber and valve. Hence it follows that the valve is always held in close contact with its seat without any irregularity in the working or operation thereof; also, by reason of this peculiar construction of the upper part of the valve and its chamber and in virtue of the fact that said valve completely fills the said chamber no appreciable quantity of liquid (as water, for instance) can enter between the valve and wall of the chamber, and therefore no leakage can take place above the valve, which enables me to dispense with the use of packing either at or about the valve or at or about the stem and opening therefor in the cap or closure *d* for the said valve-chamber. Any liquid remaining in the valve-chamber after closure of the valve will find its way out of the discharge end of the faucet through port *g*, which serves as a vent therefor. The passage *w* in the faucet beneath the valve-seat is closed at *x* against the escape of fluid or liquid in any other manner than through the ports in the valve and valve-chamber, as already described.

In Fig. 5 the construction is substantially the same in all respects as in the other figures, except that in this instance the device is employed as a stop-cock or valve for fluids or liquids, the faucet being substituted by a coupling or connection G, having internally-screw-threaded branches *y y* for connection with the ends of fluid or liquid supply pipes. (Not shown.)

The construction and mode of operation of my improved device will be fully understood from the foregoing, and it is apparent that immaterial changes may be made therein without departing from the spirit or scope of my invention.

Having thus described my invention, what I claim is—

1. A cock or faucet comprising a valve-chamber the bottom of which constitutes a valve-seat, said seat having an inlet-port at

the edge thereof adjacent the faucet-inlet, and the wall of said chamber within the faucet having an outlet-port opposite said inlet-port; and a hollow rotatable valve completely filling said valve-chamber and formed in the bottom and side thereof respectively with ports corresponding to the ports first named, said valve constructed at its upper edge to overlap the upper edge of the wall of the chamber, and the meeting faces of such edges being beveled, as shown and for the purpose described.

2. A cock or faucet comprising a valve-chamber of equal diameter throughout its height, the bottom of said chamber constituting a valve-seat, said seat and the wall of the chamber being formed respectively, with inlet and outlet ports for a liquid or fluid; and a rotatable valve also of equal diameter throughout its height and snugly fitting said chamber, said valve having ports corresponding to those first named, and also having a bearing upon the upper edge of the wall of the chamber constructed to permit descent of the valve on occurrence of wear between the valve and its seat.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. DOUGLAS.

Witnesses:

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K. E. BROWN.