

E. W. & W. H. ROBERTS.

VALVE.

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912,890.

Patented Feb. 16, 1909.

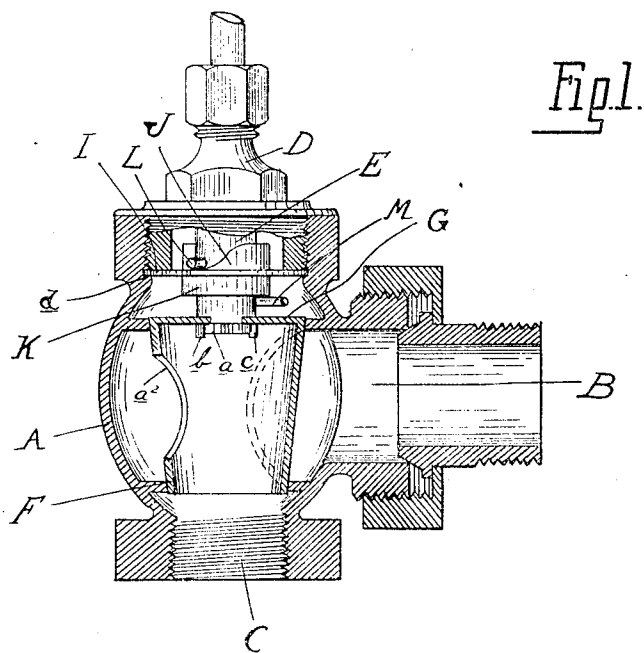


Fig. 1.

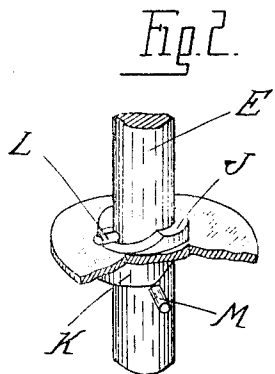


Fig. 2.

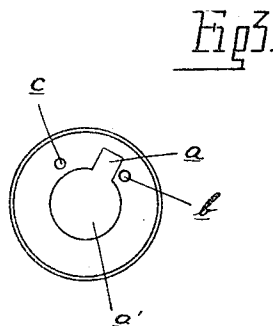


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

EARL W. ROBERTS AND WILLIAM H. ROBERTS, OF DETROIT, MICHIGAN, ASSIGNORS TO THE ROBERTS BRASS MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

VALVE.

No. 912,890.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, EARL W. ROBERTS and WILLIAM H. ROBERTS, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates generally to valves of the plug type, and particularly to tapered valves, and consists in the novel and peculiar construction of the valve, in the peculiar arrangement and combination of parts, and in various details of construction as will be more fully hereinafter set forth.

In the drawings,—Figure 1 is a vertical section through a valve embodying our invention; Fig. 2 is a sectional perspective view, illustrating the cam mechanism; and Fig. 3 is a bottom plan view of the valve proper.

It is well known that where valves of the type referred to remain seated for any considerable period of time they adhere to a greater or less extent to their seats, thereby making it difficult to open by the ordinary rotary movement. The present invention is designed to overcome this defect, and resides primarily in mechanism compelling, upon the initial opening movement of the valve, a longitudinal or endwise movement to break the set, the valve thereafter being rotated in the ordinary manner to open.

We have here shown for the purpose of illustration the preferred form of valve, but it will be understood that the construction may be varied to a greater or less extent without in any manner departing from the spirit of our invention.

In the drawings briefly described, A represents a valve casing of any suitable form or type, provided with a tapered seat, the usual inlet and outlet openings B and C, and a cap nut D screw-threaded within the casing top, as plainly shown in Fig. 1.

E represents the operating member or stem of the valve, and F the valve proper tapered to fit its seat and arranged within the casing for rotary and endwise or relative longitudinal movement.

The valve is provided, as shown, with a top plate G, centrally apertured, as at a' , and the stem E projects through this opening as shown and is swiveled to the valve in any

suitable manner. The relative rotary movement between the parts is limited by means of a finger a on the lower end of the stem, and pins $b c$ depending from the interior of the valve top G.

Held within the casing between the shoulder d formed upon the interior of the valve body and the plug cap D is a disk I carrying upon its opposite sides cams J K, the inclines being arranged as shown in Fig. 2 in opposite directions. The stem is provided with pins L M engaging respectively the cams J K referred to, and this stem is also provided with a suitable operating handle (not herein shown), and the valve proper with the usual opening a^2 adapted to be brought into and out of registration with the inlet opening B.

In Fig. 1 the valve is shown in its closed position. Upon the rotation of the stem, the latter turns independently of the valve the distance between the pins $b c$, and during the relative rotation between the parts the pin L traveling upwardly upon the incline or cam J forces the valve in a longitudinal or endwise direction, thereby breaking its set. Subsequent rotation of the valve stem causes the usual rotation of the valve, the latter turning until its opening a^2 registers with the casing inlet. The valve is closed in the usual manner by the rotation of the stem in the opposite direction, and the pin M engaging its respective cam causes a downward movement of the valve during said rotation, thereby restoring the valve to its initial position.

In the event that it is desired to remove the plug valve from its casing, it will be obvious from the construction of the device that this may be readily effected without detachment of the casing from the piping, by first removing the cap nut D, or bonnet as it is usually termed, and then withdrawing the valve through the opening in the casing top.

What we claim as our invention is,—

1. In a valve, the combination with a casing, of a tapered plug valve arranged therein for rotary and endwise movement, an operating stem having connections with the valve permitting limited relative rotation, a support fixed within the casing above the valve, oppositely-extending inclines upon the support, and pins upon the valve stem engaging the inclines.

2. In a valve, the combination with a cas-

ing, of a plug valve seated therein for rotary and endwise movement, a stem for said valve connected therewith for limited relative rotation in opposite directions, and means carried by and removable from the casing with said valve stem adapted to effect an endwise movement of the valve prior to its rotation.

3. In a valve, the combination with a casing, of a tapered plug valve seated therein for rotary and endwise movement, a stem for said valve, and means for effecting an endwise movement of the valve prior to its rotation, said means comprising a connection between said stem and valve permitting a limited relative rotation, a disk detachably seated within the casing and cooperating means carried by said disk and valve.

4. In a valve, the combination with a casing, of a tapered plug valve seated therein for rotary and endwise movement, a stem for said valve having a limited rotation in relation thereto, a disk seated within said casing, a cam carried by said disk, and a projection on said valve stem engaging said cam.

5. In a valve, the combination with a cas-

ing, of a tapered plug valve seated therein for rotary and endwise movement, an operating stem having connections with the valve permitting limited relative rotation, a projection on the valve stem and a cam engaging said projection for compelling endwise movement of the valve during the relative rotation between the latter and the stem.

6. In a valve, the combination with a casing, of a tapered plug valve seated therein for rotary and endwise movement, an operating stem swiveled to the valve, stops upon the valve with which a stop upon the stem engages limiting the relative rotation between the parts, a cam operatively associated with the valve, and a stop upon the stem engaging the cam adapted to compel endwise movement of the valve prior to its rotation.

In testimony whereof we affix our signatures in presence of two witnesses.

EARL W. ROBERTS.

WILLIAM H. ROBERTS.

Witnesses:

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JAMES P. BARRY.