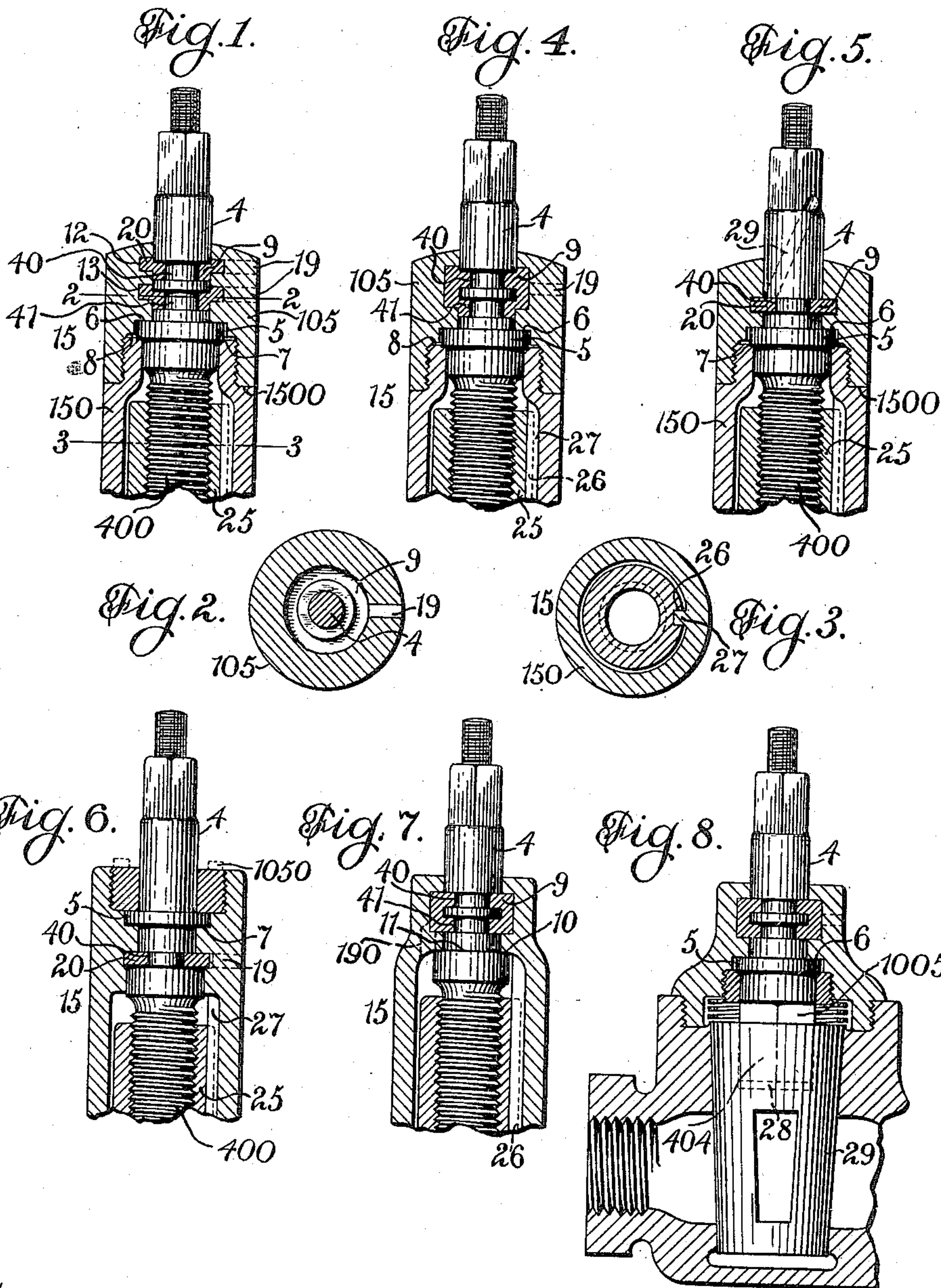


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VALVE.  
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985,526.

Patented Feb. 28, 1911.



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# UNITED STATES PATENT OFFICE.

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TO JOHN H. MICHENER, JR., OF NEW YORK, N. Y.

## VALVE.

985,526.

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*To all whom it may concern:*

Be it known that I, GEORGE W. HAMMOND, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves and similar appliances and particularly to that portion thereof which comprises a rotatable stem lying partly within and partly without the body of the valve or appliance.

The object of my invention is to provide simple and efficient means for preventing leakage from one side to the other of said body, about said stem, while permitting the free rotation of said stem.

With these objects in view my improvements comprise means illustrated in the accompanying drawing wherein—

Figure 1 is a vertical elevation, largely in section, of so much of the upper portion of a valve or similar appliance as will serve to illustrate my improvements. Fig. 2 is a horizontal cross section on line 2, 2 of Fig. 1. Fig. 3 is a similar section on line 3, 3 of Fig. 1. Figs. 4 to 8 both inclusive are sectional elevations similar to Fig. 1 and illustrating modifications of arrangement and design of some of the parts of my improved device. These modifications will be described more at length later herein.

Broadly my improvements comprise a rotatable stem 4, means such as insert 20 in co-engagement with said stem and with valve body 15 and rotatable relative to either or both thereof, for preventing leakage around said stem between said stem and body and means such as collar 5 on said stem in engagement with shoulders as 6, 7 of said body 15 for preventing endwise movement of said stem relative to said body and for preventing endthrust of said stem being communicated to said insert 20.

Referring now more in detail to the figures of the drawing, in Fig. 1 thereof body 15 is illustrated as comprising two parts as main part 150 and cap 105 screwed or otherwise secured thereto. Said cap 105 is shown in said Fig. 1 as abutting against shoulder 1500 of main part 150 and formed between said main part 150 and cap 105 is cavity 8

having shoulders 6, 7 between which collar 5 of stem 4 is held against endwise movement but is permitted freedom of rotation. Cap 105 is also provided with a cavity 9 preferably substantially annular in contour and preferably having a rough surface such as would naturally result in an unmachined casting (see Fig. 2). Said cavity 9 is illustrated in said Fig. 1 as comprising a plurality of annular channels as 12, 13 and as having leading therefrom to the outside of cap 105, ducts as 19 through which molten metal or other suitable material may be poured as hereinafter described. In said Fig. 1 stem 4 is illustrated as provided with a plurality of annular grooves as 40, 41 offset vertically from annular channels 12, 13 of cap 105. The annular space comprising channels 12, 13 and grooves 40, 41 is occupied by insert 20 comprising any suitable material such as soft metal which may be readily melted and poured in through ducts as 19. The vertical offsetting of stem grooves 40, 41 relative to body channels 12, 13 provides a greater diversity of contour for insert 20 and thereby a higher packing efficiency than when said offsetting is omitted. As illustrated in Fig. 2 the relatively rough walls of cavity 9 will prevent rotation of insert 20 therein as will also the sprues thereof in ducts 19; while the smooth contour of grooves 40, 41 in stem 4 will allow said stem to be rotated against said insert.

The arrangement of Fig. 4 differs from that of Fig. 1 in that cavity 9 comprises one annular channel and one duct 19 therefrom.

In Fig. 5 cavity 9 comprises a single annular channel and is formed concentric with stem 4 and of sufficient smoothness to allow insert 20 to rotate therein. Stem 4 in said Fig. 5 is provided with annular groove 40 and has duct 29 leading thereto from the upper part of said stem. Thus when sufficient molten metal is poured into said duct 29 to fill channel 40 and said duct 29 the resulting insert 20 will be held fast to said stem and rotate with it.

In Fig. 6 collar 5 of stem 4 is illustrated as located vertically above insert 20 and as held against endwise movement by means of shoulder 7 therebelow and nut 1050 thereabove. Also as shown in said Fig. 6 the sprue in duct 19 may be removed and insert 20



be free to turn relative to either body 15 or stem 4 or both.

In Fig. 7 stem 4 is provided with shoulder 10 abutting upwardly against shoulder 11 of body 15. This arrangement is efficient where there is no downward thrust on said stem 4 but only upward thrust. Also insert 9 is shown as poured through duct 190 within body 15 whereby no access from the outside to said insert may be had.

In Fig. 8 collar 5 of stem 4 is held upwardly against shoulder 6 by means of nut 1005 therebelow. In Figs. 1, 4, 5, 6 and 7 stem 4 is illustrated as having a threaded portion 400 in engagement with an internally threaded sleeve 25 held against rotation by groove 26 therein in engagement with feather 27 projecting inwardly from body 15. The rotation of said stem thereby actuates said sleeve 25 up or down as may be desired.

In Fig. 8 my improvements are illustrated as applied to a plug cock wherein stem 4 is formed into a square at 404 in engagement with a similar shaped cavity 28 in the upper part of plug 29.

The relative arrangement of the parts of my improved device provides a packing of so permanent a character that it is unnecessary to provide any means for adjusting the soft metal insert to prevent leakage around the stem. Said device is therefore non-adjustable and the coacting packing surfaces inaccessible whereby unskilled or malicious meddling therewith is entirely eliminated.

Numerous other modifications may be had within the scope and spirit of my invention but those shown are sufficient to illustrate the character of my improvements.

I claim:

1. In a device of the character specified the combination of a body, an endwise immovable stem rotatable therein, an annular channel within the body, an annular groove in the stem opposite the channel in the body and an inaccessible insert in co-engagement with body channel and the stem groove.
2. In a device of the character specified, the combination of a body, an endwise immovable stem rotatable therein, an annular channel within the body, an annular groove in the stem opposite the channel in the body and a non-adjustable and inaccessible insert filling both the body channel and the stem groove.
3. In a device of the character specified, the combination of a body, an endwise immovable stem rotatable therein, a cavity within the body and entirely surrounding the stem, a groove around the stem facing the cavity in the body, an inaccessible insert in the body cavity extending into the stem groove, and means independent of the insert for taking the endthrust of the stem.

4. In a device of the character specified, the combination of a body, an endwise immovable stem rotatable therein, a cavity within the body comprising a plurality of annular channels, an annular groove in the stem opposite one or more of the body channels, and an insert within the body cavity extending into the stem groove.

5. In a device of the character specified, the combination of a body, a stem rotatable therein, an annular channel within the body an annular groove in the stem, a non-adjustable insert filling the body channel and extending into and filling the stem groove, and means for preventing the endthrust of the stem being communicated to said insert.

6. In a device of the character specified, the combination of a body, a stem rotatable therein, a cavity within the body and entirely surrounding the stem, a groove around the stem facing the body cavity, an insert filling the body cavity and extending into and filling the stem groove and means independent of the insert for taking the endthrust of the stem.

7. In a device of the character specified, the combination of a body, a stem rotatable therein, a cavity within the body entirely surrounding the stem, a groove around the stem facing the body cavity, an insert filling the body cavity and extending into and filling the stem groove and means independent of said insert for taking the upward thrust of said stem.

8. In a device of the character specified, the combination of a body, a stem rotatable therein, a cavity within the body entirely surrounding the stem, a groove around the stem facing the cavity in the body, an insert in the body cavity extending into the stem groove and a duct through which said insert may be poured when in a molten state.

9. In a device of the character specified, the combination of a body, a stem rotatable therein, a cavity within the body entirely surrounding the stem, a groove around the stem facing the cavity in the body, an insert in the body cavity extending into the stem groove, a duct through which said insert may be poured when in a molten state and means independent of said insert for taking the upward thrust of the stem.

10. In a device of the character specified, the combination of a body, a stem rotatable therein, a cavity within the body entirely surrounding the stem, a groove around the stem offset vertically relative to the body cavity an insert in the body cavity and extending into the stem groove and means independent of the insert for taking the upward thrust of the stem.

11. In a device of the character specified, the combination of a body, a stem rotatable therein, an annular channel within the body, an annular groove in the stem offset verti-



cally relative to the body channel, and an insert filling the body channel and extending into and filling the stem groove.

12. In a device of the character specified,  
5 the combination of a body, a stem rotatable therein, a plurality of annular channels within the body, a plurality of annular grooves in the stem, respectively opposite said body channels, inserts within the body  
10 channels and extending into said stem grooves respectively, ducts through which

said inserts may be poured when in a molten state and means independent of said inserts for taking the end thrust of said stem.

Signed at Philadelphia, county of Philadelphia and State of Pennsylvania, this 9 day of November, 1908, before two subscribing witnesses.

GEORGE W. HAMMOND.

Witnesses:

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WILBUR M. STONE.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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