

J. W. McCOWN.

VALVE.

APPLICATION FILED OCT. 16, 1909.

958,521.

Patented May 17, 1910.

2 SHEETS—SHEET 1.

Fig. 1

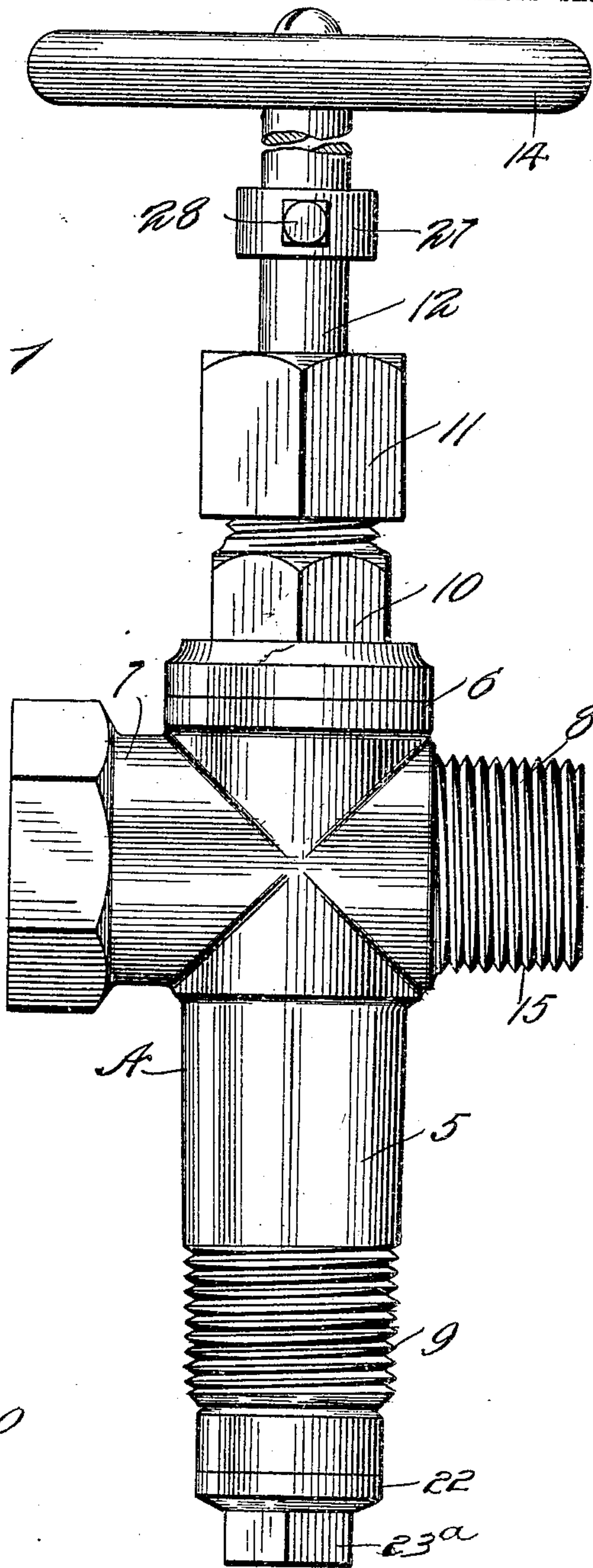


Fig. 5

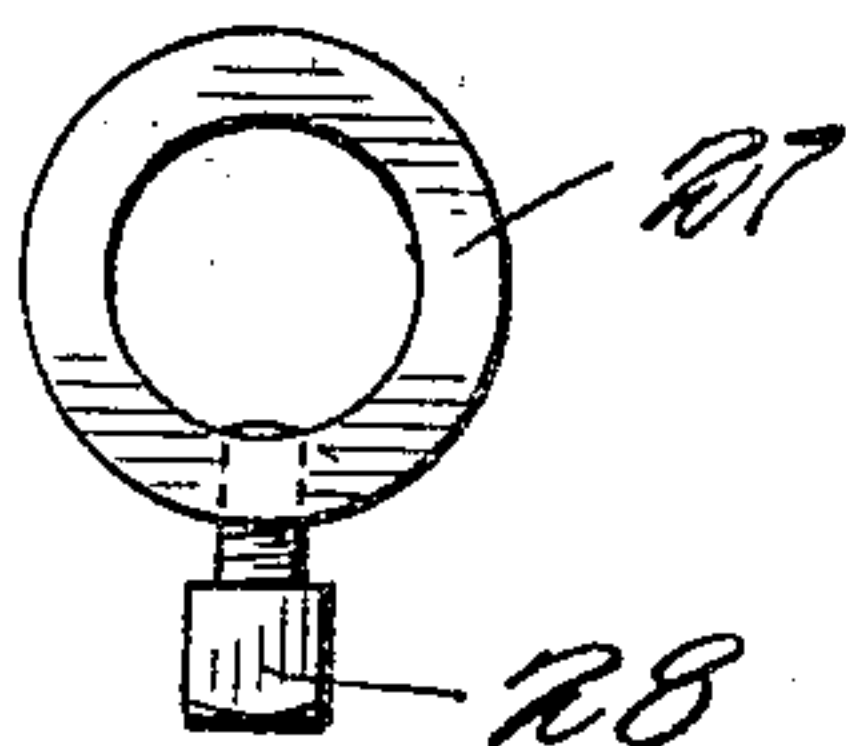
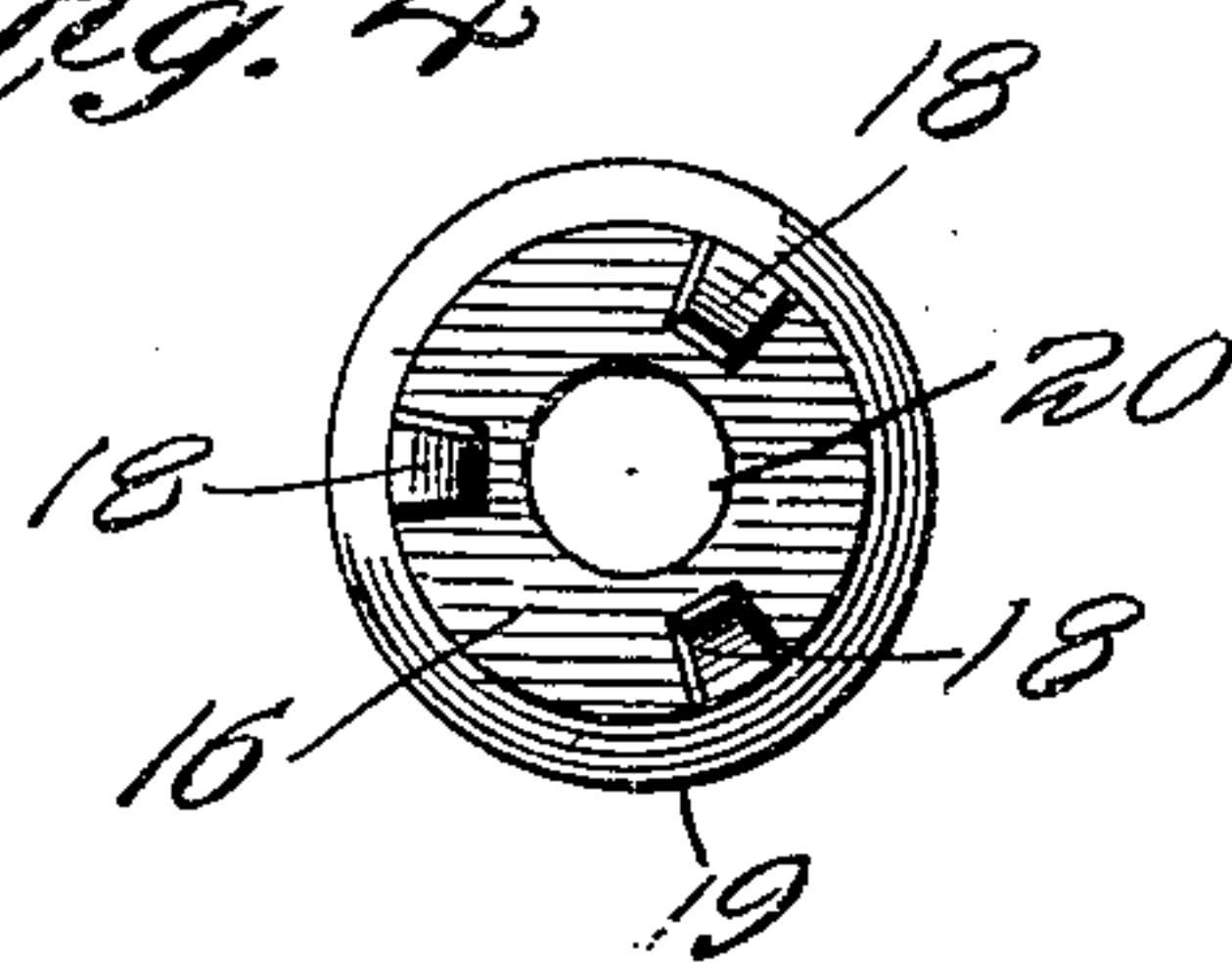


Fig. 4



Witnesses

R. C. Claffin
Wm. Baggett

Inventor

John W. McCown

By Victor J. Evans
Attorney

VALVE.

APPLICATION FILED OCT. 15, 1909.

958,521.

Patented May 17, 1910.

2 SHEETS—SHEET 2.

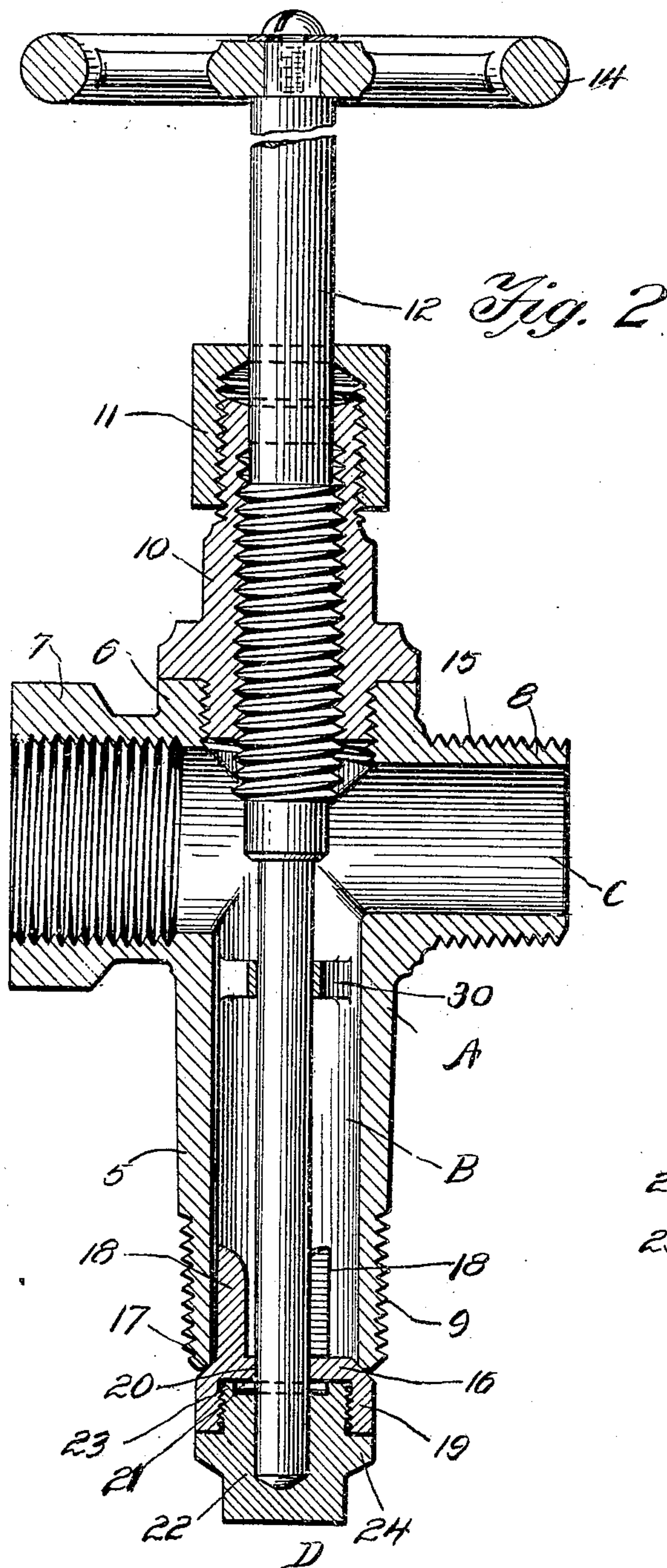
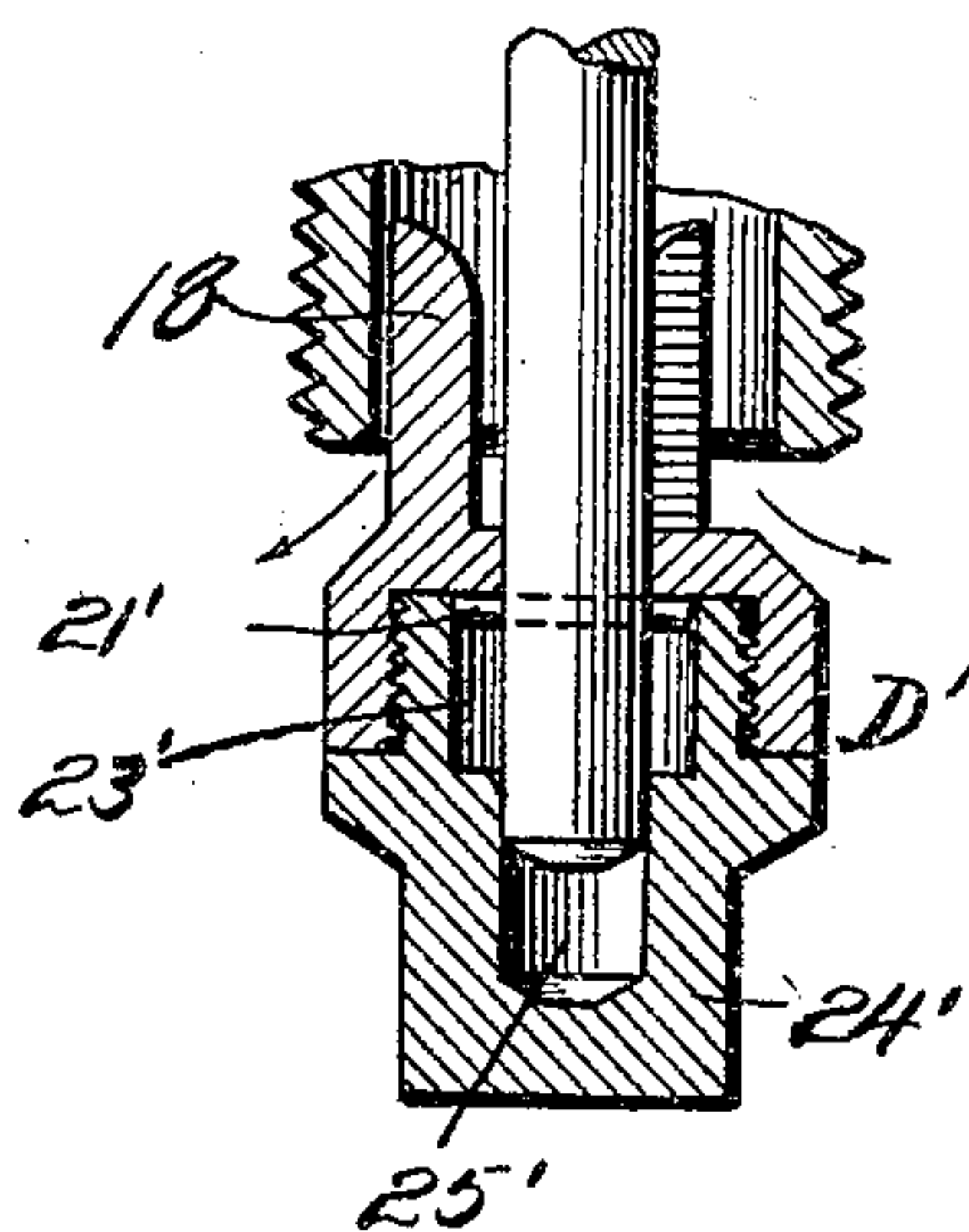


Fig. 3



Witnesses

R. C. Claffin
J. W. Bagger

Inventor

John W. McCown.

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

JOHN WICKLIFFE McCOWN, OF BUTLER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
NEWTON C. McCOLLOUGH, OF BUTLER, PENNSYLVANIA.

VALVE.

958,521.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed October 15, 1909. Serial No. 522,818.

To all whom it may concern:

Be it known that I, JOHN WICKLIFFE McCOWN, a citizen of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to that class of valves which are specially adapted to form closures for tanks wherein liquids of various kinds are kept under heavy pressure, and one object of the invention is to provide a valve of simple and improved construction in which the pressure of the liquid shall have a tendency to seat the valve so that, when the latter is in its closed or obstructing position, the liquid pressure shall have a tendency to hold it tightly upon the seat, thus avoiding leakage.

A further object of the invention is to provide a casing for a valve of the character described which will admit of liquid being pumped into the tank with which the valve is connected while the latter is unseated.

A further object of the invention is to provide a valve of the character described which, when circumstances require it, may be used as a check valve by slightly modifying the construction.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and improved form of the improved valve; it being however understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawings: Figure 1 is a side elevation of a device constructed in accordance with the invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a sectional detail view illustrating a slightly modified construction of the valve. Fig. 4 is an end view of the valve. Fig. 5 is an end view showing a ring or collar adjusted upon the valve stem for the purpose of limiting the movement of the latter.

Corresponding parts in the several figures are denoted by like characters of reference.

In the construction of the improved device there is employed a four-way valve casing A having intersecting channels or passages B and C, the former of which extends through oppositely disposed arms 5 and 6 of the casing while the channel C likewise extends through oppositely extending arms 7 and 8. The arm 5 is externally threaded at 9 for connection with a tank or other receptacle. The arm 6 is internally threaded for the reception of a bushing 10 carrying a stuffing box or gland 11 through which the valve stem 12 extends; said valve stem having threaded connection with the bushing, and said valve stem being provided with a handle 14 whereby it may be manipulated. The arm 7 of the intersecting channel C is internally threaded for the reception of a plug or a drainage pipe; and the arm 8, which constitutes the feed arm may be externally threaded, as shown at 15 to enable it to be conveniently connected with a feed pipe leading to a source of supply.

The valve stem 12 extends entirely through the channel B of the casing, and it carries at its inner end the valve D which comprises a valve disk 16 adapted to engage a seat 17 which has been ground or otherwise formed upon the extremity of the arm 5. The valve disk is provided with guide arms 18 extending into the channel B of the valve casing, and said valve disk has an outwardly extending annular flange 19 which is threaded upon its inner surface. The valve disk has a central aperture 20 for the passage of the valve stem which latter is provided with a transverse pin or stop member 21 whereby the valve disk is retained upon the stem. A cap member 22 provided with a wrench seat 23^a is externally threaded to fit within the flange 19 of the valve disk, and said cap member is provided with a recess 23 for the reception of the pin or stop member 21; said cap member is also provided with an annular flange 24 adapted to abut upon the flange 19 of the valve disk to prevent the cap member from being tightened upon the pin or stop member 21 which latter will thus be swiveled in the recess 23. Under the construction hereinbefore described and illustrated in Fig. 2 of the drawings, the movement of the valve stem in one

direction, caused by turning it upon its axis with its threaded portion in engagement with the internally threaded bushing 10, will unseat the valve, as will be readily understood, while movement of the valve stem in the opposite direction will tend to tightly seat the valve. Assuming the valve casing to be connected by the arm 5 with a boiler tank or receptacle wherein liquid of any kind is kept under heavy pressure, the pressure of the liquid will obviously have a tendency to force the valve tightly upon its seat, thus avoiding leakage. Owing to the swivel connection of the valve with its stem, there will be little or no grinding movement of the valve upon its seat, and excessive wear upon the parts whereby the seat and the valve might be injuriously affected, will be avoided.

Under the slight modification, illustrated in Fig. 3 of the drawings, the cap member here designated 24' is equipped with recesses 23' and 25' for the reception respectively of the pin or stop member 21' and of the terminal end of the valve stem, said recesses being of such depth as to permit the valve here designated D' to have a limited sliding movement longitudinally of the valve stem. It follows that when the valve is unseated, as shown in Fig. 3, it is free to move longitudinally in the direction of its seat, thus operating as a check valve. This modified form is particularly desirable when the device is to be used in connection with a pump for the purpose of injecting liquid into the tank or receptacle with which it is connected. For the purpose of regulating and limiting the longitudinal movement of the valve stem and thereby the extent to which the valve may be unseated, a bridge or guide member, or obstruction 30 of any desired character may be formed interiorly upon the casing A, in the path of the threaded portion of the valve stem as shown in Fig. 2 thereby limiting the longitudinal movement of the latter, the position of said bridge or obstructing member being obviously so arranged as to prevent the guide arms 18 being disengaged from the channel in the arm 5 of the valve casing. A similar result may be obtained by mounting a stop member consisting of a ring sleeve or collar 27 upon the valve stem 12 where it may be secured adjustably by means of a set screw 28, as shown in Fig. 1 of the drawings, at a suitable distance from the gland 11 through which the valve stem operates, for the purpose of limiting the longitudinal movement of the valve stem, and thereby the extent to which the valve may be unseated. This may be regulated in such a manner as to prevent the guide arms 18 being disengaged from the channel in the arm 5 of the valve casing.

From the foregoing description taken in

connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The construction is simple and inexpensive, and the device in practical use has been found to be thoroughly efficient for the purposes for which it is provided.

Claims:

1. A four-way valve casing having intersecting channels extending through oppositely disposed pairs of arms, a bushing connected terminally with one of the arms and having a packing gland, the opposite arm being terminally ground to form a seat, a valve stem extending through the casing and through the bushing and gland in threaded connection with the bushing, a valve disk engaging the stem and having guide arms extending into the casing, and an internally threaded annular flange, a pin extending transversely through the valve stem to retain the valve upon the latter, and a cap member having threaded connection with the flange of the valve and equipped with a recess to accommodate the transverse pin.

2. A four-way valve casing having intersecting channels extending through oppositely disposed pairs of arms, a bushing connected terminally with one of the arms and having a packing gland, the opposite arm being terminally ground to form a seat, a valve stem extending through the casing and through the bushing and gland in threaded connection with the bushing, a valve disk engaging the stem and having guide arms extending into the casing, and an internally threaded annular flange, a pin extending transversely through the valve stem to retain the valve upon the stem, and a cap member having threaded connection with the flange of the valve and equipped with recesses to accommodate the transverse pin and the terminal end of the valve stem and to admit of longitudinal movement of the valve upon the stem.

3. In a device of the character described, a valve stem, a valve disk engaging the stem and having an annular internally threaded flange, a pin extending transversely through the stem to retain the valve disk, and a cap member threaded into the flange of the valve disk and having recesses to accommodate the transverse pin and the terminal end of the valve stem to permit longitudinal movement of the valve upon the stem.

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

JOHN WICKLIFFE McCOWN.

Witnesses:

DORA M. NICKLAESS,
W. J. EURY.