

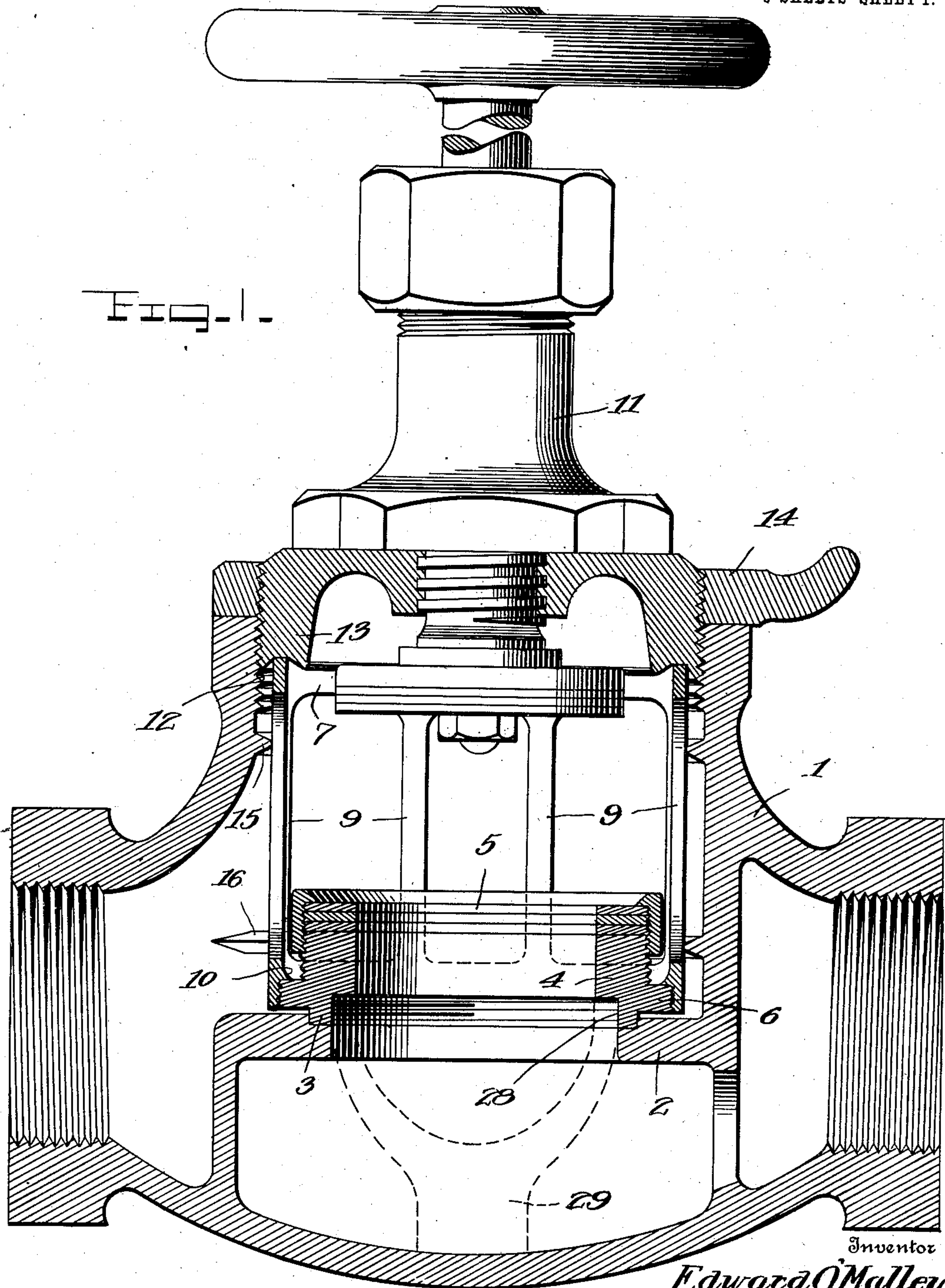
E. O'MALLEY.  
VALVE.

APPLICATION FILED MAY 6, 1909.

978,928.

Patented Dec. 20, 1910.

3 SHEETS—SHEET 1.



Inventor

Edward O'Malley

Witnesses

W. H. Rockwell  
Caroline Morgan.

By

Langdon Moore

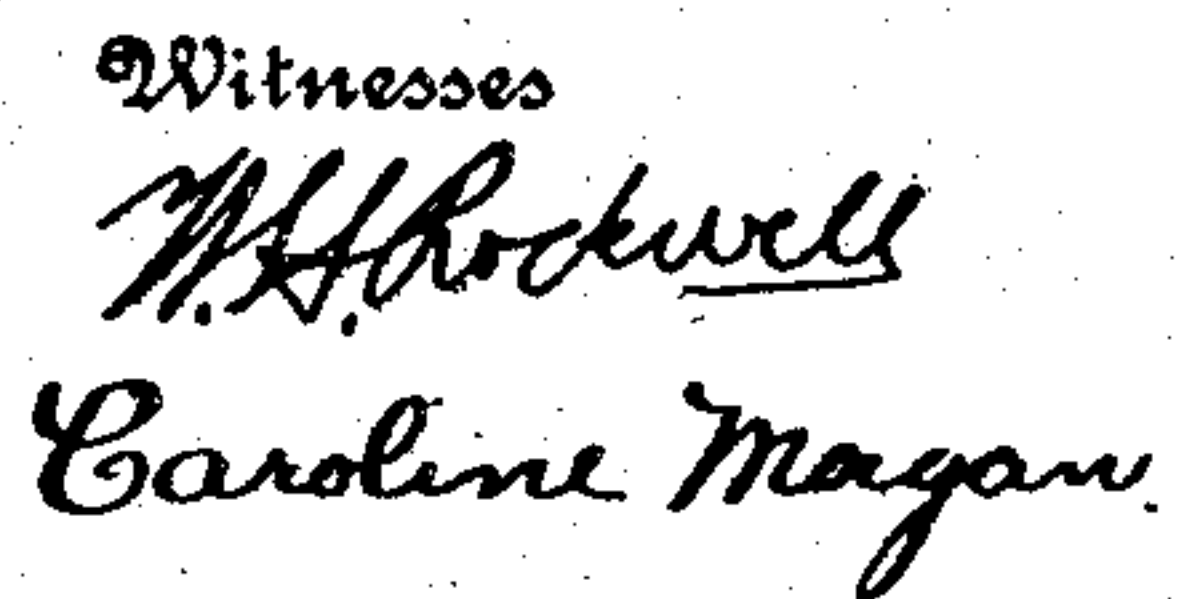
Attorney

VALVE.

Patented Dec. 20, 1910.

3 SHEETS—SHEET 2.

978,928.



பெயர்

Raugdon Moore

Attorney



E. O'MALLEY.

VALVE.

APPLICATION FILED MAY 6, 1909.

Patented Dec. 20, 1910.

3 SHEETS—SHEET 3.

978,928.

Fig. 3.

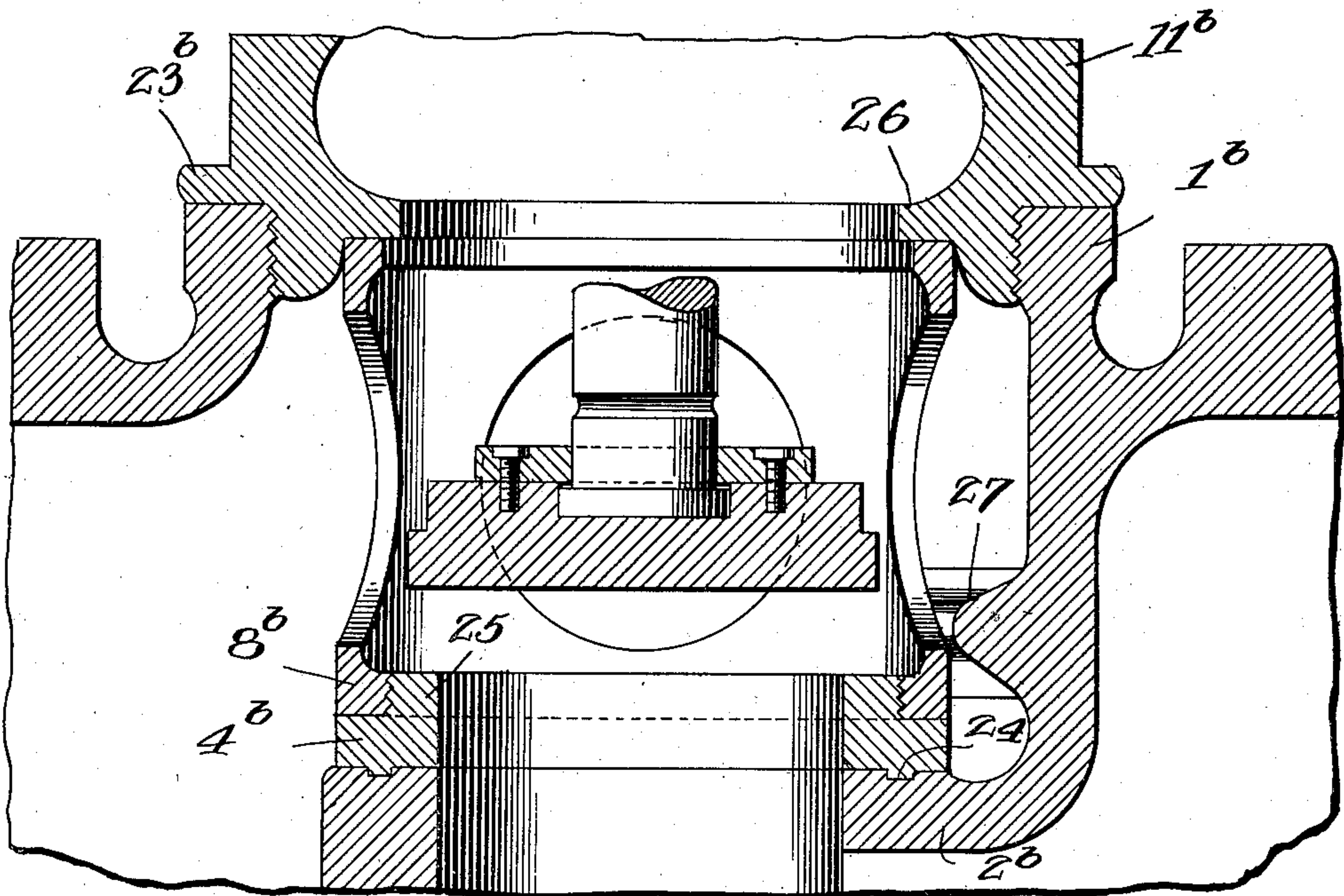


Fig. 4.

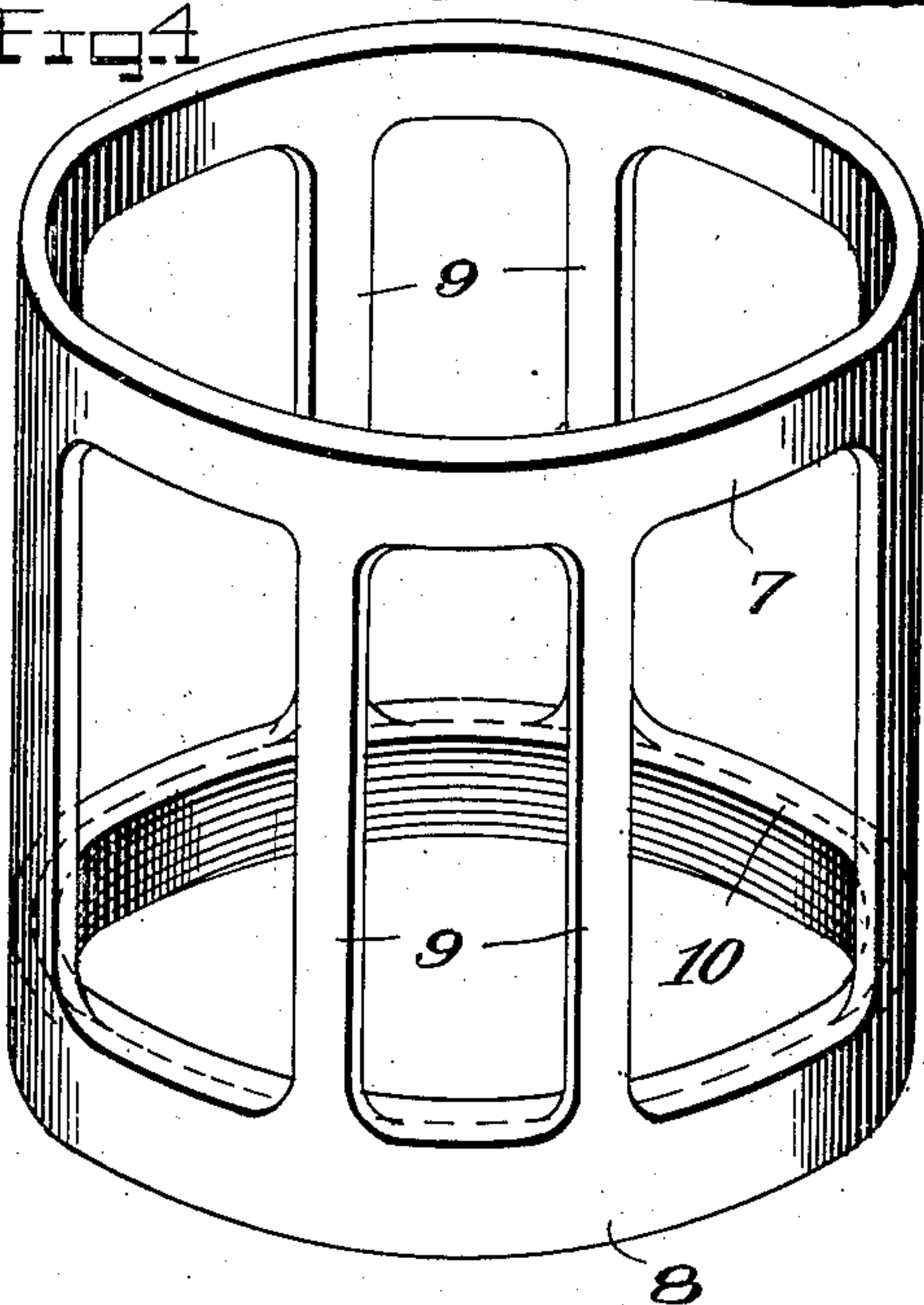
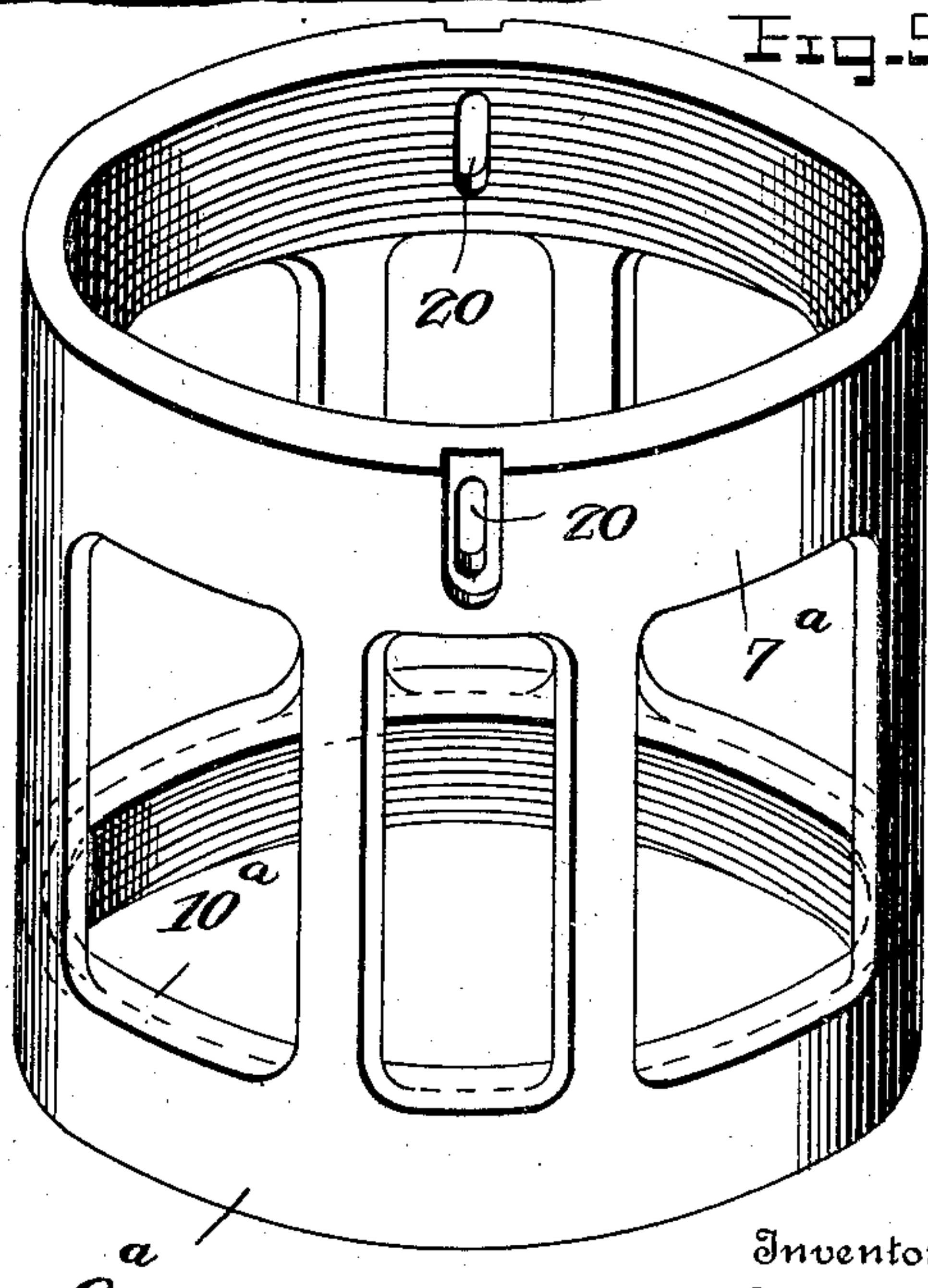


Fig. 5.



Witnesses  
*W. H. Rodwell*  
*Caroline Morgan*

Inventor  
*Edward O'Malley*  
By *Langdon Moon*  
Attorney



# UNITED STATES PATENT OFFICE.

EDWARD O'MALLEY, OF JACKSON, TENNESSEE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO O'MALLEY-BEARE VALVE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

## VALVE.

978,928.

Specification of Letters Patent. Patented Dec. 20, 1910.

Application filed May 6, 1909. Serial No. 494,329.

*To all whom it may concern:*

Be it known that I, EDWARD O'MALLEY, a citizen of the United States, residing at Jackson, in the county of Madison and State of Tennessee, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves and more particularly to globe valves provided with removable seats.

The object of this invention is to provide a valve of the type specified with a removable seat supported upon the web which is securely braced and held in position by contact with the valve cap. The advantages of such a construction are obvious. By providing a member attached to the removable seat which extends upward into engagement with the valve cap it is readily seen that when it is desired to remove the seat upon the removal of the valve cap the seat carrying member may be easily withdrawn from the interior of the casing, the seat detached, refaced, replaced in the carrying member and returned to its operative position upon the web. This construction is especially advantageous where it is desired to use a series of removable seat plates carried upon a seat frame and in this case the seat frame is attached to the cage or carrying member adapted to be engaged by the valve cap. By this construction the operation of removing the valve seat is greatly simplified.

While the preferred forms of this invention are illustrated in the accompanying sheets of drawings, it is understood that minor detail changes may be made without departing from the scope of the invention.

Figure 1 is a longitudinal sectional view through a globe valve illustrating one form of this invention. Fig. 2 is a longitudinal sectional view through a globe valve illustrating another form of this invention. Fig. 3 is a longitudinal sectional view through a portion of the globe valve illustrating a modified form of this invention. Fig. 4 is a perspective view of a detail of Fig. 1. Fig. 5 is a perspective view of a detail of Fig. 2.

In Fig. 1 the numeral 1 indicates the casing of the ordinary valve of the globe type and 2 is the web or bridge employed in valves of this character. The web is pro-

vided with the usual central opening, the upper side of the web surrounding the opening is recessed to form a seat for the depending annular projection 3 of the seat frame 4. The seat frame is provided with a series of removable trued seat plates 5 detachably secured to the seat frame. The lower portion of the seat frame is provided with an outwardly extending flange 6 which is screw threaded on its outer surface.

The cylindrical cage, illustrated in detail in Fig. 4, consists of upper and lower rings 7 and 8 joined together by integral spacing members 9. The lower ring 8 is internally screw threaded and is adapted to engage the threads upon the flange portion 6 of the seat frame 4. An internal flange 10 is provided upon the inner side of the lower ring 8 at the termination of the screw threaded portion. The valve cap 11 is screw threaded and is adapted to engage the internal threads 12 upon the casing 1. The cap is provided with a depending annular member 13 adapted to engage the upper ring 7 of the cage. A screw threaded locking member 14 is arranged upon the screw threaded portion 12 of the valve cap and is adapted to bear upon the upper portion of the valve casing 1. An internal guide 15 is provided on the interior of the casing near the upper ring 7 of the cage and a similar guide 16 is formed on the inner side of the valve casing near the lower ring 8 of the cage.

In Fig. 2 the seat frame 4<sup>a</sup> is in the form of an externally screw threaded annulus, and is provided with a plurality of removable trued seat plates 5<sup>a</sup>. The screw threaded portion of the lower ring 8<sup>a</sup> of the cage engages the threaded portion of seat frame 4<sup>a</sup> and the internal flange 10<sup>a</sup> upon the lower ring 8<sup>a</sup> engages the uppermost seat plate securing the same firmly upon the seat frame. The upper ring 7<sup>a</sup> of the cage is also interiorly screw threaded to receive a correspondingly screw threaded annular adjusting member 17. The upper portion 18 of this adjusting member 17 extends outward above the screw threaded portion until its diameter corresponds with that of the cage. The inner surface of the upper portion is provided with an inward bevel, a plurality of adjusting screws 19 are provided and are adapted to be inserted



through slots 20 in the upper ring 7<sup>a</sup> of the cage and a plurality of receiving apertures 21 for the screws are provided in the adjusting member 17. The downwardly projecting screw threaded flange 22 of the cap 11<sup>a</sup> which engages the upper portion of the valve casing 1<sup>a</sup> is recessed to receive the upper portion of the cage and the upper portion of the adjusting member 17, the upper portion of this recess being shaped to correspond to the upper surface of the adjusting member 17. Internal guides 15<sup>a</sup> and 16<sup>a</sup> upon the valve casing are provided for the cage. In this form the locking ring for the cap may be omitted, as the cap 11<sup>a</sup> is shown with a flanged portion 23 adapted to engage the casing 1<sup>a</sup>.

In Fig. 3 the valve seat 4<sup>b</sup> is in one part with a depending annular flange 24 formed on the underside of the valve seat 4<sup>b</sup> and the web 2<sup>b</sup> is correspondingly recessed to provide a seat for this flange 24. The upper, outer surface of the valve seat is cut away and the exterior of the upstanding portion 25 is screw threaded. The cage is of the same internal diameter as the valve seat, the lower portion 8<sup>b</sup> of the cage is screw threaded to engage the threaded upstanding portion 25 of the seat. The lower portion of the valve 11<sup>b</sup> is provided with an internal flange 26 adapted to engage the upper ring of the cage, and an outer flange 23<sup>b</sup> adapted to engage this casing 1<sup>b</sup>. In this form but one internal guide 27 for the cage is provided.

In each form of the invention as illustrated the valve seats 4, 4<sup>a</sup> and 4<sup>b</sup> are removably carried by their respective cages and are held directly in their proper position upon the webs 2, 2<sup>a</sup> and 2<sup>b</sup> by the engagement of the caps 11, 11<sup>a</sup> and 11<sup>b</sup> with the upper portion of the cages. By removably securing the seat or seat frame to the cage the seats may be readily removed from the casing for the purpose of refacing. The internal webs 15 and 16, 15<sup>a</sup> and 16<sup>a</sup> and 27 upon the valve casings will guide the seats and cages upon insertion of these members, and will aid in keeping the said members in proper position when the caps are being secured.

In the form shown in Fig. 2, it will be readily seen that if the same form of cage be employed as illustrated in Fig. 1, the cap 11<sup>a</sup> will not engage the upper ring of the cage after the removal of a seat plate, and the seat frame 4<sup>a</sup> is again secured thereto, because the interior flange 10<sup>a</sup> upon the lower ring 8<sup>a</sup> is adapted to engage and secure the upper seat plate to the seat frame. To overcome this difficulty the adjustable ring member 17 is carried by the upper ring 7<sup>a</sup> and upon the removal of a seat plate a corresponding adjustment is made in the upper member 17<sup>a</sup>, so that at all times

the cap 11<sup>a</sup> will exert a bracing effort upon the seat plate and seat frame 4<sup>a</sup> through the adjusting member 17<sup>a</sup> and cage.

In Figs. 1 and 2 the interior of the lower portion of the seat frames 4 and 4<sup>a</sup> are recessed as at 28 and 28<sup>a</sup> to engage chair members 29 and 29<sup>a</sup> which are supported directly upon the inner side of the lower portion of the valve casing 1 and 1<sup>a</sup>, as illustrated in dotted lines in Fig. 1, and in full lines in Fig. 2. The chair members may be screw threaded to engage the seat frame and may also be rigidly secured to the lower casings as shown in Fig. 2.

What I claim is:—

1. In a valve of the character described, a valve cap, a web, a removable seat frame thereon, a plurality of detachable seat plates carried by the frame, and a cage engaging the cap and removably secured to the seat frame.

2. In a valve of the character described, a valve cap, a web, a removable seat frame thereon, a plurality of detachable seat plates carried by the frame, a cage engaging the cap removably secured to the seat frame, and a member upon the cage securing the plates in position upon the frame.

3. In a valve of the character described, a valve cap, a web, a removable seat frame engaging the web, a cage member detachably secured at its lower portion to the frame, an adjusting member carried upon the upper portion of the cage, the under side of the cap provided with a recess to receive the upper portion of the cage and adjusting member.

4. In a valve of the character described, a valve cap provided with a depending threaded flange and an outwardly extending flange, the screw threaded flange provided with a recess and an internal annular projection, a web and a removable seat frame carried thereby, a cage detachably engaging the seat frame, an adjusting member carried upon the cage adapted to enter the recessed portion of the cap and be engaged by the annular projection.

5. In a valve of the character described, a valve cap, a web, a removable seat frame, a plurality of detachable trued seat plates thereon, a removable cage secured to the frame and securing the seat plates in position thereon, an adjusting member carried upon the cage engaging the cap adapted to compensate for the removal of the plates.

6. In a valve of the character described, a valve cap, a web, a removable seat frame thereon, a support for the frame resting upon the bottom inner wall of the casing, and a detachably secured bracing and securing member between the seat and cap.

7. In a valve of the character described, a cap, a web, a seat frame removably carried thereby, a plurality of removable seat



plates carried upon the frame, a cage detachably secured to the frame provided with means securing the seat plates thereon, a support engaging the frame and resting upon the inner wall of the casing.

8. In a valve of the character described, a cap, a web, a seat frame removably carried thereby, a plurality of removable seat plates upon the frame, means for securing the seat plates in position, a detachable securing member upon the upper side of the frame engaging the cap and a chair resting upon the inner wall of the casing supporting the underside of the frame.

9. In a valve of the character described, a cap, a web, a seat frame removably carried thereby, a plurality of removable seat plates upon the frame, means for securing the seat plates in position, a detachable securing member upon the upper side of the frame engaging the cap, a chair resting upon the inner wall of the casing supporting the underside of the frame and removably secured to the casing.

10. In a valve, a valve casing, a plurality of removable trued seat plates, a cage member in engagement with the seat plates, a removable cap upon the valve casing adapted to engage the cage member, the cage member having means to compensate for the removal of a seat plate.

11. In a valve, a valve casing, a plurality of removable trued seat plates, an opening

provided in the valve casing for the insertion and removal of the seat plates, a cap closing said opening, a cage member engaging said seat plates and cap, the cage member provided with means for compensating for the removal of a seat plate without altering the relation of the cap to the valve casing.

12. In a valve, a valve casing, a cap thereon, a valve head carried thereby, a plurality of removable trued head plates, a plurality of removable trued seat plates, means for securing both the head plates and seat plates in their respective positions, and means for compensating for the removal of a damaged plate without altering the relation between the securing means and the valve casing.

13. In a valve, a valve casing, a plurality of removable trued seat plates, an opening provided in the valve casing for the insertion and removal of the seat plates, a cap closing the opening, a valve head, a plurality of interchangeable trued head plates removably secured to the valve head, a cage member engaging said seat plates and cap, and means provided upon the cage member for compensating for the removal of a seat plate without altering the relation of the cap to the valve casing.

EDWARD O'MALLEY.

Witnesses:

R. L. BEARE,

R. H. DERRYBERRY.