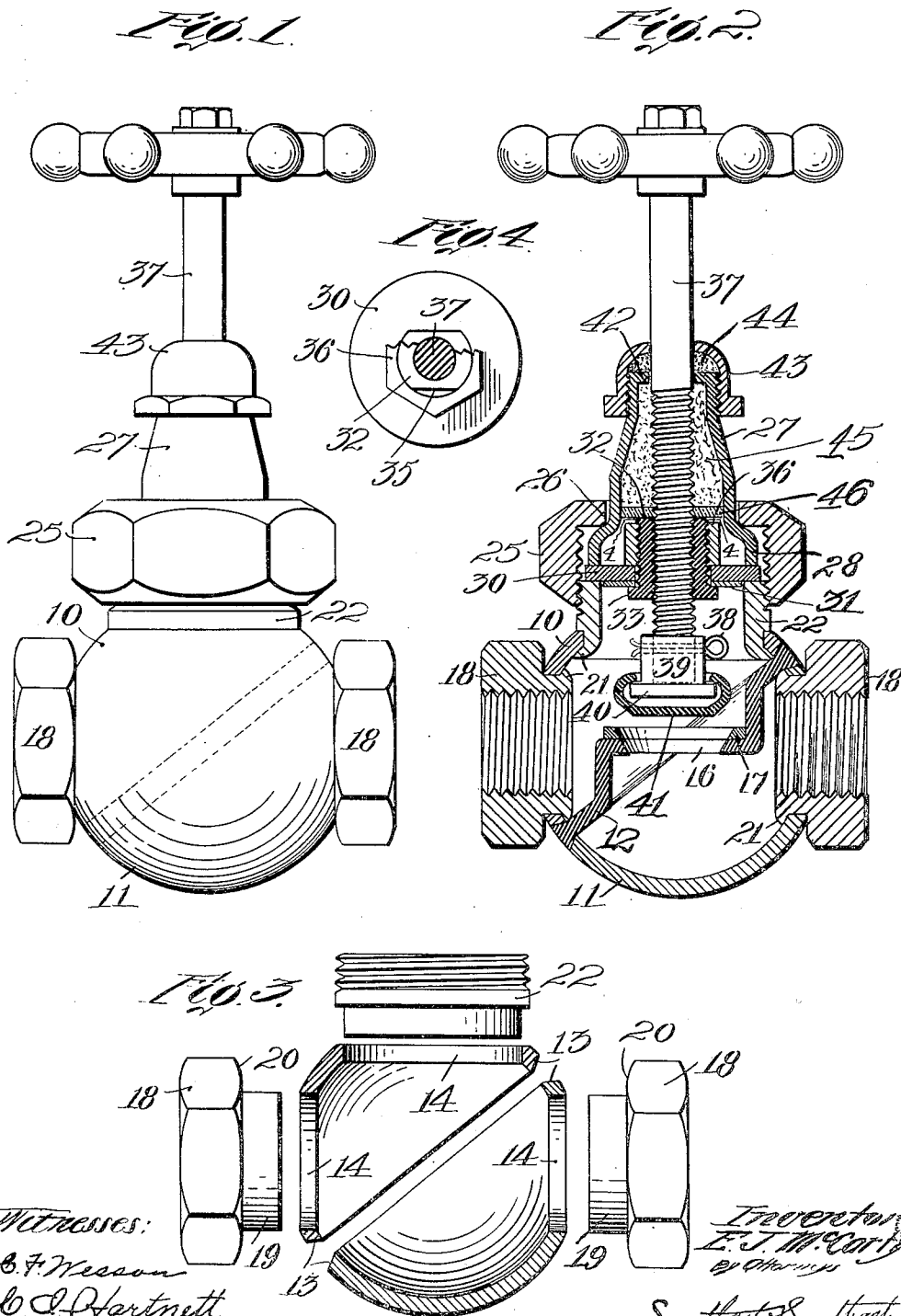


VALVE.

1,034,370.



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UNITED STATES PATENT OFFICE.

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VALVE.

1,034,370.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EUGENE J. McCARTY, a citizen of the United States, residing at Clinton, in the county of Worcester and State of Massachusetts, have invented a new and useful Valve, of which the following is a specification.

This invention relates to valves and while capable of general use, most of the features thereof are particularly applicable to globe valves, for high pressure.

The principal objects of the invention are to provide an improved construction and method of manufacture whereby the body of the valve can be made of sheet metal in such a way that its exterior form will not be different from that of the ordinary cast globe valve; to provide an improved means for holding and guiding the valve stem so that the said means shall be detachable from the body of the valve; and to provide an improved valve proper.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawing in which—

Figure 1 is a side elevation of a globe valve constructed according to this invention. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is an elevation of the same valve showing certain parts thereof before they are assembled, and Fig. 4 is a sectional view on the line 4—4 of Fig. 2.

The valve shown in the drawings comprises a casing consisting of two main members 10 and 11 and an intermediate member 12. Each of these members is formed of sheet metal, preferably steel, and shaped up in dies. The members 10 and 11 are beveled off at their edges 13 and provided with openings 14 constituting the inlets and outlets. The intermediate member consists of a disk of sheet metal of circular form and of the same size as the diameter of the globe valve. It is stamped up to form a perforation 16 therein. It is shown as provided with a valve seat 17 consisting of a piece of composition, bronze, nickel bronze or the like, set on the disk and welded or otherwise secured over the perforation 16. The ends of the valve consist of castings 18 each having a cylindrical projection 19 adapted to fit into one of the openings 14. They also project out at 20 so as to engage over the edges of the opening as indicated in Fig. 2.

In assembling, the projections 19 are inserted in the openings and flanged over to form exterior flanges 21. At the same time these parts are welded either electrically or otherwise to the edge of the opening. The castings 18 are provided with interior screw-threads for an obvious purpose. Another casting 22 is shown having an external screw-thread and secured to the valve chamber in the same way.

It will be understood, of course, that while 45 degrees is the most convenient angle for the joint between the hemispherical members, any other angle may be adopted according to the necessity of the case. In order to further change the angle between the castings 18, another plan can be adopted according to this invention. This consists in forming the members 10 and 11 in the same way as hereinbefore indicated and leaving one member in its original shape but cutting off the edge of the other at any desired angle so as to permit the two members to be put together with the outlets at an angle to each other, as indicated in my Patent No. 966,040 granted Aug. 2, 1910. This does not interfere with the form of the disk 12 because the member which is changed is of spherical form. In this way a large number of modifications can be made without changing the original dies. These parts can be made of brass, if desired.

On the casting 22 is removably mounted a nut 25 which has an inwardly extending flange 26 provided with a central passage therethrough. Extending into this nut is a hollow sheet metal member 27 provided with an outwardly flared projection 28 inside the nut so that the flange 26 will bear on the outer wall thereof so as to force it to its seat. Mounted between the hollow member and the end of the casting 22 is a plate 30. Obviously the screwing up of the nut will clamp the plate firmly in position and also hold the sheet metal member 27 securely in place. On the bottom of the plate 30 is a disk 31 fitting inside the passage through the casting 22 and serving as a guide. These two plates or disks are centrally perforated and extending through them is a nut 32 having an outwardly extending flange 33 at the bottom and provided with interior and exterior screw-threads. The nut 32 is slabbled off at 35 and the passage through the plate or disk 30 is of similar shape so that the nut cannot turn. This nut is held

in position by an ordinary nut 36 which screws down on the plate or disk 30 and holds the flange 33 firmly against the disk 31.

A valve stem 37 passes through the sheet metal member 27 and the screw-threaded portion passes through the nut 32. On the bottom of the valve stem is secured by means of a cotter pin 38, or the like, a hub 39 having a flange 40 at the bottom. The valve 41 consists of a piece of sheet copper flanged up over the flange 40 in such a way that it is held loosely thereon so that it has a slight play in order that it may exactly seat on the valve seat 17. The cylindrical portion of the valve stem passes through an opening in an inwardly extending end flange 42 on the member 27. On the outside of this is a cap 43 screwed on the end of the member 27 and having a chamber for a packing 44 for an obvious purpose. This is all the packing that is ordinarily necessary, but in some cases, as for instance when used for ammonia, an additional packing 45 of any desired kind can be added in the tapering sheet metal member 27. A washer 46 preferably is used at the bottom of this packing. When the nut 25 is tightened, it forces this packing farther into the tapering member 27 and makes it tight. The packing 44 can then be removed for repairs without allowing leakage or necessitating the closing of the valve, or the packing 44 can be dispensed with.

It will be seen that a valve constructed in accordance with the principles herein set forth will have great strength to withstand high pressure and yet can be made cheaply by die work and welding when made in large quantities. Yet with the use of much less metal than is ordinarily the case, the valve chamber can be much stronger than any cast valve which can be produced. At the same time the entire support for the valve can be removed, taking with it the valve and stem in a very simple manner without interfering with the adjustment or centering thereof. Taken as a whole the valve is inexpensive when made in large quantities and extremely strong and durable.

While I have illustrated and described a particular embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details shown and described, but

What I do claim is:—

1. In a valve the combination with a valve chamber having an exteriorly threaded hollow projection, a nut adapted to screw on said projection, said nut having an inwardly extending flange at the outer side provided with a perforation therethrough, a hollow member extending through said perforation

and having a flaring portion inside the nut, a valve stem extending through said hollow member, and a plate located between the end of the hollow member and the end of the projection and provided with a nut for the valve stem.

2. In a valve, the combination with a valve chamber having an exteriorly threaded hollow projection, a nut adapted to screw on the projection and having an inwardly extending flange at its outer end provided with a perforation, a sheet metal member extending through said perforation and having an enlarged portion inside the nut whereby when the nut is screwed up, the end of said enlarged portion will be forced toward the end of the projection, a plate located between said ends and having thereon a guide plate fitting within the hollow projection, an interiorly and exteriorly threaded nut having a flange at the bottom passing through said plates and projecting above them, a nut outside for securing the flanged nut to the plates, and a valve stem having a screw-thread fitting the inside of the flanged nut.

3. In a valve, the combination with a valve chamber having an exteriorly threaded hollow projection, a nut adapted to screw on said projection, said nut having an inwardly extending flange at the outer side provided with a perforation therethrough, a sheet metal member extending through said perforation and having a flaring portion inside the nut, a valve stem extending through said sheet metal member, a plate located between the end of the sheet metal member and the end of the projection and provided with a nut for the valve stem, a flanged head removably mounted on the end of the valve stem, and a sheet metal cap surrounding said head and flanged over inwardly at the top whereby it is held on the flange thereof.

4. As an article of manufacture, a valve comprising a tubular sheet metal member, means for securing said member on a valve chamber, a valve stem freely slidable in said member, means held by the member for causing the valve stem to feed when turned, a flanged head mounted on the end of the valve stem, and a sheet copper valve provided with an inwardly extending flange for holding it loosely on the flange on the head.

5. As an article of manufacture, a valve comprising a sheet metal chamber having a sheet metal partition therein provided with a valve seat, said chamber having an opening opposite the valve seat, an exteriorly screw-threaded hollow cylindrical member extending into said opening welded to the edges thereof and having a flange extending outwardly against the inside of the valve chamber, a nut fitting said member on the outside, a removable member secured to the

end of the exteriorly screw-threaded member by the nut, a valve stem passing there-through, and a valve on the valve stem for engaging said seat.

5 6. As an article of manufacture, a valve consisting of two members formed of sheet metal each of a general hemispherical form, a sheet metal disk between the valve members provided near the center thereof with a perforation constituting a valve seat, said disk having its edge projecting outwardly on both sides all around and flush with the circumference of the two sheet metal parts and welded thereto, said chamber having a plurality of openings therein, and a corresponding number of hollow screw-threaded members each having a cylindrical projection fitting into one of the openings and having a flange on the outside for engaging the outer wall of the opening, the part extending inside being flanged over to engage the inner wall of the opening and welded all around to the chamber.

25 7. As an article of manufacture, a valve consisting of two members formed of sheet metal each of a general hemispherical form, a sheet metal disk between the valve members extending through them and provided near the center thereof with a perforation constituting a valve seat, said disk having its edge projecting outwardly on both sides all around and flush with the circumference of the two sheet metal parts and welded thereto.

35 8. A method of making globe valves which consists in forming the valve chamber from two hemispherical pieces of sheet metal and

a central disk having a valve seat, beveling the edges of said hemispherical pieces, flanging over the edges of the central disk flush with the spherical surface of the other two members and welding the same thereto.

9. A method of making globe valves which consists in forming the valve chamber from two hemispherical pieces of sheet metal and a central disk having a valve seat, beveling the edges of said hemispherical pieces, flanging over the edges of the central disk flush with the spherical surface of the other two members and welding the same thereto, providing openings in the hemispherical members, inserting in each of said openings a threaded member having a portion adapted to project through the opening, flanging over the material of the inwardly projecting portion so as to form an outwardly extending flange and welding the same to the body of the sheet metal member.

10. In a valve, the combination of a valve casing, a tapering sheet metal member, means for removably holding the larger end of the sheet metal member on the valve casing, a valve stem passing through the sheet metal member, and packing located in the smaller end of the sheet metal member and surrounding the valve stem.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

EUGENE J. McCARTY.

Witnesses:

ALBERT E. FAY,
C. FORREST WESSON.