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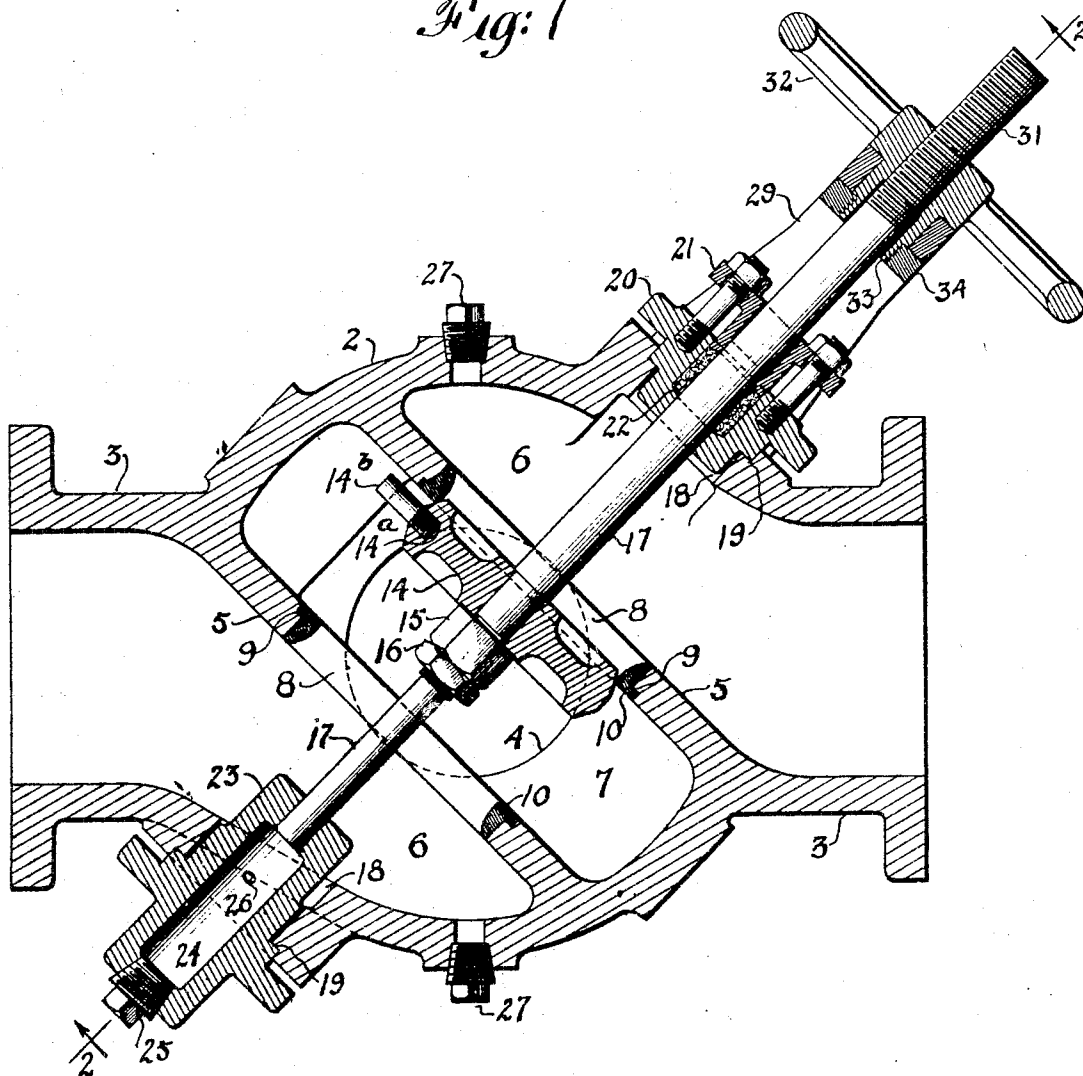
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DUPLEX VALVE

Filed Oct. 23, 1929

2 Sheets-Sheet 1

Fig: 1



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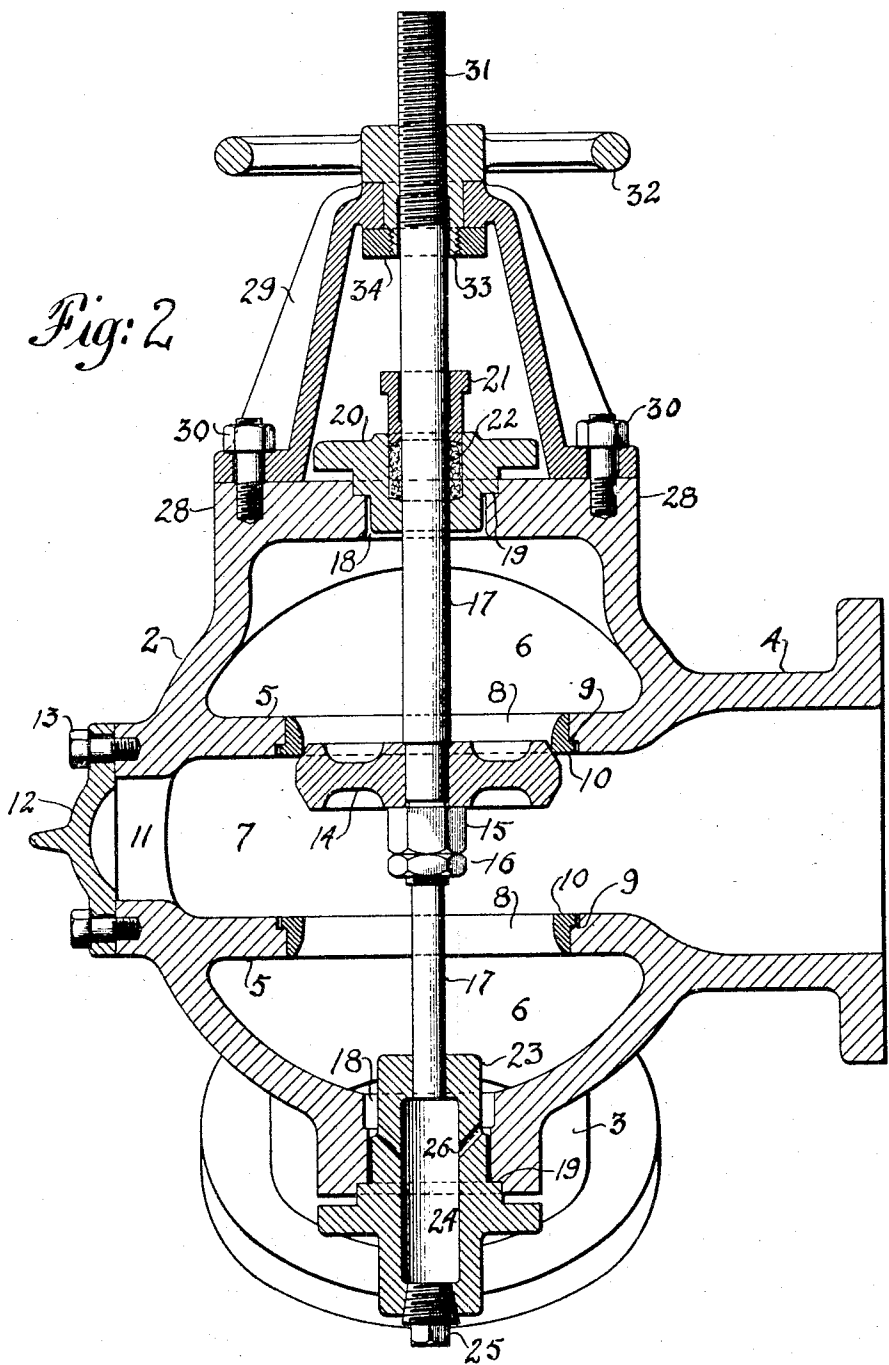
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DUPLEX VALVE

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2 Sheets-Sheet 2



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DUPLEX VALVE

Application filed October 23, 1929. Serial No. 401,637.

This invention relates to valve constructions and is particularly concerned with what is termed a "duplex" valve. Valves of this kind are intended to take the place of two single valves and are ordinarily used where there is a single inlet and two outlets, although, of course, there is no reason why a valve of this type should not be used as a valve having two inlets and one outlet.

The objects of the invention include the provision of a valve of this type which will be more dependable in service and, therefore, easier to maintain; one in which the overall size of the valve body can be kept down to a minimum for a given size flow opening; one in which the two valve seats for the double seated valve can be more conveniently inserted and more positively held in place; one in which the valve will seat more uniformly, regardless of the direction of flow; one in which the pressure of the valve against each seat will always be in a direction which tends to force the seat more tightly into position, rather than to loosen it; one in which the valve seats will always be forced more tightly into position under the influence of a given flow; one in which the detrimental effects of expansion and contraction due to changes in temperature will be reduced to a minimum; one in which the valve itself can be used as a grinding tool, so to speak, should it become necessary to resurface the bearing seats, and one in which the valve body itself may be made reversible or capable of receiving the valve stem from either side.

In short, it is the object of the invention to provide a highly efficient valve which can be kept in service almost constantly so as to cause no interruption of service for the purpose of making repairs. By my invention even the valve seats can be reground or resurfaced without taking the valve out of its position in the line.

The foregoing, together with such other objects as are incident to my invention or may appear hereinafter, are obtained by means of a construction which is illustrated in the preferred form in the accompanying drawings, wherein—

Fig. 1 is a vertical longitudinal section through my improved valve.

Fig. 2 is a section on the line 2—2 of Fig. 1.

From the drawings it will be seen that the valve body 2 is substantially spherical in shape, with oppositely extending, aligned, counterpart, flanged outlets 3 (or inlets, as the case may be), and with an opening 4 perpendicular to the axis of said outlets. Extending in planes substantially parallel to the axis of the inlet 4 are two webs or partition walls 5 located obliquely to the axis of the outlets and forming a pair of cavities 6, 6, each in communication with an outlet, and an inlet cavity 7 between them. Each dividing web 5 has a central valve opening 8 shouldered around its periphery at 9 to receive and retain a shouldered valve seat 10.

The central cavity 7 has an elongated opening 11, on the side opposite opening 4, which is provided with a cover or cap 12 secured to the body 2 as by bolts 13, said opening being of such length as to permit free insertion and withdrawal therethrough of the valve seats 10 and valve 14, and to give access to the valve retaining nuts 15, 16 on the valve stem 17. The valve 14 is provided with holes 14a, around its periphery (one of which appears in Fig. 1), into which a rod or tool 14b may be inserted (through opening 11) for rotating the valve to grind the same or its seats 10.

The outlet cavities 6 each have an opening 18 shouldered at 19, in one of which is positioned a stem guide 20 forming with collar 21 a stuffing box for the stem to hold the packing 22, and in the other of which is positioned a stem guide 23 having a cavity 24 with a drain or clean-out plug 25. The guide member 23 is equipped with one or more relief ports 26 communicating with cavities 6 and 24.

The body 2 is provided with drain or clean-out plugs 27 for the cavities 6, and (as shown in Fig. 2) has a raised portion 28 adjacent one of the cavities 6 to form a surface on which the yoke 29 may be secured by bolts 30. The screwed end 31 of stem 17 extends up through said yoke in threaded engagement with the valve handle or wheel 32, said

wheel having a sleeve portion 33 extending downwardly through the yoke for rotation therein, with a collar or flange 34 secured on its end to prevent translational movement between the wheel and the yoke.

From the foregoing the following facts will be evident:

First, by positioning the partitions, valve, and stem obliquely or diagonally with relation to the ports or outlets, the construction of the valve body, cavities and dividing webs is simplified, and the cross-sectional flow-area of the cavities and the valve openings 8 may be increased without increasing the diameter of the body or shell 2, or, stated in another way, may be maintained equal to the cross-sectional area of the outlets 3 with a reduction in diameter of the body 2, over constructions where the valve is parallel to the axis of the outlets, and, furthermore, as compared with a construction in which the valve is in a plane perpendicular to the axis of the outlets, the present construction makes possible, in combination with said maximum flow-area for a given diameter of body, the employment of the ordinary direct-connected stem instead of the geared stem-connection otherwise required;

Second, by locating the valve and stem as shown, counterpart openings 18 may be provided, in one of which the stem guide 23 may be mounted, which prevents disalignment of the valve even under rigorous conditions of service;

Third, the arrangement of ports, cavities and partitions is such that the elongated opening 11 with cover 12 may be positioned opposite the inlet 4 for ready access to the parts in cavity 7, whereby the seats 10 and valve disc 14 may be readily installed, repaired, or replaced, and the valve and seats ground (as hereinbefore shown) by insertion of a tool 14b to rotate the valve; and

Fourth, both seats being insertible through opening 11 and cavity 7 may be pressed tightly into place against shoulders 9, and the valve may be used to tighten them in place, in addition to which, the valve, as well as the normal fluid flow, tend, in service, toward the same result, in consequence of which, even when the valve is used in a steam line where changes of temperature are great, contraction and expansion will not displace the parts. These advantages are obviously not attainable in constructions wherein both seats are inserted from above or both from below, and it is also necessary in many such valves to make the seats of different diameters so that one may be inserted through the other.

What I claim is:—

1. A valve construction including, in combination, a valve body having a pair of apertured partitions therein, forming therewith three cavities, one of which is intermediate the other two, a valve between said partitions

adapted to control said apertures, and a valve seat on each partition retained thereby as against displacement outwardly from the intermediate cavity.

2. A valve construction including, in combination, a valve body having a pair of apertured partitions therein, forming therewith three cavities, one of which is intermediate the other two, a valve between said partitions adapted to control said apertures, and a valve seat on each partition retained thereby as against displacement outwardly from the intermediate cavity, together with an opening having a removable cover for access to the intermediate cavity, the valve and the seats.

3. A duplex valve construction having a valve body with a pair of valve openings, duplex valve means adapted to control said openings, and valve seats mounted in said openings, said openings, seats and duplex valve means being so constructed and arranged that the valve means when bearing against the seats may act to retain them tightly in position.

4. A duplex valve construction having a valve body with a pair of valve openings, duplex valve means adapted to control said openings, an inlet in the valve body delivering to one side of each of said openings, an outlet from the other side of each of said openings, and valve seats mounted in said openings at the inlet side, so that the fluid admitted through the inlet tends to retain the seats tightly in position.

5. A duplex valve having a valve cavity, a pair of valve openings leading therefrom, duplex valve means in said cavity, a seat at each opening, and means whereby the valve means may be rotated or said seats for grinding purposes.

6. A valve construction comprising, in combination, a valve body having two partitions forming three cavities in said body, oppositely extending openings from two non-adjacent cavities, an opening from the intermediate cavity, an opening in each partition, and a valve for controlling said partition openings, said partitions being positioned obliquely with respect to the openings from the non-adjacent cavities.

7. A valve construction comprising, in combination, a valve body having two partitions forming three cavities in said body, oppositely extending openings from two non-adjacent cavities, an opening from the intermediate cavity, an opening in each partition, and a valve for controlling said partition openings, said partitions being positioned obliquely with respect to the openings from the non-adjacent cavities and in planes substantially parallel to the axis of the opening from the intermediate cavity.

In testimony whereof I have hereunto signed my name.

JAMES MARTIN JENKINS.