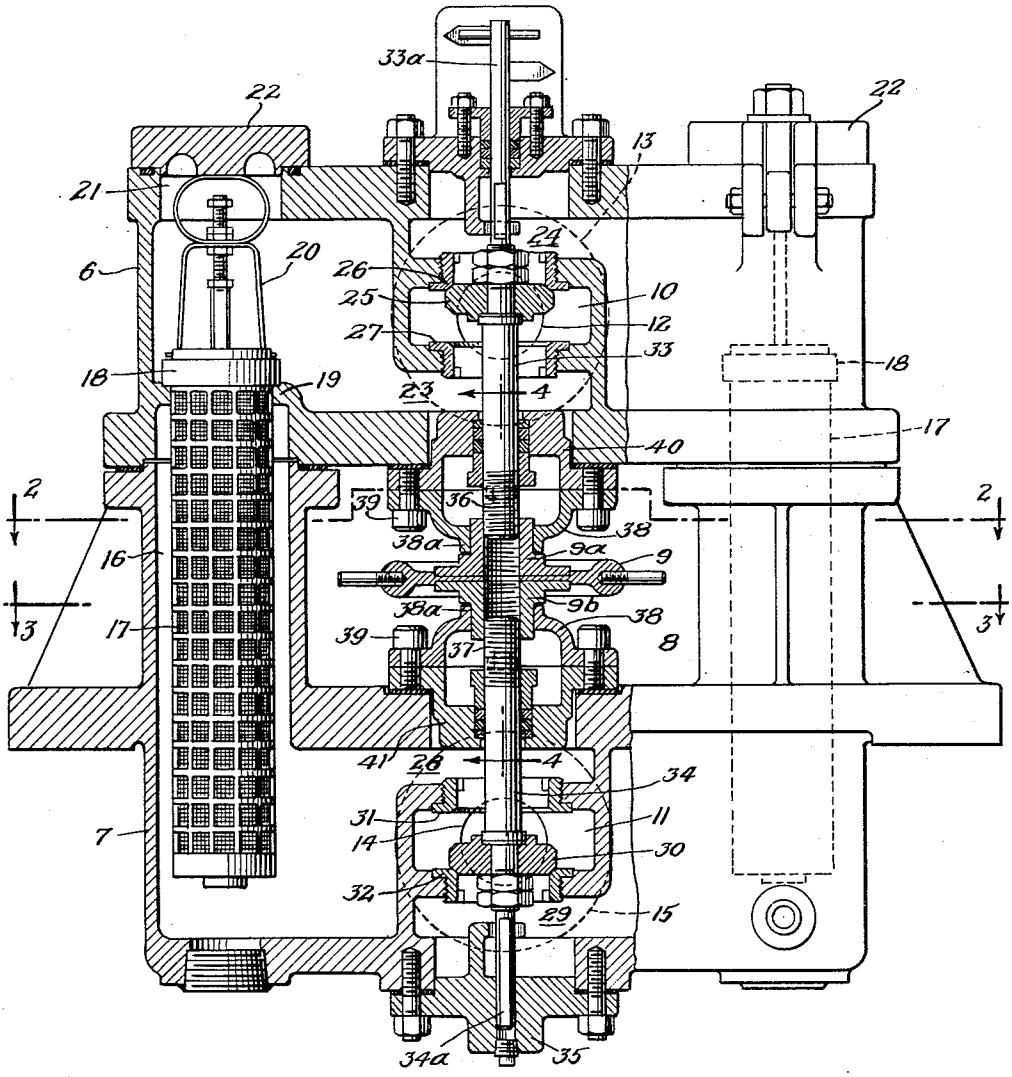
Jan. 19, 1960 J. M. JENKINS 2,921,687

MEANS FOR SIMULTANEOUSLY ACTUATING OPPOSED DISC VALVES IN A DUPLEX STRAINER

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Fig. 1.



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Fig. 2.

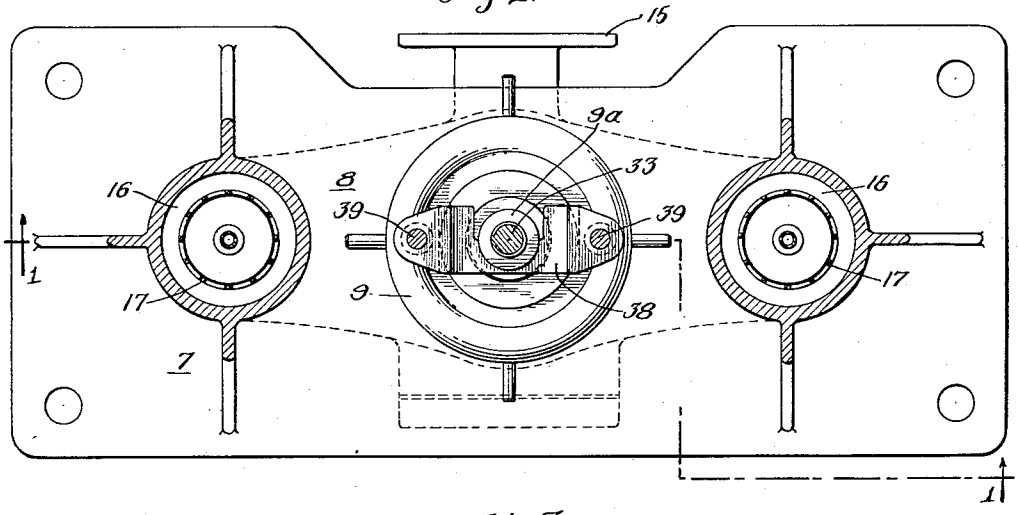


Fig. 3.

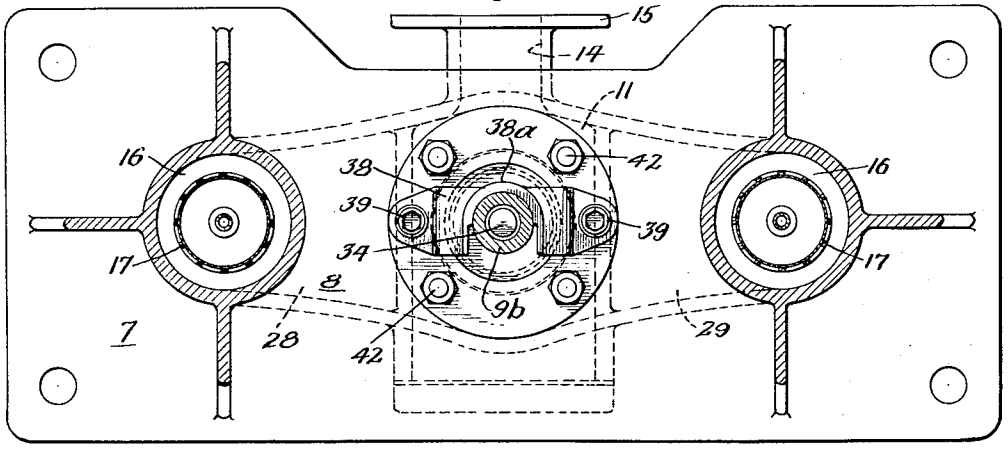


Fig. 5.

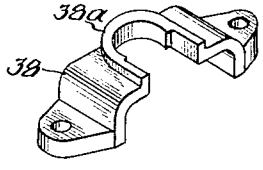
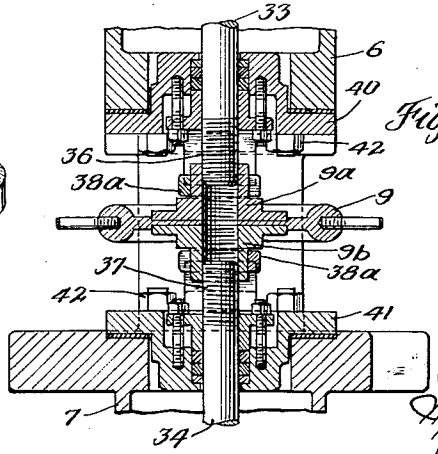


Fig. 4.



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United States Patent Office 2,921,687 Patented Jan. 19, 1960

2,921,687

MEANS FOR SIMULTANEOUSLY ACTUATING OPPOSED DISC VALVES IN A DUPLEX STRAINER

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Application May 6, 1958, Serial No. 733,407

1 Claim. (Cl. 210—341)

This invention relates to what has become known in the art as a duplex strainer. These are commonly employed for the straining or cleaning of oil where oil circulation is maintained through one strainer while the other strainer is taken out of service for cleaning, repair or replacement.

Other liquids, of course, can be similarly handled but I have illustrated my inveniton as applied to duplex oil strainers.

Strainers of the character just referred to consist of an inlet chamber, an outlet chamber, a pair of straining compartments, connecting passageways and suitable valve means and actuating mechanism therefor by means of which oil circulation may be established from inlet to outlet through one of the strainers while the other is taken out of service for cleaning purposes. In this way, no interruption in the service is necessary.

Various constructions have heretofore been adopted for accomplishing these purposes some of which have involved duplex plug valves and others a pair of disc valves arranged in alignment and simultaneously operated. However, with all previous constructions with which I am familiar certain objections have been encountered which the present invention overcomes.

The principal object of my invention is to provide a disc-type valve mechanism for a duplex strainer in which means are provided for positively insuring simultaneous movement of the two discs while at the same time providing for adequate bearing points for the valve stems coupled with ready accessibility for certain of the parts for the purpose of ease in assembly, adjustment, repair or replacement.

The invention is illustrated in preferred form in the accompanying drawings wherein:

Figure 1 is a partial vertical section and partial side elevation taken approximately as indicated by the line 1—1 in Figure 2;

Figure 2 is a plan section taken approximately as indicated by the line 2—2 on Figure 1;

Figure 3 is a plan section taken approximately as indicated by the line 3—3 on Figure 1;

Figure 4 is a vertical section taken as indicated by the line 4—4 on Figure 1; and

Figure 5 is a perspective view of a yoke and abutment member employed in the invention.

As will be seen from the drawing the duplex strainer illustrated consists primarily of an upper body portion 6 and a lower body portion 7 these two portions being suitably formed and secured together to provide a central space 8 into which an actuating hand wheel 9 as well as some associated parts are disposed as will further appear.

The upper body portion 6 is provided with a fluid inlet opening 10 and the bottom body portion 7 with a fluid outlet opening 11. A supply conduit (not shown) delivers to the inlet opening 10 through a suitable opening 12 surrounded by a connection flange 13. The outlet chamber 11 is adapted to deliver to another conduit (also not

shown) through an outlet opening 14 similarly surrounded by a connecting flange 15.

The chambers 10 and 11 and the connecting openings 12 and 14 are in substantial vertical alignment as shown in Figure 1. At each side the two body portions are formed to provide a strainer receiving pocket 16 into which is fitted a basket type strainer 17 having a ring or collar 18 at the top which rests upon an internal web 19 of the upper body member. The strainer has a suitable bail 20 by which it can be inserted and withdrawn through an opening 21 at the top which opening is provided with a cover 22. In describing these parts it will be understood, of course, that the straining compartments, the strainer baskets and the parts associated therewith are the same on both sides of the strainer although only one side is shown in section in Figure 1.

A passageway 23 connects the strainer at the left, as viewed in Figure 1, with the supply chamber 10 and another passageway 24 connects the strainer at the right with the supply chamber 10. These two passageways are controlled by a disc valve 25 which moves upwardly and downwardly between them and is adapted to seat in its upper position against the valve seat member 26 and in its lower position against the valve seat member 27.

Similarly, at the bottom, the strainer at the left is connected by means of a passageway 28 to the outlet chamber 11 and the strainer at the right to the outlet chamber 11 by another passageway 29. An exactly similar disc valve 30 controls the passageways 28 and 29 by movement between the upper valve seat member 31 and the lower valve seat member 32.

The upper valve disc 25 is provided with a valve stem or spindle 33 and the lower with a corresponding stem or spindle 34 in axial alignment with the stem 33. The upper spindle is extended as at 33*a* to project above the upper body member 6 while the lower spindle projects downwardly as at 34*a* to be guided in an opening in the bottom cover member 35.

The adjacent ends of the upper spindle and of the lower spindle are oppositely threaded as at 36 and 37 and these threaded ends project toward each other into the space 8 provided between the upper and lower body portions. The spindles, of course, are suitably packed as shown but the packing constructions form no part of the present invention.

Between the adjacent ends of the spindles is the common actuating wheel 9 already referred to which wheel has an upper hollow hub portion 9*a* having threaded engagement with the threaded stem end 36 and a lower hub portion 9*b* having threaded engagement with the end 37 of the lower stem. Two yoke-shaped members 38, one above and one below the wheel 9, are provided as guiding or positioning members for the adjacent stem ends and also as abutment members for the wheel 9. The two members 38 are identical in construction but are arranged with their openings disposed in opposite directions. For instance, in the present disclosure, the upper member 38 is arranged with the opening facing away as viewed in Figure 1 while the lower member 38 opens toward the observer. The bodies of these members are arched as clearly shown in the drawings and the upper portion of the arch fits around or embraces the adjacent hub portion of the wheel 9. These members 38 are laterally movable into and out of position and are secured by suitable screw bolts 39 to the inner cover members 40 and 41 which latter, in turn, are secured to the body portions by other screw bolts 42.

It will be noted that the hubs 9*a* and 9*b* are suitably shouldered to cooperate with the shouldered portions 38*a* on the members 38 as seen to best advantage in Figure 1. In other words, the shoulders 38*a* constitute

in effect abutments between which the wheel 9 is adapted to turn. These abutments maintain the wheel in a fixed position relative to the valve seats.

In the positions of the parts shown in the drawings, it will be noted that the valve discs have been moved to seat on the outer valve seat members 26 and 32. This closes circulation through the right hand strainer and permits circulation through the left hand strainer. When it is desired to use the right hand strainer the wheel 9 is rotated so as to pull the two valve stems together thereby moving the disc valves toward each other to seat on the respective valve seats 27 and 31. This, of course, permits circulation through the right hand strainer and closes circulation to the left hand strainer.

It will be appreciated that the members 38 have a dual function. First, by virtue of the fact that their open sides are oppositely disposed they serve to position the wheel centrally of the stems and avoid any tendency to put sidewise pressure on the stems. At the same time they function as abutment points for the hub of the wheel thereby avoiding the possibility of having the wheel ride downwardly, for example, on the lower spindle instead of drawing both spindles together as already described.

My invention avoids the problems which have heretofore been characteristic of the plug valve type of control where it is necessary to first lift the plug from its seat and then rotate it in order to change the flow from one strainer to the other. This has always produced complications, especially leakage, in the case of tapered plug valves. The invention further makes possible the use of disc valves instead of plug valves but overcomes the tendency heretofore characteristic of previous disc valve types for the hand operating wheel to ride on one or the other

of the two stems instead of moving both valves simultaneously.

I claim:

A duplex strainer having a fluid inlet chamber and a fluid outlet chamber, said chambers being arranged in substantial alignment with respect to each other, a strainer compartment on each side of said aligned chambers, a passageway connecting each strainer compartment with the inlet chamber, a passageway connecting each strainer compartment with the outlet chamber, a pair of opposed valve seats and a disc valve movable therebetween for controlling the inlet passageways, a pair of opposed valve seats and a disc valve movable therebetween for controlling the outlet passageways, a valve stem for each valve disc, said discs and stems being axially aligned and the adjacent ends of the stems being oppositely threaded, a common wheel for simultaneously actuating said valves, said wheel being disposed between the stems and being provided with a projecting hub portion on each side which hub portions are threaded to receive the threaded end of the adjacent stem, and a yoke-shaped member embracing the hub at each side of said wheel, said members being arranged with their yoke openings oppositely disposed whereby the stems are maintained in alignment and said yoke members being formed and positioned to provide abutments for the wheel hubs whereby the wheel is maintained in fixed relation to the valve seats when the wheel is rotated to move the stems and discs from one position to the other.

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