May 17, 1932. J. R. MAHAN 1,858,246

PUMP MANIFOLD

Filed May 7, 1930

Fig 1

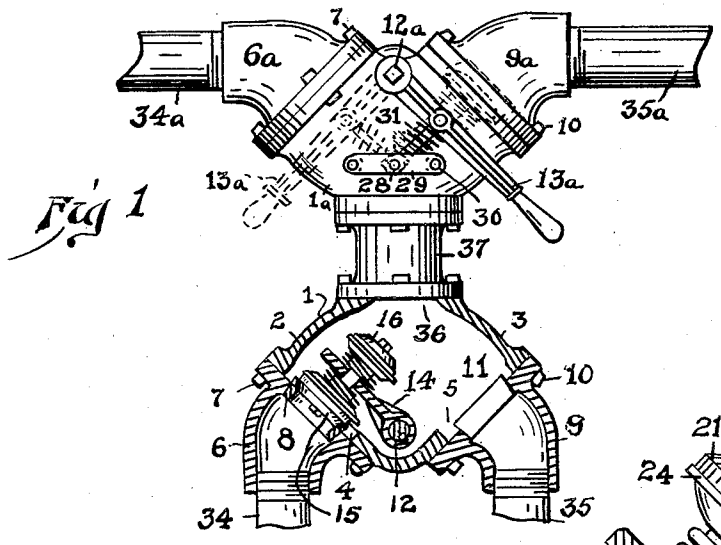


Fig. 2

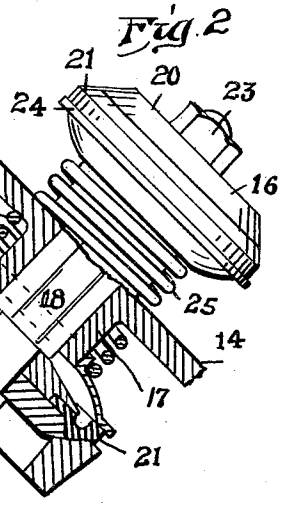


Fig. 3

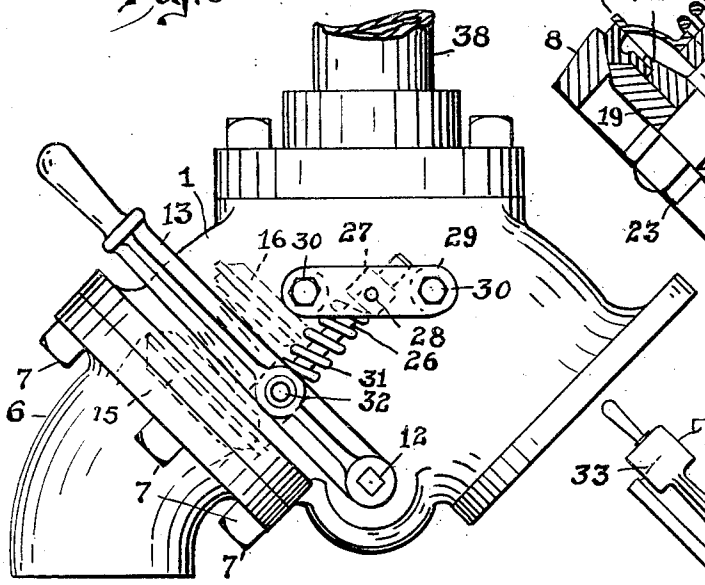


Fig. 5

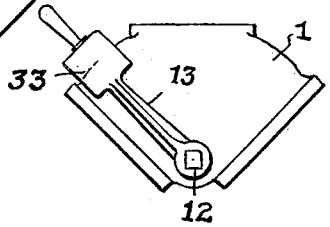
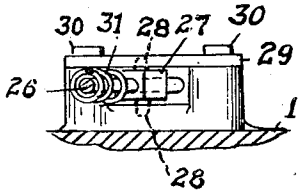


Fig 4



INVENTOR

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1,858,246

UNITED STATES PATENT OFFICE

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PUMP MANIFOLD

Application filed May 7, 1930. Serial No. 450,394.

My invention relates to pump manifolds particularly for use with plural pumps.

One object of this invention is to provide a casing with a valve seat carried by a readily detachable member serving as an inlet pipe, for example. Another object is to provide automatic means for pressing the valve upon its seat, this means being spring or weight actuated. Other objects are to provide a manifold with a simple construction at a comparatively low cost.

Referring to the accompanying drawings, Fig. 1 is a combined elevation and sectional view of an apparatus containing my invention, parts being broken off; Fig. 2, an enlarged view of the valve with one of its seats, parts being in elevation and other parts in cross section; Fig. 3, a side elevation of one valve casing and adjacent parts, some of the elements being omitted or broken away; Fig. 4, a fragmentary view showing in plan the mechanism controlling the link or rod 26; and Fig. 5, a side view of one of the casings, the operating lever being provided with a weight.

1 designates a casing preferably made in a single piece. It has two sides 2 and 3 arranged at any suitable angle with each other and having the respective inlet openings 4 and 5. The hollow pipe or fitting 6 is connected by the bolts 7 to the outer face of the side 2. The passage in the tube 6 registers with the inlet opening 4. The upper or outlet end of the pipe 6 is provided with the valve seat 8.

9 is a fitting or a pipe secured to the casing 1 by bolts 10, the passage in the pipe registering with the opening 5. The upper or outlet end of the pipe 9 is provided with the valve seat 11.

In the angle between the sides 2 and 3 I provide the shaft 12 which extends out through the casing where it is provided with the valve operating handle 13. The shaft has keyed thereto within the casing the arm 14 carrying the double-ended valve device provided at one end with the valve 15 adapted to the seat 8 and at the other end the valve 16 adapted to the seat 11.

As shown more clearly on Figs. 1 and 2, the arm 14 carries the sleeve 17. The sleeve contains the stem 18 which carries at its opposite ends the valve members 19 and 20, the valve member 19 being adapted to the seat 8 and the valve member 20 being adapted to the seat 11. The valve members carry the flexible sealing rings 21 clamped between the valve members and the disks 22 by means of the nuts 23. The outer portions of the flexible sealing rings are made V-shaped in cross section to fit the V-shaped groove between the valve members and the extensions of the valve seats. The up-turned outer edges of the sealing rings are pressed toward the seats by the disks 24 pressed toward the sealing rings by the springs 25. The mechanism just described is limited to a single valve member and is the subject of my application Serial Number 439,943, filed March 29, 1930.

In order to make each valve member close with a quick or snap action and to be held resiliently on its seat, I pivot the link or rod 26 to the handle 13 secured to the shaft 12 at the outer side of the casing. The free end of the link reciprocates freely through the block 27 having its pivots 28 in the casing 1 and in the plate 29 connected by the bolts 30 to the casing. A spring 31 under compression and surrounding the link 26 has one end bearing against the block 27 and the other end against the link 26 near the pivot 32 which connects the link to the handle. When the handle 13 is moved from the position shown toward the right the spring 31 becomes more and more compressed. As soon as the handle passes the dead-center line which includes the centers of the pivots 28 and 32 and of the shaft 12 it will, if released, move with a snap action to the right and the valve member 20 will become seated upon the valve seat 11 resiliently. If the handle be moved toward the left the valve member 19 will be similarly seated on its seat 8 after the handle 13 passes the dead-center line. The link 26 and the portion of the handle 13 between the shaft 12 and the pivot 32 form a toggle with the pivot 32 at the elbow or flexible portion thereof.

Instead of the toggle mechanism just described the handle 13 may be provided with the weight 33 which will automatically throw the valve members to their seats as soon as the

weight passes the vertical line through the center of the shaft 12, provided however that the handle is then released.

The inlet pipe 6 is provided with the pipe 34 connected to the discharge member or one pump while the inlet pipe 9 is provided with the pipe 35 connected to the discharge member of a second pump. The pumps used in similar relations to those shown by me are well known and are therefore not shown or described. The casing 1 is also provided with an outlet opening 36.

On Fig. 1 I show at 1*a* a second casing inverted and connected to the casing 1 by means of the pipe or fitting 37. The inlet pipes 6 and 9 used with the casing 1 becomes outlet pipes 6*a* and 9*a* used with the casing 1*a*. The opening in the casing 1*a* which corresponds to the discharge opening 36 in the casing 1 is the inlet opening. The fluid is delivered from the pipes 6*a* and 9*a* to the pipes 34*a* and 35*a* respectively. The casing 1*a* is provided with the handle 13*a* which operates the shaft 12*a*. The handle controls the valve mechanism within the casing 1 the same as the handle 13 controls the valve mechanism shown in casing 1.

With the parts as shown in the drawings and a pump operating to deliver fluid through the pipe 35, the fluid will pass through the pipe 9, the valve seat 11, the casing 1, the outlet opening 36 and the casing 1*a*, and the outlet pipes 6*a* and 34*a*. If the said pump is stopped and the pump connected with the pipe 34 is started, the fluid from the latter pump will pass through the pipe 6 and move the valve mechanism from the position shown in Figs. 1 and 3 so that the valve member 16 will become seated on the valve seat 11. The valve will be thrown to the seat 11 with a snap action as soon as the toggle passes to the right of its dead center. The fluid will then pass to the pipe 34*a* through the course already described. In case the second pump is stopped and the first one again started the valve mechanism will be automatically moved with a snap action to the position shown in Figs. 1 and 3 while the flow of the liquid continues as before described. If the handle 13*a* be moved from the position shown so as to lie in its extreme left hand position, as shown in dotted lines, the water from the pump will be diverted from the pipes 9*a* and 35*a* instead of through the pipes 6*a* and 34*a*.

On Fig. 3 I show a single outlet or standpipe 38 connected to the outlet of the casing 1.

I claim:—

1. In a valve, a casing having an outlet opening and two inlet openings, inlet pipes removably connected to the casing and opening into the said inlet openings, valve seats removably mounted in the pipes, a pivotally mounted arm within the casing, and valves carried by the arm, one valve adapted to rest on one outlet seat when the arm is at one limit of travel and the other valve adapted to rest on the other seat when the arm is at the other outlet limit of its travel in combination with means for automatically completing the shifting of the arm from one limit of travel to the other whenever pressure in the open inlet ceases and pressure in the other inlet is established, after the pressure in the latter inlet has shifted the arm beyond a predetermined limit.

2. In a valve, a casing having an outlet opening and two inlet openings, inlet pipes removably connected to the casing and opening into the said inlet openings, valve seats removably mounted in the pipes, a pivotally mounted arm within the casing, valves carried by the arm, one valve adapted to rest on one outlet seat when the arm is at one limit of travel and the other valve adapted to rest on the other outlet seat when the arm is at the other limit of its travel, and resilient means between each valve and the arm tending to hold the valves on their respective seats.

In testimony whereof I affix my signature.

JOSEPH R. MAHAN.