Feb. 6, 1934. E. M. BEEBE 1,945,724

MANIFOLD

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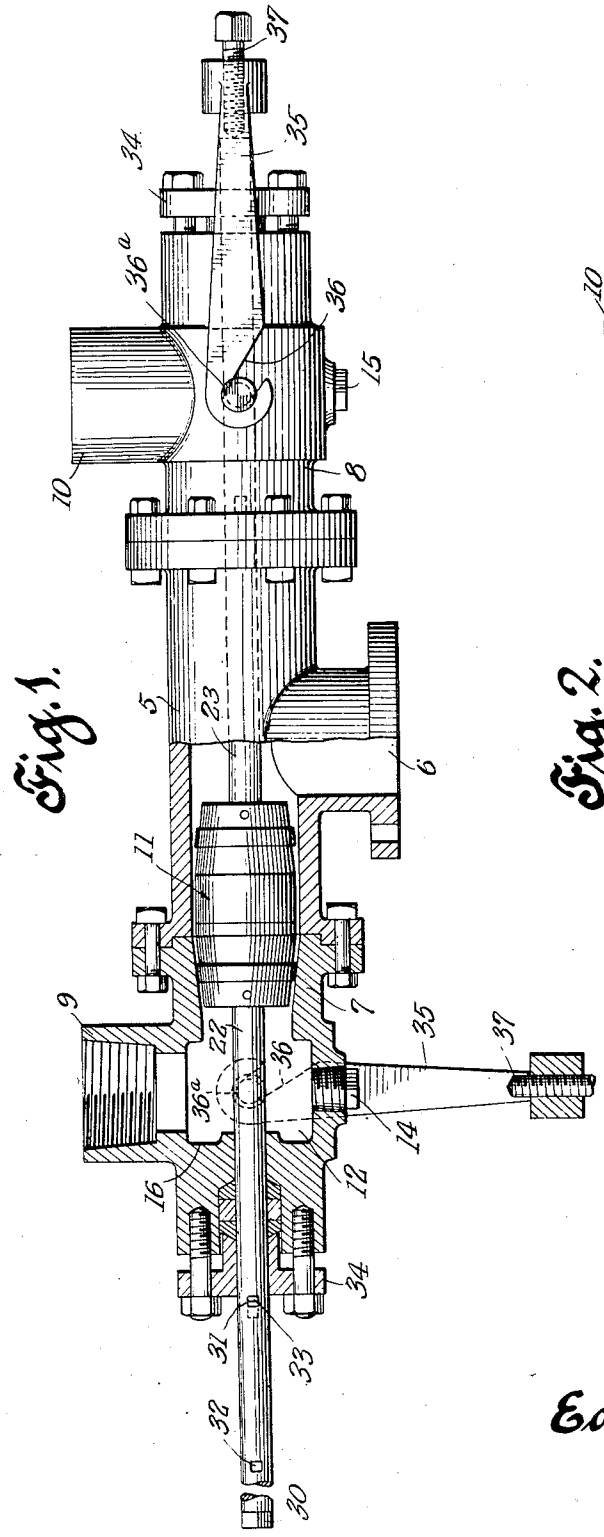


Fig. 1.

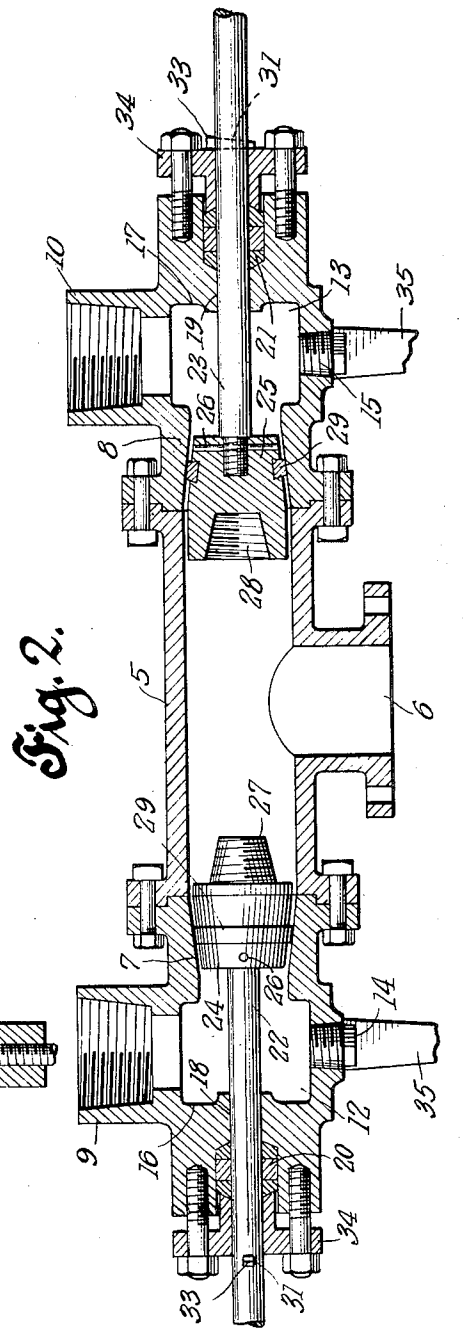


Fig. 2.

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Fig. 3.

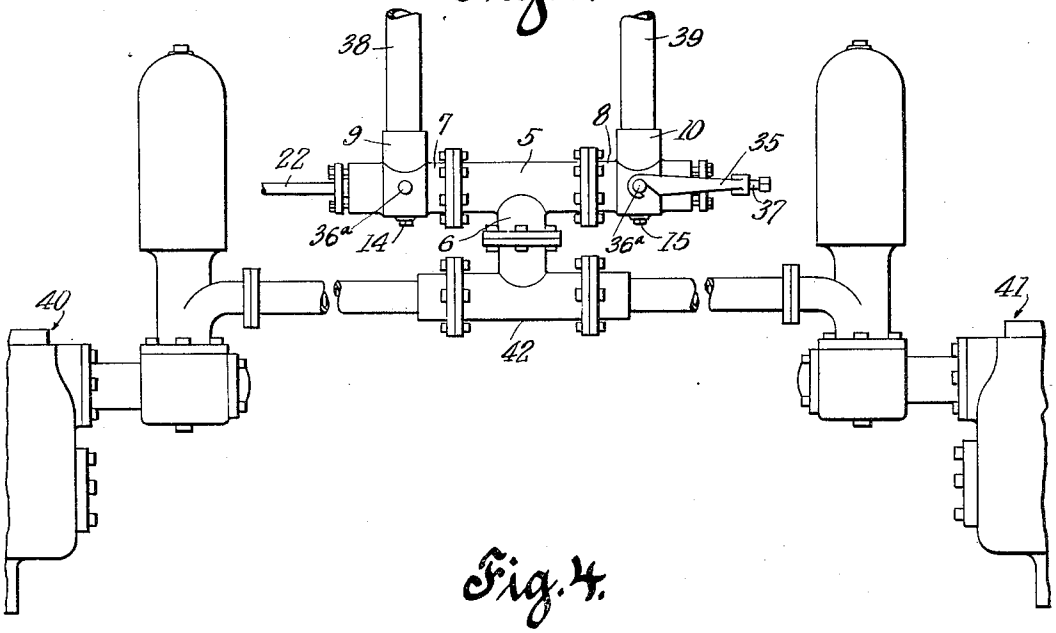


Fig. 4.

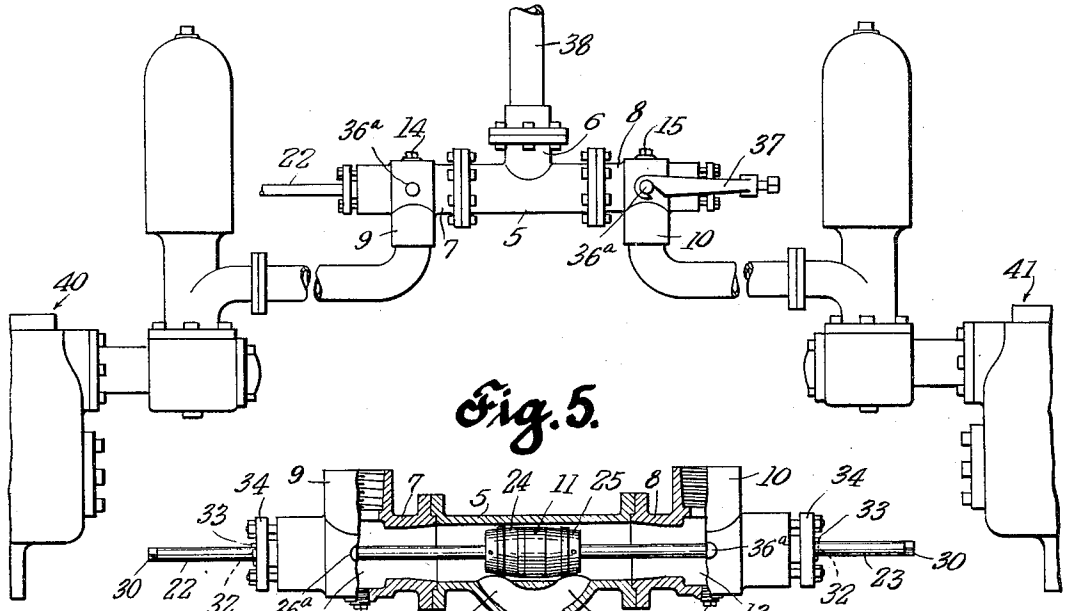


Fig. 5.

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UNITED STATES PATENT OFFICE

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MANIFOLD

Edward M. Beebe, Shawnee, Okla.

Application September 3, 1930. Serial No. 479,464

4 Claims. (Cl. 277—12)

This invention relates to manifolds such as used in rotary drilling operations.

Special objects of the invention are to provide a practical and efficient structure for manifolding slush pumps, pipe lines and the like, which will be of rugged, simple, durable design, which may be positively actuated and secured to control flow in various ways and which will be suited to a variety of uses.

The foregoing and other desirable objects are attained in this invention by the novel features of construction, combinations and relations of parts hereinafter described and broadly claimed.

The drawings accompanying and forming part of the specification illustrate different commercial embodiments and several of the possible uses of the invention, but it should be understood that the structure may be varied and the invention be employed for other purposes, within the intent and broad scope of the invention.

Fig. 1 is a part sectional and broken longitudinal view of the manifold showing the valve shifted to the left to close one outlet; Fig. 2 is a broken longitudinal sectional view showing the two parts of the valve separated and secured to close off both the end passages; Figs. 3 and 4 are broken side elevations showing the invention in use for manifolding stand pipe lines and as a slush pump manifold respectively. Fig. 5 is a broken part sectional view of another embodiment of the invention.

The present invention is based on Patents 1,686,310 of October 2, 1928 and 1,771,607 of July 29, 1930, incorporating the same features of a central manifold body 5 provided with an intermediate flanged passage 6 and having at opposite ends the flanged internally tapered valve seat members 7, 8, with elbowed pipe flanges 9, 10, and cooperating with a double ended barrel shaped valve member 11.

In the constructions here disclosed, the elbow portions of the end valve seat fittings are shown as carried out as extensions of the passage in the main body and formed with pockets or chambers 12, 13, which can be opened up at the bottom by removing drain plugs 14, 15. This construction also provides the end walls 16, 17, substantially at right angles to the axis of the main body, carrying the guides 18, 19 and stuffing boxes 20, 21, for the valve stems 22, 23.

The valve member shown is separable in two valve parts 24, 25, fixedly secured as by keys or pins 26 on the inner ends of the valve rods and adapted to be secured together as by a tool joint connection shown in the form of pin and box elements 27, 28 on the opposing ends of the valve parts. These valve parts are shown as reversely tapered and as carrying suitable packing 29 for cooperation with the tapered valve seats in the two end members 7, 8, Fig. 2.

The guides and the stuffing boxes in the upright end walls of the valve seat members provide long bearings for the valve rods, facilitating the shifting of the valve from one valve seat to the other and also "centering" the valve parts in the separated relation, thus aiding the coupling and uncoupling of the valve parts.

The outer ends of the valve rods may be squared or otherwise shaped as indicated at 30 for the reception of wrenches or other tools for turning the rods in the valve coupling and uncoupling operations. Also these rods may be provided with cross slots or openings 31, 32, to receive wedges or pins 33 engageable with the stuffing box glands 34 to secure the valve either in the seated relations shown in Figs. 1 and 2 or in the intermediate position indicated in Fig. 5.

The projecting valve rods are of special utility if the valve or the valve parts should "stick" in any position in the manifold, for then the parts can be quickly loosened by hammering or rotating, or both hammering and turning the rods.

To set the valve up tight and secure it in such relation, a yoke or yokes, such as indicated at 35 may be provided, the same having open hooks 36 by which they may be detachably hung on the studs 36^a at the sides of the manifold ends and carrying set screws 37 engageable with the ends of the rods. When not required, these yokes can be quickly unhooked from the manifold structure, and as only one of them will ordinarily be in use at a time, only one may be furnished with the manifold.

The several views illustrate some of the many different uses of the invention. In Fig. 1 the valve is shown shifted to close off the end passage at the left of the manifold, positively held in such relation by the yoke at the right hand end. In Fig. 2 two parts of the valve are shown separated and as held by the securing devices 33 closing off opposite ends of the manifold.

Fig. 3 illustrates the manifold connected with a pair of stand pipes 38, 39, and the valve shifted to the left, as in Fig. 1, to close off one stand pipe 38, leaving the other pipe 39 open to the flow from the pumps 40, 41. This view also shows the automatic type of manifold valve disclosed in Patent 1,686,310 at 42 for directing the flow from one or the other of the two pumps.

In Fig. 4, the new form of manifold is shown

employed simply as a slush pump manifold, with the end pipe flanges 9, 10, connected with the pump outlets and the intermediate passage 6 serving as an outlet to the stand pipe 38.

Fig. 5 illustrates the intermediate passage or throat of the manifold as enlarged or branched at 6*a*, 6*b*, and the valve as held in the intermediate position leaving both branches open to both ends of the manifold. This construction is preferred where it may be desirable to take the flow from both pumps simultaneously or to pass the flow to both stand pipes, for example, it being understood that in the first instance the center manifold passage would be connected with lines from the two pumps and that in the second instance this center passage would be used as an outlet to the two stand pipes. The drain plugs may be used to drain the stand pipes in freezing weather or may be employed in various ways for special circulation purposes.

Various other uses of the invention may occur to those skilled in the art and because of the fact that the structure may be modified in different ways, it should be understood that the terms employed herein have been used in a descriptive rather than in a limiting sense, except for such limitations as may be required by the state of the prior art.

What is claimed is:

1. In a device of the character disclosed, the combination of a manifold body having valve seats at opposite ends of the same, a valve member shiftable longitudinally in said manifold for cooperation with said valve seats, valve rods connected with said valve member and projecting from opposite ends of the manifold, said valve member composed of separable valve parts adapted to be coupled and uncoupled by manipulation of the exposed portions of the valve rods.

2. In a device of the character disclosed, the combination of a manifold body having valve seats at opposite ends of the same, a valve member shiftable longitudinally in said manifold for cooperation with said valve seats, valve rods connected with said valve member and projecting from opposite ends of the manifold, said valve member composed of separable valve parts adapted to be coupled and uncoupled by manipulation of the exposed portions of the valve rods and securing means for the valve rods for holding the same in different relations.

3. In a device of the character disclosed, a manifold having valve seats at opposite ends of the same, a plug valve shiftable in opposite directions to cooperate with said valve seats, said plug valve being separable in two independent valve parts for cooperation respectively with said valve seats and externally manipulated means for coupling and uncoupling said valve parts.

4. In a device of the character disclosed, a manifold having valve seats at opposite ends of the same, a plug valve shiftable in opposite directions to cooperate with said valve seats, said plug valve being separable in two independent valve parts for cooperation respectively with said valve seats and having the cooperating box and pin elements of a rotary tool joint by which said parts may be readily and securely coupled and uncoupled.

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