H. M. HALL.

PUMP.

APPLICATION FILED JAN. 9, 1920.

1,353,391.

Patented Sept. 21, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

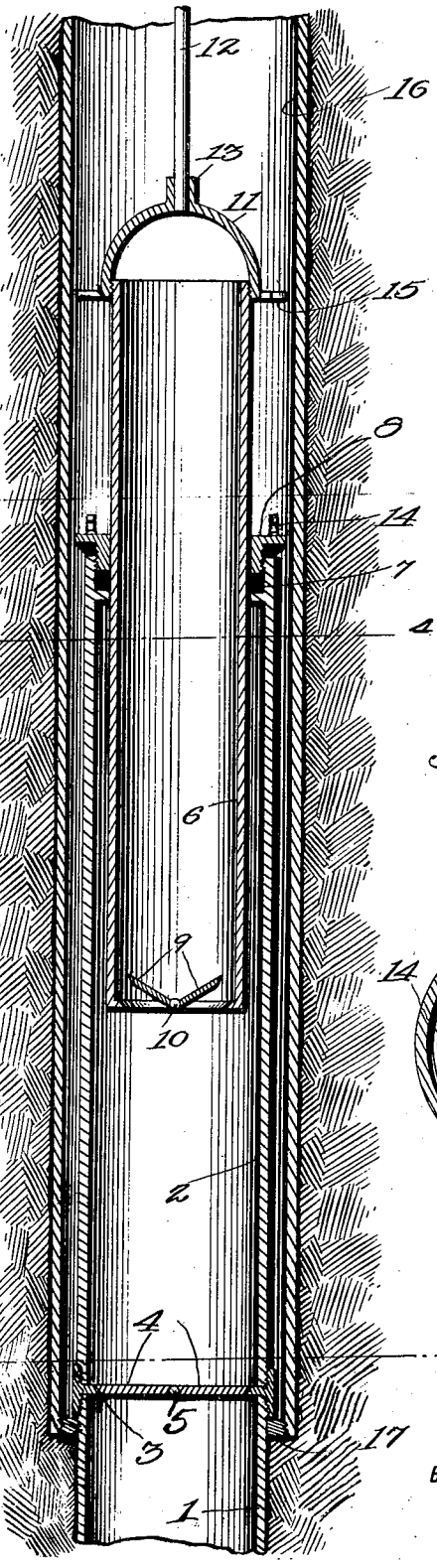


Fig. 4.

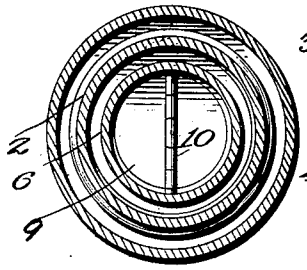


Fig. 3.

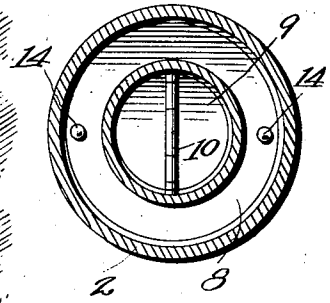
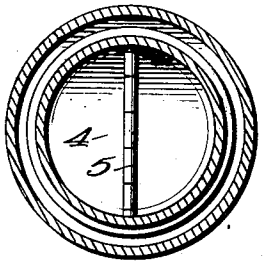


Fig. 5



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

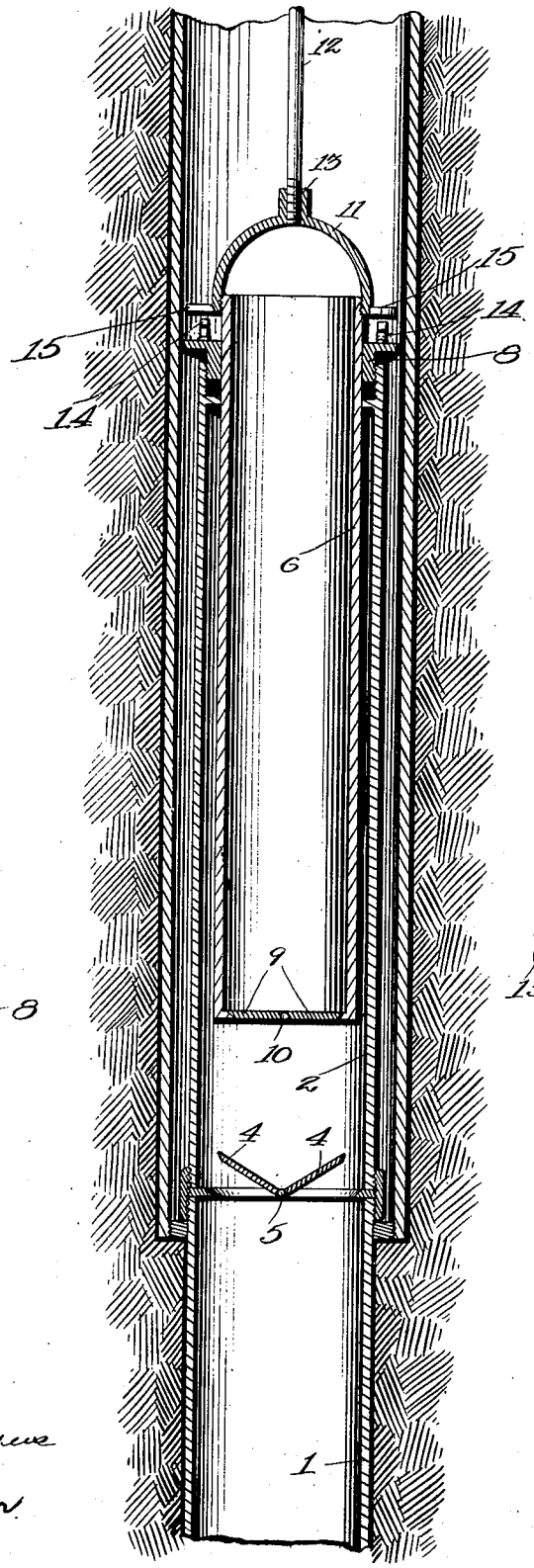


Fig. 6.

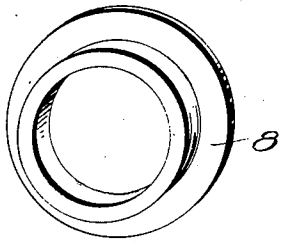
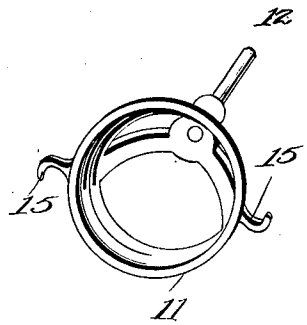


Fig. 7.



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3 SHEETS—SHEET 3.

Fig. 8.

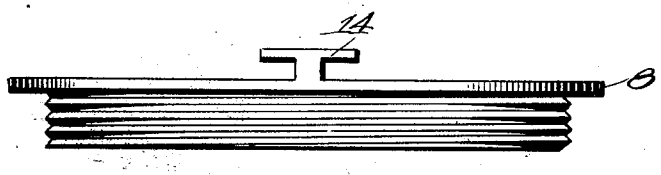
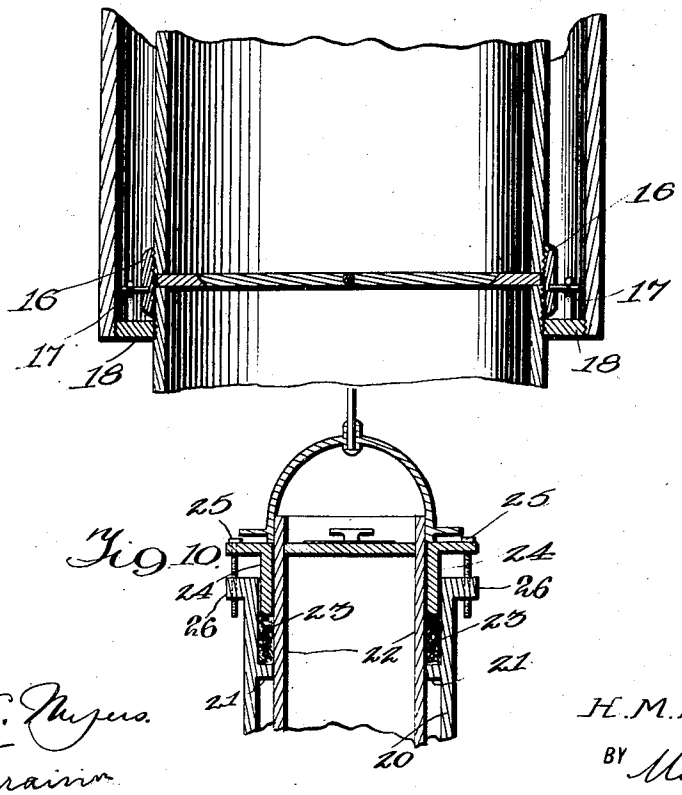


Fig. 9.



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UNITED STATES PATENT OFFICE.

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1,353,391. Specification of Letters Patent. Patented Sept. 21, 1920.

Application filed January 9, 1920. Serial No. 350,266.

To all whom it may concern:

Be it known that I, HARRY MELVIN HALL, a citizen of the United States, and a resident of Willcox, in the county of Cochise and State of Arizona, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

My invention is an improvement in pumps, and has for its object to provide a pump wherein the parts are so arranged that the barrel and plunger of the pump, together with the valves, may be easily and quickly detached from the suction pipe, or connected therewith, without the necessity of pulling the said pipe from the top of the ground.

In the drawings:

Figure 1 is a vertical section of the pump showing the plunger moving downward.

Fig. 2 is a similar view, showing the plunger moving upward.

Figs. 3, 4 and 5 are sections on the lines 3—3, 4—4 and 5—5, respectively of Fig. 1.

Fig. 6 is a perspective view of the packing nut, looking from below.

Fig. 7 is a similar view of the barrel detached.

Fig. 8 is a side view showing one of the headed pins.

Fig. 9 is a sectional view showing a modified form of connection between the bail and the casing.

Fig. 10 is a sectional view showing a packing nut.

In the present embodiment of the invention, the pump is shown in connection with a suction pipe 1, and the pump comprises a barrel 2, carrying at its lower end a valve seat 3, having hinged flap valves 4. The seat is in the form of a nipple or coupling, having threaded engagement with the top of the suction pipe, and the valves are hinged on a line diametrical to the barrel as indicated at 5, to swing upwardly at their remote edges or to swing downwardly into the same plane, the downward movement being limited by their engagement with the beveled edges of the seat.

A plunger 6 is arranged within the barrel, the plunger sliding through a packing or stuffing box 7 at the upper end of the barrel. This stuffing box is formed by an inwardly extending rib on the barrel, abutting the outer face of the plunger, and the packing nut 8 is threaded into the top of the barrel.

The plunger is open at its top, and the bottom is normally closed by flap valves 9 which are hinged at 10 diametrically of the plunger. The valves which are semi-circular like the valves 4, may swing freely upward at their free or remote edges, but they are limited in their downward movement to a position in the same plane.

A bail 11 of suitable construction is connected to the top of the plunger, and a sucker rod 12 is connected with the bail, the bail having a nipple 13 with which the sucker rod engages. The packing ring 8 has a pair of headed pins 14 on its upper face, and these pins are adapted to be engaged by hooks 15 on the bail, the said hooks extending oppositely from the bail. It will be evident that when the plunger is pushed into the barrel far enough to permit the hooks 15 to engage the pins 14, that turning of the plunger will constrain the barrel to turn therewith, the hooks and pins being so arranged that the barrel may turn in either direction, either to release it from the seat 3, or to engage it therewith. The lower end of the barrel has threaded engagement with the upper end of the seat.

The barrel is encircled by a discharge pipe 16, which is of greater diameter than the suction pipe, and this discharge pipe has at its lower end a collar 17 fitting closely about the suction pipe.

In operation when the plunger moves downward as shown in Fig. 1, the valves 9 open upward, while the valves 4 are held closed. Any liquid in the barrel will be driven past the valves 9 into the plunger. When the plunger moves upward, the weight of the water in the plunger will close the valves 9, while the partial vacuum created in the suction pipe by the upward movement of the plunger will cause the valves 4 to swing upward, and the water in the suction pipe will rush into the barrel. Thus with every upward movement of the plunger water will flow into the barrel, while with every downward movement of the plunger the water will flow into the plunger. When it is desired for any reason to inspect the plunger or barrel, the plunger is detached from the sucker rod and is pushed downward until the hooks 15 engage the lugs or headed pins 14. Now the plunger is turned in a direction to unscrew the barrel, after which the barrel and plunger may be withdrawn. The improved pump uses no leather or other ma-

terial which deteriorates rapidly in water, and hence has nothing of this character to be renewed, and should any of the parts become worn they can be very easily replaced.

It will be noticed referring to Fig. 8 that the headed pins are substantially T-shaped and that the hooks engage beneath the heads of the pins at either side of the stem. For large pumps, where the strain would be too great on the sucker rod, hooks will be provided on a collar 18 similar to those on the packing ring, the collar having threaded engagement with both the suction and the discharge pipes, and the thread will be removed from the lower half of the coupling 16, and a stud bolt 17 fastened to the coupling to engage with the hooks as clearly shown in Fig. 9.

In Fig. 10 there is shown a form of packing nut. In this construction the barrel 20 corresponding to the element 2 of Fig. 1 has an inwardly extending rib 21, which engages the peripheral surface of the element 22 corresponding to the element 6 of Fig. 1. The packing, indicated at 23, is arranged between this rib and the vertical portion of an angular ring 24. The ring has screws 25 threaded therethrough and engaging lugs 26 on the barrel.

I claim:

1. A pump comprising a barrel and a hollow plunger movable therein, said barrel having at one end a stuffing box through which the plunger slides, the stuffing box having a packing nut connected with the end of the barrel, said barrel having check valves at its lower end and the hollow plunger having check valves at its lower end, a bail connected with the top of the plunger, the bail and the packing nut having interengaging means for permitting the bail to turn said nut and plunger to unthread it from a suction pipe.

2. In combination with a suction pipe, of a barrel having threaded engagement with the upper end thereof, a hollow plunger slidable through the upper end of the barrel, said plunger and barrel having check valves at their lower ends, the plunger and the barrel having means for interengaging to constrain the barrel to turn with the plunger when the plunger is in lowermost position, and a discharge pipe inclosing the barrel and extending below the same.

3. In combination with a suction pipe, of a barrel having threaded engagement with the upper end thereof, a hollow plunger slidable through the upper end of the barrel, said plunger and barrel having check valves at their lower ends, the plunger and the barrel having means for interengaging to constrain the barrel to turn with the plunger when the plunger is in lowermost position, the valves of the barrel being carried by a seat detachable from the barrel.

HARRY MELVIN HALL.