(No Model.)

J. A. HEYDRICK.

PUMP.

No. 254,010. Patented Feb. 21, 1882.

Fig. 1.

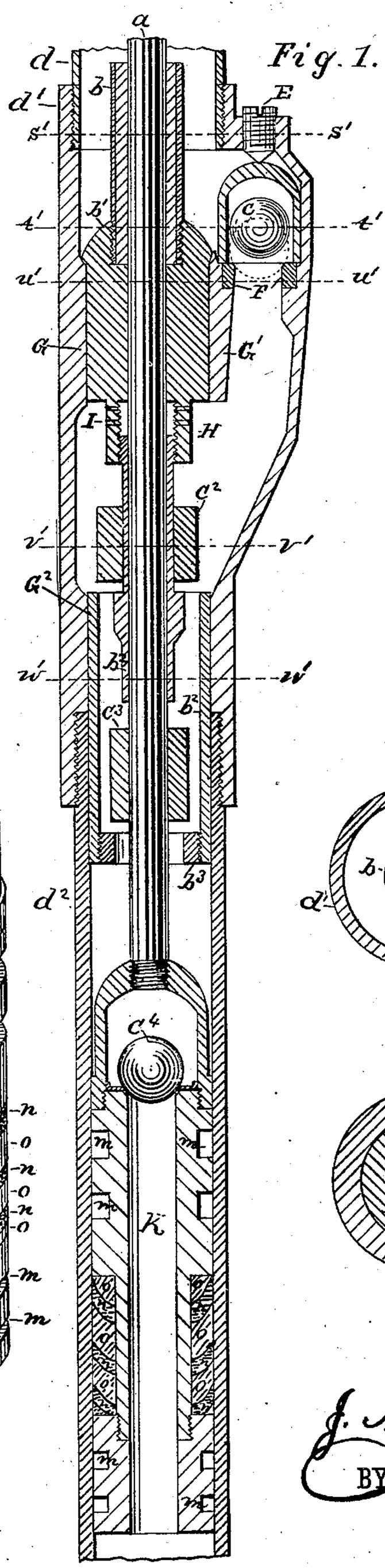


Fig. 2.

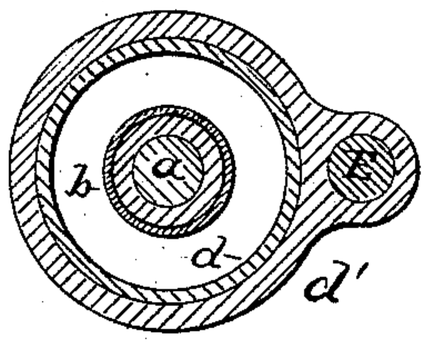


Fig. 7.

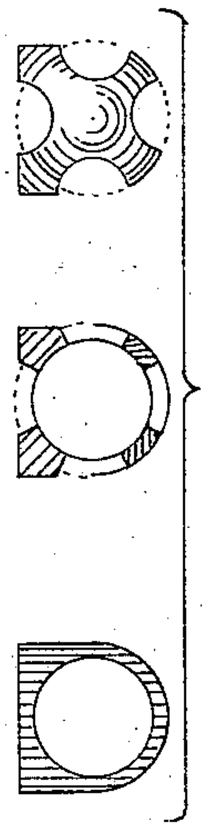


Fig. 8.

Fig. 5.

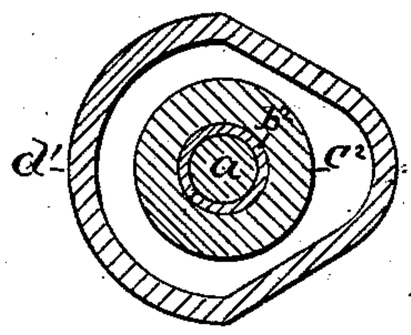


Fig. 3.

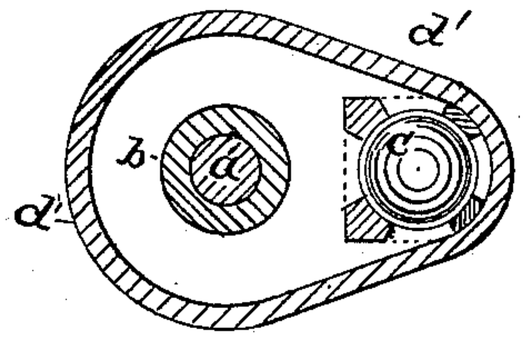


Fig. 6.

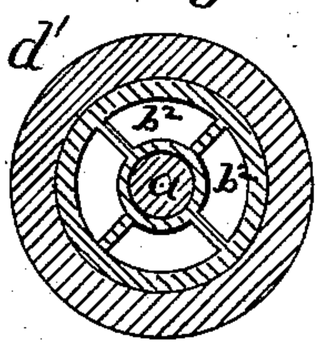
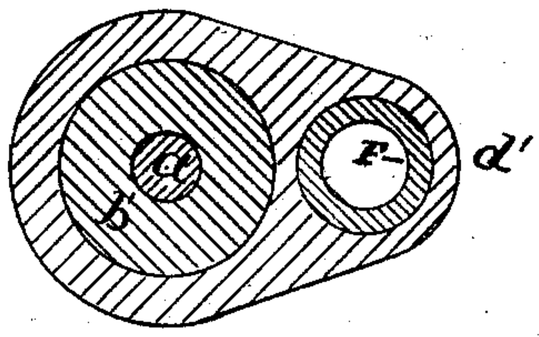


Fig. 4



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UNITED STATES PATENT OFFICE.

JESSE A. HEYDRICK, OF BARNHART'S MILLS, PENNSYLVANIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 254,010, dated February 21, 1882.

Application filed October 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, JESSE A. HEYDRICK, of Barnhart's Mills, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Pumps, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, forming part of this specification.

My invention relates to an improvement in pumps for oil-wells; and it has for its object to throw the weight of the fluid on the packers and upper ball-valve to relieve the sucker-rods of the heavy weight of the fluid, and thereby lessen the danger of breaking the said rods.

The invention consists in certain peculiarities of construction and arrangement, as hereinafter described.

In the accompanying drawings, Figure 1 is a vertical section of my improved pump; Fig. 2, a section through the line s' s' of Fig. 1; Fig. 3, a section through the line t' t'; Fig. 4, through the line u' u'; Fig. 5, through v' v'; Fig. 6, through w' w'; and Fig. 7, top and sectional views of the cage of ball C, and Fig. 8 is the follower.

The tubing d, extending to the top of the well, is connected to the working-barrel or follower-chamber d^2 at the bottom by the intermediate case or shell, d', into opposite ends of which the said parts are screwed. The shell d' at a point below its upper connection is somewhat enlarged and provided with a partition, G′, having semicircular surfaces to form two cylindrical chambers communicating with each other above and below the partition. A seat, G, is formed in the larger chamber, in which is fitted the packer b', which consists of a cylinder bored to fit the rod a, which connects the follower K with the pump-rods. (Not shown.) To make a fluid-tight joint a cylindrical layer of Babbitt metal is cast around the rod a above the packer b', and covered by a pipe, b, whose lower end is screwed into the top of said packer. The lower end of the packer b' is reduced to form a collar, H, having a female thread and ports I, leading to the rod a, to break continuous packing, and the upper end of a second packer, b^2, is screwed into said collar. The lower end of the shell d' is provided with a seat, G^2, for receiving the packer b^2. This packer consists of two cylindrical portions, one arranged within the other, and connected together by longitudinal ribs forming ports for the passage of the fluid. The top of the outer cylindrical portion, together with a shoulder in the inner portion, forms a seat for the drop-valve C^2, which incloses the upper part of the inner or smaller portion of the packer, while a seat, b^3, is screwed into the lower end of the outer cylindrical portion of the said packer for the second drop-valve, C^3, which is thus inclosed within a cage formed in the packer b^2.

As the larger chamber in the shell d' is closed by the packer b', the smaller chamber constitutes a passage for the fluid, and a seat, F, is provided in the upper end thereof for the ball-valve C, which is confined in a cage, which is secured in position by a set-screw, E, inserted through an opening in the shell d'. It is to be observed that the screw-connection between the packers b' and b^2 serves to adjust the said packers to their respective seats.

The rod a is connected to the follower K by means of the valve-cage of ball-valve C^4, into the top of which the said rod screws, the cage being screwed to the top of the follower. The follower K is provided with a longitudinal central bore for the passage of the fluid, and is constructed of two sections screwing together, the lower end of the upper section being recessed for receiving annular metal rings o, and leather cups n, arranged between the rings. The follower is provided near its ends with annular recesses m, formed in its outer surface, for receiving and holding any sand that may pass between the follower and the walls of chamber d^2.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is—

1. In a pump, the combination, with the tubing d and the follower-chamber d^2, of the intermediate double shell, d', having upper packer-seat, G G′, and lower packer-seat, G^2, and intermediate passage for fluid, substantially as shown and described, and for the purpose set forth.

2. In a pump, the combination, with the rod a and the shell d', having seat G, of the packer b', and the pipe b, inclosing a layer of Babbitt metal and screwing into the top of said packer, substantially as shown and described.

3. In a pump, the combination, with the rod

a, the shell *d'*, having seat G², and the packer *b'*, having collar H and ports I, of the packer *b²*, constructed of two cylindrical portions connected by longitudinal ribs, and having ports between the ribs, and the drop-valve C², adapted to close said ports, substantially as shown and described.

4. In a pump, the combination of the packer *b²*, having a cage formed in its lower portion, the drop-valve C³, arranged therein, the seat *b³*, screwed into the lower end of said packer, and the seat G², substantially as shown and described.

5. In a pump, the combination of the shell *d'*, its partition G', seat F, ball-valve C, the valve-cage, the set-screw E for holding the cage, and means for supporting and operating the said parts, substantially as shown and described.

6. In a pump, the combination, with the chamber *d²* and the rod *a*, of the follower K, made in two sections and having sand-recesses *m* and cups *n* and rings *o*, and the valve-cage of ball-valve C⁴, screwed to the said rod and follower, substantially as shown and described.

7. In a pump, the combination of the shell *d'*, having two packer-seats, the packer *b'*, and the packer *b²*, connected together by a screw, substantially as shown and described, whereby both packers shall be adjusted to their seats, as set forth.

8. In a pump, the combination, with the packers *b'* and *b²*, of the collar H, secured to packer *b'*, and provided with a female thread, and ports I, leading to the rod *a*, substantially as shown and described, whereby the continuous packing shall be relieved, as set forth.

9. In a pump, the combination, with the rod *a* and shell *d'*, of the packing *b*, *b'*, and *b²*, extending continuously above and below the packer-seats, substantially as shown and described.

10. In a pump, the combination of the double shell *d'*, the packer *b'*, the ball-valve C, the rod *a*, the packer *b²*, and seat *b³*, the drop-valves C² C³, the follower K, ball-valve C⁴, and follower-chamber *d²*, substantially as shown and described.

11. In a pump, the combination, with a shell or chamber and the rod *a*, of the valves C² C³ and the packer *b²*, having seats for the said valves, substantially as shown and described.

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