W. F. HERVEY.

PUMP.

APPLICATION FILED JAN. 25, 1908.

906,228. Patented Dec. 8, 1908.

Fig. 2

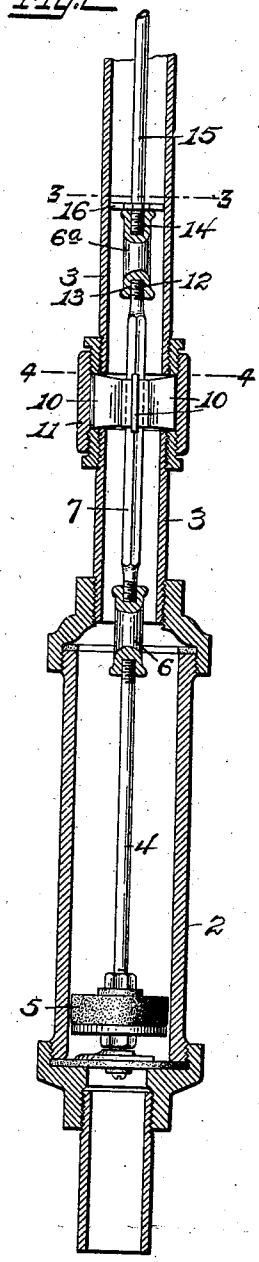


Fig. 1

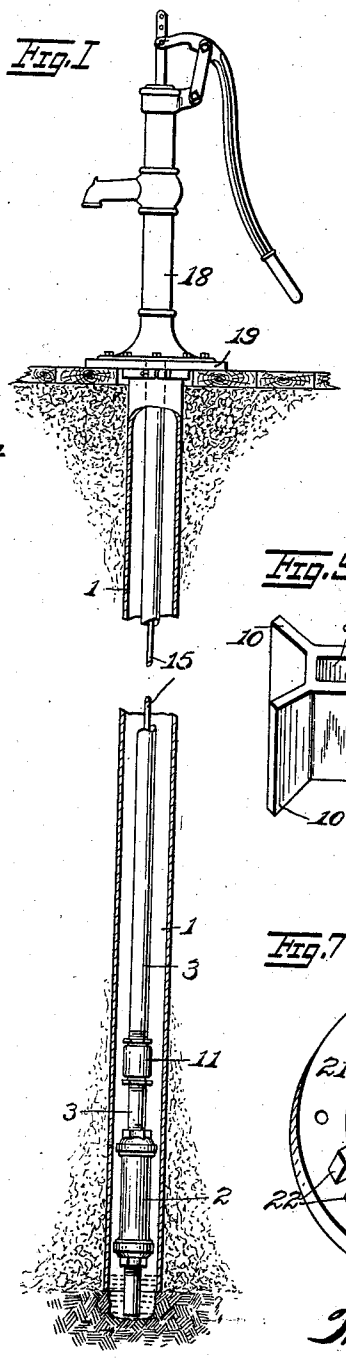


Fig. 3

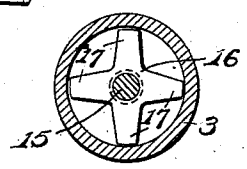


Fig. 4

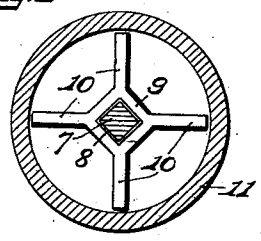


Fig. 5

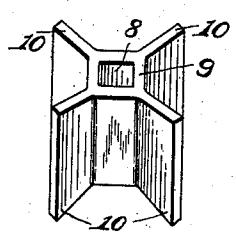


Fig. 6

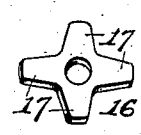
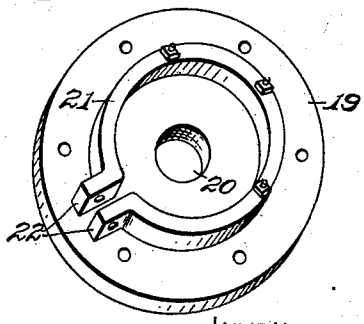


Fig. 7



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PUMP.

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Application filed January 25, 1908. Serial No. 412,543.

To all whom it may concern:

Be it known that I, WILLIAM F. HERVEY, a citizen of the United States of America, and resident of Wellsburg, county of Brooke, and State of West Virginia, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to improvements in pumps, and it has for its primary object to provide a pump whose rods and tubing are adapted to be inserted in and removed from a well separately or independently, and which may be readily connected and disconnected by one man without assistance.

A further object is to provide means whereby said tubing and said rods are maintained in fixed relation and whereby, when a line of said rods is being inserted within the tubing, said rods are directed or guided into direct alinement with the rods which are already in place therein for connecting said rods. And a still further object is to provide means whereby the pump-tubing and the well-casing are rigidly held in fixed relation, with the former centered within the latter.

With these and other objects in view, the invention finally consists in the particular construction, arrangement and combination of parts which will hereinafter be fully described, reference being herein had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a longitudinal sectional view of a well-casing, showing a pump, embodying this invention, mounted therein; Fig. 2 is an enlarged longitudinal section of a portion of the pump-tubing; Fig. 3 is an enlarged cross section on the line 3—3, Fig. 2; Fig. 4 is a similar section on the line 4—4, Fig. 2; Fig. 5 is a detail perspective view of the rod-guide; Fig. 6 is a similar view of a centering-brace; and Fig. 7 is a similar view of the under side of the casing-head showing the draw-band carried thereby.

Referring to said drawings, in which like reference characters distinguish like parts throughout the several views—1 indicates the well-casing, within which, at the bottom of the well is seated the ordinary cylinder or working-barrel 2. To said working-barrel is connected the pump-tubing which consists of a plurality of sections 3, coupled as ordinarily.

Coupled to the rod 4 of the plunger 5 by means of a union 6 is a rod 7, rectangular in cross section, which is vertically-movable through the rectangular opening 8 of a rod-guide 9. Said guide has radial arms 10 which, at their outer ends, are in close frictional engagement with the interior walls of a coupling-sleeve 11 employed for connecting two adjacent sections 3 of the tubing, and is adapted for maintaining the rod 7 against rotary movement. The upper end of said rod 7 is provided with left-hand screw-threads, as shown at 12, and is very tightly screwed up within the similarly threaded socket 13 of a union 6^a. A socket 14 in the upper end of said union 6^a is provided with right-hand threads and is adapted to receive the lower end of the lowermost of a line of connected rod-sections 15, reaching to the top of the well, all of the joints of said line being formed with right-hand threads.

Threaded upon the lower end of the lowermost rod 15 so as to lie directly above the union 6^a is a centering-brace 16 having radial arms 17 which are adapted to engage the interior walls of the pump-tubing for holding said rods centered with relation to the tubing. Said centering-brace further serves as a guide whereby, when inserting said line of rod-sections within the tubing, the line is guided into direct register or alinement with the socket 14 in the upper end of said union 6^a, means being thus provided whereby the ready connection of said line of rods to the rod 7 from the top of the well is facilitated. For the purpose of maintaining said tubing in fixed position with relation to the well-casing 1, and also for holding the pump-standard 18 in perfect alinement with the rods and tubing, a casing-head or base-plate 19, having a circular opening 20 in which the tubing fits snugly, is mounted directly over the upper end of said casing, and a draw-band 21 is mounted on the under side of said plate. Said draw-band is concentric with said opening 20, and, consequently, when made to closely embrace the upper end of the casing by bolting the members 22 thereof firmly together, said tubing is rigidly held centered with relation to said casing. The pump-standard 18, mounted centrally upon

said plate 19, serves to hold the upper end of the line of rod-sections centered with relation to the tubing.

In inserting the tubing and rods in the well, the rod 7 is coupled to the upper end of the plunger-rod 4, the rod-guide 9 is slipped thereover, the union 6^a is firmly screwed upon the upper end of the rod 7, the sections of tubing are properly connected, and all is lowered as thus assembled into the well. Then, after connecting the line of rod-sections 15, said line is inserted within the tubing from the top of the well. The centering brace 16 threaded upon the lowermost rod-section guides the latter directly into the socket 14 of the union 6^a. As is obvious, the line of rod-sections is turned to the right from the top for effecting the coupling, care being taken to not turn said rods too far to the right lest the left-hand coupling made at 12 be disturbed.

To remove the line of rod-sections from the well, said line is turned to the right until it is disconnected from the rod 7 at the point 12, when said line may be bodily withdrawn.

As is apparent from the foregoing, the particular construction and arrangement of parts described is such that the pump-rods and the pump-tubing may be independently inserted and removed. Furthermore, it will be noted that, since all the parts are rigidly held in fixed relation with respect to each other, there is but little, if any, liability of the pump-rods becoming uncoupled.

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 a pump-tubing, of a pump-rod, polygonal in cross section, located adjacent to the bottom of the tubing, a rod-guide whereby said rod is held centered with respect to said tubing and whereby rotation of said rod is prevented, a line of coupled rods extending from said polygonal pump-rod to the top of the tubing and coupled to said polygonal rod, all joints being threaded in the same direction with the exception of that at the upper end of said polygonal rod, and a centering-brace carried by said line of coupled rods.

2. In a pump, a vertically-movable rod located adjacent to the bottom of the pump tubing, means for preventing rotation of said rod, a line of coupled rods reaching from said rod to the top of the tubing, said line of rods being coupled to said rod, the threads of the coupling between said line and said rod running reverse to those of the couplings forming said line, and means for guiding said line into register with said rod.

3. In a pump, a pump-tubing, a vertically-movable rod located within said tubing above the working barrel, a rod-guide embracing said rod and having radial arms in engagement with said tubing for preventing rotation of said rod, a rod extending from the top of the tubing to said vertically-movable rod, and means carried by the last-mentioned rod whereby the latter is guided into register with the first-mentioned rod for coupling.

4. In a pump, a pump-tubing, a vertically-movable rod located within said tubing at a point adjacent to the bottom thereof, a rod-guide embracing said rod and having radial arms in frictional engagement with said tubing for preventing rotation of said rod, left-hand screw-threads carried by the upper end of said rod, a line of rods extending to the top of the well, a union carried by the lowermost of said rods adapted for being threaded on the left-hand threads of the said end of the first-mentioned rod, and a centering-brace carried by said line of rods.

5. In a pump, a pump-tubing, a vertically-movable rod located within said tubing at a point adjacent to the bottom thereof, and having connection with the plunger, a sleeve-coupling connecting two adjacent tubing sections at a point past which said rod operates, a rod-guide whereby rotation of said rod is prevented, said guide being located within said coupling, said rod having left-hand screw-threads upon its upper end, a line of rod-sections reaching from said rod to the top of the well, said sections being coupled with right-hand threads, and a centering-brace whereby said line of rod sections is directed into alinement with the upper threaded end of the first-mentioned rod for coupling thereto.

6. In a pump, a pump-tubing, a vertically-movable rod located within said tubing at a point adjacent to the bottom thereof and having connection with the plunger, a sleeve-coupling connecting two adjacent tubing sections at a point past which said rod operates, a rod-guide having radial arms in frictional engagement with the interior walls of said coupling, said guide loosely embracing said rod for holding the latter centered and against rotation, left-hand screw-threads on the upper end of said rod, a union threaded upon said threaded end, a line of connected rod-sections extending from said union to the upper end of the tubing, the lower end of said line being adapted for threading within the upper end of said union with right-hand screw threads, and a centering-guide fixed upon said line and having radial arms for engaging the interior walls of said tubing and adapted to guide the lower end of said line into register with the upper end of said union.

7. In a pump, a vertically-movable rod located adjacent to the bottom of the pump-tubing, means for preventing rotation of said rod, a line of coupled rods reaching from said rod to the top of the tubing, said line of rods being coupled to said rod, the threads of the

coupling between said line and said rod running reverse to those of the couplings forming said line, means for guiding said line into register with said rod, and a mounting for the pump-standard whereby the upper end of the tubing is maintained centered with respect to the well-casing and whereby the line of rods is maintained centered with respect to said tubing.

8. In a pump, a vertically-movable rod located adjacent to the bottom of the pump-tubing, means for preventing rotation of said rod, a line of coupled rods reaching from said rod to the top of the tubing, said line of rods being coupled to said rod, the threads of the coupling between said line and said rod running reverse to those of the couplings forming said line, means for guiding said line into register with said rod, a mounting for the pump-standard whereby the upper end of the tubing is maintained centered with respect to the well-casing and whereby the line of rods is maintained centered with respect to said tubing, said mounting comprising a base-plate having an opening therein in which said tubing closely fits, and a draw-band carried by said plate for embracing the upper end of the casing, said draw-band being substantially concentric with the opening in said plate.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

WILLIAM F. HERVEY.

Witnesses:
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LOUIS SCHOTT.