July 1, 1924. 1,499,691

J. B. REBOLD

PUMP FOR WELLS

Filed Sept. 25, 1923

Fig. 2.

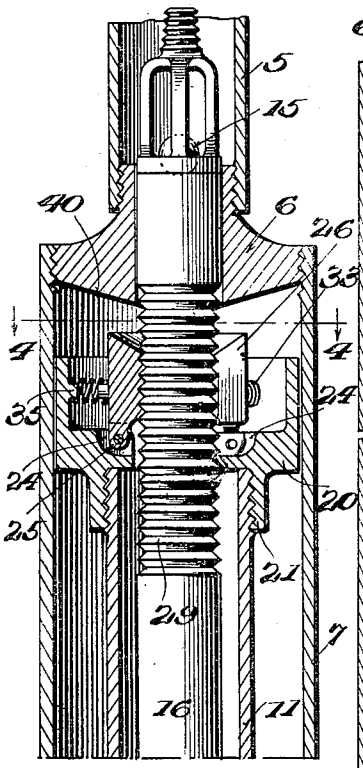


Fig. 1.

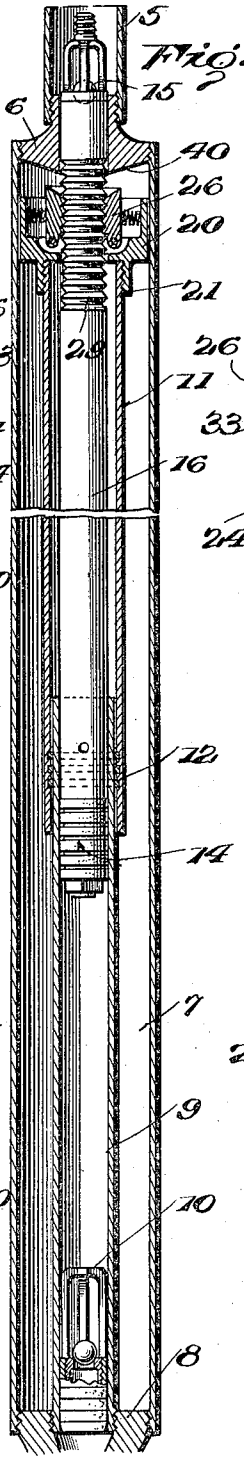


Fig. 3.

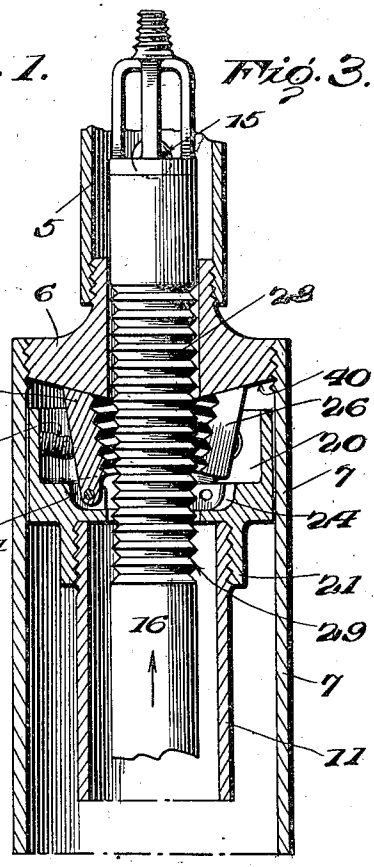
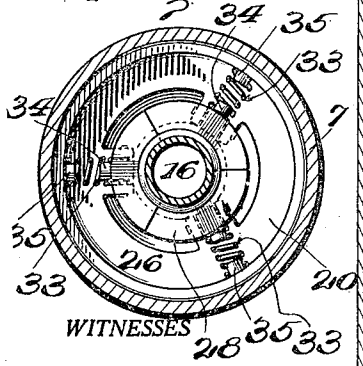


Fig. 4.



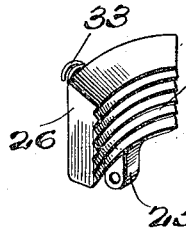


Fig. 5.

INVENTOR

J. Bryan Rebold

Patented July 1, 1924. 1,499,691

UNITED STATES PATENT OFFICE.

JENNINGS BRYAN REBOLD, OF SLICK, OKLAHOMA.

PUMP FOR WELLS.

Application filed September 25, 1923. Serial No. 664,725.

To all whom it may concern:

Be it known that I, JENNINGS BRYAN REBOLD, a citizen of the United States, residing at Slick, in the county of Creek, State of Oklahoma, have invented new and useful Improvements in Pumps for Wells, of which the following is a specification.

This invention relates to pumps especially adapted for use in wells.

Briefly stated, an important object of this invention is to provide a pump having novel means whereby to prevent sand suspended in the liquid from settling on or working its way onto the cups of the plunger, and, consequently cutting the same.

A further object is to provide a pump consisting of upper and lower working barrels and a plunger and novel means whereby the connection may be broken between the upper working barrel and the plunger when it is desired to remove the plunger without removing the upper working barrel.

A further object is to provide a pump of the character specified which may be conveniently assembled or taken apart when desired.

A further aim is to provide a pump which is of highly simplified construction, reliable in use and cheap to install.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a vertical sectional view through the improved pump.

Figure 2 is a detail sectional view illustrating the means for connecting the upper scraping barrel to the plunger, the said means being in their operative or gripping positions.

Figure 3 is a similar view, the gripping means being in their inoperative positions.

Figure 4 is a horizontal sectional view taken on line 4—4 of Figure 2.

Figure 5 is a perspective of one of the gripping members or slips.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention the numeral 5 designates a tubing, the lower portion of which has connection with the head or bushing 6 of a shell 7. The lower portion of the shell is in turn provided with a bushing 8 to which the lower end of a lower working barrel 9 is connected and within the working barrel is a standing valve 10 of the usual and well known construction.

In carrying out the invention an upper scraping barrel 11 is arranged within the shell and has a sliding or working fit with the lower working barrel. That is to say, the scraping barrel 11 receives the lower working barrel 9 and is provided with a plurality of rings 12 by means of which any sand which may collect about the lower working barrel is positively scraped from the same and prevented from entering the working barrel.

By thus scraping the sand from the outer surface of the lower working barrel 9 sand is prevented from working its way between the barrels and settling on the cups 14 of a plunger 16. The plunger reciprocates within the lower working barrel 9 and has connection in the usual manner with a sucker rod not shown and which is operated from the surface. It might be stated that the plunger is provided at its ends with valves 15, the upper valve only being shown.

One of the principal features of the invention resides in the means for detachably connecting the upper barrel 11 to the plunger so that the same will reciprocate with the plunger during pumping.

This feature of the invention includes a bowl-shaped carrier 20 having its lower end provided with an annular attaching flange 21 threaded onto the upper portion of the scraping barrel 11. Figures 2 and 3 plainly illustrate that the bottom wall of the bowl is provided with a plurality of ears 24 arranged in pairs and pivotally connected to the ears 25 of slips or jaws 26. The inner sides of the jaws are provided with teeth 28 adapted to engage annular ribs 29 on the upper portion of the plunger whereby a secure connection is provided between the plunger and the scraping barrel 11.

Figures 2 and 4 illustrate that the slips, which are three in number, are urged into engagement with the teeth of the plunger by stout coil springs 33, the said coil springs being extended over lugs or projections 34 and 35 on the opposed sides of the slips and the bowl.

In use the plunger is lowered through the tubing and is guided into the space between the slips by the beveled upper ends of the slips and when the plunger descends to

the limit of its movement the ribs 29 will be in position to be engaged by the teeth of the slips. Of course at this time, the upper barrel 11 is located in the lower portion of the shell 7, having settled to this position by gravity while disconnected from the plunger.

When the plunger is thus connected to the scraping barrel 11 the two parts reciprocate together and owing to the construction recited sand suspended in the liquid is prevented from cutting the cups and consequently decreasing the period of usefulness of the same.

However, when it is desired to remove the plunger it is merely necessary to bump the beveled upper ends of the slips onto the beveled lower side 40 of the head 6 and the slips will be immediately spread and moved out of gripping engagement with the ribs 29. The upward pull on the plunger may now be continued and the scraping barrel will as previously stated settle by gravity to the bottom of the shell. It will be noted that the slips are in position to guide the plunger into the scraping barrel. It might be said that the lower side of the head 6 has the form of a truncated cone so that the slips will be separated as shown in Figure 3 when bumped against the same.

Attention is directed to the fact that the slip carrying bowl 20 is only slightly smaller than the shell 7 and consequently guides and centers the upper scraping barrel 11 so that undue wear on certain parts of the two barrels is prevented and the upper barrel 11 is held in a proper position to receive the plunger.

It will be noted that the connection between the slip-carrying bowl 20 and the plunger is tight so that sand cannot settle on the cups by passing through the bowl.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that such minor changes in arrangement and construction of parts may be made as will remain within the spirit of the invention and the scope of what is claimed.

Having thus described the invention, what is claimed is:—

1. A pump comprising a working barrel, a scraping barrel receiving the working barrel and having scraping contact with the outer wall thereof, a plunger movable into the barrel and having ribs, and slips pivotally carried by the scraping barrel and having means to engage said ribs whereby the scraping barrel is detachably connected to and is movable with said plunger.

2. A pump comprising a working barrel, a scraping barrel having interfitting connection with the working barrel and having scraping contact with the outer wall thereof, a plunger movable into the barrel, slips pivotally carried by the scraping barrel and having means to grip said plunger whereby the scraping barrel is detachably connected to and is movable with said plunger, and means to release said slips from engagement with said plunger whereby the plunger may be removed independently of the scraping barrel.

3. A pump comprising a working barrel, a scraping barrel having interfitting connection with the working barrel and having scraping contact with the outer wall thereof, a plunger movable into the barrel, slips carried by the scraping barrel and adapted to grip said plunger whereby the scraping barrel is detachably connected to said plunger, and a shell receiving the first and second named barrels and having means arranged in the path of travel of said slips to release the slips from gripping engagement with the plunger.

4. A pump comprising a tubular scraping member, slips carried by the scraping member, a plunger movable into the tubular scraping member and adapted to be engaged by said slips, means urging the slips into locking engagement with the plunger, and a barrel received within said tubular member and having its outer wall scraped free of sand by said tubular member.

5. A pump comprising a tubular member, slips pivotally supported at one end of said tubular member, a plunger movable into the tubular member, a barrel received within said tubular member and having its outer wall scraped free of sand thereby, and springs urging the slips into locking engagement with the plunger whereby the tubular member is detachably connected to the plunger.

6. A pump comprising a tubular member, slips pivotally supported at one end of said tubular member, a plunger movable into the tubular member, springs urging the slips into locking engagement with the plunger whereby the tubular member is detachably connected to the plunger, a shell enclosing said tubular member and having a head adapted to be engaged by said slips, the opposed sides of said head and said slips being beveled, and a working barrel received within said tubular member and having its outer wall scraped by said tubular member.

7. A pump comprising a tubular member, a slip-carrying bowl secured to the tubular member, slips pivoted within said bowl, a plunger movable through said bowl and having means engaged by said slips, the upper portions of said slips being beveled inwardly and downwardly to form guides for the plunger, and a barrel received within said tubular member, said tubular member being provided with rings scraping the outer wall of the barrel.

8. A pump comprising a scraping member, a slip-carrying member secured to the scraping member and having an annular series of slips, a plunger movable through said series of slips adapted to be engaged thereby, and a shell enclosing said scraping member and said slip-carrying member and having a head adapted to be engaged by said slips, the opposed sides of said head and of said slips being beveled, and a barrel received within said tubular member, said tubular member being provded with means for scraping sand from the outer side of the barrel.

9. In a pump, the combination of upper and lower barrels, one of the barrels being provided with sand-scraping means engaging the outer side of the other barrel, a bowl carried by the upper barrel, spring actuated slips pivotally carried by said bowl, and a plunger movable into said barrels and having ribs engaged by said slips.

10. In a pump, the combination of upper and lower barrels, one of the barrels being provided with sand-scraping rings engaging the outer side of the other barrel, a bowl carried by the upper barrel, spring actuated slips pivotally carried by said bowl, a plunger movable into said barrels and having ribs engaged by said slips, and a shell enclosing said barrels and having a head adapted to be engaged by said slips.

J. BRYAN REBOLD.