

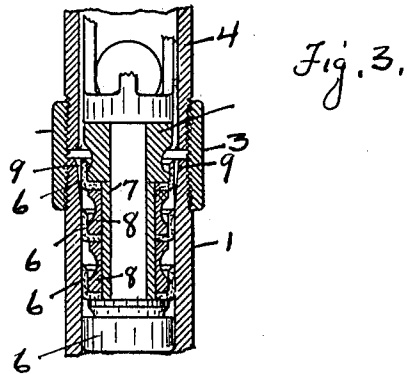
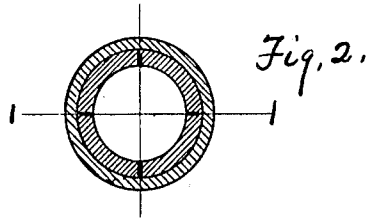
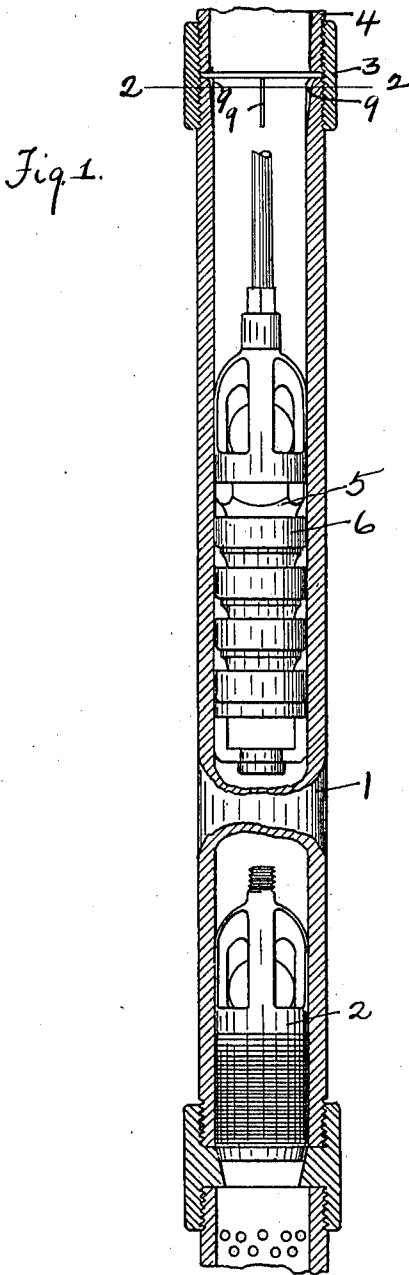
R. CONRADER.

PUMP.

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984,351.

Patented Feb. 14, 1911.



Witnesses
Margaret M. Beigle
Vernie C. Hess

Inventor
Rudolph Conrader
by H. C. L. [Signature]
Attorney

UNITED STATES PATENT OFFICE.

RUDOLPH CONRADER, OF ERIE, PENNSYLVANIA.

PUMP.

984,351.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RUDOLPH CONRADER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly, the invention relates to pumps ordinarily used in Artesian wells, and pumps in which there are flexible cups, either for the plunger or for packing for parts of the pumps. In the ordinary use of these pumps, it is frequently necessary to pull the plunger or other parts from the barrel, and where the pump has been in operation, there is above the plunger a column of liquid of great height, thus exerting a tremendous pressure on the plunger. When, therefore, the plunger reaches a point opposite the point between the working barrel and the tubing, the sides of the cup flare out, catch the shoulder of the tubing and are destroyed. Not only this but portions of the cup are ordinarily thrown off, and these are left in the well, and getting under the valves, often require a second pulling of the valve to clear them, with the danger in the second pulling as in the first, of destroying the cups, and depositing the pieces of the cups in the well. The object of the invention is to prevent this.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 is a central section of the pump on the line 1—1 in Fig. 2, the plunger being in elevation; Fig. 2 is a section on the line 2—2 in Fig. 1; Fig. 3 is a section on the line 3—3 in Fig. 2, the plunger being also partly in section.

1 marks the working barrel; 2 the standing valve; 3 the coupling at the top of the working barrel; and 4 the tubing secured into the coupling 3. The plunger 5 has the usual flexible cups 6. These are secured on a sleeve 7, extending longitudinally of the plunger, and supported by the nuts or collars 8. The parts so far described are of the usual construction.

At the top of the working barrel are arranged passages 9. These are formed by

sawing slots as shown, the slots extending from the top of the working barrel a distance downwardly somewhat greater than the depth of the cup so that when the cup is brought abreast of the slots, the liquid above the plunger can pass through the slots and escape below, thus balancing the pressure above and below as the cup passes from the end of the working barrel up into the tubing. This balancing of the pressure prevents the outspreading of the cup as heretofore described. Any passage or by pass that will accomplish this purpose may be used, but I prefer the saw slot as shown.

What I claim as new is:

1. In a pump the combination of a tube having a longitudinal passage in the walls thereof and a flexible cup for maintaining a column of liquid in the tube, the sides of the cup and the length of the longitudinal passage being proportioned to permit of a movement of the liquid through the passage past the cup when the cup is in position abreast the passage.

2. In a pump the combination of a tube having a longitudinal passage in the walls thereof extending from the ends of the tube; a coupling arranged on said end of the tube; a second joint of tubing secured to the coupling; and a flexible cup for maintaining a column of liquid in the tube, the size of the cup and the length of the longitudinal passage being proportioned to permit of a movement of the liquid through the passage past the cup when the cup is abreast of the passage.

3. In a pump, the combination of a tube having a slot, extending from the top thereof downwardly in the tube; a flexible cup for maintaining a column of liquid in the tube, the size of the cup and the length of the slot being proportioned to permit of a movement of liquid through the slot past the cup when the cup is abreast the passage.

4. In a pump, the combination of a working barrel having a longitudinal passage, extending from the top thereof downwardly; a plunger in the working barrel being formed with flexible cups, the length of the passage and the size of the cups being proportioned to permit of a passage of liquid through the slot past the cups, when the cup is abreast the passage.

5. In a pump the combination of a work-

ing barrel having slots cut from the top
thereof downwardly; and a plunger in the
working barrel having cups, the length of
the slot and the cups being proportioned to
5 permit of the passage of liquid through the
slots from above the cup to below the cup,
when the cup is brought abreast the slot.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

RUDOLPH CONRADER.

Witnesses:

THOMAS C. MILLER,
MARGARET M. BEIGLE.