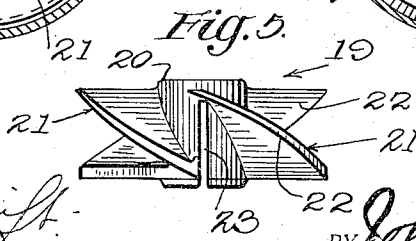
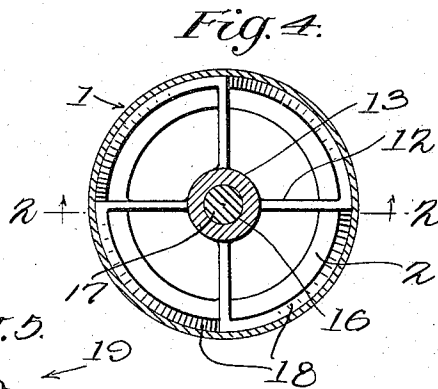
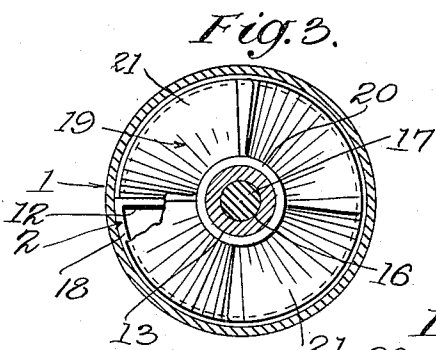
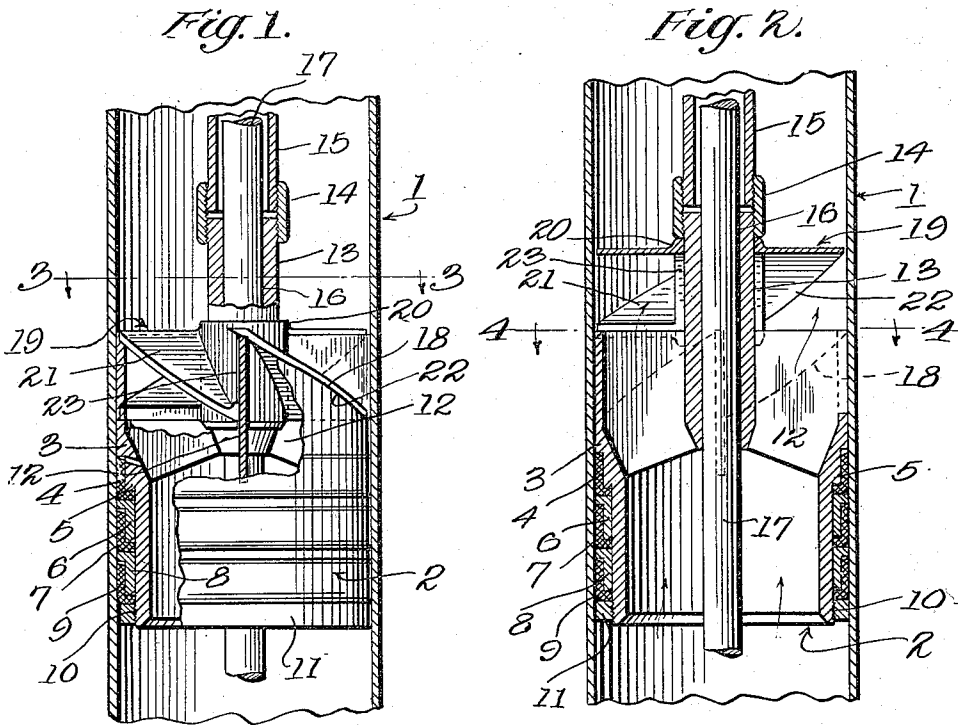


J. J. BECKER.
VALVE FOR DEEP WELL PUMPS.
APPLICATION FILED SEPT. 4, 1915.

1,201,543.

Patented Oct. 17, 1916.



WITNESSES:
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JOHN J. BECKER, OF LOS ANGELES, CALIFORNIA.

VALVE FOR DEEP-WELL PUMPS.

1,201,543.

Specification of Letters Patent.

Patented Oct. 17, 1916.

Application filed September 4, 1915. Serial No. 49,047.

To all whom it may concern:

Be it known that I, JOHN J. BECKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Valves for Deep-Well Pumps, of which the following is a specification.

This invention relates to improvements in valves for deep well pumps and its prime object is to provide a valve that will have a very large passageway for liquid and thereby prevent the valve from choking when the pump is run at high speed.

The preferred form as illustrated in the drawings consists of a pump plunger provided with a valve seat in its upper end and a valve adapted to seat in the valve seat in said plunger, said valve being provided with a series of spirally arranged ribs which form spiral water passages when the valve is unseated; and my invention consists of the novel features herein shown, described and claimed.

Referring to the drawings: Figure 1 is a longitudinal sectional view partly in elevation of a pump cylinder with the plunger in place and the valve seated. Fig. 2 is a longitudinal central sectional view showing the valve unseated and taken upon the line 2—2 of Fig. 4. Fig. 3 is a cross section taken upon the line 3—3 of Fig. 1 and showing the valve in plan. Fig. 4 is a cross section taken upon the line 4—4 of Fig. 2. Fig. 5 is a view of the valve in elevation.

Referring to the drawings in detail, 1 designates a portion of a deep well cylinder. Within the cylinder 1 is a pump plunger 2, which is cylindrical in cross section to conform to the inside of the cylinder 1. The upper end of said plunger is turned down to form a shoulder 3, for the reception of a cup packing ring 4, the lower end of said ring extending under a second shoulder 5. A dividing ring 6 abuts against the lower end of the packing ring 4 and a second cup packing ring 7 extends around the outer face of the dividing ring 6 and under the lower edge thereof. A second dividing ring 8 abuts against the lower end of the packing ring 7 and a third packing ring 9 extends around the outer face of said dividing ring 8. The lower end of the plunger 2 is exteriorly screw threaded at 10 for the reception of an interiorly screw threaded re-

taining ring 11. The retaining ring 11 abuts against the lower end of the packing ring 9 and holds the several packing rings and dividing rings in place.

The wall of the plunger 2 is comparatively thin and extends upwardly a distance above the shoulder 3. A series of radial ribs 12 are formed integral with the wall and extend inwardly and merge in a vertical sleeve 13. The sleeve 13 extends upwardly a distance above the upper end of the plunger and is connected by a coupling to the operating tube rod 15. The sleeve 13 is provided with a bore 16 through which the plunger rod 17 extends to the lower plunger (not shown). A series of serrations 18 are formed in the upper end of the plunger 2 and extend alternately from near the lower edge of each of the ribs 12 to the upper edge of the succeeding rib.

The valve 19 is provided with a hub 20 bored to fit the sleeve 13 of the plunger 2, said valve being adapted to operate up and down on said sleeve. A series of spirally arranged segmental ribs 21 are formed around the boss 20 and extend from the lower end thereof to near the upper end, each rib extending radially from the boss 20 slightly more than a quarter of the diameter, so that the upper end of one rib overlaps the lower end of the succeeding rib. The valve 19 is slightly less in diameter than the plunger 2 so that it may operate freely above the plunger in the cylinder 1. The under faces 22 of the outer edges of the ribs 21 are of the same contour as the upper edges of the serrations 18 in the plunger 2, so that when the valve is seated, as shown in Fig. 1, water tight joints are formed between these parts. A series of radial slots 23 are formed in the boss 20 and extend from the lower edge thereof and end under the upper ends of the ribs 21. Said slots are adapted to fit over the ribs 12 of the plunger 2 and form guide ways for the valve 19 when in operation.

When the valve is seated as shown in Fig. 1 the ribs 12 of the plunger 2 cut off the passages formed between the spiral ribs 21 of the valve 19.

Fig. 2 shows the valve in its open position and the spiral water passages formed between the ribs of the valve 19 free for the upward passage of liquid. The upward movement of the valve 19 is limited by the coupling 14.

What I claim and desire to secure by Letters Patent of the United States, is:—

1. A pump plunger comprising a body portion having a serrated upper edge forming a valve seat, a series of radial ribs formed with the body portion and extending inwardly and merging in a sleeve, a valve adapted to seat in the valve seat formed in said plunger and having a hub adapted to operate on said sleeve, means forming spiral water passages around said hub and means for closing said passages when the valve is seated.

2. A pump plunger comprising a body portion having a valve seat in its upper edge, a series of radial ribs formed with the body portion and extending inwardly and ending in a sleeve, a valve having a hub adapted to operate on said sleeve, said valve having a series of spirally arranged ribs adapted to fit within the cylinder and seat in said valve seat in the plunger, and slots formed in the hub of said valve for the reception of the plunger ribs, so that when the valve is seated said ribs close the passages formed between the spiral ribs of said valve.

3. A pump plunger comprising a body portion having a series of serrations formed in its upper end, ribs extending inwardly from the body portion and merging in a

sleeve, a valve having a hub fitting around said sleeve, guideways formed in the hub for the reception of said ribs, a series of spirally arranged ribs around the hub, the under edges of the outer ends of said ribs being adapted to seat in the serrations formed in the upper end of the plunger and form tight joints, said ribs alternating from bottom to top of the hub and overlapping, so that when the valve is seated the ribs formed in the plunger close the passages around the said valve.

4. A pump plunger comprising a body portion having a serrated upper edge forming a valve seat, a series of radial ribs formed with the body portion and extending inwardly and merging in a sleeve, a valve adapted to seat in the valve seat formed in said plunger and having a hub adapted to operate on said sleeve means forming spiral water passages around said hub, means for closing said passages when the valve is seated and a stop formed upon the plunger sleeve to limit the upward movement of the valve.

JOHN J. BECKER.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."