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F. O. STERRETT.

PUMP FOR HANDLING HEAVY OILS.

(Application filed May 6, 1901.)

(No Model.)

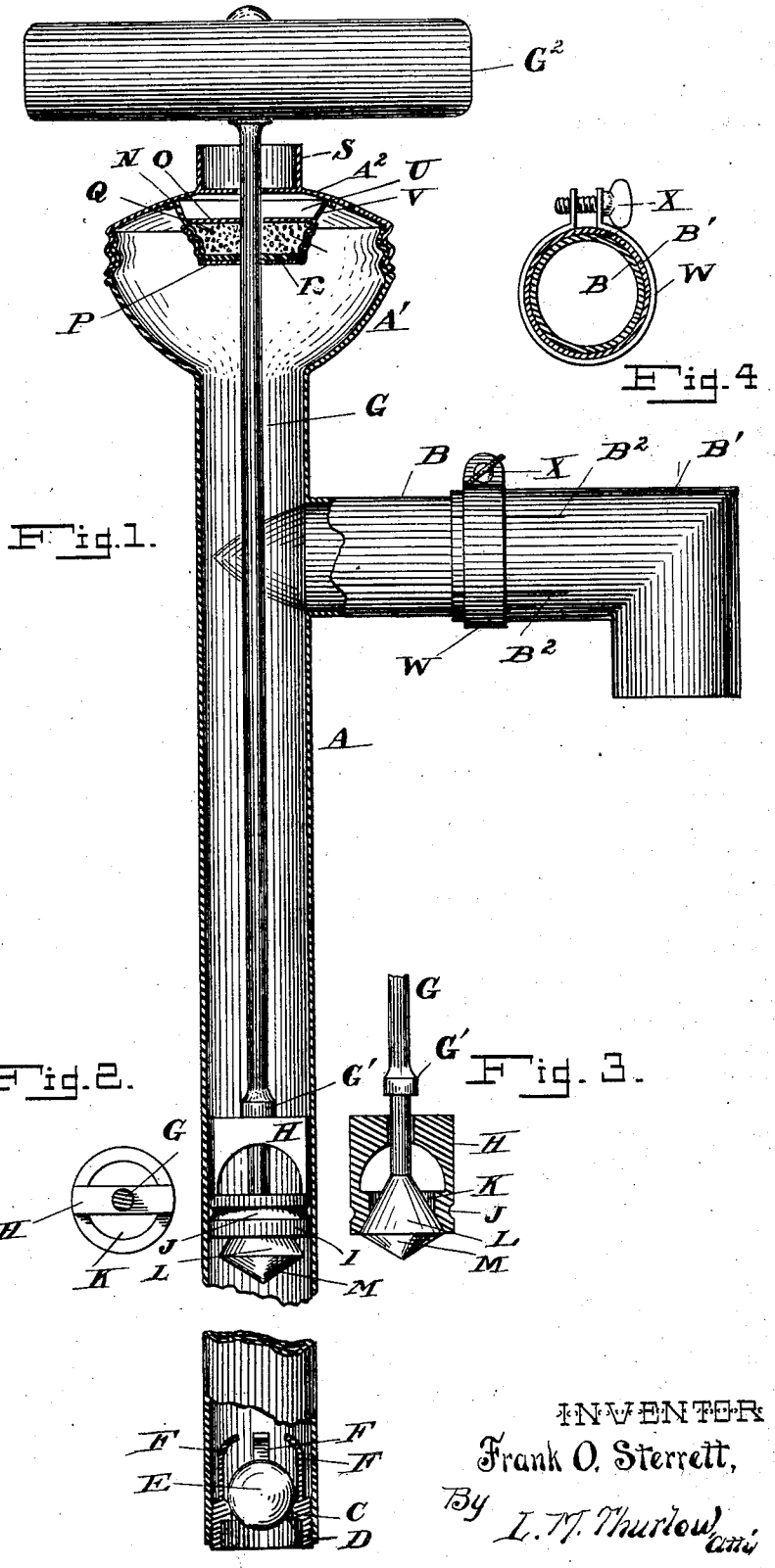


Fig. 1.

Fig. 4

Fig. 2.

Fig. 3.

WITNESSES:

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PUMP FOR HANDLING HEAVY OILS.

SPECIFICATION forming part of Letters Patent No. 693,920, dated February 25, 1902.

Application filed May 6, 1901. Serial No. 59,049. (No model.)

To all whom it may concern:

Be it known that I, FRANK O. STERRETT, a citizen of the United States, residing at Henry, in the county of Marshall and State of Illinois, have invented certain new and useful Improvements in Pumps for Handling Heavy Oils; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention pertains to pumps of that class employed for handling heavy oils.

The object of the invention is to provide a pump having valves of a construction that will permit heavy oils, even when cold and stiff, to readily pass through them.

Another object of the invention is to provide a peculiar form of arrangement of stuffing-box for preventing the oil being carried up by the stem which carries the plunger and spilled or smeared on the outside of the pump and surrounding objects.

Another object is to provide an extensible spout for the pump by which to deliver the oil to any desired receptacle.

The invention relates to certain details of construction which will be brought out in the following specification.

In the appended drawings, Figure 1 is a sectional elevation of the pump, showing the valves and stuffing-box as well as the delivery-spout. Fig. 2 is a plan view of the body of one of the valves. Fig. 3 is a vertical section of the same, showing a coned end of the pump-stem. Fig. 4 is a cross-section of the delivery-spout, a detachable elbow, and a clamp therefor shown in Fig. 1.

A indicates the pump-tube, having a delivery tube or spout B, as shown. In the bottom of the said tube A is a ball-valve consisting of a seat C, screwed into the end of such tube and having an opening D, wherein is seated a ball E. Vertical arms F permit the ball to rise and fall without leaving the vicinity of the seat, as will be understood. Evidently other means equal to that just described may be employed, however. A valve-stem G, having a handle G^3, is provided to move vertically within the tube A, as in all pumps of this character, and its lower end carries a valve of peculiar form. It consists of a plunger H, which has a cylindrical portion I to snugly fit within the tube to slide therein. An annular groove J in the periphery of said portion I, which, however, is common to many such devices, fills with the oil and serves to make a tight-working joint. The plunger H of the valve is merely a guide, its curved edges serving to keep the valve in vertical position. It is arched over the portion I and permits the oil to pass upward through the opening K in the valve and out at each side thereof. The stem G carries at its end a tapered block L, which rests within a seat of the same taper, as shown in Fig. 3. The bottom of the block is also tapered, as shown at M, so as to form less resistance to the oil as the valve descends. The said stem G has a boss at G′, which limits the upward movement of the plunger H, it being understood that the stem passes through the body H, as indicated in Fig. 3. The top of the tube A is flared to form a head A′, having threads pressed in its upper edge. A cap A^2, also threaded in like manner, engages the head and forms a guide for the stem. Depending within the said cover and surrounding the stem G is a chamber composed of an annular wall N, which is soldered or otherwise suitably secured to the cover. Said chamber contains a bottom O, and a cap P is screwed onto the lowermost open end of the chamber-walls. A filling of asbestos, cotton, or other suitable packing material Q is contained in said chamber beneath the bottom O and is held in place by the cap P described; but between the cap and the packing is inserted a metal washer R, which lies on said cap. The cover A^2 carries a catch-basin S, in the bottom of which is an aperture T, larger than the stem G, through which oil if carried up on the stem can return to a receptacle U beneath the said basin S, and thence through an aperture V in the wall N into the tube A.

The spout B before described is provided with an extension B′, whose shifting end is split at B^2. A clamp W surrounds the split end and a set-screw X serves to draw its ends together to accomplish the clamping operation.

The operation of the device is as follows: When the pump is inserted into a barrel, tank, or other vessel from which the oil is to be

drawn, the valve-stem is operated by means of its handle. When forcing the rod down the friction of the portion H on the inner surface of the tube together with the pressure of the oil beneath it keeps it raised from the portion L and the oil passes said portion L, arises through the opening K into the tube A. As the upward movement takes place the parts come together, as in Fig. 3, thus lifting the oil within the tube to the spout B, where if it be thin enough it will flow out; otherwise it will arise into the flared head A′, where under pressure of the constant inflow of oil it will be forced out through the said spout B. Evidently at each upward stroke of the stem the ball E will be raised to admit the oil and a downward stroke will seat the ball. Then by the succeeding downward stroke the oil passes through the valve on the stem G. It will be seen that the oil is first scraped from the stem by the washer R as the handle G^2 is raised. Then the packing Q prevents oil being carried up on the rod or stem outside the head. However, should the packing become worn, so as to permit the oil to be drawn up, the basin will catch any such, from whence it will flow into the receptacle U and finally into the head A′ through the aperture V. If the oil is thin by reason of having been kept in a warm place or of being heated purposely it will not rise above the spout B; but if cold and very thick, like heavy stiff molasses, it will rise into the head A′ and being thick will not pass through the aperture V, because of the resistance to its passage therethrough and by reason of an easier means of exit through the spout B; but when the oil, if any is carried up on the stem G, becomes warm it is sufficiently thin to run back into the receptacle U and then through the hole V, as described, and if a quantity of the oil is lying in that receptacle it cannot escape, except through the said hole, even when the device is lying on its side.

In cold weather oil becomes very thick and stiff, and especially so if the oil is naturally of a heavy grade. No pump now constructed for the purpose of handling heavy stiff oils will do this work without first heating the oil. Then, of course, the purpose of the pump is actually lost, and the said pump is placed in a position of uselessness as to such work. By former methods the oil could not be handled, for when wanted hurriedly there is no time to heat it, and more often than otherwise the receptacle containing it cannot be kept in a warm place because of the room it takes up. I have therefore in the absence of an efficient pump devised the one herein described, which by its peculiar construction handles the heaviest oils as well as molasses and other viscous fluids. The ease with which the pump is operated to lift such thick materials is surprising, and no valve of the ordinary construction will permit the passage of the fluid as will the plunger and valve described.

The pump may be readily separated and cleaned when desired, as may be understood.

Having thus described my invention, I claim—

1. In a pump of the character described, the combination of the tube A for insertion into the oil, the ball-valve E in the bottom thereof, the valve-stem G within the tube, the valve-block L, M, at the lower end of said stem, the upper surface of said block being a long taper, the flat portion H through which the valve-stem passes, the round portion I at the bottom, the large opening K through the latter, the boss G′ on the valve-stem for limiting the vertical movement of the said stem through the plunger, the spout B on the tube for exit of the oil, the head A′ at the top of the tube, the cover A^2 therefor, the portion N secured to said cover A^2 through the bottom of which the valve-stem is made to pass, the packing Q and the cap P for retaining it in place all arranged substantially as described.

2. In a pump for handling heavy oils, the combination of the tube A, an inlet-valve E at the bottom thereof, the valve-stem G, the coned valve-block L, M, on the end of said stem, the plunger H having the large opening K therethrough and the beveled seat in the bottom thereof for the tapered portion L of the valve-block, the boss G′ for limiting the vertical movement of the valve-rod through the said block, the spout B for the exit of the oil, the flaring head A′ at the top of the tube A, the cover A^2 thereof, the depending cup N within the cover through the bottom of which the valve-stem passes, the packing Q in the said portion N, the cap P for holding said packing, the receptacle U above the packing, the catch-basin on top of the cover A^2 and the aperture V in the wall of said receptacle all arranged substantially as set forth.

3. In a pump of the character described, the combination of the tube A, the valve E in the bottom thereof, the spout B, the adjustable extensible portion thereon, the clamp W for securing it in place, the flaring head A′ on the upper end of the tube A, the cover A^2 therefor adapted to screw upon the latter, the depending portion N secured to the said cover A^2, the bottom O therein, the packing Q within the said portion N, the washer R and the cap P for retaining the packing in place, the receptacle U, the aperture V for draining it, and the catch-basin S all arranged substantially as and for the purposes specified.

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

FRANK O. STERRETT.

Witnesses:
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