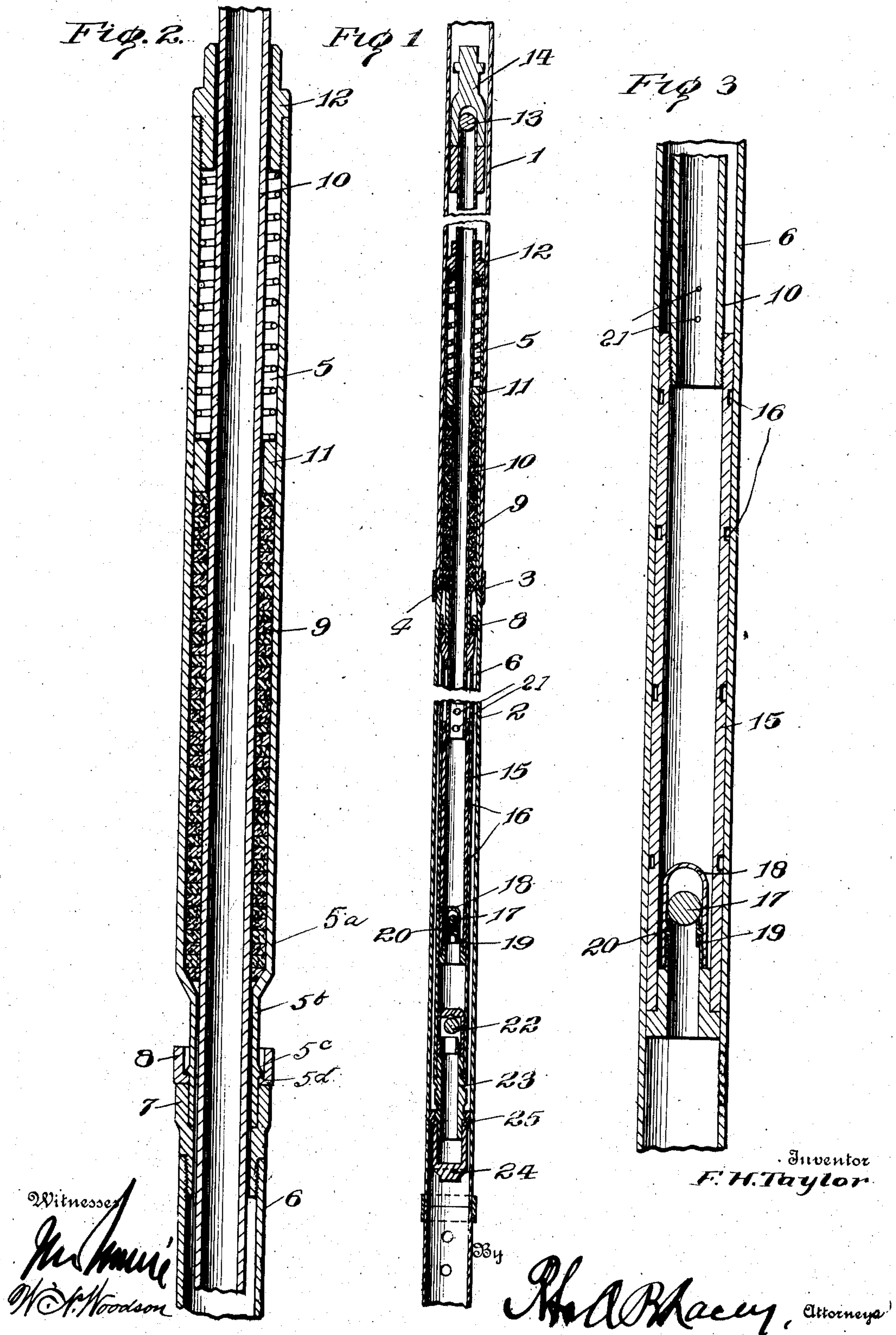


No. 854,255.

PATENTED MAY 21, 1907.

F. H. TAYLOR.
OIL WELL PUMP.

APPLICATION FILED OCT. 17, 1905.



UNITED STATES PATENT OFFICE.

FRANK H. TAYLOR, OF TORONTO, OHIO.

OIL-WELL PUMP.

No. 854,255.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed October 17, 1905. Serial No. 283,155.

To all whom it may concern:

Be it known that I, FRANK H. TAYLOR, a citizen of the United States, residing at Toronto, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Oil-Well Pumps, of which the following is a specification.

The object of my invention is to provide an improved pump, particularly designed for oil or the like wells, and characterized by simplicity and durability of construction, and ease and effectiveness of operation.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a longitudinal sectional view through a pump embodying the invention, parts being broken away. Fig. 2 is a similar view on an enlarged scale of the upper portion of the pump. Fig. 3 is a longitudinal sectional view of the pump, the section being taken through the plunger.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates one section of the well tubing and 2 designates an adjacent lower section which is connected to the section 1 by means of a coupling 3. The interior diameter of the section 2 is preferably somewhat smaller than the interior diameter of the section 1 so as to produce an upwardly facing shoulder 4 at the juncture of the two sections, said shoulder being designed primarily to support the pump within the tubing.

The pump comprises a liner barrel which is constructed in two main sections, namely, an upper section 5^a and a lower section 6. The section 5^a is intended to fit snugly within the upper section 1 of the well tubing and it is contracted or reduced at its lower end, as indicated at 5^b, the offset to form the contracted portion being adapted to rest upon the shoulder 4 of the well tubing so as to suspend the pump therein. As seen best in Fig. 3, the lower contracted end 5^b of the upper section 5^a of the liner barrel, or pump body, is provided with an interior flange 5^c producing a downwardly facing shoulder 5^d. The coupling sleeve 7 which connects the upper section 5^a with the lower section 6 preferably

screws around the upper section and inside of the lower section as shown, and its upper edge coacts with the shoulder 5^d to clamp the inwardly turned edge of a cup 8 between them, the said cup snugly fitting against the wall of the lower section 2 of the well tubing.

The upper section 5^a of the liner barrel of the pump is secured at its upper end to a stuffing box 12 and a hollow plunger rod 10 is mounted to slide through the stuffing box, the upper end of said rod being secured to a cage 14 adapted for engagement by the sucker rod and containing the ball valve 13. The interior of the upper section 5^a of the liner barrel constitutes a packing chamber 5 the lower end of which is constructed as shown best in Fig. 2 by the formation of the said section. The inner wall of this packing chamber is constituted by the rod 10 and in the lower end of this chamber packing rings 9 are located. Above said rings there is a follower 11 pressed upon by a spring which bears thereagainst and against the stuffing box 12. The lower section 6 of the liner barrel or pump body is connected at its upper end as above stated, to the lower end of the coupling sleeve 7 and extends downwardly within the section 2 of the well tubing and is of such diameter as to produce a space between its walls and the well tubing, as illustrated in Fig. 1. This space is maintained tightly closed at the upper end by means of the cup 8 which is located preferably just underneath the coupling 3, while the lower end of said space is maintained closed by means of a preferably leather cup 25 which is clamped between the inlet cap 24 screwed on the lower end of a coupling neck 23, said neck being screwed at its upper end into the lower end of the section 6 and supporting in said lower end a cage formed with a valve seat upon which the pump valve or foot valve 22 is adapted to rest.

The hollow plunger rod 10, it will be seen, is spaced slightly from the section 6 and is only packed at its upper end by means of the packing 9. To the lower end of said rod a hollow plunger 15 is secured, said plunger snugly fitting the section 6 of the liner barrel and adapted to reciprocate therein and provided with a series of grooves 16 constituting fluid packing rings. To enable the oil to fill said spaces, the lower end of the hollow rod 10 is provided with one or more ports 21. The lower end of the plunger 15 is provided with a cage 18 in which the removable valve

seat 20 is mounted, said cage being secured within the lower end of the hollow plunger 15 preferably by means of a collar 19. As shown best in Fig. 3, the lower plunger valve 5 17 which in this instance is a ball valve, mounted within the cap 18, is adapted to rest upon the seat 20.

In the practical operation of my improved pump, the oil is drawn into the lower section 10 of the liner barrel between the plunger 15 and the foot valve 22. When the plunger descends this oil is forced upwardly past the valve 17 into and through the hollow plunger 15 to the hollow plunger rod 10, and the 15 oil which was before in the plunger rod is forced out through the upper plunger valve 13 and into the well tubing. The valve 13 manifestly relieves the lower valve 17 of the pressure exerted by the oil in the well tubing 20 and thereby insures the free operation of the pump.

It is to be particularly noted that the plunger 15 itself requires no packing except the 25 fluid packing constituted by the oil itself, which clearly promotes the durability and efficiency of the pump, and it is also to be noted that the solid particles such as sand which may be held in suspension by the oil, are prevented from accumulating in the 30 space between the lower section 6 of the pump body or liner barrel and the well tubing, owing to the upper cup 8 and the lower cup 25. It is evident that this arrangement will prevent such an accumulation of sand or 35 the like which would cause the pump barrel to stick in the tubing and render it very difficult to remove the pump from the well.

Having thus described the invention, what is claimed as new is:

40 A pump of the character described, adapt-

ed to be suspended in well tubing, the body of the pump being constructed in upper and lower sections, a hollow plunger rod mounted to reciprocate in said sections and provided with intake and outlet valves, a foot valve in 45 the lower section of the pump body, the upper section of the pump body being contracted near its lower end and the offset to produce the contracted portion constituting the means for suspending the pump within 50 the tube, said upper section snugly fitting the well tubing, while the lower section is adapted to be spaced therefrom, the upper section forming a packing chamber around the plunger rod, a packing in said chamber, a 55 stuffing box secured to the upper end of the upper section, the packing chamber being reduced at its lower end by reason of the said contracted portion of the upper section, and the said contracted portion being formed 60 with a downwardly facing shoulder, and a threaded portion beyond said shoulder, a coupling sleeve connecting the lower section of the pump body with the said threaded ex- 65 tremity of said contracted portion of the upper section, and a cup clamped between the upper edge of said sleeve and the said shoulder, said cup being adapted to engage the walls of the tubing and extend upwardly from the said coupling with its free edge up- 70 permost, and another cup secured to the lower end of the lower section of the pump body and adapted to engage the walls of the tubing, as and for the purpose set forth.

In testimony whereof I affix my signature 75 in presence of two witnesses.

FRANK H. TAYLOR. [L. s.]

Witnesses:

P. A. GAVIN,

W. A. WATSON.