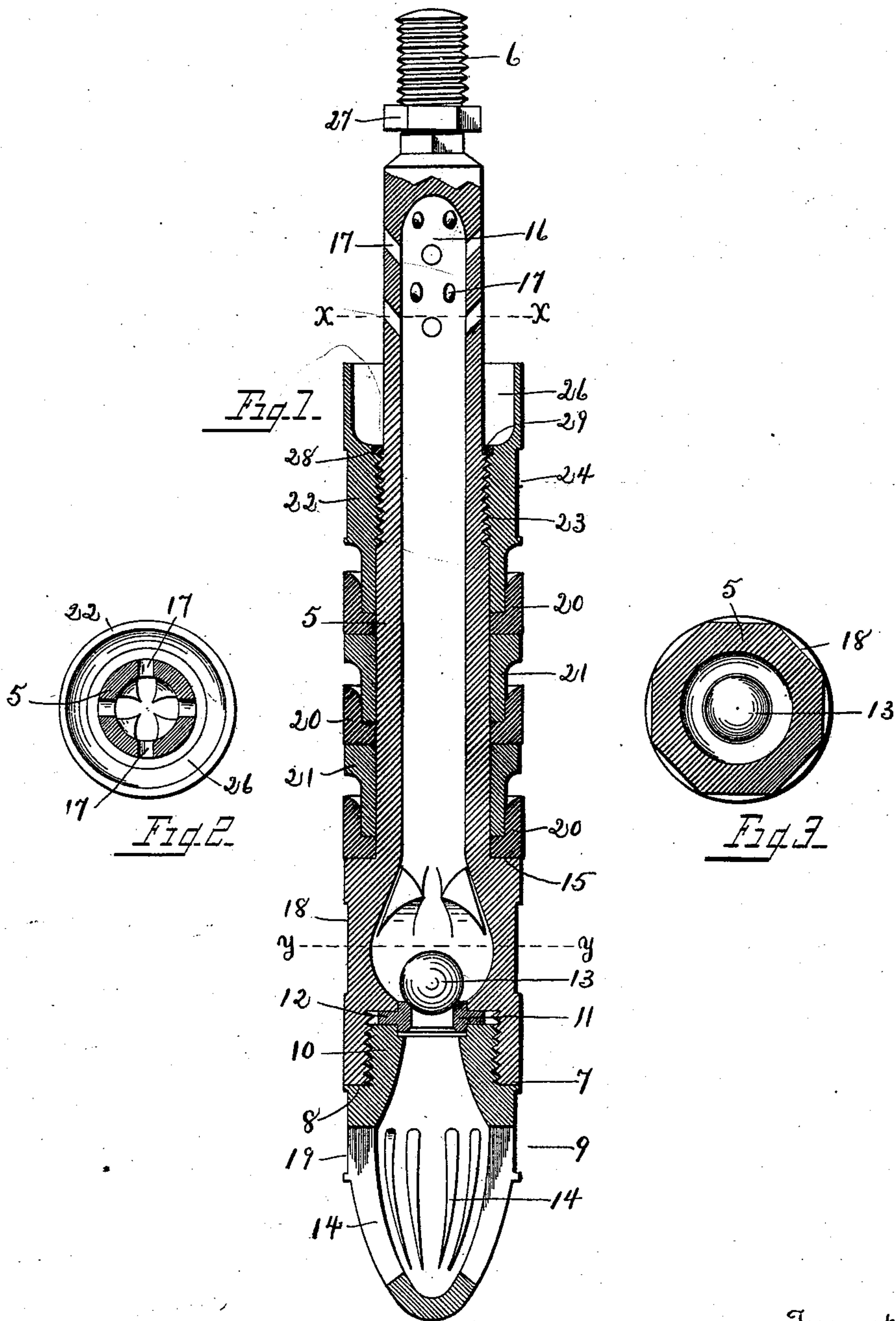


(No Model.)

D. B. STEVENSON.
PISTON FOR DEEP WELL PUMPS.

No. 541,699.

Patented June 25, 1895.



Witnesses

Carroll J. Webster
M. C. Hillyard

Inventor
David B. Stevenson.

by W. H. Stevens, Attorney

UNITED STATES PATENT OFFICE.

DAVID BOWLBY STEVENSON, OF PETROLIA, PENNSYLVANIA.

PISTON FOR DEEP-WELL PUMPS.

SPECIFICATION forming part of Letters Patent No. 541,699, dated June 25, 1895.

Application filed March 25, 1895. Serial No. 543,097. (No model.)

To all whom it may concern:

Be it known that I, DAVID BOWLBY STEVENSON, a citizen of the United States, residing at Petrolia, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Pistons for Deep-Well Pumps; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents my pump-plunger in longitudinal vertical section. Fig. 2 is a horizontal section at line x of Fig. 1, and Fig. 3 is a horizontal section at line y of Fig. 1.

This invention relates in general to pumps for deep wells and more particularly to improvements in the piston of the pump which is the subject of a former patent No. 529,209 to myself. In using that pump I discovered the necessity of something to keep the rivets which fall into it from being repeatedly thrown up by the oil when pumping, and wearing or stopping the pump. I also found that the barrel of the piston when screwed together in sections, particularly below the valve, would be jarred loose and be lost off, and the object of the present invention is to overcome those objectionable features.

To this end my invention consists in the construction and combination of parts forming a piston for deep well pumps hereinafter described and claimed reference being had to the accompanying drawings, in which—

5 represents the barrel of the piston made in a single piece from the screw pin 6, by means of which it is to be connected to the piston rod, to the lower end 7 against which the shoulder 8 of the point plug 9 rests. This point plug is of a size, below its shoulder 8 to nearly fill the pump barrel and is reduced and screw threaded at its neck 10 to fit into the threaded lower end of the piston barrel 5.

11 is a ring made of any suitable material to be turned with a true flange 12 to fit between and be tightly held by the point plug 9 and the barrel, and with a valve seat on each face for the ball valve 13 to rest on one side at a time. When this seat becomes worn on the upperside so as to be of no further service the ring may be inverted and the under side becomes the valve seat, as good as a new ring. The plug 9 is hollow and has perforations 14

to admit the oil and yet to serve as a strainer to keep out gravel, &c. The barrel is solid at its pin end 6 and to a sufficient distance below the shoulder 15 to insure strength and is bored from its lower end making it hollow up to the point 16, 17 representing outlets at the sides for the escape of oil. The lower end of the barrel 5 is turned to fit freely in the pump barrel and is polygonal at 18 to receive a screw wrench whereby the whole plunger may be screwed into the usual socket of a piston rod.

The plug 8 is a polygon in the region 19 to receive a screw wrench so that by means of two wrenches the plug and piston barrel may be screwed firmly together at 10. The body of the piston is reduced to receive the packing rings 20 of which there may be any suitable number, with loose sliding collars or rings 21 interposed, and a follower ring 22 which is internally screw threaded at 23. This follower is polygonal in the region 24 to receive a wrench whereby it may be forcibly screwed down upon the cups and rings to hold them in place upon the shoulder 15. The follower 22 is hollowed out at its upper end, leaving an annular cup 26 around the reduced body or barrel 5 to serve as a rivet-catcher. It will be seen that this cup 26 is the full size of the plunger to fill the pump barrel so closely that rivets or gravel, if dropped into the pump barrel, cannot pass down between the plunger and pump barrel. It will also be seen that the discharge apertures 17 are above the rivet cup so that oil being pumped will not pass through the cup but entirely above it, so that rivets when once caught in the cup will stay there until they are drawn out of the well with the plunger.

27 represents a check-nut that may be screwed back up against the piston rod socket to tighten its grip upon the plunger.

28 is an annular recess in the lower part of the cup and a little wider than the depth of the screw thread 23 into which a packing ring 29 of leather or other soft material may be forced to keep sand out of the screw joint.

The bore of the barrel 5 is enlarged at the lower end to serve as a cage for the ball and recesses 29 between lugs projecting inward from above the wall of this cage permit the oil to pass up around the ball when the piston being pushed down raises the ball; otherwise

the ball when forced into the top of the cage by rising oil would serve as a valve to stop the passage of rising oil the same as it now stops the oil which has passed upward, from descending. This piston barrel being one piece from the piston rod down to and beyond the shoulder 15 cannot be parted so as to lose the packing cups and rings in the well. The annular cup being almost a close fit in the pump barrel is sure to catch any falling rivets, and being below the delivery aperture 17 these rivets cannot be tossed up by rising oil. Thus I avoid clogging the pump with rivets.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. In pump pistons, a hollow piston barrel of a size at its lower end to loosely fit the pump barrel and reduced along its body and provided at its upper end with an integral screw pin for attachment to a piston rod and further provided with side discharge apertures near its upper end; a series of packing rings or cups mounted on the reduced portion of the barrel above a shoulder thereof; slide rings located between the said packing rings or cups

and a follower nut screw threaded upon the body over the packing ring, substantially as described.

2. In pump pistons, a hollow piston barrel adapted to be secured to a piston rod and having side-delivery apertures near its upper end; packing rings upon the said piston barrel and a follower screw-threaded upon the barrel over the packing rings and hollowed into an annular cup around the barrel below the said delivery apertures, substantially as described.

3. In pump pistons, a hollow piston barrel having delivering apertures at its sides near the upper end; packing rings upon the said barrel; a follower screw-threaded upon the barrel above the rings and cup-shaped at its upper end and having an annular recess over the screw-thread in the cup, and a packing ring of soft material in the recess, substantially as described.

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

DAVID BOWLBY STEVENSON.

Witnesses:

ORA E. GILMORE,

ARTHUR C. POSTLEWAIT.