

A. S. HILL.
Oil-Well Pumps.

No. 127,880.

Patented June 11, 1872.

Fig 1.

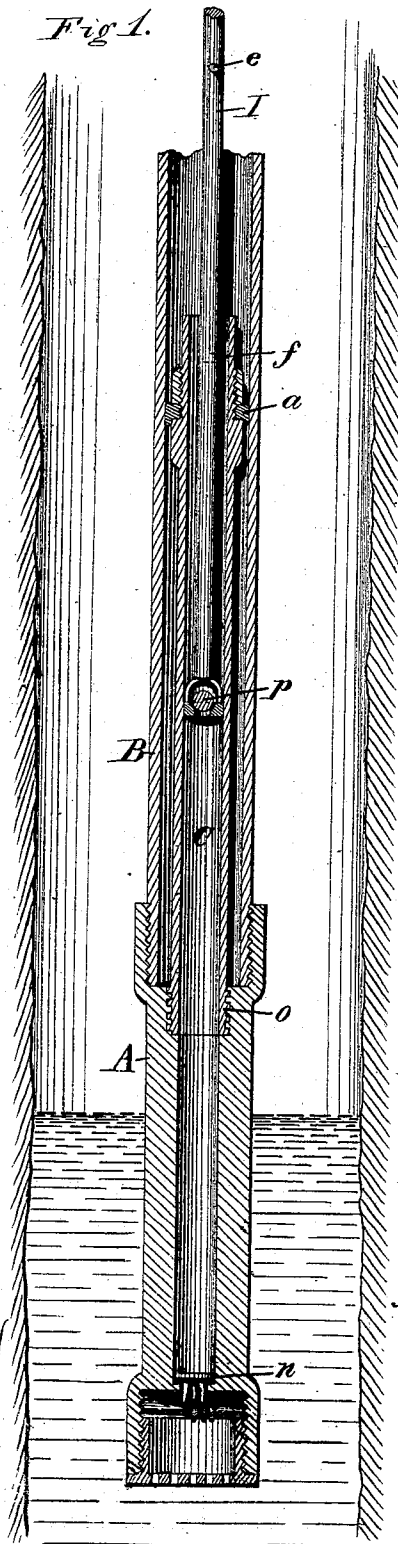
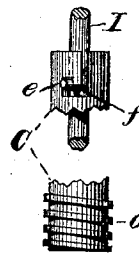


Fig 2.



Fig 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

ALEXANDER S. HILL, OF PLEASANTVILLE, PENNSYLVANIA.

IMPROVEMENT IN OIL-WELL PUMPS.

Specification forming part of Letters Patent No. 127,880, dated June 11, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ALEXANDER S. HILL, of Pleasantville, in the county of Venango and State of Pennsylvania, have invented certain Improvements in Oil-Pumps, of which the following is a specification, reference being had to the accompanying drawing.

My invention consists in so constructing pumps for oil-wells that the barrel of the pump in which the bucket or piston which contains the upper valve is located can be detached and removed or replaced without the necessity of withdrawing the tubing, as hereinafter explained.

Figure 1 is a vertical section of the lower portion of an oil-well with the pump in place, with my improvement applied. Figs. 2 and 3 are views showing portions in detail.

As heretofore constructed, the pumps used in oil-wells, when their barrels become worn, have to be removed; and in so doing it has been necessary to draw out the tubing of the well, as the pump is attached permanently to the lower end of said tubing. This consumes time, and is a laborious operation, as the tubing has to be replaced after the pump is repaired, as well as taken up in the first instance. To obviate the necessity of removing the tubing in order to take out the barrel of the pump, I proceed as follows: First, I construct the pump-body in two parts, the lower part A being secured rigidly to the lower end of the tubing B and intended to remain with the tubing in the well. The other portion C, and which constitutes the chamber within which the piston plays, is made of less diameter externally and is screwed into the upper end of the portion A, as represented in the drawing, there being a space left between the outside of this portion C and the tubing B. Near its upper end the part C is provided with a packing-ring of leather, which serves to prevent sand and similar sediment from being deposited in the space between the barrel C and the tubing, as it would do if allowed to settle therein. This space, however, is expected to be filled with oil, so as to equalize the pressure inside and outside of the tube or barrel C, the packing, while being sufficiently tight to prevent the passage of sand and similar material, still permitting the oil to pass into the space and fill

the same. At its upper end this tube C is provided with what is termed a bayonet-joint, as shown clearly in Fig. 3, this joint being formed on both sides of the tube, the same being shown also in dotted lines in Fig. 1. The pump-rod I is provided with a bolt, *e*, which passes transversely through it and is so located that when the rod is shoved clear down until the bucket or valve *p* attached to it strikes the bottom valve *n*, or nearly so, this bolt *e* will enter the vertical slot of the bayonet-joint *f*. When the bolt *e* is thus entered in the slot the pump-rod I is turned so as to cause the bolt *e* to swing around in the horizontal slot of the joint, after which the rod is drawn up slightly, so as to cause the bolt *e* to lock in the joint *f*, as shown in Fig. 3. When this is done the pump-rod I is rotated, and, being locked to the tube C, the latter is rotated with it and is thereby unscrewed and detached from the lower section A of the pump, when, by drawing up the pump-rod, the tube or section C of the pump is drawn up with it, the remaining section A, with the tubing B, being left undisturbed. The barrel or tube C, being removed from the rod, is replaced by another or more perfect one, when the rod I is again lowered into the well until the part C is brought into the required position, when, by rotating the rod in the reverse direction, the part C is screwed fast to the section A, after which the rod is raised to its proper position for pumping, as represented in Fig. 1, the bolt *E* being then some distance above the top of the barrel C, so as not to interfere at all with the motions of the rod when the pump is being operated. It will, of course, be understood that the screw *o* on the lower end of the barrel C will be so made that its thread shall run in a direction opposite to the open end of the horizontal slot of the joint *f*, as shown in Fig. 3, the screw-thread *o* being there shown as a left-handed one. If the joint *f* be made in a reversed direction, then, of course, the thread of the screw *o* must be reversed also, the only requisite being that the screw and joint shall be relatively such that when the rod is rotated to unscrew the barrel C the bolt *e* shall be locked in the joint, as represented in Fig. 3, so that the barrel C cannot become detached from the rod, but shall remain locked to it, so as to be lifted out with it. It will be seen that all the wear of the piston *p* upon the

barrel of the pump takes place within and upon the section or part C, the piston never entering the lower part A, except when shoved down to lock the rod to the part C for the purpose of detaching it, as above described; and, therefore, all that is required to repair the pump is to insert a new section or part, C, which is readily accomplished without in any manner disturbing either the tubing or the section A of the pump.

By this invention a great saving of time and money is effected, as will be readily comprehended when it is understood that these wells range from five to twelve hundred feet in depth. It is obvious that the means of connecting the rod to the section of the pump to be removed may be varied or changed and the same result be accomplished; and, although I deem the method shown a very simple and efficient one, I do not wish to be understood as limiting myself to this special device, as others may be

used with equal efficiency, the gist of my invention being in the removal of that portion of the pump which receives the wear, without detaching or removing the tubing, and that portion of the pump which contains the lower valve.

Having thus described my invention, what I claim is—

1. A pump for oil-wells, constructed substantially as described, whereby the barrel in which the bucket or piston works can be detached and removed independently, as set forth.

2. The combination of the stationary section A with the removable section C and the pump-rod I, the two latter being provided with a locking joint or device, substantially as described.

ALEXANDER S. HILL.

Witnesses:

J. MCKENNEY,
W. C. DODGE.