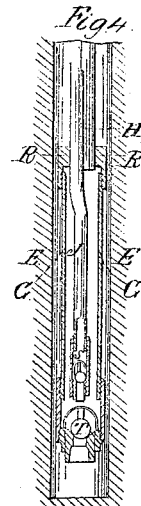
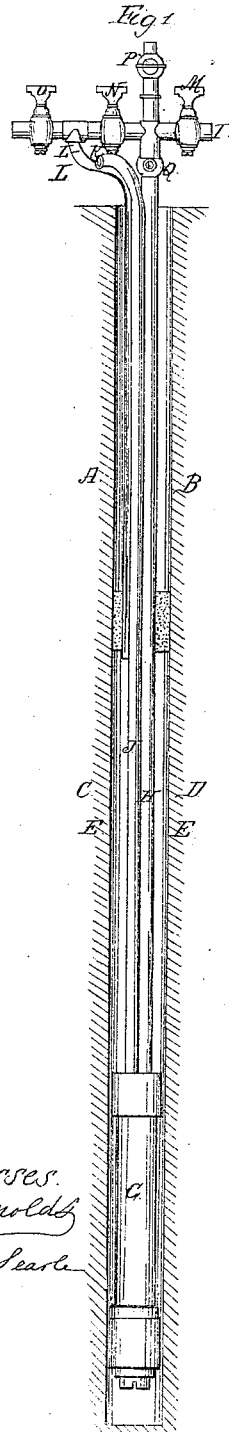


H. SEARL.
PUMP.

No. 46,824.

Patented Mar. 14, 1865.



Witnesses.
W. A. Reynolds
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UNITED STATES PATENT OFFICE.

HENRY SEARL, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN OIL-EJECTORS.

Specification forming part of Letters Patent No. 46,824, dated March 14, 1865.

To all whom it may concern:

Be it known that I, HENRY SEARL, of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Pump; and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists in constructing a pump for deep wells, which pump has a receiver which takes the place of a working-barrel, with a valve at the lower end and a cap at the upper end, and a pipe to extend from the top of the well down through the cap of the receiver, and through which pipe steam is forced into the receiver, and another pipe, which has a valve in the lower end, and which extends from near the bottom of the receiver up through the cap to the top of the well, this pipe to be called a "supply-pipe," so that when steam is forced down through the steam-pipe into the receiver the lower valve is closed by the pressure and the valve in the supply-pipe is opened, and whatever is in the receiver is forced up the supply-pipe and held up by the valve. Then the steam is allowed to blow off and condense, forming a vacuum, and the water or oil is drawn up in the receiver, and by letting the steam on again whatever is in the receiver is again forced up the supply-pipe, and thereby produces a reciprocating motion without the use of a piston or sucker-rod.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by referring to the annexed drawings and letters of reference marked thereon, in which—

Figure 1 represents a section of a well with my pump ready for operation. Fig. 2 is a section at A B, Fig. 1. Fig. 3 is a section at C D, Fig. 1. Fig. 4 shows a section of the lower part of the well with a section of the receiver and the steam and supply pipes connected with it, and also showing a section of the valve in the lower end of the receiver and in the lower end of the supply-pipe.

E E, Fig. 1, represent a section of the well. F F, Fig. 1, show a section of the seed-bag which is used in oil-wells to pack around the pipes and keep the surface-water from the well. G, Fig. 1, shows the receiver of my pump, which may be of any desired length. H, Fig. 1, shows the pipe which carries the steam di-

rectly from the boiler without the use of an engine to the receiver. The steam is admitted to this pipe at I, Fig. 1. J, Fig. 1, shows the supply-pipe up through which the water or oil is forced, and which comes out at K, Fig. 1. L, Fig. 1, shows a pipe by means of which the steam which is blown off in exhausting the pump is made to escape in the well below the seed-bag for the purpose of helping warm the water in the well outside of the pump. M, Fig. 1, shows a stop-cock which shuts off from or lets on the steam to the pump. N, Fig. 1, shows a stop-cock between the pipes H and L, Fig. 1. O, Fig. 1, shows a stop-cock by means of which air can be let into the well through the pipe L, Fig. 1, so as to keep an atmospheric pressure on the water or oil, or to let the gas in the well escape. P, Fig. 1, shows a stop-cock which lets the steam from the pipe H blow off in the air. Q, Fig. 1, shows a stop-cock by means of which the steam can be shut off from the pump if it should be desirable to let the whole force of steam down the well outside of the pump through the pipe L, Fig. 1.

F, Fig. 2, shows the top of the seed-bag F F, Fig. 1. H, Fig. 2, shows a section of the steam-pipe H, Fig. 1. J, Fig. 2, shows a section of the supply-pipe J, Fig. 1. L, Fig. 2, shows a section of the pipe L, Fig. 1.

G, Fig. 3, shows the top of the receiver G, Fig. 1. H, Fig. 3, shows a section of the steam-pipe H, Fig. 1. J, Fig. 3, shows a section of the supply-pipe J, Fig. 1.

E E, Fig. 4, represent a part of a section of the well shown E E, Fig. 1. G G, Fig. 4, show a section of the cap of the receiver G, Fig. 1. R R, Fig. 4, show a section of the cap of the receiver G H, Fig. 4, shows the steam-pipe H, Fig. 1, as it passes through the cap of the receiver R R, Fig. 4. J, Fig. 4, shows the supply-pipe J, Fig. 1. S, Fig. 4, shows a section of the valve in the lower end of the supply-pipe J. T, Fig. 4, shows a section of the valve in the lower end of the receiver G.

Now, it will be seen that by opening the cocks M and Q, Fig. 1, and closing the cocks N O and P, and then forcing steam down the pipe H, Fig. 1, into the receiver G, Fig. 1, the pressure on the water or oil in the receiver closes the valve T, Fig. 4, and opens the valve S, Fig. 4, and allows the water or oil to go up the pipe J and out at the top at K, Fig. 1.

The valve S also holds up the water or oil when the pressure is removed.

It will also be seen that by closing the cock M and opening the cock N, Fig. 1, the steam is allowed to pass from the pipe H into the pipe L, down through the seed-bag F, into the well outside the pump, and materially assist in warming the well, both above and below the seed-bag, which is desirable, as it warms the water around the pipes, and prevents the steam in the pipe H from condensing too much.

It will be seen that the pipe L being shorter than the pipe H, the steam will rise in the pipe H, thereby forming a vacuum in the receiver G, which is immediately filled by the atmospheric pressure, lifting the valve T, Fig. 4, and the water or oil is drawn up into the receiver G, which may be of any desired length.

Now, by closing the cock N and opening the cock M the steam is again forced down the pipe H, and the oil or water is again forced up the pipe J, the valves S and T, Fig. 4, operating as before described, thereby producing a reciprocating motion, without the use of a sucker-rod or piston.

The well can also be heated the whole length of the pump by letting the steam run down the pipe H and up the pipe J for any desired length of time without the reciprocating motion.

It will also be seen that by closing the cocks M and N and opening the cock P the steam in the pipe H is allowed to blow off in the air, and in that way form a vacuum in the pump, and by closing the cock N and opening the cock O the air is allowed to pass down the pipe to keep atmospheric pressure on the well.

It will also be seen that if at any time it is desirable to force steam down the well outside of the pump it can be done by closing the cocks O, P, and Q and opening the cocks M and N, thereby forming a direct connection with the boiler and the pipe L, Fig. 1.

The advantages of this pump over those

now in use are, first, no engine is required to work the pump; second, the piston or sucker-rod with a valve is not required; third, a finished working-barrel, as used in other force-pumps, is not required; fourth, the well is heated to a high degree of temperature, which is very desirable both to hold in solution and melt out the paraffine, and to rarefy the gas and warm the oil so that it rises and pumps more freely, and which would also have a tendency to cause a well to flow; fifth, doing away with the engine and sucker-rod and finished working barrel simplifies the pump and makes it more economical than those now in use, both in first cost and in operating.

Having thus fully described the construction and operation of my improved pump, I would observe that I do not wish to be understood as claiming the use of steam or compressed air for ejecting oil or other fluids from deep wells, believing, as I do, that the same are in common use; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of the receiving-chamber G in an oil-well or other deep well; when said chamber is connected with the surface or mouth of the well by means of the steam-pipe H and the eduction-pipe J, and when said receiving-chamber is supplied with the induction-valve T and the eduction-pipe J is supplied with a suitable valve, S, all substantially in the manner and for the purpose herein set forth, but not intending to be understood as making any specific claim to the induction-valve T in said pumping apparatus.

2. The arrangement of the cocks M, N, O, P, and Q, in combination with the pipes H, L, and J, all operating in the manner and for the purpose substantially as herein described and represented.

HENRY SEARL.

Witnesses:

W. S. REYNOLDS,
HENRY R. SEARL.