M. LYTLE.

Oil-Well Pumps.

No. 206,956. Patented Aug. 13, 1878.

Fig 1.

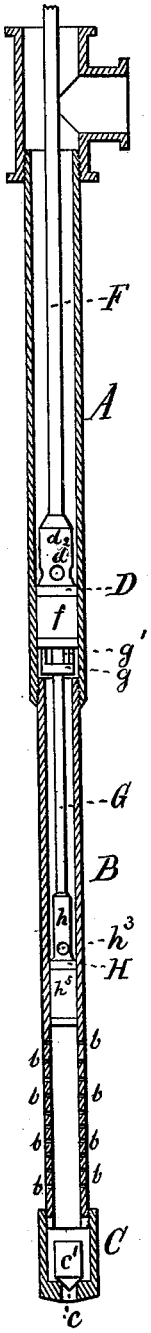
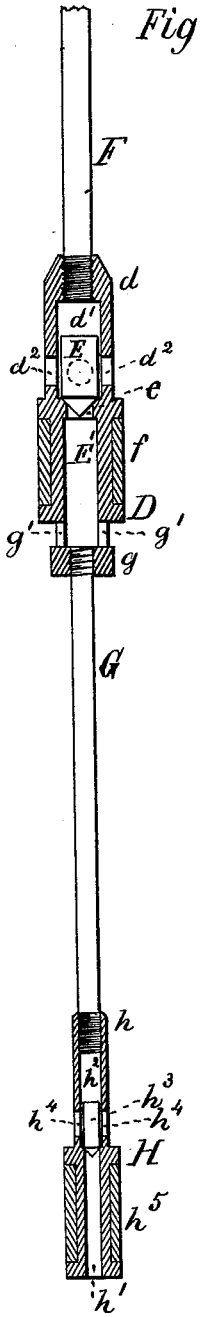


Fig 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

MURDICK LYTLE, OF OIL CITY, PENNSYLVANIA.

IMPROVEMENT IN OIL-WELL PUMPS.

Specification forming part of Letters Patent No. **206,956**, dated August 13, 1878; application filed July 16, 1878.

To all whom it may concern:

Be it known that I, MURDICK LYTLE, of Oil City, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Oil-Well Pumps, which improvement is fully set forth in the following specification and accompanying drawings, in which latter—

Figure 1 is a vertical central section of the said pump, and Fig. 2 an enlarged vertical section of the double piston used therein.

The nature of my invention consists in certain constructions, combinations, and arrangement of parts, hereinafter described and specifically claimed, whereby an oil-well pump is produced which is adapted for pumping oil and washing the walls of the well.

The object of my invention is to provide a pump which is simple in its construction, and which, in its upstroke, is capable of lifting oil from wells and discharging the major portion into proper receivers, and in its downstroke violently force back into the well in a lateral direction the minor portion of oil thus lifted, and thereby prevent the walls of the well and the holes in the tube from becoming coated with paraffine.

Another object of my invention is to insure a backward movement and lateral discharge of the oil, and at the same time provide for an agitation of the sediment and paraffine by suction through the foot-valve of the pump at such times when the bottom of the pump is not closed tight, and the lateral holes are not made large enough to be wholly depended upon for the influx and efflux of the oil.

In the accompanying drawings, A represents a pump-barrel of ordinary construction, and B a smaller barrel, forming a continuation of the barrel A by being fastened to the lower end of the same. C indicates a case for a foot-valve, and is fastened to the lower end of the barrel B. The barrel A is provided with a hollow piston, D, which has an upper extension, d, with a valve-chamber, d^1, and side openings, d^2. Within the valve-chamber d^1 an ordinary valve, E, is properly seated over a contracted opening or valve-seat, e, at the top of the piston proper, and over its central passage, E′.

To the top of the extension d a pump-rod, F, is suitably secured, and a second pump-rod, G, is fastened to the lower part of a lower extension, g, of the piston D. Into this lower extension the central passage, E′, of the piston is extended down to its bottom, near which it is provided with side openings, g'.

The piston D is provided with suitable packing f. The extensions d and g are of smaller diameter than the piston, in order to give access from the barrel A to their side openings, d^2 and g', as will be hereinafter explained.

The pump-rod G extends down into the smaller barrel B, and there is provided with a piston, H. The piston H has an upper extension, h, to which the rod G is fastened. A central passage, h^1, is made through the piston, and a valve-chamber, h^2, in the extension h, the latter being provided with a valve, h^3, which is seated over the passage h^1 in a suitable manner. The lower part of the extension h is provided with side openings, h^4. The extension h is of smaller diameter than the bore of the barrel B, so as to allow room for the oil which enters the barrel from the openings h^4. The piston H is provided with suitable packing, h^5. The case C has a foot-valve, c', seated over the suction-hole c at the bottom, and the barrel B is provided with openings b in all directions below the range of the piston H.

Operation: When the oil in the well is found to be sufficiently high over the openings b, which can be easily ascertained by a few strokes of the pump, the pump is regularly set in operation. The upstroke of the rod F causes the pistons D and H to ascend in the barrels A and B, the unequal diameters of which cause a steady increase of the capacity of the space between the two pistons, for which increase the lifting capacity of the lower smaller piston, H, does not furnish a sufficient supply. This deficiency creates a vacuum and suction between the two pistons, the result of which is, that the oil below the piston H enters the passage h^1, lifts the valve h^3, and, through the openings h^4, enters the space between the two pistons. At the same time the oil in the well enters the barrel B through the openings b and c, lifting the valve c', and keeping the space below the piston H filled. The downstroke of the pistons D and H has the effect to diminish the space between them in the same degree the upstroke has increased it. This degree of capacity causes the

oil within the said space to force its way through the passage E of the piston D, lift the valve E, and pass through the openings d^2 into the room above the said piston. The amount of oil thus forced above the piston D is equal to the difference of the lifting capacity of the two pistons. The oil below the piston H is, by the downstroke of the same, forced through the holes *b* in so many powerful jets, which agitate the oil in the well, and strike the walls of the well with a force sufficient to wash off all solid formations of paraffine, which, if left undisturbed, would close up the supply-channels of the well.

It will be seen that the foot-valve *c* and opening *c'* could be omitted and the barrel B closed at the bottom without changing the principle of my invention; but by using the said valve the agitation of the oil is extended downward by means of the suction of the pump, and the more solid parts of the paraffine are easily drawn into the pump, and prevented from clogging the openings *b* during the up stroke of the pistons, and thus a gradual accumulation of sediment in the bottom of the well is prevented.

What I claim as new is—

1. The combination of the barrels A B, of different diameters, and the pistons D H, substantially as and for the purpose set forth.

2. The hollow piston D, having open extensions *d g*, and a valve, E, in combination with the hollow piston H, having an open extension, *h*, and valve h^3, substantially as and for the purpose set forth.

3. The combination of the pistons D H, barrels A B, of different diameters, foot-valve *c*, and side openings, *b*, whereby at the downstroke of the pistons oil is forced radially from the barrel B, substantially as and for the purpose set forth.

MURDICK LYTLE.

Witnesses:
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