

M. J. Fenner

Oil Pump

N^o 79,333.

Patented June 30, 1868.

Fig. 1.

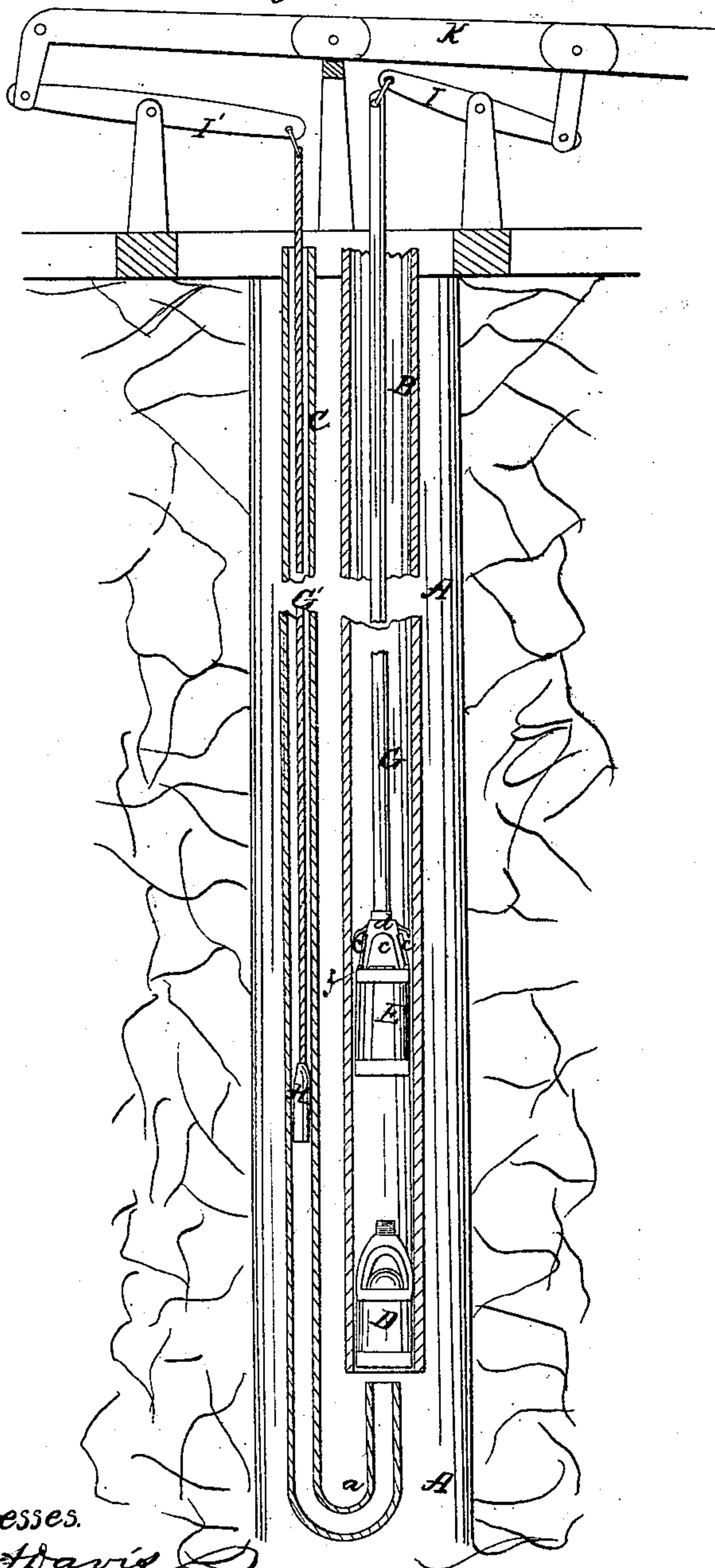
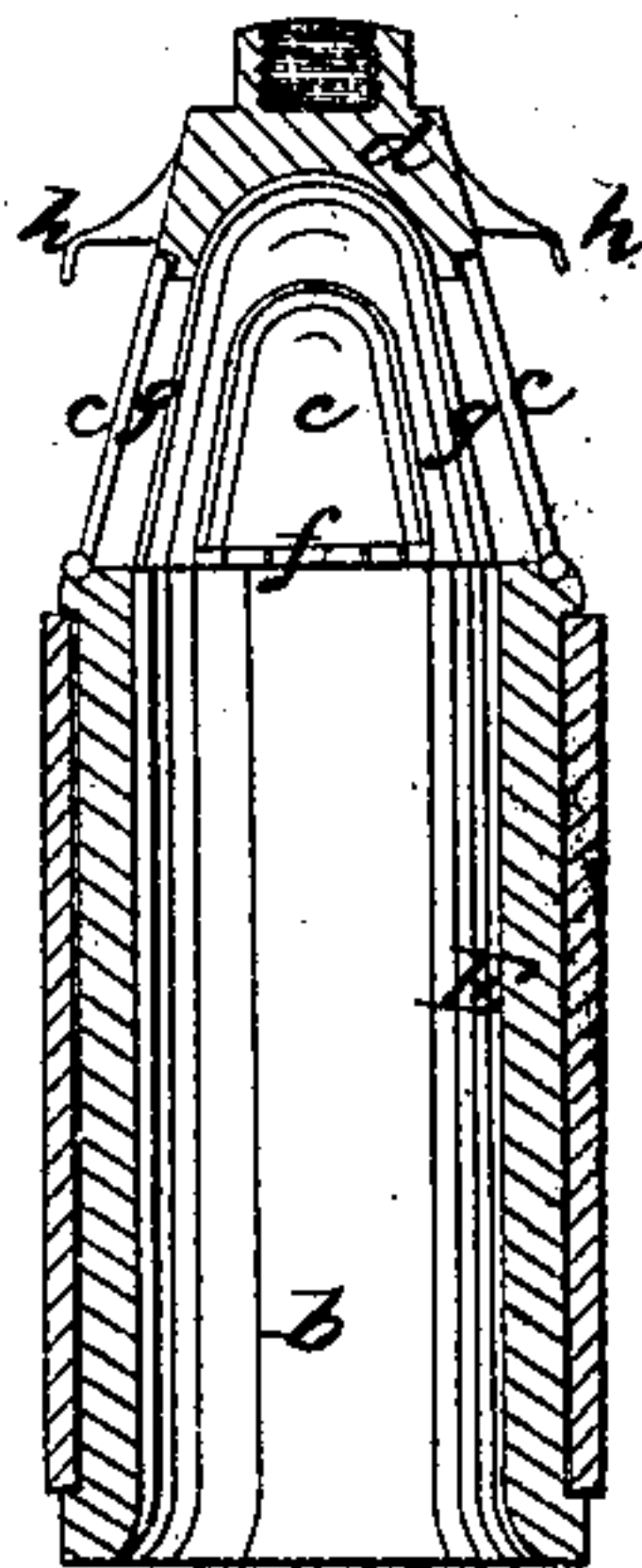


Fig. 2.



Witnesses.

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Inventor.

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United States Patent Office.

MANDANA D. FENNER, OF ROCHESTER, NEW YORK.

Letters Patent No. 79,333, dated June 30, 1868.

IMPROVEMENT IN PUMPS FOR OIL-WELLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, MANDANA D. FENNER, of Rochester, in the county of Monroe, and State of New York, have invented certain new and useful Improvements in Pumps for Oil-Wells, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a central vertical section of my improved pump.

Figure 2, a central vertical section of the piston enlarged.

Like letters of reference indicate corresponding parts in both figures.

My invention consists in the employment of an auxiliary pipe, in combination with the main pipe, extending from top to bottom of the well, and having a plunger working therein, with a superincumbent column of liquid resting upon the plunger, the effect being to produce an agitation in the bottom of the well by the alternate working of the plunger in drawing and in forcing out the liquid, thereby washing the well and keeping the crevices clear, and insuring a full supply of oil; a further effect being also produced in assisting to raise the liquid in the main tube by the downward pressure of that in the auxiliary tube.

The invention further consists in the special form and construction of the piston, which is open at the bottom, and is provided with laterally-opening valves at the top, whereby the passage for the liquid through is greatly enlarged, and a better escape for gas provided.

As represented in the drawings, A is the bore of the well, B the main tube, and C the auxiliary tube. I prefer to bend the lower end of the auxiliary tube upward at the bottom of the well, as shown at *a*, but this is not absolutely essential.

The main tube is provided with lower valve D and piston E, as usual, and has a connection, G, extending to the top of the well, and connecting with the working parts, by which the piston is operated.

The auxiliary tube likewise has a solid plunger, H, situated within suction distance of the bottom of the well, and from this a connection, G¹, extends to the top of the well, and connects with the operating parts.

The connections G G¹, I prefer to make of wire cable, but any equivalent may be employed.

Since the relative lengths of stroke of the plungers H E should be proportional to the relative sizes of the tubes in which they move, it is necessary that the arrangement of the working machinery at the top of the well should be such as to produce an inequality of leverage. This may be effected in any desired manner and by any desired means. In the drawings, it is shown as accomplished by secondary levers, I I¹, of unequal lengths, operated by a primary lever or working-beam, K.

By this arrangement, it will be perceived that the alternate strokes of the plunger in the auxiliary tube will produce alternate motions of the liquid in the well, by drawing it in and forcing it out of the tube; and since the well is of small diameter, (only four or five inches,) this will produce a very intense agitation. The effect is to thoroughly wash the well and keep the supply-crevices constantly clear of the paraffine and other sediment that collects ordinarily. This is a matter of very great importance.

In ordinary wells, with but a single main tube, there is a motion of the liquid only in one direction—upward; for in the down stroke the check-valve closes and prevents the down current. The tendency, under this inaction in the well, is to choke with paraffine. I contemplate, broadly, giving the liquid in the well an alternative and positive action, by a pipe opening into the liquid, and having a solid or closed piston, through which the liquid cannot be passed upward.

In addition to the above, a very important effect is produced by assisting to elevate the oil in the main tube, and thereby remove the great pressure from the piston E. In the upward stroke of the main piston, the downward stroke of the auxiliary plunger with the weight of the superincumbent column of liquid upon it, will apply pressure to the main column, and assist in elevating it, especially in such wells where the pressure inward to the well by the gas, or otherwise, is considerable. Beside the resisting-pressure, the impetus obtained by the bend *a*, under the main tube, will be considerable.

By this means, much pressure is removed from the main piston, and thereby much leakage around the piston is obviated, and much wear of the packing is prevented. Much difficulty is experienced in ordinary wells from these sources.

In some wells, where there is no danger of clogging from paraffine, the main and auxiliary tubes might be united at their lower ends, and a system of valves might be applied, which would admit the oil and force it up the main tube, without expending the pressure of the auxiliary tube in the well.

I make the piston E substantially as shown in fig. 2, that is, open at the bottom, as shown at *b*, and provided at the top with a suitable number of flat valves, *c c c c*, situated on opposite sides of the conical or rounding head *d*, and hinged at *f*, so as to open outward, uncovering the ports, *g g g g*. In order to prevent them from opening outward too far, so as to strike the sides of the barrel or cylinder, I provide the piston-head with stops, *h h*, which arrest the motion.

By this arrangement, I secure a much larger passage, *b*, through the piston than usual, which not only increases the producing capacity of the pump, but also allows a better escape of the gas. The construction is also much simpler and cheaper than when a ball-valve is employed, as usual, for, in such case, the piston is necessarily made of several parts which screw together, while mine may be made in only a single piece with the valves attached.

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

An apparatus for washing or producing an agitation in a well, consisting of a tube opening directly into the liquid of the well, and having a solid plunger, in combination with an elevating-tube, having a valvular piston, when the plunger and piston have an inequality of leverage, substantially as described.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

MANDANA D. FENNER.

Witnesses:

R. F. OSGOOD,

J. A. DAVIS.