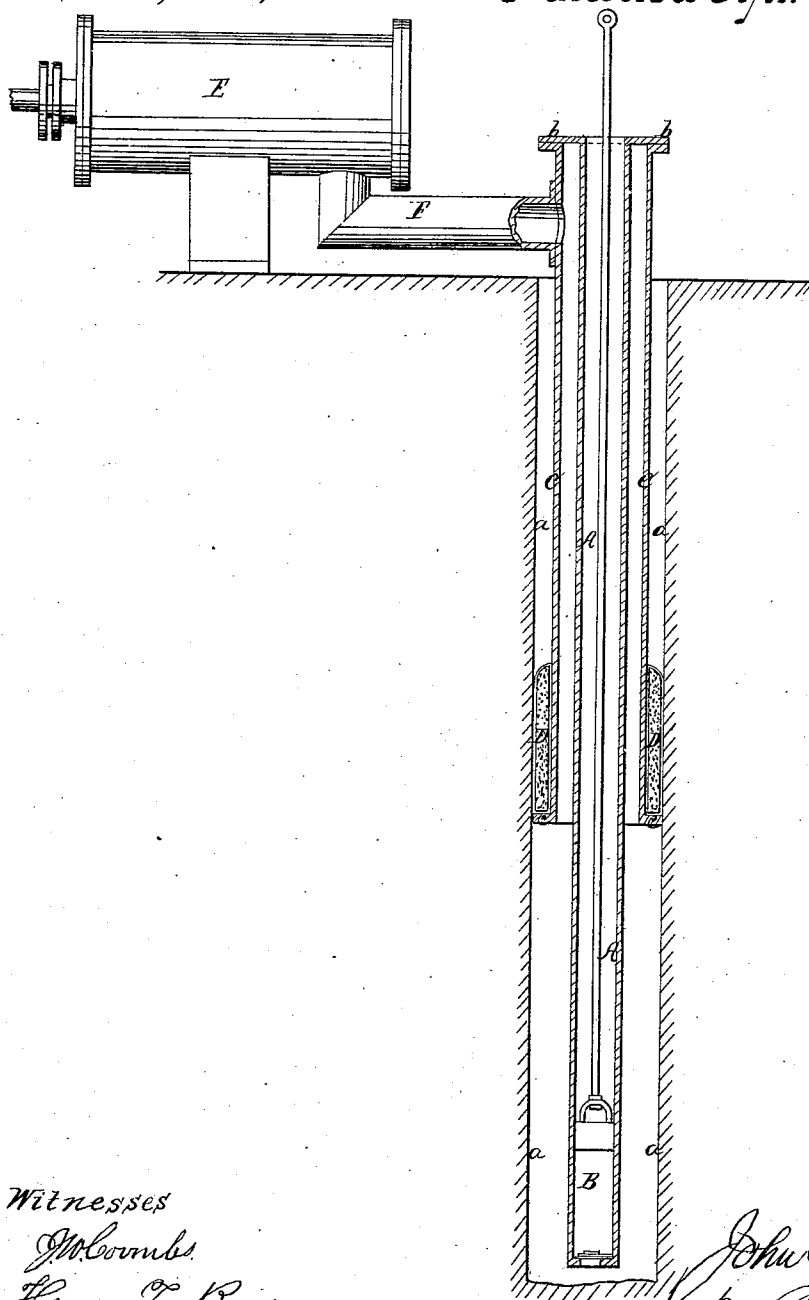


J. B. Root,
Water Elevator,
No 47,133, Patented Apr. 4, 1865.



Witnesses

W. Coombs
Henry T. Brown

Inventor

John B. Root
per Brown & Co

UNITED STATES PATENT OFFICE.

JOHN B. ROOT, OF NEW YORK, N. Y.

IMPROVEMENT IN OIL-WELL PUMPS.

Specification forming part of Letters Patent No. 47,133, dated April 4, 1865.

To all whom it may concern:

Be it known that I, JOHN B. ROOT, of the city, county, and State of New York, have invented a new and useful Improvement in Tubing and Pumps for Oil-Well; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, said drawings representing a vertical section of a well tubed and having pumps applied according to my invention.

The gases which are formed in petroleum-wells interfere very seriously with the pumping up of the oil when the wells are tubed in the usual manner with a single tube. This is owing to there being no other outlet for the gases but through the oil-pump, which constantly works on their expansion with its valves continually open, and so fails entirely to bring up oil, or bring up very little, though there is a copious supply in the well. The object of this invention is to obviate this interference of the gases with the working of the oil-pump; and to this end it consists in providing in an oil-well, besides the ordinary oil-tube connected with the oil-pump, an additional tube connected with an exhausting-pump at the top of the well for drawing off or permitting the escape of gases. It also consists in a certain mode, hereinafter described, of applying such additional tube and the "seed-bag" in combination with each other and with the oil-tube, whereby great facility is afforded for applying the said additional tube and for the removal of the oil-tube and oil-pump from the well without disturbing the seed-bag or permitting water to enter the lower part of the well.

A is the oil-tube, made much smaller than the well, and having the oil-pump B at its lower end, as is usual in the ordinary system of tubing oil-wells.

C is the additional tube, represented as made of iron, with an internal diameter larger than the external diameter of the oil-tube A. This tube C surrounds the oil-tube, and is attached to the upper end thereof by an air-tight flanged joint, *b*. The length of the said tube C is such that it extends from the upper end of the oil-tube to such depth down the bore *a a* of the well as it is desirable to place the seed-bag D, which is employed to exclude the water from

the lower part of the bore whence the oil is obtained. The seed-bag is supported upon an external flange, *c*, formed upon the open lower end of the said tube C. At or near the mouth of the well, above the ground, there is an exhausting-pump, E, which may be like an ordinary air-pump, the gas-exhaust pipe F of which is connected with the upper part of the tube C.

The exhausting-pump E may be kept at work continually, if necessary, or so long as gas is being collected or accumulating in the well, which may be ascertained by a pressure-gage attached to the gas-exhaust pipe, or by such other means as experience may suggest, the gas coming up the tube C to the exhaust-pipe F, and by its keeping the well free of gas it leaves nothing for the oil-pump to do but to bring up the oil. So long as it is kept in operation it will, if of sufficient capacity and worked at a proper speed, keep a partial vacuum in the lower part of the well and so encourage the flow of oil to the well through the crevices in the sides thereof. Without the pump the tube C might in some cases be used to allow the gas to escape in a natural way.

It is not absolutely necessary to arrange the gas-tube C around the oil-tube, as it might be arranged on one side thereof if the seed-bag be properly applied in connection with the two tubes to exclude water from the lower part of the well; but I consider it best to arrange it around the oil-tube as represented, as so applied it enables the oil tube and pump to be taken up whenever necessary by disconnecting the flange *b* without disturbing the seed-bag. Even in cases where it is not necessary to exhaust or provide for the escape of gas, such a tube, C, might be used in the form and manner represented as a means of enabling the oil tube and pump to be removed without disturbing the seed-bag. By constructing the tube C of soft wood and inserting it tightly into the bore it might be made to dispense with the seed-bag, as it would be swollen by any incoming water and so made to exclude the water from the lower part of the well.

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

1. The employment, in an oil-well, of an additional tube, so arranged and applied, in combination with the oil-tube and an exhausting-pump, that while it permits the exclusion of

water from the lower part of the well by means of the seed-bag, it provides for the escape of the gases from the well, substantially as herein described.

2. The arrangement of the tube C, surrounding and connected with the upper part of the oil-tube A, and applied within the well,

substantially as herein described, whereby the oil-tube and oil-pump may be removed without disturbing the seed bag.

JOHN B. ROOT.

Witnesses;

HENRY T. BROWN,
J. W. COOMBS.