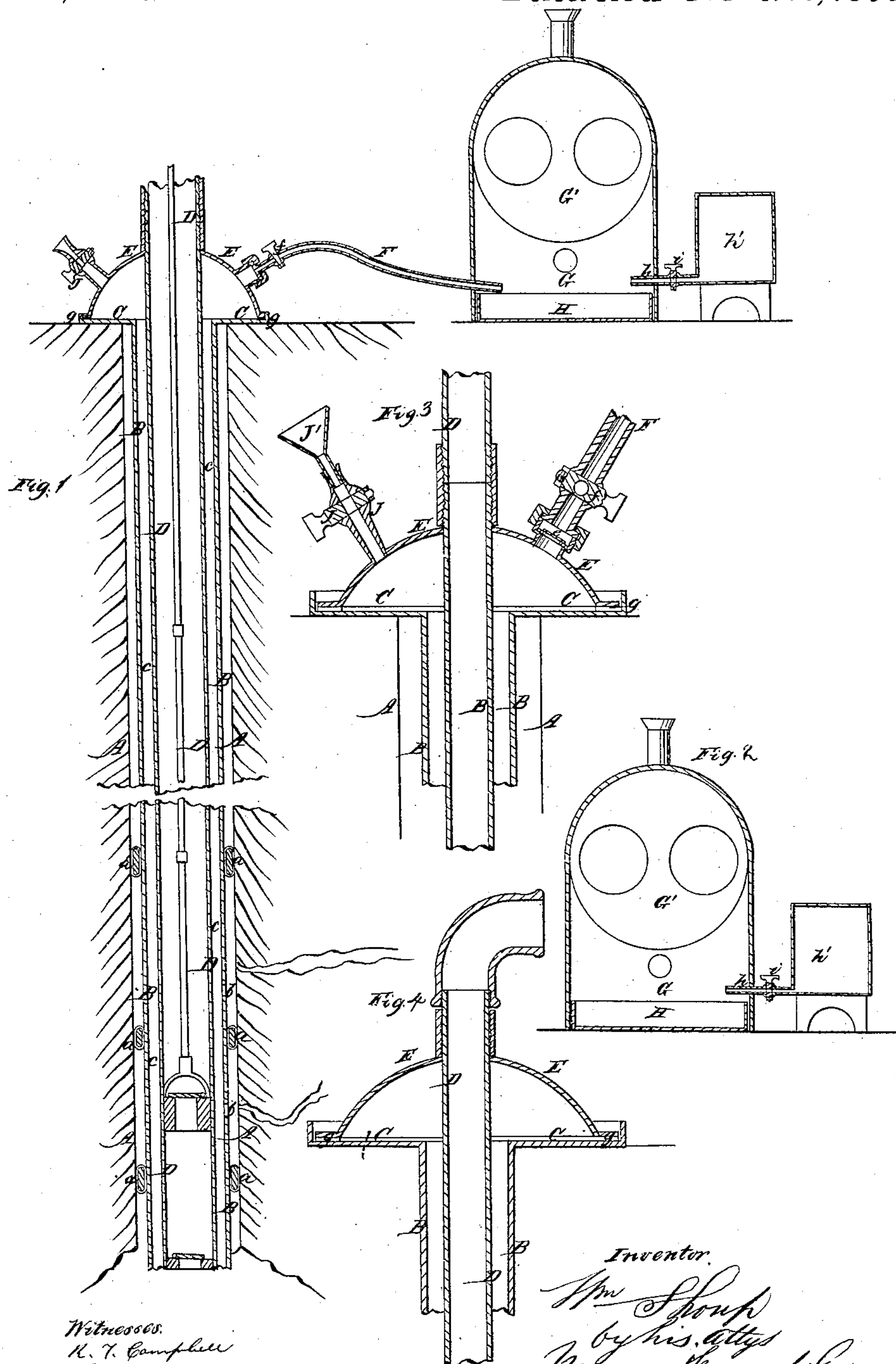


W. Shoupe,
Oil Pump,

N^o 59,782.

Patented Nov. 20, 1866.



Witnesses.
H. T. Campbell
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IMPROVEMENT IN APPARATUS FOR OBTAINING OIL FROM WELLS.

WILLIAM SHOUPÉ, OF SALTSBURGH, PENNSYLVANIA.

Letters Patent No. 59,782, dated November 20, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM SHOUPÉ, of Saltsburgh, in the county of Indiana, and State of Pennsylvania, have invented certain novel improvements in Oil Well Machinery; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a sectional view of an oil well, showing my improved arrangement of oil and gas pipes, the latter communicating with the fire chamber of a steam boiler.

Figure 2 is a sectional view of an oil tank applied to a steam boiler which is adapted for burning oil.

Figure 3 is an enlarged sectional view of the pump and gas pipes, showing the manner of sustaining them at the top of the well, and also of conducting off the accumulated gas from the well.

Figure 3 is the upper end of a pipe which is used in wells where the oil flows spontaneously.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improvements in oil well machinery, intended for wells which require pumping, or for those which flow spontaneously.

The object of my invention is to provide for conducting off the gas from wells during the operation of pumping, so that the gas shall not interfere with the operation of the pump, nor keep the oil back in the well, and to employ this gas in a perfectly safe manner as fuel for the steam boiler of the engine which is used to work the pumps, as will be hereinafter described.

Another object of my invention is to employ a concavo-convex cap for the upper support of the outer tube, in such manner that this cap shall form an air-tight chamber at the top of the well and surrounding the pump tube and admit of the gas arising from the well being conducted off, and also the introduction of air or water into the well whenever desired, for the purpose of causing the oil to flow freely through the pump-tube during the working of the pump, as will be hereinafter described.

Another object of my invention is to provide for safely using the gas which escapes from the well for fuel, beneath the boiler of the engine which operates the pump.

Another object of my invention is to provide by means of seed bags or their equivalents and a perforated casing for the pump-tube, for conducting oil from veins at different depths in the well, into the main reservoir in the well from which the oil can be elevated by the pump, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the oil well, into which a pipe, B, is first introduced, extending down to the fissure or reservoir in the earth, but not dipping into the body of oil therein.

This pipe is firmly secured at its upper end to the centre of a shallow cup or flange, C, which is suitably supported at the top of the well.

The pipe, B, is tapped at as many points as may be found desirable for the purpose of allowing oil from small veins, which may run into the well at different distances from its top, to flow into this pipe and run down into the main reservoir at its lower end.

To effect this object successfully, I employ seed bags, *a a a*, or other suitable packing as shown in figure 1, for cutting off the flow of water, but forming communications with the interior of the pipe, B, through holes *b b* that are made through this pipe. A seed bag or other suitable packing will be forced down nearly to the bottom of the pipe, B, first, then another seed bag will be forced down to a point which is just above a vein of oil, and if it is found that other veins lead into the well above the first one other seed bags are introduced, and in this way large quantities of oil can be saved which would be lost, at the same time the water from upper strata can be kept back.

The pump-tube, D, is somewhat smaller in diameter than the casing, B, so that when it is introduced into this casing, a space, *e*, will be left around it for the influx of oil through the perforations through the casing, and also for the free ascent of gas from the well. This pipe, D, is secured permanently to the centre of a dome, E, which has a base that is nearly equal in diameter to the base cup, C, upon which it rests, as shown in figures 1 and 3.

This dome, E, serves as a means for centering and supporting the pump-tube, D, and also, as a chamber in which the gas arising from the well between the pipes B and D is collected.

This dome is rendered air-tight by means of a gasket, *g*, of rubber or other suitable substance placed beneath the edge of said dome, as shown in figure 3. The pipe or tube D leads down into the oil in the well, and it is provided with suitable pumping contrivances for elevating the oil to any desired height. A pipe, F, is applied to the dome E, so as to form a communication between the interior thereof and the furnace chamber G G of the steam boiler G', for the purpose of utilizing the gas escaping from the dome E by employing it as fuel in said furnace. To provide against accidents, I employ a check-valve *e'* and a stop-cock *f* in said pipe F. The cock *f* is used for regulating the escape of the gas, and the valve *e* is used to prevent the return of any gas which may have passed through its orifice, thus preventing fire from communicating with the gas in the chamber or dome E. The pipe F leads directly through the side of the furnace-wall and the gas is burned beneath the boiler. On the opposite side of the boiler a pipe, *h*, leading from an elevated reservoir, *h'*, of oil is conducted through the furnace-wall so as to discharge oil into a tank, H, beneath the boilers. The pipe *h* is provided with a cock *i*, by which the flow of oil into the tank can be regulated or when desired entirely cut-off. Other provisions may be made in the furnace-chamber for economically burning the gas and oil, or one or the other, which it is not necessary for me to describe, as the simple plan shown in the drawings, figures 1 and 2, will answer a very good purpose.

The dome E is also provided with a cock J for admitting water into the well when the pumps cease to work on account of a sudden fall or exhaustion of the oil in the well. A funnel J' shown in figure 3, is applied to the pipe J, and water poured into the well until the pump can be started, when the funnel is removed and the valve or cock closed so as to prevent the escape of gas at this point.

It is not necessary to provide means for securing the dome E down upon the flange C of the outer casing B, as the weight of the pipe D will be sufficient to keep the dome down firmly in its seat, and the gasket will render the joint air and gas proof.

It is intended by my invention to employ a fluid, viz: oil and a gas as the fuel for the steam boiler of the engine which operates the pumps, and to connect the gas pipe and the pipe from the oil reservoir with the boiler furnace, so that both the oil and gas can be used together; and should the gas cease to flow from the well, then more oil can be supplied by means of the stop-cock.

When rich gas is flowing freely from the well, a less amount of oil will be required to keep up the desired temperature beneath the boilers, and in proportion as the flow of gas diminishes, the flow of oil must be increased.

I contemplate employing that part of my invention which relates to the arrangement of several seed bags around the outer perforated casing B, in obtaining salt water from saline wells for the purpose of collecting all the available salt from different veins which the well may intersect, and at the same time keeping back the fresh water from upper strata.

The method of sealing the top of the well-tubes by means of a dome E, may be used for salt wells but this is not essential for the purpose.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is—

1. In combination with the well pipes B and D, and a chamber E, I claim the gas pipe F, having a safety-valve applied to it, substantially as described.
2. Sustaining the pump tube D in the well by means of a self-sealing dome E, or its equivalent which forms a chamber at the top of the well communicating with the gas space between the two pipes B and D, substantially as described.
3. The inlet J applied to the dome E, for admitting of the introduction of water into the well, substantially as described.
4. The means substantially as herein described, whereby oil is allowed to flow into the outer casing B, at points intermediate between the packing, and at the same time the "surface" water is kept back and not allowed to flow into the well.
5. In combination with a casing B, which is perforated at suitable points, and which encloses the pump-tube D, I claim the chamber E, and an outlet pipe which is provided with a safety-cock or valve, substantially as described.

WILLIAM SHOUPÉ.

Witnesses:

HAIL CLARK,
SAMUEL TAYLOR.