Aug. 28, 1923. 1,466,199

A. L. SMITH

DEVICE FOR FORCING FLUID FROM WELLS

Filed May 20, 1922

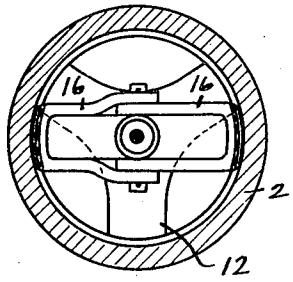


Fig. 3.

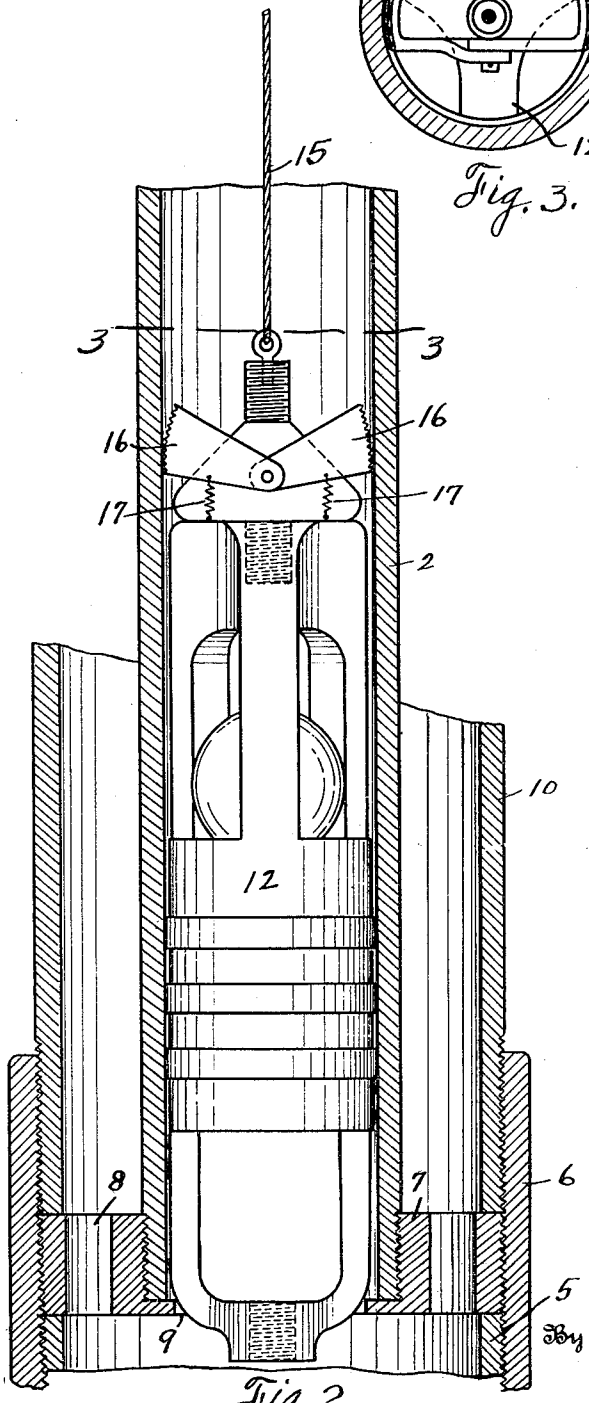


Fig. 2.

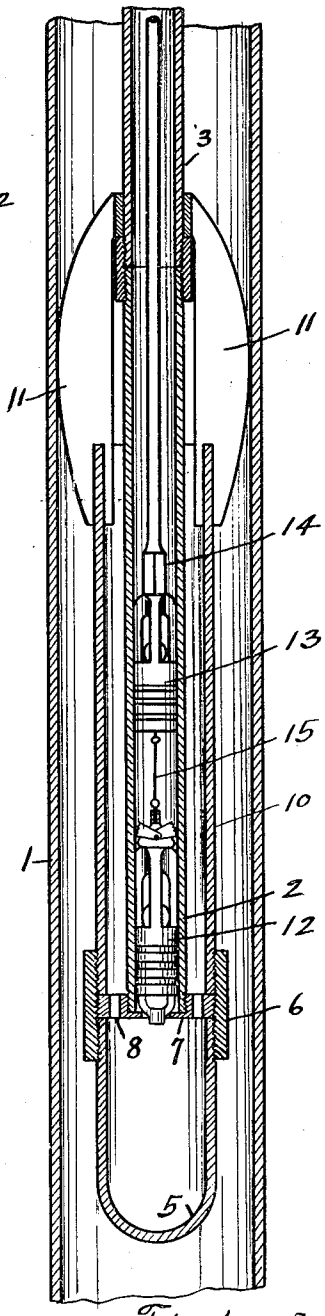


Fig. 1.

Inventor

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Patented Aug. 28, 1923. 1,466,199

UNITED STATES PATENT OFFICE.

ABNER L. SMITH, OF HULL, TEXAS.

DEVICE FOR FORCING FLUID FROM WELLS.

Application filed May 20, 1922. Serial No. 562,519.

To all whom it may concern:

Be it known that I, ABNER L. SMITH, citizen of the United States, residing at Hull, in the county of Liberty and State of Texas, have invented certain new and useful Improvements in a Device for Forcing Fluid from Wells, of which the following is a specification.

This invention relates to new and useful improvements in a device for forcing fluid from wells.

One object of the invention is to provide a device of the character described which is primarily intended for the purpose of forcing oil or other fluids from wells by the use of compressed air or other fluid delivered under pressure.

Another object of the invention is to provide a device of the character described which may be readily converted into a pump whereby the oil or other fluid may be pumped from the well in the usual manner.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 is a vertical sectional view of the device showing the standing and traveling pump valves therein and showing the pump rod for operating the latter.

Figure 2 is an enlarged fragmentary vertical sectional view thereof and,

Figure 3 shows a transverse sectional view taken on the line 3—3 of Figure 2.

Referring now more particularly to the drawings the numeral 1 designates the casing which is let down into the well bore, the numeral 2 designates the barrel which is tubular in form and is let down within the casing, by means of a string of pipe 3, which continues up to the ground surface. Connected to the lower end of the barrel there is a hood 5. This hood is connected by means of the ordinary coupling 6 into the lower end of which it is screwed. There is an annular spider 7 threaded into this coupling which is provided with the fluid passageways 8, and which also has the central opening 9 into which the lower end of the barrel is threaded. A sleeve 10 has its lower end threaded into the upper end of the coupling 6 and this sleeve extends some distance above the coupling, but usually terminates beneath the surface 11 of the fluid as it stands in the well. The casing 1, the sleeve 10, and the barrel 2 are arranged concentrically and are spaced apart as shown. Anchored to the upper end of the sleeve 10 are the wings 11, preferable four in number. These wings serve to hold the barrel and sleeve centered with reference to the casing.

In use the device is let down into the well casing until it is submerged in the fluid to be forced out. Air, gas or other similar fluid is then forced, under pressure down through the pipe 3 into the hood 5 and it passes up through the openings 8 of the spider and thence on up through the sleeve 10 around the barrel and forces the oil or other fluid in the well up through the casing to the surface of the ground.

If there is not sufficient fluid in the well to submerge the apparatus, the pump valves are let down into the barrel. These valves are in the main of conventional construction. The standing valve is indicated by the numeral 12 and the traveling valve is indicated by the numeral 13. The traveling valve is reciprocated in the usual way by the sucker rod 14. In letting these valves down into the barrel they are first connected together by a comparatively weak cord 15 and they are both then let down together through the instrumentality of the sucker rod 14 until the standing valve 12 is seated in the spider 7 at the bottom of the barrel. The upper end of the cage of the standing barrel has two oppositely disposed dogs 16, 16 which are pivoted to the cage and whose outer ends are serrated. When the standing valve is seated in the spider 7 these dogs drop out and their outer ends engage with the barrel 2 and anchor said standing valve in position. To insure against the disengagement of said dogs from the barrel the pull springs 17, 17 are provided whose upper ends are attached to the respective dogs and whose lower ends are attached to the cage.

When the standing valve is anchored in place the traveling valve 13 may then be reciprocated through the sucker rod 14 in the usual way, and the cord 15 will be easily broken upon the first upstroke of the traveling valve and will not interfere with the operation of the pump.

During the pumping operations the oil or other fluid to be pumped will be drawn up around the sleeve 10 and will enter the top of said sleeve and pass down into the

hood 5 and thence upwardly through the standing valve and traveling valve and onto the ground surface through the pipe 3. If gas is encountered it will be freed from the oil at the top of the sleeve 10 and will pass on up through the casing around the pipe 3.

What I claim is:—

1. A device of the character described including a tubing adapted to be let down into a well bore, a spider secured to the lower end of said tubing, a hood attached to said spider and located beneath it, a detachable sleeve attached to the spider above and surrounding the lower end of said tubing, a standing valve located in the lower end of said tubing and a traveling valve adapted to reciprocate in the tubing above said standing valve.

2. A device of the character described including a tubing adapted to be let down into a well bore, a spider secured to the lower end of said tubing, a hood attached to said spider and located beneath it, a sleeve attached to the spider above it and surrounding the lower end of said tubing, a standing valve in the lower end of said tubing, dogs for anchoring said valve in position in the tubing and a traveling valve adapted to reciprocate in the tubing above said standing valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ABNER L. SMITH.

Witnesses:
E. V. HARDWAY,
JAS. W. OLIVER.