F. A. MONROE.

DEVICE FOR CLEANING OIL WELLS.

APPLICATION FILED JUNE 10, 1916.

1,198,566. Patented Sept. 19, 1916.

Fig. 1.

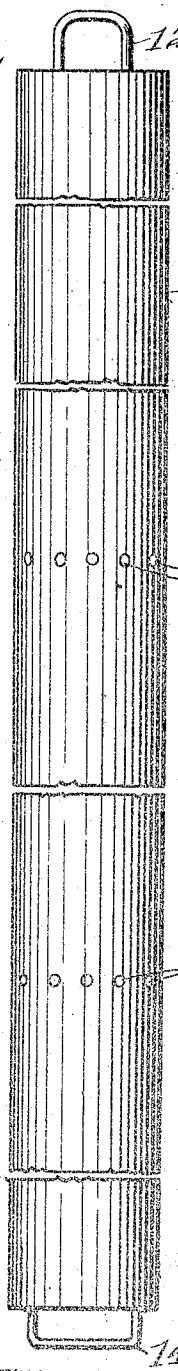


Fig. 2.

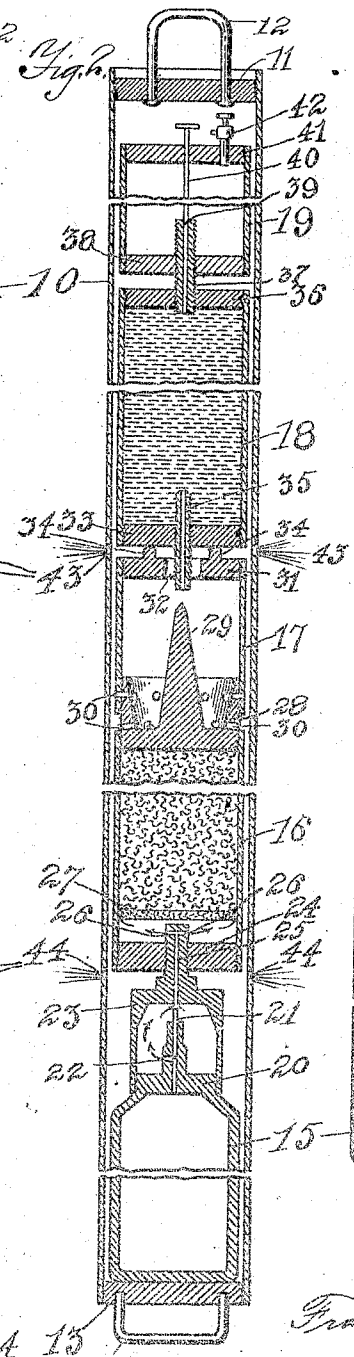


Fig. 3.

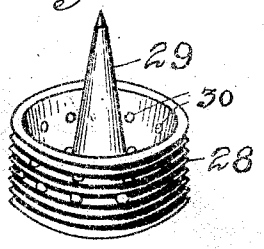
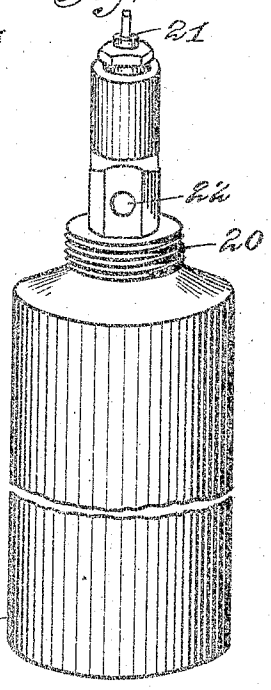


Fig. 4.



Witnesses

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DEVICE FOR CLEANING OIL-WELLS.

1,198,566. Specification of Letters Patent. Patented Sept. 19, 1916.

Application filed June 10, 1916. Serial No. 102,875.

To all whom it may concern:

Be it known that I, FRANK A. MONROE, a citizen of the United States, residing at the city of Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Devices for Cleaning Oil-Wells, of which the following, taken in connection with the accompanying drawings, is a specification.

The invention relates to improvements in the means for removing paraffin, the thickened product of petroleum, or other deleterious substances from the oil bearing portion of an oil well; and the object of the improvement is to provide a sure and continuous means of attaining a high efficiency of steam production so as to render the action of the device more sure and continuous in operation; and the invention consists in the novel features and combinations hereinafter set forth and claimed.

In the drawings, Figure 1 is an elevation of the oil well cleaner, certain portions being broken away, showing the conformation of the outer casing and the exits for the steam. Fig. 2 is a lengthwise diametral sectional view of the oil well cleaner showing the construction and arrangement of the same. Fig. 3 is a perspective view of the cone-shaped steam producing head in the heating section. Fig. 4 is a perspective view of the gas tank section of the cleaner.

Like characters of reference refer to corresponding parts in the several views.

The numeral 10 designates the cylindrical or tubular casing within which the different sections of the cleaner are assembled. The casing 10 has the top plate 11 with the loop 12 therein for turning the plate 11 into the casing 10 and supporting the cleaner, and the bottom plate 13 with the loop 14 therein for turning said plate 13 into the casing 10, both the top and bottom plates being preferably threaded and screwed into the casing 10.

Within the casing 10 between top plate 11 and bottom plate 13 a number of sections are supported one upon the other to produce a strong volume of steam which is as continuous in its pressure as possible and for as long a time as possible. The sections consist of an oxygen or other compressed gas cylinder 15 to feed the combustion, a heating section 16 which has a steam producing section 17 on its upper end, a water tank section 18 supported on said steam and heating section 16 and 17, and at the top a compressed air chamber 19.

The five sections 15, 16, 17, 18 and 19 are connected to one another as follows: The top of the cylinder section 15 is provided with a head 20 with a needle valve 21 in the top of the head 20 to open and close the outlet 22. A cap 23 is screwed onto the head 20 over the valve controlled upper end of said head, which cap 23 has an upward projection which is screwed into the bottom plate 24 of the heating section 16. The cap 23 has a hole 25 extending up through the same and has outlets 26 in different directions near the top of the projection within the heat producing section 16.

An asbestos plate 27 is provided within the heat producing chamber section 16 over the upper end of the cap 23 to protect the same to some extent from the heat producing fuel after ignition. Carbon block, charcoal or other heating fuel may be used within the heating chamber section 16. The ignition and steady burning of the heat producing fuel is controlled and aided by the gas in the cylinder 15 as it escapes in the desired quantity through the vents 2 25 and 26 into said section 16 around the asbestos plate 27. A cup shaped head and union 28 is screwed into the upper end of the heating section 16 which has a cone shaped central upwardly projecting portion 29 which extends down to the bottom of the cup shaped head and union 28. A number of holes 30 are provided around the cup shaped head 28 extending through said cup and the cylindrical section 16 into the head 28.

The cup shaped head 28 is screwed into the upper end of the cylinder or tube which forms the section 16, and a second cylindrical section 17 is screwed onto the upper end thereof for a steam production chamber. The water drips upon the cone-shaped upwardly extending central part 29 thereby forming steam, and the holes 30 which extend from the cup-shaped receptacle 28 out through the cylinder and into the outer casing 10 permit the excess of water to drip down over the outer side of the section 16 which being heated also produces steam. The upper end of the section 17 is closed by means of the screw plate 31 which has the opening 32 therethrough directly over the cone 29.

The water tank section 18 rests upon the

projections 34 on the plate 31, the bottom plate 33 of the section 18 being screwed into the tube for said section. A small tube 35 is screwed through the center of plate 33 to permit the water to drip down therethrough onto the cone 29. The upper end of the tank 18 is closed by a plate 36 which has the small tube 37 inserted through the bottom plate 38 of the compressed air section 19, tube 37 being sufficiently small to aid in controlling the flow of water. The tube 37 has a needle valve 39 in the upper end thereof with the stem 40 extending down through the upper plate 41 of the section 19. A valve 42 is provided in the upper plate 41 for charging the compressed air section or cylinder 19.

In assembling the parts ready for operating the device the gas tank 15 and heating section 16 are attached to one another and charged with gas and charcoal or carbon blocks. Section 18 is filled with water and section 19 charged with compressed air and the two connected to one another. It is then apparent that the sections 15 and 16 may be inserted in the casing 10 resting firmly in the bottom of the same but being sufficiently smaller than said casing to permit the steam to pass down along the sides of the sections 16 17. The tank section 18 and section 19 having been charged with water and air are set upon the sections 15 and 16 and 17, after which the upper plug or head 11 is inserted.

The charcoal or combustible material in section 16 is ignited before the insertion of the section and a limited flow of gas is turned on by means of the valve 21 which permits the gas to flow up around the asbestos pad 27, thereby insuring a continuous combustion in the chamber 16 and heating the walls of said chamber and the cup-shaped plate 28 with its cone 29 for a comparatively long period of time.

The sections 18 and 19 having been charged with water and gas are inserted with the tube 35 extending down through the hole 32 and the plate 33 resting upon the projections 34, thereby supporting the two upper sections within the casing 10. The needle valve 39 having been opened sufficient to permit a steady dripping of the water from the tank section 18 down through the pipe or tube 35 onto the cone 29, which being heated produces a steady column of steam, the sides of the cup-shaped head 28 also assisting in this production of steam, the steam rises through the opening 32 and passes out through the ring of holes 43 in the casing 10 against the walls of that portion of the oil well which it is desired to heat. Other rings of holes or openings for the steam may be provided as at 44, the rings of openings 43 and 44 being spaced apart as desired. Any number of such rings of holes may be provided without departing from my invention.

I claim as new:

1. In a device for cleaning oil wells, a tubular casing having exits for steam through the sides thereof, a fuel burning receptacle section in said casing, a water tank section supported above said fuel burning section in said casing and arranged to drip water on said fuel burning section to produce steam, and means on said casing for supporting the same in an oil well.

2. In a device for cleaning oil wells, a tubular casing having exits for steam through the sides thereof, means on said casing for supporting the same in an oil well, a fuel burning receptacle section in said casing, a steam producing section above said fuel burning receptacle section to be heated thereby, and a water tank section above said steam producing section arranged to drip water into said steam producing section and form steam.

3. In a device for cleaning oil wells, a tubular casing having exits for steam through the sides thereof, a fuel burning receptacle section in said casing, a gas charged cylinder section in said casing connected to said fuel burning receptacle section to feed the combustion therein, a steam producing section above said fuel burning receptacle section to be heated thereby, and a water tank section above said steam producing section arranged to drip water into said steam producing section to form steam.

4. In a device for cleaning oil wells, a tubular casing having exits for steam through the sides thereof, a fuel burning section in said casing, a gas charged cylinder section in said casing connected to said fuel burning section to feed the combustion therein, a steam producing section above said fuel burning section to be heated thereby, a water tank section above said steam producing section arranged to drip water into said steam producing section to form steam, and a compressed air cylinder section connected to said water tank section to force the flow of the water out of said tank section into said steam producing section.

5. In a device for cleaning oil wells, a tubular casing having exits for the steam through the sides thereof, means on said casing for supporting the same in an oil well, a plurality of cylindrical sections in said casing having a space between the inner walls of said casing and said cylindrical sections for the circulation of the steam, one of said sections a heat producing section, a steam producing section on said heat producing section comprising a cup shaped head and union having the holes through the sides thereof and a cone-shaped upward projection therein, a water tank

section supported a spaced distance above said steam producing section arranged to drip water onto said cone-shaped upward projection and into said cup-shaped head, and means for regulating the flow of the water from said tank section onto said cone-shaped projection.

6. In a device for cleaning oil wells, a tubular casing having exits for steam through the sides thereof, means on said casing for supporting the same in an oil well, a cylindrical fuel burning section in said casing, a gas charged cylindrical section in said casing connected to said fuel burning cylindrical section to feed the combustion therein, a steam chamber section comprising a cup-shaped head and union connecting said fuel burning section and said steam chamber section, a cone-shaped projection in said cup-shaped head to be heated by said fuel burning section, a cylindrical water tank section supported on said steam producing chamber section and piped to flow water onto said cone-shaped projection to form steam, and a cylindrical compressed air section in said casing above said water tank section and pipe connection between said compressed air section and said water tank section and valve regulation of said pipe connection to give regulated air pressure in said water tank section.

In testimony whereof I have affixed my signature in the presence of two witnesses.

FRANK A. MONROE.

Witnesses:
H. A. SANDBERG,
A. W. KITTLE.