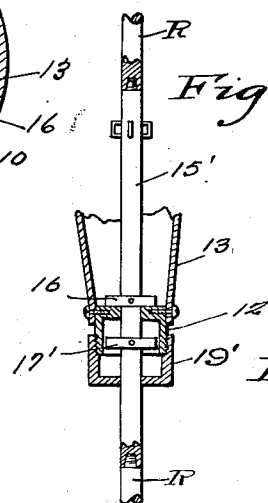
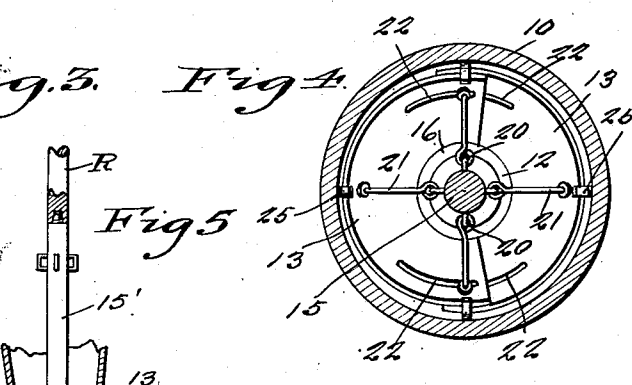
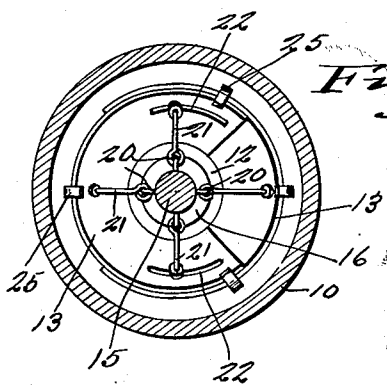
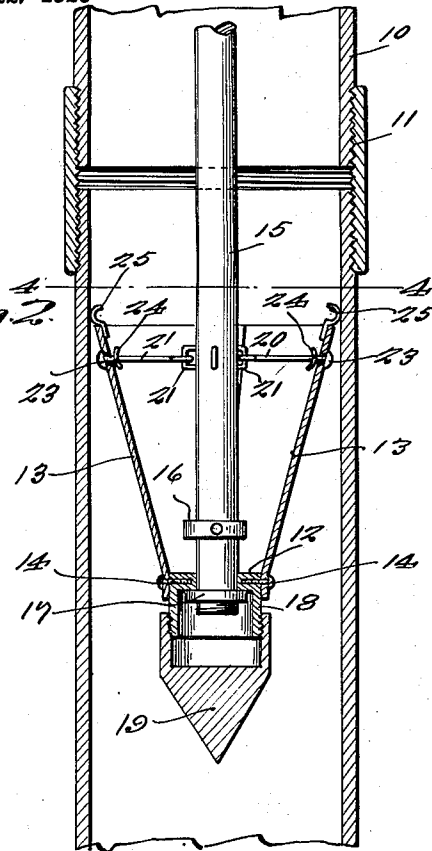
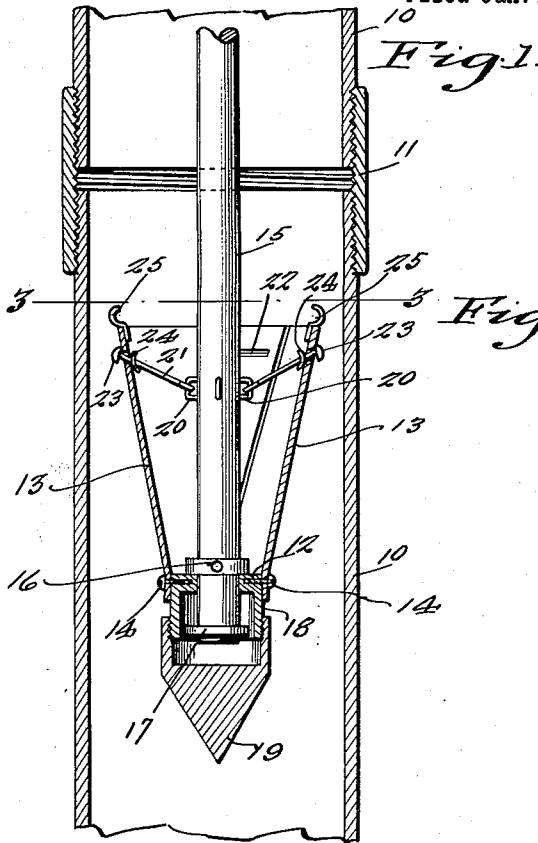


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E. E. CAMPBELL
WELL CLEANING DEVICE

Filed Jan. 22, 1926



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WITNESS:

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UNITED STATES PATENT OFFICE.

EARL EDGAR CAMPBELL, OF GILLETTE, WYOMING.

WELL-CLEANING DEVICE.

Application filed January 22, 1926. Serial No. 83,057.

This invention relates to well cleaning devices and has for an object the provision of a device which may be attached to the pump rods or cable of a well apparatus and lowered into the well for the purpose of removing paraffin from the interior of the well tubing.

It is the present practice to pull the well tubing for the purpose of cleaning or removing the paraffin which collects within the tubing and during this operation, thousands of barrels of oil are wasted, while, by the use of the present invention the tubing may be cleaned without first being pulled, so that the oil waste above mentioned is eliminated.

For the accomplishment of the above, the invention provides means which may be attached to the pump rods or cable and lowered into the tubing to any desired depth and then raised, the device during the raising process removing the paraffin from the walls of the tubing and collecting the same so that when the device is removed from the tubing it will carry with it the collected paraffin.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a sectional view illustrating the invention in position within a well tubing with the device contracted.

Figure 2 is a similar view showing the device expanded for the removal of paraffin.

Figure 3 is a section taken substantially on the line 3—3 of Figure 1.

Figure 4 is a similar view on the line 4—4 of Figure 2.

Figure 5 is a fragmentary section showing a slightly different form of the invention.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates the sections of the tubing of an oil well which sections are connected by a coupling 11 in the usual manner.

The invention which is designed for the removal of paraffin from the interior of the tubing comprises a receptacle which includes a base 12 while rising from this base are walls which are formed of separate sections 13. The lower ends of the sections 13 are secured to the base 12 in such manner as to

permit of slight relative movement, the securing means being indicated at 14. The receptacle thus described provides an inverted hollow substantially frusto-conical member whose side walls may be contracted or expanded.

Rising from the base 12 is a rod 15 which extends centrally through the receptacle and is adapted to be secured to a pump rod or cable, being preferably attached to the sinker and lowered into the tubing to any desired depth. The lower end of the rod 15 has secured thereon a collar 16 which is adapted to engage the upper face of the base 12, while a nut 17 threaded upon the lower end of the rod 15 and spaced from the collar 16 is adapted to engage the under face of the base so that the receptacle is capable of limited movement upon the rod. The base has extending therefrom an exteriorly threaded sleeve 18 and this sleeve has secured thereon a preferably conical guide 19 which encloses the nut 17 and facilitates the passage of the device downward.

Loosely secured to the rod 15 as indicated at 20 are radially extending rods 21, the outer ends of these rods extending through elongated slots 22 provided in the sections 13 of the receptacle. The outer ends of the rods 21 are provided with heads 23 while spaced from these heads are washers 24, the latter being upon the inside of the receptacle. As the adjacent edges of the receptacle sections 13 overlap and the rods 21 pass through the slots 22 of these sections, the latter are slidingly connected so that they may expand and contract.

As previously stated, the sections 13 are secured to the base 12 in a manner to permit of slight relative movement and when the walls of the receptacle are collapsed they will remain in such position due to frictional engagement between the parts, as the device is being lowered into a well. When the conical guide 17 strikes the bottom of the well, the jar will force the upper ends of the sections outward and the wall of the well will be engaged as the receptacle is drawn upward.

The device is lowered to the desired depth within the tubing and when pulled upward, the sections 13 will move outwardly so as to expand the walls of the receptacle in accordance with the diameter of the tubing. The upper open edge of the receptacle provides

a scraping edge so that the paraffin will be removed from the interior of the tubing and will fall into the receptacle.

5 Extending from the upper edge of the receptacle are spaced curved deflector elements 25 which engage the inner wall of the tubing and prevent the scraping edge of the receptacle from striking the lower edge of the tubing sections at the tubing joints.

10 In the form of the invention just described, the device is attached to the lower extremity of a pump rod or cable, and of course, the entire string of rod or cable must be pulled for the purpose of attachment.

15 This is overcome by the construction illustrated in Figure 5. In this figure, the rod 15' extends entirely through the device and has its opposite ends formed for removable attachment to the adjacent ends of rod or cable sections R, so that the rod 15' and consequently the device may be inserted at any point within the length of the string. In this form of the invention the base 12 has secured thereto a cap 19' which is provided with an opening for the passage of the rod 15'. The rod 15' is supplied with the usual collar 16 and spaced from this collar is a collar 17' which is attached to the rod and provides for limited longitudinal movement.

20 The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

25 Having described the invention what is claimed is:—

30 1. A well cleaning device comprising an inverted hollow substantially frustro-conical receptacle closed at its lower end, radially expandible walls for said receptacle, said

walls being normally held in contracted position and capable of movement to expanded position when the device is subject to impact.

2. A well cleaning device comprising a receptacle including a base and upwardly and outwardly inclined sectional walls rising from the base, means connecting the wall sections to permit of expansion and contraction, means to limit expansion, a pointed guide depending from the base and means to lower the receptacle into a well.

3. A well cleaning device comprising a receptacle including a base and upwardly and outwardly inclined sectional walls rising from the base, a supporting rod extending upwardly from the base through the receptacle for attachment to the lowering means, means extending from the rod through the wall sections to connect said sections in a manner to permit of expansion and contraction and to limit expansion and a pointed guide depending from the base.

4. A well cleaning device comprising a receptacle including a base, transversely curved substantially semi-circular flared walls extending upwardly and outwardly from and supported by the base and having their side edges overlapping, means securing the lower ends of the walls to the base to permit limited relative movement, a supporting rod extending upwardly from the base through the receptacle for attachment to a lowering means and means extending through the overlapping portions of the wall sections and connected to the rod to limit relative outward movement of the upper ends of said sections and to hold said sections associated.

In testimony whereof I affix my signature.

EARL EDGAR CAMPBELL.