

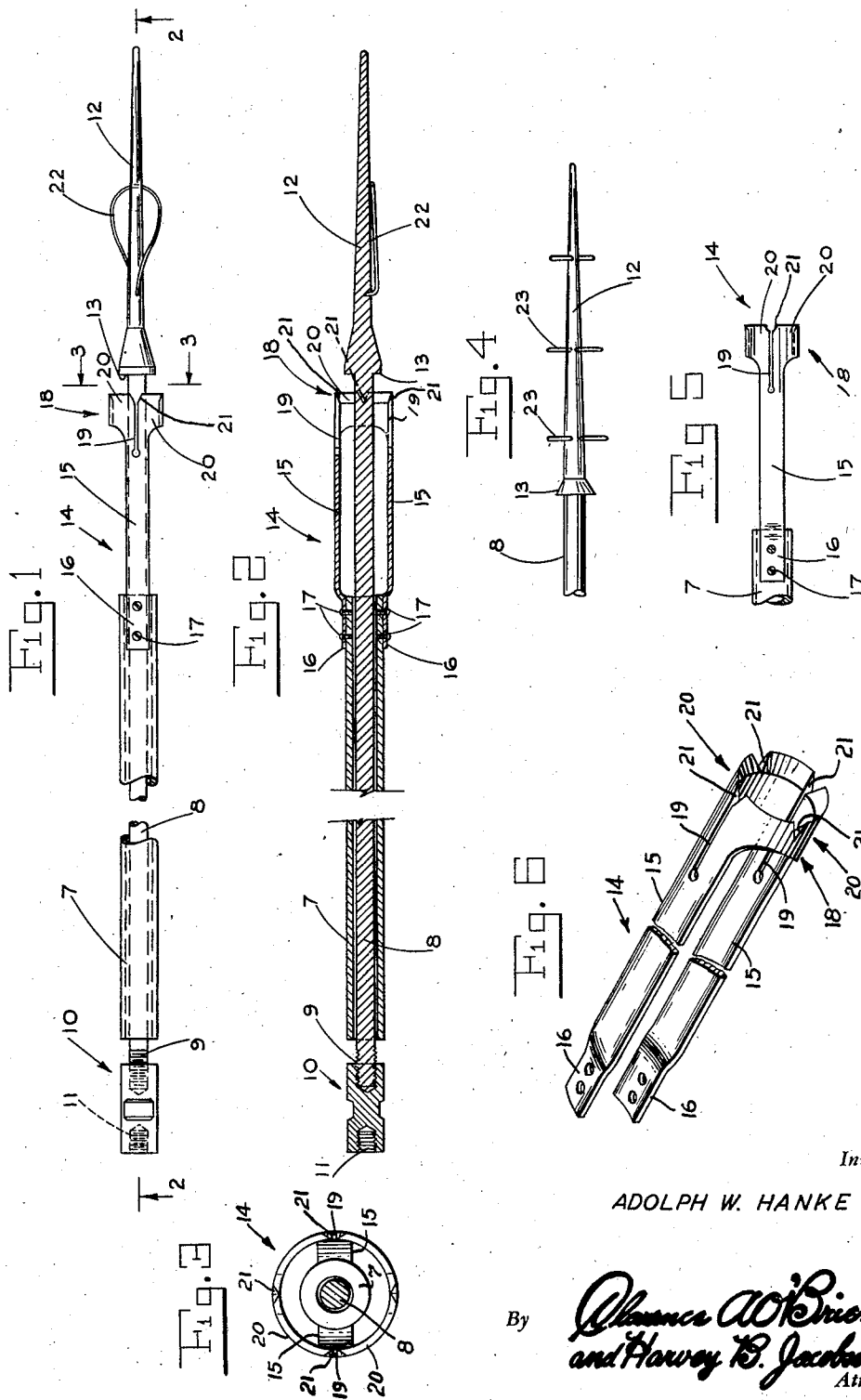
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PARAFFIN DISLODGING TOOL

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PARAFFIN DISLODGING TOOL

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This invention relates to a novel and improved tool or implement for loosening and dislodging accumulated paraffin deposits from oil well tubes and casings, its purpose being to provide a satisfactory and convenient way of permitting the thus loosened strips and particles of paraffin to be flown from the well casing for subsequent separation and removal.

The customary or usual practice in this line of endeavor is to pull the complete string of tubing, lay it down on a suitable chamber and then to apply heat, from a suitable source, to loosen and melt the paraffin; or, to haul the tubing to a boiler where steam pressure is employed to accomplish the same ends.

In accordance with the principles of the instant invention, I provide an especially designed paraffin dislodging tool which is rapidly reciprocated in a well casing or tubing, the structure of said tool being such as to gouge, shave and dislodge the paraffin deposits and to thus break same into sufficiently small pieces to be flown out from the casing, this by allowing the well to flow from five to twenty barrels per hour and thus carrying off the paraffin particles and pieces.

More specifically, the preferred tool comprises an elongated tube having resilient adaptable cutting and shaving means on the leading or working end, there being a rod mounted for independent reciprocation in the tube and said rod having a spearhead on its forward or working end and appropriate cleaning means to prevent clogging of the cutting blades with adhering paraffin, whereby to keep same in good working order during the operation of the tool.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a side elevational view of a paraffin dislodging and removing tool constructed in accordance with the principles of the present invention.

Figure 2 is a central longitudinal section taken on the plane of the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is an enlarged cross-section on the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a fragmentary side elevational view showing a modified spearhead with radial cleaning fingers.

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Figure 5 is a fragmentary side elevational view showing the bladed scraping and cutting unit.

Figure 6 is a fragmentary perspective view, on an enlarged scale, of the scraping and cutting unit by itself.

Referring now to the drawings by distinguishing reference numerals, it will be seen that the cylinder or tube is denoted by the numeral 7. This serves as a guide as well as a sheath-like holder for the reciprocating rod 8. The rod is threaded, as at 9, the latter end being tapped into a socket in the coupling element 10, and said element 10 having another socket 11 at its opposite end to accommodate a weight or sink which is used in connection with the tool, said sink not shown. The forward or working end of the rod is fashioned into a pointed spear 12 of appropriate length, the inner end of said spear providing a shoulder, as at 13, to alternately strike the adjacent lower or leading end of the tube 7 to provide the desired intermittent impact and jarring blows between the respective parts 7 and 8.

The paraffin scraping and cutting means carried by the tube 7 is denoted, as a unit, by the numeral 14. This unit comprises a pair of parallel spaced spring arms 15 having their laterally offset inner ends 16 secured by fastenings 17 to diametrically opposite sides of the adjacent tube-end. It may be desirable in certain instances to use, in addition to the fastenings 17, spaced tack-welds. The arms terminate in an annular cutter head 18 and this is divided by a pair of longitudinal diametrically opposite slits 19 into duplicate semi-circular half-sections 20. The resiliency of this construction enables the cutting blades, thus formed, to yield and conform to slight irregularities, if any, in the well casing or tubing. It is also desirable, for more efficient scraping results to provide the cutter head with equidistant, circumferentially spaced notches 21, as brought out to better advantage in Figure 3. Further, the extreme outer edge portions of the half-sections are internally bevelled, as shown in Figure 2.

In Figures 1 and 2, I have shown the spear provided with a twisted wire attachment 22 which is suitably anchored, as shown, and which forms a sort of a whip, this whirling around between the blades or knives 20 to dislodge paraffin and to clean said blades and promote effective operation of the latter. If instead of providing the "whip-wire" 22 other means is desirable, I can use, for example, radial cutting prongs 23, as brought out in the modification shown in Figure 4.

Many oil producing wells, obviously, accumulate paraffin deposits within the entire surfaces of

the walls of the tubing, especially high pressure flowing wells. This makes it difficult to manage the wells and also equally difficult to remove the paraffin, especially by the crude and time-taking methods heretofore set forth.

In using the tool herein shown, a lubricator must be placed on top of the master gate or tubing and the tool must be inserted through the lubricator, which is a little longer than the length of said tool. A wire line stuffing box with a pulley is placed on top of the lubricator. The tool can be used as long as the well flows by running it in, on a small steel line and flowing the well during the operation on a small choke, thus permitting the oil to flow into the tank without loss of oil.

The device is operated by drilling the tool up and down with two or three-foot strokes and making thirty to forty strokes per minute and allowing the well to flow from five to twenty barrels per hour, thus carrying off the paraffin.

It is also to be noted that the notched blades 20 cut the paraffin from the walls of the tubing and that the reciprocatory spearhead goes up and down between said blades each time and this mixes the paraffin, allowing it to flow out with the oil and at the same time preventing clogging of said blades. The shoulder on the rod, which forms the juncture between the rod and spearhead, strikes the adjacent end of the tube 7 and this provides the desired intermittent jarring action, thus lifting the cutting head or unit at each stroke of the reciprocatory rod and spearhead. The spearhead spins freely mixing the paraffin and thus keeping the blades clean. The aforementioned sinker which is attached to the coupling 10 (said sinker not shown) is some two or three feet long and weighs fifteen to twenty-five pounds according to the weight the operator desires. The sinker forces the tool into the paraffin. The notched blades cut the paraffin into strips, making it easier to mix same and also to keep said blades clean. The tool is highly polished outside to prevent paraffin from sticking on the surface. It has been found that a tool of this type will cut from one hundred to two hundred and fifty feet per hour by following the procedure set forth.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

I claim:

1. A paraffin dislodging tool for oil well casings

comprising an elongated open-ended tubular body provided at one end with diametrically opposite resilient arms extending forwardly thereof and terminating in semi-circular coacting cutting and surface scraping knives, a rod slidable through and extending beyond opposite ends of said tubular body, said rod being provided on its actuating or upper trailing end with coupling means, a spearhead on the working or leading end of the rod, and said spearhead operating in reciprocatory relation between and outwardly beyond the cutting knives and having a cleaning element thereon to whirl against said knives for keeping same clean and in working order, said coupling means and spearhead being disposed outwardly of the respective opposite ends of said tubular body and constituting longitudinally spaced stop shoulders engageable with said opposite ends.

2. A paraffin dislodging tool for oil well casings comprising an elongated open-ended tubular body, paraffin cutting, scraping and dislodging means, said means embodying blades which are substantially semi-circular, opposed and arranged to provide an annular scraping unit resiliently attached to the leading end of said tubular body, and extending forwardly thereof, a rod extending slidably through and beyond opposite ends of said tubular body, said rod being provided on one end with coupling means having a stop shoulder engageable with the rearward end of said tubular body, a spearhead on the opposite end of said rod, said spearhead being on that end of the rod which extends between and beyond said blades and functioning as a stop shoulder engageable with the leading end of said tubular body, said spearhead being slidable in and out of said annular scraping unit and provided with cleaning elements which are operable to dislodge paraffin which may adhere to the scraping blades when in operation, the combined length of said rod and spearhead being such that the spearhead may, when in operation, project wholly beyond said scraping blades.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
399,346	Poulesson	Mar. 12, 1889
595,780	Krisan	Dec. 21, 1897
1,180,230	Bowman	Apr. 18, 1916
1,180,485	French	Apr. 25, 1916
2,001,270	Slaughenhop	May 14, 1935
2,283,048	Collett	May 12, 1942
2,315,069	McKean et al.	Mar. 30, 1943
2,322,419	Cranford	June 22, 1943
2,326,528	Festervan et al.	Aug. 10, 1943