July 5, 1949. H. N. STAMOS 2,475,160

PARAFFIN REMOVER

Filed April 12, 1945

Fig. 1

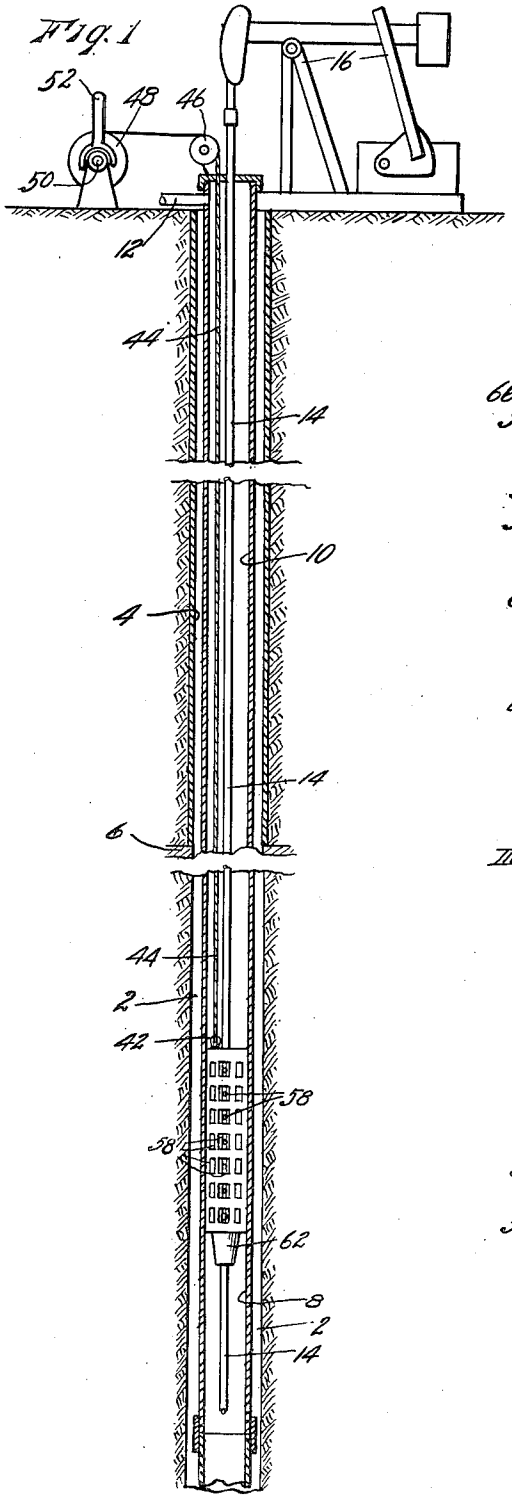
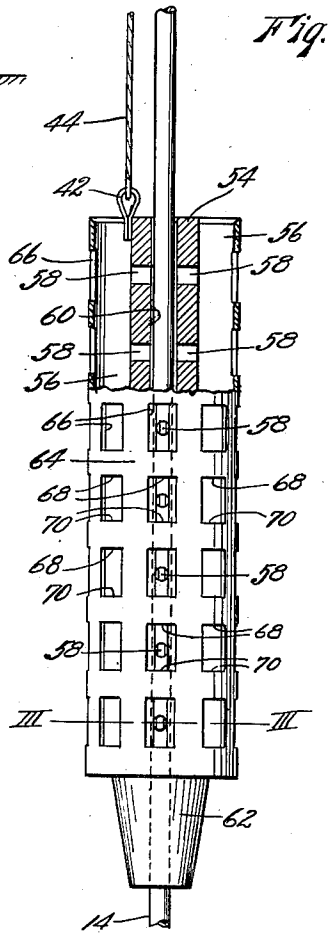


Fig. 2



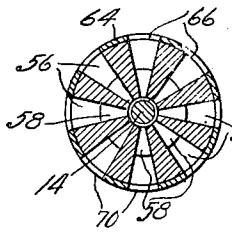


Fig. 3

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PARAFFIN REMOVER

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2 Claims. (Cl. 166—18)

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My invention relates to new and useful devices for removing deposits of paraffin, wax, and asphaltic or other substances from the inner surface of oil well tubing, so that the pumping mechanism may operate effectively and produce a uniform flow of oil to the surface. Oil in a great many oil wells contains paraffin and other deposits which are in a liquid state when at the depth at which the oil is produced, but which, as the oil is pumped upwardly and the temperature decreases, crystallize and accumulate inside the oil line and upon the piston rod of the pump. In the course of time the deposits accumulate and check the flow of oil to the surface. The pump must then be removed, which is an expensive and time consuming operation, and in case of an accident requiring a fishing job, the time lost and extra expense incurred is tremendously increased.

One object of my invention is the provision of a deposit-removing device which may be installed in the oil line without removal of the pump or piston-rod, and which may be operated independently of the piston-rod.

A further object is to provide a deposit-removing device that may be left in the oil line ready for use when needed.

Other objects will hereinafter appear, and in order that the invention may be fully understood, reference will now be had to the accompanying drawing, in which:

Figure 1 is an elevational view of the device installed in an oil well structure shown partially in sectional form.

Fig. 2 is an enlarged elevational view, partly in section, of the device applied to a portion of the piston rod.

Fig. 3 is a cross-sectional view taken on line III—III of Fig. 2.

Referring in detail to the different parts, 2 designates the bore of the well, 4 the casing which rests upon the rock formation 6, 8 the working barrel of the oil pump, 10 the oil tubing which is connected to the upper end of the working barrel 8 to conduct the oil to an outlet pipe 12 at the surface, 14 the piston-rod which operates the pump plunger, not shown, and 16 a pumping unit for reciprocating the piston-rod 14. All of the foregoing may be of any preferred or conventional form.

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Referring to the device as detailed in Figs. 2 and 3, 54 designates a cylindrical member having longitudinal, peripherally spaced grooves 56 formed therein and extending the full length thereof. Each groove 56 communicates with a plurality of radial posts 58 extending outwardly from the axial bore 60 of the cylindrical member 54, which latter has a reduced lower end portion 62 which acts as a pilot when the member 54 moves downwardly in the oil tubing. Cylindrical member 54 is adapted to be carried slidably in oil tubing 10, piston-rod 14 extending slidably through axial bore 60.

The cylindrical member 54 is surrounded by a tightly fitting tubular scraper 64 having circular rows of rectangular apertures 66 spaced one above another for approximately the full length of the scraper. The apertures 66 register with the grooves 56, so that paraffin and other deposits removed from the oil tubing 10 and the piston-rod 14 may enter the grooves 56 and be carried upwardly by the oil to the surface. Deposits removed from the surface of the piston-rod 14 and entering the bore 60 may escape therefrom to the grooves 56 through posts 58. The upper and lower edges 68 and 70, respectively, of each aperture 66 constitute scrapers for effectively removing paraffin and other deposits from the inner surface of the oil tubing, so that the deposits may be carried to the surface as above stated. A loop 42 is secured to the upper end of member 54 for attachment with a cable 44 whereby the device may be moved up and down on piston rod 14. Said cable extends upwardly to the top of the well, where it runs over a guide sheave 46 and is connected to a drum 48 freely mounted upon a drive shaft 50 to which the drum may be connected or disconnected by a clutch mechanism, not shown, controlled by a lever 52.

In the use of the device, the upper end of piston-rod 14 is disconnected from the pumping unit 16 and cylindrical member 54 is then slipped upon the piston-rod and lowered by the cable 44 to the desired depth in the oil tubing 10. The device may then be raised and lowered in the tubing 10 as previously described. With the foregoing arrangement the device will be raised each time drum 48 is thrown into gear, and dropped by gravity when the drum is thrown out of gear.

Buttons or other suitable indicating devices,

not shown, may be attached to the cable 44, to inform the operator when the drum 48 should be thrown in or out of gear. Operation of the device as described will not interfere with the operation of the pump, so that the upward flow of oil to the surface will carry the paraffin and other deposits removed from the inner surface of the oil tubing 10 and the outer surface of the piston-rod 14, therewith, as the paraffin and other deposits are cut up into small particles by the device.

From the above description it is apparent that I have provided a device which is efficient for the purpose intended. I also reserve the rights to such other forms and modifications as properly fall within the scope of the invention as claimed.

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

1. In combination, a device adapted to move up and down in an oil well tubing, comprising a cylindrical member provided with a plurality of peripheral grooves extending longitudinally thereof, an axial bore, and ports communicating the grooves with said axial bore, and a tubular member fixedly mounted upon said cylindrical member and surrounding said peripheral grooves and provided with circular rows of rectangular apertures spaced one above another for approximately the full length of said tubular member, said apertures communicating with the peripheral grooves in the cylindrical member and provided with upper and lower external edges constituting scrapers.

2. In combination, a device adapted to move up and down in an oil well tubing, comprising a

cylindrical member provided with a plurality of peripheral grooves extending longitudinally thereof, an axial bore through which the pump rod may extend and freely operate, and ports communicating the grooves with said axial bore, a tubular member fixedly mounted upon said cylindrical member and surrounding said peripheral grooves and provided with circular rows of rectangular apertures spaced one above another for approximately the full length of said tubular member, said apertures communicating with the peripheral grooves in the cylindrical member and provided with upper and lower external edges constituting scrapers, and means for moving the device up or down in the well tubing on the pump rod and independently of the movement thereof.

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