July 11, 1944. W. J. MILLER 2,353,412

OIL SAVER

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Fig. 1.

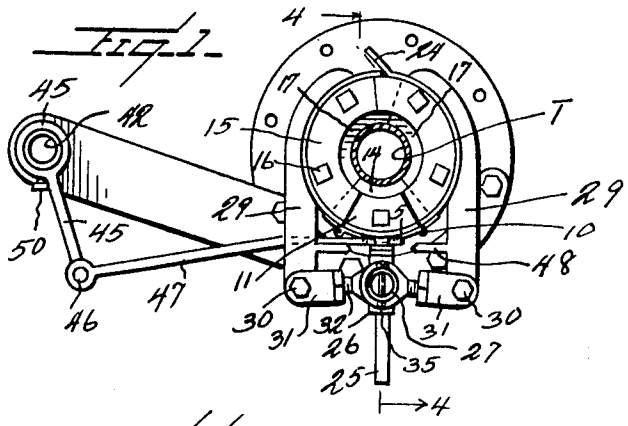
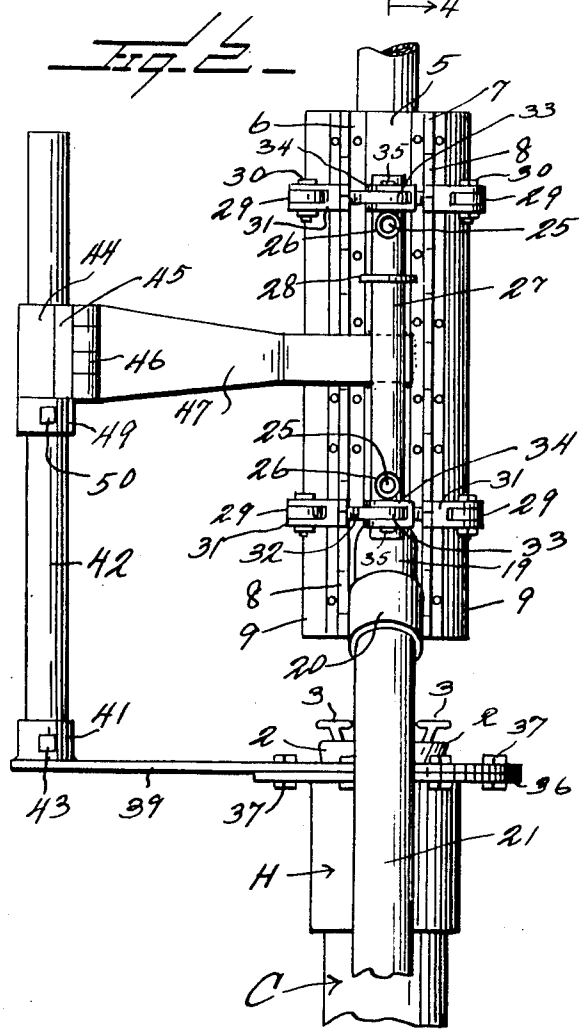
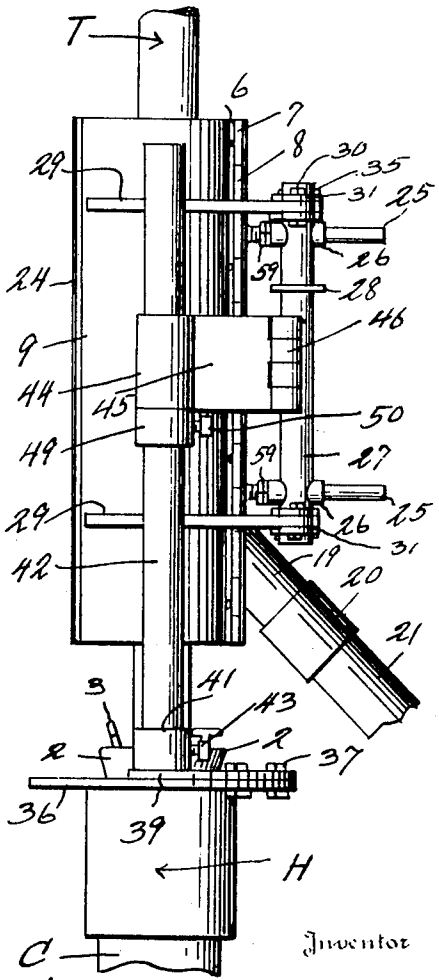


Fig. 3.

Fig. 2.





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Fig. 4

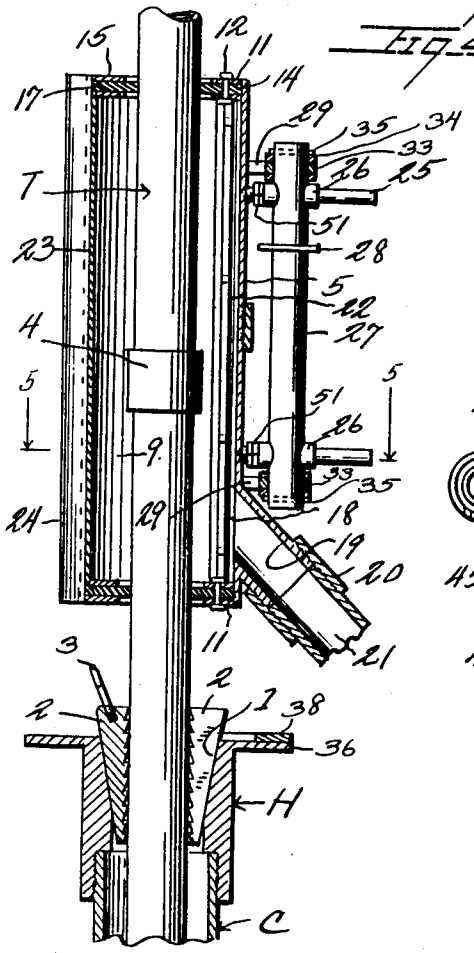


Fig. 6

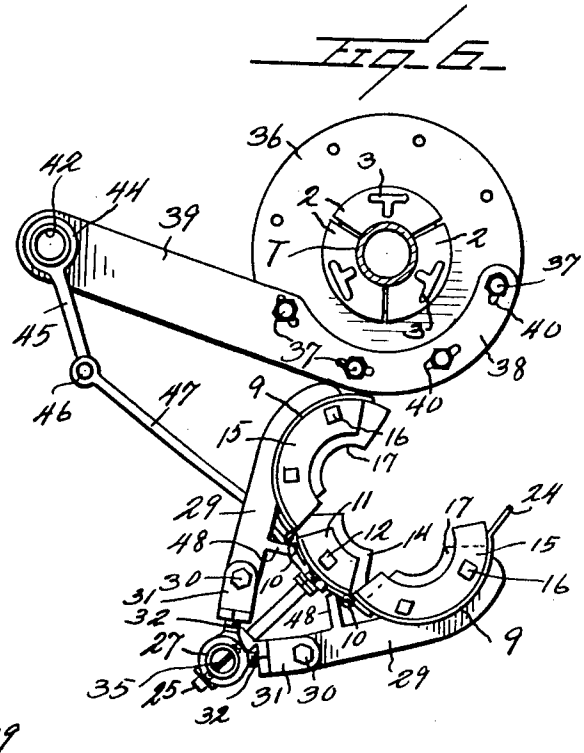
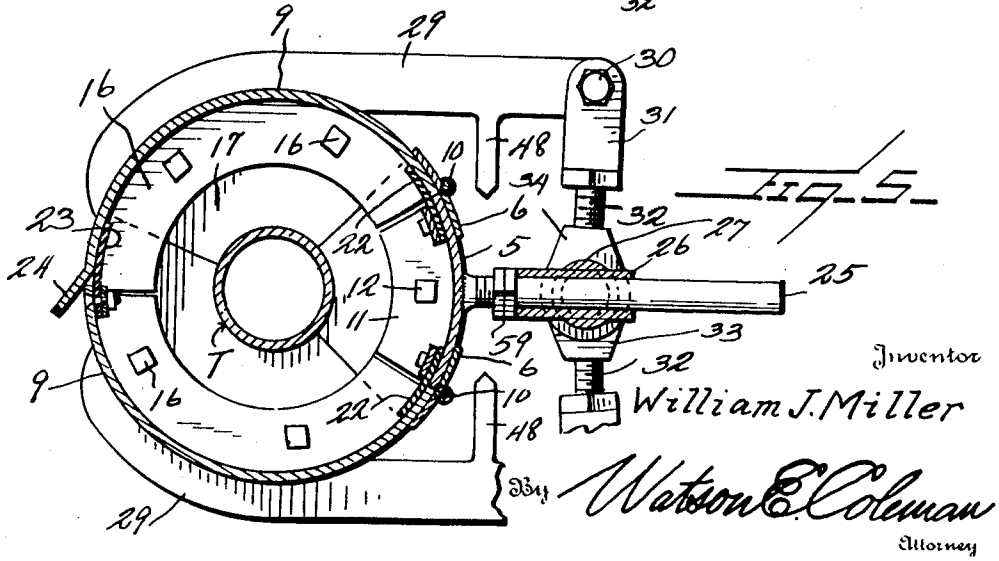


Fig. 5



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OIL SAVER

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Application August 26, 1941, Serial No. 408,371

5 Claims. (Cl. 166—16)

This invention relates to an oil saver, and it is primarily an object of the invention to provide a device of this kind for recovering at the well oil which would otherwise be lost when the well tubing is broken out or disconnected in sections.

Quite frequently the sucker rods and tubing at a well are pulled or removed from the well on account of stuck valves, the tubing being sanded up, etc. At present, when such tubing is pulled or raised, no means is provided to prevent the oil within the tubing from being wasted or to prevent such oil from falling on the derrick floor, making the same slippery and unsafe for workmen and also increasing the fire hazard. It is an object of the present invention to eliminate this wastage of oil.

Another object of the invention is to provide a device of this kind which is adapted to be placed around the tubing at a joint with means for delivering the collected oil to a pit or other storage place below the derrick floor or elsewhere.

An additional object of the invention is to provide a device of this kind which is so mounted upon the well casing to allow the device to be swung away from the tubing when desired and thereby permit the workmen to readily use tongs above the applied device in order to pull or raise the tubing, and also to eliminate the necessity of lifting the device into applied or working position with respect to the tubing and to facilitate the moving of the device out of the way when not in use.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved oil saver whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in top plan of an oil saving device constructed in accordance with an embodiment of my invention, the well tubing being in section;

Figure 2 is a view in rear elevation of the device as illustrated in Figure 1, the well casing and the tubing being in fragment;

Figure 3 is a view in side elevation of the assembly as illustrated in Figure 2;

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 1;

Figure 5 is an enlarged detailed sectional view taken substantially on the line 5—5 of Figure 4; and

Figure 6 is a view in top plan of the device as illustrated in Figure 1, but in an out of the way or inoperative position.

As disclosed in the accompanying drawings, C denotes a conventional well casing which extends the usual distance above the derrick floor (not shown). Fitted on the upper end of this casing C is a tubing head H through which passes the well tubing T. The upper portion of the bore of the head H is tapered, as at 1, and with which coact the usual slips 2, each of which being provided at its upper or larger end with a conventional handle 3 to facilitate the application or removal of the slip. The foregoing parts, in themselves, are well-known and are believed to require no further description other than to state that the tubing T comprises a desired number of sections with adjacent sections detachably coupled in the usual manner, as at 4.

The oil saving device as herein disclosed comprises an elongated back plate 5 arcuate in cross-section and of desired dimensions. Rigidly secured in any manner desired along the side or longitudinal marginal portions of this back or rear plate 5 is a hinge strip 6 provided with the knuckles 7 for interfitting alignment with the knuckles 8 carried by the inner longitudinal marginal portions of the side plates 9, also arcuate in cross-section. These interfitting knuckles 7 and 8 have disposed therethrough the pintles 10 whereby the side plates 9 are hingedly connected to the back or rear plate 5. As is particularly illustrated in Figures 1 and 5 of the drawings, when the plates 9 are in closed position they coact with the back or rear plate 5 to provide a substantially cylindrical box which, when in applied or working position, surrounds the tubing T and extends above and below a coupling 4 between adjacent sections of the tubing.

The opposite end portions of the rear or back plate 5 have welded or otherwise rigidly secured thereto the inwardly disposed flanges 11 and bolted, as at 12, or otherwise securely fastened to the opposed faces of these flanges 11 are the arcuate packing blocks 14 of a rubber compound, or otherwise as may be preferred. When the device is in applied or working position around the tubing T these blocks 14 have tight contact with the peripheral portions of the tubing T above and below the coupling 4.

The opposite end portions of the side members 9 also have welded or otherwise rigidly secured thereto the inwardly disposed flanges 15, to the

opposed faces of which are also bolted, as at 16, or otherwise securely held thereto, the arcuate packing blocks 17 also of a rubber compound or the like which have close contact with the peripheral portions of the tubing T above and below the coupling 4 when the oil saving device is in applied or working position around the tubing. The several packing blocks 14 and 17 are so formed that when the side plates 9 are in closed position around the tubing T a receptacle is formed to receive the oil which drains out of the upper section of the tubing T as said upper section is uncoupled and raised or lifted up. The oil so collected passes out through a discharge opening 18 in the lower portion of the back plate 5, and which opening is defined by an outwardly and downwardly inclined nipple 19 to which is suitably coupled, as at 20, an end portion of a flexible hose 21. This hose 21 is of a length to extend down through the derrick floor so that the collected oil may be delivered to a pit or other storage place under the derrick floor.

The side or longitudinal marginal portions of the back or rear plate 5 have suitably secured along the inner face thereof the sealing strips 22 to lap the adjacent marginal portions of the side plates 9 when in their closed positions to prevent leakage between the closed plates 5 and 9. The outer longitudinal marginal portion of one of the side plates 9 also carries a closing or sealing strip 23 to lap the adjacent longitudinal marginal portion of the second side plate 9 when closed. The outer or free longitudinal margin of one of the side plates 9 is formed to provide an outwardly disposed angularly related lip 24 which serves as a striker or guide to facilitate the full closing of the plates 9. This lip 24 is preferably at the marginal portion of the side plate 9 which is lapped by the strip 23.

The back plate 5, at substantially its transverse center and at points spaced lengthwise thereof, has welded or otherwise rigidly secured thereto the outstanding parallel rods 25, said rods being preferably at right angles to the plate 5. Slidably mounted on these rods 25 are the sleeves 26 which are also disposed through the opposite end portions of an operating bar 27. This bar 27 connects the sleeves 26 for unitary sliding movement along the rods 25 and is adapted to be grasped by the hand of a workman when it is desired to move the sleeve. The upper portion of this bar 27 is provided with a surrounding outstanding flange 28 to facilitate the proper gripping of the bar by the hand of the workman which, as is believed to be obvious, is generally very slippery.

The side plates 9 have rigidly secured thereto, at desired points spaced lengthwise thereof, the rearwardly directed arms 29. The outer or free end portions of these arms 29 are pivotally connected, at at 30, with the inwardly disposed clevises 31 in each of which threads a shank 32. One of the shanks 32 is provided with an eye member 33 which interfits between the spaced jaws of an eye member 34 carried by the opposed shanks 32. An end portion of the bar 27 is disposed through these eye members 33 and 34 so that upon requisite pull or push being given to the bar 27 the side plates 9 will be swung into open position or returned to closed position. The bar 27 and the eye members 33 and 34 are maintained in desired assembled relation by the pins 35 or the like inserted through the end portion of the bar 27 outwardly of but closely adjacent to the eye members 34. It is to be noted that the sleeves 26 are of such lengths as to assure effective travel of the bar 27 along the rods 25 when the side plates 9 are being swung into either open or closed position.

As illustrated in the accompanying drawings, the head H is provided with an outstanding surrounding flange 36 to which is adapted to be bolted, as at 37, the arcuate end portion 38 of an elongated arm 39. This portion 38 is provided with a series of slots 40 through which the bolts 37 are passed. These slots are provided to allow the arm 39 to be mounted upon flanges 36 of varying sizes. The outer end of this arm 39 carries at its outer or free end portion an upwardly facing socket 41 in which is engaged the lower end portion of an upstanding post 42 of desired length. Threaded through the wall of the socket 41 is a holding screw 43 for engagement with the inserted lower end portion of the post 42 to maintain the post in place. It is believed to be obvious, however, that other means may be employed for maintaining the post 42 in position. Freely mounted on the post 42 for rotation therewith is a sleeve 44 which has extending outwardly radially therefrom an arm 45. This arm 45 is relatively broad and has its outer end portion hingedly connected, as at 46, to the outer end portion of a rigid elongated arm 47 welded or otherwise rigidly secured to the outer face of the back plate 5 at a point substantially midway its ends. The arms 45 and 47 are of such lengths as to permit the box structure of the device to be readily swung to one side when not in use so that no interference or obstruction will be offered to the usual tong operation in connection with the tubing T.

It is believed to be obvious, and as illustrated in Figure 6, when the box structure is swung to an inoperative position the side plates 9 are open to allow desired removal of the box structure from around the tubing. The arms 29, at a point closely adjacent to their pivotal connections 30, are provided with the inwardly disposed fingers or lugs 48 for contact with the outer face of the rear or back plate 5 to limit the extent of opening movement of the side plates 9.

In the accompanying drawings only the lower portion of the head H is illustrated, the upper portion provided with the usual packing elements and oil outlet being omitted.

In practice, when the plates 5 and 9 are around the tubing to provide a collecting box, and the tubing T held with the slips 2, the workman continues to unscrew the tubing with tongs which are on the tubing above the assembled box structure of the device. After the upper section of the tubing has been disconnected, the same is lifted and the oil within such separated section of the tubing will drain within the box structure of the device and travel through the hose 21 back to the well or to a pit or storage place under the derrick floor. After the separated tubing section has been drained, the device, or more particularly the box structure as afforded by the plates 5 and 9, is easily removed by pulling outwardly on the bar 27 to swing the side plates 9 into open position. After these side plates 9 have been moved into open position the device can be readily swung away from the tubing T to allow room for handling the unscrewed section of the tubing. It is to be stated at this time that the hose 21 is of a length to readily allow for the swinging of the device away from the tube.

It is also believed to be obvious that by having the device supported for swinging movement rela-

tive to the tubing, there is eliminated the extra work of lifting the device from the floor to be applied in working position or to place on the floor when not in use. It is also believed to be obvious that the mounting of the device for swinging movement will not only save time but will materially add to the safety of the workmen and also prevent damage to the device as a result of rough handling.

As is particularly illustrated in Figures 2 and 3 of the drawings, the sleeve **44** is maintained in desired selected position upon the post **42** by a slip collar **49** with which the sleeve **44** contacts from above. This collar **49** is fixed at desired position on the post **42** by a conventional binding screw **50**.

Threaded on the inner portions of the rods **25** are the nuts **59** for limiting the extent of the inward movement of the sleeves **26** and the resultant inward movement of the pivotal connection of the shanks **32** with the bar **27** past center. It is believed to be obvious that the side plates **9** will be effectively maintained in closed position by allowing this pivotal connection to pass dead center.

From the foregoing description it is thought to be obvious that an oil saver constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

1. An oil saving device to be disposed around a well tubing and to extend above and below a joint in said tubing, said device comprising a back plate, side plates hingedly connected to the back plate, means carried by the opposite end portions of the back plate and the side plates to substantially close the ends of the device when the same is disposed around the tubing, one of the plates being provided in its lower portion with a discharge opening, rods extending outwardly from the back plate at points spaced lengthwise thereof, an operating bar mounted on said rods for sliding movement lengthwise of the rods, said bar providing a hand grasp, rearwardly disposed arms carried by the side plates, and operative connections between said arms and the bar for swinging the side plates into open or closed positions upon requisite sliding movement of the bar along the rods.

2. An oil saving device to be disposed around a well tubing and to extend above and below a joint in said tubing, said device comprising a back plate, side plates hingedly connected to the back plate, means carried by the opposite end portions of the back plate and the side plates to substantially close the ends of the device when the same is disposed around the tubing, one of the plates being provided in its lower portion with a discharge opening, an outstanding rod carried by the back plate, an operating member slidable on said rod, rearwardly disposed arms carried by the side plates, and operative connections between said arms and the operating member for moving the side plates into open or closed positions upon movement of the operating member along the rod.

3. An oil saving device to be disposed around a well tubing and to extend above and below a joint in said tubing, said device comprising a back plate, side plates hingedly connected to the back plate, means carried by the opposite end portions of the back plate and the side plates to substantially close the ends of the device when the same is closed around the tubing, an operating bar exterior of the device and extending lengthwise of the back plate, means carried by the back plate for supporting said bar for lateral movement toward or from the back plate, said bar constituting a hand grasp, rearwardly disposed arms carried by the side plates, and operative connections between said arm and the bar for swinging the side plates into open or closed positions upon requisite lateral movement of the bar toward or from the back plate.

4. An oil saving device to be disposed around a well tubing and to extend above and below a joint in said tubing, said device comprising a back plate, side plates hingedly connected to the back plate, means substantially closing the ends of the device when the same is closed around the tubing, rods extending outwardly from the back plate at points spaced lengthwise thereof, an operating bar slidably mounted on the rods for movement toward or from the back plate, said bar constituting a hand grasp, rearwardly disposed arms carried by the opposite end portions of the side plates, and operative connections between the arms and the opposite end portions of the bar for swinging the side plates into open or closed positions upon requisite sliding movement of the bar upon the rods.

5. An oil saving device to be disposed around a well tubing and to extend above and below a joint in said tubing, said device comprising a back plate, side plates hingedly connected to the back plate, means carried by the opposite end portions of the back plate and the side plates to substantially close the ends of the device when the same is closed around the tubing, an operating bar exterior of the device and extending lengthwise of the back plate, means carried by the back plate for supporting said bar for lateral movement toward or from the back plate, said bar constituting a hand grasp, rearwardly disposed arms carried by the side plates, operative connections between said arms and the bar for swinging the side plates into open or closed positions upon requisite lateral movement of the bar toward or from the back plate, and inwardly disposed fingers carried by the arms for contact with the back plate for limiting the opening swinging movement of the side plates.

WILLIAM J. MILLER.