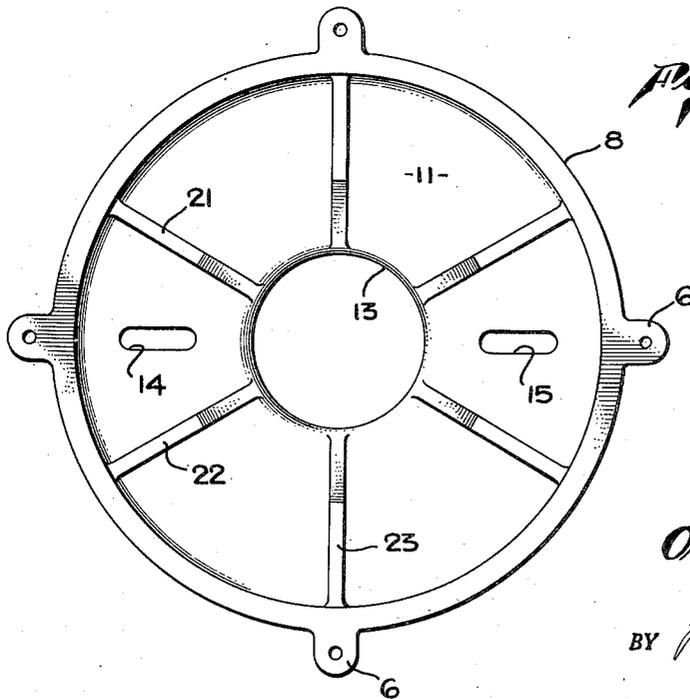
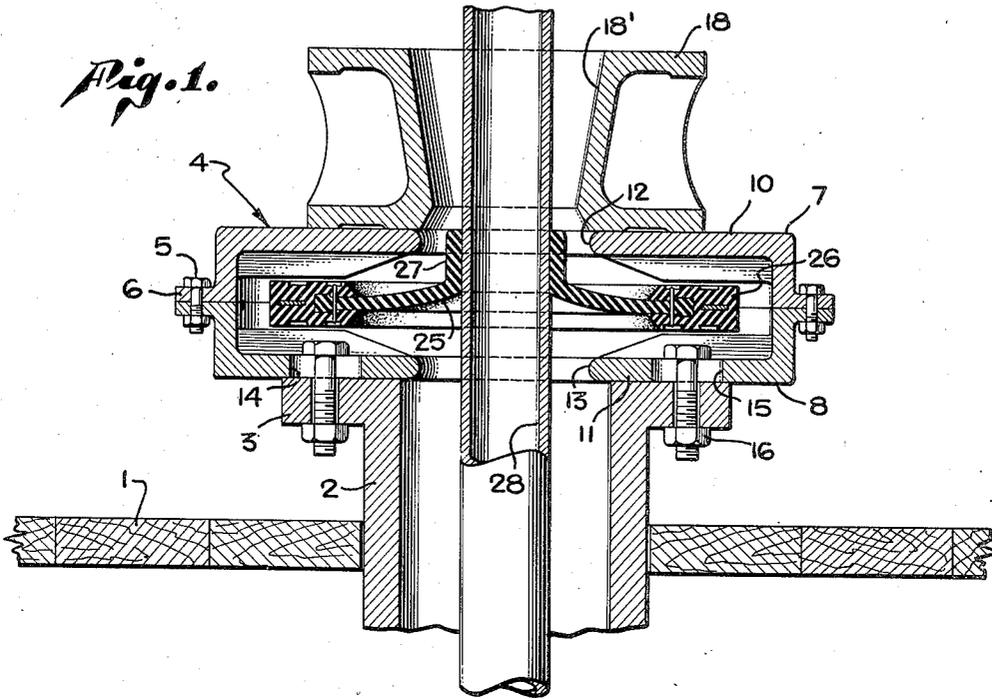


April 10, 1951

O. C. SLAVENS
DEVICE FOR HOLDING WIPERS

2,548,127

Filed April 14, 1947



Oswel C. Slavens
INVENTOR.

BY *Browning & Southard*

ATTORNEY

UNITED STATES PATENT OFFICE

2,548,127

DEVICE FOR HOLDING WIPERS

Orvel C. Slavens, Long Beach, Calif., assignor to
National Lead Company, Los Angeles, Calif., a
corporation of New Jersey

Application April 14, 1947, Serial No. 741,227

4 Claims. (Cl. 166-14)

1

This invention pertains to means for movably holding a wiper in operative position with respect to tubing and the like being withdrawn from a well hole, and to an arrangement of elements whereby tubing may be effectively cleaned of adhering mud fluid, oil, or the like, while being withdrawn from the well.

The present invention is directed toward an arrangement of elements whereby the upper end of the well head or well casing may support the normal tubing spider (used in grasping and holding the tubing while it is being raised or lowered into a well) and at the same time provide means whereby a wiper element may be effectively positioned so as to insure thorough removal of adhering oil or mud from the tubing while it is being withdrawn.

It is to be understood that a wiper is generally an annulus of resilient material encircling the drill pipe, tubing, etc. Such wiper can not be immovably mounted and give satisfactory service because most well holes depart somewhat from a true vertical and during withdrawal of a string of tubing or pipe, the tubing or pipe deviates from a constant axial position with respect to the top of the casing and instead exhibits appreciable lateral displacement in various radial directions. In the event the wiper were stationary, such lateral movement would quickly buckle, tear, disrupt, or otherwise damage the wiper and render it ineffective.

The present invention contemplates, in combination with a casing head of a well, a hollow circular housing capable of movably retaining and holding a wiper element or disc so that the customary tubing spider may be supported or anchored above the well head and still permit efficient operation of a wiper therebelow.

It is an object of the present invention, therefore, to disclose and provide a hollow circular housing adapted to be connected to a casing head, said housing including an annular wiper which is movable transversely in the housing so as to adapt itself to various positions of tubing or the like extending from the casing head and through the housing.

Another object of the invention is to disclose and provide a device for movably holding a wiper in operative position with respect to tubing and the like being withdrawn from a well.

A still further object of the invention is to disclose and provide a simple and efficient construction and arrangement of parts whereby a wiper may be used on tubing and above the well head.

2

These and other objects of the invention will become apparent to those skilled in the art from the following detailed description of an exemplary form of device, reference being made to the appended drawings, in which:

Fig. 1 is a vertical section of a general arrangement of elements embodying the present invention.

Fig. 2 is a plan view of one-half of a housing for use in the arrangement of this invention.

As more or less diagrammatically shown in Fig. 1, a derrick floor is indicated at 1 and the well head or casing head 2 provided with the outwardly extending flange 3 extends upwardly through the floor 1. Positioned upon the well head or casing head is the device 4 for movably holding a wiper. This device comprises a hollow cylindrical housing of larger diameter than the casing 2. In the form illustrated, this cylindrical housing is made of two identical, interchangeable halves connected together by means of bolts 5 extending through the ears 6 formed in the cylindrical side walls of the halves, the upper half being generally indicated at 7 and the lower at 8.

It will be evident that these two halves 7 and 8 form a complete holding device provided with a top wall 10 and a lower wall 11 spaced from each other, each of the walls being provided with an axial port. The port in the top wall 10 is indicated at 12 whereas the axial port of the lower wall 11 is indicated at 13. These ports may be of the same diameter as the internal diameter of the casing 2 or they may be, and generally are, slightly smaller.

Means are provided for removably attaching the holder 4 to the well head or casing head 2. Such means may comprise slots 14 and 15 formed in the wall 11, these slots being adapted to receive bolts, such as 16, extending through suitable bores formed in the flange 3 of the casing head.

Similar slots formed in the upper wall 10 may be used for the reception of bolts whereby a tubing spider 18 may be anchored to the holder 4. By making the two halves 7 and 8 identical, they become interchangeable.

It has been found desirable to form radial ribs on the inner opposing surfaces of the top and bottom walls 10 and 11. Such ribs are indicated at 21, 22, and 23. The inner or opposing surfaces of the ribs of the upper wall 10 are spaced from the inner or opposing surfaces of the ribs formed in the lower wall 11.

Positioned between the upper and lower walls and between the ribs carried by such walls is a

3

wiper which, in the illustration given, consists of a central annular portion 25 and a rim 26. The rim 26 may be of materially harder and less resilient composition than the central annular portion 25 which carries a contacting lip 27.

The outer diameter of the wiper is preferably larger than the diameter of the ports 12 and 13 and larger than the diameter of the casing 2. The holding device or cylindrical housing 4 is also of larger diameter than the casing 2 and of larger inner diameter than the wiper. The top and bottom walls of the holder 4 (and the opposing surfaces of the ribs carried by such walls) are spaced a slightly greater distance than the thickness of the wiper. As a result, the wiper is movably retained within the holder 4 and may move laterally or transversely with respect to the axis of the ports 12 and 13. Tubing extending through the central aperture of the wiper and being contacted by the lip 27 of the wiper, is indicated at 28.

During withdrawal of the tubing 28, such tubing weaves or moves radially with respect to the axis of the wiper holder, tubing spider, and casing head. The wiper thus will also move while retaining its resilient, yieldable, wiping engagement with the tubing. It is to be remembered that tubing not only includes joints but is often provided with protectors and these joints and protectors must also pass through the wiper element. The wiper should therefore be of sufficient resiliency to permit such joints and protectors to pass therethrough without being damaged.

It will be evident from the description given that the tubing spider may be operated in the normal manner and slips inserted into the bowl 18 whenever it is desired to suspend or hold the tubing without in any way interfering with the operation of the wiper and without necessitating its removal from the casing head.

The ribs 21-23 are preferably arranged radially as shown in Fig. 2, although other arrangements may also be used. These ribs 21-23 reduce the surface area of the wiper in actual contact with the holder. The transverse movement of the wiper is thus unimpeded and the tendency of the wiper to buckle or strain when moved transversely by the tubing 28, is reduced. By properly spacing the edges of the ribs, space is provided therebetween for the heads of the bolts, such as 16, which connect the housing to the casing or well head and to the tubing spider, the ribs thereby preventing the wiper from contacting and being impeded in its transverse movement by the bolt heads.

Although the exemplary form of wiper holder shown in the drawings is split along a plane transverse to the axis of the ports 12 and 13 so that the two halves are virtually interchangeable, the invention is not limited thereto since the holder 4 could well be made of two portions split along a plane parallel to the central axis and suitably releasably connected together. In all instances, however, the holder should include spaced upper and lower walls so that the holder can be readily attached to the casing head and at the same time provide a firm foundation for a tubing spider. Moreover, although the holder illustrated is of circular plan, it is evident that

4

pentagonal, hexagonal or other polygonal plan forms could also be employed. All such holders, however, should preferably have a free, transversely extending space to permit the contained wiper to move and adjust its position to the weaving of the tubing or the like which extends through the wiper.

I claim:

1. In combination with a casing head of a well: a hollow, circular housing, including a bottom wall, a top wall, and aligned axial ports in said walls; radial ribs on the inner opposing surfaces of said top and bottom walls; means for connecting the housing to the casing head; and an annular wiper of larger diameter than the ports in the walls of the housing positioned within the housing and movable transversely therein on said ribs.

2. A device for movably holding a wiper in operative position with respect to tubing and the like being withdrawn from a well hole, comprising: a hollow cylindrical housing, said housing including a top wall and a bottom wall spaced therefrom, each of said walls being provided with an axial port through which tubing and the like may readily extend; radially extending guide ribs on the inner faces of said walls and a wiper disc within the housing and movable transversely therein between and guided by said ribs.

3. A device for movably holding a wiper in operative position with respect to tubing and the like being withdrawn from a well hole, comprising: a hollow cylindrical housing, said housing including a top wall and a bottom wall spaced therefrom, each of said walls being provided with an axial port through which tubing and the like may readily extend; radially extending guide ribs on the inner faces of said walls, a wiper disc within the housing and movable transversely therein between and guided by said ribs, said housing being transversely split into like upper and lower portions; and means releasably connecting said portions.

4. A device for movably holding a wiper in operative position with respect to tubing and the like being withdrawn from a well hole, comprising: a hollow cylindrical housing, said housing including a top wall and a bottom wall spaced therefrom, each of said walls being provided with an axial port through which tubing and the like may readily extend; radial ribs on the inner opposing surfaces of said top and bottom walls; and a wiper disc within the housing and movable transversely therein on said ribs.

ORVEL C. SLAVENS.

REFERENCES CITED

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

UNITED STATES PATENTS

| Number | Name | Date |
|-----------|----------------|---------------|
| 1,641,921 | Crowell | Sept. 6, 1927 |
| 1,773,137 | Fuller et al. | Aug. 19, 1930 |
| 1,875,632 | McEvoy | Sept. 6, 1932 |
| 1,946,304 | Bryant | Feb. 6, 1934 |
| 2,182,899 | MacClatchie | Dec. 12, 1939 |
| 2,444,653 | Kennedy et al. | July 6, 1948 |