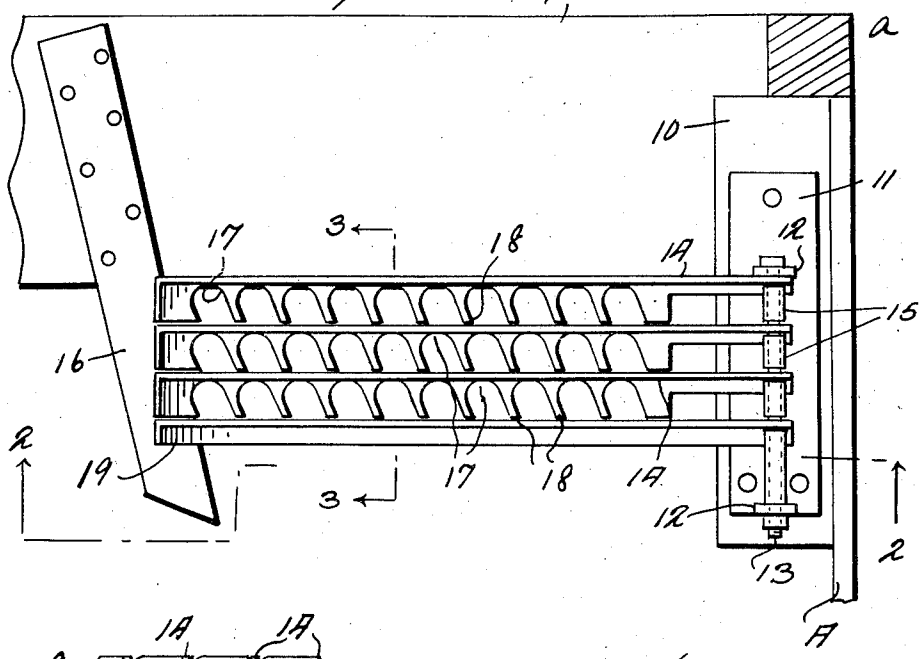
Aug. 28, 1934. W. F. HARRAH 1,971,609

TUBING AND DRILL PIPE RACK

Filed March 7, 1933

Fig. 1



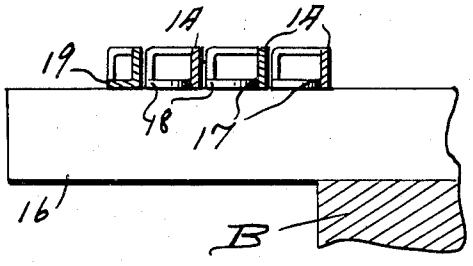
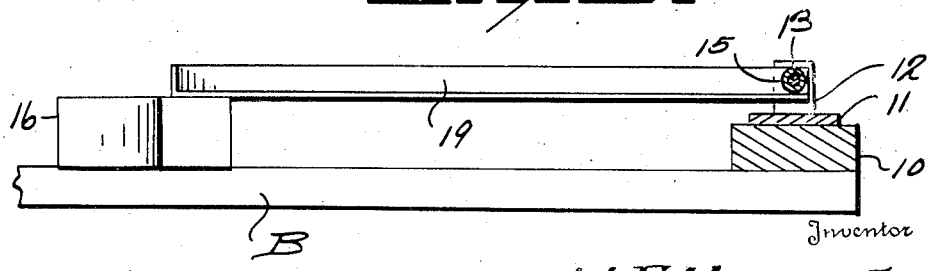


Fig. 3

Fig. 2



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TUBING AND DRILL PIPE RACK

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2 Claims. (Cl. 211—60)

This invention relates to racks for use on derricks for supporting tubing or drill pipes. When the joints of drill pipe or tubing are withdrawn from a well, they are stacked in the derrick, one end of each joint resting upon the derrick floor, the other being carefully placed in the top of the derrick by a workman, known as the "derrick man". The derrick man stands on the "finger," a beam which projects inward from the derrick structure and he places successive joints of pipe in some kind of order against the tubing board which supports the weight of the stack of joints. Heretofore it has been necessary for the derrick man to tie the joints in with soft rope and as he is working a long way from the derrick floor and must use a great deal of strength and skill in placing the joints, accidents are rather frequent.

The general object of the present invention is to provide a rack for such tubing or drill pipe which will permit the drill pipe and tubing to be racked with safety and speed and a further object is to provide a rack including a plurality of rack bars which are swingingly mounted so that they may be turned upward into inoperative position and out of the way when not in use or readily turned into a horizontal and operative position when desired.

Another object in this connection is to so mount the rack bars that they may be readily spaced apart different distances to accommodate different diameters of pipe or joints and further to so construct the recesses or seats for the pipe that the pipe or joints will not fall out of place.

Other objects will appear in the course of the following description.

This invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a top plan view of a portion of a derrick constructed in accordance with this invention, one of the posts being shown in section and showing the pipe rack in applied position;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is an enlarged sectional view on the line 3—3 of Figure 1.

Referring to the drawing, A designates a derrick of the usual form and having the corner posts *a*. This derrick carries the usual tubing board B. In addition to this tubing board, there is mounted upon the derrick, a wooden beam designated 10 which is bolted down, this board in practice being two by eight inches. Upon this beam is mounted the iron base plate 11 and extending upward from this base plate are the ears 12 through which passes a bolt 13. Mounted upon this bolt are a plurality of rack bars, each of which is designated 14. The bolt passes through the ends of the rack bars and spacing the rack bars apart are the sleeves 15.

It will be seen that the rack bars have free swinging motion upon the bolt, the rack bars being disposed when in use in a horizontal plane and the extremity of the bars being supported by a hard wood finger 16 bolted down to the tubing board B. Each of the rack bars has a plurality of recesses 17 which extend inward on a slant and are defined by the slanting or diagonal fingers 18. The recesses 17 are designed to each contain a pipe or joint. The rack bars may be of any desired length and it will be seen from Figure 1 that one rack bar, when lowered, closes the recesses of an adjacent rack bar and thus locks the pipe within these recesses. The rack bars may have any desired length and any number of these rack bars may be used.

Preferably there will be used in connection with the outermost rack bar a safety or locking bar 19 also swingingly mounted upon the bolt 13 preferably formed of angle iron which, when lowered into a horizontal position to rest upon the finger 16, extends across the pipe recesses of the adjacent rack bar. It is to be particularly observed that the connection of the various rack bars to the bolt is a loose connection so that as the strands of pipe are allowed to fall into the rack bar, the actual weight of the pipe is carried by the tubing board and not by the device itself.

It will also be noted that after the first rack bar has been filled, then the second rack bar is let down, thus locking in place the pipe standing in the first rack bar. When the second rack bar has been filled, the third rack bar is turned down, performing the same function and when the third rack has been filled, the locking bar 19 is turned down, thus locking all the pipe in place.

The number of rack bars in the device can be varied to suit the depth of the well and the amount of drill pipe necessary to drill the well or tubing necessary to produce from it.

The changing of the rack bars is readily secured by removing the bolt 13 and adding to or subtracting from the number of rack bars thereon. The lengths of pipe 15 which act as sleeves and separate the rack bars fit loosely over the bolt and sections of it in appropriate lengths would be supplied in order to make up the device in any desired manner for a particular well. It may also be pointed out that the device is reversible in that it can be used on either side of the

plate. The tubing board and finger board are normally placed in the derrick, as illustrated in the drawing, but it sometimes becomes necessary in deep wells to stack drill pipe or tubing in more than one corner of the derrick, and thus it is obvious that a plurality of these rack arrangements may be used. It will also be understood that the size of the slots in the rack bars will be varied to accommodate different sizes of pipe.

The fingers 18 defining the slots will have to be varied in width depending upon the weight of the pipe being placed in the rack. For instance, these fingers would be one-half inch in width to accommodate three inch pipe and would be increased in width to accommodate heavier pipe.

Where this racking device is constructed of heavy materials for the purpose of racking large sizes of drill pipe, it may be necessary to provide means to lift the several rack bars or to lower them. This can be readily secured by the use of a rope and pulley attached to the side of the derrick.

It will be seen in Figure 1 that the forward edge of the tubing board B is disposed so as to intersect the slots 17 of the first or innermost rack bar 14 so that a standard pipe placed in the slots will push the innermost rack bar 14 back until the pipes supported within the slots 14 come to rest against the edge of the tubing board. This board may be as much as four feet in width and is usually constructed of two or four by twelves. Whatever portion of the weight of the pipe is exerted laterally will, of course, be borne by the bolt 13 and by the base plate 11 but since the rack bars 14 are slidable upon the bolt 13, the innermost series of pipes will bear against the tubing board B and this innermost series of pipe will support the rack bar in advance and this in turn will support the third rack bar so that all of the pipes and several bars will be practically supported by the tubing board B. This is secured by having the sleeves 15 of shorter length than the diameter of the pipes to be supported in the racks. The same result can be secured of transmitting the thrust of the vertical pipes to the tubing board B by providing the tubing board B with a member or members against which the innermost bar 14 will bear when forced rearward by the weight of the pipes.

While I have illustrated the base 11 as being mounted upon a special beam 10, I want it understood that it is also possible to bolt the base plate 11 to the side of the derrick.

It will be seen that with my device the pipe is practically locked in place by the inclined fingers 18 or any rack bar so that there is no danger of the pipe falling out before the next succeeding rack bar has been lowered.

What is claimed is:—

1. A tube rack for derricks comprising a base, a plurality of rack bars swingingly mounted on the base for movement from a vertical to a horizontal position, each rack bar being angular in cross section to provide a flange extending at right angles to the pivotal axis of the bar, and a flange extending parallel to the pivotal axis, the last named flange of each rack bar having a plurality of relatively deep recesses adapted to receive a plurality of standing pipes, and a locking bar swingingly mounted upon the base and when turned to a horizontal position closing the recesses of the last rack of the series.

2. A racking device for pipes comprising a base adapted to be mounted upon a derrick and having a longitudinally extending bolt carrying a removable nut at one end, a plurality of rack bars swingingly mounted on the bolt for movement from a vertical to a horizontal position, each rack bar being angular in cross section to provide a flange at right angles to the bolt, and a flange parallel to the bolt, the last named flange having a plurality of relatively deep recesses adapted to receive a plurality of standing pipes, a locking bar swingingly mounted upon said base and when turned to a horizontal position closing the recesses of the last rack bar of the series, sleeves loosely embracing the bolt and disposed between the first named flanges of the rack bars, and a sleeve disposed between one end of the bolt and the locking bar, the sleeves being removable whereby to permit the addition of other rack bars upon the bolt and the spacing of these rack bars from each other, and to permit the temporary removal of the locking bar and the disposition of other rack bars upon said bolt behind the locking bar.

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