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SAFETY PIPE RACK

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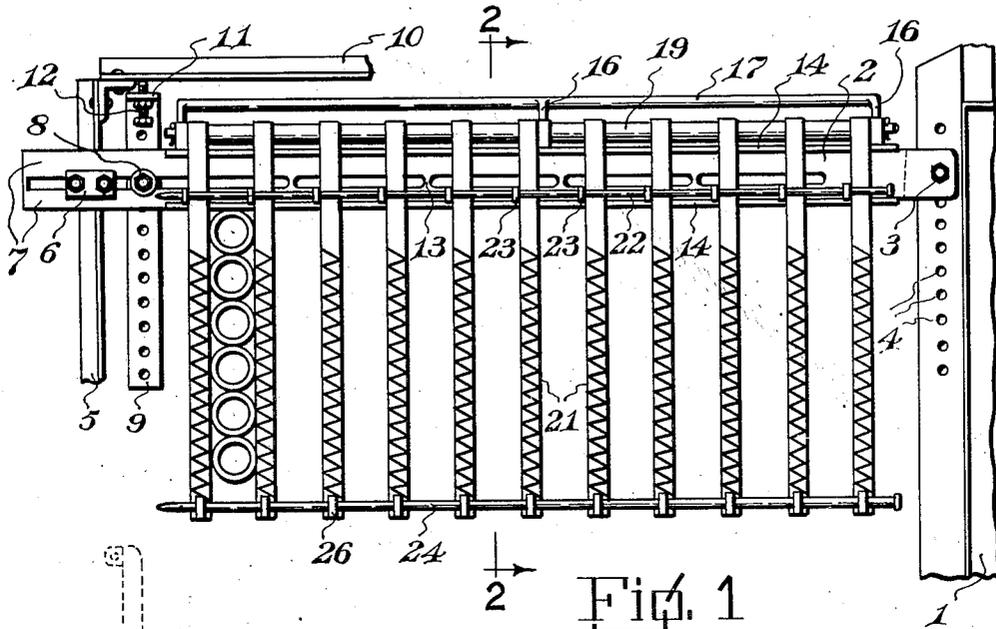


Fig. 1

Fig. 2

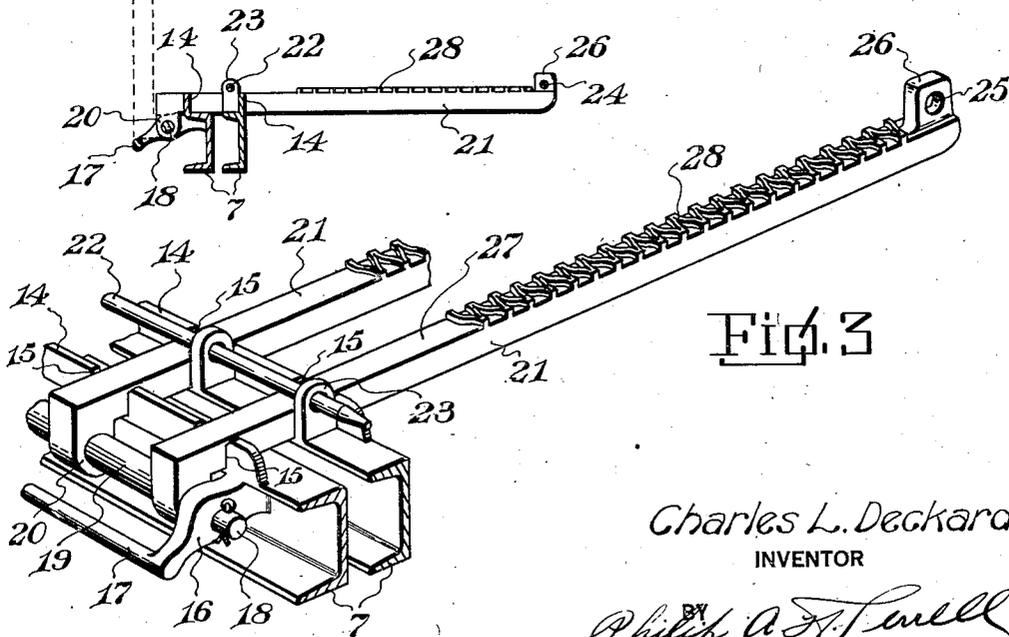


Fig. 3

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SAFETY PIPE RACK

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5 Claims. (Cl. 211-60)

The invention relates to safety pipe racks for oil well derricks, and has for its object to provide a device of this kind comprising a finger frame having a brace cooperating with a portion of the derrick structure for bracing the rack as a whole against the weight of tubing therein.

A further object is to form the frame from two sections having recesses in the upper side of each section and into which the rack fingers swing and are side braced when in horizontal operative position.

A further object is to provide the upper side of the frame with apertured lugs forming the notches or adjacent the notches for the reception of a locking bar for overlying the upper sides of the fingers and holding said fingers in operative position for the reception of pipe sections, and also preventing accidental upward hinging of the fingers.

A further object is to provide the outer ends of the fingers with upwardly extending apertured lugs for the reception of a safety bar for holding the pipe sections between the fingers after they have been properly positioned.

The lugs also form means for preventing the foot of the operator from slipping off the ends of the fingers during a pipe racking operation.

A further object is to form the fingers rectangular shaped in cross section and to provide the upper sides thereof with non-skid treads.

A further object is to form the frame from spaced channels connected together, and to provide the inner ends of the fingers with downwardly extending lugs hingedly mounted on a hinge pin to the outer side of the outer channel. Also to provide a bumper bar to the outer side of the frame and adapted to limit the outward hinging movement of the fingers when raised to inoperative positions.

A further object is to provide the upper sides of the frame channels with notched flanges in the notches of which the fingers are received when the fingers are hinged downwardly for pipe racking purposes.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a top plan view of the pipe rack

showing the same attached to a tubing board and to the derrick.

Figure 2 is a vertical transverse sectional view through the pipe rack.

Figure 3 is a detail perspective view of a portion of the pipe rack.

Referring to the drawing, the numeral 1 designates a tubing board to which one end of the rack frame 2 is attached and clamped at 3 in one of a plurality of apertures 4. The other end of the frame is attached to one of the derrick girders 5 by means of a girder clamp 6, preferably a U-bolt extending between the spaced channel members 7 forming the frame. Clamped to the under side of the frame 2 by means of a bolt 8 is an apertured brace 9 which may be adjusted inwardly and outwardly in relation to the girder 10 for bracing the frame against the weight of the inclined pipe sections. The brace 9 is provided with an upturned arm 11, through which is threaded an adjusting screw 12 which engages the brace 10, clearly shown in Figure 1.

It will be noted that the channel members 7 are in spaced relation; however, they are connected together by webs 13 at spaced points to form a rigid structure. Extending upwardly from the outer sides of the upper sides of the channels 7 are flanges 14 having aligned notches 15 therein, and extending rearwardly from one of the channels 7 are spaced arms 16, connected together by a bumper bar 17. Extending through apertures of the arms 16 is a hinge pin 18, on which are pivotally mounted, between spacer sleeves 19, the downwardly extending arms 20 forming the hinge of the rack fingers 21. The rack fingers are received within the notches 15 when they are moved to lowered or horizontal positions as shown in Figures 2 and 3.

When the fingers 21 are raised to inoperative positions as shown in dotted lines in Figure 2, they will pass beyond the center of gravity and will be limited in their movement by the bumper bar, and incident to their position will remain in a vertical position until hinged downwardly for use.

After the fingers 21 have been moved to horizontal positions for a pipe racking operation a locking bar 22 is passed through the apertures of apertured lugs 23 in a position above the fingers, hence it will be seen there is no danger of upward hinging of the fingers during a pipe handling operation. The pipe sections are stacked with their upper ends between the fingers 21 and after which the safety bar 24 is passed through the apertures 25 of the upwardly extending toe

guard lugs 26 carried by the outer ends of the fingers, therefore it will be seen that the pipe sections will be positively held between the fingers after the racking operation. It will also be seen that when the operator is walking over the fingers during the pipe racking and handling operation, should his foot slip it will engage the toe guard lugs and prevent falling. By forming the fingers square in cross section a relatively wide upper surface is provided for the operator's foot and to further insure against slipping said upper surface 27 may be provided with a non-skid surface 28, which may be formed in any manner desired.

From the above it will be seen that a pipe rack is provided for derricks, which is simple in construction, thoroughly braced relative to the derrick structure and one having a frame formed from channels thereby increasing its strength, and at the same time providing means for supporting spaced notched channels, the walls of which engage opposite sides of the fingers and brace the same against side strain thereon.

The invention having been set forth what is claimed as new and useful is:

1. A pipe rack adapted to be disposed within a derrick structure, said rack comprising a frame, anchoring means between the ends of the frame and the derrick structure, an inwardly and outwardly adjustable safety brace carried by said frame and cooperating with a portion of the derrick for bracing the frame against the weight of pipe in the rack, said brace comprising a bar connected to the frame and extending across the frame angularly and engaging a portion of the derrick structure.

2. A device as set forth in claim 1 wherein the brace includes an adjusting bolt carried by said brace and cooperating with a portion of the derrick structure.

3. A derrick pipe rack comprising a frame, means for anchoring said frame within a derrick, a finger hinge pin carried by the frame to the rear thereof, a plurality of fingers hingedly mounted on said pin, the upper side of said frame having notches for the reception of the fingers when in horizontal position, means for positively holding said fingers in said notches said hinged pin being disposed below the upper surface of the frame, downwardly extending arms carried by the fingers and forming the hinged connection to the hinge pin and means cooperating with the hinged ends of the fingers for limiting the same when raised to a vertical position.

4. A derrick pipe rack comprising a frame formed from spaced channels connected together, upwardly extending notched flanges carried by the upper sides of said channels, a plurality of fingers pivotally connected to one of said channels and adapted to be received within the notches of the flanges when moved to horizontal positions, and means for holding said fingers in said notches.

5. A derrick pipe rack comprising a frame, means for anchoring said frame within a derrick, a finger hinge pin carried by the frame to the rear thereof, a plurality of fingers hingedly mounted on said pin, the upper side of said frame having notches for the reception of the fingers when in a horizontal position, means for positively holding said fingers in said notches and a bumper bar carried by the frame and positioned to be engaged by the hinged ends of the fingers, for limiting the upward movement of the fingers and maintaining the same substantially vertical when moved to inoperative position.

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