Dec. 19, 1950 A. P. ROBISHAW 2,534,682

ADJUSTABLE PIPE RACK

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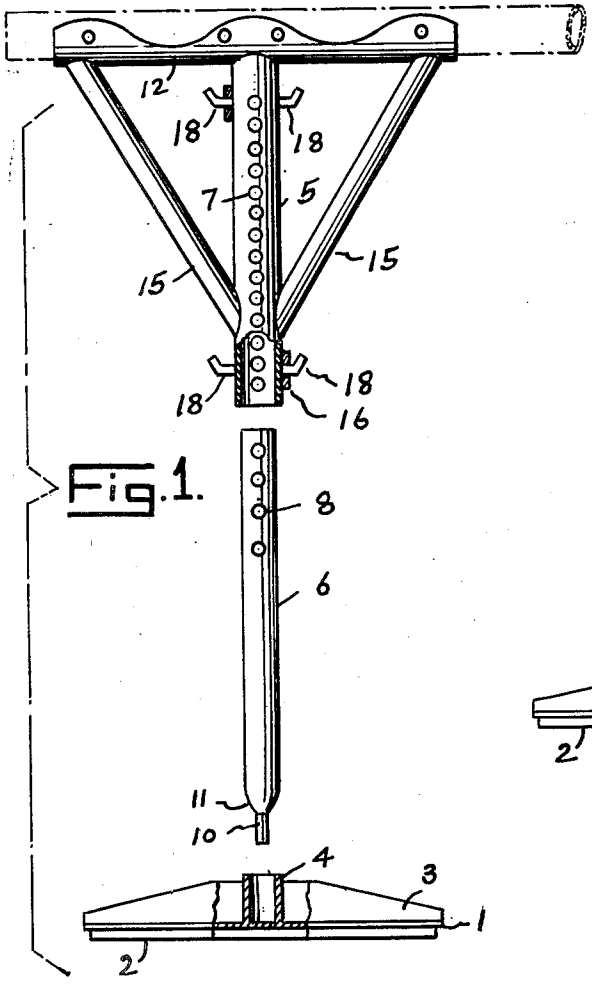


Fig. 1.

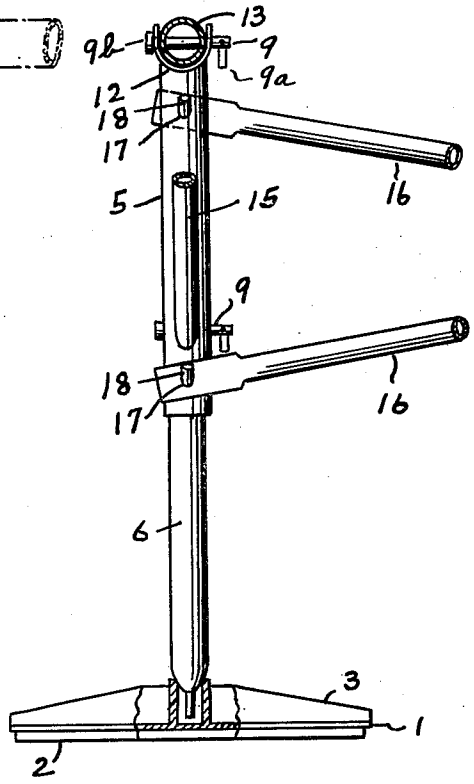


Fig. 3.

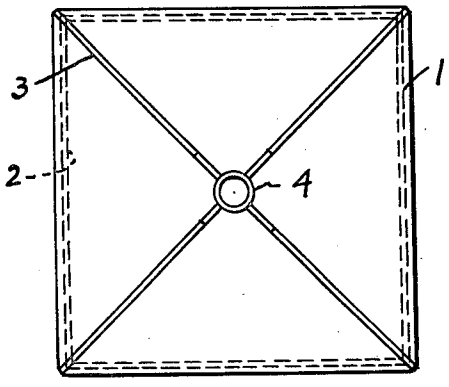


Fig. 2.

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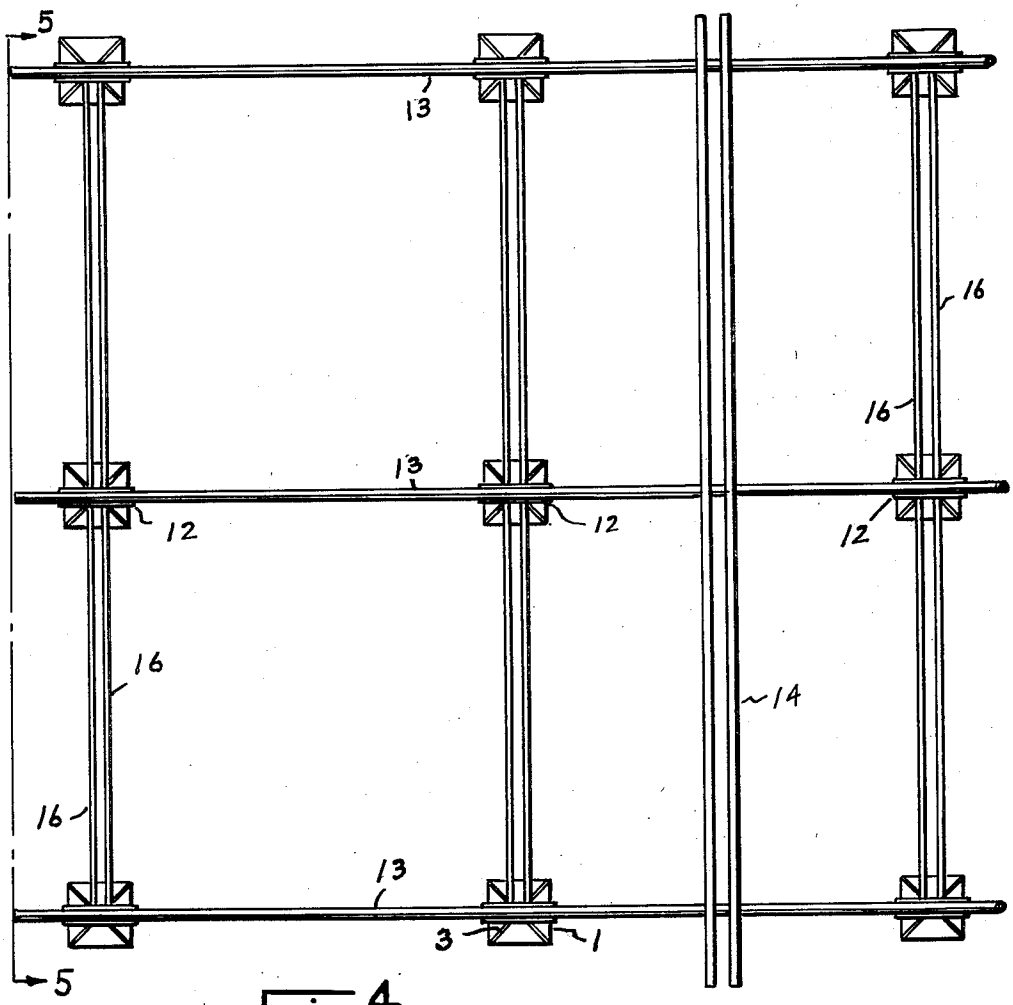


Fig. 4.

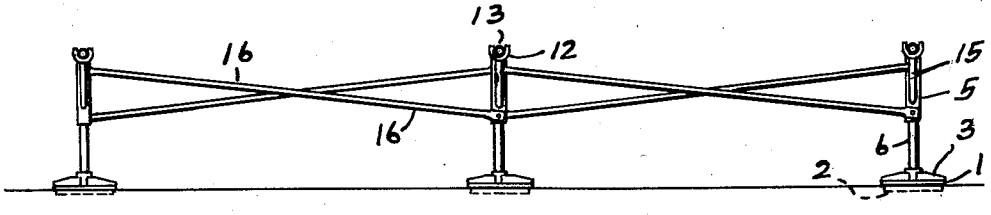


Fig. 5.

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ADJUSTABLE PIPE RACK

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3 Claims. (Cl. 211—182)

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This invention relates to an adjustable pipe rack.

An object of the present invention is to provide a rack of the character described, specially designed for use in racking pipe or other similar long objects.

Another object of the present invention is to provide an adjustable pipe rack specially designed for use in oil fields or other locations where the ground surface is irregular, said rack being adjustable so that the supporting sills may be brought to horizontal position irrespective of the irregularity of the ground surface underneath.

It is another object of the present invention to provide a rack of the character described which is very flexible so that the supporting sills may be brought into alignment in horizontal position and the supporting columns and column bases will adjust themselves relative to each other and to the ground surface so as to maintain the sills in horizontal position.

A further object of the present invention is to provide an adjustable pipe rack of the character described whose parts may be quickly and easily assembled together to form a supporting structure and which may be readily dismantled for storage or transportation.

With the above and other objects in view the invention has particular relation to certain novel features of construction, arrangement of parts and use, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:

Figure 1 is a side view of the supporting column and base plate in position to be assembled and shown partly in section.

Figure 2 is a plan view of the base plate.

Figure 3 is a side elevation of the supporting column and base plate taken at right angles to the view shown in Figure 1.

Figure 4 is a plan view of the assembled rack; and

Figure 5 is an end view thereof.

Referring now more particularly to the drawings wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates the base plate which is, preferably, rectangular in form. It may have a depending flange 2 secured to the underside thereof and extending around the base plate for better engagement with the ground surface to prevent slippage and constituting ground engaging means.

The base plate may be provided with the radial upstanding flanges 3 for adding rigidity to the

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plate. The flanges 2 and 3 are preferably welded to the plate 1 and the flanges 3 radiate from a central upstanding tubular nipple 4.

Upstanding from the respective base plate are vertically adjustable columns or upright supports. These columns are preferably formed of upper sections 5 and lower sections 6 which are, preferably, telescoped together and which may be secured at any selected point of adjustment.

As shown, each upper section 5 is provided with oppositely disposed rows of perforations 7, the perforations of these respective rows being relatively close together and aligning transversely with the perforations of the opposite row. The upper end of the lower section 6 of each column is provided with transverse perforations 8 which may, if desired, be spaced further apart than the perforations 7 for close adjustments. The upper and lower sections 5 and 6 may be secured in telescopic relation by means of a cross pin 9 fitted through aligned perforations 7 and 8, as illustrated in Figure 3.

The lower end of the section 6 of each column or upright is reduced in diameter forming a reduced downward extension or pin 10 and above said extension said section 6 is formed with a convex face 11 therearound formed of near semi-spherical shape to provide a bearing surface of a ball and socket type joint. In the erection of the rack a column may be seated on the upper end of a nipple 4 with the extension 10 projecting downwardly into the nipple and with the convex face 11 resting on the upper end of the nipple. The extension 10 will hold the column in approximately vertical position during the erection process limiting the degree of lateral universal movement of the upright relative of the base, and the face 11 will allow the column to assume a vertical position even though the base plate may be located on a slanting ground surface for the end of nipple 4 provides a socket type bearing surface for face 11.

Secured to the upper end of each column section 5, preferably by welding, there is an elongated saddle 12 which is arcuate in cross section, as shown more clearly in Figures 3 and 5.

The base plates and columns are spaced the required distance apart each way, preferably in rows with the saddles of a row in alignment. These saddles are provided to receive the supporting sills 13 which are preferably composed of heavy pipe. The sills may be secured in the saddles by cross pins, such as 9, which are passed through aligned transverse openings provided in the saddles and in the sills to receive them.

These pins may be of any selected construction. As illustrated in Figure 3, each pin 9 has a pivoted latch 9a, at one end, and an enlarged head 9b, at the other end, and in inserting the pin the latch may be brought into alignment with the pin and inserted into place and will then hang down to prevent the accidental displacement of the pin.

The base plates and columns are arranged in rows so that the sills 13 will be in substantially parallel arrangement and spaced the required distance apart. These sills form supports for the pipe, as 14, to be racked.

It is obvious that if the base plates are distributed over an area whose surface is irregular that the columns may be adjusted vertically so that the sills will be in horizontal alignment.

In order to support, and strengthen, the saddles the upper section 5 of each column is provided with the angle braces 15, 15 whose upper ends may be welded to the saddle ends and whose lower ends may be welded to the corresponding section 5 near its lower end.

There are the transverse cross braces 16 designed to tie respective columns together and to strengthen the entire structure. These cross braces may, if desired, be formed of pipe with their ends flattened and provided with openings, as 17.

At the upper and lower ends of the section 5 of each column are the pairs of oppositely extended lugs, or hangers, 18. In the present illustration the outer ends of these lugs are upturned and the lugs are shaped to fit snugly through the opening 17 of the cross brace 16. However, other means may be provided for conveniently connecting the ends of the braces 16 to the columns.

As shown, one end of a cross brace 16 is connected, to an upper lug 18, or hanger, and, its other end is connected to the lower lug, or hanger, 18 of the aligned supporting column. These cross-braces 16 are arranged in pairs, the cross braces of each pair crossing, as best shown in Figure 5.

The beams 13 will, therefore, brace the rack in one direction and the cross braces 16 will brace said rack in the other direction.

The rack is very flexible and the columns will assume an upright position irrespective of the angle of the corresponding base plate. The various parts may be easily and quickly assembled and the rack erected without the necessity of excavating or preparing the foundation and also the rack may be quickly and readily dismantled and stored either on a vehicle for transportation or an any convenient place of storage.

The drawings and description disclose what is now considered to be a preferred form of the invention by way of illustration only while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. In a knock down rack, a plurality of upright supports arranged in aligned, spaced, and crossed rows, saddles at the top of the supports, sills supported by the saddles in parallel relation to each other, truss members extending transversely of the sills between adjacent uprights, a broad base at the foot of each upright releasably supporting it, the engagement between the uprights and bases each including a nipple secured to one and a near semi-spherical face formed on the other and engaging the open end of the nipple, a pin extending from the face into the nipple engageable with the nipple to limit relative universal movement of the uprights relative to the bases, each base being broad to provide a substantial bearing area to engage a supporting surface, the truss members being such as to serve both as tension and compression members, being two in number and crossed between each adjacent pair of uprights, and releasably secured to the uprights by lugs extending radially from the uprights, openings in the truss members adjacent thein ends receiving the elements, and upstanding end portions on said lugs retaining the truss members against lateral movement.

2. The knock down rack of claim 1 wherein the bases have downturned ground gripping means.

3. The knock down rack of claim 1 wherein each upright is formed of two telescoping parts facilitating adjustment as to length and the truss members are secured to the uppermost one of the parts of each upright.

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