March 8, 1949. H. J. WOOLSLAYER ET AL 2,464,109

PIPE RACK

Filed July 31, 1945 2 Sheets-Sheet 1

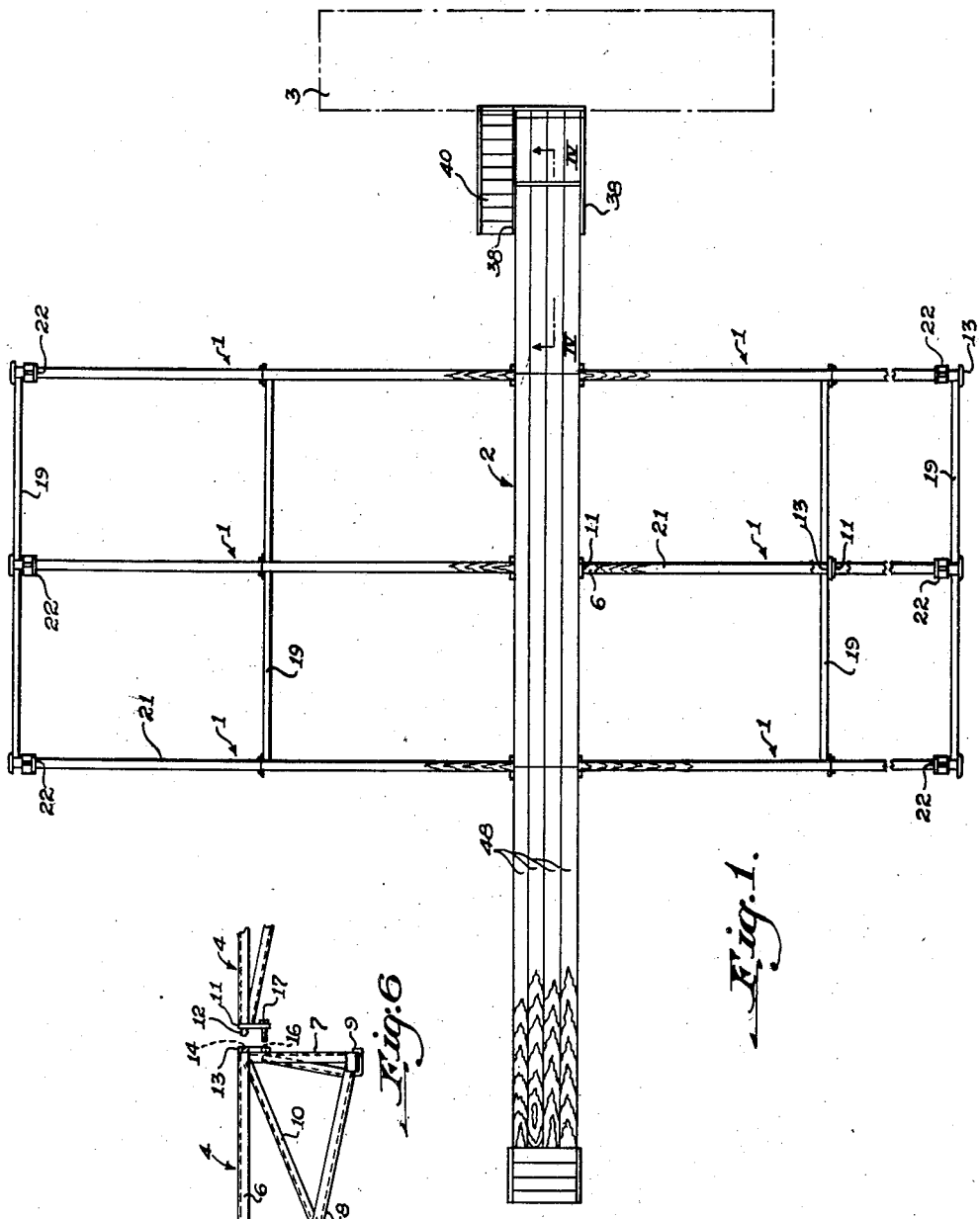


Fig. 1.

Fig. 6

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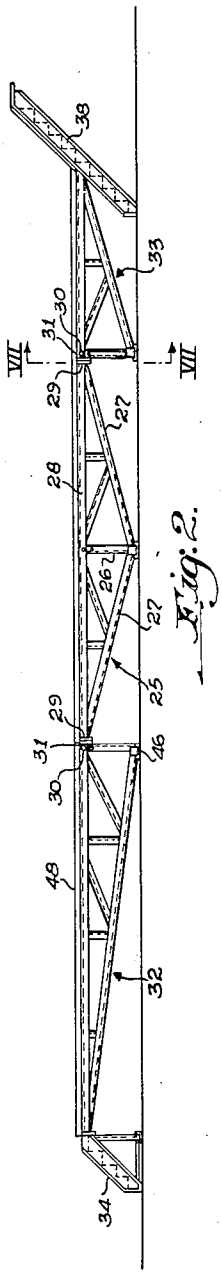


Fig. 2.

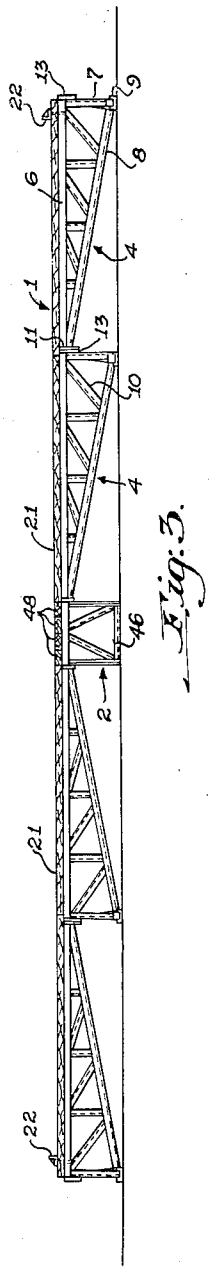


Fig. 3.

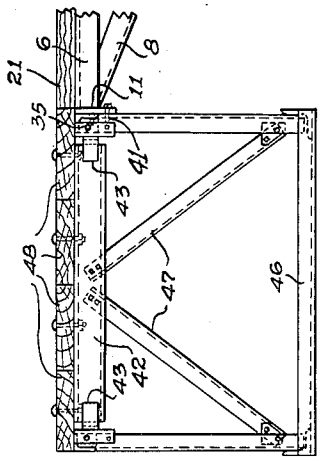


Fig. 7.

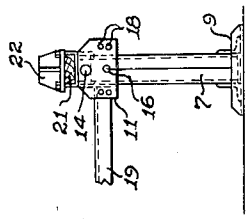


Fig. 5.

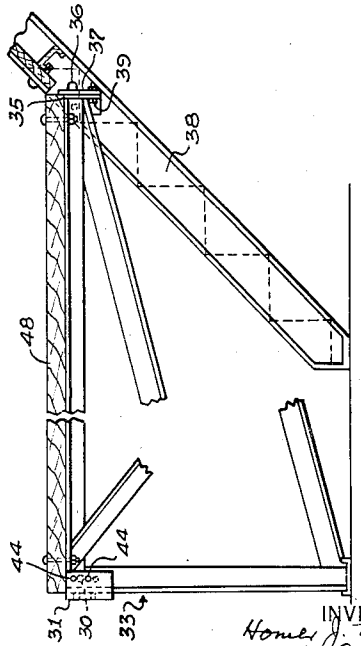


Fig. 4.

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UNITED STATES PATENT OFFICE

2,464,109

PIPE RACK

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2 Claims. (Cl. 211—1)

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This invention relates to racks on which pipes are piled beside oil well derricks.

It is customary practice to build skeleton platforms or racks on the ground beside oil well derricks. These racks, which are only a few feet high, support the pipes that are to be used in the well drilling operations. Generally, there is a walk extending across the rack to the base of the derrick. When a pipe is needed in the derrick, it is rolled along the rack to the walk and then dragged lengthwise toward the derrick floor, which may be connected to the walk by means of a ramp. Heretofore, it has been the practice to fabricate these racks entirely in the field, thereby requiring the handling of many parts and the consumption of a considerable amount of time. Considerable time and effort also are required to level the feet of the rack so that undue stresses will not be placed on some parts of it.

It is among the objects of this invention to provide a pipe rack which can be quickly constructed in any desired size from a relatively few interchangeable prefabricated units, which is easily dismantled for transportation to a new location, which is exceptionally strong, and which is easy to level up.

In accordance with this invention each of a plurality of spaced parallel pipe-supporting beams, resting on the ground, is formed from a plurality of prefabricated truss members disposed end to end and detachably connected together. These truss members are triangular in shape and preferably interchangeable. By connecting more or less of them together, the beams can be made any desired length. Cross members are detachably connected to adjacent beams to tie them together in the desired spaced relation and to stabilize the rack. Each truss is in contact with the ground at only one point. Preferably, adjoining ends of the truss members are provided with cooperating dowel pins and sockets, and with means for bolting them together. It is preferred to divide each beam into two parts the adjacent ends of which are detachably connected to the opposite sides of a walkway extending across the rack. The walkway likewise is formed from prefabricated truss members detachably connected together and to the beams in the same way as the trusses of the beams.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which Fig. 1 is a plan view of our rack connected to the floor of a derrick; Fig. 2 is a side view of the walkway; Fig. 3 is a side view of the pipe-supporting beams; Fig. 4 is an enlarged

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fragmentary vertical section of the walkway taken on the line IV—IV of Fig. 1; Fig. 5 is an outer end view of one of the pipe-supporting beams; Fig. 6 is a fragmentary side view of two truss members about to be connected together; and Fig. 7 is an enlarged vertical section through the walkway taken on the line VII—VII of Fig. 2.

Referring to Fig. 1 of the drawings, two groups of spaced parallel pipe-supporting beams 1 rest on the ground on opposite sides of a walkway 2 that leads to the floor 3 of an oil well derrick. As shown in Fig. 3, each of these beams is formed from a plurality of prefabricated truss members 4 that are disposed end to end, although for a very short beam only one truss could be used. The top of each truss member is a channel 6 to one end of which a vertical leg 7 is connected. A diagonal bracing member 8 connects the opposite end of the channel to the lower end of the leg. A shoe 9 may be mounted on the lower end of the leg to distribute the load over the ground and to provide a stable support for the truss. The horizontal channel and the diagonal brace are connected by intermediate braces 10.

Mounted on the pointed end of each truss is a vertical plate 11 from the upper end of which a stud or dowel pin 12 projects, as shown in Fig. 6. Below the pin there is a bolt hole through the plate. The opposite end of each truss likewise is provided with a vertical plate 13 which projects laterally from both sides of the truss. The upper part of this plate is provided with a socket or opening 14 for receiving the pin on the adjoining truss, while the lower part is provided with a bolt hole 16 registering with the hole in the adjoining plate 11. When the pin is inserted in opening 14 it aligns the two trusses, while a bolt 17 through the bolt holes fastens the two plates together so that the trusses can not come apart. The pin takes most of the shear stresses and makes it unnecessary to use more than one bolt at each joint. As shown in Fig. 5, the laterally projecting portions of plate 13 are provided with pairs of bolt holes 18 to which are fastened the ends of horizontal cross members 19, generally angle irons, which connect the laterally spaced trusses into a rigid structure.

As each truss engages the ground at only one point, which is at its shoe 9, little difficulty is experienced in leveling the beams. By making the beam trusses all alike, they are interchangeable so that they can be connected together in any order. Timbers 21 preferably are laid on top of the beams, while stop members 22 may be

clamped to the outer ends of the beams to keep the pipes from rolling off.

The walkway 2, which also serves as a skidway for pipes, extends outwardly far enough beyond the outer beams 1 to clear the longest pipe that may be laid across the beams. The trusses 4, on opposite sides of the walk, point in opposite directions so that their elevated ends can be fastened to and be supported by the walkway. As shown in Fig. 2, the two parallel beams from which the walkway is constructed are formed in the same general manner as pipe-supporting beams 1, from triangular truss members detachably connected end to end. However, each beam of the walkway may contain a long truss 25 that extends entirely across the pipe-supporting beams. This truss has a center leg 26 from which diagonal braces 27 extend upwardly to the opposite ends of the top channel 28. Each end of the truss is provided with a plate 29 from which a dowel pin projects in the same manner as pins 12. Below the pin there is a bolt hole through the plate.

The trusses 32 and 33 at the opposite ends of this center truss point in opposite directions so that the pins on the center truss can project into openings 35 (Fig. 7) in vertical angle members 31 (Fig. 4) welded to the legs of the end trusses, and bolts 41 can fasten plates 29 to angle members 31, all as in beams 1. The inner ends of the end trusses are each provided with a pair of vertically spaced holes 36 for receiving the pin 12 and bolt 17 by which the adjacent pipe-supporting truss is connected to the walkway. The outer end of truss 32 is supported, through a pin and bolt connection similar to those just described, by a stairway 34 by which the top of the walkway is reached from the ground. As shown in Fig. 4, the outer end of truss 33 is provided with a plate 35 from which a pin 36 projects through a bracket 37 bolted to the inside of one of a pair of inclined supports 38 that extend from the ground to derrick floor 3. A bolt 39 fastens the plate and bracket together. One of these supports 38 also forms one side of a stairway 40 (Fig. 1) from the ground to the derrick floor.

As shown in Fig. 7, the two beams of the walkway are connected together at their tops by horizontal cross members 42 bolted to the beams. Thus, a right-angle bracket 43 is welded to each end of a cross member with its end face abutting the instanding leg of the adjoining angle member 31. Holes 44 (Fig. 4) through the angle member and through bracket 43 receive bolts that connect them together. The feet of the beams are connected by cross channels 46 that serve as shoes. Diagonal braces 47 are bolted to the top cross members and to the legs of the beams. These cross members and braces can be disconnected from the beams when it is desired to break the walkway down into individual trusses for shipment. The walkway is covered by planks 48 which also cover the space between the inner end of the walk and the derrick floor to form an inclined ramp.

It will be seen that with the prefabricated truss members disclosed herein, a pipe rack of any desired size can be built quickly with a minimum amount of labor and parts. Also, it can as readily be taken apart for movement to a new

location or for temporary storage. Only a few bolts are required for the entire rack. Each all welded truss is amply strong for the load it is required to support. As each truss rests on the ground at only one point, the work of providing suitable supports for the trusses is simplified. It desired, the walkway can be omitted, and the elevated ends of the beams supported by any suitable means.

According to the provisions of the patent statutes, we have explained the principle and construction of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. An oil well pipe rack comprising a plurality of spaced parallel pipe-supporting beams adapted to rest on the ground, a pair of spaced parallel beams adapted to rest on the ground and extending transversely of said pipe-supporting beams and projecting from opposite sides thereof, each of said beams being formed from a plurality of prefabricated truss members disposed end to end, means detachably connecting adjoining ends of said members in each beam together, means detachably connecting ends of said pipe-supporting beams to the sides of said transverse beams, and a floor mounted on said transverse beams to form a walk across said pipe-supporting beams.

2. An oil well pipe rack comprising a plurality of spaced parallel pipe-supporting beams adapted to rest on the ground, a pair of spaced parallel beams adapted to rest on the ground and extending transversely of said pipe-supporting beams and projecting from opposite sides thereof, each of said beams being formed from a plurality of prefabricated truss members disposed end to end, means detachably connecting adjoining ends of said members in each beam together, means detachably connecting ends of said pipe-supporting beams to the sides of said transverse beams, a floor mounted on said transverse beams to form a walk across said pipe-supporting beams, a stairway connected to one end of said floor, and a ramp extending upwardly from the opposite end of the floor.

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