Dec. 21, 1937. P. H. NASH 2,102,966

COMBINATION ROD HANGER AND TUBING RACK

Filed Feb. 12, 1935 3 Sheets-Sheet 1

FIG. 1.

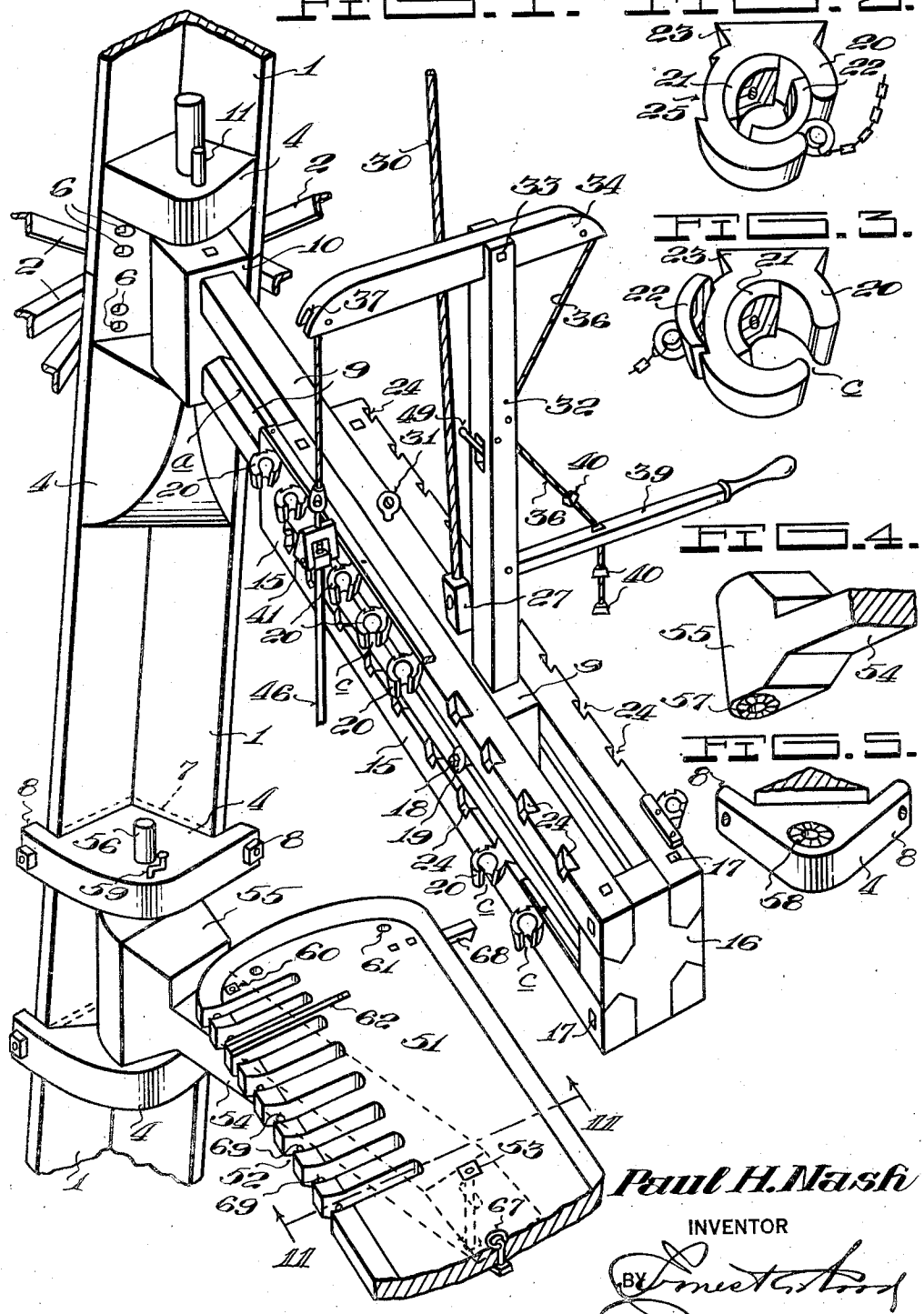


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

Paul H. Nash

INVENTOR

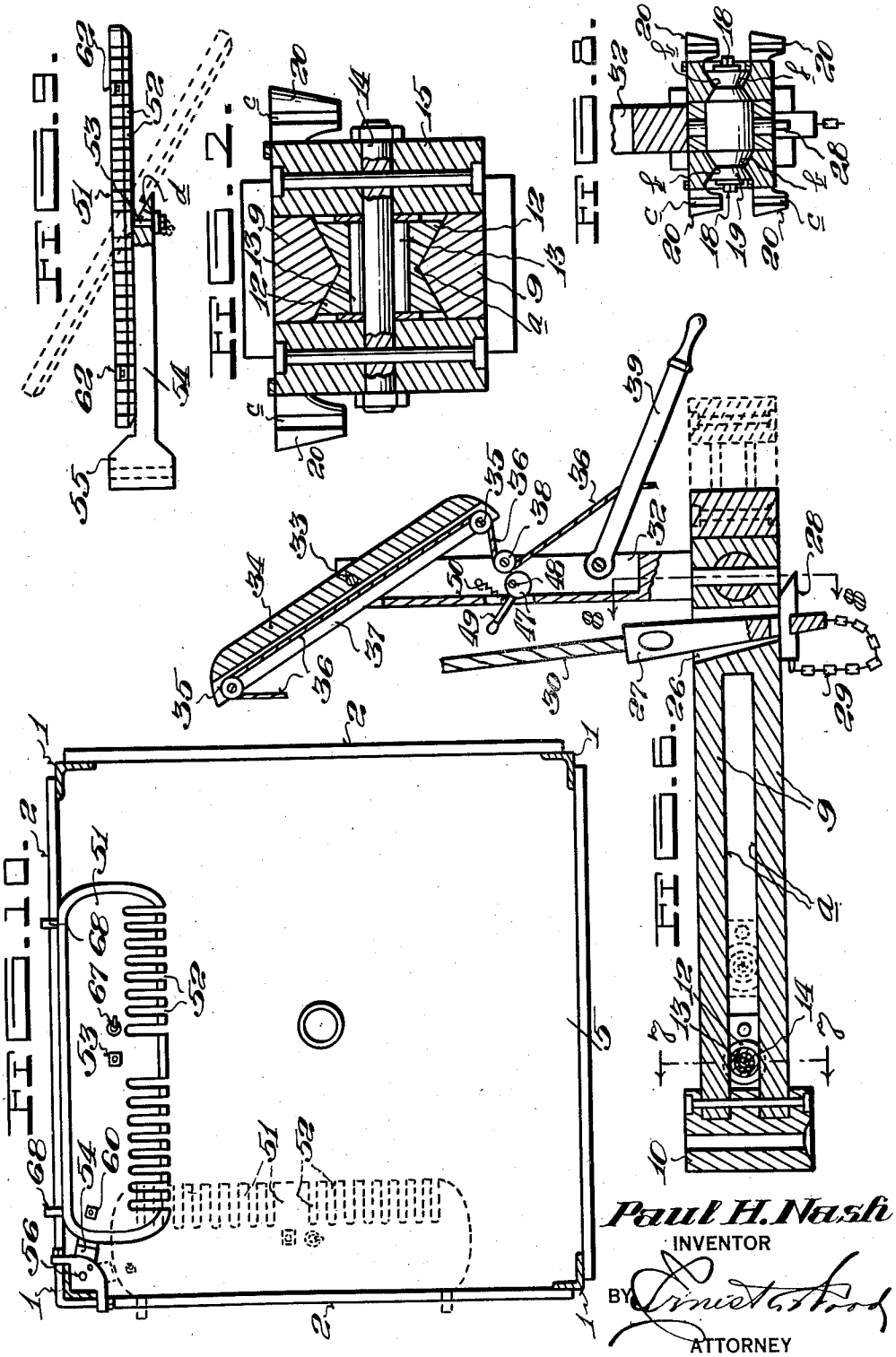
BY

ATTORNEY

Dec. 21, 1937. P. H. NASH 2,102,966

COMBINATION ROD HANGER AND TUBING RACK

Filed Feb. 12, 1935 3 Sheets-Sheet 2



Paul H. Nash
INVENTOR
BY Ernest G. Hood
ATTORNEY

Dec. 21, 1937. P. H. NASH 2,102,966

COMBINATION ROD HANGER AND TUBING RACK

Filed Feb. 12, 1935 3 Sheets-Sheet 3

FIG. 10.

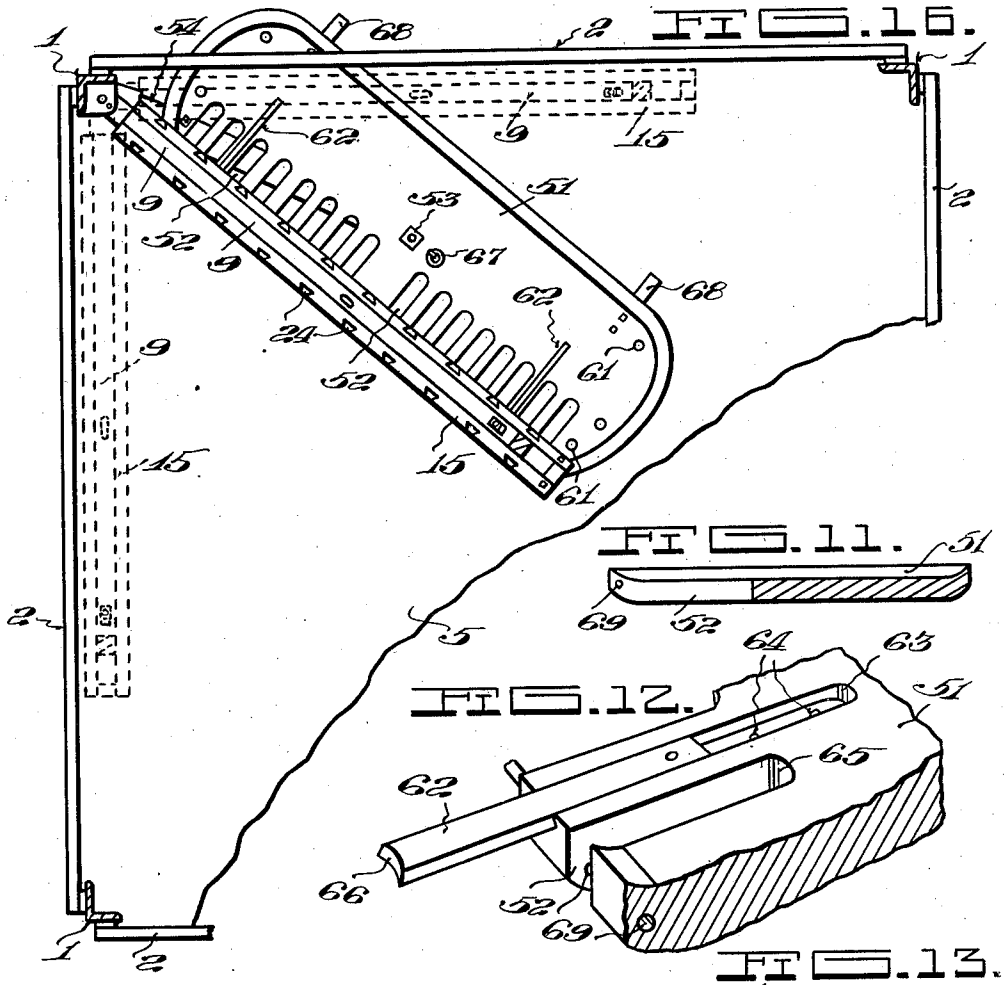


FIG. 11.

FIG. 12.

FIG. 13.

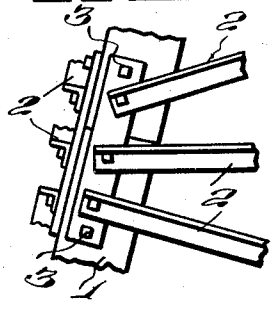
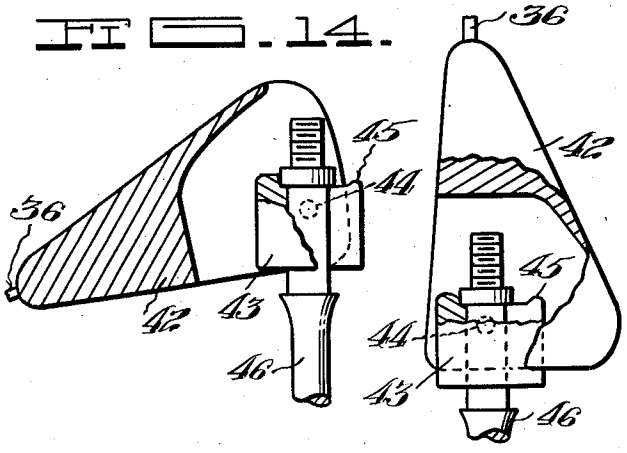


FIG. 15.

FIG. 14.



Paul H. Nash
INVENTOR

Ernest G. Hood
ATTORNEY

Patented Dec. 21, 1937 2,102,966

UNITED STATES PATENT OFFICE

2,102,966

COMBINATION ROD HANGER AND TUBING RACK

Paul H. Nash, Pampa, Tex., assignor of one-third to G. M. Walters, Pampa, Tex.

Application February 12, 1935, Serial No. 6,194

3 Claims. (Cl. 211—60)

This invention relates to well tools and equipment and it has particular reference to a combined rod hanger and tubing rack for well derricks.

The principal object of the invention is to provide an economically efficient and safe means for suspending and retaining sucker rods in the derrick whereby the disadvantages present in the customary handling of rods is overcome as well as the accidents resulting from accidental release of the rods, which frequently causes injury to workmen on the derrick floor.

Another object of the invention is to provide a rod hanger which is pivotally displaceable relative to the point of operation on the derrick floor in order that the rods, when pulled and suspended may be moved out of the way so that the operation of pulling tubing may be carried on without interference.

Another object of the invention is to provide a new and novel grappling and hoisting means which lends materially to the ease and readiness by which the rods may be brought to rest in the hanger by an attendant as well as positively preventing accidental release of the rod while the same is being placed in the hanger.

Another object of the invention is to provide in combination with the rod hanger, a platform serving as a tubing rack and which platform is adjustable relative to the rod hanger as well as other points of operation on the derrick floor, such adjustments being advantageous as regards both the platform and the rod hanger since operations may be carried on on either side of the central point of the derrick depending upon wind and weather conditions and the like. Both the tubing rack and rod hanger may be moved out of the way of operation at any time desired and locked against accidental displacement from any position to which they may be moved.

With the foregoing objects as paramount, the invention has particular reference to its salient features of construction and arrangement of parts, which will become manifest as the description proceeds, taken in connection with the accompanying drawings, in which:—

Figure 1 is a fragmentary perspective view of a derrick rig showing the rod hanger in perspective and fragmentarily showing the tubing rack.

Figure 2 is a detail view in perspective showing one of the rod retainers adjustably receivable in the rod hanger, illustrating the removable slip in operative position.

Figure 3 is a view similar to Figure 2, showing the slip in inoperative position.

Figure 4 is a detail view in perspective, fragmentarily showing the pintle or pivotal end of the tubing rack or platform.

Figure 5 is a fragmentary view of the bracket having thereon a corrugated boss corresponding with a similar element carried by the pintle.

Figure 6 is a longitudinal view of the rod hanger in vertical cross section.

Figure 7 is a transverse section on lines 7—7 on Figure 6.

Figure 8 is a transverse section on lines 8—8 on Figure 6.

Figure 9 is a detail view of one of the adjustments provided for in the platform or tubing rack.

Figure 10 is a plan view of a derrick floor showing two of the several adjustments provided for the tubing rack relative to the center of the derrick floor.

Figure 11 is a transverse section of the tubing rack on lines 11—11 on Figure 1.

Figure 12 is a fragmentary view of the tubing rack showing the guide and stop for sections of tubing as they are mounted in the rack.

Figure 13 is a fragmentary view of the conventional method of fastening girts and braces to the derrick leg and illustrates the bolts removed to effect securement of the mountings of the invention thereto.

Figure 14 is a view of the grapple showing its position for receiving a rod.

Figure 15 shows the locked position of the grapple after having received the rod, and

Figure 16 is a fragmentary view of a derrick floor showing adjusted positions of the rod hanger.

Continuing with a more detailed description of the drawings, reference is primarily made to Figure 1 wherein 1 designates the leg of a conventional steel derrick, the braces and girts being designated by the reference character 2. First, the bolts 3 shown in Figure 13 are removed preparatory to mounting the brackets 4 which serve to support the invention at a convenient location above the derrick floor 5. It is apparent that by removing the bolts 3, the derrick is not weakened at any point while the brackets 4 are being applied. The brackets 4 correspond in shape to the angle of the leg 1 and therefore conformably fit. The upper bracket 4 is held in position by bolts 6 while the lower bracket is secured by means of a V bolt 7, the ends of which extend through apertures provided in the ears 8 as shown in Figure 5. It is apparent that the brackets 4 may be mounted at any desired position about the derrick floor and the particular leg to which the brackets are secured may be selected in accordance with adja-

cent machinery or pull lines entering the derrick. In other words, the invention may be mounted so that it will not interfere with operations on the derrick floor.

Referring particularly to the rod hanger, attention is again directed to Figure 1 in which is shown horizontally parallel members 9, the ends of which are affixed to a pintle or block 10 which is disposed in the recess position of the bracket 4 and pivotally held therein by a pin 11. The confronting edges *a* of the members 9 are beveled as shown particularly in Figure 7 and these edges conform with the annular V-shape groove in a roller 12 which is mounted on a roller bearing 13. The shaft 14 on which the bearing 13 is mounted extends through the walls of a member 15, the latter being comprised of relatively spaced parallel members embracing the members 9. The outer ends of the members comprising the member 15 are joined together by a plate 16 as shown in Figure 1 and held in fixed relationship by pins or bolts 17.

The shaft 18 is carried by the free end of the member 9 as shown in detail in Figure 8 and each end of this shaft carries a roller 19 having a V-shaped annular groove therein to conform with the beveled confronting edges *b* of the members comprising the member 15. It is apparent from the foregoing that the arrangement provides for sliding movement of the member 15 upon the member 9 and which enables its operator or attendant to properly adjust the member 15 which is the rod hanger relative to the point of operations, thereby making it convenient to properly dispose the rods in their respective retainers.

The rod retainers are constructed in the manner shown in Figures 2 and 3, each being formed of a substantially circular casting 20, each having a recess *c* breaking the continuity of the circle and they are further provided with a stationery gripping member or slip 21 and a removable slip 22. A dove-tailed projection 23 is provided on each retainer 20 to be conformably received by recesses 24 on each of the members comprising the rack 15. The retainers 20 are also provided with recesses 25 on one side, the purpose of which is shown in Figure 3, i. e. to provide means for receiving and holding the removable slip 22 in a position accessible to the operator or attendant.

The member 9, as shown in Figure 6, has an opening 26 therein to receive a wedge shaped pin 27, the pin being held in the opening by a key 28 connected to the end of the pin by a chain 29 to prevent loss thereof. A supporting cable 30 is connected to the pin 27 and extends to the top of the derrick or to some suitable point in the derrick to carry the weight of the rod hanger and its load of rods. An eyelet 31, shown only in Figure 1 is provided, to which is connected a cable for the purpose of raising the rod hanger to a position to be mounted.

The outer end of the member 9 supports an upright 32 and pivoted to the top of this upright by means of a bolt 33 is an arm or crane 34. Referring to Figure 10, a grooved roller 35 is mounted in either end of the arm 34 and a cable 36 is passed over these rollers and lies within a groove 37 in the arm 34. The cable 36 continues over a roller 38 mounted in the upright 32 and downward through an aperture in a lever 39. A series of stops 40 are provided in spaced relationship on the cable 36 and are shaped to conform to the shape of the aperture in the lever 39 so that they will not pass through the aperture. Through this arrangement, the cable 36 may be lengthened or shortened as desired.

Suspended from the other end of the cable 36 is a grapple or elevator 41. This elevator is shown in Figures 14 and 15 in detail and is comprised of a bifurcated member 42 having mounted therein a grooved member 43, the latter being pivoted at 44. A shoulder 45 is provided on the wings of the member 43, for a purpose to be explained later. Normally, the elevator is in the position shown in Figure 15 and when it is desired to engage a rod 46, the body 42 is pivoted to the position shown in Figure 14, in which position the squared end of the sucker rod 46 may be readily inserted into the recess of the member 43, the shoulders 45 serving to prevent release of the rod and the weight of the latter will cause the body 42 to move into the upright position shown in Figure 15, in which position, the rod 46 is positively locked against escape or accidental release from the member 43. The pivotal point of the member 43 at 44 is offset relative to the connection of the cable 36 with the body 42 and this fact is a further insurance that the rod 46 will not be released from the elevator until the rod has been moved through the opening *c* of the retainer 20 and secured by the slip 22. After having been thus secured, the body 42 is manually returned to the position shown in Figure 14 and the elevator may be readily removed from the rod 46.

As the rods are elevated or withdrawn from the well to a position for reception by the elevator 41, it is desired that the cable 36 be secured against movement. A locking means for this purpose is shown in Figure 6 and is comprised of an eccentric 47 pivoted at 48. A lever 49 is provided to actuate the eccentric 47 so that it will bear against the cable 36 and urge the latter against the periphery of the roller 38 with a wedging action. The greater the pull upon the cable 36, by the weight of a rod or the like, the more secure the locking means. Downward pressure upon the lever 39 will relieve the wedging action on the cable 36 and release the eccentric 37 to the action of the spring 50. The crane may be then manipulated by the lever 39 to bring the suspended rod into proper position for reception by a selected one of the several rod retainers 20. The fact that the rod hanger is movable or longitudinally adjustable, allows the operator to change the position of the retainers 20 at will to render less burdensome the work of mounting the rods in their respective places in the hanger.

As a means for supporting the attendant or operator during the operation of pulling and suspending the rods, a platform 51 is provided and which serves also as a tubing rack. This device is comprised of a substantially rectangular member whose normally operative position is shown in dotted lines in Figure 10 and has a series of recesses 52 in one side thereof to receive sections of tubing. The member 51 is pivoted at 53 to an outwardly extending arm 54. This is shown in detail in Figure 9 as well as in Figure 1.

The arm 54 has an enlarged end or pintle 55 which is received in the recess of the lower bracket 4 and pivotally held therein by a pin 56. The pivotal relationship of the arm 54 with the bracket 4 allows the former to be moved to any position desired. As a means for locking or temporarily holding the platform 51 in adjusted position, a corrugated boss 57 is provided on the pintle 55 of the arm 54 which corresponds with

a similar boss 58 on the bracket 4 as shown in Figures 4 and 5. In addition to this temporary holding means, a screw bolt 59 enters the top portion of the lower bracket 4 and is urged against the pintle 55 of the arm 54.

It will be noted in Figure 9 that the outer end of the arm 54 is beveled at *d*. This feature allows the platform 51 to be tilted as shown in dotted lines so that it may be more readily rotated to adjusted position relative to the supporting arm 54.

While rods are being handled on one side of the point of operations, the platform 51 is shown properly adjusted in Figure 1 and secured by means of a bolt 60. Apertures 61 are provided at four corners of the platform so that the latter may be reversed in its position relative to the arm 54 should the operations be carried out on the opposite side of the point of operation. These features of adjustment are likewise important when the platform is loaded with tubing and moved aside out of the way against one side of the derrick in the manner shown in Figure 10. It is of course preferred that the platform or tubing rack lie flush against the side of the derrick as illustrated both in solid lines and in dotted lines in Figure 10, depending upon which side of the point of operation the work of loading the rack is carried out.

In Figure 12 is shown a detail fragmentary view of the platform or tubing rack 51 in order to illustrate a stop or guide 62. The guide 62 slides within a dove-tailed recess 63 and may be secured in adjusted positions by virtue of apertures 64 into register with which is moved an aperture 65 in the guide arm 62. A suitable pin or bolt inserted in the apertures will hold the arm 62 against longitudinal movement. The outer end of the arm 62 is concave at 66 so that a section of tubing may be rested thereagainst preparatory to its introduction into one of the recesses 52 provided therefor. The fact that the arm 52 is capable of extending outwardly beyond the edge of the platform 51 affords a stop to prevent a section of tubing from falling while it is being guided into a selected one of the several recesses 52.

A ring 67 is provided midway between the ends of the platform for the purpose of receiving a cable by which the platform is elevated to a point in the derrick for mounting and in addition, a pair of hooks 68 are provided on one side of the platform adapted to engage over the girt 2 of the derrick to hold the platform against release when in the inoperative position shown in Figure 10.

As a means for holding the sections of tubing within the recesses 52 of the platform 51, apertures 69 are provided therein between the recesses 52 through which a rod is passed.

Manifestly, the construction shown is capable of considerable modification and such modification as is considered within the scope and meaning of the appended claims is also considered within the spirit and intent of the invention.

What is claimed is:

1. A rod hanger including in combination with a derrick, an extensible member suspended for pivotal displacement, having rod receiving and retaining means removably mounted thereon, said extensible member comprising parallel arms swingably mounted to a leg of said derrick and whose confronting surfaces are interposed by a grooved roller engaging said surfaces, a pair of side members in which the axis of said roller is journaled and capable of longitudinal sliding movement on said parallel arms, said members each having spaced recesses for reception of said rod receiving and retaining means.

2. A rod hanger including an extensible member arranged to be removably attached to a derrick leg, said member being further arranged for pivotal movement, rod receiving and retaining means removably mounted on either side of said extensible member, said extensible member being comprised of relatively parallel arms and a pair of side members, a grooved sheave interposed between said parallel arms and having its rotative axis journaled in said side members, the latter being provided with spaced recesses to receive said rod receiving and retaining means.

3. A rod hanger including a member suspended for pivotal displacement, a second member longitudinally displaceable relative to said first member, rod receiving means carried by said second member, removable means for retaining the rods in said rod receiving means, said first member comprising parallel arms joined together at their outer ends, said second member comprising a pair of elements embracing said arms for longitudinal movement thereon, a grooved roller engaging the confronting surfaces of said arms and having its axle journaled to said elements.

PAUL H. NASH.