Mar. 6, 1923. 1,447,629

R. H. RAMSEY

MEANS FOR HANDLING WELL CASINGS

Filed Sept. 8, 1920

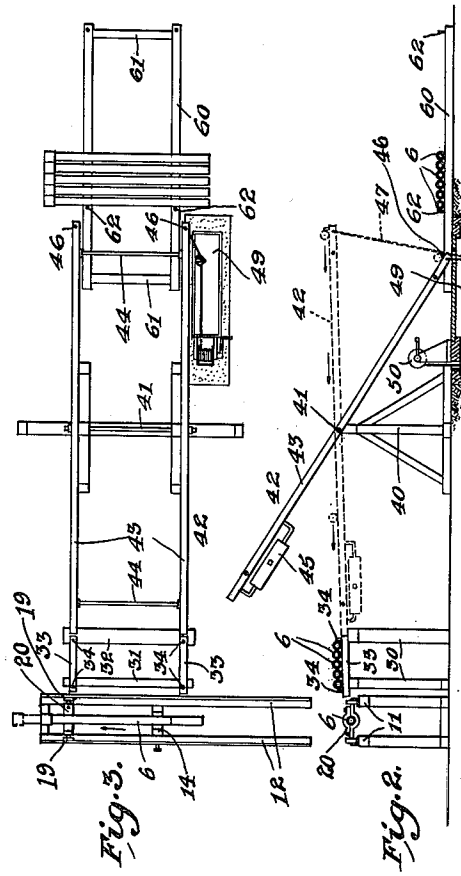


Fig. 3.

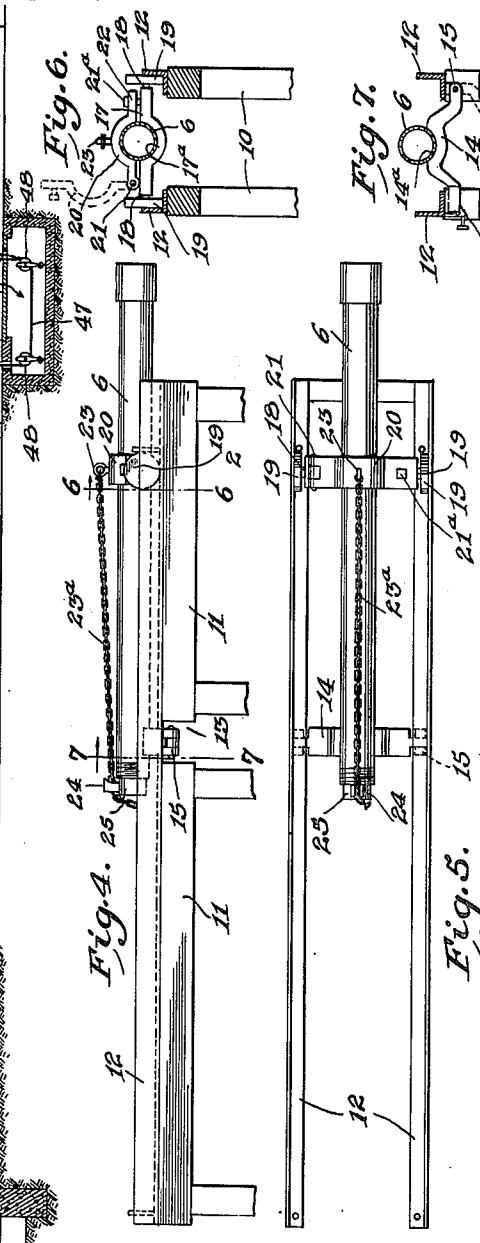


Fig. 2.

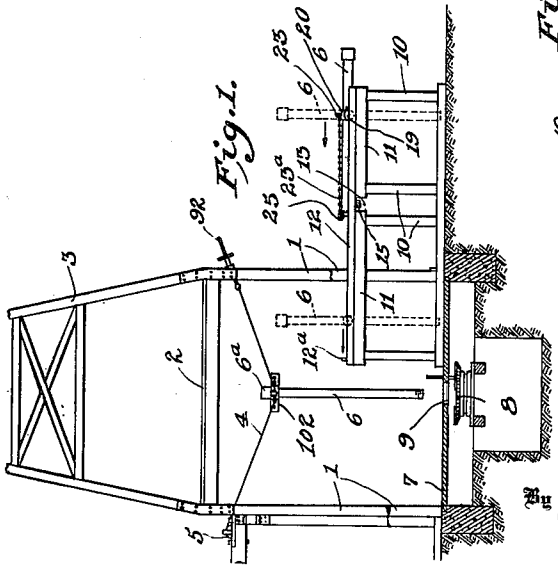


Fig. 1.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Inventor

Ralph H. Ramsey

By Mason Fenwick & Lawrence,

Attorneys

Patented Mar. 6, 1923. 1,447,629

UNITED STATES PATENT OFFICE.

RALPH H. RAMSEY, OF ARDMORE, OKLAHOMA.

MEANS FOR HANDLING WELL CASINGS.

Application filed September 8, 1920. Serial No. 408,960.

To all whom it may concern:

Be it known that I, RALPH H. RAMSEY, a citizen of the United States, residing at Ardmore, in the county of Carter and State of Oklahoma, have invented certain new and useful Improvements in Means for Handling Well Casings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates particularly to the art of handling well casing sections, delivering and suspending them in an upright position where they may be conveniently attached to the sections already in the well hole.

It consists in its entirety of the combination of a derrick and well casing hoist, with an elevated track and carrier for delivering well casing pipe in upright position to the hoist and means for moving casing pipe whereby sections of casing may be conveyed to the well, coupled and lowered into the well hole without lifting or carrying by hand onto said elevated track. It also consists in the specific sub-combinations and elements set forth in the ensuing description, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings, in which similar reference characters designate similar parts throughout the several views:

Figure 1 is an elevation of a derrick, the lower platform being in section, a part of a casing hoist, and an elevated track;

Figure 2 is an elevation of one end of an elevated track, a counting rack adjacent thereto, and a pivoted track arranged in position to deliver casing sections to said counting rack;

Figure 3 is a plan view of the parts shown in elevation in Figure 2;

Figure 4 is an enlarged elevation of the fixed elevated track showing a pipe in place on a carrier as it is delivered from the counting rack;

Figure 5 is a plan view of the parts shown in Figure 4;

Figure 6 is a cross section on the line 6—6 of Figure 4, and

Figure 7 is a cross section on the line 7—7 of Figure 4.

Numeral 1 indicates columns supporting a derrick 3. Supported at the tops of the columns 1 is a platform 2, intended to be elevated above the base of the derrick a distance of approximately thirty feet, or a distance sufficient to afford abundant room for handling a section of well casing in an upright position beneath it. A pair of cables 4, attached at one end to adjusting bolts 92 extend over the pulleys 5 to a hoisting mechanism or draw works. The bight of the cables 4 is adapted to suspend a well casing section 6 by engagement with a sustaining member 102 whereby a casing section may be lowered through the hole 9 in the platform 7 and through the center of the rotary 8, by means of which the casing section may be screwed to another section already set in the well hole, all as more fully described in my application #408961, filed September 8, 1920.

Erected on standards 10 are parallel beams 11 upon which rest two parallel rails 12, which in the embodiment illustrated consist of angle irons having their inner angles facing each other. In the embodiment illustrated there are two beams 11 on each side, the two beams on each side having ends spaced as at 13 in order that a transverse support 14 extending between the rails 12 may be accommodated. The said support 14 is pivoted at 15 within the notch 13 to the under side of a rail 12. The other or free end of the support 14 is releasably held in position against the under side of the opposite rail 12 by any suitable form of releasable connection such as the latch 16. The support 14 is shown bowed upward and having a curved groove or seat 14^a in its upper face adapted to accommodate a pipe section.

Adapted to travel on the rails 12 is a yoke-like carrier 17 having a curved seat 17^a on its upper side and trunnions 18 at its ends upon which are journaled wheels or rollers 19, the said rollers being adapted to travel on the rails 12. Forming part of the carrier 17 is a clamp member 20 hinged at 21 and adapted to have its other end 22 securely and adjustably fastened to said carrier 17, as by a screw bolt 21^a. The under side of the clamp 20 is preferably curved corresponding to the curve 17^a in the upper side of said carrier 17. Projecting from the upper side of the clamp 20, substantially central thereof, is an eye bolt or the like 23 to which is attached a chain 23^a or other flex-

ible tie. The said chain 23a is adapted to be secured between a pair of lugs 24 extending from one side of a plug 25, which, as shown, is adapted to be inserted in the end of a section of casing.

Supported on standards 30 is a counting rack comprising beams 31 and 32 extending parallel with the rails 12, and cross skids 33, extending substantially at right angles to said rails 12 and preferably elevated a slight distance above them at least high enough so that casing pipe resting on said skids 33 may roll over the wheels 19 of the carrier 17, in passing from the rack on to said carrier and support 14 between the rails 12. The skids or track sections 33 of the rack are preferably of a length to accommodate side by side five sections of well casing. Removable pins or chocks 34 are preferably provided to keep the sections of well casing from rolling when on said counting rack. The beam 32 of said counting rack is somewhat wider than the beam 31, and the skids 33 do not pass entirely across said beam, thus leaving a shelving portion or stop surface upon which the extremities of the rails of a pivoted track section may rest in alinement with said skids 33, as will be presently explained.

Pivoted on an elevated support 40 about a horizontal axis 41 between its ends is a track 42 composed of two side rails 43 spaced apart a distance equal to the spacing of the track sections or skids 33 of the counting rack. The said side rails 43 may be tied together by a pivot rod 41 and two tie rods 44. At its delivery end the track section is provided with an adjustable counterweight 45 sufficiently heavy to counterbalance the weight of a section of well casing resting on the other end of the track; and the disposition of said track is such that when its delivery end, bearing the counterweight 45 descends, it will come in contact with the stop surface on the beam 32 so that the rails 43 will come into alinement and flush with the skids 33. At the receiving end of said pivoted track are chocks or pins 46 whereby a casing pipe resting upon the receiving end of said pivoted track, when the latter is in the inclined position illustrated in full lines in Figure 2, will not roll backward off of the pivoted track as the receiving end thereof is elevated.

Connected to the receiving end of the pivoted track 42 is a chain or cable 47 which passes around pulleys 48 shown secured in a pit 49. From the pulleys 48 the cable 47 passes around a mechanical advantage device which may be a hand winch 50. By means of this winch the track section 42 may be forced into the inclined position ready to receive a section of casing pipe and when the pipe has been rolled onto the track 42 the winch may be unwound or released and the counterweight 45 permitted to elevate the receiving end carrying the casing until the track is in the position shown in dotted lines in Figure 2.

In the embodiment illustrated, the pivoted point 41 of the track 42 is at a slightly higher elevation than the surface of the counting rack in order that the casing pipe may be aided by gravity to roll into position on said counting rack.

A skid 60 consisting of two side members tied together at their ends by bars 61 is preferably placed upon the ground so that the side members thereof are in vertical planes substantially parallel with the rails 43 of the pivoted track member. A quantity of casing pipe to be used in connection with the well drilling operations will be raised above the ground on the skid 60. The pipes may be chocked on the skids by pins 62, which may be removable, if desired. By removing the pins 62 from the side adjacent the pivoted track 42 the casing sections may be readily rolled onto the lower end of said track, the chock pins 46 at that time being depressed so low with respect to the tops of the skid 60 that said pins offer no obstruction to the rolling of the pipe onto the lower end of said pivoted track.

In practice, a pile of well casing sections will be maintained upon the skid 60. One of these sections will be rolled along the skid and onto the lowered receiving end of the pivoted track 42. The receiving end of the track may then be elevated by reversing the winch 50, or releasing it, allowing the weight 45 to fall and elevate the casing section. The delivery end of the pivoted track 42 will come to rest upon the top shelf 32 with the side rails 43 substantially flush and in alinement with the skids 33 of the counting rack. The casing section will then roll gently under the influence of gravity onto the counting rack and be stopped by the inner stop pins 34. This operation may be repeated until five sections of well casing are accumulated on the counting rack. The five sections of well casing represent, when placed end to end, a length of substantially one hundred feet; hence, after five sections have been removed from the rack and assembled in the well hole, it will be understood that one hundred feet of well has been cased.

Assuming now that five sections of well casing are accumulated on the counting rack and another section is needed at the well; the inner stop pins 34 will be removed and the section nearest the track 12 will be rolled over and received by the releasable support 14 and the carrier 17. Care will be taken to have the casing pipe rest in the carrier 17 so that the distance from the carrier to the end that rests on the support 14 will be slightly greater than the distance from the

BEST AVAILABLE COPY

carrier 17 to the other end of the section. Clamp 20 will now be secured, plug 25 inserted in the end of the pipe which is adjacent the support and nearest the derrick and chain 23 secured between the lugs 24. If now the releasable support 14 is released, the casing section will swing gently into a vertical position as indicated in dotted lines in Figure 1. The section will be firmly supported by the chain 23 even though the clamp 20 is not secured tightly enough of itself to hold the section. The carriage 17 may now be pushed easily along the track 11 to a position beneath the platform 2 where a divided swivel clamp 102 sustained in the bight of the cables 4 may be properly secured to said pipe section 6 beneath the coupling 6^a on its upper end, and the pipe lifted from the track and suspended directly over the hole 9 of the platform and the center of the rotary. It may then be lowered gently to place when desired and screwed to the casing already in the well.

A suitable stop 12^a may be affixed to the ends of the rails 12, if found desirable, in order to avoid danger of the carrier 17 rolling off the end of said tracks.

The rails 12 should be elevated from the ground a distance slightly greater than one half the length of a casing section, and as a standard casing section is about twenty feet in length, the height of the rails 12 would be in practice about eleven feet. From the foregoing description it will be apparent that pipe casing may be handled with a minimum amount of labor and rapidly supplied upon call without the necessity of lifting and carrying it by hand. All of the casing for lining a well may be removed from the skid 60, conveyed to the derrick, coupled to other sections and lowered into the well, by the aid of the described apparatus with very little muscular effort.

The counting rack may serve as a convenient check or tally, to indicate the amount of casing that goes into a well. Any simple registering device may be applied to the said counting rack, if desired, so as to check up the number of hundreds of feet of casing that have been used.

Having described my invention in a manner to enable those skilled in the art to which it appertains to make and use the same, what I claim and desire to secure by Letters Patent of the United States is as follows:

1. In an apparatus of the class described, an elevated track, a releasable support on said track, and a carrier movable along said track, said carrier having pipe supporting means disposed at substantially the same height as said releasable support.

2. In an apparatus of the class described, an elevated track comprising two parallel rails spaced apart, a support releasably sustained transversely of the space between the rails, a carrier movable along the rails and bridging the space between them.

3. In an apparatus of the class described, an elevated track comprising two parallel rails spaced apart, a releasable support between the rails, a clamping carrier adapted to travel on said rails, said carrier being capable of rotating on a horizontal axis transverse of said track.

4. In an apparatus of the class described, an elevated track comprising two parallel rails spaced apart, a releasable support adapted to bridge the space between said rails, a carrier adapted to travel on said rails, said carrier comprising a member having alined trunnions journaled in wheels supported on said rails, and means for securing a load thereto.

5. In an apparatus of the class described, an elevated track comprising parallel spaced rails, a carrier adapted to travel on said rails and free to rotate on a horizontal axis transverse of said track, means for securing a load to said carrier, a flexible tie attached to said carrier, and means on the free end of said flexible tie whereby it may be connected to the load at a point remote from the carrier.

6. In an apparatus of the class described, an elevated track comprising parallel spaced rails, a carrier adapted to travel on said rails, said carrier comprising a clamp, a flexible tie connected to said carrier, and a plug having means for securing it to the flexible tie.

7. In an apparatus of the class described, a fixed elevated track comprising spaced parallel rails, a releasable support extending across the space between said rails, a carrier movable along said rails, a track pivoted horizontally on an elevated support, said pivoted track extending at an angle to said fixed track, and means to stop the descent of the delivery end of said pivoted track in position to deliver to the fixed track.

8. In an apparatus of the class described, a fixed elevated track comprising spaced parallel rails, a releasable support extended across the space between said rails, a carrier movable upon said rails, a rack parallel with and alongside said fixed elevated track, a track extending at right angles to said fixed track and rack and pivoted horizontally on an elevated support, said pivoted track being so disposed that when the delivery end thereof descends it is substantially flush with said track, and means for stopping the descent of the delivery end of said pivoted track.

9. In an apparatus of the class described, an elevated track comprising spaced parallel rails, a releasable support extending across the space between said rails, a carrier movable along said rails, a track horizontally

pivoted on an elevated support slightly higher than said rails, said pivoted track extending at an angle to said fixed track, and being so disposed that when its delivery end descends it is in position to deliver to the support and carrier on said fixed track.

10. In an apparatus of the class described, an elevated track, a pipe carrier movable thereon, a counting rack parallel with and alongside said track, a track extending at right angles to said fixed track and rack and horizontally pivoted on an elevated support, a stop device disposed so as to check the descent of one end of said pivoted track in position flush with said rack.

11. In an apparatus of the class described, an elevated track, a pipe carrier thereon, a counting rack arranged parallel with said track, a track extending substantially at right angles to said fixed track and rack and pivoted horizontally on an elevated support, a counterweight on that end of the pivoted track which is adjacent to said rack, and means to check the descent of said end in position flush with said rack.

12. In an apparatus of the class described, a well derrick, said derrick comprising supporting columns affording free lateral ingress for a standard length of casing pipe in upright position, a hoisting and lowering device on said derrick, an elevated track having its delivery end adjacent said hoisting and lowering device, a carrier movable on said track and arranged to rotate on a horizontal axis transverse of said track, a releasable support on said track, and means for elevating casing pipe onto said carrier and said support.

13. In a device of the class described, a track comprising parallel spaced rails, a carrier movable thereon comprising a yoke-like member, a wheel on each end, a clamp pivoted on one side of the center of said yoke-like member, and means to secure the other end of said clamp adjustably to said yoke.

In testimony whereof I affix my signature.

RALPH H. RAMSEY.