

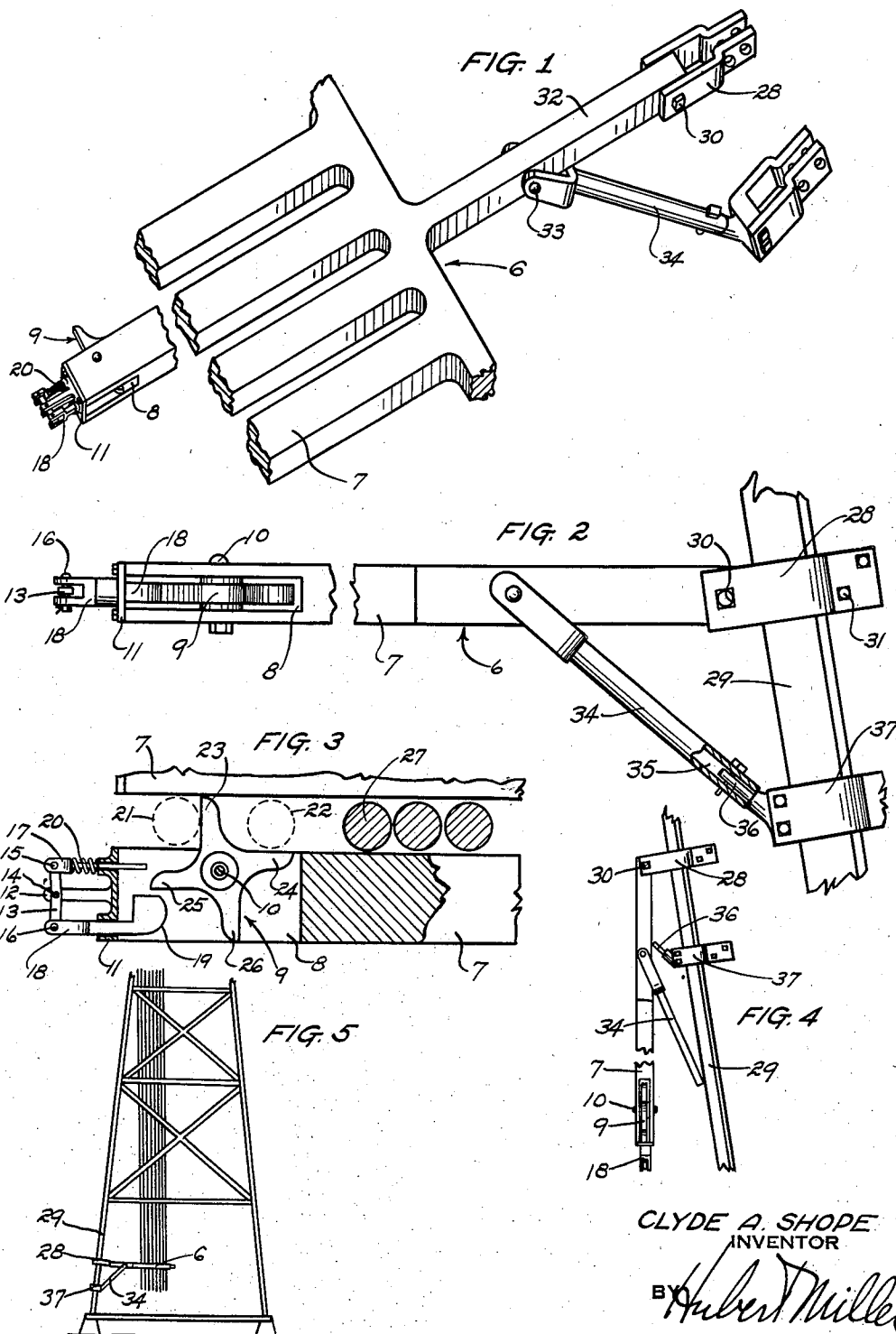
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SUCKER ROD RACK

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SUCKER ROD RACK

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2 Claims. (Cl. 211-60)

This invention relates to sucker rod handling equipment and more particularly to a sucker rod rack for racking the lower ends of a plurality of sucker rods as they are withdrawn from the well.

In recent years it has become a general practice to hang each section of the sucker rod string from a rack located in the upper part of the derrick rather than to set the various sections on end and to lean their upper ends against a part of the derrick as was previously the general practice. While the hanging of the sucker rod sections from the upper part of the derrick increases the speed with which the sucker rod string may be removed from the well, it also presents difficulty in that the hanging sucker rods are free to swing in the wind and to become entangled and entwined. In replacing a string in the well the various sections are individually lifted from above by a transfer elevator, and when the transfer elevator picks up a single section of sucker rod string and the lower end of that section is entangled with numerous other sections of sucker rod string, it is necessary for the various sections to be disentangled manually at their lower ends before the one particular section can be positioned over the well. This greatly slows the work of getting the entire string back into the well. In addition this entanglement of the lower ends of the various sections of the sucker rod string greatly slows the work of replacing broken boxes and pins.

It is the chief object of this invention, therefore, to provide a sucker rod rack for the lower ends of the hanging sections of sucker rod string so as to keep the upper and lower ends of the individual sections in substantial alinement and to prevent the entanglement of the lower ends of the various sections by preventing them from blowing freely in the wind.

It is a further object of the invention to provide such a rack for the lower ends of the various sections of the sucker rod string which will permit the free entrance of the rods into the rack but which will prevent the lower ends of the sections from slipping out of the rack.

Another object of the invention is to provide a rack for the lower end of the sections of sucker rod string which will permit the withdrawal of only one rod at a time from the rack.

The details in the construction of a preferred form of my invention, together with other objects attending its production, will be better understood from the following description when read in connection with the accompanying drawing,

which are chosen for illustrative purposes only, and in which—

Figure 1 is a perspective view of a portion of the rack showing particularly the clamps for mounting the rack on the derrick;

Figure 2 is a side elevation of the device installed on the derrick with parts in section to show the manner in which the rack is detachably braced;

Figure 3 is a horizontal section through a portion of the device and shows in detail the mechanism for handling each sucker rod as it is racked;

Figure 4 is a side elevation of that portion of the device shown in Figure 2 and shows the manner in which the device may be folded out of the way when not in use; and,

Figure 5 is a diagrammatic view showing the rack installed on a derrick with various sections of a sucker rod string in position in the rack.

Like characters of reference designate like parts in all the figures.

The invention consists preferably of a substantially T-shaped casting, which is designated as a whole by the numeral 6, and which has any desired number of outwardly projecting parallel spaced fingers 7. Near their outer ends the fingers 7 are provided with slots 8. Each of these slots 8 houses a four-toothed ratchet 9, as shown in both Figures 2 and 3. These ratchet wheels are rotatably mounted at 10 and their blades are of sufficient length to substantially span the space between the adjacent fingers 7. The extreme outer end of each of the fingers 7 carries a plate 11, which is provided with an integral outwardly extending pivot support 12, which pivots a link 13 at the point designated by the numeral 14. The opposite ends of the link 13 are pivotally connected at 15 and 16 to respective dogs 17 and 18, the intermediate portions of which pass through suitably sized openings in the plate 11 and extend into the slot 8. One side of the inner end of the dog 18 is preferably rounded as designated by the numeral 19. The other side of the inner end of the dog 18 is substantially parallel to the opposite sides of the finger 7. A spring 20 encircles that portion of the dog 18 between the plate and the pivot pin 15 and normally maintains the dog 17 at the outer end of its throw, which in turn forces the dog 18 to normally remain at the inner end of its throw. The dog 17 is of such length as to permit the ratchet wheel 9 to pivot without contacting the inner end of this dog when the dog is in its normal position. On the other hand, the dog 18 is of such length as to contact the various teeth

of the ratchet wheel 9 and to prevent the rotation of this ratchet wheel in a counter clockwise direction. The rotation of the wheel in a clockwise direction may take place when the rounded edge of one of the teeth of the ratchet 9 is moved to a position of actual contact with the rounded end 19 of the dog 18. Further movement of the ratchet simply forces the dog 18 to the outer end of its throw against the action of the spring 20 and permits that particular tooth of the ratchet to pass the dog 18. The action just described occurs when a sucker rod is moved from the position shown by the dotted lines designated by the numeral 21, to the position shown by the dotted lines, designated by the numeral 22. This movement of the sucker rod forces the tooth 23 of the ratchet 9 into the position occupied by the tooth 24 in Figure 3. When it is desired to remove one of the rods from the rack, the dog 17 is manually depressed to the inner end of its throw, which movement moves the dog 18 to the outer end of its throw and out of the path of movement of the teeth on the ratchet 9. With the dogs held in this position the tooth 25 may move toward the position occupied by the tooth 26 in Figure 3. Its movement is arrested before it actually reaches that position, however, by contact of the tooth 23 with the inner end of the dog 17, thus leaving the tooth 24 in a position which partially bridges the space between the adjacent fingers 7. In this position the finger 24 prevents the rod 27 from passing freely out of the rack. In other words only one rod has been permitted to be withdrawn from the rack. The dog 17 is now released and the dog 18 re-assumes its normal position, permitting the tooth 24 to assume the position occupied by the tooth 23 in Figure 3.

As a means of attaching the casting 6 to the derrick, I provide an ordinary clamp 28 which is clamped to any desired one of the derrick members 29 by means of bolts 31 and 31, the bolt 30 serving as a pivot pin for the end of the arm 32 of the casting 6. Intermediate its ends, the arm 32 is pivoted at 33 to a brace 34, one end of which is bifurcated as shown in Figure 1. The opposite end of the brace 34 has a bore 35 for receiving a pin 36 which is an integral part of a clamp 37, which is attached to the derrick

member 29 in a manner similar to the attachment of the clamp 28.

After the sucker rod string has been withdrawn from the well and replaced therein, and there is no longer any immediate use for this rod rack, the outer end of the rack may be manually lifted, which movement causes the brace 34 to move away from its pin 36, the casting may then be pivoted about its pivot point 30 to the position shown in Figure 4, which places the entire device in a position along the side of the derrick member 29.

While I have described and illustrated a specific embodiment of my invention, I am aware that numerous alterations may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

I claim:

1. A rack for elongated members comprising: a member which includes a plurality of spaced parallel fingers projecting outwardly from an integral base or supporting arm; a ratchet wheel pivotally carried on the outer end of each of said fingers, their teeth adapted to respectively control the passage of said elongated members into and out of the spaces between the adjacent fingers; and a pair of dogs for each ratchet wheel, one dog releasable but normally operative to prevent the rotation of its respective ratchet wheel in one direction, and the other dog normally inoperative but movable into a position to contact and limit the rotation of its said respective ratchet wheel in said one direction.

2. A rack for sections of sucker rod string or of tubing comprising: a member which includes a plurality of spaced parallel fingers projecting outwardly from an integral base or arm; a ratchet wheel pivotally mounted near the outer end of each of said fingers, the teeth of each of said wheels adapted to respectively bridge the space between its finger and one adjacent finger as the wheel is rotated; and a pair of co-acting dogs for controlling each ratchet wheel, one spring pressed for normally preventing the free rotation of its respective wheel in one direction, and the other manually depressable for releasing the spring pressed dog and for stopping the rotation of its respective wheel in the said one direction after one tooth has passed said spring pressed dog.

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