March 31, 1931. J. A. YERKES ET AL 1,798,296

SUCKER ROD ELEVATOR

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Fig. 1

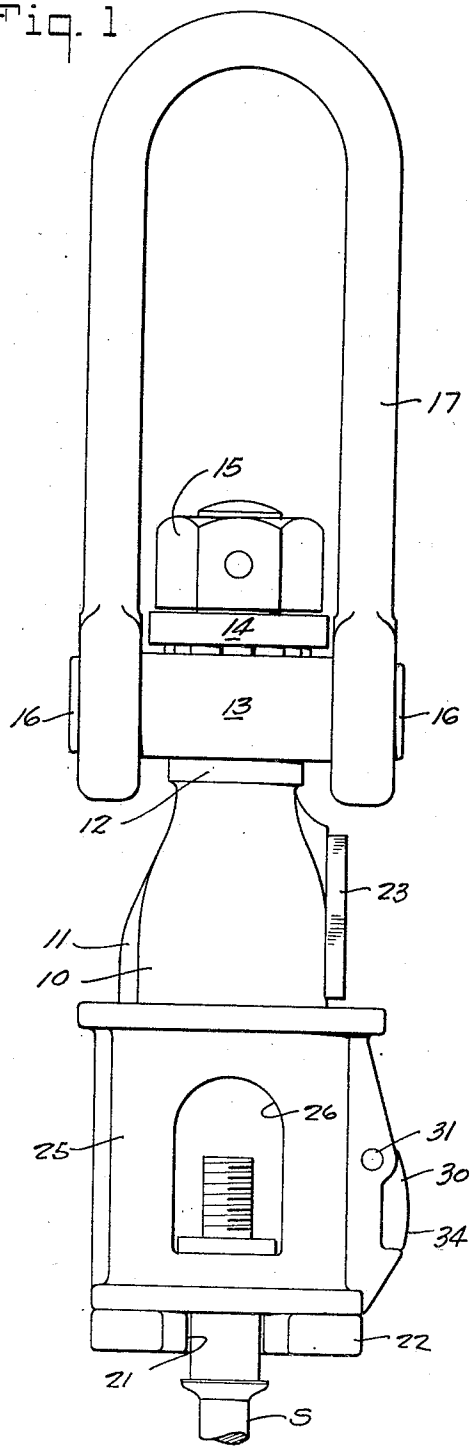


Fig. 2

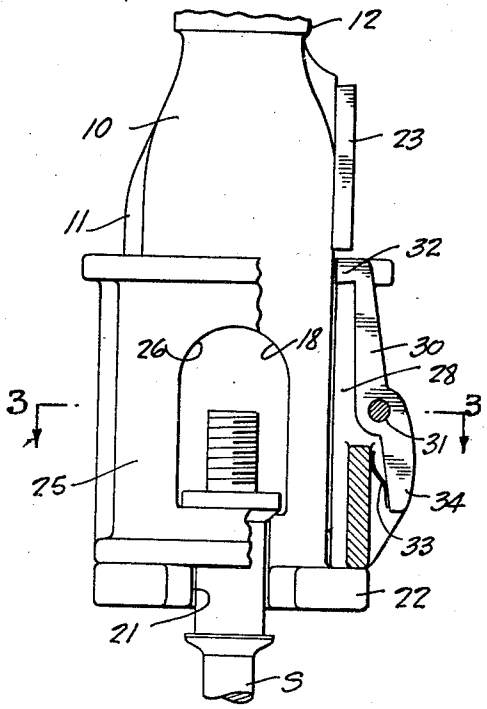
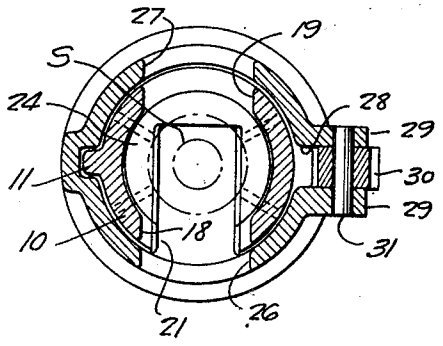


Fig. 3



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Fig. 4

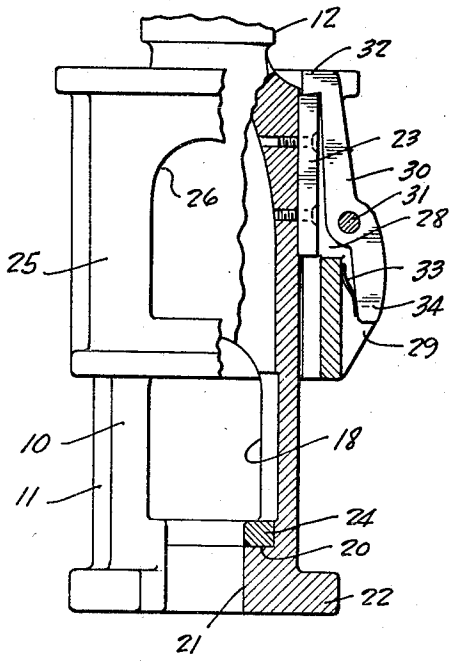


Fig. 5

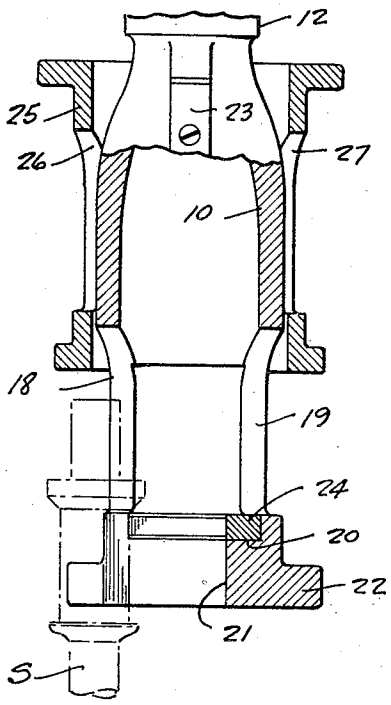
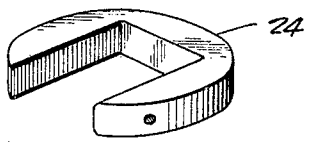


Fig. 6



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UNITED STATES PATENT OFFICE

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SUCKER-ROD ELEVATOR

Application filed February 3, 1930. Serial No. 425,572.

This invention relates to an elevator adapted to engage and support rods having outstanding collars, such as sucker rods. The use of the present invention in conjunction with rod racks or hangers as employed in oil well work will illustrate its utility. In oil wells, it is the common practice to have a derrick so arranged that stands or lengths of sucker rods may be suspended therein especially during elevation of the sucker rod string or lowering thereof. The sucker rods in current use have an end with a square serving as a wrench hold, flanges or collars laterally projecting from the rod at the ends of the square. Hangers or racks are commonly employed having slots to receive the smaller portion of the rod and arranged so that a collar will span a slot and the rods may be supported on the hanger or rack by resting on their collars. The rack is suspended by suitable means in the derrick.

Elevators for handling such rods must be so arranged as to leave the lower or inner collar free. To this end, elevators have been constructed which engage the rod at the square and above the lower collar. This permits a rod to be manipulated by means of the elevator to dispose it in the slot of a rod rack and enables it to be supported on its lower collar without interference by the elevator. It also permits a rod stored in a rack to be grabbed by the elevator and removed from the rack without requiring initial disturbance of the rod. Elevators comprising a slotted body for embracing the square on a rod and suspending the rod by its upper or outer collar have been provided for this purpose. To prevent displacement of the rod from the slot in the elevators, a gate sleeve slidable on the body has been provided. This sleeve in its lower position spans the mouth of the slots and acts as a guard to prevent the rod from passing through the mouth. In its upper position the sleeve clears the rod and permits disengagement or release. Such sleeves are commonly mounted so as to be freely slidable on the body and are therefore subject to accidental displacement from closed to open position. Furthermore, when the elevator is to be attached to a rod, the sleeve must be held in open position until the rod is inserted. This requires labor and skill on the part of the one operating the elevator.

The present invention has for its objects the provision in an elevator of the character described, of means to lock the sleeve in either open or closed position; and the provision of a renewable and reversible seat for the rod to rest upon.

These objects together with other objects and corresponding accomplishments are obtained by means of the embodiment of our invention illustrated in the accompanying drawings, in which:—

Fig. 1 is an elevational view of the sucker rod elevator with a fragment of a sucker rod shown therein with the gate shown in closed position; Fig. 2 is a fragmentary view similar to Fig. 1, parts being shown in section to better illustrate the invention; Fig. 3 is a section as seen on the line 3—3 of Fig. 2; Fig. 4 is an elevation partly in section showing the gate in open position; Fig. 5 is a view taken at right angle to Fig. 4 and showing a sucker rod in initial entering position; and Fig. 6 is a perspective view of a detachable seat.

Referring more particularly to the drawings, a hollow body is indicated by 10, the body having a cylindrical portion with a rib 11 and a neck or shank 12. Rotatably mounted upon the neck is a bearing member 13 for supporting the body, there being a thrust bearing race 14 held in position by a nut 15 threaded upon the end of the body. Bearing member 13 is provided with pintles 16 to receive the eyes of a bail 17. The elevator may be suspended by means of tackle secured to the bail. Windows 18 and 19 are provided in the body so as to provide for viewing a sucker rod which may be in position therein. Adjacent the bottom of the chamber in the body is a ledge 20 meeting a slot 21 opening through one side of the body, the slot having a width about equal to the width of the square of a sucker rod. An external flange 22 on the body serves as a stop for the gate sleeve. Detachably mounted upon the body adjacent the upper end is a keeper 23 for a

latch later described. A renewable seat 24 is mounted upon the ledge 20.

Longitudinally slidable upon the body is a gate sleeve 25. The sleeve 25 has a slot or groove to receive the rib 11 on the body and thereby to prevent rotation of the sleeve upon the body. Windows 26 and 27 in the sleeve are provided for registration with the windows 18 and 19 in the body. When the sleeve is in the lower position shown in Figs. 1 and 2, it will span the mouth of the slot 21 and form a guard or gate therefor. In the lower position, the sleeve rests upon the flange 22. In the upper position shown in Figs. 4 and 5, the sleeve permits introduction into the body of a sucker rod indicated by 5, and in Fig. 5 the sucker rod is shown at the entrance of the slot. The sleeve is slotted as indicated by 28 to accommodate a catch, there being ears 29 between which is mounted the catch 30. The catch is pivotally secured to the sleeve by a pin 31. At the upper end of the catch is a lateral projection 32 adapted to hook over the keeper as shown in Fig. 4 or under the keeper as shown in Fig. 2. A leaf spring 33 tends to press the catch into engagement position with respect to the keeper.

Referring to the drawings, Figs. 4 and 5 illustrate the elevator in position to receive a sucker rod. In this position, the sleeve is disposed with the catch 30 hooked over the keeper 23. The spring 33 holds the catch in this position. It is then easy to slip the elevator over the end of a sucker rod with the square portion in the slot 21, the inner collar below the body and the upper collar disposed so that it may rest upon the seat 24. When the parts have been disposed so that the sucker rod is entirely within the slot, the catch is pressed at its finger portion 34 so as to release it from the keeper. Thereupon, the sleeve drops to the position shown in Figs. 1 and 2, and the catch engages the under face of the keeper 23 locking it in this position. It is obvious, that the position of the sleeve cannot be changed except by operation of the latch. The latch serves to maintain the sleeve either in its open or closed position. When in open position, the elevator may be operated to grab a sucker rod, without any necessity on the part of the person manipulating it to hold the sleeve in open position.

What we claim is:—

1. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate member slidable longitudinally on said body to span the mouth of said slot, and a latch for locking said gate member and said body member in predetermined position in relation to one another.

2. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate member slidable longitudinally on said body to span a mouth of said slot, and a latch having a catch on one of said members and a keeper on the other of said members, said catch and keeper being engageable to lock said members in predetermined relation to one another.

3. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate member slidable longitudinally on said body to span a mouth of said slot, a latch having a catch on one of said members and a keeper on the other of said members, said catch and keeper being engageable in either of two positions whereby to lock said gate members either in open or closed position.

4. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate member encompassing said body member and slidable thereon to span the mouth of said slot, and a catch for locking said gate member and said body member in predetermined position in relation to one another.

5. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate member encompassing said body member and slidable thereon to span the mouth of said slot, a latch having a catch on one of said members and a keeper on the other of said members, said catch and keeper being engageable to lock said members in predetermined relation to one another.

6. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate member encompassing said body member and slidable thereon to span the mouth of said slot, a latch having a catch on one of said members and a keeper on the other of said members, said catch and keeper being engageable in either of two positions whereby to lock said gate member either in open or closed position.

7. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge forming a seat for the collar of a rod, a gate sleeve slidable on said body to span the mouth of said slot, a keeper on said body having an upper retaining ledge and a lower retaining ledge, a catch on said body having a lateral projection to either engage over said upper ledge or be disposed under said lower ledge whereby to lock said gate sleeve either in upper slot open position or lower slot closed position.

8. An elevator for rods having collars com-

prising a body member having a laterally extending slot bordered by a ledge, a detachable seat member mounted on said ledge forming a seat for the collar of the rod, a gate member slidable longitudinally on said body to span the mouth of said slot, and a latch for locking said gate member and said body member in predetermined position in relation to one another.

9. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge, a detachable seat member mounted on said ledge and forming a seat for the collar of a rod, a gate member encompassing said body member and slidable thereon to span the mouth of said slot, and a latch for locking said gate member and said body member in predetermined position in relation to one another.

10. An elevator for rods having collars comprising a body member having a laterally extending slot bordered by a ledge, a detachable seat member mounted on said ledge forming a seat for the collar of a rod, a gate sleeve slidable on said body to span the mouth of said slot, a keeper on said body having an upper retaining ledge and a lower retaining ledge, a catch on said body having a lateral projection to either engage over said upper ledge or to be disposed under said lower ledge whereby to lock said gate sleeve either in upper slot open position or lower slot closed position.

In witness that we claim the foregoing we have hereunto subscribed our names.

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JOHN G. BOUSLOG.