July 13, 1926. 1,592,706

J. D. PRIDGEN

SAFETY SUCKER ROD ELEVATOR

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Fig. 1.

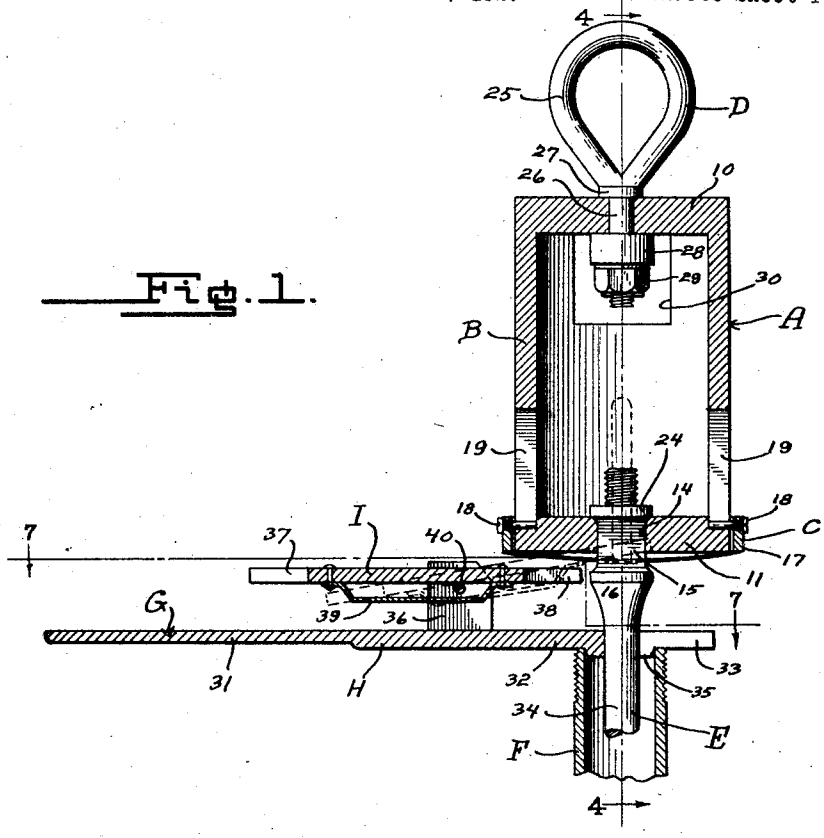


Fig. 7.

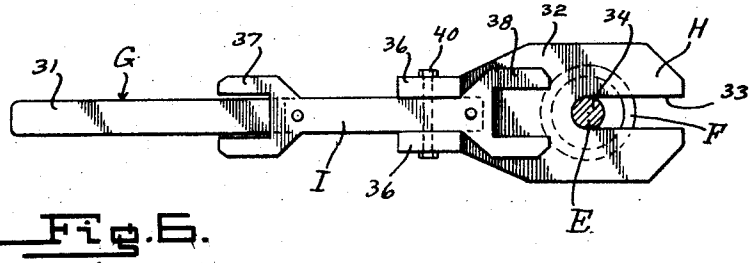
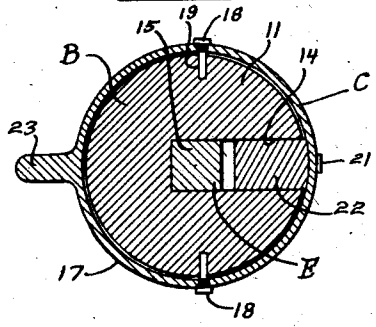


Fig. 6.



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Fig. 2.

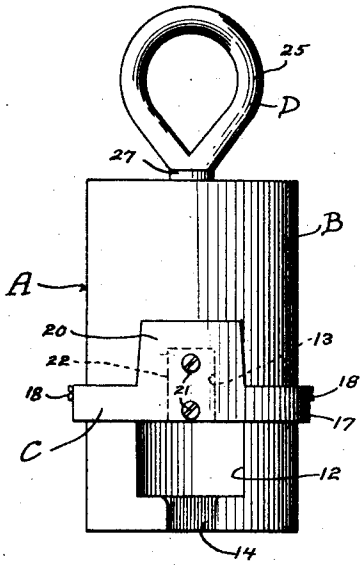


Fig. 3.

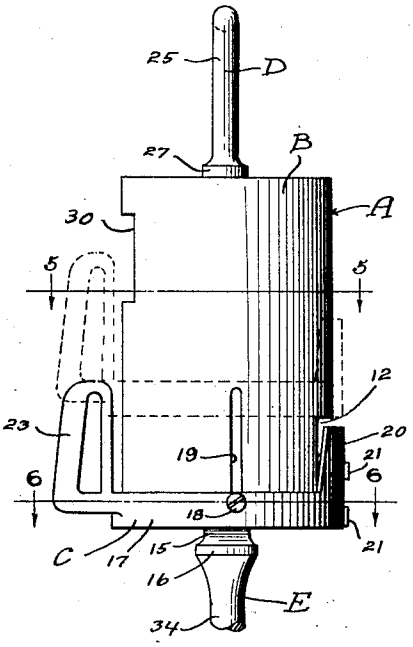


Fig. 4.

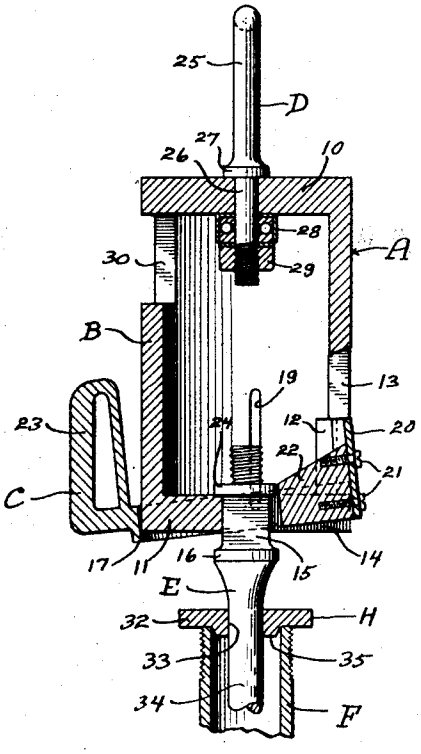
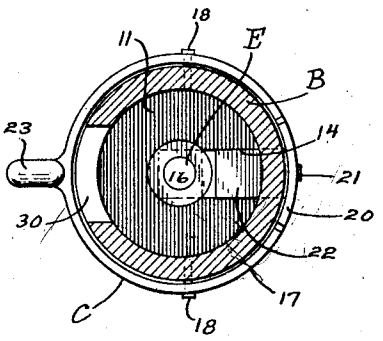


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SAFETY SUCKER ROD ELEVATOR.

Application filed February 17, 1925. Serial No. 9,851.

The present invention relates to improvements in means for pulling out and replacing sectional sucker rods.

As is the practice now in general use, a set of two elevators are employed for the purpose of pulling or replacing sucker rods in oil or water wells. In the pulling of a sucker rod by this method, first one elevator is attached to a head of one rod length, and the rod is then raised until the coupling at its lower end is free of the well casing; whereby upon attaching the other elevator to the head of the lower rod section, the elevated rod section may be unscrewed from its lower section and the process repeated; first attaching one elevator and then the other. This procedure requires much time and labor, and quite frequently the elevator becomes detached from the line or cable, resulting in considerable damage to property, and in some cases in personal injury.

It is therefore a primary object of this invention to provide an improved means for pulling and replacing sectional sucker rods, whereby merely one elevator is employed in connection with a wrench attachment for accomplishing the pulling or replacing of the rod, said wrench attachment being substituted for the second elevator.

A further object of the invention is to provide an improved elevator for sucker rods embodying novel features of construction whereby the sucker rod will be prevented from moving out of the elevator when being removed or placed in a well.

A still further object of the invention is to provide an improved elevator of the character described, wherein the locking arrangement which is automatic in its locking operation, also acts for centering the sucker rod axially beneath the point of suspension of the elevator, thereby eliminating possible canting of the elevator.

Other objects and advantages of the invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawings, forming a part of this specification, and in which drawings,

Figure 1 is a view in central vertical section, and showing the improved sucker rod elevator and wrench attachment in operative relation to a casing and sucker rod.

Figure 2 is a front elevation of the improved elevator, showing the rod retaining means in a raised position.

Figure 3 is a side elevation of the elevator, and showing the retaining means in a lowered position just prior to its being canted into a locked position.

Figure 4 is a central vertical section on line 4—4 of Figure 1, looking in the direction of the arrows, and showing the retaining means in a lowered operative position for axially centering the sucker rod in the elevator.

Figure 5 is a horizontal section on line 5—5 of Figure 3.

Figure 6 is a horizontal section on line 6—6 of Figure 3, and

Figure 7 is a top plan view of the improved combined rod holder and wrench for use in combination with the elevator.

Referring to the drawings in detail, and wherein similar reference characters designate corresponding parts throughout the several views, the letter A may generally designate the improved sucker rod elevator, and which in the example shown embodies a body portion B; a retaining means C; and a suspension means D. E may generally designate a sucker rod length of suitable construction, and F a casing for the rod. The wrench attachment, which may be generally designated by the letter G, comprises a rod holder or rest H, and a normally separable wrench portion I.

Referring more particularly to the body portion B of the elevator and which is preferably formed of metal, the same is of cylindrical hollow formation, being closed at its upper end by a top wall 10, and at its lower end by a bottom wall 11. An opening 12 of substantially rectangular shape in formation, is provided adjacent the lower end of the front portion of the body, and extends upwardly a suitable distance from a plane equal with the upper surface of the bottom wall 11. Centrally of the upper portion of the opening 12 and of less width than the opening, is a longitudinally

extending guideway 13 and the purpose of which will be subsequently explained. Disposed directly below the guideway 13 in the bottom wall 11, and extending from the peripheral edge of the wall 11 to a point axially thereof, is a slot 14 for the reception of the wrench square 15 of the sucker rod box or head 16. If desired, the upper face of the bottom wall 11 may be slightly cupped toward its axial center for aiding in retaining the sucker rod E axially of the body.

Referring now to the retaining means C, and which is adapted for relative movement with respect to the body portion B, the same embodies a locking ring 17 which is pivotally mounted at substantially right angles to the slot 14 as by aligned pivot pins 18 which are adapted for sliding movement in vertically extending guide slots 19 provided in the body portion B, and which slots are preferably disposed to one side of the medial vertical plane of the body portion B. This ring 17 which is of slightly greater size than the outer dimension of the body B, and which is clearly shown in Figures 5 and 6 respectively, has provided at its forward portion, an upwardly extending locking tongue 20 which is of a size to permit of its being swung inwardly to a position whereby the upper edge thereof will engage beneath the upper wall of the opening 12 for locking the ring 17 in a lowered operative position as shown in Figure 4. Disposed inwardly of the locking tongue 20, and preferably secured to the tongue as by suitable fastening elements 21, is a substantially wedge shaped retaining block 22 being of such thickness as to permit of its being moved into the slot 14 when the retaining means is in a lowered position. The guideway 13 is adapted to receive this tongue 22 when the means C is in a raised position, for preventing rotational strain upon the pivot pins 18. Disposed diametrically opposite to the locking tongue 20 and preferably formed integral with the ring 17, is a hand grip or handle 23 which preferably extends upwardly beside the body portion B. This handle portion 23 aside from forming a suitable means for raising of the retaining means C, is of sufficient weight to cause the ring 17 to cant in a manner as illustrated in Figure 4 for locking the tongue 20 beneath the top wall of the opening 12 when the means B is in a lowered position. It will also be seen that as the locking tongue swings inwardly, that the locking block 22 will move into engagement with the upper collar portion 24 of the sucker rod for holding the sucker rod in the axial center of the elevator. By so disposing the vertically extending guide slots 19 to one side of the vertical medial plane of the body B, and to that side at which the tongue 20 is disposed, the handle side of the means C will automatically cant downwardly for performing the locking operation when the means is lowered upon the elevator body.

With reference now to the suspension means D, the same preferably consists of an attaching eye 25 having a depending shank portion 26 extending through an axially aligned opening provided in the top wall of the body portion B. A shoulder 27 is preferably formed at the juncture of the shank 26 with the eye 25, for bearing engagement with the top surface of the wall 10. A ball bearing arrangement 28, held in position against the underface of the top wall 10 as by a nut 29, provides means for swivel connection of the means D and body portion B, at a point in vertical axial relation with the seat for the sucker rod E. If desired, an opening 30 may be provided adjacent the upper end of the body B for permitting of easy assembling of the suspension means D with the body.

Referring now to the wrench attachment G, and more specifically to the rod holder or rest H, the same consists of a handle portion 31 having a rest plate 32 provided at one end thereof, and which plate is formed with an outwardly opening slot 33 of a size to receive the reduced body portion 34 of the sucker rod E. A boss 35 is provided on the under surface of rest plate 32, in concentric relation to the inner end of the slot 33, and is adapted to extend into the casing F for preventing lateral movement of the rod holder when supporting a sucker rod. Arranged at a point intermediate the handle portion 31 and rest plate 32, are upstanding spaced apart arms 36 having their inner flat faces disposed in parallel confronting relation to one another. The wrench member I, which is of double end formation, is provided at each end with wrench heads 37 and 38 having longitudinally opening slots of different sizes for use upon sucker rod couplings having different sizes of wrench squares. Secured to one face of the wrench I, and having its intermediate portion spaced from the wrench, is a longitudinally extending retaining strip 39 having each end thereof secured to the wrench in any approved manner. A bolt 40 is adapted to extend between the wrench I and strip 39, and have its ends mounted in the upstanding arms 36 of the holder H for permitting of reversing of the wrench member upon removal of the bolt. It can be seen that by so slidably and pivotally mounting the wrench upon the holder H, that the wrench member may be slid into and out of holding relation with the wrench square 15, and also inclined at various angles for proper engagement with the wrench square as is illustrated in the dotted line showing in Figure 1. This construction permits of the wrench attachment being applicable to vari-

ous types of sucker rod couplings where the wrench squares are disposed at various places upon the head or box of the coupling.

In operation of the improved device as disclosed, and assuming that the sucker rod is supported by the combined rod holder and wrench G as in Figure 1, the retaining means C is first raised to a position for freeing the opening 12 as illustrated in Figure 2. The elevator A may then be slid over the head of the sucker rod, with the wrench square 15 sliding into the slot 14, and the shoulder 24 resting upon the upper surface of the bottom wall 11 at a point axially of the elevator. The retaining means C may then be lowered to its fullest extent and whereby, due to the special pivotal supporting thereof, the same will automatically cant downwardly at one side, thereby locking the tongue 20 in the opening 12 and swinging the block 22 inwardly for centering the sucker rod within the elevator.

The elevator and sucker rod may then be raised a slight distance for permitting withdrawal of the device G, and then raised a sufficient height until the next coupling of the sucker rod sections is disposed a short distance above the top of the casing F. The device G may then be slid into position with the rest plate positioned about the body portion of the rod below the head 16, and the wrench I moved into position with the wrench square 15 as illustrated in the dotted line showing in Figure 1. The sucker rod may then be lowered until the head 16 seats upon the rest plate 32, and the boss 35 extends into the casing F for preventing accidental displacement of the holder G with the sucker rod. Any suitable wrench may then be applied to the upper sucker rod section, and by grasping the holder G with the other hand, the upper section may be readily unscrewed from the lower section; whereby, after removal of the raised rod section from the elevator A, and withdrawal of the wrench I from engagement with the lower rod section, the elevator may be coupled to this section as before stated, and the process repeated as before. Owing to the swivel mounting of the elevator body B, it will be seen that there will be no liability of the elevator becoming uncoupled from its line or cable when the elevated rod section is being unscrewed from its contiguous lower rod section.

It will be apparent from the foregoing description, that by so employing an improved combined rod holder and wrench in combination with an improved elevator as described, that merely one elevator is required for pulling or replacing sucker rods in wells, and that this process of pulling and replacing sectional sucker rods will be accomplished in an efficient and expeditious manner.

Various minor changes may be made as to the specific construction and operation of the device herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. An elevator for sucker rods, comprising a hollow body portion having a transversely extending slot provided in its bottom wall for reception of the wrench square of a sucker rod, locking means embodying a block extending into the hollow body portion and adapted for movement into said slot in engagement with the sucker rod head for preventing withdrawal of the rod from the slot, and suspension means carried by said body for attachment to a line or cable.

2. An elevator for sucker rods comprising a hollow body portion having a transversely extending slot provided in its bottom wall for reception of the wrench square of a sucker rod, retaining means movable relative to said body and embodying a retaining block adapted for swinging movement into said slot for centering the sucker rod in the elevator body and locking the rod against movement out of the slot, and swivelly mounted suspension means carried by the upper portion of the body for suspending the elevator from a line or cable.

3. An elevator for sucker rods comprising a hollow body portion having a transversely extending slot provided in its bottom wall for reception of the wrench square of a sucker rod, retaining means for said rod comprising a locking ring slidably mounted exteriorly of the body portion and embodying a retaining block adapted for movement into the slot of said body portion, means for locking the retaining means in lowered operative relation to said rod, and means for suspending the elevator from a line or cable.

4. An elevator for sucker rods comprising a hollow body portion having a transversely extending slot provided in its bottom wall for reception of the wrench square of a sucker rod, retaining means slidably and pivotally mounted exteriorly of the body portion and adapted for automatic canting into a locked position upon its downward limit of movement for locking the sucker rod against movement out of the slot in said body portion, and means for suspending the elevator from a suitable means.

5. An elevator for sucker rods comprising a hollow body portion having a top wall, and a bottom wall having a slot extending from the axial center of the body portion to the outer surface thereof, a locking ring pivotally and slidably mounted in vertically extending slots disposed to one side of the vertical medial plane of the body portion, a retaining block carried by

said ring and adapted for movement into the slot in said bottom wall upon the downward limited movement of the locking ring, means for locking said ring in its lowered position upon canting of the ring, and means for suspending the elevator from a suitable means.

6. An elevator for sucker rods comprising a hollow body portion having a top wall, and a bottom wall having a slot extending from the axial center of the body portion to the outer surface thereof, means carried by the top wall for suspending the elevator from a suitable support, and means for retaining a sucker rod in the slot of said bottom wall embodying a vertical movable locking ring adapted for automatic canting into a locked position upon its downward limit of movement.

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