Feb. 28, 1928. 1,660,708

J. GRANT

WELL ELEVATOR

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Fig. 1.

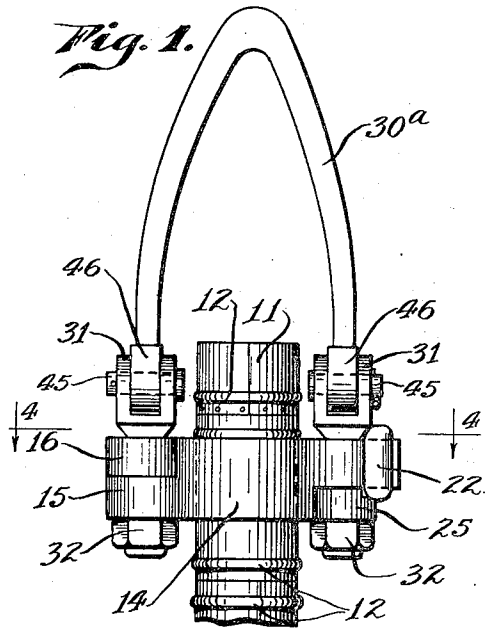


Fig. 2.

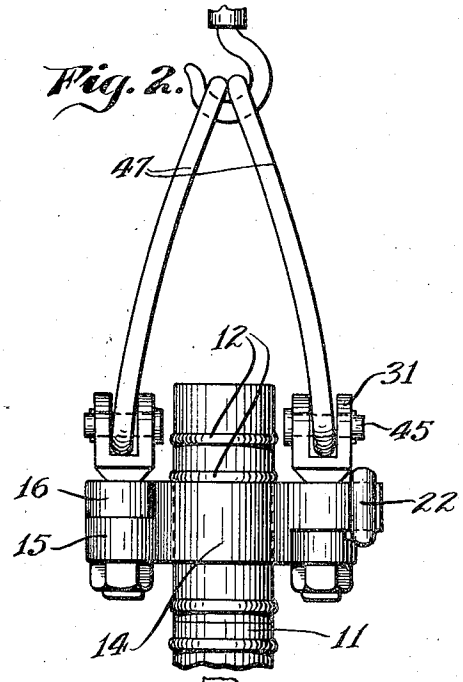


Fig. 4.

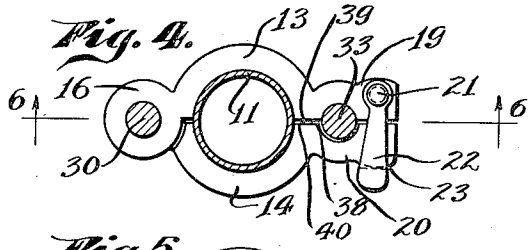


Fig. 3.

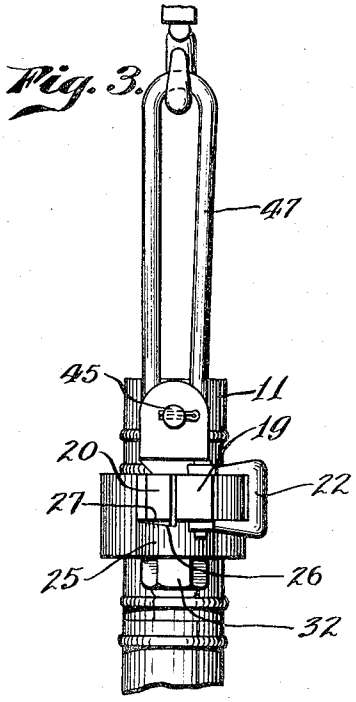


Fig. 5.

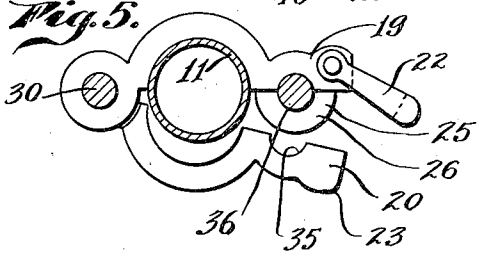
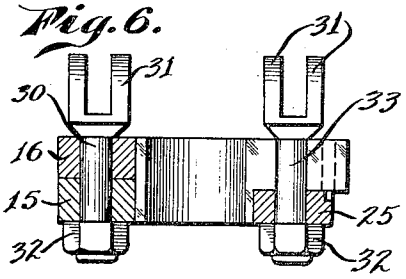


Fig. 6.



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Fig. 7.

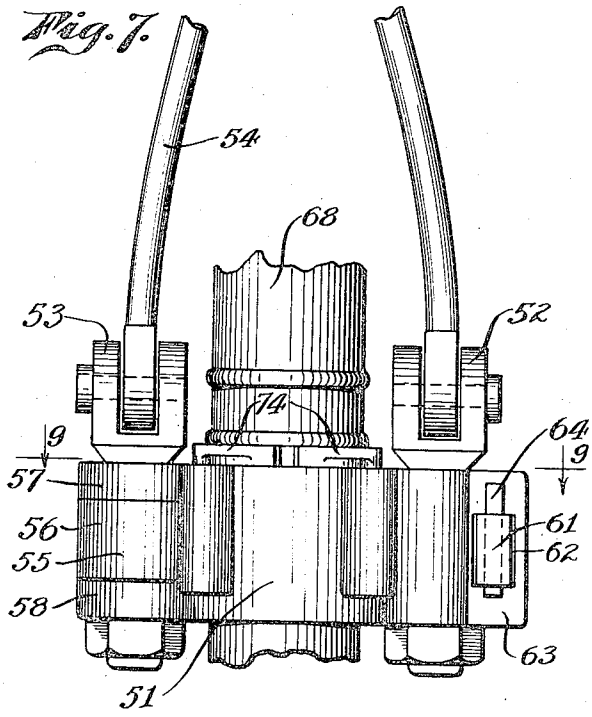


Fig. 8.

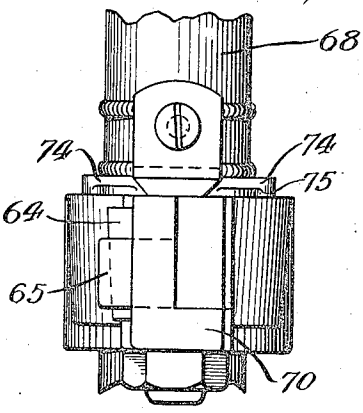


Fig. 9.

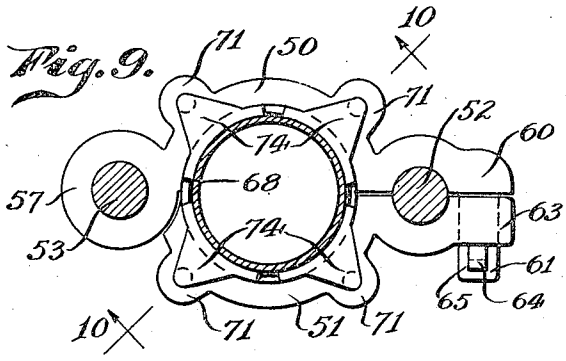


Fig. 11.

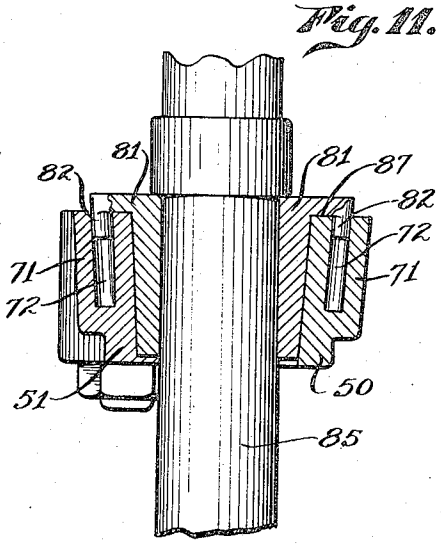
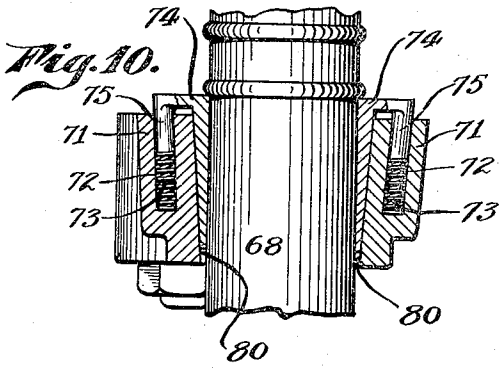


Fig. 10.



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Patented Feb. 28, 1928. 1,660,708

UNITED STATES PATENT OFFICE.

JOHN GRANT, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO DUNN MANUFACTURING COMPANY, OF OXNARD, CALIFORNIA, A CORPORATION OF CALIFORNIA.

WELL ELEVATOR.

Application filed May 17, 1924. Serial No. 713,953.

This invention relates to a device from which well casing is suspended in being raised or lowered within the well and is in particular an elevator which may be used with fabricated casing.

It is an object of my invention to provide a casing elevator which will grip the casing in such a manner as to support the same frictionally as well as by engaging under shoulders provided at joints between the component sections forming the casing.

It is a further object of my invention to provide an elevator which may be used with either shackle or link suspending means.

It is a further object of my invention to provide an elevator from which the shackle may be removed without the necessity of heating and bending the shackle.

It is a further object of my invention to provide such a device in which the shoes thereof overlap so that the upper, or collar engaging surface thereof, will be maintained in perfect alignment.

It is a further object of my invention to provide an elevator which may be used for several different sizes of casing.

It is a still further object of my invention to provide an elevator which will grip the casing with greater intensity as the load thereupon is increased.

It is also a further object of my invention to provide an elevator which may be quickly installed upon and removed from the casing.

Other objects and advantages will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only:

Fig. 1 is an elevational view of a form of my invention sustaining a length of fabricated casing.

Fig. 2 is a view similar to Fig. 1 illustrating the adaptability of my invention to use with link suspending means.

Fig. 3 is an edge elevation of the apparatus illustrated in Fig. 2, the clamping means thereof being in disengaged position.

Fig. 4 is a section taken on a plane represented by the line 4—4 of Fig. 1.

Fig. 5 is a section similar to Fig. 4 but with the forward shoe thereof swung slightly back from the casing.

Fig. 6 is a section taken upon a plane represented by the line 6—6 of Fig. 4.

Fig. 7 is an elevational view of a form of my invention provided with slips for furnishing additional frictional engagement with the casing upon which it is in use.

Fig. 8 is an edge elevation of the apparatus illustrated in Fig. 7.

Fig. 9 is a section taken substantially upon a plane represented by the line 9—9 of Fig. 7.

Fig. 10 is a section taken upon a plane represented by the line 10—10 of Fig. 9.

Fig. 11 is a sectional view similar to Fig. 10 but showing the manner in which my device is adapted to use upon smaller sizes of casing.

My device is particularly adaptable to use upon fabricated casing, one form of which I have shown in the drawing as indicated at 11. This casing is made up of a number of thicknesses of rolled plate which are suitably joined together by riveting and reinforced with circumferential corrugations 12. One of the chief difficulties in the handling of this casing arises from a very small and somewhat rounded shoulder provided by the corrugations 12 for an elevator to seat against. My invention overcomes this difficulty in that it furnishes frictional contact with the casing as well as direct lifting abutment against the slight shoulders provided by the corrugations 12.

In the construction of my device I provide a pair of substantially semi-circular shoes 13 and 14. A hinge structure 15 extends from the lower portion of the shoe 14 and co-acts with a hinge structure 16 extending from the upper portion of the shoe 13. Oppositely from the hinge structure are extended from each of the shoes 13 and 14 latch lugs 19 and 20, there being mounted upon a pin 21 extending vertically through the lug 19 a shackle 22 adapted to swing over and engage a cam face 23 formed upon the lug 20. A toe 25 extends forwardly from the lower portion of lug 19 and supports upon the inwardly sloped face 26 thereof the lug 20 which has its lowerly disposed face 27 inwardly and downwardly sloped to correspond with the face 26. A pin 30 having a clevis 31 formed thereupon extends vertically through the hinge projections 15 and 16 and has a nut 32 threaded and riveted upon its lower end. A similar pin 33 hav-

ing formed thereupon a clevis 31 extends vertically through the lug 19 and has also a nut 32 upon its lower end. The lug 20 is recessed as shown at 35 in Fig. 5 to accommodate that portion 36 of the pin 33 which projects forwardly from the lug 19.

It will be perceived from an inspection of Fig. 4 that the shoes 13 and 14 are so formed as to provide a space 38 between the adjacent faces 39 and 40 thereof when the shoes 13 and 14 are closed around the casing 11. When the shackle 22 is driven over the cam face 23 upon the lug 20 by a few blows from a suitable hammer or mallet, the shoes 13 and 14 are forcibly compressed around the casing 11 so that they will frictionally grip the casing. When the shoes are in closed position around the casing and the elevator lifted against one of the corrugations 12 on the casing 11, the downward force upon the shoe 14 will cause the faces 26 and 27 of the latch lugs 19 and 20 to be held firmly together, the inward slope of the faces 26 and 27 assisting in maintaining the shoes in closed relationship. The shackle 30^a which I show in Fig. 1 as a suspending means and for my device connects with the clevises 31 formed upon the pins 30 and 33 by means of pins 45 which extend laterally through the clevises and through the ends 46 of the shackle. The shackle may be easily removed by merely withdrawing the pins 45, and links 47 may be used instead of the shackle 30^a, as shown in Figs. 2 and 3. By the convenient form of construction I employ it is possible to replace worn shackles or links without the necessity of forging or welding.

In the form of my invention shown in Fig. 7 I provide semi-circular shoes 50 and 51 supported upon clevis pins 52 and 53 which are adapted to be engaged by a shackle 54 or other suitable means. It may be desirable to hinge the shoes together as indicated at 55, a lug 56 extending from the shoe 51 being confined between lugs 57 and 58 formed upon the shoe 50. It may also be desirable to provide in connection with the latch lug 60 a tongue 61 adapted to extend through an opening 62 provided in the latch lug 63 and to drive a wedge 64 through a channel provided in the projecting portion 65 of the tongue 61 to serve as a locking means to hold the shoes 50 and 51 in closed relationship around the casing 68. A toe 70 projects rearwardly from the lower portion of the lug 63 and is adapted to support the lug 60, as best illustrated in Fig. 8.

Formed upon the outer surface of the shoes 50 and 51 are bosses 71 which are drilled from the top to provide recesses 72 therein. In the recesses 72 are placed compression springs 73 as illustrated in Fig. 10 which support slips 74 by means of pins 75 formed thereupon and so situated as to project downwardly into the recesses 72. The springs are of such a size and strength as to maintain the slips in a sufficiently raised position to provide an approximate interior diameter corresponding to the diameter of the casing. When the shoes 50 and 51 are closed around the casing 68, the slips 74 will rest against the outer surface of the casing so that the frictional contact between the slips and the casing will cause the slips to move relatively downward within the shoes 50 and 51 as the elevator is lifted, thus causing them to become firmly wedged between the casing 68 and the converging inner surfaces 80 of the shoes 50 and 51. It will be seen that as the load is increased the slips will grip the casing with greater force.

My invention is adapted for use with various sizes of fabricated casing and also with standard casing by substituting the proper size slips for those I have illustrated in demonstrating the utility of my invention. Fig. 11 illustrates the manner in which reducing slips 81 having short pins 82 extending therefrom, are mounted upon the shoes 50 and 51. It is not necessary when handling standard casing, such as I have shown at 85, to employ any wedging action of the slips 81 as the collars used to join lengths of standard casing furnish a sufficient shoulder for the elevator to lift against, therefore, for handling standard casing, the slips or reducers 81 are adapted to rest firmly down upon the shoes 50 and 51 as indicated at 87.

Having thus disclosed my invention, I claim and desire to secure by Letters Patent:

1. In a casing elevator, the combination of: a casing surrounding structure comprising a rearward shoe and a forward shoe; hinge structure extending from said rearward shoe; hinge structure from said forward shoe to co-act with said hinge structure extending from said rearward shoe; a clevis pin extending vertically through said hinge structures; a latch lug extending from said rearward shoe having a toe projecting forwardly therefrom; a clevis pin extending vertically through said latch lug; a lug extending from said forward shoe, a portion thereof overlapping said toe; bosses formed upon said shoes having recesses therein in open communication with the top surfaces of said shoes; resilient means within said recesses; and slips operable within said shoes and having pins associated therewith adapted to enter said recesses; substantially as described.

2. In a casing elevator, the combination of: a casing surrounding structure comprising a rearward shoe and a forward shoe; hinge structure extending from said rearward shoe; hinge structure from said forward shoe to co-act with said hinge struc-

ture extending from said rearward shoe; a clevis pin extending vertically through said hinge structures; a latch lug extending from said rearward shoe having a toe projecting forwardly therefrom; a clevis pin extending vertically through said latch lug; a lug extending from said forward shoe, a portion thereof overlapping said toe; and slips operable within said shoes, said slips being resiliently mounted upon said shoes; substantially as described.

In testimony whereof, I have signed my name to this specification.

JOHN GRANT.