

April 15, 1924.

1,490,445

W. W. WILSON

WELL ELEVATOR

Filed April 9, 1920

Fig. 1.

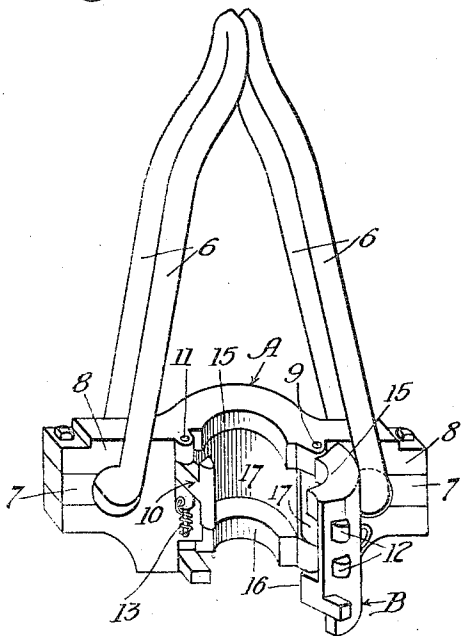


Fig. 2.

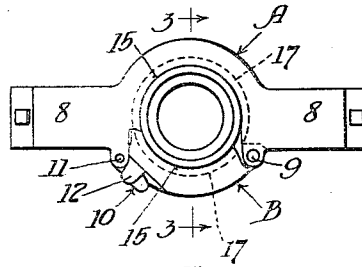


Fig. 3.

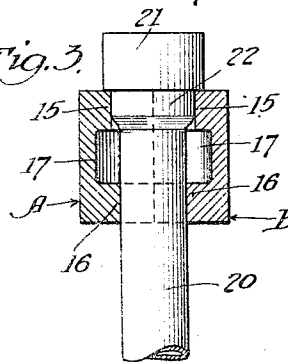


Fig. 4.

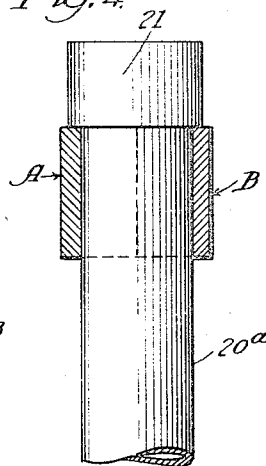


Fig. 5.

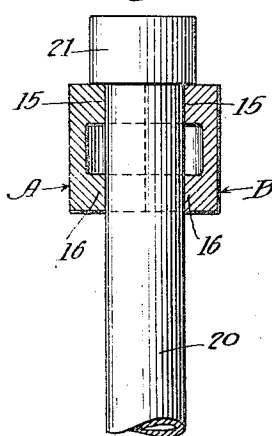
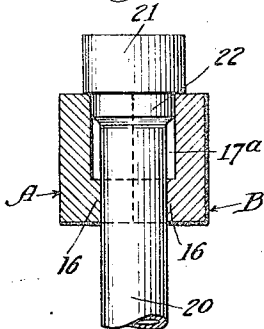


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM W. WILSON, OF LOS ANGELES, CALIFORNIA.

WELL ELEVATOR.

Continuation of application Serial No. 98,522, filed May 19, 1916. This application filed April 9, 1920.
Serial No. 372,578.

To all whom it may concern:

Be it known that I, WILLIAM W. WILSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Well Elevators, of which the following is a specification.

This invention relates to well elevators—elevators such as used for handling casing or pipe in oil and water wells and the like; and a general object of the invention is to provide an improved type of casing or pipe elevator, and to provide features of improvement which give greater facility of use of the elevator. This present application is a continuation of my previous application, Serial No. 98,522, filed May 19, 1916.

It is not necessary here to describe in detail the method and manner of using casing and pipe elevators, as that is well known. Such elevators are necessarily heavily constructed and, in order to have the requisite strength and sturdiness, must be of a considerable vertical dimension. In the past, elevators of this kind have been so constructed as to encircle and engage the pipe or casing throughout a considerable vertical length (their whole vertical length); such elevators being usually of greater dimension lengthwise of the pipe than the diameter of the pipe. Elevators normally engage a pipe directly beneath the collar; and it is at this point, or thereabouts, that the pipe tongs are normally applied when screwing or unscrewing pipe, with the result that the particular part of the pipe which is engaged by the elevator becomes somewhat mutilated or deformed at times. Such mutilation, or deformation, from this or any other cause, is added to the normal non-uniformity of the pipe; with the result that in many instances it is difficult to apply an elevator to the pipe; or that when the elevator is so applied the pipe will rock in the elevator.

It is a primary object of my invention to overcome these difficulties and others; and it is also an object to provide an elevator construction in which the machine work is reduced to a minimum. In my invention which accomplishes these foregoing stated objects, it is also an accomplishment that the elevator is so constructed that it may be, if so desired, somewhat changed, by a simple

operation of machining, to vary its effective size.

For the purpose of illustrating my invention I shall describe preferred and specific forms thereof, reference for this purpose being had to the accompanying drawings 60 in which—

Fig. 1 is a perspective illustrating one form of elevator equipped with my present invention; Fig. 2 is a plan view of such elevator, the links being removed for purposes of illustration; Fig. 3 is a section on line 3-3 of Fig. 2; Fig. 4 is a section similar to that of Fig. 3 showing the elevator modified to receive a larger pipe; Fig. 5 is a section similar to that of Fig. 3 showing a modified construction adapted to receive a pipe which has not the enlarged end as shown in Fig. 3; and Fig. 6 is a similar section showing another modified form of construction adapted to take a pipe with an enlarged end.

I illustrate my invention as applied to a particular form of elevator; and I shall describe that particular form of elevator sufficiently to make the application of my invention clear and definite; but it will be understood that I do this for the purpose of rendering my invention clearly intelligible and not at all for the purpose of limiting my invention to the particular kind of elevator herein described. The type of elevator herein described is also described in the patent of Elihu C. Wilson, No. 1,314,996, dated Sept. 2, 1919, and the particular kind of elevator herein described is also described, and is the subject matter of claims in said E. C. Wilson's applications for Letters Patents Serial No. 878,130, filed December 26, 1914, Serial No. 835,924, filed May 2, 1914.

In this type of elevator there is a body member A and the suspension links 6 are connected directly to opposite sides of member A by entering between bifurcated extensions 8, being held from displacement by blocks 7. Body member A forms one half, or one part, of the clamp designed to encircle the pipe below its collar; the other part comprising the gate B which swings on a hinge pin 9 at one end and at the other end is adapted to be held in closed position by a suitable latch mechanism. This latch mechanism in the present instance embodies

a swinging T-headed latch 10, pivoted on a hinge pin 11, and whose T-head is adapted to swing over lugs 12 when the gate is closed; a spring 13 impelling the latch to the position shown in the drawings.

Although there are other details of construction and operation, it is not necessary here to enter into those.

In contradistinction to the prior elevator constructions, the interior bore of my improved elevator—the bore which receives the pipe—is not of uniform diameter from top to bottom but is of varying diameter. I utilize a plurality of spaced interiorly projecting ribs, preferably two in number, as shown at 15 and 16, spaced vertically apart; and between these ribs there is a recessed portion 17 which is sunk back far enough from the inner circumferences of the ribs so as not to engage with the surface of the pipe 20. As I have said, these ribs are spaced apart vertically; and preferably the upper rib is at the upper end of the elevator, the upper surface of this rib being preferably substantially flush with the top of the elevator; while the lower rib is preferably (in order to space it as far as possible from the upper rib) although not necessarily, at the bottom of the elevator. These ribs are applied to both members A and B of the elevator. In other words, they are formed so as to extend substantially completely around the interior bore of the elevator; although it will readily be seen, from the nature of the operation of these ribs, that it is not necessary that they extend completely around the circumference.

I have shown the ribs as being integrally formed with the elevator structure; and this is preferred in an elevator of the type shown. But in other types of elevators, or in this type, the ribs may be made of separate parts and secured in any suitable manner.

In Figs. 1, 2 and 3 I have shown specifically a formation of the ribs for engaging and holding a pipe which has an enlargement 22 at its threaded end near the collar 21. Accordingly, the upper rib 15 has a larger internal diameter than the lower rib 16. Collar 21 rests on the upper surface of the upper rib, which upper rib is of sufficient vertical thickness, and is generally of sufficient strength, to support the weight of the pipe, or a string of pipe. The upper rib thus performs the function both of a guide rib and of a support for the pipe. The lower rib 16 engages around the pipe at a spaced distance below the upper rib and performs the function of a guide rib. The recessed surface at 17 does not engage the pipe at all. It will readily be seen that the pipe is thus held and guided by two spaced interiorly projecting parts, being engaged at two spaced points, and not engaged at all be-

tween those two spaced points. If the pipe is somewhat irregular, or if it has become mutilated or deformed, it is apparent that the closing of the elevator upon the pipe, and the engagement of the ribs with the pipe on limited spaced surfaces, is much easier than would be the engagement of the elevator with the pipe throughout a surface whose extent is measured by the height of the elevator. And if the pipe or the elevator, or both, are more or less covered with thick oil, my elevator is much more easily closed upon the pipe than is an ordinary elevator. When the elevator is closed upon the pipe it will be seen that the pipe is guided at two spaced points. Being thus guided and held at two spaced points it cannot rock in the elevator.

Furthermore, in finishing my improved elevator, it is of course unnecessary to machine the recessed surfaces; it only being necessary to machine or to otherwise accurately form the inner surfaces of the interiorly projecting parts. The cost of manufacture is thus cut down. I have shown the lower rib 16 as being of the same vertical thickness as the upper rib; but this may or may not be so, as may be desired; the lower rib may be made of less vertical thickness, because it is not a supporting rib in the ordinary operation of the elevator; although, if made of the thickness and strength indicated, it may serve as a safety support in case the upper rib should be defective and give way.

It is to be noted that the ribbed structure gives greater strength to the elevator, with a given weight of material, than in the ordinary type; the metal being more efficiently distributed for resisting vertical strains.

In Fig. 6 I show a formation which accomplishes substantially the same results as accomplished with Fig. 3. Here there is only a lower rib 16, the casing collar 21 resting directly upon the upper surface of the elevator members A and B and the enlarged part 22 of the pipe fitting in the upper part of the bore, leaving a recess at 17^a below the enlarged part 22. It is a feature of my elevator that it provides, either in the form shown in Fig. 3 or Fig. 6, a non-rocking engagement of the elevator with a pipe having an enlargement, as well as providing a non-rocking engagement for a pipe of constant diameter.

In Fig. 5 I show the application of my invention to a pipe of constant diameter. Here the upper and lower ribs 15 and 16 are of the same internal diameter.

In Fig. 4 I show how such an elevator as shown in either Figs. 3, 5 or 6 may be bored out to take a larger sized pipe, as illustrated at 20^a. This view shows the ribs entirely machined off, and illustrates the maximum size of pipe which the elevator may be made

to take; but there is still sufficient stock left in members A and B to give the required strength and sturdiness. Of course it will be understood that the ribs might be machined back somewhat without entirely taking off the ribs, to take a larger size pipe than is shown in Fig. 3; and that larger size pipe may be either a pipe of uniform diameter throughout or may be pipe of the kind shown in Figs. 3, 4 and 6.

Having described a preferred form of my invention, I claim:

1. A well casing elevator including opposed complemental jaws movable toward and away from each other and having their opposed faces shaped to form an annular casing receiving opening when closed, said opposed faces being formed with a plurality of superposed casing engaging ribs which project inwardly therefrom and are of different widths so as to define openings of different diameters to receive a casing having two different external diameters, the upper edges of the jaws forming a rest for the coupling collar at the upper end of the casing.

2. A well casing elevator including opposed complemental jaws movable toward and away from each other and having their opposed faces shaped to form an annular casing receiving opening when closed, said opposed faces being formed with spaced upper and lower casing engaging ribs which project inwardly different amounts and define openings of different diameters to receive a casing having two external diameters, the upper and lower ribs being separated by a channel having a base which is uniformly spaced from the casing, the upper rib forming a rest for the collar at the upper end of the casing.

3. A well casing elevator including opposed complemental jaws movable toward and away from each other and having their opposed faces shaped to form an annular casing receiving opening when closed, said opposed faces being formed with spaced upper and lower casing engaging ribs of which the lower rib projects inwardly a greater amount than the upper rib so that the upper rib defines an opening larger than the lower rib to allow for the enlarged upper end of a casing, the upper edges of the jaws providing a seat for the collar at the upper end of the casing and the upper and lower ribs being separated by a channel of which the base is spaced from the casing.

4. A well casing elevator including opposed complemental jaws movable toward and away from each other and having their opposed faces correspondingly recessed to provide an annular casing receiving opening when closed, the walls of the said recesses being formed with corresponding integral and transversely disposed casing engaging

ribs, the edges of the ribs serving to engage the casing and the ribs being of sufficient depth and thickness so that they can be machined to fit casings of different sizes and will firmly engage the casing to support the same without undue play.

5. A well casing elevator including opposed complemental jaws movable toward and away from each other and having their opposed faces correspondingly recessed to form an annular casing receiving opening when closed, the walls of the said recesses being formed at the top and bottom of the jaws with corresponding integral transversely disposed casing engaging ribs, said ribs being of sufficient depth and thickness so that they can be machined to fit casings of different sizes and will support the same, the upper edge of the upper rib being flush with the top of the jaws so as to engage the shoulder at the upper end of the well casing.

6. A well casing elevator including opposed complemental jaws with opposed faces forming a casing receiving opening, said opposed faces having integral circumferentially extending and inwardly projecting casing engaging ribs, two in number, one situated near the upper end of the jaws and adapted to support a casing by engaging under the lower edge of a collar thereon, and the other spaced below the supporting rib and forming a casing guiding rib; both said ribs having smooth interior casing engaging surfaces and the internal jaw surface between the ribs being recessed to a diameter substantially larger than the casing and the recess being open and of such diameter that the casing surface is not engaged between the two ribs.

7. A well casing elevator including opposed complemental jaws with opposed faces forming a casing receiving opening, said opposed faces having circumferentially extending and inwardly projecting casing engaging ribs, two in number, one situated near the upper end of the jaws and adapted to have its upper edge extend under the lower edge of a collar on the casing to support the casing, and the other spaced below the supporting rib and forming a casing guiding rib; the internal jaw surface between the ribs being recessed to a diameter substantially larger than the casing and the recess being open and of such diameter that the casing surface is not engaged between the two ribs.

8. A well casing elevator including a substantially annular structure adapted to receive a casing through it, the inner casing engaging face of the structure being formed of two circumferentially extending vertically spaced ribs the upper one of which is of sufficient size and strength to receive and support the casing by extending beneath and in contact with a collar on the casing,

and the lower one of which is a casing guiding rib; the interior surface between the two ribs being recessed to a diameter substantially larger than the casing and the
5 recess being open and of such diameter that the casing surface is not engaged between the two ribs.

9. A well casing elevator including a substantially annular structure adapted to receive a casing through it, the interior surface of the structure being arranged to circumferentially engage the casing surface at two spaced and limited annular surfaces only, one of said surfaces providing a substantially horizontal seat for a collar on the
15 casing.

10. A well casing elevator, including hinged complementary jaws provided with means for locking them in closed position,

said jaws having semi-circular open recesses in their opposed faces of substantially larger diameter than the well pipe or casing to be engaged, so that the casing surface is not engaged at the recesses, and ribs or rings at the top and bottom of said
20 recesses projecting inwardly and of an internal diameter to circumferentially engage the well pipe or casing, the uppermost of said ribs being adapted to support the well pipe or casing by extending beneath a collar
25 thereon.

In witness that I claim the foregoing I have hereunto subscribed my name this 31st day of March, 1920.

WILLIAM W. WILSON.

Witness:

VIRGINIA BERINGER.