

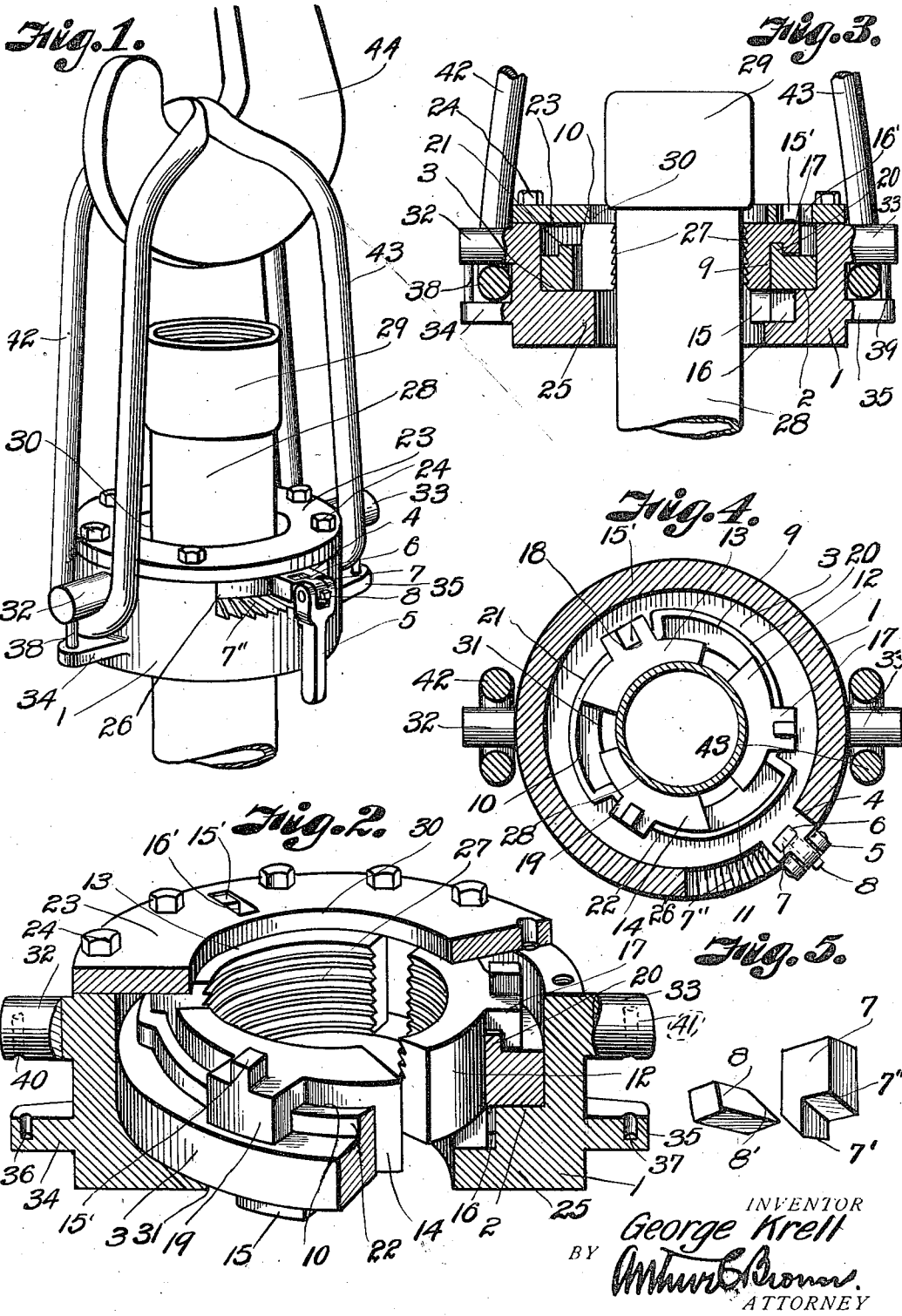
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CASING ELEVATOR

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CASING ELEVATOR.

Application filed November 30, 1921. Serial No. 518,797.

To all whom it may concern:

Be it known that I, GEORGE KRELL, a citizen of Germany, residing at Kansas City, in the county of Jackson and State of Missouri, U. S. A., have invented certain new and useful Improvements in Casing Elevators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to casing elevators; that is, to an elevator for lowering or raising well casing.

One of the objects of the invention is to provide a durable, efficient and inexpensive construction which is adapted to grip the body portion of the casing in a releasable manner in contra-distinction to those forms of elevators which suspend the casings from the collar or internally offset portions.

It has generally been the practice to raise and lower oil well casing for example, by ring-shaped structures called elevators which surround the casing or pipe and are of such diameters that the offset internally threaded portions or collar at the end of the pipe which make the union, rest upon the elevator so that they carry the entire weight. This method of lowering and hoisting oil well casing I have found objectionable for a number of reasons, chiefest of which is that the collar sometimes becomes detached on account of the terrific weight of the suspended casing so that the entire casing is lost. There are other minor objections which need not be enumerated here.

I have found that the casing can be releasably gripped in any point by providing gripping jaws constituting part of the elevator or casing and that this makes a more convenient and more easily workable construction.

The specific details of the device selected for illustrative purposes will be apparent by reference to the following description in connection with the accompanying drawings, in which—

Fig. 1 is a perspective view of an elevator constructed in accordance with my invention and applied to a section of well casing.

Fig. 2 is an enlarged fragmentary perspective view of the elevator.

Fig. 3 is a vertical, longitudinal, sectional view through the same, showing its application to a section of oil well casing.

Fig. 4 is a cross sectional view through the elevator and casing, and.

Fig. 5 is a detail view showing the latch for holding the ring in fixed relation with respect to the housing, and the drift pin for lifting it.

1 designates the outer shell or housing, the inner face of which is provided with a circumferential shoulder 2 to support a rotatable jaw-actuating ring 3 having a radial lug or projection 4, to which is pivoted an actuating lever 5. The lug is provided with a vertical slot 6 to receive a latch or pawl 7 provided with a tooth 7' to engage the teeth 7'' in the housing 1, and extending longitudinally of the lug 4 is a drift pin 8 having an inclined portion 8' to slide against the inclined face 7''' to lift it out of engagement with the teeth 7'', as will be explained hereinafter.

The lever 5, when in a horizontal position or nearly so, may be manually operated to impart a rotative movement to the ring 3. The ring 3 is provided with a plurality of cam-faces 9, 10 and 11; against which bear segmental jaws 12, 13 and 14, the jaws having depending lugs 15 which are in radial slots 16 near the lower edge of the ring 1. The respective jaws are also provided with notched lugs or hook-shaped members 17, 18 and 19, which are in hooked and sliding engagement with the cam flanges 20, 21 and 22 of the actuating ring 3 and these jaws are also provided with upstanding lugs 15', which are adapted to slidably engage the slots 16' in the cover plate 23 secured to the housing 1 by the bolts 24. The member 1 and its cover plate constitute a housing within which the actuating ring 3 and the jaws are confined and held against longitudinal movement in one direction by the cover plate and against longitudinal movement in the other direction by the floor portion 25 in which the shoulder 2 and the slot portions 16 are formed.

The lug 4 has its amplitude of movement limited by the slot 26 (see Figs. 1 and 4).

The inner faces of the jaws 12, 13 and 14 are provided with teeth 27, which may grip the casing 28 when the jaws are moved into gripping position. Normally, the jaws will be retracted so that the spaces between them will be greater than the diameter of the cas-

ing head or collar 29, over which the elevator is to pass, it being understood that the cover plate 23 is provided with an opening 30 and the floor portion 25 is provided with an opening 31, both of which will be of sufficient diameter to permit the elevator to pass over the head 29. The ring or casing member 1 is provided with outstanding trunnions 32 and 33 aligning with complementary lugs 34 and 35, the latter having recesses or seats 36 and 37 to receive pins 38 and 39 which may be introduced into the seats by first inserting them into the recesses 40 and 41 and then dropping them into the recesses 36 and 37. Therefore, it will be seen that the pins 38 and 39 are removable so that suspension links 42 and 43 may be slipped over the trunnions and held in place, the links being so arranged that they may be suspended from a hook or other suspending device 44.

When the parts are assembled and it is desired to attach the elevator to a section of well casing, the drift pin 8 may be tapped with a hammer so that its face 8' will slide against the face 7''' of the latch or pawl 7 to raise it out of engagement with the teeth 7''. Then the lever 5 can be raised to a horizontal position or nearly so to swing the ring 3 about its axis so as to spread the jaws to allow the elevator to slip over the head 29. Then the lever 5 will be swung in an opposite direction to cause the ring 3 to move into jaw-actuating position so that the tooth 7' on the pawl or latch 7 will engage an appropriate tooth 7'' in the housing 1, it being understood that the ring 3 will cause the jaws 12, 13 and 14 to impinge against or bite into the outer surface of the well casing to provide an efficient grip so that the casing may be lowered into the well or elevated, as may be expedient. When the ring 3 is in jaw-actuating or clamping position, the pawl 7 may engage the teeth 7'' or if the tooth 7' is not between the teeth 7'', the operator may tap the upper end slightly with a hammer so that it will drop into tooth-engaging position.

From the foregoing description and in connection with the accompanying drawings, it will be apparent that when the ring 3 is rotated in one direction, the cam flanges 20, 21 and 22 will move the jaws 12, 13 and 14 into extended position and when the ring 3 is moved in an opposite direction, the jaws

will be moved into gripping position. When the casing has been raised out of the well, the elevator can be removed by imparting a rotative movement to the ring 3 so as to move the jaws to their extended positions away from the casing and thereby permit the elevator to be slipped over the head 29.

It will be apparent, therefore, that the device is simple in construction, efficient and easily applied.

What I claim and desire to secure by Letters-Patent is:

1. A casing elevator comprising a housing, radial jaws within the housing, a ring for actuating said jaws in radial directions, a lug on the ring, a vertically sliding pawl in the lug having a tooth for engaging a part of the housing, and a drift pin projecting through the end of the lug and having a cam face to contact with the pawl to raise it out of housing-engaging position.

2. A casing elevator comprising a housing, radially movable, casing-engaging jaws in the housing, a ring for actuating them, a lug on the ring and operable in a slot in the housing, a vertically movable pawl having a tooth for engaging the housing to hold the ring in fixed position, and a longitudinally movable device having movement in one direction to raise the pawl out of functional position and movable in the opposite direction to allow the pawl to move into functional position.

3. A casing elevator comprising a housing, sliding jaws within the housing, a jaw actuating element, a lug on the element, a sliding pawl in the lug having a tooth for engaging a part of the housing and a drift pin projecting through the lug and having a cam face to contact with the pawl to raise it out of housing engaging position.

4. A casing elevator comprising a housing, radially movable jaws in the housing, a rotatable member for actuating them, a lug on the member, a vertically movable pawl for engaging the housing to hold the member in fixed position and a device having movement in one direction to raise the pawl out of the functional position and movable in the opposite direction to allow the pawl to move into functional position.

In testimony whereof I affix my signature.

GEORGE KRELL.