

A. G. HEGGEM.
TUBING AND CASING ELEVATOR.
APPLICATION FILED NOV. 6, 1909.

986,388.

Patented Mar. 7, 1911.

Fig. 1.

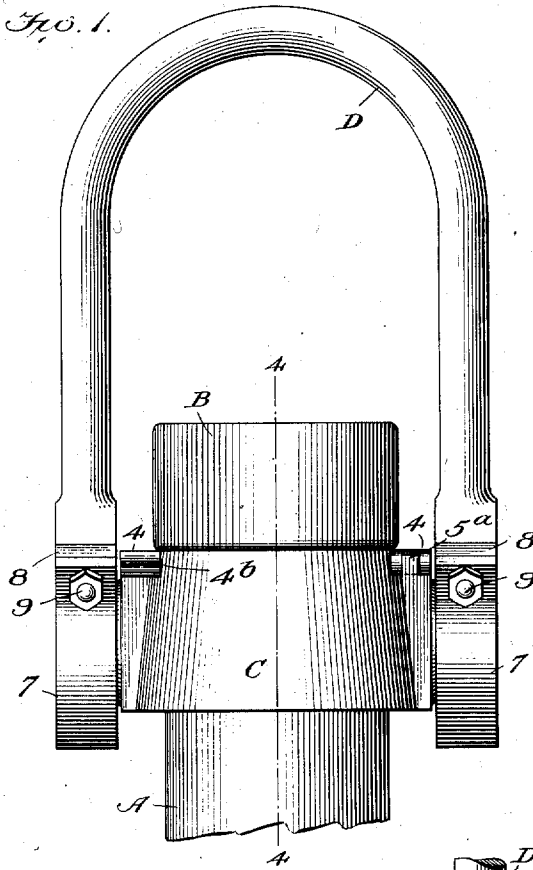


Fig. 2.

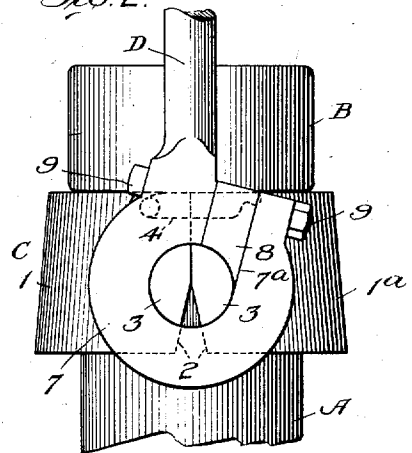


Fig. 3.

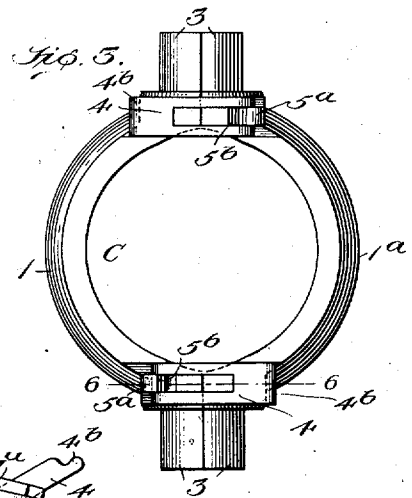


Fig. 4.

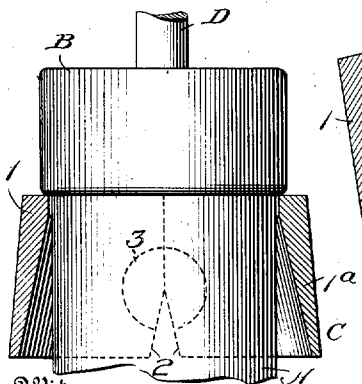


Fig. 5.

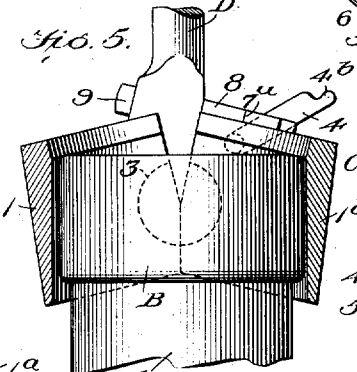


Fig. 6.

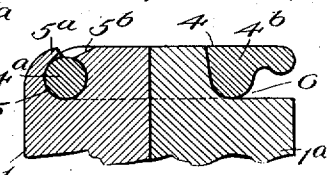
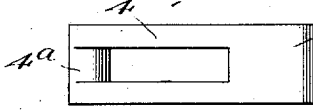


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

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TUBING AND CASING ELEVATOR.

986,388.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed November 6, 1909. Serial No. 526,537.

To all whom it may concern:

Be it known that I, ALFRED G. HEGGEM, a citizen of the United States, residing at Coraopolis, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Tubing and Casing Elevators; and I do hereby 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.

My invention relates to that class of devices commonly termed tubing and casing elevators, employed in casing oil and Artesian wells, and has for its object the provision of efficient means for securely holding the casing while it is being raised or lowered and when sections of casing or tubing are being added to or removed from the string. Heretofore, in this class of devices the structure has comprised two semi-circular members pivoted or hinged together at one side and secured by a latch at a point opposite the hinge, said members constituting, when closed, a ring which is adapted to encircle the casing or tubing just below the coupling or screw collar thereon. The members which constitute the ring are suspended by means of links or bails that are so disposed with relation to the hinge and oppositely located latch as to aid the hinge and latch in maintaining the closed position of the ring members when the elevator is in service, said links or reins being also so connected with the members constituting the ring as to permit of the ready opening of said members when the ring or elevator is to be applied to or removed from the casing. In such a construction of elevator, the weight of a string of casing, through the medium of the coupling or screw collar on the casing, causes a disruptive strain on the connections of the ring members, and especially is this the case when there is any slack or lost motion, as in pulling a joint or joints of casing, or when any vibration or swaying of the string of casing occurs and the force is exerted on one side of the ring.

To overcome these several objections to the present construction of casing elevators, I have devised a construction thereof comprising a plurality of ring sections or members so pivotally connected with a bail that

they are relatively movable or may oscillate to and from each other on an axis lying in the plane of the bail to increase and diminish the internal diameter of the ring formed by said members without breaking the continuity of the ring, thus permitting the elevator to be passed over the coupling or screw collar on the casing, and such a construction embodies the main feature of my invention.

The members constituting the ring of the elevator may be two in number, each provided with segmental pintles of approximately semicylindrical form, or of such form as will permit the ring members when journaled on the bail to oscillate to and from each other, said ring members being of greater internal diameter below than above the pintles, to thereby effect an alternate increase and decrease in the internal diameter of the ring by the oscillation of said members, and such a construction embodies a secondary feature of my invention.

There are other, minor, features of invention residing in particular combinations and elemental constructions all as will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating my invention, the scope of which will be pointed out in the claims, Figure 1 is a view in elevation of a casing elevator embodying my invention as applied to the upper end of a section of casing. Fig. 2 is a view in elevation of the elevator taken at right angles to that shown in Fig. 1, a portion of the bail being broken away. Fig. 3 is a top or plan view of the elevator shown in Fig. 1, the bail being removed. Fig. 4 is a sectional view of the elevator, taken in the plane of the line 4-4 Fig. 1, showing it in position to raise or lower the casing. Fig. 5 is a sectional view similar to Fig. 4, showing the members of the ring in position to pass over the coupling on the tubing or casing. Fig. 6 is a section of portions of the ring members and the latch therefor, taken in the plane of the line 6-6, Fig. 3, and Fig. 7 is a top or plan view of the latch for securing the members of the ring.

Like symbols refer to like parts wherever they occur.

I will now proceed to describe my invention more fully so that others skilled in the

art to which it appertains may apply the same.

In the drawings, A indicates the upper end of a section of tubing or casing and B the coupling or screw collar thereon.

C indicates an elevator for handling casing, and D the bail thereof with which the usual casing hook engages when the tubing or casing is to be raised or lowered.

The elevator C, which is preferably in the form of a frustum of a hollow cone, may be comprised of two equal members or sections 1, 1^a each of which is cut back or formed with divergent, adjacent edges, as at 2, and is provided with trunnions 3, 3, each of said trunnions being wedge shaped in cross section and being formed as a cylindrical segment of slightly less extent than a semi-cylinder, the form of the members and their trunnions or pintles being such as to give sufficient clearance to permit the independent oscillation of the respective sections when the trunnions or pintles are journaled in the eyes formed at the lower ends of the bail D.

4, 4 indicate latches for securing the sections 1, 1^a of the ring C together. These latches may be of general rectangular shape and bar form (see Fig. 7) having a pintle bar 4^a at one end and a locking bar 4^b opposite thereto.

In order to secure the latches 4 to the ring sections 1, 1^a in hinged connection therewith, said members 1, 1^a may be grooved, as at 5, for the reception of the pintle bars 4^a of the latches. After said pintle bars have been inserted in the grooves 5, the projections 5^a, 5^b are forced down over the pintle bars to hold them in position. The members 1, 1^a of the ring may also be grooved, as at 6, to receive the locking bar 4^b of the latch 4, and, as indicated in Fig. 3 of the drawing, the latches 4, 4 are preferably reversed on opposite sides of the ring, or, in other words, the pintles of the respective latches 4 are on different sections of the ring.

The bail D of the elevator is provided with hooks or slotted eyes 7, 7 which receive the trunnions or pintles 3, 3 and which are of a character that will permit the withdrawal and introduction of the pintles 3, 3 of one of said members 1, 1^a independently of the pintles of the other of said members. For this purpose it is preferred to cut out each of the eyes 7, 7, as at 7^a, sufficiently to allow the passage of the pintle or trunnion 3, 3, to provide a block 8 for closing the slot 7^a after the pintle 3 has been passed into the eye, and also to provide a transversely disposed bolt 9 for holding the block 8 in position. This bolt 9 not only secures the block 8, but also serves to strengthen the hook or slotted eye 7.

The elemental construction being substan-

tially such as hereinbefore pointed out the parts may be assembled as follows to constitute the elevator. The latches 4, 4 are secured to the respective sections 1, 1^a of the ring C by inserting the pintle bars 4^a, 4^a of the latches in the grooves 5 of the respective members 1, 1^a and then forcing down the lips or projections 5^a, 5^b to retain the pintle bars in position. The members 1, 1^a are then combined with each other and with the bail D by inserting the pintles or trunnions 3, 3 of one member 1 in the eyes 7, 7 of the bail through the slots 7^a, 7^a and thereafter inserting the pintles 3, 3 of the other member 1^a in the eyes 7, 7 of the bail in like manner, after which the blocks 8 are inserted to close the slots 7^a, 7^a and hold the pintles of the members 1, 1^a in the eyes 7, 7 and the members 1, 1^a in juxtaposition, after which the bolts 9 are inserted and secured by nuts or otherwise.

It will now be noted that the members 1, 1^a constituting the ring may be oscillated on their respective pintles so as to alternately approach and recede from each other at their upper and lower ends and that this oscillation alternately increases and diminishes the internal diameter of ring C, so that when the members 1, 1^a occupy a certain relative position, that is to say when the tops of the members lie in different planes, (see Fig. 5) the tubing or casing and its coupling member may pass freely through the ring C, but can not be withdrawn therefrom when the reverse oscillation of the members 1, 1^a (see Fig. 4) has changed their relative position, or brought the tops of the members into the same plane, and diminished the internal diameter of the ring.

When the members 1, 1^a of the ring C occupy the relative position shown in Fig. 5 of the drawing and the coupling B on the end of the casing A has been passed through the ring C, the members 1, 1^a are brought into the position shown in Figs. 1, 2 and 4 of the drawing, after which the latches 4, 4 are turned down into the positions shown in Figs. 3 and 6 of the drawings, and the ring C is drawn up against the screw collar or coupling B, in which position the elevator carries the weight of the casing and the latches are held securely in position by the screw collar or coupling B of the casing resting thereon.

When it becomes desirable to apply the elevator to the tubing or casing some distance down on the string, this can be readily accomplished by removing bolts 9, blocks 8, and one of the members 1^a, after which the retained member 1 remaining in the bail may be applied to the tubing or casing below the desired coupling B, the displaced member 1^a may be then inserted in the eyes 7 to complete the ring and the blocks 8 and bolts 9 replaced.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. In a tubing and casing elevator, the combination of ring sections, and a bail on which said sections are pivoted, the sections of the ring arranged to oscillate to and from each other on an axis lying in the plane of the bail.

2. A tubing and casing elevator comprised of a plurality of independent ring sections adapted to oscillate on a bail, and a bail adapted to maintain the continuity of the ring and on which the ring sections are each pivoted to permit of their oscillation to and from each other.

3. In a tubing or casing elevator, the combination with a plurality of ring sections having a plurality of pivotal connections which permit the relative movement of the ring sections without breaking the continuity of the ring, of a latch for preventing the relative movement of the ring sections.

4. In a tubing or casing elevator, the combination of a bail, and a plurality of members constituting a ring, each of said ring members being pivotally connected to said bail and being arranged to oscillate independently of each other to increase and diminish the internal diameter of the ring formed thereby.

5. In a tubing or casing elevator, the combination of a bail, and a plurality of ring members pivotally and independently connected with the bail said ring members being adapted to oscillate to and from each other about an axis passing through their points of attachment to the bail.

6. In a tubing or casing elevator, the combination of a bail, and a plurality of ring members independently pivoted to the bail on a common axis.

7. In a tubing or casing elevator, the combination with a bail having pintle eyes, of a plurality of ring members each having pintles for engaging the pintle eyes of the bail, and latches for locking the ring members against relative movement.

8. In a tubing or casing elevator, the combination with a bail having slotted eyes, of a plurality of ring members each having

pintles for engaging the bail eyes, and blocks for closing the slotted eyes of the bail.

9. In a tubing or casing elevator, the combination with a bail having slotted eyes, of a plurality of ring members each having pintles for engaging the bail eyes, blocks for closing the slotted bail eyes, and bolts for securing the blocks which close the slotted bail eyes.

10. In a tubing or casing elevator, the combination of a bail having pintle eyes, and a plurality of ring members each having segmental pintles of less extent than a semi-cylinder, said ring members having divergent adjacent edges affording clearance which permits the relative oscillation of said ring members.

11. A tubing and casing elevator comprised of a plurality of independent ring sections each section having a plurality of journals whereby it is pivoted on a bail, and a bail on which each of said independent sections is journaled, said bail serving to connect the ring sections and maintain the continuity of the ring.

12. A tubing and casing elevator comprised of a plurality of ring sections constituting the frustum of a hollow cone, and a bail on which said sections are provided.

13. A tubing and casing elevator comprised of a plurality of ring members constituting the frustum of a hollow cone, and a bail on which said members are journaled, said bail serving to connect said ring members and maintain the continuity of the ring.

14. In a casing and tubing elevator, the combination with a bail, of a plurality of pivotally connected members constituting a ring the opening through which is adapted to be enlarged and diminished by the relative oscillation of said pivotally connected members, the tops of said pivotally connected members lying in different planes when the opening through said ring is of greatest size.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

ALFRED G. HEGGEM.

Witnesses:

D. J. BROWN,
W. K. McKEE.