Fig. 1.

Fig. 2.

Fig. 3.

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My invention consists in new and useful improvements in an elevator or sucker rods and well tubing and has for its object to provide a device which is simple in construction, having a minimum number of moving parts, yet being so designed to afford maximum strength and durability.

Another object of my invention is to provide an elevator which is accurate and positive in operation and one which insures the safety of both the operator and the apparatus with which it is employed.

Heretofore rod and tubing elevators of this general character have involved a multiplicity of joints, pivots, springs and latches which were subject to become worn and thus decrease the efficiency and life of the elevator, aside from adding to the initial expense of manufacture. It is the object of my invention to overcome these disadvantages, and to this end I have provided a device, the parts of which may be cast of durable metal and are so few in number and sturdy in structure as to greatly facilitate the accuracy and positiveness of operation and prolong the lifetime of the device.

With the above and other objects in view which will appear as the description proceeds, my invention consists in the novel features herein set forth, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

Referring to the drawings in which numerals of like character designate similar parts throughout the several views,

Fig. 1 is a perspective view of the device showing the jaws in open position.

Fig. 2 is a mouth end view showing the jaws in closed position, the trunnion bearings of the supporting bail being shown in section.

Fig. 3 is a sectional view of a portion of the elevator taken on line 3—3 of Fig. 2.

Fig. 4 is a transverse sectional view showing the parts in the position illustrated in Fig. 1.

Fig. 5 is a similar view showing the jaws in closed position.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5.

Fig. 7 is a detail of a modified form of jaw, and

Fig. 8 is a further modification showing the jaw member provided with transverse teeth.

In the drawings, 1 represents the main body casting or housing which is substantially rectangular in shape and is provided at each of its longitudinal extremities with trunnions 2 preferably cast integral thereupon, said housing being hollowed out, its front face opening into a chamber 3 adapted to receive the working parts of the device. The rear portion of the body 1 is extended and merges into a substantially U-shaped handle 4, which is internally channelled as at 5 to slidably receive and guide a substantially U-shaped yoke 6, the free ends of which extend into the chamber 3 in the housing 1 through a transverse slot 7 provided in the rear wall of said chamber in direct line with the channels 5.

8 represents two gripping elements which are pivotally secured within the chamber 3 of the housing by means of suitable pins 9 which extend through the opposite side walls of the housing, said gripping elements comprising parti-circular jaw members 10 which are disposed transversely of the housing, the walls of the latter being cut out as at 11 forming a mouth to accommodate the extremities of said jaw members as clearly shown in Fig. 1.

The body of each gripping element is reduced adjacent the jaw member and bifurcated as at 12, said reduced portion fitting closely between the walls of the housing and being provided with an aperture 13 to receive the pivot pin 9. It will be noted from Figs. 4 and 5 that the pin apertures 13 are located eccentrically in the bifurcated portions 12 of said gripping elements and that the ends of said bifurcated portions are rounded to permit the free rotation of the gripping elements within the chamber about the pins 9.

The free ends of the yoke 6 are provided with extensions 14 which, when the parts are assembled, are interposed between the bifurcations 12 of the respective gripping elements, said extensions being slotted as at 15 to...
accommodate the pins 9 and permit the required relative movement of said yoke in the channels 5, as heretofore set forth. The extremities of the extensions 14 are provided with outwardly projecting shoulders or lugs 16 for engaging eccentrically mounted pins 17 which extend through the bifurcated portions of the gripping elements 8, whereby when the yoke 6 is moved in a direction away from the gripping elements, said shoulders 16 engage the pins 17 and rotate the respective gripping elements around the pins 9 to open the jaw members. In order to facilitate the operation of the device and return the yoke 6 to its normal position when the jaws are closed, I provide suitable springs 18 between the inner face of the handle 4 and the yoke.

It will be noted that the inner extremities of the bifurcations 13 adjacent the front faces of the jaw members are provided with outwardly projecting shoulders or abutments 19 which when the jaw members are in closed position as shown in Fig. 5, are firmly engaged by the squared inner faces 20 of the yoke extensions 14, thus locking the jaws in closed position.

In operation, the device is grasped in the hand of the operator with his hand encircling the handle 4 and the adjacent portion of the yoke 6. By contracting the hand, the yoke is moved rearwardly in the guide channel 5, compressing the springs 18, which movement causes the shoulders 16 to engage the eccentric pins 17 extending through the bifurcated portions of the gripping elements and the continued rearward movement of the yoke causes the squared faces 20 of the yoke extensions 14 to disengage the abutments 19 of the jaw members, thus as the said extensions 14 move to the extreme rearward position permitted by the slots 15, the engagement of the shoulders 16 and pins 17 rotates the gripping elements on their pivots 9 to open the jaws as shown in Fig. 4.

As will be seen from Figs. 4 and 5, the adjacent front edges of the jaw members are substantially squared, while the adjacent rear edges are cut angularly with respect to one another. In other words, a small segment of the circle formed by the two jaws in cross section, is removed from the rear portion thereof, whereby when the jaws are opened as shown in Fig. 4, the angular rear edges of the jaws are brought together to form a substantially unbroken seat for the rod or tubing, in which position the jaws will remain even though pressure is released from the yoke and handle, until forced into locked position by the sucker rod to be gripped.

The jaws are now in a position to receive the rod or tubing and when said rod or tubing is in place within the open jaws, the operator pushes the whole device forwardly towards the rod which causes the gripping elements 8 to rotate in the reverse direction on the pins 9, closing the jaws around the rod as shown in Fig. 5, whereupon the yoke is returned to its forward position by the springs 18, the squared faces 20 of the extensions 14 sliding forwardly and again engaging the abutments 19 to lock the jaws against rotation.

Various modified forms of jaws may be employed in connection with my invention. For example, I have shown in Fig. 7, jaw members particularly adapted for use in connection with squared rods, the operation of the device being the same as that heretofore described. Again in Fig. 8 I have shown a jaw provided with transverse teeth for biting engagement with a rod or tubing.

While I have shown in the drawings an elevator constructed in proportions which are particularly adapted for use in connection with sucker rods, it is obvious that by changing the proportions and providing jaws of greater diameter, my invention may be applied to tubing elevators with equal efficiency.

Obviously, an elevator manufactured in accordance with my invention is extremely simple in construction and operation and by eliminating a large number of working parts and all but one pivotal mounting or connection for each jaw member, the possibility of non-functioning and inaccuracy due to wearing parts is reduced to a minimum.

The entire structure is self-contained and held in assembled form solely by the pivots 9, which renders the device extremely easy to dismantle if desired. By simply removing the pins 9, the gripping elements 8 and yoke 6 may be withdrawn through the open end of the chamber 3 of the housing.

It will be noted that with this arrangement less parts is practically impossible, for even though one of the pins 9 should break, the respective gripping element will be retained in the housing by the engagement of the shoulder 16 of the yoke and the pin 17 of the gripping element.

From the foregoing it is believed that the construction and operation of my invention may be clearly understood by those skilled in the art without further description, it being borne in mind that numerous changes may be made in the details of construction without departing from the spirit of the invention as set forth in the following claims.

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

1. An elevator of the character described comprising a housing, gripping elements independently fulcrumed at oppositely disposed points in said housing and provided with jaws, an actuating member, means on said member operatively, but loosely engaging said gripping elements for rotating the latter on their pivots to open said jaws.
2. An elevator of the character described comprising a housing, gripping elements independently fulcrumed at oppositely disposed points in said housing and provided with jaws, an actuating member, extension on said member having means operatively, but loosely engaging said gripping elements for rotating the latter on their pivots to open said jaws, said extension also serving to lock said jaws in closed position.

3. An elevator of the character described comprising a housing, a handle on said housing, gripping elements pivotally mounted in said housing and provided with jaws, a yoke slidably supported in said handle with its ends extending into said housing, means on the ends of said yoke operatively, but loosely engaging said gripping elements to rotate the same on their pivots to open said jaws, said yoke ends also serving to lock said jaws in closed position.

4. An elevator of the character described comprising a housing, a handle on said housing, gripping elements pivotally mounted in said housing and provided with jaws, a yoke slidably supported in said handle and having extensions operatively engaging said gripping elements for rotating the latter on their pivots to open said jaws, slots in said extensions embracing the pivots of said gripping elements to permit a relative sliding movement of said yoke in rotating said gripping elements, said extensions also serving as stops to prevent the rotation of said gripping elements when said jaws are in closed position.

5. An elevator of the character described comprising a housing, a handle on said housing, gripping elements pivotally mounted in said housing and provided with jaws, a yoke slidably supported in said handle and having extensions operatively engaging said gripping elements for rotating the latter to open said jaws, said extensions being provided with slots embracing the pivots of said gripping elements to permit a relative sliding movement of said yoke in opening said jaws, abutments on said gripping elements, and stops on said extensions for engaging said abutments to prevent the rotation of said gripping elements when in closed position.

6. An elevator of the character described comprising a housing, a handle on said housing, gripping elements pivotally mounted in said housing and provided with jaws, a yoke slidably supported in said handle and having extensions operatively engaging said gripping elements for rotating the latter to open said jaws, said extensions being provided with slots embracing the pivots of said gripping elements to permit a relative sliding movement of said yoke in opening said jaws, abutments on said gripping elements, stops on said extensions for engaging said abutments to prevent the rotation of said gripping elements when in closed position, and means for normally retaining said stops and abutments in locking engagement.

7. An elevator of the character described comprising a housing, gripping elements pivotally mounted in said housing and provided with jaws, abutments eccentrically disposed on said gripping elements, an actuating member, shoulders on said actuating member for operatively engaging said abutments to rotate said gripping elements on their pivots for opening the jaws, and means for locking said jaws in closed position.

8. An elevator of the character described comprising a housing, gripping elements pivotally mounted in said housing and provided with jaws, members eccentrically disposed on said gripping elements, an actuating member, means integral with said actuating member for operatively engaging said first named members to rotate said gripping elements on their pivots for opening the jaws, and means for locking said jaws in closed position.

9. An elevator of the character described, comprising a housing, gripping elements pivotally mounted in said housing and provided with jaws, abutments eccentrically disposed on said gripping elements, an actuating member, shoulders on said actuating member for operatively engaging said abutments to rotate said gripping elements on their pivots for opening the jaws, and means on said actuating member for locking said jaws in closed position.

10. An elevator of the character described comprising a housing, a handle on said housing, gripping elements pivotally mounted in said housing and provided with jaws, gripping elements being bifurcated at one end, pins mounted eccentrically in said gripping elements and extending through said bifurcations, a yoke slidably supported in said handle and having extensions which lie between said bifurcations, shoulders on said extensions for operatively engaging said pins to rotate said gripping elements upon the movement of said yoke for opening the jaws, said extensions also serving as abutments to prevent the rotation of said gripping elements when in closed position.

11. An elevator of the character described comprising a housing, a handle on said housing, gripping elements pivotally mounted in said housing and provided with jaws, said gripping elements being bifurcated at one end, pins mounted eccentrically in said gripping elements and extending through said bifurcations, a yoke slidably supported in said handle and having extensions which lie between said bifurcations, shoulders on said extensions for operatively engaging said pins to rotate said gripping elements upon the movement of said yoke for opening the jaws, said extensions also serving as abutments to prevent the rotation of said gripping elements when in closed position, said exten-
sions being provided with slots embracing said pivots for permitting a relative sliding movement of said yoke.

12. An elevator of the character described comprising a housing, a mouth in said housing, gripping elements pivotally mounted in said housing and having jaws lying in said mouth and extending transversely substantially the width of said housing, an internally channeled handle on said housing, a yoke slidably supported in said channel and having extensions operatively engaging said gripping elements to rotate the same on their pivots for opening the jaws, said extensions also serving as abutments to lock said jaws in closed position.

13. An elevator of the character described comprising a housing, a mouth in said housing, gripping elements pivotally mounted in said housing and having jaws lying in said mouth and extending transversely substantially the width of said housing, an internally channeled handle on said housing, a yoke slidably supported in said channel and having extensions operatively engaging said gripping elements to rotate the same on their pivots for opening the jaws, said extensions also serving as abutments to lock said jaws in closed position, and spring means for normally retaining said yoke and extensions in locking position.

14. An elevator as claimed in claim 12 wherein the adjacent forward edges of said jaws are substantially squared, the adjacent rear edges of said jaws being cut angularly with respect to one another and normally spaced apart for the distance of a segment of a circle, whereby when said gripping elements are rotated on their pivots to open said jaw members, the adjacent rear edges of the jaws are brought together to form a substantially unbroken seat for the member to be gripped.

In testimony whereof I affix my signature.

BURTON G. WESTON.