April 2, 1940. D. COLE 2,195,445

PIPE ELEVATOR

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Fig. 1

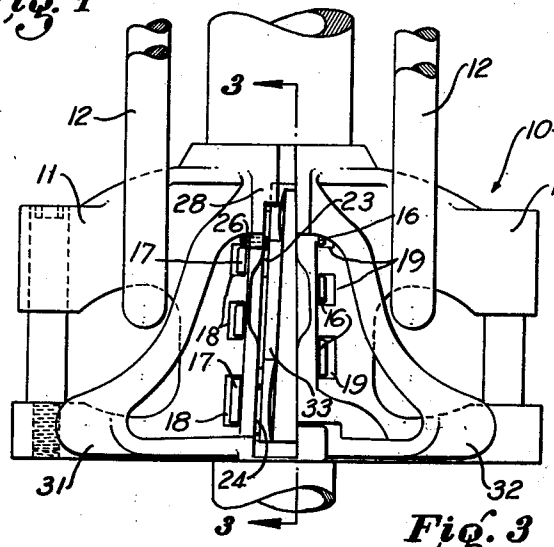


Fig. 2

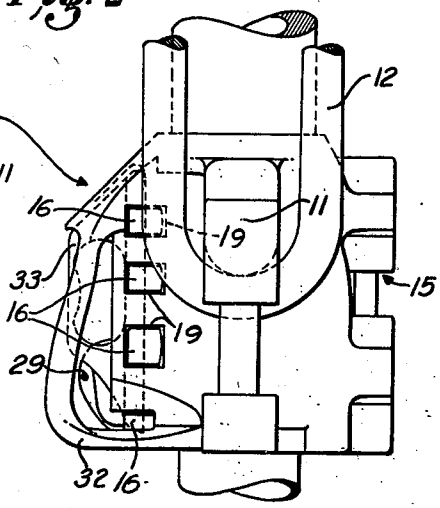
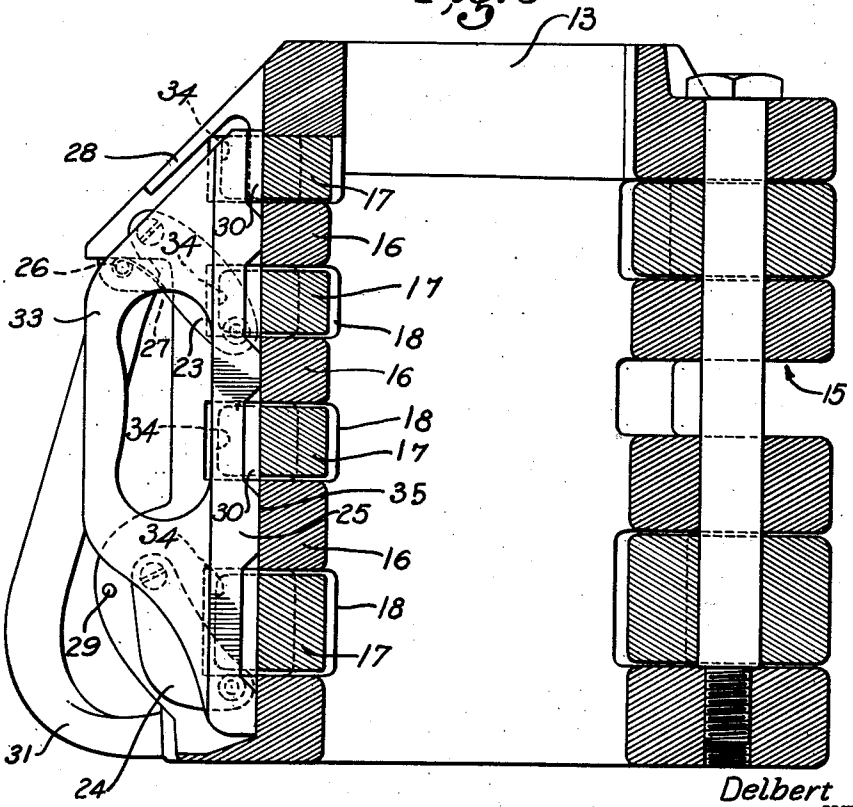


Fig. 3



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Fig. 4

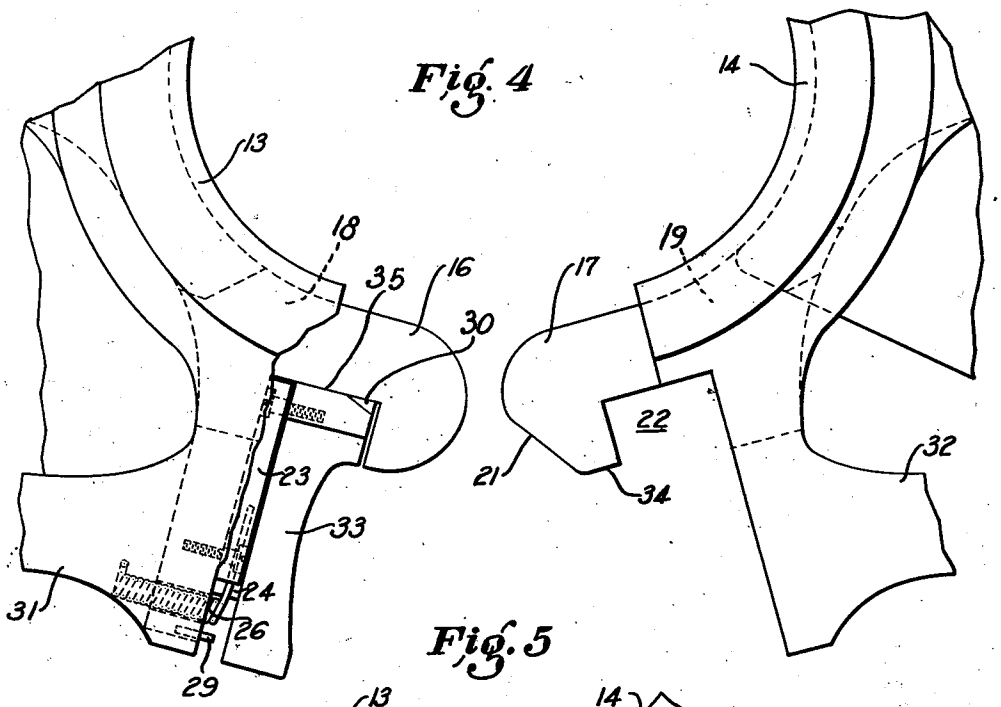
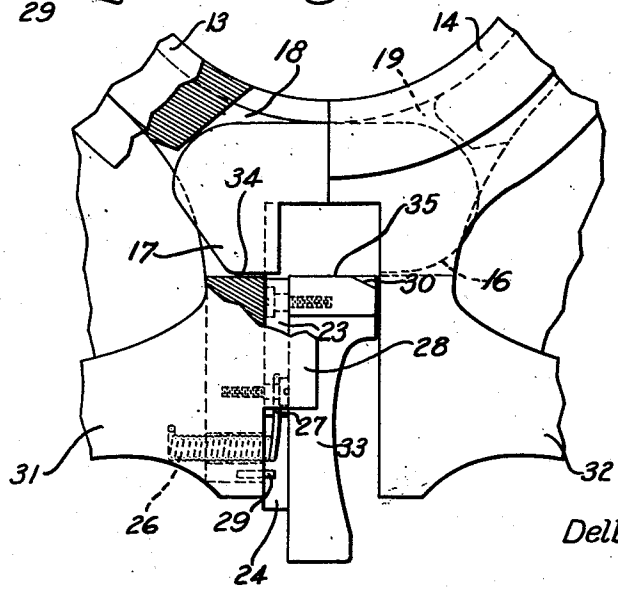


Fig. 5



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PIPE ELEVATOR

Delbert Cole, Hollydale, Calif.

Application October 4, 1937, Serial No. 167,147

8 Claims. (Cl. 294—90)

This invention relates to the handling of drill pipe and the like in well drilling rigs.

One of the objects of my invention is to provide an elevator with an improved latch which will automatically lock the closure members together when said members are in latching position.

Another object of my invention is to provide an elevator with a latch which is positive in operation, and which is of simple and durable construction.

Another object of my invention is to provide an elevator with a latch which can only be opened by engaging the handle of the latching member, and pulling the handle outwardly from the axis of the elevator.

Another object of my invention is to provide a latch which is protected on all sides, and therefore cannot be accidentally opened.

Another object of my invention is to provide an elevator with a latching member mounted on one of the closure members which engages the latching surfaces of said closure members on a vertical line of engagement, which extends substantially the full length of the elevator.

My invention has many other objects, advantages, and features, some of which, with the foregoing, will be set forth at length in the following description where I shall outline a form of the invention, which I have selected for illustration in the drawings accompanying and forming a part of the present specification. In the said drawings, I have shown one form of my invention, but it is to be understood that I do not limit myself to such form, since the invention, as expressed in the claims, may be embodied in a large plurality of forms.

Referring to the drawings:

Figure 1 is a front elevation of one form of the elevator of my invention, with the closure members in closed position and the latching member in latching position.

Figure 2 is a side elevation of the device shown in Figure 1.

Figure 3 is a section taken along the line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary view showing the closure members in open position.

Figure 5 is an enlarged fragmentary view showing the closure members in closed position, and the latching member in open position.

In the drawings, the numeral 10 indicates a piping elevator which is provided with the usual ears or lugs 11 which are adapted to be engaged by the ends of the usual bails 12 to operate the elevator in the conventional manner.

The piping elevator 10 consists of closure members 13 and 14, which are hinged together at one end as at 15.

The other ends of the closure members 13, 14, are provided with cooperating latch lugs 16 and 17 respectively and openings 18 and 19 respectively. The inner surfaces of the lugs 16 and 17 may be curved as shown in Figure 4, so as to complete the walls of the cylindrical opening of the elevator when the closure members 13, 14, are in closed position.

The ends of the lugs 17 may be beveled as at 21, and the outer faces of the lugs 16 and 17 are provided with recesses 22.

Swingably mounted on the closure member 13, by means of links 23, 24, is a latching member 25. A spring 26 is also mounted on the closure member 13, one end 27, of the spring 26 is adapted to engage the lower surface of the upper link 23, and urge it and the latching member 25 inward toward the axis of the elevator. The guard 28 and the stop 29 are provided in order to limit the outward movement of the latching member 25. The portions of the latching member 25 which are first engaged by the beveled surfaces 21 of the latch lugs 17 are beveled as at 30, as clearly shown in Figure 5.

The closure members 13, 14, are provided with handles 31 and 32, respectively, and the latching member 25 is provided with a handle 33.

In positioning the elevator around the drill pipe, the closure members are swung outwardly around the drill pipe. The elevator is then closed by moving the handles 31 and 32 toward each other. As the outer beveled surfaces 21 of the latch lugs 17 engage the beveled surfaces 30 of the latching member 25, the latching member 25 is automatically forced outwardly from the axis of the elevator and downwardly pivoting about the connection between the links 23, 24 and the closure member 13 until the outer ends 34 of the latch lugs 17 engage the inner surface 35 of the latching member 25. The moment that the outer surfaces 34 of the latch lugs 17 no longer engage the inner surfaces 35 of the latching member 25, or the inner surfaces of the links 23, 24, the latching member 25 is automatically forced inwardly and upwardly pivoting about the above-mentioned connection into the recesses 22 of the latch lugs due to the action of the spring 26.

It will be apparent that the elevator is securely locked when the closure members 13, 14, are in closed position, and that the elevator can only be opened by means of an outward pull on the handle 33 of the latching member.

In order to open the elevator, the handle 33 of the latching member 25 is moved outwardly from the center of the elevator and downwardly pivoting about the connection between the links 23, 24 and the closure member 13 until the inner surface 35 of the latching member 25 is entirely clear of the outer ends 34 of the latch lugs 17. The closure members 13, 14 are then moved apart and clear of the drill pipe by means of handle 31 or 33 and handle 32.

It will readily be seen that the latching member 25 has a very limited reciprocal longitudinal and vertical pivotal movement and that the position of the inner surface 35 of the latching member is at all times parallel in all positions of operation.

It will also be seen that the latching member 25 is securely protected from all sides by the guard 28, and handles 31 and 32, so that the latching member cannot be accidentally opened.

In the claims, I have used the term "vertical" to include any vertical movement, either up or down.

From the foregoing description taken in connection with the accompanying drawings, the method of operation and the advantages of the construction will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the form which I now consider to be the best embodiment thereof, I desire to have it understood that the articles shown are merely illustrative, and that the invention is not to be limited to the details disclosed herein, but is to be accorded the full scope of the appended claims.

I claim:

1. In an elevator of the class described, closure members hinged together at one end and provided with latch lugs at the other end, recesses in the outer portion of said latch lugs to form latching surfaces when said closure members are in closed position, a latching member swingably mounted on one of said closure members, said latching member being so mounted that it is adapted to be engaged by the latch lugs of the other of said closure members when said closure members are moved to closed position and that it is free to be moved outwardly and vertically when said latching member is engaged by said latch lugs, a spring mounted on one of said closure members for urging said latching member inwardly and vertically into the recesses of the latch lugs so that the latching members will automatically lock the closure members when said members are in closed position, and means for unlatching said elevator by moving said latching member outwardly and vertically until said latching member no longer occupies any portion of the recesses of said latch lugs.

2. In an elevator of the class described; closure members hinged together at one end and provided with latch lugs at the other end, recesses in the outer portion of said latch lugs to form latching surfaces when said closure members are in closed position; a latching member swingably mounted on one of said closure members, said latching member being so mounted that it is adapted to be engaged by the latch lugs of the other of said closure members when said closure members are moved to closed position, that it is free to be moved outwardly and vertically when said latching member is engaged by said latch lugs, and so that the inner surface of said latching member is substantially parallel to the vertical axis of said elevator in all positions of operation; and a spring mounted on one of said closure members for urging said latching member inwardly and vertically into latching position so that the latching member engages with the above mentioned latching surfaces and automatically locks the closure members when said members are in closed position.

3. In an elevator of the class described; closure members hinged together at one end and provided at the other end with latching surfaces when said closure members are in closed position, said latching surfaces extending substantially the entire length of said closure members; a latching member extending substantially the entire length of said closure members swingably mounted on one of said closure members, said latching member being so mounted that it is adapted to be engaged by the other of said closure members when said closure members are moved to closed position, that it is free to be moved outwardly and vertically when said latching member is engaged by the other of said closure members, so that it is adapted to engage the latching surfaces of said closure members on a vertical line of engagement which extends substantially the entire length of said closure members, and so that the inner surface of said latching member is substantially parallel in all positions of operation; means mounted on one of said closure members for urging said latching member inwardly and vertically into latching position so that the latching member will automatically lock the closure members when said members are in closed position; and means for unlatching said elevator by moving said latching member outwardly and vertically.

4. In an elevator of the class described, closure members hinged together at one end and provided with latch lugs at the other end, recesses in the outer portion of said latch lugs to form latching surfaces when said closure members are in closed position, a latching member mounted on one of said closure members, said latching member being so mounted by means of parallel linkage whereby the position of said latching member is substantially parallel in all positions of operation and a spring mounted on one of said closure members for urging said latching member inwardly and vertically into latching position so that the latching member will automatically lock the closure members when said members are in closed position.

5. In an elevator of the class described, closure members hinged together at one end and provided with latching surfaces at the other end, said latching surfaces extending substantially the entire length of said elevator, and a latching member extending substantially the entire length of said elevator, said latching member being so mounted on one of said closure members that it is adapted to engage the latching surfaces of said closure members on a vertical line of engagement which extends substantially the entire length of said elevator.

6. In an elevator of the class described, closure members hinged together at one end and provided with latching surfaces at the other end, said latching surfaces extending substantially the entire length of said elevator, and a latching member extending substantially the entire length of said elevator, said latching member being so mounted on one of said closure members that it is adapted to engage the latching surfaces of said closure members on a vertical line of engagement which extends substantially the entire

length of said elevator, and so that the inner surface of said latching member is substantially parallel to the vertical axis of said elevator in all positions of operation.

7. An elevator for casing or piping comprising a closure member adapted to partially surround the casing or piping, a latching member carried by said closure member, said latching member being so constructed and mounted that the inner surface of said latching member is at all times parallel to the vertical axis of said elevator, said latching member extending substantially the entire length of said closure member, a second closure member formed to partially surround the casing or piping and hinged at one end to said first mentioned closure member, recesses in the outer portion of the other end of said second closure member extending substantially the entire length of said first mentioned closure member adapted to form latching surfaces for said latching member when said second closure member is in closed position, said latching member engaging the latching surfaces of said second closure member in a vertical line of engagement extending substantially the entire length of said second closure member when said second closure member is in closed position and a spring carried by said first mentioned closure member for urging said latching member into closed position.

8. An elevator for casing or piping comprising a closure member adapted to partially surround the casing or piping, a latching member connected to said closure member by means of parallel linkage whereby the position of said latching member is substantially parallel in all positions of operation, said latching member extending substantially the entire length of said closure member, a second closure member formed to partially surround the casing or piping and hinged at one end to said first mentioned closure member, recesses in the outer portion of the other end of said second closure member adapted to form latching surfaces for said latching member when said second closure member is in closed position, said latching member engaging the latching surfaces of said second closure member in a vertical line of engagement extending substantially the entire length of said second closure member when said second closure member is in closed position, and a spring carried by said first mentioned closure member for urging said latching member into latching position so that the latching member will automatically lock said second closure member when said member is in latching position, and means for unlatching said elevator by moving said latching member outwardly until said latching member no longer extends into any portion of the recesses of said second closure member.

DELBERT COLE.