Aug. 11, 1925. 1,549,199

F. M. KELSO ET AL

PIPE ELEVATOR

Filed Oct. 2, 1924

Fig. 1.

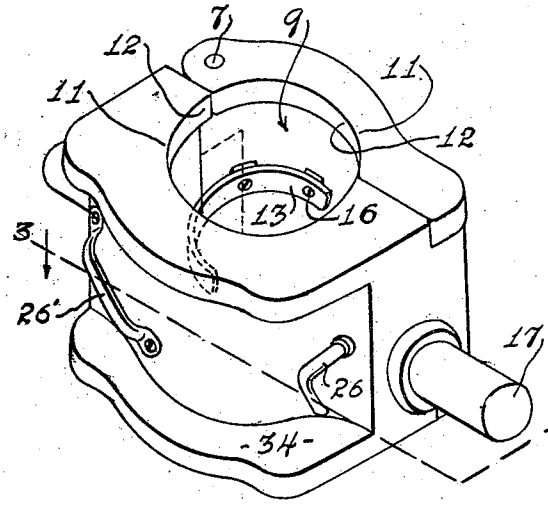


Fig. 2.

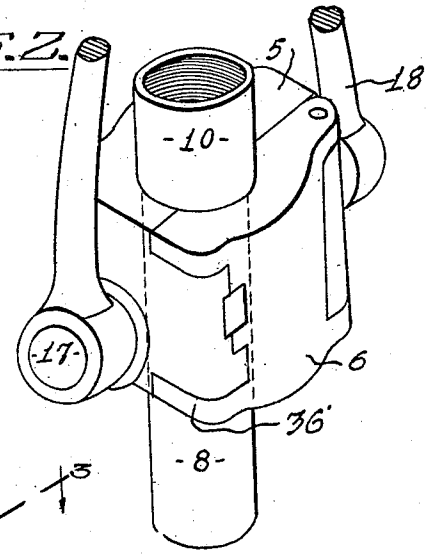


Fig. 4.

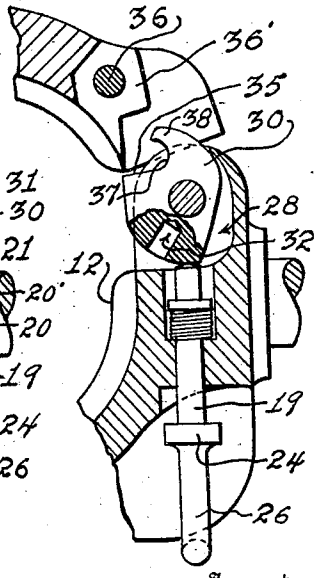
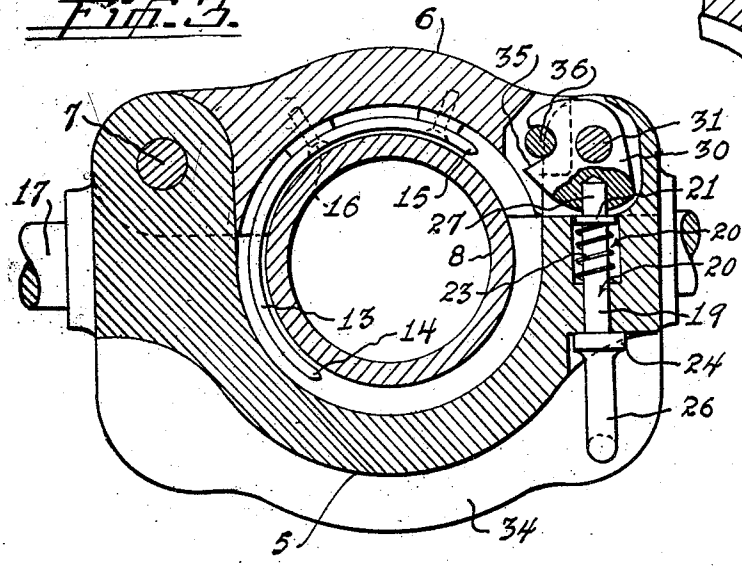


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PIPE ELEVATOR.

Application filed October 2, 1924. Serial No. 741,173.

To all whom it may concern:

Be it known that we, FAY M. KELSO and GIRD E. MULLINIX, citizens of the United States, and residents of Oxnard, in the county of Ventura and State of California, have invented new and useful Improvements in Pipe Elevators, of which the following is a specification.

This invention relates to pipe elevators, such as are used in connection with oil and water well operations for raising drill pipe, tubing, casing and the like.

The principal object of the invention is to provide an elevator which is easily manipulated and conducive to speed.

Another object of the invention is to provide an elevator which may be caused to engage and encompass a pipe by the mere act of moving the elevator into close proximity to the pipe to be engaged.

Another object of the invention is to provide an elevator which may be entirely disengaged from a pipe by a single manual operation.

Another object of the invention is to provide simple and effective locking means to insure against accidentally dropping the pipe.

Still another object of the invention is to provide locking means for locking automatically when the elevator is applied to a pipe, and which releases automatically when the elevator is being removed from the pipe but which will not become accidentally released.

Still other objects and advantages will appear hereinafter.

We have illustrated by the accompanying drawings a preferred embodiment of the invention.

In said drawings,

Figure 1 is a front view in perspective of the preferred embodiment of our invention;

Figure 2 is a rear view in perspective of the elevator showing it in its normal pipe engaging position;

Figure 3 is an enlarged view in section seen on the line 3—3 of Figure 1 showing the parts in the position which they assume when the elevator is in pipe engaging or closed position;

Figure 4 is a similar view showing the relation of the parts when the elevator is in open position.

In carrying out our invention in the embodiment illustrated, we provide two substantially semi-circular sections 5 and 6 which are hingedly articulated by a pivot pin 7, such construction being common to practically all elevators. Section 5 is hereinafter referred to as the "body," while section 6 may be termed the "door." It will be understood, in the consideration of this invention, that by rotating the door on the pivot pin about one-quarter of a revolution relative to the body, a pipe 8 or other round object may be introduced to the bore 9, laterally. Subsequently, by moving the door into closed position relative to the body, as shown in Figure 2, the pipe is completely encompassed.

Usually the elevator is placed around the pipe immediately below the pipe collar or coupling 10, so that upon the elevator being raised all depending portions of the pipe will be suspended by the collar resting upon the upper surfaces 11, 11, of the body and door, respectively. Said bore at intermediate points is of enlarged diameter, while margins 12, 12, provided by the body and door, are arranged on a circumference of smaller diameter so that said margins practically embrace the pipe and insure of the collar setting evenly upon the said upper surfaces. In the intermediate enlarged portion of the bore there is provided a semi-circular hook 13 having, respectively, ends 14 and 15. Said hook is co-axial with the bore of the elevator and is attached to the door as at 16. In attaching the hook to the door, one end 15 is so arranged that when the door is open the said end will offer interference and will come in contact with the pipe toward which the elevator body is being moved, so that the act of moving the body member into normal proximity to a pipe will result in the door being moved to closed position. The body is provided with a pair of opposed trunnion pins 17 on which is trunnioned the usual bail 18. The trunnions and bail are located substantially centrally of the complete device so that a suspended pipe will hang truly perpendicular to the bail. Obviously the door may be opened or closed without interference on the part of the bail; however, as will appear hereinafter, the door may be moved to open position only by moving the body away from the pipe.

The body is provided with a retractile bolt 19 which is slidably fitted in a bore 20 provided in the body and extending at right angles to the transverse center line of the

elevator. Said bore is enlarged as at 20′ to freely house a shoulder 21 on the bolt. A coil spring 23 is provided in the enlarged portion of the bore and in abutment with said shoulder. An outside shoulder or stop 24 is provided to limit advance movement of the bolt. Said bolt terminates exteriorly of the body in a curved or hooked handle 26 which is adapted to be engaged by one or two fingers of the hand. On the body there is also provided a suitable handle 26′ adapted to be grasped by one hand while one or more fingers of the other hand engage the curved end of the bolt.

An end 27 of the bolt extends outwardly into a cored space provided in said body member, and when said door is in closed position with regard to the body an end portion of said door extends into a cored space 28 provided in the body at that point. Within said space there is provided an oscillating or rotary latch member 30. Said member is supported therein by a vertical pivot pin 31, and the said latch member is provided with a bore or depression 32 into which the end 27 of the bolt may find its way. When said depression is brought into alinement with the bolt, the tension of the spring will force the corresponding end of the bolt into the depression and hold the oscillating latch in the position shown in Figure 3. When that end of the bolt has become so inserted in the depression, the latch member cannot be moved upon its axis or pivot pin, and that end of the bolt cannot be retracted from the depression, accidentally or otherwise, except by a force which will retract the bolt into the enlarged bore. To prevent accidental movement of the bolt, the curved end or handle, as well as the other handle, is protected by projecting flanges 34 which are provided integrally. Said flanges also protect the handles in event that the elevator is dropped, as often happens.

The latch member is provided with an abutment surface 35 which extends in a path at right angles to the bolt when the parts have assumed the open position shown in Figure 4. The door carries a vertical pin 36 so positioned that just before that end of the door comes into normal abutment with the body, the said pin will strike the said abutment surface and move the latch a partial revolution, thereby bringing the depression into alinement with the end of the bolt. The abutment surface is continued as at 37 in an arcuate path to provide a horn or hook 38 which may partially encompass the pin 36. The hook 38 is so arranged that when the latch is moved into locked position as shown in Figure 3 said pin becomes securely engaged by the said hook, and then it is, of course, impossible for the latter to become disengaged from the pin unless it rotates a partial revolution. Such partial revolution cannot take place as long as the bolt is in the depression of the latch.

The operation of the bolt and latch as a locking means for the door is practically apparent from the foregoing, but such operation, as well as the operation of the elevator, as a whole, will be better understood from the following description.

Figure 1 being a front view, it will be seen that the door is actually at the rear. With the parts in the position shown in Figure 3, which is the normal position which they assume when the device is placed around a pipe, it is impossible to open the door so long as the body is in the proximity to the pipe. In fact, the door itself cannot be opened relative to the body directly because of the position of the hook which engages the contained pipe. Actually the operator of our improved elevator does not open the door or pay any attention to the operation of the door. To remove the elevator from the pipe both of the handles are grasped, as previously described, the operator standing in front of the elevator or, in other words, on the body side thereof. By pulling both handles toward himself, the bolt is retracted from the depression in the latch, permitting of the latch rotating to become disengaged from the pin carried by the door. The act of pulling upon the two handles not only renders the locking mechanism ineffective, but it results in the body being moved away from the pipe while the door opens in conformance with such movement.

The relative positions of the bolt, latch, door and body, at the time that the body is being moved away from the pipe is shown particularly in Figure 4. As the body is moved toward the operator and away from the pipe, the door gradually opens relative to the body until the hook which is contained internally of the bore of the elevator has assumed such position that it no longer interferes with its removal from the pipe.

To again apply the elevator to the pipe, the door is placed in open position and as the body is moved into proximity to the pipe the hook will cause the door to be moved into closed position, as previously described. In other words, the elevator is caused to engage the pipe by moving the body into proximity with the pipe, such being the only operation required, and likewise the elevator may be removed from a pipe by the simple act of pulling on the two handles. While the elevator is in use in raising or lowering pipe, the locking means is practically infallible.

While we have shown and described a specific construction and arrangement of parts, we do not limit ourselves to any

specific construction or arrangement of parts, and may alter same as occasion requires without enlarging the scope of our invention within the appended claims.

We claim as our invention:

1. In a pipe elevator, a body, a door, and locking means for said door embodying a bolt which is operatively retractile along a line parallel to the path through which the body is normally moved in being retracted from a pipe, said bolt extending to the forward side of the body and terminating in a handle, and means on said bolt contacting with said body whereby the act of pulling the handle outwardly in the direction mentioned, to retract said bolt will result in the body being withdrawn from an encompassed pipe.

2. In a pipe elevator, a door and body adapted to jointly encompass a pipe and being so arranged relative to each other that withdrawal of said body from a pipe will result in said door being opened, locking means for said door embodying a retractile bolt; said bolt being operative to release said locking means by being retracted in a direction parallel to the said line in which the body is normally retracted, and a handle at the forward end of said bolt adapted to be employed for the purpose of jointly retracting the bolt and withdrawing the body from an encompassed pipe.

3. In a pipe elevator, a body, a door hinged to said body movable to closed position to coact with the body to encompass a pipe, an oscillatable latch member, intermeshing means between said latch member and door respectively, whereby the door is positively geared to the latch member when the door is moving toward or away from closed position; said latch member having a bore, a retractile bolt in said body, adapted to enter said bore to lock the latch and door relative to the body when the latch is moved by the door so as to bring said bore in alinement with said bolt.

4. In a pipe elevator, a body, a door hinged to said body movable to closed position to coact with the body to encompass a pipe, an oscillatable latch member, intermeshing means between said latch member and door respectively, whereby the door is positively geared to the latch member when the door is moving towards or away from closed position; said latch member having a bore, a retractile bolt in said body adapted to enter said bore to lock the latch and door relative to the body when the latch is moved by the door so as to bring said bore in alinement with said bolt; said bolt being retractile from said bore in a line paralleling that along which the body is normally moved in being retracted from an encompassed pipe, a handle at the outer end of said bolt for the purpose set forth, and an abutment on said bolt arranged to contact with the body whereby the body may be moved through the medium of the bolt.

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