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ELEVATOR LATCH

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Fig. 1

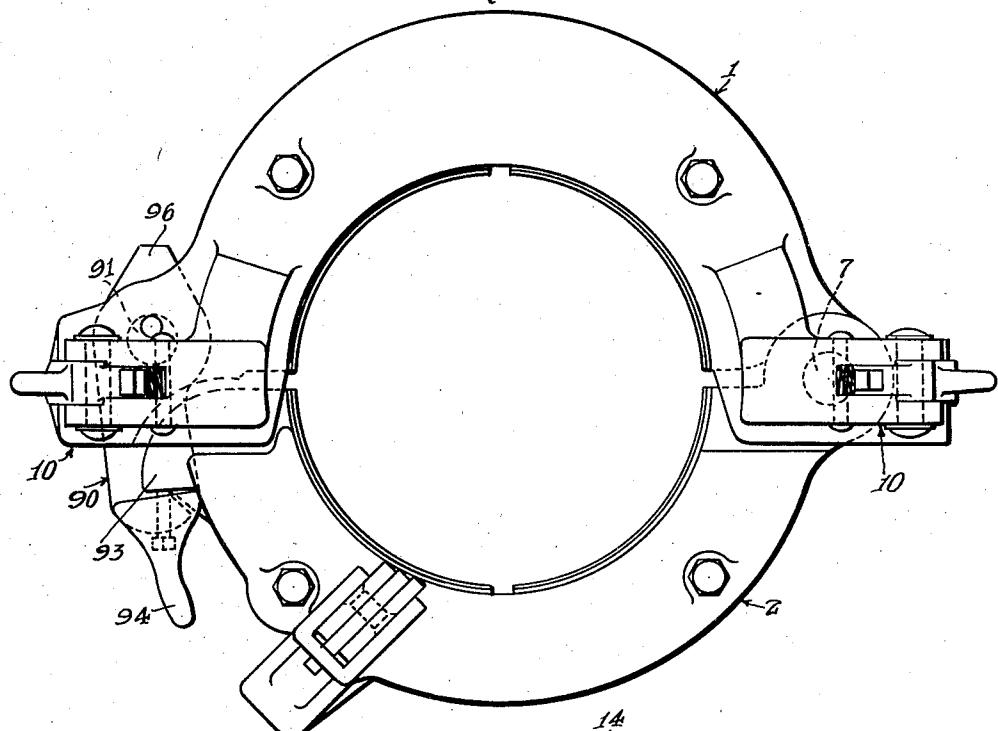


Fig. 2

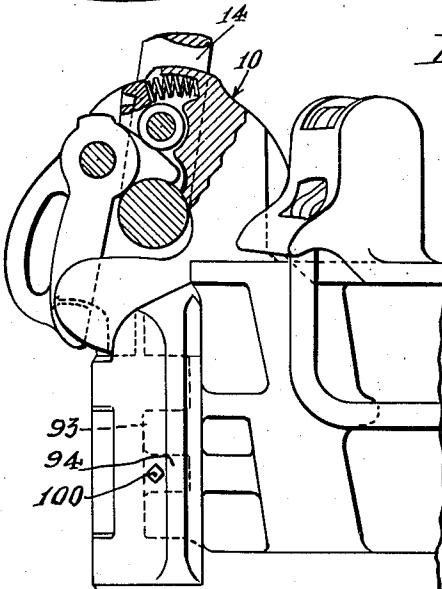
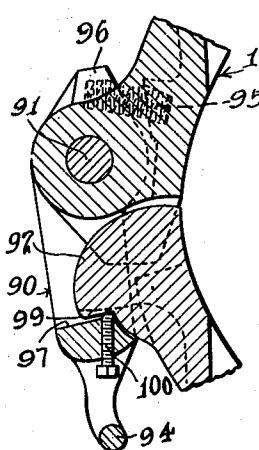


Fig. 3



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## UNITED STATES PATENT OFFICE

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## ELEVATOR LATCH

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Original application September 29, 1936, Serial No. 103,176, which in turn is a division of application Serial No. 58,907, January 13, 1936. Divided and this application January 4, 1938, Serial No. 183,301

2 Claims. (Cl. 294—90)

This invention relates to latches for elevators used to raise and lower strings of pipe or rods in wells, and is particularly useful in, although not limited to, large elevators for handling very large pipe or casing.

This is a division of my application Serial No. 103,176, filed September 29, 1936, Patent No. 2,144,072, on an Elevator, which, in turn, is a division of my application Ser. No. 58,907, filed January 13, 1936, and issued March 1, 1938 as Patent No. 2,109,493.

An object of the invention is to provide a lock for the latch of an elevator, which lock can be adjusted to be self-locking when the elevator is supporting a pipe, or can be adjusted to be non-self-locking if the additional safety of the self-locking latch is not required or desired. The manner in which this object is achieved, together with other minor objects and features of the invention, will be explained by describing in detail, with reference to the drawing, a side door elevator incorporating the latch construction. It is to be understood, however, that the latch construction in accordance with the invention, is not limited to use in side door elevators, but may also be employed in center latch elevators.

In the drawing:

Fig. 1 is a plan view of an elevator incorporating a latch in accordance with the invention, the elevator being shown in closed and latched condition;

Fig. 2 is a front elevation of a portion of the elevator (shown in closed position), and showing the latch in elevation; and

Fig. 3 is a detail horizontal sectional view showing the construction of the adjustable lock on the door latch of the elevator.

Referring to Fig. 1, a side door slip elevator is therein depicted comprising a main body member 1 having hingedly connected thereto at one end a door 2. Thus the body member 1 and the door 2 may each be provided on one end with hinge lugs or eyes which are interconnected by a hinge pin 7.

The body member 1 is also provided with link-engaging ears or hooks 10 for engaging links 14 used for supporting the elevator. The detailed construction of the ears or hooks 10 and associated parts is described in detail in application Serial No. 103,176, hereinbefore referred to, and since it does not constitute a part of the present invention, it need not be described in detail herein.

In operation, the door 2 is swung into open position on the hinge pin 7 to permit placing

of the elevator about a pipe to be lifted and the door is then closed about the pipe prior to lifting the same.

Of course, in any elevator, and particularly in slip type elevators in which the slips are wedged between the pipe and the body member and the door of the elevator, (and the elevator disclosed in the drawing is of the slip type), the door must be positively locked in closed position during a pipe-lifting operation.

The latch mechanism which is disclosed in the drawing, and will now be described in detail, is particularly effective for this purpose.

Referring to the drawing, the latch for securing the door in closed position comprises a latch 90 hingedly connected to one end of the body member 1 by a pin 91 (Fig. 3) and adapted to engage shoulders 92 and 93 on the end of the door 2 when the elevator is in closed position. The latch 90 is preferably provided with a handle 94 to facilitate opening and is constantly urged into locking position by a helical spring 95 compressed between a recessed wing 96 on the latch and the body member 1.

The rear faces of the shoulders 92 and 93 are rounded off as shown in Fig. 1 and the front faces of the latch 90 are likewise rounded off so that when the door 2 is slammed shut the latch 90 is automatically forced outwardly by contacting with the rounded faces on the shoulders 92 and 93 to permit the latch to slip thereover. Of course, when the door is fully closed, the spring 95 snaps the latch over the shoulders 92 and 93 into the closed position shown in Fig. 3, in which the rear substantially flat faces 97 of the latch engage against the front faces of the shoulders 92 and 93. The main portions of the front faces of shoulders 92 and 93 are slightly convex and concentric relative to the latch pin 91 when the door is in closed position to facilitate closing and opening of the latch.

However, in some instances it is desired that the latch be positively locked in closed position when the weight of a pipe is on the elevator, the weight of the pipe tending to open the door. To this end, I prefer to form a ridge 99 on the latch-engaging face of the shoulder 92, which ridge instead of being rounded off extends substantially straight, as clearly shown in Fig. 3. The latch member 90 is provided with a screw 100 extending therethrough at the level of the ridge 99 on the shoulder 92 so that when the screw 100 is adjusted so that its end extends beyond the face 97 of the latch it contacts the ridge 99, as shown in Fig. 3. The ridge 99 is inclined at such an

angle that in order for the latch to open the door must be fully closed. Therefore, if the latch is once closed and the slips set into engagement with a pipe the force of the slips acting between 5 the pipe and the body member 1 and the door 2 tends to open the door, forcing the ridge 99 up against the end of the screw 100 and positively preventing any opening movement of the latch. However, after the slips have been retracted so 10 that the door 2 can move into fully closed position, then the ridge 99 is displaced far enough away from the end of the screw 100 to permit opening of the latch.

In case it is not desired to utilize the self-locking feature described, the screw 100 is simply turned out until its end is flush with the face 97, whereupon it forms no function in the operation of the latch and the latch may be opened or closed without the door 2 being in fully closed position 20 so long as the opening pressure on the door does not produce sufficient friction between the engaging faces of the latch and the shoulders 92 and 93 to prevent movement of the latch.

For purposes of illustration, the various features 25 of my invention have been described as incorporated in a particular side door slip elevator. It will be apparent to those skilled in the art that various modifications may be made in the particular elevator construction illustrated without 30 departing from the spirit of the invention and the invention is therefore to be limited only as set forth in the appended claims.

I claim:

1. In an elevator of the type described comprising a pair of body members adapted to encircle a pipe and hinged together at one end for relative swinging movement into closed and open positions in combination with means for locking said members in closed position; the locking means which comprises a latch hinged to the free end of one of said members for horizontal swinging movement toward and away from the end of the other member, a shoulder on the said other member adapted to be engaged by said latch when the latter is in closed position, said shoulder having a latch engaging face extending at an oblique angle with respect to a radius from the axis of the latch hinge in such direction that 15 when the elevator is in closed position the distance from the latch hinge to the outer end of said latch-engaging face is greater than the distance from the latch hinge to the inner end of the latch-engaging face, and an adjustable non-yieldable contact member on said latch adapted to contact said inclined face on said shoulder and prevent opening movement of said latch except when said elevator members are in fully closed position.

2. A latch construction as described in claim 1, in which said adjustable means comprises a screw threaded through said latch and adjustable from a position in which its inner end is flush with the shoulder engaging face of the latch to a position in which it projects substantially beyond said face of the latch.

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