July 29, 1952 J. J. PROGRESS 2,605,330

LATCH POSITION SIGNALING DEVICE

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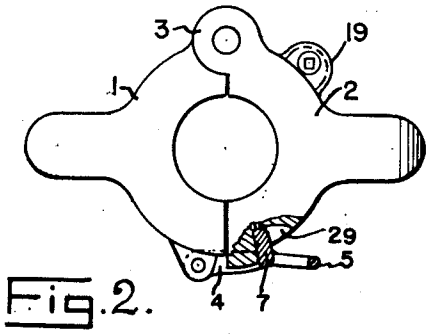


Fig. 2.

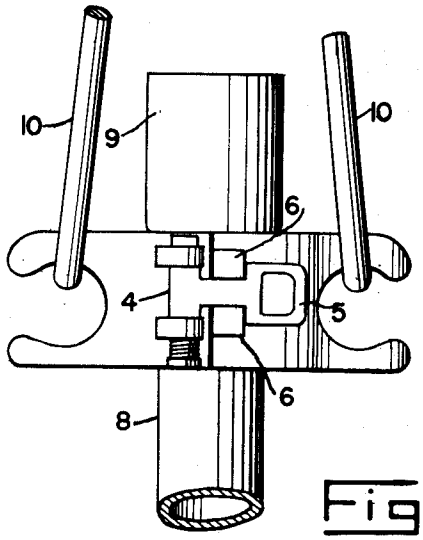


Fig. 1.

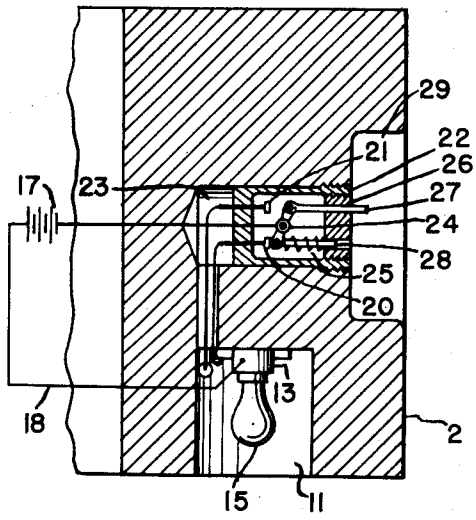


Fig. 4.

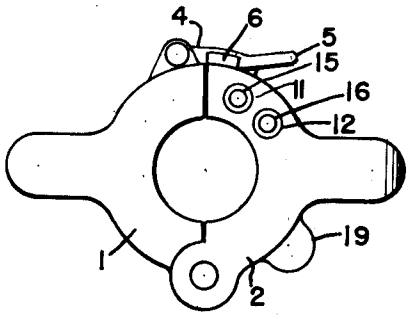


Fig. 3.

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LATCH POSITION SIGNALING DEVICE

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3 Claims. (Cl. 177—311)

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This invention relates to a safety signalling device specially designed for use in well drilling operations.

An object of the present invention is to provide a signalling device which will indicate to workmen on a derrick floor that the elevator latch is completely and safely closed.

In carrying on well drilling operations the drill stem as withdrawn from the well, must be broken up and stacked in the derrick; and when making up the drill stem in going back into the drill bore the drill stem sections must be screwed, one at a time, onto the stem as it is lowered into the well bore. An appliance commonly known as an elevator is swung from the derrick crown block in the conventional manner and is latched about the drill stem section to suspend the same either while the drill stem is being broken up and withdrawn or made up and lowered.

This elevator is composed of two sections hinged together on one side so that the elevator can be opened and closed with a latch at the other side to latch the sections around the drill stem.

It is very important that the latch be securely closed as otherwise when the weight is imposed on the elevators the latch might accidentally release and allow a drill stem section to drop onto the derrick section and cause injury to the workmen or other equipment or both.

It is another object of the present invention to provide a signalling device whereby the workmen on the derrick floor may know whether or not the sections of the elevator are safely latched together.

This latching operation is performed by a workman up in the derrick and if the elevator is not safely latched the workmen on the floor can transmit that information to the workman up in the derrick so that the latter can safely latch the elevator.

While the signalling device has been specially designed for use on drill stem elevators it may be applied to latches used for a similar type of work.

Other objects and advantages will be apparent from the following specification which is illustrated by the accompanying drawings, wherein:

Figure 1 is a side view of an elevator latched about a drill stem section.

Figure 2 is a top plan view of an elevator, partly in section.

Figure 3 is a bottom plan view thereof, and

Figure 4 is an enlarged, fragmentary, sectional view.

Referring now more particularly to the drawings the numerals 1 and 2 designate the arcuate sections of the elevator which are hinged together, at one side, by the hinge 3.

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Pivoted to the other end of section 1 there is a latch which is designated generally by the numeral 4 and whose outer end has a hand grip 5 by means of which the latch may be swung open or into closed position.

The other end of the section 2 is provided with spaced outwardly extended lugs 6, 6 between which the latch fits when in closed position and said latch is formed with a transverse bar 7 which extends inwardly and which engages behind the lugs 6 when the latch is in closed position to latch the elevators about the drill stem section 8 and underneath the top collar 9 thereof. The elevator is suspended by links, such as 10, 10 from a travelling block which, in turn, is suspended by means of the conventional cable or wire line which operates over the crown block of the derrick.

If the latch is not swung fully to home position, in latching the elevator about the drill stem section, it is liable to accidentally release when the full load is imposed on it and to drop the drill stem section on the derrick floor. The derrick man may not be in position to surely determine whether the latch is fully closed or not and therefore provision has been made to indicate to the workmen on the derrick floor the true situation.

In the present illustration there are two chambers 11 and 12 in the lower end of one of the elevator sections. In the present illustration these chambers are in the lower end of the elevator section 2.

Mounted in these chambers there are the electric light sockets, as 13, 14 into which are screwed the electric light globes 15, 16. The globe 15 is of one color, preferably red and the globe 16 is of another color, preferably green.

Each globe is wired in circuit with a battery 17 through the wiring 18. This battery may be mounted in a suitable housing 19 forming part of the elevator and the circuit through each globe is provided with spaced contact points 20, 21. These contact points are located in a suitable housing 22 therefor which is screwed into the chamber 23 formed in the elevator section 2 and mounted in this housing there is a double acting switch 24 which is pivoted in the housing and which is normally held in contact with the contact point 20 by means of a pressure spring 25.

The outer end of the housing 22 is normally closed by a plug 26 which is screwed therein and pivotally connected to the ends of the switch 24 are the push rods 27, 28 which work through

aligned bearings in the plug **26**. The pressure spring **25** surrounds the push rod **28** and is interposed between the switch and the plug **26** so as to normally hold the switch in contact with said contact point **20** which completes a circuit through the red light globe **15**, when the latch is open, so as to indicate to the workmen that the latch is open.

When the latch is fully closed the bar **7** seats fully in a recess **29** in the elevator section **2** and contacts against the outer end of the rod **27** and thereby forces the switch **24** into contact with the contact point **21** and moves said switch out of contact with the contact point **20**. The latch is now fully closed and the circuit through the green light **16** is completed and the circuit through the red light is broken so as to indicate to the workmen that the latch is safely closed and the operator of the drawworks is then signalled and the drill stem section may then be safely elevated or lowered as the case may be.

When the load is delivered to the required destination the latch is then opened to release the elevator from the load; the circuit through the red light is completed and through the green light is broken to indicate that the elevator latch is open.

The switch mechanism is positioned so that it will be actuated by the latch to close the circuit through the green light **16**. However, this switch may be located in either of the elevator sections and arranged to be actuated by the other section when the elevator sections are fully closed around the pipe so that the latch itself will completely close so as to securely hold the elevator sections in closed position.

A green light signal is thus given to the workmen about the derrick to indicate that the elevator is completely latched when a load is being handled and if not completely and safely latched to indicate that fact also to the workmen.

The drawings and description are illustrative and disclose what is now considered to be a preferred form of the invention, however only by way of illustration while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. A lifting device formed of parts connected together and adapted to be latched around a load to be lifted, a releasable latch movably mounted on one part, a catch on another part adapted to be engaged by the latch, when the latch is moved to closed position, an electrical signalling device carried solely by one of said parts and including two signals, said signalling device having a switch positioned so as to be closed by the latch, when the latch is in closed position, to complete an electrical circuit through one of said signals, said switch automatically closing the circuit through the other signal when the latch is released.

2. A pipe elevator formed of two sections which are hinged together at one end and which are shaped to fit around a round object, a latch hinged to the other end of one of said sections and a catch on the other end of the other section engageable by the latch when the latch is closed, two electric light globes in one of said sections, a switch in said section positioned so as to be closed by the latch, when the latch is in closed position, to complete an electrical circuit through one of said globes and means for reversing the switch to open said circuit and to complete an electrical circuit through the other globe when the latch is released.

3. A safety signalling device in a pipe elevator formed of two sections which are hinged together at one end and which are shaped to fit around a round object and having a latch on the other end of one of said sections and a catch on the other end of the other section engageable by the latch when the latch is closed, said device comprising, two electric light globes in one of said sections, a switch in said section positioned so as to be closed by the latch, when the latch is in closed position, to complete an electrical circuit through one of said globes, and means for reversing the switch to open said circuit and to complete an electrical circuit through the other globe when the latch is released.

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