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J. E. PATTERSON

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SAFETY DEVICE FOR HOISTS

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Fig. 1

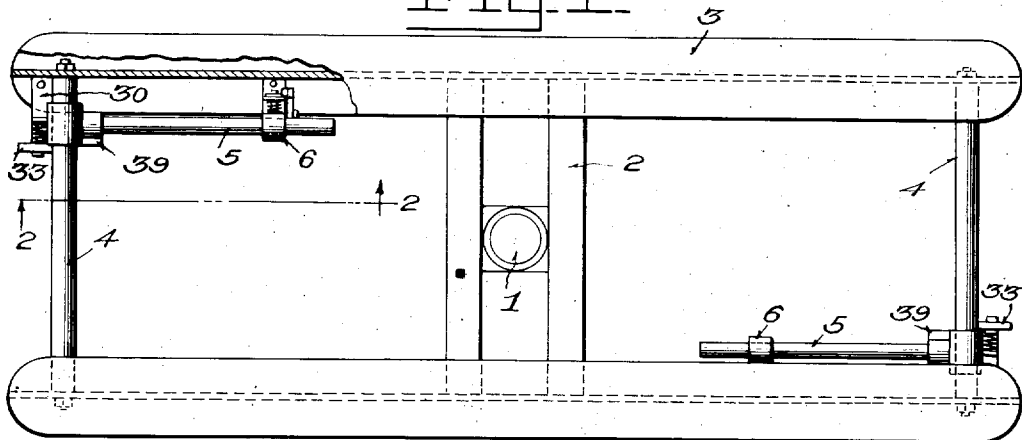


Fig. 2

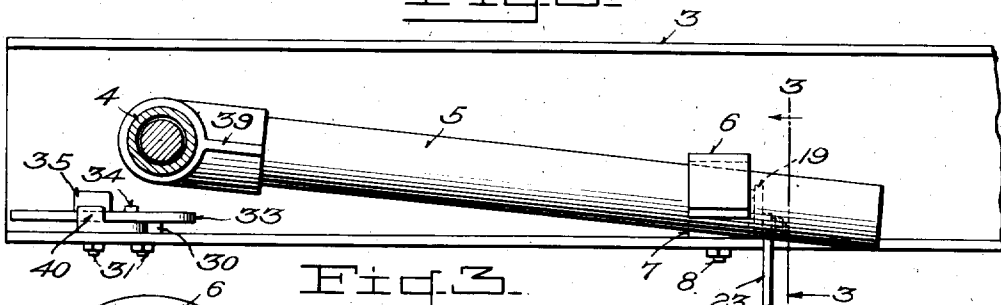


Fig. 3

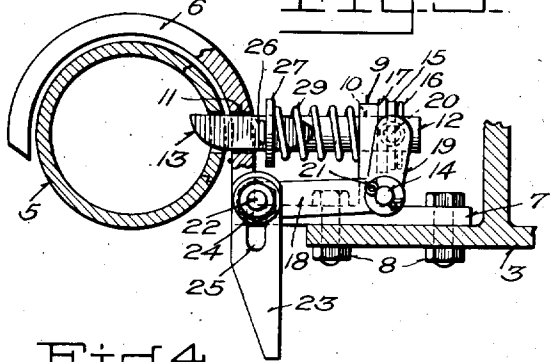


Fig. 4

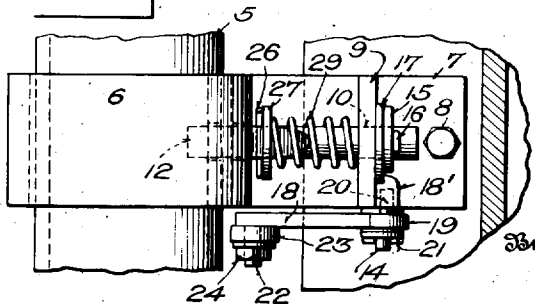
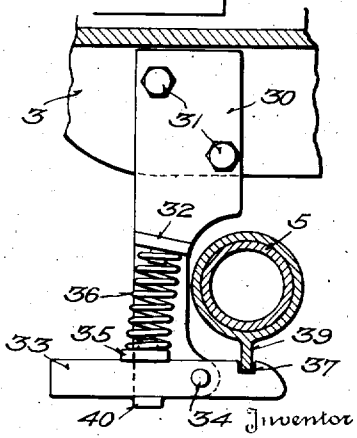


Fig. 5



JULIAN E. PATTERSON,

By C. E. Herrstrom & H. C. Philocean
Attorneys

UNITED STATES PATENT OFFICE

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SAFETY DEVICE FOR HOISTS

Julian E. Patterson, Brownfield, Tex.

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2 Claims. (Cl. 254-89)

Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The present invention pertains to a novel safety device for a hoist of the type embodying a hydraulic plunger, such as those used in automotive repair shops.

The object of the invention is to provide a device to prevent the hoist from falling or slipping from the elevated position because of leakage of the hydraulic system or any other cause. It is evident that a hoist that is likely to slip or fall is a constant hazard to a man working underneath it.

This object is accomplished by means of a leg, or a pair of legs, pivotally suspended from the platform of the hoist and occupying a vertical position when the hoist is elevated. The hoist can then drop or slip only until the safety leg rests on the floor. When the hoist is to be lowered, the leg is swung upward and into a latch carried by the platform. This latch embodies a release finger which, on engaging the floor, releases the leg and places it in readiness to assume the vertical position when the hoist is again elevated. The platform also carries another latch adapted to receive and retain the leg in the vertical position so that the leg will not swing when coming into contact with the floor.

An illustrative embodiment of the invention is disclosed by way of example in the following description and in the accompanying drawing in which:

Figure 1 is a plan view, partly broken away, of a hoist embodying the present invention;

Figure 2 is a cross section taken on the plane indicated by the line 2-2 of Figure 1;

Figure 3 is a cross section taken on the plane indicated by the line 3-3 of Figure 2;

Figure 4 is a plan view of the structure shown in Figure 3, and

Figure 5 is a fragmentary plan view, partly in section, illustrating the latch for holding the leg in vertical position.

In Figure 1 is shown a hoist or lift including a hydraulic plunger 1 surmounted by a head 2 carrying a pair of horizontal rails or channels 3 in the usual manner. The rails support at one or both ends a cross shaft 4 which is preferably rotatably mounted. On each shaft is mounted a leg 5 adapted to swing about the axis of the shaft and which may be secured rigidly to the shaft if the latter is rotatably mounted. If two shafts 4 are provided, as in the preferred construction, the legs 5 are diagonally related to each other. The

corresponding latches associated with each leg 5 are identical, and only one set need therefore be described in detail.

Each rail 4 carries a clip including a downwardly facing concave member 6 having an outwardly extending lug 7 fastened to the base of the channel 3 by bolts 8. The member 6 is positioned to receive the corresponding leg 5 when the latter is swung to a horizontal position. An apertured lug 9 is formed upon the extension 7 and is provided with a hole 10 aligned with a similar hole 11 in the member 6. In these holes is slidably mounted a locking pin 12 having a rounded end 13 disposed within the member 6 and adapted to engage the leg 5 received therein. A laterally extending pin 14 is secured to the base of the lug 9 for a purpose that will presently be described.

On one end of the locking pin 12 is mounted a washer 15 backed by a cotter pin 16. Next to the washer is mounted a disk 17 having a laterally extending boss 18. The disk normally bears against one side of the member 9.

On the pin 14 is rotatably mounted a bell crank lever having a long arm 18 extending towards the member 6 and a short arm 19 extending towards the disk 17. The arm 19 carries a pin 20 rotatably received in the boss 18. The bell crank lever is held on the pin 14 by a cotter pin 21. The free end of the longer arm 18 is formed with an outwardly extending threaded stud 22 on which is fastened a trip leg 23 by means of a nut 24. The leg 23 has a slot 25 receiving the stud 22 and permitting the leg to be locked in selected positions to the arm 18.

Another cotter pin 26 is passed through the locking pin 12 in a position to engage the outer surface of the member 6. Against the pin is a washer 27, and between the washer and the member 6, the pin 12 is surrounded by a compressed coil spring 29.

As the hoist is being raised, the leg 5 is free from the clip 6 and reaches a vertical position when the hoist is fully raised. In this position it serves as a safety leg or stop to support the hoist in case the plunger 1 slips in its cylinder. When the hoist is to be lowered, the leg is lifted and forced into the clip 6 over the rounded end 13 of the locking pin 12 and is then held by the pressure of the spring 29 on the locking pin. As the hoist reaches its lowest position, the trip finger 23 engages the floor and swings the bell crank lever 18, 19 retracting the pin 12 and permitting the leg 5 to fall out of the clip in readiness for the next elevating operation.

Slightly below the shaft 4 and adjacent to the

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leg 5 another latch is fastened to the rail 3. This device includes a plate 30 bolted at 31 to the rail and formed with an upstanding lug 32 between its ends. At the free end of the plate 30 a latching finger 33 is pivotally mounted by stud 34. The finger 33 is also formed with an upstanding lug 35, and between the lugs 32 and 35 is inserted a compressed spring 36. One of the edges of the finger 33, near the free end thereof, is formed with a notch 37 for a purpose that will presently appear. Adjacent to the notch, the edge of the plate 30 is formed with a recess 38 adapted to receive the leg 5 when in the vertical position. The leg is formed with a rib 39 that snaps into the notch 37. Thus, the leg remains locked in the vertical position when it takes the weight of the hoist. Before swinging the leg into the clip 6, as previously set forth, the finger 33 is obviously swung away from the rib 39 by pressure on the unnotched end thereof. Adjacent to the finger, the plate 30 is formed with a lug 40 to limit the movement of the finger under the action of the spring 36.

While a specific embodiment of the invention has been shown and been described, it will be understood that various alterations may be made without departure from the spirit of the invention as indicated by the appended claims.

What I claim is:

1. In a hoist having a platform, a leg having its upper end pivotally attached thereto on a horizontal axis and adapted to swing by gravity to a vertical position, a bracket attached to said platform at a point thereon spaced from said axis and having a flange engaging said leg to limit upward pivotal movement thereof, a latch member movably mounted on said bracket, a spring arranged to move said latch member into engagement with said leg to hold said leg in locked position adjacent said bracket, a pivotally mounted bell crank lever arranged to move said latch member, and a finger carried by said bell crank lever and

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extending below said platform for engagement with the ground to retract said latch member when the platform is lowered.

2. In a hoist having a platform, a leg having its upper end pivotally attached thereto on a horizontal axis and adapted to swing by gravity to a vertical position, a bracket attached to said platform at a point thereon spaced from said axis and having a flange engaging said leg to limit upward pivotal movement thereof, said bracket having a second flange spaced from said first mentioned flange and said flanges being provided with aligned openings therein, a latch member slidably mounted in said openings, a spring arranged to move said latch member into engagement with said leg to hold said leg in locked position adjacent said bracket, a bell crank lever pivotally mounted on the second mentioned flange of said bracket and having one leg engageable with said latch member, and a finger extending downwardly from the other leg of said bell crank lever and below said platform for engagement with the ground to retract said latch member when the platform is lowered.

JULIAN E. PATTERSON.

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