March 6, 1934. J. M. BENSON 1,950,290

SCAFFOLD

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Fig. 1.

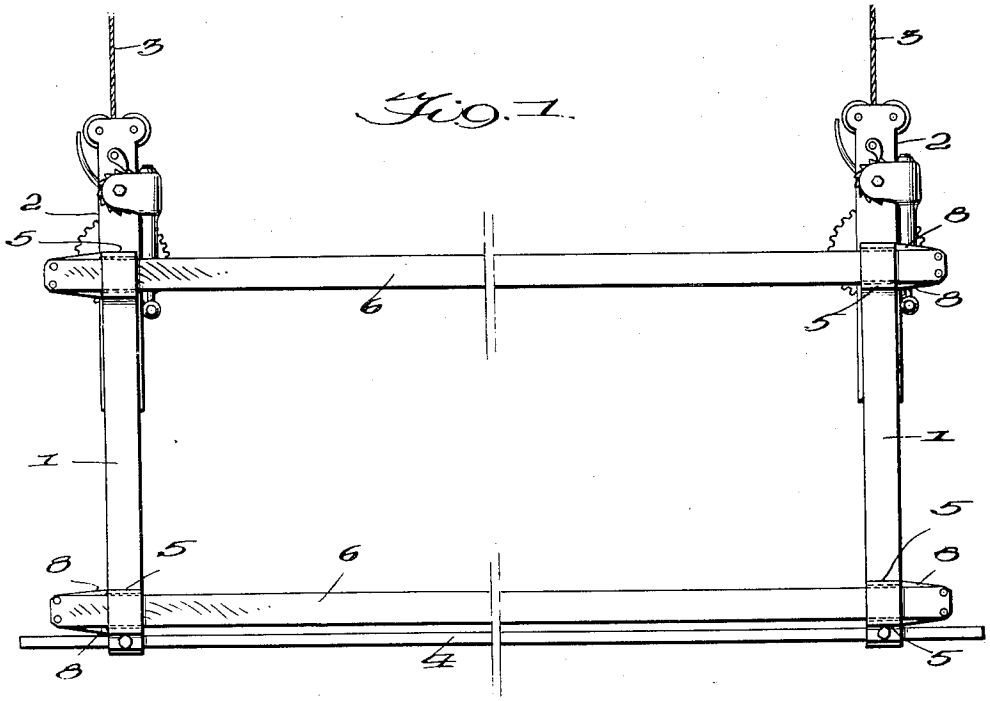


Fig. 2.

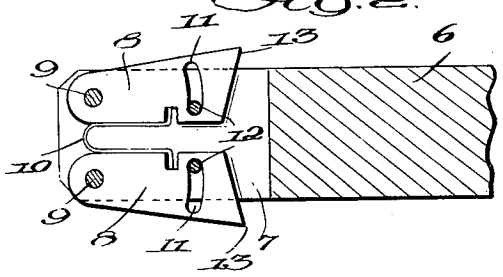


Fig. 4.

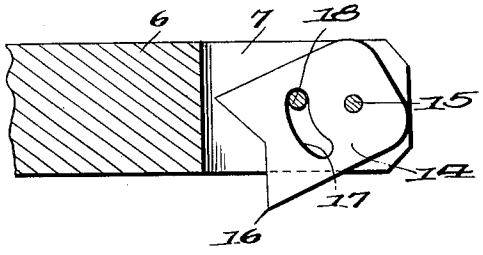


Fig. 3.

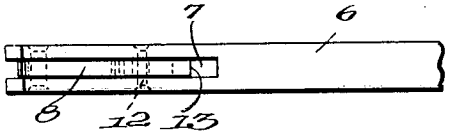
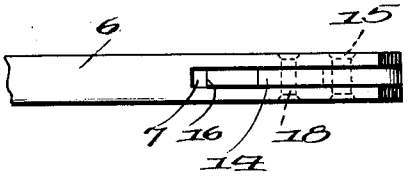


Fig. 5.



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Fig. 6.

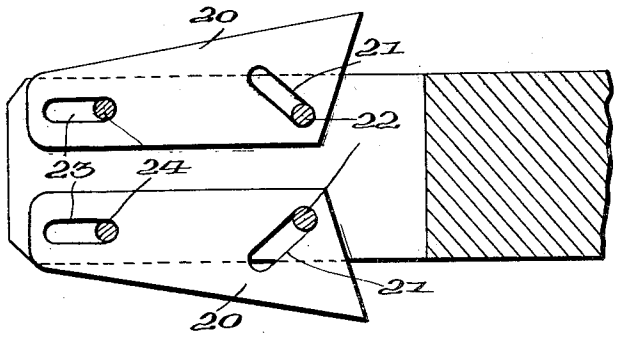


Fig. 7.

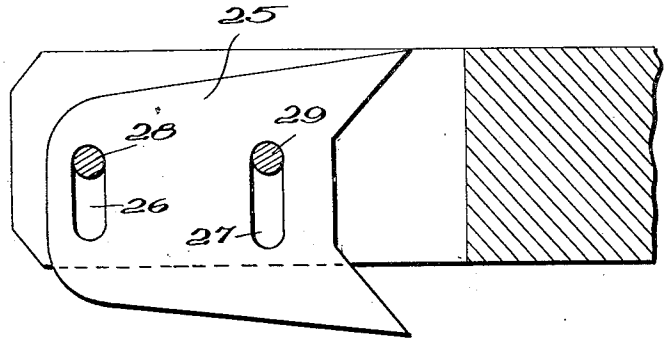


Fig. 8.

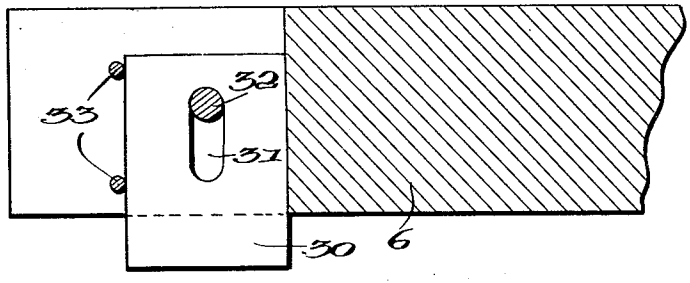
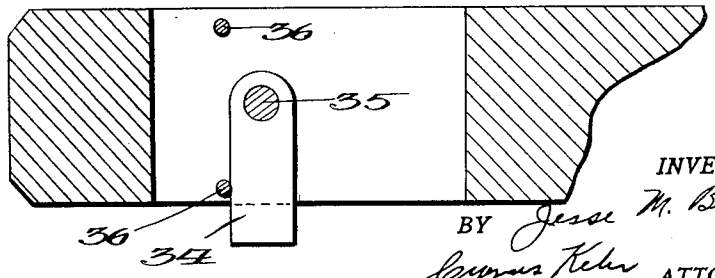


Fig. 9.



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UNITED STATES PATENT OFFICE

1,950,290

SCAFFOLD

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Application March 22, 1933, Serial No. 662,173

14 Claims. (Cl. 304—18)

This invention relates to an improvement in scaffolds, and more particularly to the manner of attaching the guard-rails to the supporting frame structures, so as to prevent accidental displacement of the guard-rails.

Heretofore, guard-rails of scaffolds either have been loosely received in the guide portions of the frame without any fastening means, or they have been nailed in place to prevent their removal. The former was unsatisfactory because it would permit the guard-rails to work out and become disengaged from the frame structures, with the danger that a workman might fall from the scaffold, or the guard-rail might injure someone in falling after becoming displaced. On the other hand, when guard-rails are nailed, they may not be easily displaced when it is desired to dismantle the scaffold structure, and repeated nailing of the guard-rails at different points tends to weaken and even split the rails, especially when made of wood as they usually are.

My present invention provides for locking the guard-rails in place, so as to permit them to be readily displaced, and yet the lock is of such a character that it may be easily turned when it is desired to remove the guard-rails. The guard-rails usually slip through the openings in the frame structure, and my invention provides one or more locking plates at each end of the guard-rail, so arranged that, after the ends of the guard-rails are slipped through the openings in the frame, these plates move outward from concealment within the guard-rail, either by gravity or a spring to engage on the outer sides of the frame, and thereby prevent accidental displacement of the guard-rail, although it may be removed easily by pressing the locking plates inwardly.

In the accompanying drawings:

Fig. 1 is a side elevation of a scaffold with my invention applied thereto;

Fig. 2 is a sectional view through an end portion of a guard-rail showing the locking plates in elevation;

Fig. 3 is a top plan view of the same;

Fig. 4 is a view similar to Fig. 2, but showing a slightly different form of locking plate;

Fig. 5 is a top plan view thereof; and

Figs. 6, 7, 8, and 9, are sectional views showing other forms of locking plates.

My invention is shown as applied to a scaffold structure which may be of conventional form, such as has been used heretofore. Such a scaffold usually comprises a frame designated 1, at each opposite end of the scaffold, having at its upper portion a hoist structure 2, connected in the usual manner with a supporting rope or cable 3. The supporting ropes or cables usually extend to an upper portion of the building to which they are attached for supporting the scaffold therefrom. The frames 1 usually have flooring boards 4 disposed therebetween, upon which the workmen may stand.

Each of the frames 1 is constructed with one or more guides or openings 5 therein, there being two shown in each frame in the upper and lower portions thereof to receive bars or guard-rails 6 which are slidable therethrough.

Each of the bars 6 has each opposite end bifurcated to form a groove 7 therein. In each of the grooves 7 in the form shown in Figs. 2 and 3 is a pair of locking plates 8, pivoted as at 9, and swingable vertically in the groove 7. A bowed spring 10 is arranged between the plates 8 with its opposite ends bearing against the inner edges of the plates, normally tending to press the plates in opposite directions and to limit the upward movement of the plates. The plates 8 are provided with slots 11 through which the pins 12 extend. The slots permit the locking plates to be pressed inward against the tension of the spring 10 in slipping the ends of the bars through guides 5, and then after each end has been pushed far enough through its guide beyond the point 13 of the locking plates, the spring 10 swings the latter in opposite directions to engage behind the guide 5 and thereby prevent accidental displacement of that end of the bar 6.

Instead of using a pair of locking plates with a spring as shown in Figs. 2 and 3, I may use a single locking plate 14 as shown in Figs. 4 and 5, which would be pivoted as at 15 within the groove 7 and provided with oppositely directed points 16 one or the other of which may serve to engage behind the guide 5. The plate 14 would be actuated by gravity and one side or the other would normally tend to swing out of the groove 7 according to the edge of the bar turned downward, which swinging movement is limited by a slot 17 in the plate 14, into which slot a pin 18 extends.

The provision of locking plates in the opposite ends of a bar prevents accidental displacement thereof from the scaffold frame structure by locking it in place in the guides; but these locking plates may be easily turned so as to permit the bar to be readily removed when desired.

In Fig. 6, I have shown the bar or guard-rail as provided with a pair of plates 20, each of which has an inclined slot 21 therein receiving a pin 22 and a longitudinal slot 23 receiving a pin 24. Pressure applied to the extreme edges of the plates

20, such as would be applied by forcing an end of the bar through a frame guide 5 would serve to force the plates to the right in Fig. 6, whereas gravity acting in conjunction with the inclined slots 21 will serve to direct the lowermost plate outwardly to lock the bar in place.

In Fig. 7, a single plate 25 has parallel slots 26 and 27 therein, receiving pins 28 and 29 which allow this plate to slide vertically by gravity to a point such as shown in Fig. 7, where it may engage a side of the guide and prevent withdrawal of the bar therefrom.

In Fig. 8, the bar 6 has a slidably mounted locking-plate 30 adapted to slide laterally of the bar from the groove therein, and to limit this sliding movement the plate 30 has a slot 31 receiving a pin 32. To hold the plate 30 against swinging movement, said plate is mounted between an end of the groove and pins 33 arranged along a side of the plate.

In Fig. 9, a pivoted plate 34 is pivoted as at 35 within the groove, so as to swing in opposite directions therethrough, and has its swinging movement in the direction of the respective end of the bar limited by pins 36 so as to engage behind the guide and hold the bar in place therein.

I claim:

1. In a scaffold, the combination with frame structure having horizontally alined guides, of a horizontally disposed guard-rail having opposite end portions thereof slidably receivable in the guides, at least one end of said guard-rail having a vertical groove therein, a locking plate housed in said groove and movable by gravity action to present a portion thereof beyond said groove in position to engage a side edge of said guide to restrain said guard-rail against accidental displacement.

2. A guard-rail for a scaffold adapted to be horizontally disposed and slidably receivable in receiving guides of a a scaffold frame, said guard-rail having a vertically disposed groove in an end portion thereof, a locking plate housed in said groove and movable by gravity to present a portion thereof beyond said groove for engagement with a scaffold frame guide to restrain said guard-rail against accidental displacement.

3. In a scaffold, the combination with frame structure having aligned guides, of a bar having opposite end portions thereof slidable through the guides, at least one end portion of the bar having a groove therein, a locking plate housed within said groove and having an edge portion arranged in position to swing out of the groove in position to engage a side of the guide to restrain displacement of the bar therefrom, and a pivot for said locking plate located within the groove.

4. In a scaffold, the combination with frame structure having aligned guides, of a bar having opposite end portions thereof slidable through the guides, at least one end portion of the bar having a groove therein, a locking plate housed within said groove and having an edge portion arranged in position to swing out of the groove in position to engage a side of the guide to restrain displacement of the bar therefrom, and a pivot for said locking plate located within the groove, and fixed relative to the bar, said pivot being arranged to permit the swinging of the locking plate so as to dispose said engaging edge portion outside of the confines of the groove.

5. In a scaffold, the combination with frame structure having aligned guides, of a bar having opposite end portions thereof slidable through the guides, at least one end portion of the bar having a groove therein, a locking plate housed within said groove and having an edge portion arranged in position to swing out of the groove in position to engage a side of the guide to restrain displacement of the bar therefrom, and a pivot for said locking plate located within the groove, said locking plate having a slot therein, and a pin extending into the slot for limiting the swinging movement of the locking plate.

6. In a scaffold, the combination with frame structure having aligned guides, of a bar having opposite end portions thereof slidable through the guides, at least one end portion of the bar having a groove therein, a locking plate housed within said groove and having an edge portion arranged in position to swing out of the groove in position to engage a side of the guide to restrain displacement of the bar therefrom, a pivot for said locking plate located within the groove, means for limiting the outward swinging movement of the locking plate, and resilient means arranged to tend to move the locking plate in an outward direction.

7. A guard-rail for a scaffold adapted to be horizontally disposed and slidably receivable in receiving guides of a scaffold frame, said guard-rail having a vertically disposed groove in an end portion thereof, a locking plate disposed in the groove and having an edge portion adapted to engage a side of a guide for restraining the removal of the guard-rail therefrom, a pivot for the locking plate located within the groove in position for swinging movement of the locking plate to a position approximately wholly enclosed within the groove, or to a position to dispose the engaging edge portion thereof outside of the groove and the confines of the guard-rail.

8. A guard-rail for a scaffold adapted to be horizontally disposed and slidably receivable in receiving guides of a scaffold frame, said guard-rail having a vertically disposed groove in an end portion thereof, a locking plate disposed in the groove and having an edge portion adapted to engage a side of a guide for restraining the removal of the guard-rail therefrom, a pivot for the locking plate located within the groove in position for swinging movement of the locking plate to a position approximately wholly enclosed within the groove, or to a position to dispose the engaging edge portion thereof outside of the groove and the confines of the guard-rail, said locking plate having a slot therein, and a pin extending into the slot for limiting the extreme swinging movement of the plate.

9. A guard-rail for a scaffold adapted to be horizontally disposed and slidably receivable in receiving guides of a scaffold frame, said guard-rail having a vertically disposed groove in an end portion thereof, a locking plate disposed in the groove and having an edge portion adapted to engage a side of a guide for restraining the removal of the guard-rail therefrom, a pivot for the locking plate located within the groove in position for swinging movement of the locking plate to a position approximately wholly enclosed within the groove, or to a position to dispose the engaging edge portion thereof outside of the groove and the confines of the guard-rail, means for limiting the outward swinging movement of the locking plate, and resilient means bearing against the locking plate normally tending to swing the same outwardly.

10. A guard-rail for a scaffold adapted to be horizontally disposed and slidably receivable in receiving guides of a scaffold frame, said guard-

rail having a vertically disposed groove in an end portion thereof, a pair of locking plates pivotally mounted in the groove and having edge portions to swing out of the groove to engage a guide and restrain removal of the guard-rail therefrom, resilient means interposed between the plates tending to force the same in opposite directions out of the groove, and means for limiting the outward swinging movements of the plates.

11. A guard-rail for a scaffold adapted to be horizontally disposed and slidably receivable in receiving guides of a scaffold frame, said guard-rail having a vertically disposed groove in an end portion thereof, a locking plate pivotally mounted in the groove in position to swing in opposite directions, the opposite sides of said plate having guide engaging portions arranged to swing alternately to positions outside of the confines of the guard-rail, whereby one of said engaging portions is located within the confines of the guard-rail, while the other is disposed outside of the confines thereof, and means for limiting the swinging movement of the locking plate in opposite directions.

12. A guard-rail for a scaffold comprising a bar having a groove therein, a locking plate mounted in said groove for sliding movement laterally of the bar, and means within said groove for limiting the extent of said sliding movement.

13. A guard-rail for a scaffold comprising a bar having a groove therein, a locking plate mounted in said groove for sliding movement laterally thereof to a point with an end portion of said plate projecting from a side of rail, and means for limiting the extent of said sliding movement.

14. A guard-rail for a scaffold comprising a bar having a groove therein, a locking plate mounted in said groove for sliding movement laterally thereof to a point within an end portion of said plate projecting from a side of rail, means for limiting the extent of said sliding movement, and means for guiding said sliding movement.

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