Jan. 24, 1967 D. P. DIETER ETAL 3,299,456

DOCKBOARD

Filed Oct. 5, 1964

FIG. 1.

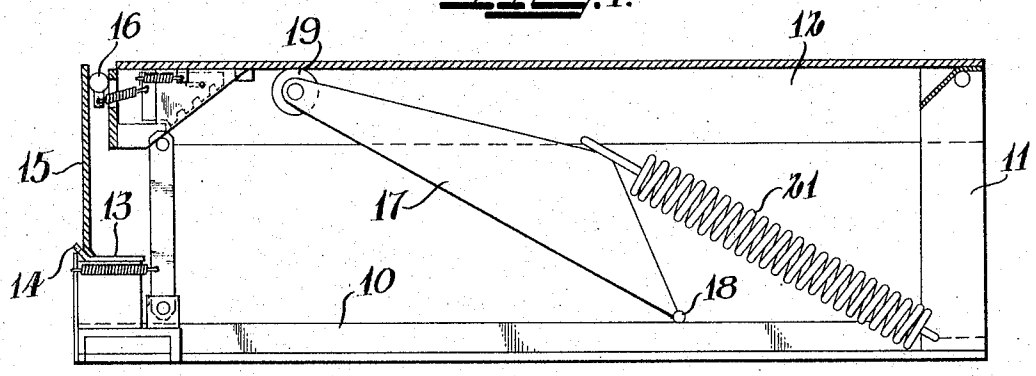


FIG. 2.

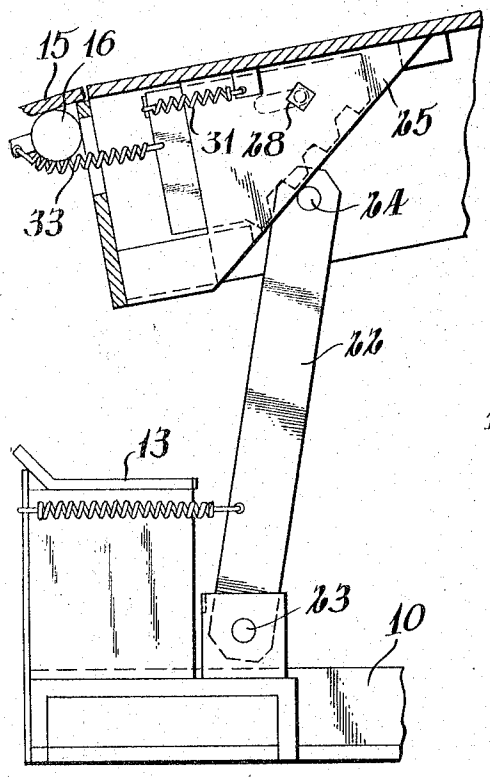
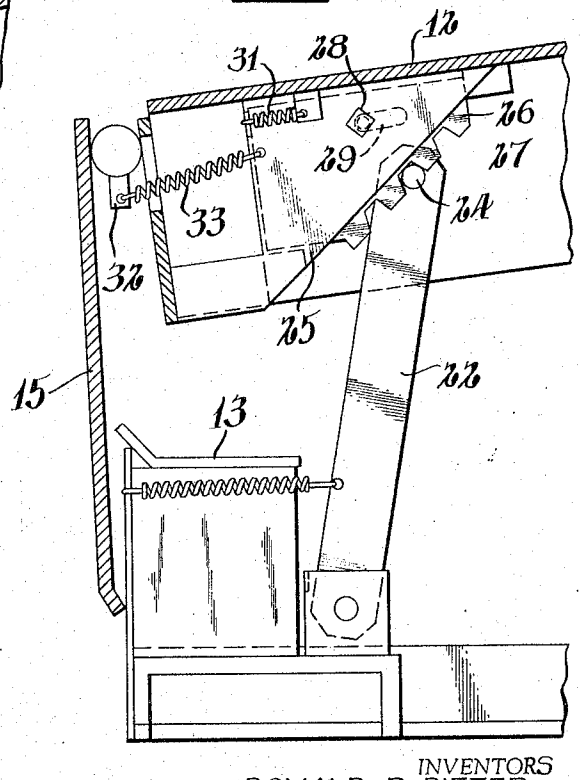


FIG. 3.



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DOCKBOARD

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This invention relates to dockboards and more particularly to a safety stop means for limiting downward movement of a dockboard when it is at a level below the horizontal traffic position and is not supported in the normal manner by the lip thereon.

In the operation of dockboards provided with pivoted lips, the lip normally rests on a stop member on the frame when the board is in its horizontal cross traffic position with the lip depending. If the board should be at an angle below its horizontal crosstraffic position when a truck on which the lip is resting pulls away and the lip swings down the lip will not engage the stop to support the board and the board will consequently be free to move down to its maximum lowered position. Thus if a person walks on the board or should drive a truck over it the board would tend to swing down to the maximum possible extent thereby possibly injuring the person or damaging property.

It is accordingly one of the objects of the present invention to provide a dockboard in which safety support means are provided to limit downward movement of the board when it is not supported by the lip.

According to a feature of the invention, a pivoted strut element is provided on the frame to engage either with a smooth surface on a cam plate over which the strut element can slide freely so the board can move downwardly freely or the board can move downwardly freely or with one or more stop shoulders on a latch plate to limit downward movement of the board. Control means are preferably provided to control each plate as it is engaged by the strut. In the preferred construction, the latch plate is slidable to expose or to conceal the stop shoulder or shoulders thereon and may be connected to the pivoted lip to be moved thereby as the lip moves between its depending and resting positions.

The above and other objects and features of the invention will be more readily apparent from the following description when read in connection with the accompanying drawing, in which:

FIG. 1 is a side view with parts in section of a dockboard embodying the invention, parts being omitted for clarity;

FIG. 2 is a partial view similar to FIG. 1 showing the dockboard in its normal operating position; and

FIG. 3 is a view similar to FIG. 2 showing the dockboard in a position in which the safety stop is functioning.

The dockboard, as shown in FIG. 1, comprises a frame, indicated generally at **10**, which is adapted to be set in a recess in a loading dock. At one end, the frame includes upright members **11** to which the dockboard, indicated at **12**, is pivoted. At its opposite end the frame carries a raised stop plate **13** which may have an upturned lip, as indicated at **14**, at the forward edge thereof.

A lip **15** is hinged to the free end of the dockboard on a hinge **16** to swing from a depending position, as shown in FIGS. 1 and 3, to a raised position, as partly shown in FIG. 2, in which it forms in effect a continuation of the dockboard.

The dockboard is adapted to be raised by spring mechanism comprising one or more pivoted triangular plates **17** pivoted on the frame **18** and carrying rollers **19** which engage the lower surface of the dockboard. Springs **21** connected to the plate or plates tend to swing them in a

direction to raise the dockboard. Normally the dockboard is held in lowered position by any of a number of different forms of hold down mechanism, not shown, which can be released by the operator when it is desired to elevate the board. Preferably also means are provided to lift the lip **15** to its raised position as the board is raised. This means may take the form of any one of several known constructions and is omitted for simplicity of illustration.

When the dockboard is in its horizontal cross traffic position, as shown in FIG. 1, the lip **15** depends therefrom and engages the stop plate **13** behind the upturned shoulder **14**. In this position, the lip will hold the dockboard against further downward movement and will enable traffic to move across it since its upper surface is substantially level with the normal dock surface. In use the board may swing from an elevated position in which it angles upwardly to a lowered position below the level of the dock, as shown in FIGS. 2 and 3.

When the dockboard is being used with the lip extended, the lip will normally engage the bed of a truck in front of the dock to bridge the space between the dock and the truck bed. When the truck pulls away from the dock at the completion of a loading or unloading operation, the lip will swing downwardly to depend from the dockboard and when the dockboard is moved down to its cross traffic position the lip will engage the stop plate **13** and will support the board in the normal manner, as shown in FIG. 1.

On occasions, however, the truck may pull away from the dock when the board is below the horizontal position substantially as shown in FIG. 2. The stop means of the present invention will prevent the board from moving down further in the event this should occur.

As shown, the stop means includes a generally vertically extending strut **22** pivoted at its lower end on a horizontal axis **23** on the frame **10** and carrying a stop pin **24** at its upper end. A cam plate **25** terminating in a lower edge at an acute angle to the surface of the dockboard is secured to the undersurface of the dockboard in a position to be engaged by the pin **24**. Preferably two plates **25** spaced slightly apart are provided slidably to receive between them a latch plate **26**. The latch plate **26** is formed with one edge generally parallel to the sloping edge of the cam plate **25** and which is formed with one or more latching notches **27** adapted to receive the latch pin **24**. The latch plate is adapted to slide parallel to the undersurface of the board **12** and its sliding movement is guided and limited by a pin or bolt **28** carried by the plate or plates **25** and extending through an elongated slot **29** in the latch plate. A spring **31** connected to the latch plate and to one of the plates **25** normally urges the latch plate to the right, as seen in the drawings, so that the notches **27** therein will be exposed beyond the sloping edge of the plate **25**. Thus the latch plate is normally in a position in which the pin **24** will engage in one or the other of the notches **27** to limit downward movement of the board without restricting upward movement thereof.

To make the latch plate inoperative so that board can be moved downward below the horizontal traffic position during use, the latch plate is adapted to be retracted to the position shown in FIG. 2 in which its notched edge lies within the sloping edge of the guide plate **25**. For this purpose a portion of the hinge **16** which is connected to the lip **15** is provided with a projecting arm **32** whose free end is connected through a spring **33** to the latch plate. When the lip is in its depending position, as shown in FIGS. 1 and 3, the spring **33** is relaxed and the spring **31** will shift the latch plate to the right, as shown in FIG. 3. When the lip is raised as, for example, when the dockboard is in use the arm **32** will swing to the position shown in FIG. 2 to stretch the spring **33** which will

overpower the spring 31 and shift the latch plate to the left so that its notched edges are concealed by the guide plate. In this position the dockboard can move freely to its maximum lowered position since the pin 24 will slide freely over the lower sloping edge or cam surface on the guide plate 25 so that the board can be used in the normal manner.

However, if a truck on which the lip is supported should pull away from the dock with the dock in a lowered position, as shown in FIGS. 2 and 3, the lip would swing down missing the stop plate 13, as illustrated in FIG. 3. At this time, however, the latch plate will be moved to the right by the spring 31 and the pin 24 will engage in the notch 27 immediately above it thereby to limit downward movement of the board below the position which it then occupies. Thus if a person should walk on the board while in this condition or should accidentally drive a truck on it the board would be permitted to move down a maximum of one or two inches only rather than to the full extent of its downward movement so that injury or damage would be minimized.

While one embodiment of the invention has been shown and described herein, it will be understood that it is illustrative only and not to be taken as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A dockboard comprising a frame, a generally rectangular board pivoted at one end on the frame on a horizontal axis for swinging vertically, a lip pivoted on the free end of the board to swing from a depending position to a raised position forming an extension of the board, a strut pivoted on the frame and extending toward the underside of the board, a latch plate and a cam plate carried by the board on its underside to be engaged by the free end of the strut, resilient means urging the free end of the strut into engagement with the latch and cam plates, the cam plate being formed with a smooth surface over which the free end of the strut can move to permit free vertical movement of the board, the latch plate being formed with at least one latching surface engageable with the free end of the strut to limit downward movement of the board, the plates being movable relative to each other, and control means operable in conjunction with movement of the lip to move the plates relative to each other thereby to position the plates so that the strut will engage the cam plate when the lip is raised and the latch plate when the lip is in its depending position.

2. A dockboard comprising a frame, a generally rectangular board pivoted at one end on the frame on a horizontal axis for swinging vertically, a lip pivoted on the free end of the board to swing from a depending position to a raised position forming an extension of the board, a strut pivoted on the frame and extending toward the underside of the board, a latch plate and a cam plate carried by the board on its underside to be engaged by the free end of the strut, resilient means urging the free end of the strut into engagement with the latch and cam plates, the cam plate being formed with a smooth surface over which the free end of the strut can move to permit free vertical movement of the board, the latch plate being formed with at least one latching surface engageable with the free end of the strut to limit downward movement of the board, the plates being mounted in side by side relationship and one of them being mounted for sliding movement relative to the other so that the edge portion of either plate may be exposed for engagement with the strut, and control means operable in conjunction with movement of the lip to move the plates relative to each other, thereby to position the plates so that the strut will engage the cam plate when the lip is raised and the latch plate when the lip is in its depending position.

3. A dockboard comprising a frame, a generally rectangular board pivoted at its rear edge on the frame on a horizontal axis, a lip pivoted on the front edge of the board for swinging from a depending position to a raised position forming an extension of the board, a strut pivoted on the frame at its lower end on a horizontal axis to swing from a vertical upright position to an inclined position, a spring urging the strut to its upright position, a cam plate and a latch plate carried by the board in side by side relationship in planes normal to the pivotal axis of the strut and having generally parallel edges lying at an acute angle to the board and which are engageable with the upper end of the strut, the edge of the cam plate being a smooth surface over which the upper end of the strut can slide freely and the edge of the latch plate being formed with at least one projecting shoulder to engage the upper end of the strut and limit downward movement of the board, one of the plates being slidable parallel to the other whereby one or the other of the inclined edges of the plates projects to be engaged by the upper end of the strut, and control means operable in conjunction with movement of the lip to move the plates relative to each other, thereby to position the plates so that the strut will engage the cam plate when the lip is raised and the latch plate when the lip is in its depending position.

4. A dockboard comprising a frame, a generally rectangular board pivoted at its rear edge on the frame on a horizontal axis, a lip pivoted on the front edge of the board for swinging from a depending position to a raised position forming an extension of the board, a strut pivoted on the frame at its lower end on a horizontal axis to swing from a vertical upright position to an inclined position, a spring urging the strut to its upright position, a cam plate and a latch plate carried by the board in side by side relationship in planes normal to the pivotal axis of the strut and having generally parallel edges lying at an acute angle to the board and which are engageable with the upper end of the strut, the edge of the cam plate being a smooth surface over which the upper end of the strut can slide freely and the edge of the latch plate being formed with at least one projecting shoulder to engage the upper end of the strut and limit downward movement of the board, the latch plate being slidable relative to the cam plate so that the shoulder thereon may be retracted behind or projected beyond the inclined edge of the cam plate, and control means operable in conjunction with movement of the lip to move the plates relative to each other, thereby to position the plates so that the strut will engage the cam plate when the lip is raised and the latch plate when the lip is in its depending position.

5. The dockboard of claim 4 in which the control means includes a spring connected to the latch plate to urge it to a position in which the shoulder projects and a connection from the lip to the latch plate to move it to a position in which the shoulder is retracted when the lip is moved to its raised position.

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