Jan. 27, 1970 R. L. LE CLEAR 3,491,394

DOCKBOARD

Filed Aug. 22, 1967

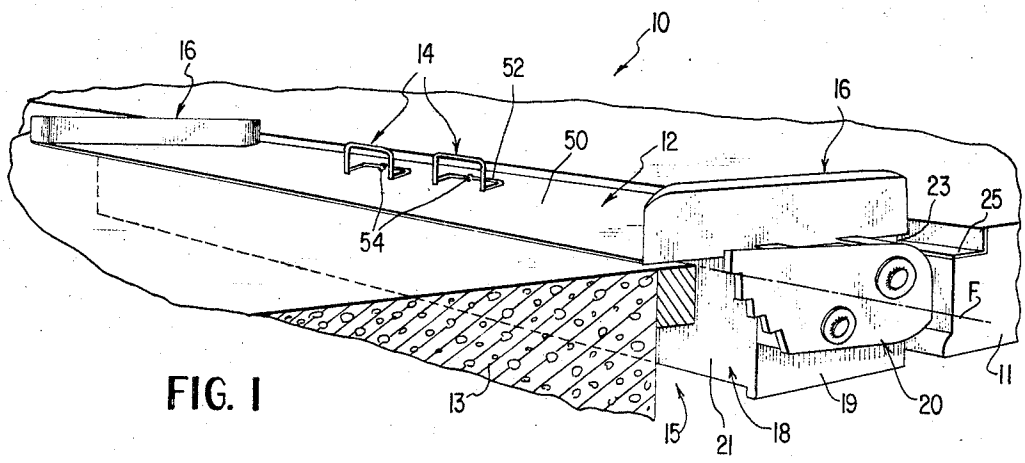


FIG. 1

FIG. 2

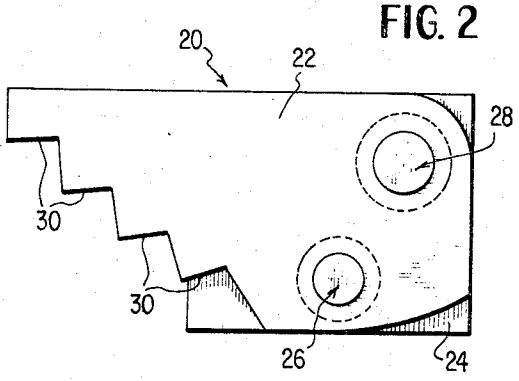


FIG. 4

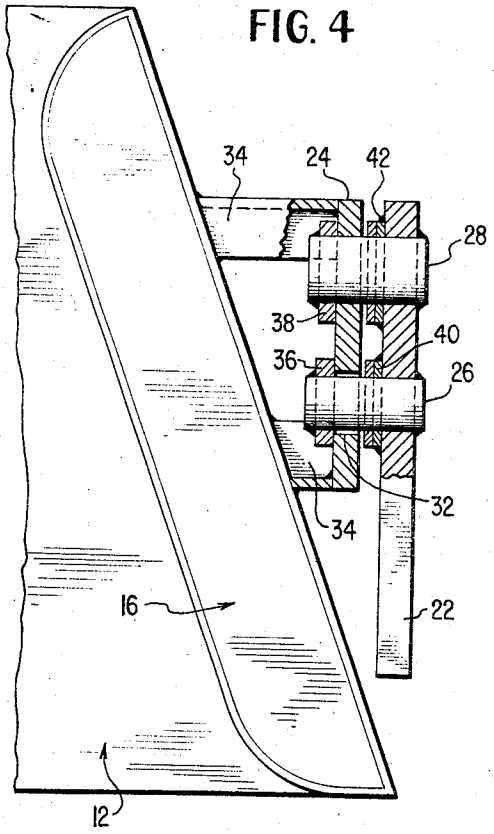
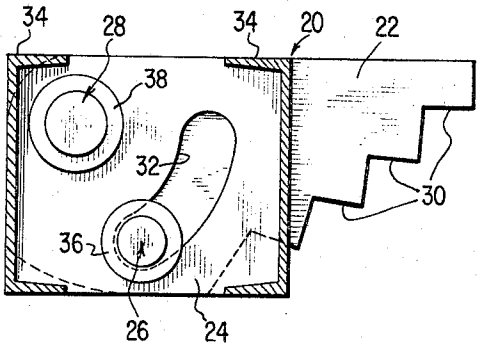


FIG. 3



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DOCKBOARD

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U.S. Cl. 14—72 1 Claim

ABSTRACT OF THE DISCLOSURE

A dockboard for spanning the gap between a railroad car, and a loading dock, including a main platform, a support structure and locking means for preventing shifting of the dockboard while in use. The locking means includes a support plate which is reinforced by channel means and a pivotally mounted locking member containing downwardly and rearwardly spaced teeth to abut the edge of the loading dock. Pivoting and guide pin means are made integral with the locking member and movable with respect to the support plate while being held against disassociation therefrom.

This invention relates generally to material handling equipment, and specifically to portable ramp means of the type which can be efficiently utilized for bridging a gap between two spaced apart surfaces.

It is common practice for goods to be shipped in railroad cars, and for some means to be utilized to unload the railroad cars onto an adjacent platform or dock. Most desirably, the unloading is effected by so-called "fork-lift" trucks. In most instances, if not all instances, when a railroad car is adjacent a fixed platform, there is a gap between the car and the platform so that a fork lift truck cannot drive into the car unless some ramp is provided. It is the type of ramp used for this purpose with which the present invention is most directly involved.

There have been prior suggestions as to the manner in which the space between a fixed platform and a given railroad car could be spanned so as to permit the railroad car to be unloaded by a fork-lift truck driving therein from the adjacent platform. The suggested prior arrangements virtually all incorporated a platform member. The mere use of a platform member, however, was not itself sufficient because such member, if not fixed in position, would be movable and shiftable depending upon the forces exerted thereon by the fork lift truck entering or leaving the car with or without a load. Therefore, some of the prior arrangements incorporated a locking mechanism.

The basic concept underlying the use of a locking mechanism was, in some way, to maintain the platform member which spanned the space between the railroad car and the fixed platform in a given position. Where the railroad cars were not loaded with contents completely up to the door line, the platform member could rest slightly inside the railroad car and slightly over the fixed platform. However, with the advent of so-called "high cube" railroad cars, the doors are slidable outside of the main floor surface of the car so that the cars could be loaded completely up to the door line. Thus, in this new type of car which is now finding widespread use, there is no floor space immediately adjacent the door within the car on which to rest the platform.

There thus was a need for a portable platform arrangement or dockboard which could be positioned between a fixed platform or dock and a high cube car so as to permit the contents thereof to be unloaded conveniently by a wheeled means such as a fork-lift truck. One of the objects of the present invention is to satisfy this need, and in this regard, it is a specific object hereof to achieve

the desired result by utilizing the door slide arrangement as a partial support for the portable platform mechanism.

Of equal importance, if not greater importance, is the technique by which the portable platform member is to be locked in position. When a fork-lift truck is operating to load or unload a railroad car or like item, the forces exerted on the platform mechanism are not only vertical forces of weight, but also lateral forces depending upon turns, weight distribution, and the like. It is thus essential that the means for securing the portable platform member in position be capable of withstanding lateral forces and torsional forces, as well as the normal weight, without distorting in any way.

Prior locking arrangements have not been capable of withstanding the miscellaneous forces to which they are subjected in many instances. In all prior locking arrangements which prove satisfactory and of which present knowledge is available, the locking member or support therefor had some structural weakness which prevented its efficient utilization under varying load conditions.

Thus, another object of the present invention is to overcome such problems and provide a portable platform member or dockboard with a locking means as a part thereof, which locking means positions the platform member or dockboard in desired location, and maintains the same in that location without distortion of the locking component, irrespective of the forces to which it is subjected.

Even more specifically in this regard, it is an object hereof to provide a locking arrangement incorporating a locking member and a support plate therefor, wherein the locking member is pivotally movable through a given arc by virtue of its mounting on the support plate, and wherein the support plate, while contoured and shaped to permit the desired pivotal movement, is specifically reinforced by connecting means so as to prevent distortion thereof.

Consistent with the preferred embodiment of the invention, the dockboard provided hereby includes a main platform, a support structure, and locking means secured to the support structure, which locking means has a locking plate member and a support member, with the locking plate member being solid and merely having pins therein and with the support member providing the pivot as well as an arcuate slot for controlled movement, but additionally, wherein the support member is reinforced by channel means connecting the same to the support structure of the unit.

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description. Such description refers to the annexed drawings presenting a preferred and illustrative embodiment of the invention. In the drawings:

FIGURE 1 is a perspective view of a dockboard in use in accordance with this invention;

FIGURE 2 is a side view of the locking means of this invention;

FIGURE 3 is a side view from the rear of the locking means of this invention; and

FIGURE 4 is a top plan view of one end of the dockboard of FIGURE 1, including the locking means according to this invention with parts in section.

Referring to the drawings, there is shown in FIGURE 1 thereof a dockboard for high cube railcars in accordance with the preferred embodiment of this invention generally designated **10**, a railcar **11**, and a loading platform **13** partially broken away. The dockboard **10** includes a main platform or ramp generally designated **12**, lifting handles generally designated **14**, side guard rails generally designated **16**, a supporting structure generally designated **18** and the locking means generally designated **20**.

Attention is drawn to FIGURE 1 wherein loading dock **13** is depicted broken away so as to better illustrate the overall construction of the dockboard **10**. The front edge of the loading dock **13** is understood to continue along extension line F adjacent to which locking means **20**, as hereinafter described in more detail, is shown.

The main platform **12** comprises a substantially planar top surface **50** mounted between the side guard rails **16** and upon the supporting framework **18** which includes end members **19**, front member **21**, a rear member **23** and cross bracing members (not shown). The main platform **12** is either rectangular in shape or flared, tapering inwardly at the ends toward the rear.

The rear member **23** of the supporting framework **18** projects downwardly a sufficient distance that it will rest on, and engage, the bottom door-slide flange **25** of a high cube rail car **11** and the main platform **12** will rest flush with the floor surface of the car. In a dockboard for conventional rail cars according to this invention the rear portion of the main platform **12** will rest directly on the car floor.

The locking means **20**, shown in FIGURES 2 and 3, comprises a locking member **22**, a support plate **24**, a guide pin **26** and a pivot pin **28**. The locking member **22** contains a plurality of teeth **30** at its forward end, said teeth **30** being stepped downwardly and readwardly and being of sufficient size so that a selected one of said teeth **30** will abut the edge of the loading platform **13** according to the size of the gap **15** (FIGURE 1), thereby supporting the dockboard and insuring against unwanted movement. The support plate **24** is fixedly mounted, as by welding, to the frame **18** by channel pieces **34**. Channel pieces **34** reinforce support plate **24** and prevent structural weaknesses from manifesting themselves therein. The locking member **22** is pivotally mounted on support plate **24** by means of pivot pin **28** located in the upper rear portion of the locking member **22** and the support plate **24**. The pivot pin **28** is fixedly secured to the locking member **22**, becoming an integral part thereof, and rotatably secured to the support plate **24**. The support plate **24** also contains an arcuate slot **32** in which cooperating guide pin **26** slideably engages. Guide pin **26** is fixedly secured to, and therefor integral with, locking member **22** and, along with the arcuate slot **32**, defines the limits of travel of locking member **22** when it pivots about pivot pin **28**. Due to this unique integral construction, locking member **22** is free of structural weakness.

Referring to FIGURE 4 the locking means is shown in part of a flared dockboard in accordance with this invention. Guide pin **26** and pivot pin **28** are fixedly attached to locking member **22** at **40** and **42** respectively. This is done by any suitable means such as welding. Guide pin **26** is secured in support plate **24** by any suitable means which will allow guide pin **26** to slide in the arcuate slot **32** but which will prevent removal of guide pin **26** such as by a washer **36** welded to guide pin **26**. Similarly, pivot pin **28** is secured to the support plate **24** as by washer **38** welded to pivot pin **28** such that pivot pin **28** is free to rotate but may not be pulled loose. While a space is shown between attaching means **40**, **42** and support plate **24** it is clear that such a space is sufficiently small that "wobble" does not occur, or it may be considered to represent a bearing surface.

Lifting handles **14** are mounted in tandem onto the main platform **12** in a known manner and remain in a vertical position when rotated across their center point. They are spaced such that the forks of a fork-lift truck will engage them in order to transport and position the dockboard. When the lifting handles **14** are rotated back across their center point they retract rearwardly, toward the car, into the grooves **52** so as not to interfere with loading or unloading operations. The lifting handles **14** can be manually retracted into the openings **52**, or by contact with the first fork-lift truck or other vehicle to cross

the dockboard. A finger-hole **54** is positioned in each of the openings **52** so that the lifting handles can be grasped and raised by hand. The lifting handles **14** are positioned about the center of the main platform **12** so as to maintain proper balance when handling the dockboard with a fork-lift truck.

While the main platform **12** is described without an additional lip member thereon it is to be understood that the same may be provided without departing from the spirit or scope of this invention.

Having considered in detail the construction of the preferred embodiment of the inventive dockboard, attention is now drawn to the preferred mode of use. When the dockboard **10** is lifted by a fork lift truck by means of lifting handles **14**, the locking members **22** drop to the lower limit of their travel as determined by arcuate slot **32** and the cooperating guide pin **26**. Obviously, when the dockboard **10** is lowered into the proper position spanning the gap **15** between rail car **11** and loading dock **13**, a corresponding one of the teeth **30** on each locking member **22** first engages and abuts the front edge F of loading dock **13**. As the dockboard **10** further is lowered, the locking members **22**, along with their pivot pins **28**, pivot upwardly with respect to the support plates **24** and other members which are fixed to support structure **18**. When the dockboard **10** has finally been positioned the locking members **22** firmly abut the front edge F of the loading dock and effectively prevent unwanted movement. The fork-lift truck then disengages from the lifting handles **14** and proceeds to either load or unload freight from the car.

It is therefore clear that this invention provides a dockboard including a floor or platform means, a supporting frame means beneath the floor means, including a support means at opposite lateral sides of the floor means and a locking means. The locking means includes a support plate at each lateral side of the dockboard having a pivot pin accommodating opening therein and as shown in FIGURE 2, also having an arcuate slot having its center line determined by a radius from the center of the said opening. Latching members are provided in the form of plates **22** having radially spaced seats as at **30** for self-selective abutment with an edge of a gap to be spanned by the dockboard, see F, FIGURE 1. A pivot pin **28** extends perpendicularly inwards of one face of each latching member at a location spaced from the seats or teeth **30**. A second pin **26** extends perpendicularly inwards from the same face of the latching members in spaced relation to the first pin and at a location determined by the radial distance between the center line of the arcuate slot and the center of the pivot pin accommodating opening in the adjacent support plate. Means are provided that rigidly secure the pins to the latching members to maintain the pins in parallel relation. Further, as shown, the pins are transversely and longitudinally dimensioned to be accommodated within and project through and beyond the openings and slots respectively, so as to provide a pivot bearing relation between each pin **28** and its associated opening and a guiding relation between each pin **26** and the associated slots **32**. Means are rigidly secured to the ends of each pin inwardly of the support plate to prevent disassociation of said pins from the openings and slots respectively. Reinforcing means are provided that extend inwards of the support plates at least one opposite sides of the slots and which are rigidly secured to the support means to connect the support plates and associated latching members to the dockboard and to assist in rigidifying the support plates to prevent warping thereof, a responsive to heavy lateral thrusts occasioned during extended use of such a dockboard.

Thus, it will be seen that a preferred embodiment has been particularly described consistent with the aforementioned objects of this invention. This embodiment is to be considered illustrative and in no way limiting.

What is claimed is:

1. A dockboard including a floor means, a supporting frame means beneath said floor means and including a support means at opposite lateral sides of said floor means, a locking means comprising a support plate having a pivot pin accommodating opening therein and also having an arcuate slot therein having its center line determined by a radius from the center of said opening, a latching member comprising a plate having radially spaced seats for self-selective abutment with an edge of a gap to be spanned by the dockboard, a pivot pin extending perpendicularly inward of one face of said latching member plate at a location spaced from said seats, a second pin extending perpendicularly inward of said one face of said latching member plate in spaced relation to said first pin and at a location determined by the radial distance between the center line of said arcuate slot and the center of said pivot pin accommodating opening, means rigidly securing said pins to said latching member plate to maintain said pins in parallel relation, said pins being transversely and longitudinally dimensioned to be accommodated within and project through and beyond said opening and slot respectively, so as to provide a pivot bearing relation between said first pin and said opening and a guiding relation between said second pin and said slot, means rigidly secured to the ends of said pins inwardly of said latching member plate to prevent disassociation of said pins from said opening and slot respectively, and reinforcing means extending inwards of said support plate at least on opposite sides of said slot and rigidly secured to one of said support means to connect said support plate and latching member plate to said dockboard and to assist in rigidifying said support plate to prevent warping thereof responsive to heavy lateral thrusts occasioned during extended use of such a dockboard.

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