MULTIPLE DECK PLATFORM

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This invention relates generally to platforms for transport or storage of objects accommodated thereon, and in particular to a multiple deck platform having an upper deck which can be easily and conveniently moved between lower and raised position.

In the transport and storage of objects such as cans of soft drink pre-mix platforms of a single deck type are customarily used. When single deck platforms are used, it will be apparent that storage of the cans requires a maximum amount of floor space. The capital investment required to provide relatively extensive floor space is considerable and any means for reducing the amount of floor space needed for storage of a given amount of cans is obviously desirable. Further, the labor cost in handling bulky objects such as soft drink pre-mix cans is relatively high where the rudimentary single deck platforms are used.

In accordance with the present invention there is provided a multiple deck platform having a hinged upper deck which may be swung to raised position after being unloaded so as to make the lower deck available for subsequent unloading. While the framework for both the lower deck and the upper deck is formed of relatively heavy, braced members, counterweighting springs are provided which act upon the upper deck so that its weight is substantially balanced. The upper deck may therefore be moved to raised position with a relatively light force.

An object of the present invention is, therefore, to provide a multiple deck platform which reduces by one-half the floor space required for storing of a given number of objects, such as soft drink pre-mix cans and materially reduces the labor cost of handling.

A further object of the present invention is to provide a multiple deck platform of the type referred to above having means for counterbalancing the weight of the upper deck to permit it to be easily and conveniently moved to raised position.

A further object of the present invention is to provide a multiple deck platform having a framework constructed of relatively heavy structural steel members with the decks proper being formed of wood so as to resist scarring or other damage to the objects, such as soft drink pre-mix cans, placed thereon.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a perspective view of a platform embodying the present invention showing the upper deck in raised position.

Fig. 2 is a perspective view similar to Fig. 1, but showing the platform from the end opposite to that of Fig. 1.

Fig. 3 is a perspective view of the platform with the upper deck in lowered position and with both decks loaded.

Referring initially to Figs. 1 and 2, the platform is shown to include a lower deck indicated generally at 10 and an upper deck indicated generally at 11. The lower deck comprises spaced parallel angle irons 12 having deck boards 13 extending therebetween and secured to the angle irons by means of spaced, countersunk screws 14. At their ends the deck boards are mortised so that while they extend between the horizontal portions of the angle irons, they are flush with the upper edges thereof.

Underlying the deck boards each of the angle irons carries an oppositely disposed angle iron 16 which underlies the end margins of the deck boards. The web portion generally formed by the angle irons 12 and 16 has secured thereto, by welding or other suitable means, the spaced skids 17. As may be seen in Fig. 2, the skids 17, a rolling jack 20 to be accommodated under the lower deck when the platform is to be transported.

Triangleshaped bracing plates 18 are secured by welding or other suitable means to the end areas of the angle irons 12. Adjacent parts of the bracing plates have extending therebetween end plates 19, the end plate being secured to the bracing plates by means of countersunk bolts 21. Each of the end plates has welded thereto at its upper margin a reinforcing member 22.

Referring now principally to Fig. 1 it may be seen that one of the end plates 21 is bolted thereon hinge straps 23 which carry eyes at their upper ends accommodating a hinge rod or pintle 24. The pintle provides a pivotal support for the upper deck which is similar to the lower deck previously described. The upper deck includes overlapping angle irons 26 and 27 which, by means of bolts 28, hold therebetween the upper deck boards 29. Plates 31 extend between the angle irons and serve to reinforce the deck floor, similar plates (not visible) being provided for the lower deck floor. At one of its ends the upper deck is provided with upstanding angle irons 32 and at its other end with angle members 33 having triangular faced portions extending along the sides of the upper deck. The angle irons 32 and the angle members 33 are secured by any suitable means, such as welding, to the angle irons 26. Lower end rails 34 extend across the end of the upper deck, being secured by means of bolts 36 to the angle irons 32 and the angle members 33.

Upper end rails 37 similarly extend across the ends of the upper deck. Upper side rails 38 are pivoted to the angle irons at 40 and, as shown in Fig. 3, may be pivotally raised to facilitate the unloading of the upper deck, their lowered position being defined by stop pins 39.

Hinge straps 41 extend from between the angle irons 26 and 27 and at their outer ends are provided with eyes which accommodate the pintle 24. A central hinge strap 42 is secured by means of bolts 43 to the under face of the adjacent plate 31. The outer end of the strap 42 is provided with an eye which also accommodates the pintle 24. It will thus be apparent that the upper deck is hinged by means of the pintle 24 to one of the end plates 19 and can be raised from a lower position, shown in Fig. 3, to the raised position, shown in Fig. 1. While this pivotal arrangement of the upper deck permits access to the lower deck, it will be evident that because of the weight of the upper deck structure, considerable lifting force would be required to raise the upper deck. To counterbalance this weight, thereby permitting raising of the upper deck with very little lifting force, an adjustable spring means is provided which will now be described.

Members 46 are bolted at 47 to the angle members 33 and extend through slots therein. As will be apparent from Fig. 3, the members 46 are spaced between the angle pintle 24 and extend outboard thereof. At their ends the members 46 have hooked thereto tension springs 48 which are anchored by means of eyes 49 carried by outwards extending brackets 51. With the upper deck in lowered position, as shown in Fig. 3, it will be evident that the axes of the springs 48 are substantially vertical and the force of the spring therefore has substantially no
component tending to raise the upper deck. After the upper deck is unloaded, it may be raised by applying only a small upward force at its free end sufficient to move the axes of the springs off the vertical. As soon as this occurs the force exerted by the springs is provided with a component which tends to raise the upper deck, with the consequent lateral movement of the upper ends of the springs providing an increasing lever arm for this force component. An initial light lifting force is thus sufficient to start the travel of the upper deck.

In operation the loaded platform as shown in Fig. 3 may be prepared for unloading by first raising the side rails 38 (these rails are shown partially raised in Fig. 3), thereby permitting convenient access to the upper deck. After the upper deck is unloaded, it may be swung to raised position (Figs. 1 and 2) and the lower deck un-loaded.

It will be noted that the platform is constructed of relatively heavy structural steel members and heavy deck boards. The end plates 19 are provided with suitable notches 52 to accommodate the depending sides of the channel structures formed by angle irons 26 and 27. This arrangement has a braking function resisting lateral displacement of the upper deck and permits the weight of the upper deck and its contents to be supported on the rails 38. When raised, the platform can be loaded and unloaded with a minimum use of labor.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as other modifications may readily suggested themselves to persons skilled in this art and within the scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. A multiple deck platform for storage or transport of objects accommodated thereon, said platform including a lower deck, said lower deck being formed by parallel coextensive angle irons having deck boards extending transversely there-between, bracing plates of equal height rigidly connected to and extending upwardly from said angle irons at each of their ends, end plates secured to said bracing plates and extending across the ends of said lower deck, an upper deck formed by parallel coextensive channel forming members having boards extending transversely there-between and parallel to the web portion of said channels, hinge means mounted jointly upon one of said end plates and said upper deck to permit said upper deck to be pivotally raised with relation to said lower deck, members carried by said upper deck spaced above said hinge means and extending outwardly therefrom, adjustable coextensive spring extending between the ends of said end plates and the ends of said members, each of said end plates having appropriately spaced slots in its upper margin to accommodate and thereby brace the depending sides of said channel forming members when said upper deck is in lowered position.

2. A storage and transport structure comprising two and upper decks of equal areas, parallel end plates of equal height attached to said lower deck and extending upwardly from the ends thereof, hinge means connecting an end of said upper deck with the upper end of one of said plates, parallel angle irons secured to the underside of said upper deck longitudinally and inwardly from the lateral edges thereof and extending throughout its length, said end plates having notches in their upper edges to receive the projecting portions of said angle irons whereby to lock said upper deck in lowered position in parallelism with said lower deck and against lateral movement with respect to said plates, bracing plates rising from the corners of said upper deck, a member projecting rearwardly from the upper end of each of said bracing plates at the hinged end of said upper deck, a spring connected at one end to each of said members and at the opposite end to the adjacent end plate below the hinges thereof, and means for adjusting the tension of said springs.

3. A storage and transport structure comprising lower and upper decks of equal areas, parallel end plates of equal height attached to said lower deck and extending upwardly from the ends thereof, hinge means connecting an end of said upper deck with the upper end of one said plate and normally resting at its opposite end upon the other of said end plates in parallelism with said lower deck, spaced parallel angle irons secured to the underside of said upper deck longitudinally and extending throughout its length, said end plates having notches in their upper edges to receive the projecting portions of said angle irons whereby to lock said upper deck when in lowered position against lateral movement with respect to said plates, bracing plates rising from the corners of said upper deck, rails connecting said bracing plates at their upper ends, a member projecting rearwardly from the upper end of each of said bracing plates at the hinged end of said upper deck, a spring connected at one end to each of said members and at their opposite ends to the adjacent end plate below the hinges thereof, and means for adjusting the tension of said springs.

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