May 14, 1957 H. L. LOPES 2,792,141

VEHICLE MOUNTED CONTAINER FOR HANDLING PALLETS

Filed June 3, 1955 2 Sheets-Sheet 1

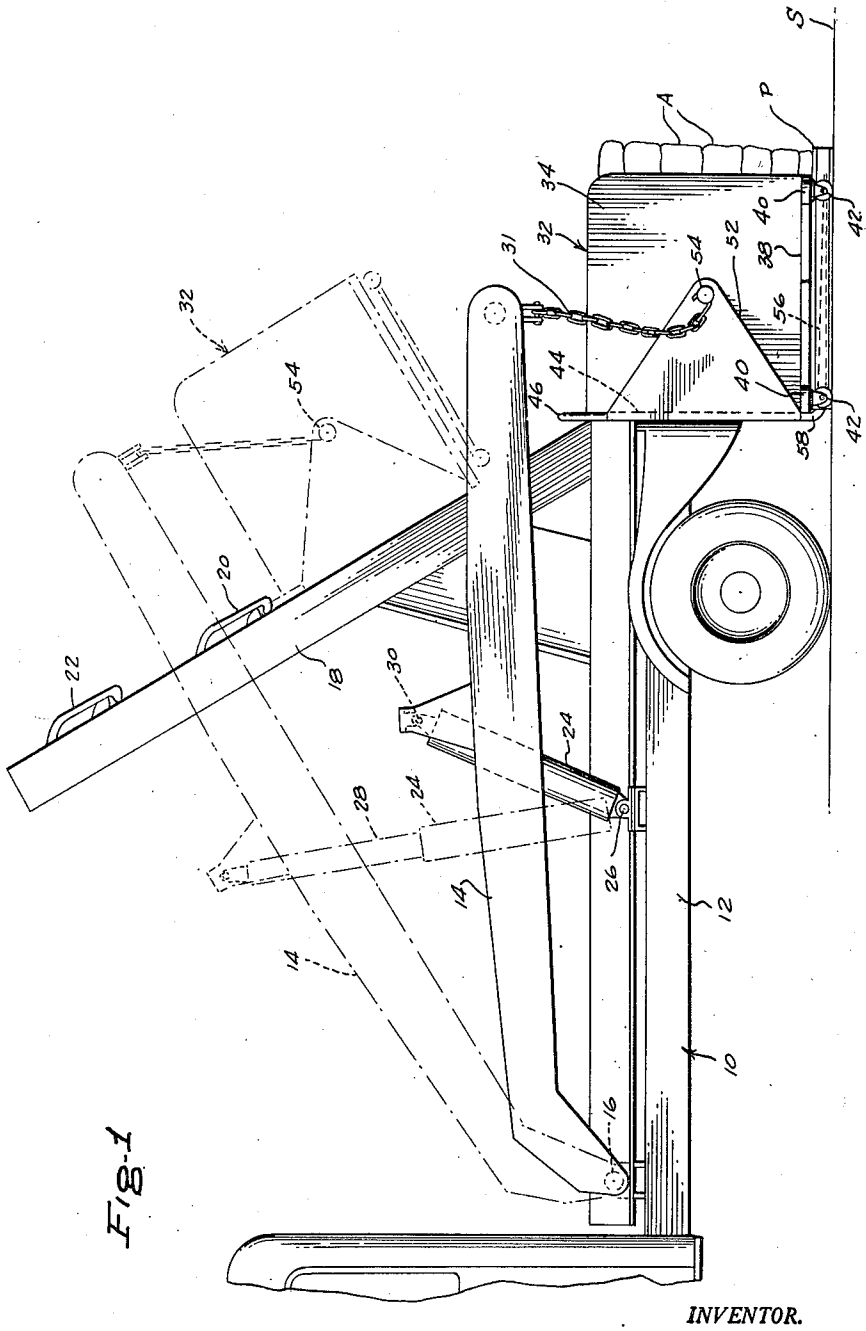


Fig. 1

INVENTOR.
HUMBERTO LEMOS LOPES
BY
McMorrow, Berman & Davidson
ATTORNEYS

May 14, 1957 H. L. LOPES 2,792,141

VEHICLE MOUNTED CONTAINER FOR HANDLING PALLETS

Filed June 3, 1955 2 Sheets-Sheet 2

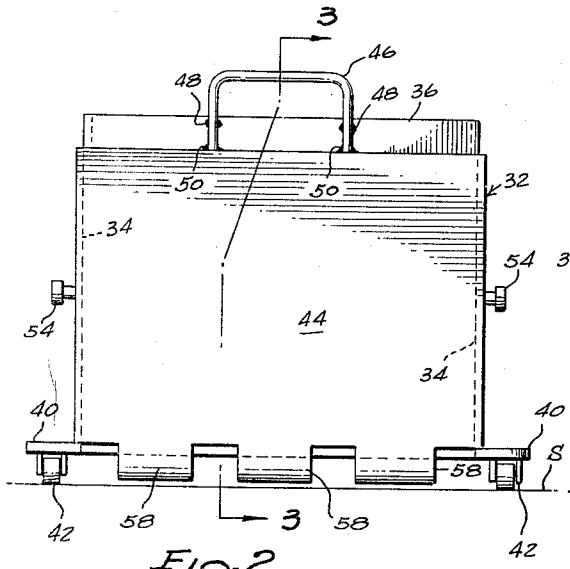


Fig-2

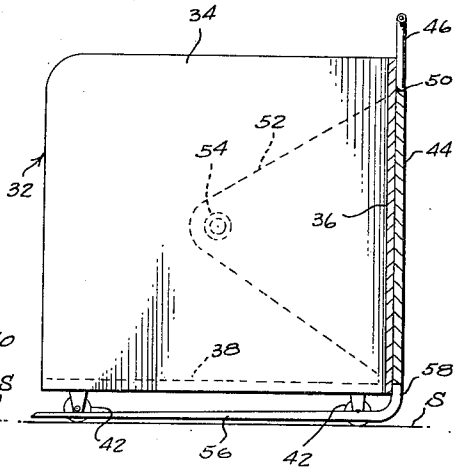


Fig-3

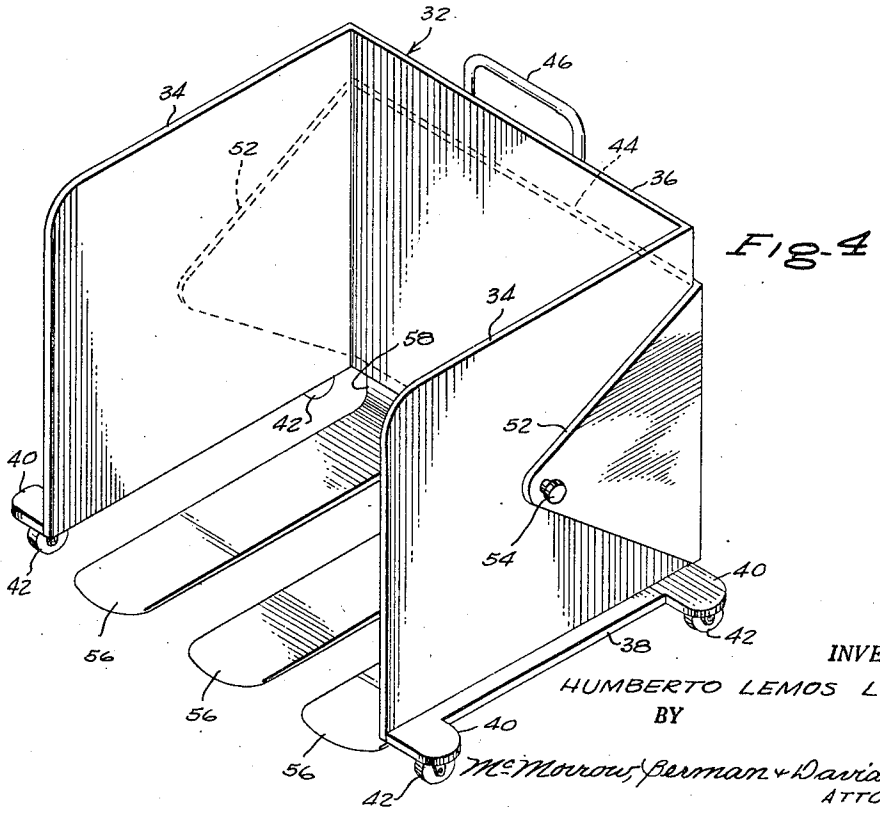


Fig-4

INVENTOR.
HUMBERTO LEMOS LOPES
BY
McMorrow, Berman & Davidson
ATTORNEYS

United States Patent Office 2,792,141 Patented May 14, 1957

2,792,141

VEHICLE MOUNTED CONTAINER FOR HANDLING PALLETS

Humberto Lemos Lopes, Bahia, Brazil

Application June 3, 1955, Serial No. 513,058

4 Claims. (Cl. 214—621)

This invention relates to a container particularly designed for the handling of pallets, whether loaded or not, the container constituting the present invention being interchangeable with other containers used for different types of goods, upon a transporting and hoist device such as that shown, for example, in U. S. Patent No. 2,305,148, issued December 15, 1942, to George R. Dempster.

The transporting and lifting device of the mentioned patent is adapted for attachment, to a boom assembly thereof, of any one of a number of interchangeable load support containers, and the main object of the present invention is to provide an additional container attachable to said boom assembly, which container will be specially formed for the handling of pallets.

Heretofore, on a device such as described hereinbefore, the handling of palletized units has involved certain difficulties, due to the fact that the containers so far used have not been so formed as to permit such units to be handled bodily without disturbance of the articles stacked upon the pallets thereof. As a result, it has been necessary in many instances to remove the stacked articles from the pallets, after which said articles, after being transported in the provided container to their new location, must be restacked upon other pallets. Obviously, this involves considerable cost, and even where cost is not a factor, the excessive amount of time involved in the handling of the materials has seriously militated against making the most efficient use possible of the lifting and transporting system of the designated patent, so far as units of the type described are concerned.

Accordingly, the container formed in accordance with the present invention, summarized briefly, comprises an open front, open-topped receptacle, rollably supported a short distance above the ground or floor surface, and equipped with a plurality of tines extending in a plane slightly above the lowermost portions of the supporting rollers of the container, thus to locate the tines a minimum distance above the supporting surface, so that with the container attached to the boom assembly of a truck or similar vehicle, the container can be shifted into a pallet-embracing position with the tines extending under the pallet, after which elevation of the boom assembly causes the container, and the loaded pallet, to be hoisted bodily for transportation to a new location, without disturbance of the article stacked upon the pallet. Similarly, at the new location, on lowering of the boom assembly, the container is again brought into rollable engagement with the supporting surface, with the pallet being now supported, still without disturbance of the stacked load, directly upon the supporting surface free of the tines, whereby to permit the container to shift out of a pallet-embracing position responsive to forward movement of the associated vehicle.

More specific objects of the invention are to provide a container as described which will be so formed as to protectively wall in the pallet at three sides thereof, to prevent the pallet from falling off the vehicle during

transportation of the pallet to the desired location; to provide a container as described which will be simply constructed, so as to be adapted for manufacture at a minimum cost; to provide a container which, despite its low cost, will still be rugged, and will have a minimum of moving parts, thus to insure trouble-free operation over a maximum period of time; to provide a particular mounting of the tine assembly upon the walls of the container, that will effect a highly efficient distribution of the load when the container is in use; and to provide a container as described which, when mounted upon a lifting device of the type previously described herein, will be shiftable into and out of a pallet-supporting position with maximum ease and facility.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like parts throughout the several views, and wherein:

Figure 1 is a side elevational view of a truck-mounted lifting device and of a container formed according to the present invention, the lifting device and container being shown in full lines in a lowered position, and in dotted lines in a raised position.

Figure 2 is an enlarged rear elevational view of the container per se;

Figure 3 is a vertical section through the container on line 3—3 of Figure 2; and

Figure 4 is a perspective view of the container, still further enlarged.

At 10 there has been generally designated a truck including a chassis having side bars or frame members 12 supporting a lifting device including parallel, transversely spaced, identically formed boom arms 14 pivotally connected at 16 at their inner ends for swinging movement in vertical planes about an axis extending transversely of the vehicle adjacent the cab thereof. Adjacent the outer, free end of the boom arms, there is fixedly mounted upon the vehicle a container support frame 18 inclined substantially from the vertical and having, at locations spaced longitudinally thereof, automatically engaging hooks or catches 20, 22.

The boom arms are raised and lowered through the provision of hydraulic means including a cylinder 24 pivotally mounted at 26 upon the truck chassis, and having a hydraulically extensible ram or piston rod 28 pivotally connected at 30 to the boom arms intermediate the opposite ends thereof.

Carried by the outer ends of the boom arms are depending chains 31 equipped at their lower, free ends with hooks adapted to engage a container to be lifted and transported.

The construction so far described is wholly conventional and does not per se constitute part of the present invention, said construction being substantially shown in the hereinbefore mentioned patent. In use, the device is adapted to be backed up to a container, to the opposite sides of which the chains 31 are connected, after which the piston 28 is extended to raise the boom arms to the dotted line positions shown. This causes the lifted container to slide upwardly along the inclined frame 18, the container having a yoke disposed to engage automatically with a selected catch 20 or 22, whereby to permit the container to be detached from the boom assembly while held in an elevated position, for transportation to a selected location.

A plurality of interchangeable containers are used with the lifting device illustrated and described herein, and the present invention comprises a container generally designated 32 which can be interchangeably used with the other containers already known.

My container 32 is formed open at its front and top, and includes side walls 34 disposed in vertical planes and

integral along their back edges with a back wall **36**. Integrally or otherwise rigidly connected to the lower edges of the side walls **34**, and extending from front to rear of the container, are outwardly projecting, relatively narrow flanges **38**, integral at their opposite ends with ears **40** projecting outwardly from the container side walls an even greater distance. The ears **40** having casters or swiveled rollers **42** connected to the undersides thereof, thus providing a four point, swiveled, rollable support for the container when it is lowered into engagement with a supporting surface S.

A reinforcing back plate **44** extends from side to side of the back wall **36**, with its upper edge terminating a short distance above the top edge of wall **36**. A yoke of inverted U-shape, designated at **46**, has the lower ends of its legs welded at **48**, **50**, to the back wall **36** and backing plate **44** respectively, and the back wall is also welded as necessary at any other locations to the back wall **36** to insure a strong, permanent, fixed connection thereto.

Integral with and projecting forwardly from backing plate **44**, in contact with the outer surfaces of side walls **34**, are triangular side reinforcing plates **52**, and projecting outwardly from the apex portions of plates **52**, are headed lugs **54** disposed substantially centrally of the side walls **34**. Integral with the bottom edge of backing plate **44**, and spaced uniform distances apart transversely of the container, are elongated tines **56** progressively reduced in thickness in the direction of their free ends as shown in Figure 3, so as to be substantially knife-edged at said free ends for insuring placement of the tines under a pallet T to be lifted. Tines **56** have their bottom surfaces extending in a horizontal plane, said plane being spaced closely above the lowermost portions of the rollers **42**, so as to be disposed fully out of contact, but a minimum distance above, the supporting surface S on which the rollers are supported. The tines provide a bottom on the container, and at their inner ends, are formed with upwardly projecting, short extensions that constitute the parts of the tines rigid with the backing plate **44**.

In use, the chains **31** are hooked to the lugs **54**, and with the container rollably supported upon support surface S, the vehicle is backed up to a pallet P having a stack of articles A, or other material to be transported, extending upwardly therefrom. The pallet, as is usual, has its platform portion spaced above the supporting surface S, and accordingly, when the vehicle is backed up, the container will roll upon the supporting surface, being pushed thereover by the truck. With the container properly aligned with the pallet, the container is shifted to the right in Figure 1 until the pallet is confined to its maximum extent therein. The side walls **34** and back wall **36** will provide abutments for the sides and back of the stack of material, while the tines **56** will move under the platform portion of the pallet.

The hydraulic mechanism is now operated to shift the boom arms **14** upwardly to the dotted line position of Figure 1, and the container, carrying the loaded pallet, will be carried upwardly sliding along the frame **18** until yoke **46** is automatically engaged in catch **20** or, perhaps, in catch **22**, whichever is desired according to the needs of the particular situation. In this position of the container, it is tilted backwardly, so that there is no danger of the stack of articles accidentally falling outwardly through the open front of the container.

The boom arms are now detached from the container, and the container with the loaded pallet can be transported to a new location, at which the pallet is to be unloaded. The operation is now reversed, to lower the container to the supporting surface, and the truck, when driven forwardly, will pull the container out of its pallet-confining position, all without disturbing the stack of articles carried by the pallet.

It will be seen that the construction is one which is particularly adapted to be used in association with a lifting and transporting mechanism such as that illustrated, and it will further be noted that there will be a saving in time, man hours, and other factors importantly affecting the operation, due to the fact that it is not necessary to unload the pallet prior to transporting the same, nor is it necessary to reload the pallet after the articles have been transported to the desired location.

Of course, at the final location at which the pallet is to be unloaded, empty pallets can be collected, and stacked one upon the other, after which the empty pallets can be lifted and transported by the container in the same manner as a single loaded pallet.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. The combination with a hoisting and transporting device including depending flexible elements at opposite sides thereof, of a container for lifting and transporting pallets comprising a receptacle including side walls, a back wall, and a bottom, said receptacle being open at its top and front to permit movement of the receptacle along a supporting surface into a position in which it will receive and support a pallet disposed upon said surface; a horizontally disposed flange projecting outwardly from each of said side walls adjacent the lower end thereof, a horizontally disposed ear projecting outwardly from each end of each flange, a roller depending from each ear for rollably supporting the receptacle upon said supporting surface during movement of the receptacle into said position, the receptacle bottom during the rollable movement of the receptacle being disposed a short distance above the supporting surface for engagement under the pallet; and means projecting outwardly from the respective side walls of the receptacle for engagement by said flexible elements, for lifting of the container and supported pallet by said device.

2. The combination with a hoisting and transporting device including depending flexible elements at opposite sides thereof, of a container for lifting and transporting pallets comprising a receptacle including a pair of side walls, a back wall, and a plurality of tines projecting forwardly from the back wall and defining a bottom on the receptacle, said tines being adapted for engagement under a pallet on movement of the receptacle along a supporting surface on which the pallet is disposed with the side walls and back walls embracing the pallet; a horizontally disposed flange projecting outwardly from each of said side walls adjacent the lower end thereof, a horizontally disposed ear projecting outwardly from each end of each flange, a roller depending from each ear for rollably supporting the receptacle upon said supporting surface, said tines extending in a common, substantially horizontal plane spaced a short distance above the lowermost portions of the rollers; and outwardly projecting, headed lugs on the side walls engageable by said flexible elements for lifting of the container and supported pallet by said device.

3. The combination with a hoisting and transporting device including depending flexible elements at opposite sides thereof, the container for lifting and transporting pallets comprising a receptacle including a back wall, side walls projecting forwardly from the back wall, a plurality of tines projecting in a substantially horizontal plate forwardly from the back wall at the lower ends thereof to define a bottom on the receptacle, said receptacle being open at its front and top, a reinforcing

backing plate overlying the back wall and fixedly secured to the back wall, and reinforcing side plates projecting forwardly from opposite ends of the backing plate along the side walls; rollers carried by the side walls at the lower ends thereof for rollably supporting the receptacle upon a supporting surface, the plane of said tines being disposed slightly above the lowermost portions of the rollers for disposition of the tines out of contact with said supporting surface; and outwardly projecting, headed lugs carried by the reinforcing side plates, for engagement with the elements for lifting of the container and supported pallet by said device.

4. The combination with a hoisting and transporting device including depending flexible elements at opposite sides thereof, a rigid frame, and catch means on said rigid frame, of a container for lifting and transporting pallets comprising a receptacle having an open front and an open top, said receptacle including side walls in vertical planes and a back wall rigidly connected to the side walls, and further including tines projecting approximately horizontally forwardly from the lower end of the back wall between the side walls for engagement under a pallet to be lifting when the receptacle is shifted along a supporting surface to a pallet-embracing position; casters carried by the receptacle at the lower end thereof

for supporting the receptacle for rolling movement along a supporting surface to said position, said tines being disposed in a common plane slightly above the lowermost portions of the casters for disposition of the tines out of contact with said supporting surface; yoke means projecting upwardly from the back wall and engageable by said catch means on lifting of the receptacle and the supported pallet by said device; and means projecting outwardly from the respective side walls substantially centrally thereof engageable by the flexible elements for connecting the container to the device preliminary to lifting of the container by the device.

References Cited in the file of this patent

UNITED STATES PATENTS

555,473	Carpenter	Feb. 25, 1896
2,305,148	Dempster	Dec. 15, 1942
2,387,500	Dempster	Oct. 23, 1945
2,441,750	Britton	May 18, 1948
2,606,675	Jones	Aug. 12, 1952
2,689,054	Martin	Sept. 14, 1954
2,702,142	Jones	Feb. 15, 1955
2,707,573	Balwics	May 3, 1955