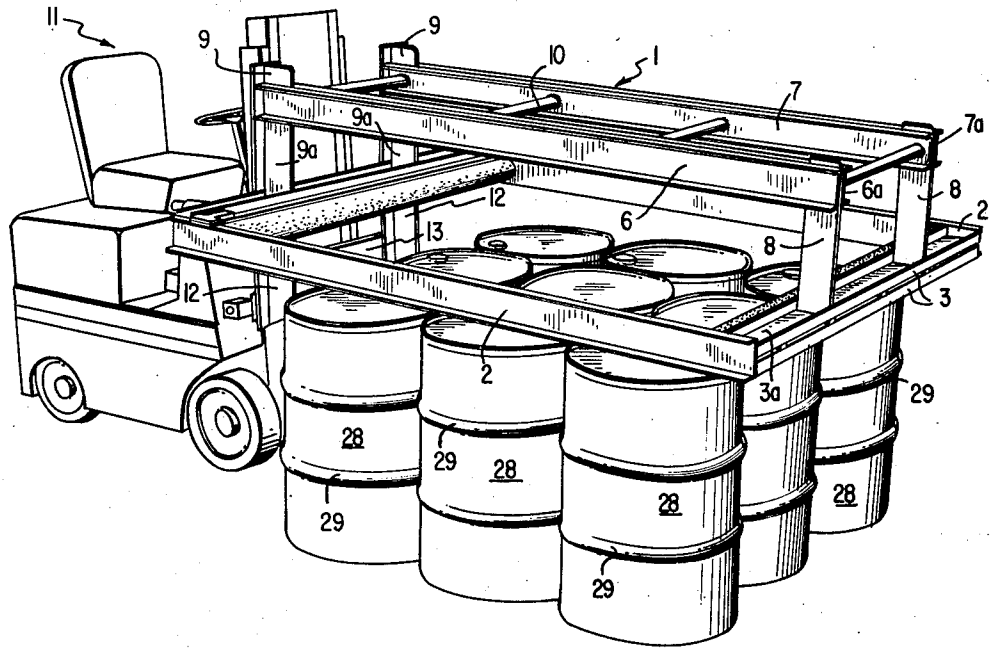
July 13, 1965 R. C. SHINN, JR 3,194,422

MULTI-DRUM CARRIER DEVICE

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FIG. 1



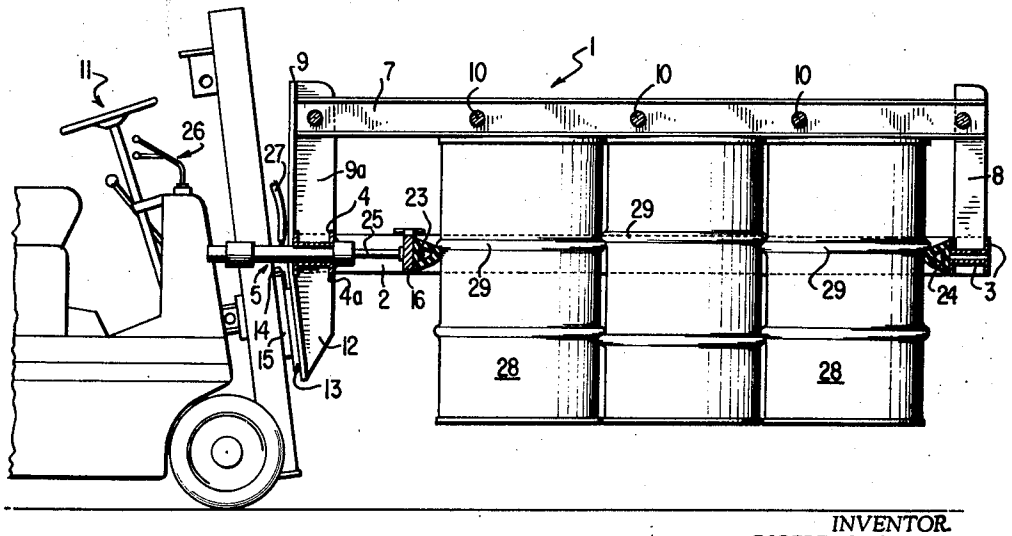


FIG. 2

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FIG. 3

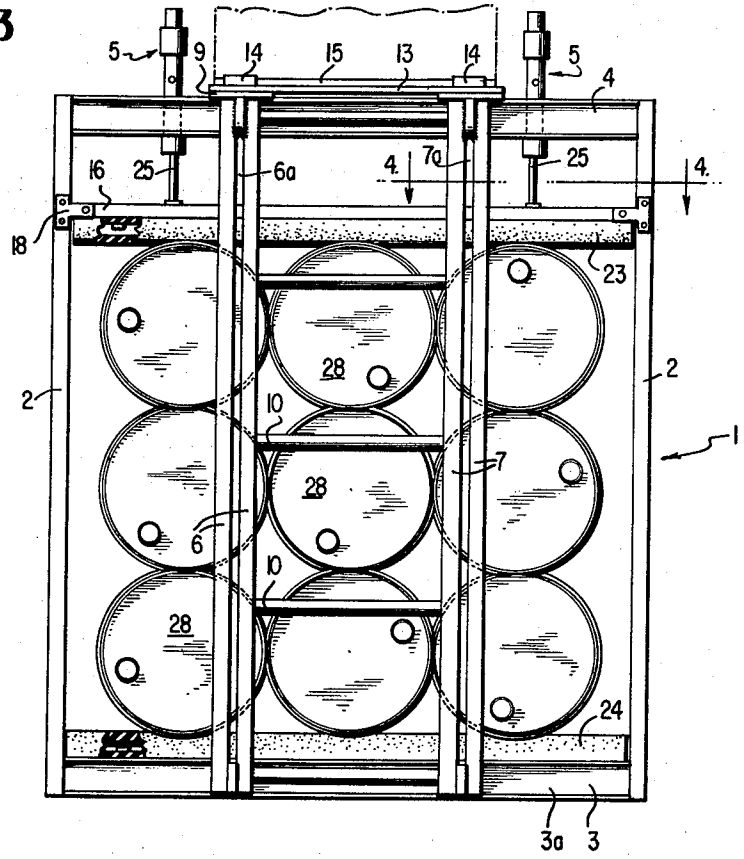


FIG. 5

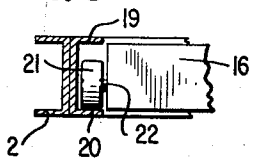


FIG. 4

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3,194,422

MULTI-DRUM CARRIER DEVICE

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Filed Nov. 14, 1963, Ser. No. 323,793
8 Claims. (Cl. 214—653)

This invention relates to an article-handling device, and more particularly to a device for lifting and transporting a plurality of drums or barrels, and the like.

Heretofore, various types of multi-drum carrier devices have been employed for simultaneously handling a plurality of drums. While these devices have been satisfactory for their intended purposes, they have been characterized by the limited number of drums which can be carried, their complicatedness and expensiveness in construction and their awkwardness in operation.

After considerable research and experimentation, the article-handling device of the present invention has been developed which comprises, essentially, a frame assembly adapted to be attached to the carriage of a conventional lift truck, said frame assembly including a slidable pusher bar for clamping a plurality of drums within the frame assembly. By the construction and arrangement of the frame assembly and lift truck carriage, a plurality of drums can be lifted and transported by placing the frame assembly over the drums, actuating the pusher bar to clamp the drums within the frame assembly and then lifting the clamped drums by means of the lift truck carriage.

An object of the invention is to provide an improved multi-drum carrier device.

Another object of the invention is to provide an improved multi-drum carrier device adapted to be attached to the carriage of a lift truck.

Yet another object of the invention is to provide an improved multi-drum carrier device having a pusher bar slidably mounted within a frame assembly whereby a plurality of drums can be clamped therein.

Still another object of the invention is to provide an improved multi-drum carrier device having a pusher bar slidably mounted within a frame assembly, said frame assembly and associated pusher bar being constructed and arranged to be placed over a plurality of drums to be lifted whereby the pusher bar, when actuated, abuts the wall of the drums adjacent to and beneath annular ribs or chines formed in the wall of the drums.

A further object of the invention is to provide an improved multi-drum carrier device characterized by simplicity in design, strong and rugged in construction, having few moving parts, and not likely to get out of order even after long and continued use.

With these and other objects in view, which may be incident to my improvements, the invention consists in the parts and combinations to be hereinafter set forth and claimed, with the understanding that the several necessary elements, comprising my invention, may be varied in construction, proportions and arrangement, without departing from the spirit and scope of the appended claims.

In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements in their useful applications to the particular constructions which, for the purpose of explanation, have been made the subject of illustration.

In the drawings:

FIGURE 1 is a perspective view of the multi-drum carrier device attached to a conventional lift truck;

FIGURE 2 is a side elevational view, partially in section, showing the carrier device in the lift position;

FIGURE 3 is a top plan view of the carrier device shown in FIGURE 2;

FIGURE 4 is a view taken along line 4—4 of FIGURE 3; and

FIGURE 5 is a fragmentary view of the device showing a form of bearing means that is adapted to be used with the device.

Referring to the drawings and more particularly to FIGURES 1 and 2 thereof, the multi-drum carrier of the present invention comprises a frame assembly 1 having a pair of spaced, parallel, longitudinally extending channel members 2, the forward ends of channel members 2 being interconnected by a pair of oppositely disposed, transversely extending channel members 3, the opposite or rearward ends of the channel members 2 being similarly interconnected by transversely extending channel members 4 and 4*a*. The oppositely disposed channel members 4 and 4*a* are spaced apart a sufficient distance to accommodate a pair of fluid motors 5, to be described more fully hereinafter.

The frame assembly 1 also includes two pairs of spaced, parallel, oppositely disposed, longitudinally extending channel members 6 and 7 positioned in a horizontal plane above the channel members 2 and inboard therefrom. The forward end portions of channel members 6 and 7 are supported in the horizontal plane by means of a pair of vertically extending arms 8 having their upper end portions integrally secured, as by welding, to the web portions 6*a* and 7*a* of the channel members 6 and 7, and the lower ends of the arms 8 being integrally secured to the web portion 3*a* of the channel member 3. The opposite or rearward ends of the channel members 6 and 7 are maintained in the horizontal plane by means of a pair of spaced, parallel, vertically extending T beams 9, the flange portion 9*a* of each T beam having its upper portion extending between and integrally secured to the web portions 6*a* and 7*a* of the channel members 6 and 7, the lower ends of the T beams being integrally secured to the channel member 4. In order to enhance the rigidity of the frame assembly, a plurality of transversely extending reinforcing rods 10 are integrally secured to the channel members 6 and 7.

While, for purposes of illustration, the improved multi-drum carrier device is shown attached to a conventional lift truck 11; it should be understood that it is within the purview of the invention to attach the carrier device to other lifting and transporting devices; such as overhead cranes, and the like. Thus, if it is desired to attach the carrier device to a lift truck, a pair of spaced, parallel, depending T beams 12 (FIGURE 2) are rigidly secured to the channel member 4*a* and a transversely extending plate member 13 is rigidly secured to the T beams 12, said plate member being provided with hooked strap members 14 (FIGURE 3), or other suitable securing means for detachably mounting the frame assembly on the carriage 15 of the lift truck 11.

As will be seen in FIGURES 3 and 4, the clamping assembly for the carrier device comprises, a pusher bar 16 slidably mounted on the channel members 2 by means of bearing members 17 secured to the opposite ends of the pusher bar by plates 18, said bearings engaging the upper flange surface of the channel members 2. While the bearing illustrated in FIGURES 1 to 4 is of the pad or block type, it will be appreciated by those skilled in the art that roller or antifriction bearings can also be employed, as shown in FIGURE 5, wherein an oppositely disposed channel member 19 is secured to the channel 2, the lower flange 20 of channel member 19 forming a track for a roller bearing 21 journaled to a shaft 22 secured to the end of the pusher bar 16. To cushion the impact when the pusher bar is moved to the clamping position, a resilient fender 23 is secured to one surface of the pusher bar and another resilient fender 24 is secured to the inwardly facing flange surfaces of the channels 3.

In order to slide the pusher bar 16 along the channels 2, the piston rods 25 of the fluid motors 5 are secured to the opposite surface of the pusher bar, said fluid motors being connected to the conventional hydraulic control valves 26 and hydraulic pressure system of the lift truck by means of suitable hose connections 27.

In the operation of the improved multi-drum carrier device, the lift truck 11 (FIGURE 1), carrying the frame assembly 1, is moved into a position such that the frame assembly is positioned above a plurality of conventional drums 28 having the usual annular ribs or chines 29. The frame assembly is then lowered to a position where the channel members 6 and 7 abut the upper surface of the drums 28 and the fluid motors 5 are then actuated to force the pusher bar 16 and associated fender 23 forwardly against the adjacent row of drums 28. The biasing force of the pusher bar causes the chines on adjacent drums to interlock, as shown in FIGURES 2 and 4, and the chines on the forward row of drums are forced against fender 24. After the drums are so clamped within the frame assembly, the lift truck carriage 15 is then raised to thereby elevate the frame assembly and associated drums, as shown in FIGURE 2.

In constructing the frame assembly 1, the channels 6 and 7 are positioned at a predetermined height above the pusher bar 16 so that when the frame assembly is lowered, with the channels 6 and 7 abutting the upper surfaces of the drums, the fender 23 on the pusher bar is properly positioned for engaging the adjacent row of drums beneath the chines when the fluid motors are actuated; thus, the channels 6 and 7 not only enhance the rigidity of the frame assembly but also serve as an indexing means to properly position the pusher bar relative to the drum chines.

While the improved multi-drum carrier has been disclosed for transporting nine drums, it should be understood that the carrier functions equally well for transporting any number of drums less than nine, and by increasing the length, width and height of the carrier assembly or by securing duplicate carrier assemblies on either side of the channel members 2, any number of drums in excess of nine can be transported. Furthermore, it should be understood that it is within the purview of the present invention to include additional pusher bars and actuating means, such as fluid motors, electric screw-jacks, and the like, depending upon the number and/or weight of the drums being handled.

While I have shown and described the preferred embodiment of my invention, I wish it to be understood that I do not confine myself to the precise details of construction herein set forth by way of illustration, as it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention or exceeding the scope of the appended claims.

I claim:

1. A multi-drum carrier device of the character described, comprising a frame assembly adapted to be placed around a plurality of drums, means for raising and lowering the frame assembly, said frame assembly including a pair of parallel, longitudinally extending members, a pair of transversely extending members secured to corresponding ends of said parallel members, a transversely extending pusher bar slidably mounted on said parallel members, means carried by said frame assembly for sliding said pusher bar toward one of said transversely extending members, longitudinally extending means parallel to and positioned above said first pair of members, and vertically extending means connected between said longitudinally extending means and said first pair of members and mounted on the transversely extending members for maintaining the longitudinally extending means at a predetermined position above said first pair of longitudinally extending members, whereby when the frame assembly is placed around the drums to be carried the longitudinally extending means abuts the upper surfaces of the drums, to thereby properly position the pusher bar with respect to the drums, whereupon actuation of the pusher bar, the drums are clamped between the pusher bar and one of the transversely extending members.

2. A multi-drum carrier device according to claim 1 wherein resilient fenders are secured to the pusher bar and said one transversely extending member, to thereby cushion the impact when the pusher bar is moved to clamping position.

3. A multi-drum carrier device according to claim 1, wherein the means for actuating the pusher bar comprises a pair of fluid motors having their piston rods secured to said pusher bar.

4. A multi-drum carrier attachment for use on a vertically movable carriage of a lift truck, comprising means for mounting said attachment on the carriage, a rectangular frame assembly adapted to be placed around a plurality of drums having chines, said rectangular frame assembly including a first pair of longitudinally extending members and a pair of transversely extending members secured to corresponding ends of said first pair of members; a transversely extending pusher bar slidably mounted on said first pair of members for engaging the drums beneath the chines, means carried by said frame assembly for sliding said pusher bar on said first pair of members, a second pair of longitudinally extending members parallel to and positioned above said first pair of members and adapted to be placed on the top surfaces of the drums to be carried, and vertically extending members connected between the first and second pairs of members and mounted on the transversely extending members for maintaining the second pair of members at a predetermined position above said first pair of longitudinally extending members and associated pusher bar, whereby when the frame assembly is placed around the drums, the second pair of longitudinally extending members abut the upper surfaces of the drums to thereby properly position the pusher bar with respect to the chines on the drums.

5. A multi-drum carrier device according to claim 4, wherein resilient fenders are secured to the pusher bar and to one of the transversely extending members, to thereby cushion the impact when the pusher bar is moved to the drum engaging position.

6. A multi-drum carrier device according to claim 4, wherein the means for actuating the pusher bar comprises a pair of fluid motors having their piston rods secured to said pusher bar.

7. A multi-drum carrier device according to claim 4, wherein each end of said pusher bar is supported by said first pair of longitudinally extending members, and bearing means positioned between the ends of said pusher bar and said first pair of members to facilitate the sliding of said pusher bar thereon.

8. A multi-drum carrier attachment for use on the carriage of a lift truck comprising, a rectangular frame assembly adapted to be placed around a plurality of drums having chines, said rectangular frame assembly including a first pair of longitudinally extending members and a pair of transversely extending members secured to corresponding ends of said first pair of members; a transversely extending pusher bar slidably mounted on said first pair of members for engaging the drums beneath the chines, means carried by said frame assembly for sliding said pusher bar on said first pair of members, resilient fenders secured to the pusher and to one of the transversely extending members, to thereby cushion the impact when the pusher bar is moved to the drum engaging position; a second pair of longitudinally extending members positioned above said first pair of members and adapted to be placed on the top surfaces of the drums to be carried, vertically extending members connected between the first and second pairs of members for maintaining the second pair of members at a predetermined position above said first pair of longitudinally extending members and asso-

ciated pusher bar, whereby when the frame assembly is placed around the drums, the second pair of longitudinally extending members abut the upper surfaces of the drums to thereby properly position the pusher bar with respect to the chines on the drums, and hooked strap members secured to the frame assembly for detachably connecting the frame to the carriage of the lift truck.

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