

May 8, 1956

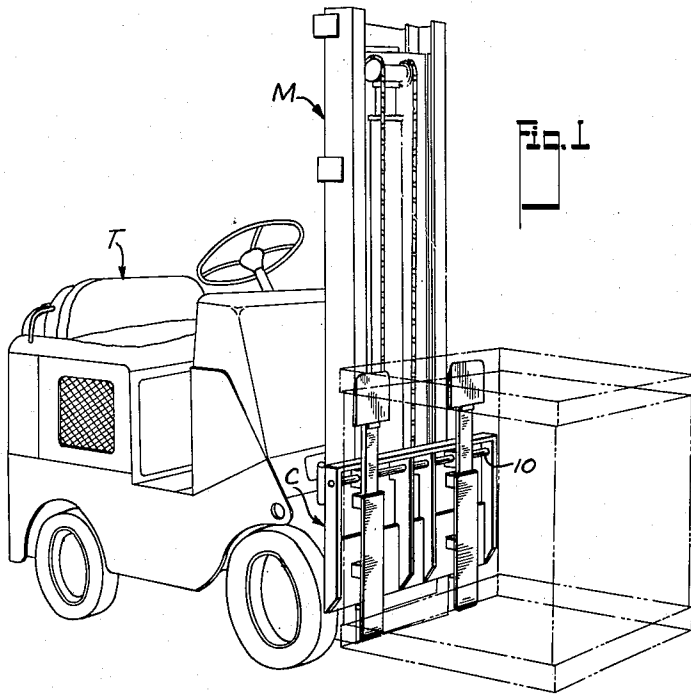
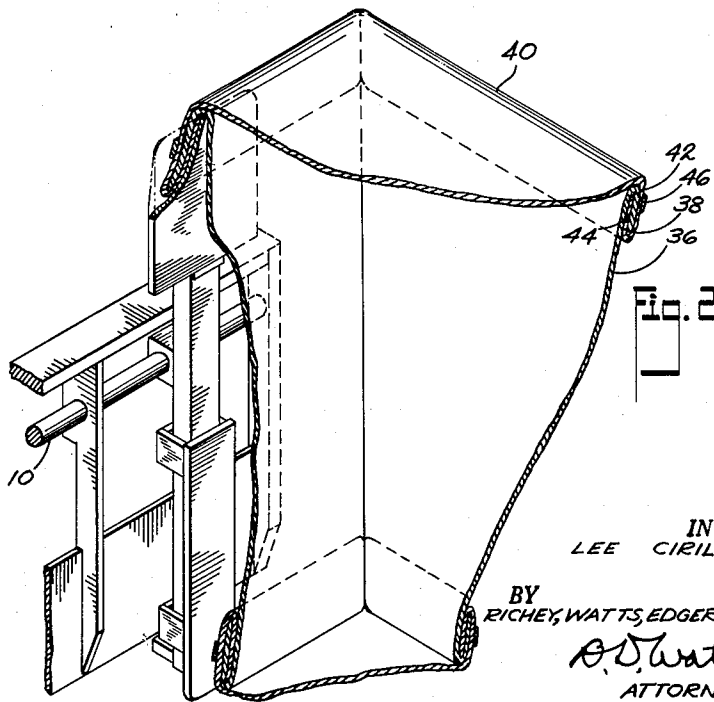
L. CIRILLO

2,744,645

CARTON HOOK ASSEMBLY FOR LIFT TRUCKS

Filed May 8, 1952

2 Sheets-Sheet 1



INVENTOR.
LEE CIRILLO

BY
RICHEY, WATTS, EDGERTON & MCNENNY

A. D. Watts
ATTORNEYS

May 8, 1956

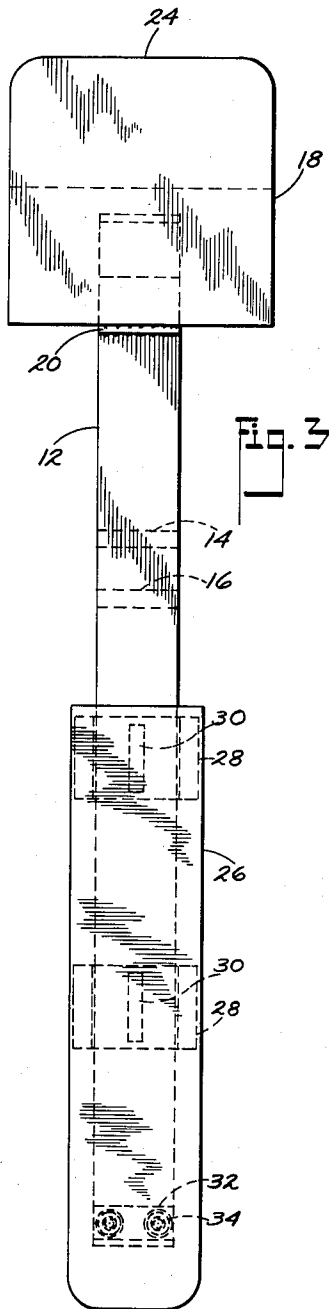
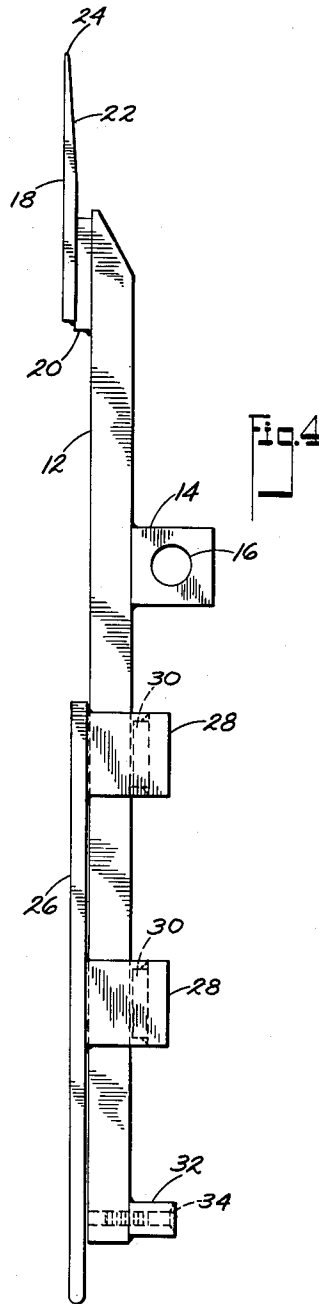
L. CIRILLO

2,744,645

CARTON HOOK ASSEMBLY FOR LIFT TRUCKS

Filed May 8, 1952

2 Sheets-Sheet 2



INVENTOR.
LEE CIRILLO

BY
RICHEY, WATTS, EDGERTON & McNEENY

B. Swatto
ATTORNEYS

1

2,744,645

CARTON HOOK ASSEMBLY FOR LIFT TRUCKS

Lee Cirillo, South Euclid, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio, a corporation of Ohio

Application May 8, 1952, Serial No. 286,697

5 Claims. (Cl. 214—651)

This invention relates to lift trucks equipped with structure on the carriage for handling packaged articles and, particularly, for lifting and carrying packing boxes having a down-turned flange structure around the top thereof.

In recent years, pasteboard cartons have come into wide use for packing household appliances and other articles of trade in lieu of wooden crates and boxes. Lumber for crating has been in short supply and shippers have found it more economical to use paper products with a minimum of wooden framing for packing purposes. Accordingly, this invention is particularly adapted to handling these containers with greater ease and dispatch than when using previously known equipment.

The most important object of this invention, therefore, is to provide carton handling apparatus mounted on the carriage portion of the lift truck which will lift, carry and stack the carton without the use of pallets or other auxiliary handling structure.

Another object of this invention is to provide vertical blade elements for engaging an overhanging lip formed by the upper portion of the carton and the lid structure.

Another important object of this invention is to provide a blade element for engaging the overhanging lip on the packing carton and a self-adjusting shoe disposed at the lower portion of the carton to prevent damage to the carton and its contents while it is being handled.

Other objects and advantages more or less ancillary to the foregoing and the manner in which all the various objects are realized will appear in the following description which, considered in connection with the accompanying drawings, sets forth the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a perspective assembly view of the preferred embodiment of this invention;

Fig. 2 is a partial detail view showing the box engaging structure in use with a carton;

Fig. 3 is a front elevation view of the carton hook assembly; and

Fig. 4 is a side view of the carton hook assembly.

Referring first to Fig. 1 wherein the preferred embodiment of this invention is shown as a lift truck T having a vertical mast and slide structure M on which a carriage C is carried for vertical reciprocation by a hydraulic cylinder and piston assembly with chains attached to the carriage C. The carriage C has a transverse pivot bar 10 extending thereacross. The bar 10 is removable for changing the usual fork structure and also provides for lateral positioning of the load supporting members relative to the centerline of the carriage C.

A pair of hook assemblies is pivotally mounted on the bar 10 and are shiftable toward and away from each other. In the preferred embodiment, a pair of carton hook assemblies is shown, but it is obvious that if the cartons are narrow or tall that a single hook would function as required.

The carton hook assembly has a vertical post 12 of

2

rectangular cross section and having a length approximately the height of the box to be handled. On the rear side of the post 12, a boss 14 is affixed which has a bore 16 therethrough of such size as will receive the bar 10 and will permit sliding and rotative movement thereon.

At the uppermost end of the post 12, a rectangular blade 18 is mounted, a spacer plate 20 being located between the blade 18 and the post 12. The blade 18 has a tapered face 22 on the rear thereof which provides for a relatively thin, dull edge 24 at the top thereof.

A flat elongated shoe 26 is slidably mounted on the lower portion of the post 12 beneath the boss 14. A pair of U-shaped guides 28 are affixed to the rear of the shoe 26 and slidably engage the sides of the post 12, thereby maintaining the alignment of the shoe 26 therewith. On the inner walls of the guides 28 facing the bar 12, a bearing 30 is affixed to provide a wearing surface for engagement with the rear of the post 12 and to reduce the friction to the point where the shoe 26 will be freely slidable along the post 12. At the lowermost end of the post 12, a stop 32 is joined to the post 12 by a pair of screws 34 threadably engaged therewith. The stop 32 prevents the shoe from falling off the post 12 when the carriage is lifted and is removable by withdrawing the screws 34 to provide for the installation of the shoe 26 on the post 12.

The carton of a type which may be used with this invention is illustrated in Fig. 2 wherein the side wall 36 of the carton is rebent to form a down-turned flange 38 thereon. The top portion 40 of the box has a down-turned flange 42 which is rebent to form an additional up-turned flange 44, the down-turned flange 42 being outside the down-turned flange 38 of the side wall 36 and having the up-turned flange 44 disposed between the side wall 36 and the down-turned flange 38 of the side wall 36. An interlocking structure is provided thereby with the down-turned flange 38 being held securely in position. A steel banding 46 circumscribes the down-turned flange 42 of the top 40 and prevents the bending of the lip away from the side wall 36 of the box and the unlocking of the flanges.

In operation, the truck T is moved toward the box with the carriage C in the lowermost position on the mast M. In this position, the blade 18 is moved against the side wall 36 of the box, the edge 24 being below the down-turned flange 42. The carriage C is then raised until the blade 18 slides upwardly between the flange 44 and the side wall 36 of the box and engages the rebent portion of the side wall 36. Continued movement of the carriage C lifts the box for stacking or repositioning as required.

When the carriage C is in the lowermost position, the lower end of the shoe 26 is against the floor, and it will remain there until the carriage has risen to a point where the stop 32 engaged the lower guide 38 on the shoe 26.

During the box lifting operation, the shoe 26 frictionally engages the side of the box at the extreme bottom thereof and remains in that position as the blade and post are lifted into position by movement of the carriage. As the box is raised from the floor, the friction of the shoe against the lower portion of the box prevents the shoe from sliding along the post 12 thereby maintaining the relative positions of the assembly during the carrying operations.

When the box is lifted by the upper rim, the weight of the box tends to force the lower portion thereof toward the carriage. By providing the shoes 26 for engagement with the lower rim of the box, damage to the carton and its contents is prevented since the side of the box cannot engage the rough edges on the carriage. By providing the sliding shoes, boxes of various sizes may be accommodated since the position of the shoe is deter-

3

mined by the floor and is always at the bottom of the box. This renders the device self-operating, no manual adjustments being required during the use of the carton handling structure.

It is to be understood that the specific nature of the present disclosure is not intended to be restrictive or confining and that various rearrangements of parts and modifications of design may be resorted to without departing from the scope or spirit of the invention as herein claimed.

What is claimed is:

1. A lift truck for handling cartons having a down-turned flange around the top thereof comprising a vehicle having a vertical mast structure, a carriage reciprocable on the mast, column means joined to the carriage, an upwardly projecting blade at the upper end of the column means, and shoe means freely slidable on the lower end of the column means for preventing damage to the box and the contents thereof during the lifting operation.

2. A lift truck for handling material presenting a down-turned flange comprising a vehicle having a vertical mast structure, a carriage reciprocable on the mast, support means joined to the carriage, upwardly projecting flange engaging means at the upper end of said support means, and a shoe freely slidable on said support means for engagement with the lowermost end of said carton.

3. A lift truck for handling material presenting a down-turned flange comprising a vehicle having a vertical mast structure, a carriage reciprocable on the mast, support means joined to the carriage, upwardly projecting flange engaging means at the upper end of said support means, and a shoe slidable on said support for engagement with the lowermost end of said carton as said flange engaging means is moved upwardly.

4

4. In combination with a lift truck having a mast, a carriage vertically reciprocable on the mast and means mounted on the carriage for engaging and lifting an article having a down-turned lip as said carriage moves vertically, said means comprising a column pivotally joined to the carriage, an upwardly projecting blade at the upper end of said column, and a shoe freely slidable vertically on said column and normally positioned at the lowermost end of said column.

5. In combination with a lift truck having a mast, a carriage vertically reciprocable on the mast and means mounted on the carriage for engaging and lifting an article having a down-turned lip as said carriage moves vertically, said means comprising a column pivotally joined to the carriage, an upwardly projecting blade at the upper end of said column, and a shoe slidable vertically on said column and normally positioned at the lowermost end of said column, the face of said shoe being parallel to the face of said blade.

References Cited in the file of this patent

UNITED STATES PATENTS

685,845	Johnson et al.	Nov. 5, 1901
1,610,789	Jensen	Dec. 14, 1926
2,175,041	Thumim	Oct. 3, 1939
2,196,822	Bissell	Apr. 9, 1940
2,447,300	Williams	Aug. 17, 1948
2,517,085	Cirillo	Aug. 1, 1950
2,593,820	Weiss	Apr. 22, 1952
2,634,875	Trautner	Apr. 14, 1953
2,650,732	Hartquist	Sept. 1, 1953
2,670,095	Blatz	Feb. 23, 1954
2,684,773	Boyles	July 27, 1954