United States Patent [19]

Cooley

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[54] **PALLET-LOAD STRAIGHTENER DEVICE**

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[52] **U.S. Cl.** ..... **214/6 S,** 214/10.5 R, 271/61

[51] **Int. Cl.** **B65g 57/00**

[58] **Field of Search** ..... 214/6 S, 6, 10.5, 214/310, 152, 6 C, 6 P, 6 R; 211/49, 50; 294/670 B; 271/89, 61

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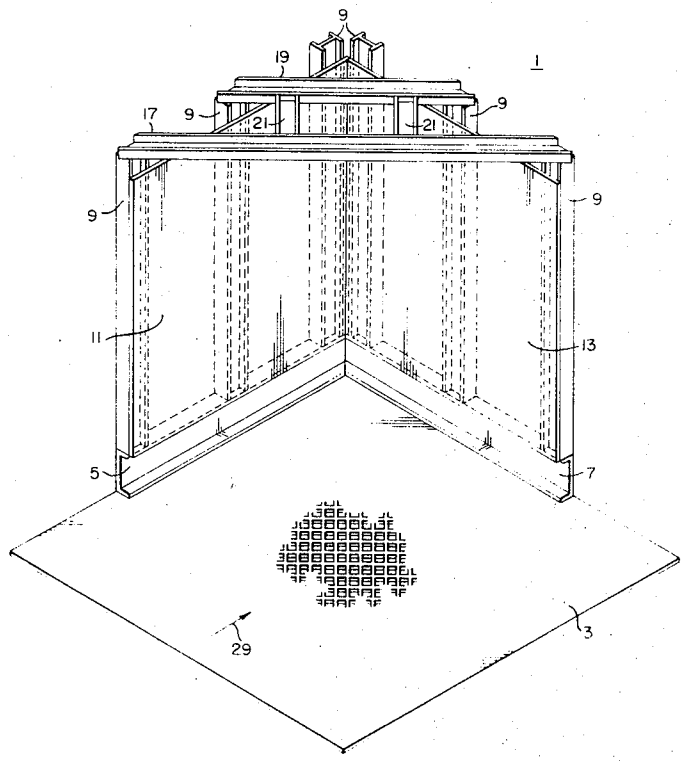
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[57] **ABSTRACT**

A pallet-load straightener device is provided, which includes a lower metallic apron or floor plate, upon which a fork-lift truck may ride up upon, and straighten disarranged cartons upon a unit-pallet load by moving the same against two rear adjoining straightener walls of the straightening device, so that no manual operations are required to reorganize the cartons. The lift truck may move in one direction against one straightener wall, drop the pallet load and withdraw the forks from the pallet, and then the fork-lift truck may move into the adjoining side of the pallet load to force the disarranged cartons upon the unit-pallet load against the adjoining straightener wall of the straightening device.

Bracing strips or channels are provided at the upper end of the device to facilitate movement of the straightener device into different locations at the receiving dock.

5 Claims, 4 Drawing Figures



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SHEET 1 OF 2

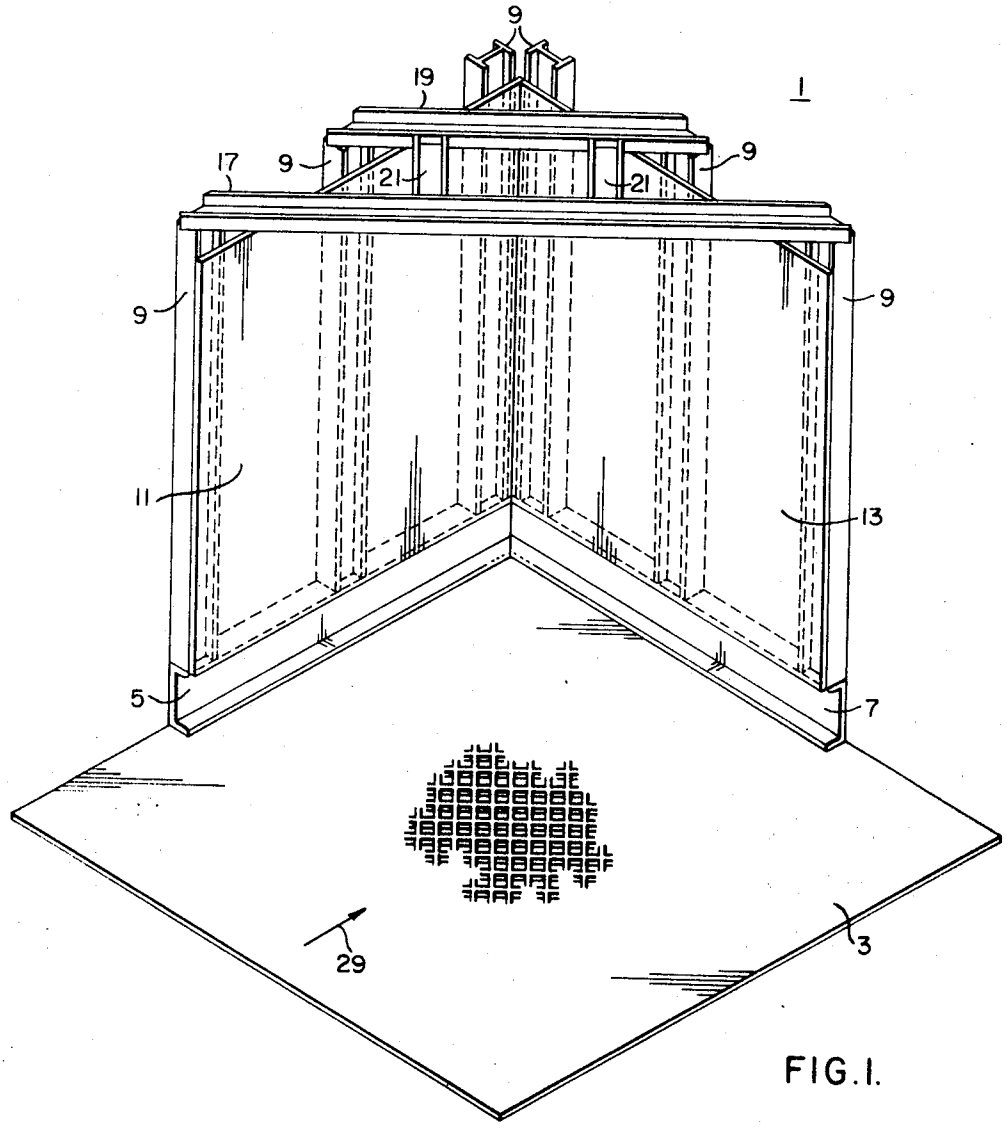


FIG. 1.

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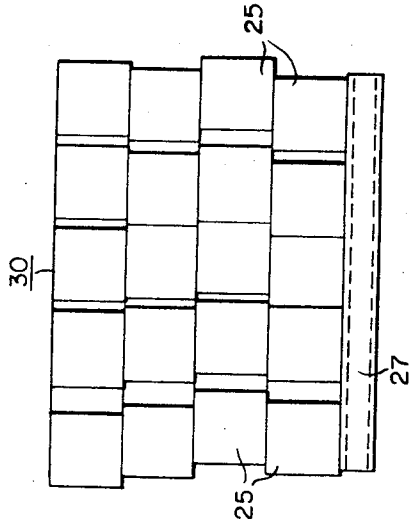


FIG. 3.

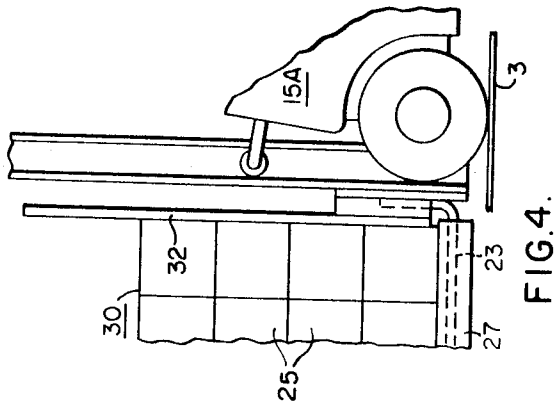


FIG. 4.

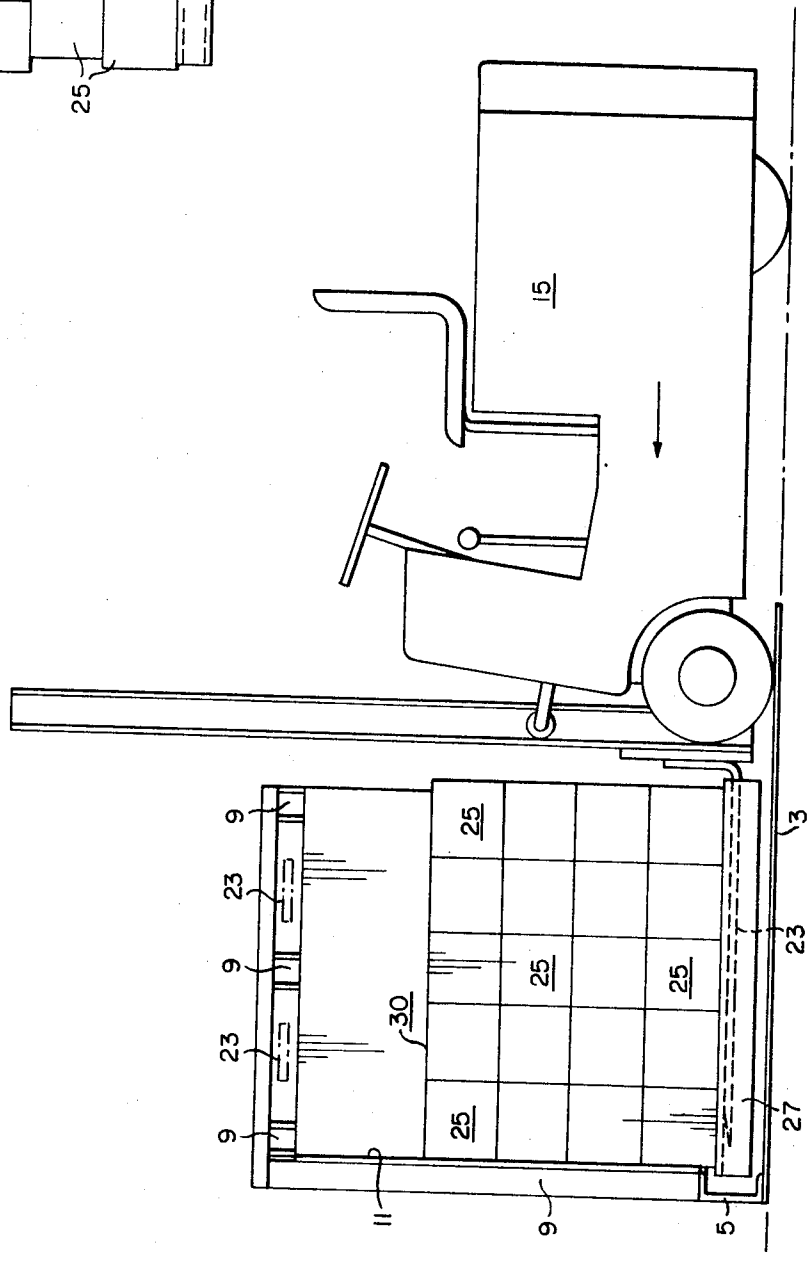


FIG. 2.

PALLET-LOAD STRAIGHTENER DEVICE

CROSS-REFERENCES TO RELATED APPLICATIONS

Applicant is not aware of any related applications pertinent to the present invention.

BACKGROUND OF THE INVENTION

Considerable material handling is obtained by stacking cartons upon pallets, which are handled by fork-lift trucks. Manufacturers of merchandise, packed in cartons, use pallets of all types to assemble these cartons into a unit load. The unit load is satisfactory for in-plant handling and storage. It is also advantageous to the manufacturer-shipper and the customer-receiver to transport this pallet load by public and private carrier between the plants. During this transportation by rail car or truck, the unit load often is loosened from its compact arrangement. The receiver must manually restack, or adjust the disarranged cartons or packages for safe and satisfactory handling in his method of use.

Thus, during transport, shock and vibrations can cause packages stacked on a pallet to become disarranged. The accumulated effect of only a slight increase in clearance between many packages or cartons can destroy the integrity of the load. This can be prevented, of course, by the strapping or over-wrapping installed by the shipper, but in many circumstances this is uneconomical or considered undesirable. It is, therefore, desirable to provide a means for conveniently and economically reorganizing and straightening disarranged packages and cartons on a stacked pallet load, without resort to manual handling.

SUMMARY OF THE INVENTION

The present invention is particularly concerned with providing a means of adjusting and reorganizing the stacked cartons or packages on a pallet load without manual handling. The device of the present invention, which may be termed a pallet-load straightener, is used in conjunction with a fork-lift truck, and comprises, generally, a pallet-load straightener device having a lower metallic floor plate, to which is welded upstanding metal channel members, which, in turn, support upstanding metal I beams, the latter supporting a pair of adjoining rear straighener wall portions to serve as wall straighteners for the loose or disarranged cartons of the unit pallet load.

Preferably, braces are welded to the upper ends of the upstanding metallic I members to facilitate the lifting of the entire device by the forks of a fork-lift truck, so that the entire straightener device may be readily moved to different locations within a plant, or to different places on a loading platform in a truck-shipping or receiving dock area.

Accordingly, a general object of the present invention is to provide an improved material-handling device, which is capable of straightening disarranged cartons stacked upon a unit pallet load.

Another object of the present invention is the provision of an improved pallet-straightening device, which may be readily utilized by the operator of a fork-lift truck without any manual handling of the disarranged cartons whatsoever.

Still a further object of the present invention is to provide an improved pallet-load straightening device,

which may be readily moved from one location to another location in a receiving dock area.

Still a further object of the present invention is the provision of an improved pallet-load straightening device, which has upstanding channels provided on the floor plate thereof to provide for pallets, that are larger than the supported load to extend beyond the upstanding straightener walls.

Further objects and advantaggs will readily become apparent upon reading the following specification taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the pallet-load straightener device of the present invention;

FIG. **2** is a side elevational view of the pallet-load straightener device of the present invention, as utilized by a fork-lift truck, in straightening disarranged cartons upon a pallet load;

FIG. **3** is a fragmentary view showing the disarranged cartons upon a pallet load and loosely separated from each other; and,

FIG. **4** is a fragmentary side elevational view of a modified type of fork-lift truck having a load-back rest in abutment with the packages utilizing my invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, and more particularly to FIG. **1** thereof, the reference numeral **1** indicates a pallet-load straightener device, which comprises, generally, an apron base **3**, which, preferably, is of a metallic corrugated material, say metallic plate, for example, one-fourth inch thick, and of dimensions say, for example, 72 inches by 72 inches.

Welded to the upper surface of the aforesaid apron base **3** is a pair of upstanding channel members, designated by the reference numerals **5, 7** and supporting upstandingly therefrom a plurality, say, for example, six vertically-extending I beams **9**. The I beam members **9** support adjoining inward straightener walls, designated by the reference numerals **11** and **13**, which serve as straightener walls, against which the disarranged cartons may be pressed by the fork-lift truck **15**, as shown more clearly in FIGS. **2** and **4** of the drawings.

Preferably, the side straightener walls **11, 13** may comprise metallic plates, say, for example, one-fourth inch thick and say 48 inches by 52 inches square. Welding may be used to affix the several structural members and plates together.

Extending across the upper ends of the supporting I beam members **9** are diagonally-extending bracing members **17, 19,** and **21,** which may be welded to the upper ends of the support members **9,** so that a fork-lift truck **15** or **15A** may position the forks **23** within the area, as shown by the dotted lines **23** in FIG. **2,** and thereby carry the entire straightener device **1** from one location to another location in a shipping or dock-receiving area.

FIG. **2** illustrates how a fork-lift truck **15** may press cartons **25,** which, through shock and vibration during transportation, may become loosely stacked on the pallet, as illustrated in FIG. **3.** As shown in FIG. **2,** the fork-lift truck **15** may press these cartons **25** against the straightener side walls **11** and **13** in the manner shown in FIG. **2.** The operator may drop the fork **23,** remove the truck **15** out of the pallet load, and move in the di-

rection indicated by the arrow **29** in FIG. **1**, so as to straighten the cartons **25** in the transverse direction against the other metallic straightener wall **13**.

Consequently, the structural pallet straightener device **1** of my invention may be used in conjunction with a fork-truck **15**, or similar handling device, that will straighten and compact the assembly of cartons **25** previously stacked as a full pallet load. The angle-shaped and reenforced walls **11, 13** having a recessed bottom frame **5, 7** are braced so as to facilitate use.

Generally, the sequence of the organizing operations may be as follows:

1. A pallet **27** is removed from the carrier by a fork-truck **15**.

2. The truck **15** moves against one wall **11** (north-south direction) of the straightener device **1**, and the cartons **25** are lined up by the straightener wall **11**.

3. The pallet load is moved against the second wall **13** of the straightener device **1** by the side-shifter attachment of the truck **15** to line up the cartons **25** in the other direction.

4. If a side-shifter attachment on the truck **15** is not available, a four-way entry pallet **27** may be set down on the straightener apron or floor plate **3**, the fork-lift truck **15** backs up and enters the pallet **27** in the direction of the straightener second wall **13**, and lines up the cartons **25** as in operation step 2 above.

FIG. **4** illustrates the use of a load-back rest **32** on the lift truck **15A** in abutment with the packages **25** to press them against the straightening walls **11, 13**. Thus, my invention may utilize either a truck **15** without such a load-back rest **32**, or a truck **15A** which carries such a load-back rest **32**, as shown in FIG. **4**.

From the foregoing description of my invention, it will be apparent that no manual operations are necessary, and a compact and readily-usable straightener device **1** is available, with lower channel members **5, 7** adaptable for accommodating pallets **27** that are larger than the load **30**, which pallets **27** extend beyond the straightener walls **11, 13** as shown in FIG. **2**.

Although I have illustrated and described a specific embodiment of my invention, it is to be clearly understood that the same was merely for the purpose of illustration, and that changes and modifications may readily be made therein by those skilled in the art, without departing from the spirit and scope of the invention.

I claim:

1. A pallet-load straightening device for straightening disarranged cartons and packages on stacked pallets comprising, in combination, a horizontally-disposed metallic apron upon which a fork-lift truck carrying a stacked-pallet load may ride up upon, two metallic C-shaped channel members normal to each other and facing inwardly and being affixed to the outer side edges of said metallic apron, only two upstanding vertically-disposed adjoining straightening metallic walls positioned normal to each other and fixedly secured to the upper edges of said normally-arranged C-shaped metallic channel members, said horizontal apron extending outwardly beyond the free ends of each of said vertically-extending walls and said channel members and being adapted to facilitate the driving of a lift truck onto and off thereof, whereby the operator of a fork-lift truck may sequentially drive the fork-lift truck onto said apron in directions parallel to the longitudinal bottom edges of said vertically-extending walls and sequentially compress and constrict disarranged packages and cartons against said two vertically-disposed straightening walls in the two directions which are normal to each other, and oversized pallets may be accommodated by the recessed portions of said two C-shaped channel members.

2. The pallet-load straightening device of claim **1**, wherein a plurality of spaced vertically-extending beams affixed to said C-shaped channel members assist in bracing and supporting the two upstanding vertically-disposed metallic straightening walls.

3. The combination of claim **2**, wherein additional horizontally-disposed bracking members extend across the upper ends of the vertically-extending beams to thereby facilitate the carriage of the entire device from one location to another location.

4. The combination of claim **2**, wherein the spaced vertically-extending beams comprise I-beams welded to the upper faces of the two C-shaped channel members.

5. The combination of claim **4**, wherein additional horizontally-disposed bracing members are welded to the upper ends of the vertically-extending I-beams to thereby facilitate the bodily carriage of the entire device from one location to another location.

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