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3,719,342

CLIP FOR RIDGID FOAM PALLET

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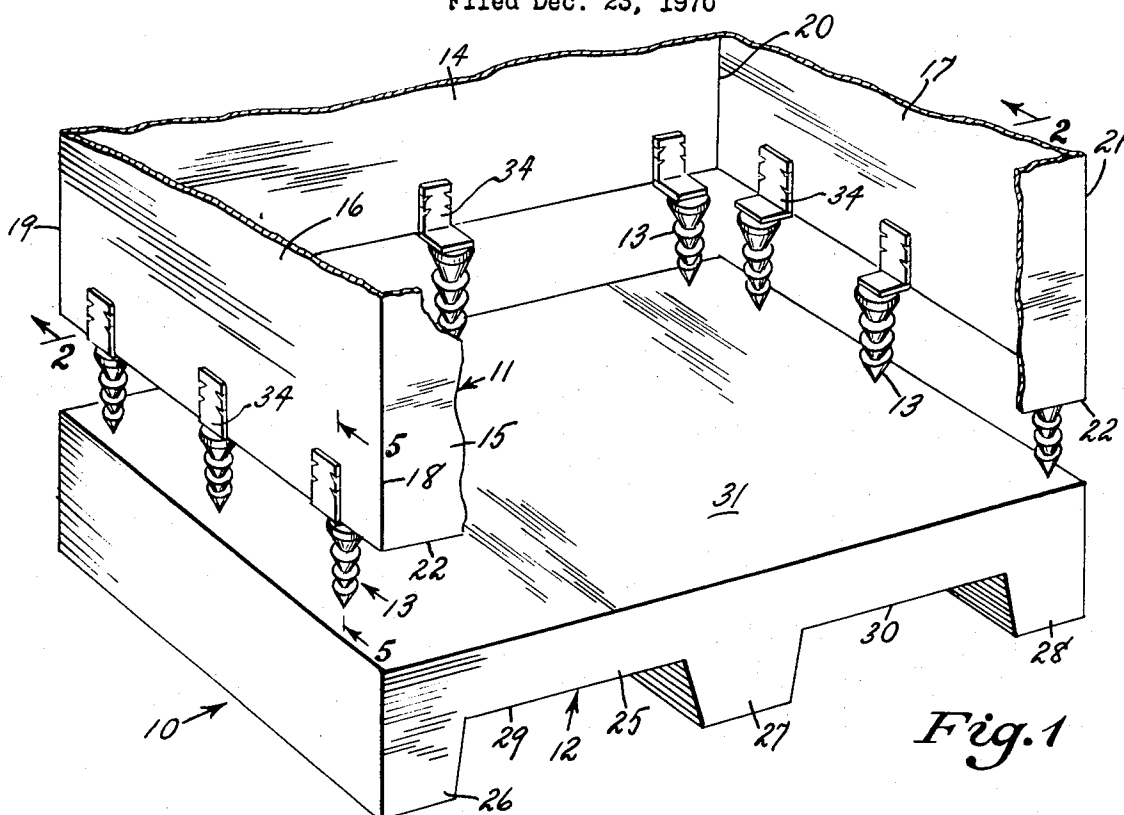


Fig. 1

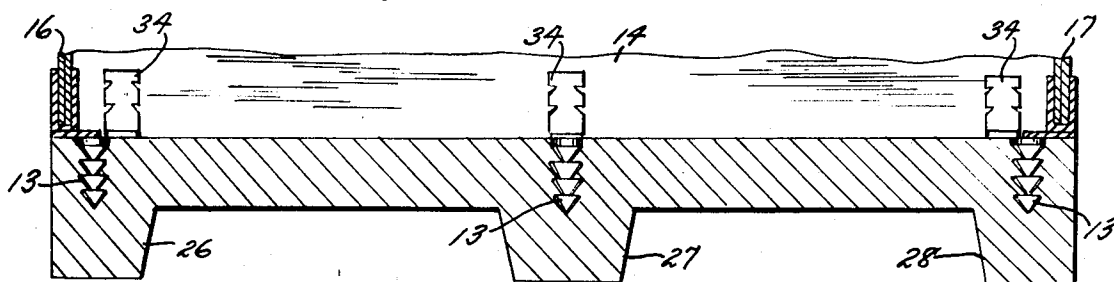


Fig. 2

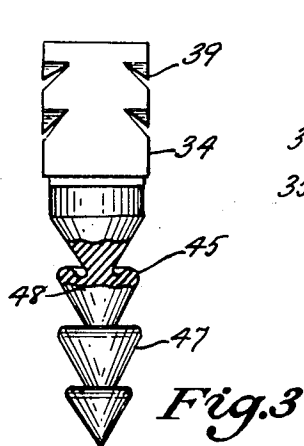


Fig. 3

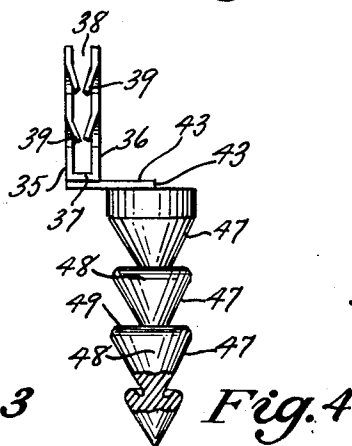


Fig. 4

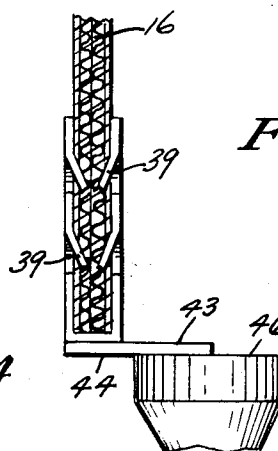


Fig. 5

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CLIP FOR RIGID FOAM PALLET

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1 Claim

ABSTRACT OF THE DISCLOSURE

A clip for interconnecting the cardboard sides of a collapsible shipping container to a molded rigid foam pallet inwardly of the peripheral edges thereof. The clip includes a pair of planar side members having inwardly directed teeth for engaging the opposite sides of a cardboard panel, and a stepped pointed downwardly extending projection capable of penetrating the upper surface of said pallet and extending into the portions of relatively thick cross-section, whereby the rigid foam, by virtue of elastic memory may flow over the stepped surfaces of the projection to provide a retentive effect.

This invention relates generally to the field of collapsible reusable shipping containers, and more particularly to an improved clip for interconnecting fibrous side wall portions thereof to a molded rigid foam pallet. Reference is made to my prior patent, No. 3,443,737, dated May 13, 1969, and my co-pending application, Ser. No. 857,838, filed Sept. 15, 1969, now Pat. No. 3,580,618, dated May 25, 1971, which disclose analogous constructions.

Collapsible containers of the type shown in the above mentioned patent and application have found wide acceptance in the shipping industry, owing to relatively light weight, ease of handling in conjunction with fork lift trucks, and reasonable cost of manufacture. Conventional wood pallets, however, with the increasing costs of lumber and fabricating labor have become relatively costly, and being relatively fragile when carelessly handled, the breakage rate has proven to be quite high. Thus, the wood pallet very often does not survive a single shipment, necessitating its repair or discard.

In an attempt to lower the cost of fabricating panels, it is known in the art to fabricate the same from rigid foam synthetic resinous materials, in which case the entire pallet, including skids and platform are shaped as an integral unit having openings for the insertion of the engaging parts of a fork lift truck. The rigid foam material most commonly used is of a pelletized form which expands during curing to form a plurality of interconnected bubble-like structures possessing a relatively high degree of elastic memory. Although the useful life of such structures is relatively short, it is normally adequate for a single use, and the cost of fabrication is low enough to permit discarding after such single use.

Because of the poor retention of nails driven into the pallets, difficulty has been encountered in securing the lower edges of the side walls of the shipping container thereto. These walls are normally of corrugated material with a life expectancy roughly comparable to that of the pallet, and in the prior art, interconnection has been solely by strapping with metal bands which incidentally hold the cover to the container in engaged position as well. Once the straps are cut to gain access to the interior of the container, there is no means for maintaining the side walls of the container in engagement with the pallet.

It is therefore among the principal objects of the present invention to provide an improved clip means simultaneously engaging the lower edge of the side wall of the shipping container and the upper surface of the foam pallet, thereby eliminating the need for strapping, and providing

a semi-permanent interconnection between the side walls and pallet parts of a shipping container.

Another object of the invention lies in the provision of improved clip means of the class described which may be conveniently fabricated at relatively low cost, whereby they may be expendable after a single use.

A further object of the invention lies in the provision of improved clip means of the class described which may be installed without the use of any tools by those having only ordinary skills.

Yet another object of the invention lies in the provision of improved clip means which utilizes the normal plastic memory of the synthetic resinous foam forming the pallet to retain the same in engaged condition with the pallet.

These objects, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claim.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIG. 1 is an exploded fragmentary view in perspective of an embodiment of the invention.

FIG. 2 is a fragmentary transverse sectional view of the embodiment in fully assembled condition.

FIG. 3 is a view in elevation showing a clip element forming a part of the embodiment.

FIG. 4 is a second elevational view of the clip element as seen from the right hand portion of FIG. 3.

FIG. 5 is an enlarged fragmentary sectional view of a clip element as seen from the plane 5-5 in FIG. 1.

Briefly stated, the invention contemplates the provision of an expendable clip having a pair of side walls defining a generally planar interstice engageable with the lower edge of a container side wall, and a pointed projection, the axis of which is parallel to the plane of the interstice capable of penetrating the upper surface of a rigid foam pallet to be retained therein by the elastic memory of the foam material.

In accordance with the invention, the device, generally indicated by reference character 10 includes a continuous side wall 11, a rigid foam pallet 12 and a plurality of interconnecting clips 13.

The continuous side wall 11, as has been mentioned, is preferably formed from corrugated fibrous material, and includes a pair of side portions 14 and 15, and a pair of end portions 16 and 17. The portions 14-17, inclusive, are interconnected at fold lines 18, 19, 20 and 21 substantially at a mutual right angle, and provide a continuous lower edge 22 which overlies the pallet 12.

The pallet 12 is formed as an integral molding of foam material, and includes a planar portion 25, as well as first, second and third skid portions 26, 27 and 28, respectively. The skid portions 26-28 define openings 29 and 30 for the entry of a fork lift truck (not shown) whereby the assembled device 10 may be lifted and transported as required. The planar portion 25 defines a continuous upper surface 31 which supports the side wall 11 and the contents of the container (not shown).

The clips 13 are substantially identical, each including a wall-engaging clip element 34 having first and second generally rectangular side walls 35 and 36, respectively and interconnected by a lower wall 37. The walls 35-36 define interstices 38 of width corresponding to the width of the side wall 11. A plurality of tines or barbs 39 extend into the interstice, and thus penetrate the surfaces of the side wall to prevent disengagement of the clip from the wall (see FIG. 5).

A planar interconnecting member 42 includes an upper surface 43 welded to the lower surface of the lower wall 37, and a lower surface 44 welded to a pointed projection

45 having a principal axis parallel to the plane of the interstice 38. The projection 45 includes an end surface 46 from which extend a series of truncated cones 47 having tapering surfaces 48 and dished surfaces 49 substantially perpendicular to said principal axis.

The device is assembled by first positioning a plurality of clips 13 upon the lower edge 22 of the side wall 11 as shown in FIG. 1. In this position, the projections 45 extend inwardly of the inner surface 40 of the wall, so as to overlie the upper surface 31 in areas inwardly of the peripheral edge thereof. It will be observed that the projections 45 also overlie the skid portions 26-28 which are relatively thick cross-section.

Referring to FIG. 2, the projections 45 are engaged with the pallet 12 by forcing the same into the body of the pallet. Where the pallet is resting upon a horizontal surface, the foot of a user may be applied to the upper surface 43, and the weight of the user may be transmitted to assist in forcing the projection 45 into the body of the foam material. As the projection 45 descends, the foam material is spread apart to permit passage therethrough, and after the projection is fully seated, as shown in FIG. 2, elastic memory of the material tends to cause flow of the same into the interstices formed between the surfaces 48 and 49 to exert a locking action. It will be appreciated that manual force alone will in some cases be sufficient to dislodge the projection immediately after entry, but after the projection has been allowed to remain in engagement for a reasonable period of time, resistance to withdrawal increases, so that the combined retentive effect upon all of the clip members is sufficient to prevent accidental disengagement.

The container may now be completed by the engagement of a top cover (not shown) and placed in service.

It will be understood that although I have disclosed the clips 13 as being formed of metallic materials, it is also possible to form the same either wholly or partially of synthetic resinous materials as well.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifica-

tions will occur to those skilled in the art to which the invention pertains.

I claim:

1. A clip for interconnecting the sides of a collapsible shipping container to a pallet formed of molded rigid foam inwardly of the peripheral edges of said pallet comprising: a clip element including first and second planar parallel side walls interconnected at the lower ends thereof to form an interstice for the reception of a planar side wall therebetween, said planar parallel side walls including inwardly extending tines adjacent the longitudinal edges thereof, and an integral pointed projection having a principal axis substantially parallel to the plane of said interstice and extending in laterally offset relation thereto in an opposite direction from the closed end of said interstice, said projection including a plurality of truncated cones of substantially equal greater diameter, each including a dished surface having rounded peripheral edges, said dished surfaces being substantially perpendicular to said last mentioned axis for engaging the body of said rigid foam pallet through a surface thereof in non-withdrawal relation.

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BERNARD A. GELAK, Primary Examiner

U.S. Cl. X.R.

51—714, 309; 287—20.92 E; 24—85, 73; 108—55