Jan. 18, 1955 W. W. CUSHMAN 2,699,912

KNOCKDOWN PALLET

Filed Oct. 6, 1953

FIG. 1.

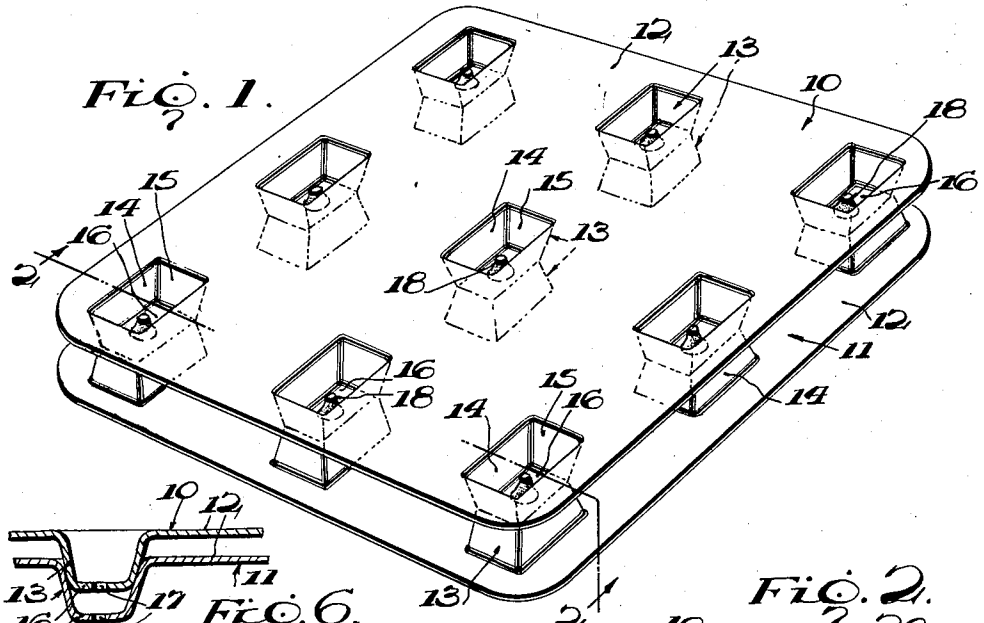


FIG. 6.

FIG. 2.

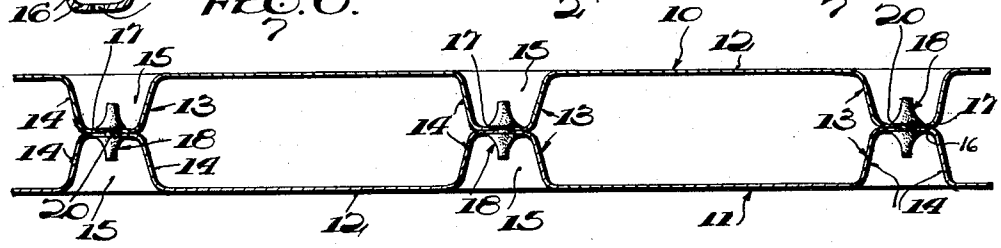


FIG. 4.

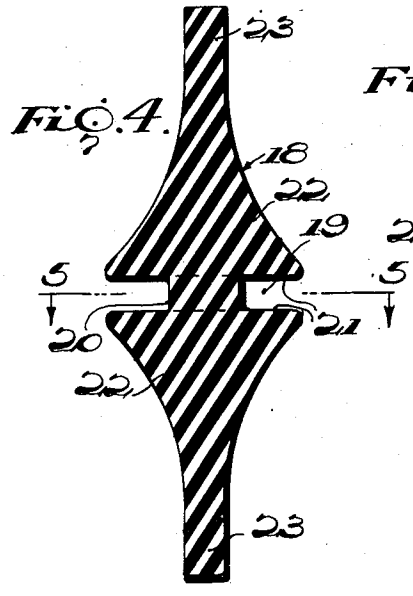


FIG. 3.

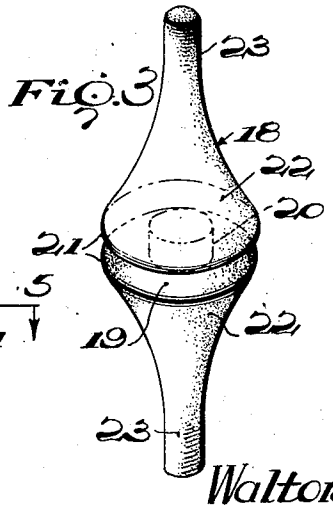
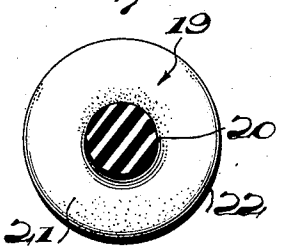


FIG. 5.



INVENTOR

Walton W. Cushman

BY W. J. Eccleston

ATTORNEY

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2,699,912

KNOCKDOWN PALLET

Walton W. Cushman, Webb City, Mo.

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2 Claims. (Cl. 248—120)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

My invention relates to load supporting pallets of the type extensively used in conjunction with fork-lift trucks.

A primary object of the invention is to provide a pallet formed of readily separable pallet sections or sides which may be nested or stacked for the purpose of conserving shipping and storage space.

A further object of the invention is to provide a knock-down pallet having novel and simplified means for readily detachably securing the pallet sections together in assembly, and facilitating their separation for nesting or stacking with a minimum of effort.

A further object is to provide a knock-down pallet of the 4-way type which is reversible or invertible in use, simplified and durable in construction, lightweight, and highly compact.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a perspective view of a knock-down pallet embodying my invention,

Figure 2 is an enlarged vertical section taken on line 2—2 of Figure 1,

Figure 3 is an enlarged perspective view of an elastic fastener or rivet employed for detachably securing sections of my pallet together in assembly,

Figure 4 is an enlarged central vertical longitudinal section through the rivet shown in Figure 3,

Figure 5 is a horizontal transverse section taken on line 5—5 of Figure 4, and,

Figure 6 is an enlarged fragmentary cross section through a pair of pallet sections in the nested or stacked condition after separation.

In the drawings, where for the purpose of illustration is shown a preferred embodiment of my invention, the numerals **10** and **11** designate generally companion pallet sections or sides, which are identical in construction, and preferably formed unitary from sheet metal, plastics material, or the like.

The pallet sections **10** and **11** comprise generally flat rectangular body portions or plates **12** of a preferred thickness and area, as shown. Each plate **12** is formed to provide a plurality of spaced hollow legs or projections **13** projecting beyond one face thereof, and preferably rectangular in horizontal cross section, although not limited to this particular shape. The legs or projections **13** of each plate **12** are preferably arranged in rows, equidistantly spaced apart longitudinally and transversely of the rectangular pallet sections, and the legs **13** of each row are preferably three in number and spaced apart equidistantly longitudinally of the rows, as shown.

Each hollow leg or projection **13** opens through the outer face of the plate **12**, and comprises pairs of converging or inclined side walls **14** and **15**, integrally connected at corresponding ends by flat bottom walls **16**. The bottom walls **16** of the hollow legs **13** are spaced equidistantly from the plate **12** carrying the particular legs **13**, and the legs **13** are all uniform in size and

shape. It is thus seen that the legs **13** of each pallet section comprise tapered cup-like projections, extending beyond one face of the flat plate or body portion **12**. The bottom walls **16** of the hollow legs **13** are provided with openings **17**, extending therethrough, and adapted to register when the bottom walls **16** are brought together in opposed contacting relation as shown in Figures 1 and 2.

I provide means for readily detachably securing the pallet sections **10** and **11** together in assembly. Such means comprises elastic deformable fastener elements or rivets **18**, engageable through companion pairs of the registering openings **17** of the hollow legs **13**, as shown. Each elastic rivet **18** comprises an elongated body portion formed of rubber, synthetic rubber or the like, provided at its longitudinal center with a relatively narrow annular groove **19**, forming a short central reduced longitudinal shank **20** of substantially the same diameter as the openings **17**. The groove **19** forms relatively wide flat opposed shoulders **21** at the opposite ends of the shank **20**, and longitudinally tapering end portions **22** of the rivet are disposed upon opposite sides of the groove **19** and terminate in relatively long narrow end extensions **23**, adapted to be grasped by the fingers when applying or removing the elastic rivets to or from the openings **17**. The tapered portions **22** are relatively wide or thick near the longitudinal center of the elastic rivet **18**, and taper uniformly longitudinally toward the reduced end extensions **23**, which are preferably somewhat narrower than the central shank **20**.

In use, the pallet sections **10** and **11** are placed in parallel superposed relation with the hollow legs **13** arranged innermost and having end bottom walls **16** opposed and contacting, as shown. The openings **17** will now register, and one of the rivets **18** is applied through each pair of registering openings **17**. To do this, one reduced extension **23** of the rivet is passed through the registering openings **17** in either direction, and grasped by the fingers and pulled until the tapered portion **22** of the rivet passes through the registering openings **17**, and the bottom walls **16** enter the annular groove **19**. Since the rivet **18** is deformable and elastic, this action is rendered possible, and the contacting walls **16** will readily snap into the groove **19**, and be held firmly therein by the opposed shoulders **21**, with the shank portion **20** occupying and filling the openings **17**. As the rivet **18** is thus applied to the pallet sections **10** and **11**, the same will stretch and become deformed sufficiently to allow passage of the tapered portion **22** through the pair of registering openings **17**. When the rivet is released, it will return to its normal shape shown in Figure 4, wherein it serves to firmly secure the pair of hollow legs **13** together in assembly. I prefer to provide each companion pair of legs **13** with one of the rivets **18**, as shown in the drawings, although the rivets may be employed only at the four corner pairs of legs **13** and in the center pair of legs **13**, if preferred.

When separating the pallet sections **10** and **11** for nesting or stacking as illustrated in Figure 6, it is merely necessary to grasp one of the extensions **23** of each rivet **18** and pull or stretch the same longitudinally, until the rivet **18** is dislodged from the registering openings **17**, by deforming the tapered portion **22**. When all of the rivets **18** are thus removed, the pallet sections **10** and **11** are separated and nested or stacked, as shown in Figure 6, and the hollow tapered legs **13** will now interfit telescopically or nest in the manner shown in the drawings. The arrangement affords a highly compact and space saving arrangement for the pallet sections **10** and **11** during return shipment, storage or the like, and any number of pallet sections may be nested or stacked together in the manner shown in Figure 6, with a relatively slight space between each body portion or plate **12**.

Since each of my pallet sections **10** and **11** is provided with the hollow legs **13**, obviously, these legs need be only half as deep as would be the case with a pallet employing one plate or side **12** having hollow legs or projections extending beyond one face thereof. This is true, since the overall height or thickness of

the pallet must conform to standard requirements, based upon the thickness of the lifting tines or forks of the industrial truck used to transport the pallet and load. With my arrangement, the plates **12** are maintained spaced apart the proper standard distance, by the use of the legs **13**, which are individually only half as deep as the legs of one section pallets, such as the pallet shown in my prior Patent 2,544,657, issued March 13, 1951. This relative shortness of the hollow legs **13** renders the stacking or nesting of the pallets twice as compact and space saving as would be the case where longer tapered legs are employed for one section pallets, as in my prior patent above mentioned, although the overall assembled height or thickness of the present pallet is the same as that of the single section pallet in my prior patent.

It may be further seen that my pallet is a 4-way pallet which may receive the lifting forks of an industrial truck from any one of the four sides of the pallet, as found desirable, and the pallet is reversible or invertible in use, since it is identical in construction on both sides.

It is to be understood that the form of my invention, herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

I claim:

1. A four-way reversible knock-down pallet comprising a pair of separate companion pallet sections, a plurality of tapered hollow projections carried by each pallet section and extending beyond one side thereof and spaced apart uniformly in rows extending longitudinally and transversely of the pallet, said projections including end walls having central openings extending therethrough, said openings of one pallet section registering with the openings of the other pallet section when the companion pallet sections are in back to back relation with the end walls of said projections abutting, the hollow projections of the companion pallet sections then forming a corresponding number of recesses opening through opposite sides of the pallet and surrounding said registering openings, and a plurality of elastic rivets for the registering openings of the end walls and serving to detachably connect the

companion pallet sections, said rivets having deformable central body portions larger than the registering openings and passable therethrough, the body portions of the rivets having grooves to receive the abutting end walls with portions of the deformable rivet body portions disposed upon opposite sides of the end walls in clamping engagement therewith, said rivets also including reduced elongated end extensions at opposite ends thereof and projecting longitudinally of the rivets into the recesses at the opposite sides of the pallet formed by said hollow projections and spaced from the side walls of the projections, whereby the rivets may be readily applied to or removed from the pallet sections from either side of the assembled pallet.

2. A four-way reversible knock-down pallet comprising companion pallet sections, a plurality of tapered cup-like projections carried by each pallet section and projecting upon one side thereof and spaced apart in rows extending substantially parallel to the margins of the pallet section, the projections including end walls having openings extending therethrough, the companion pallet sections being adapted for back to back contacting relation with said end walls of the projections abutting and the openings of the end walls registering, a plurality of elastic rivets for detachably connecting the pallet sections in said back to back relation and including enlarged body portions having grooves formed therein to receive the portions of the abutting end walls surrounding said registering openings and snugly engaging the end walls, and reduced longitudinal extensions carried by the opposite ends of said rivets and disposed centrally within the cup-shaped projections upon opposite sides of the abutting end walls, whereby the rivets are readily appliable to and removable from the pallet sections from either side of the assembled pallet.

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