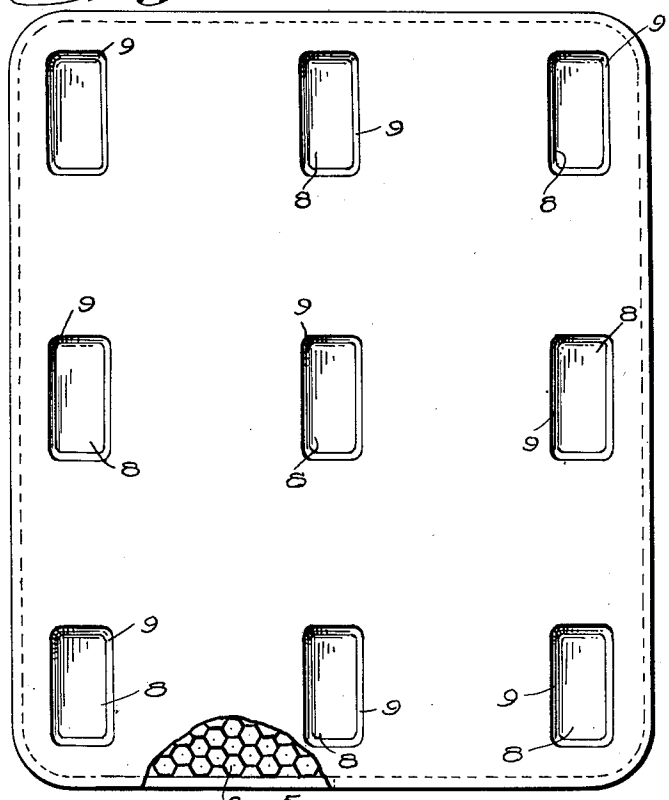
March 13, 1951 W. W. CUSHMAN 2,544,657

PALLET

Filed Sept. 5, 1947 2 Sheets-Sheet 1

Fig. 1



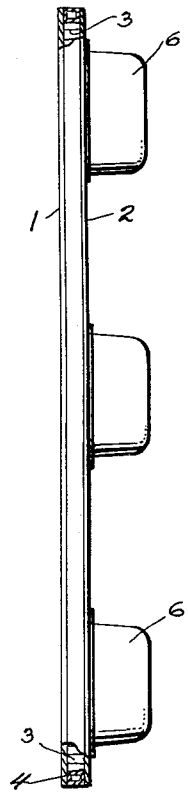


Fig. 2

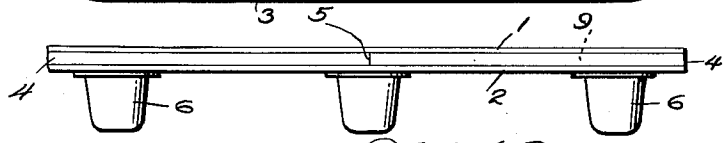
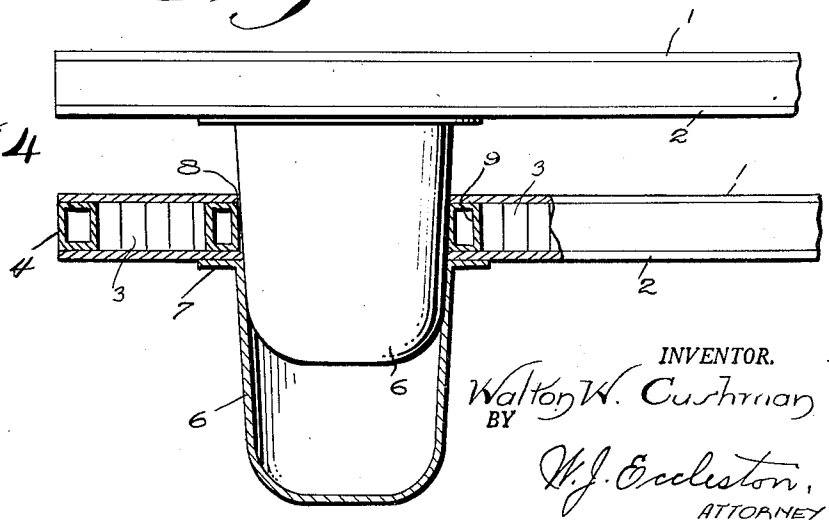


Fig. 3

Fig. 4



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PALLET

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Fig. 5

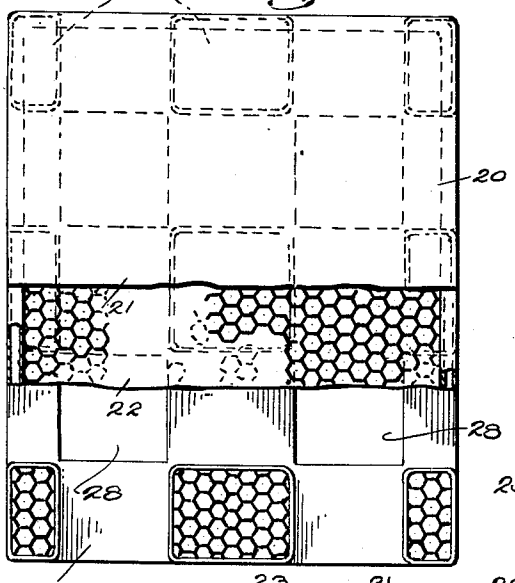


Fig. 6

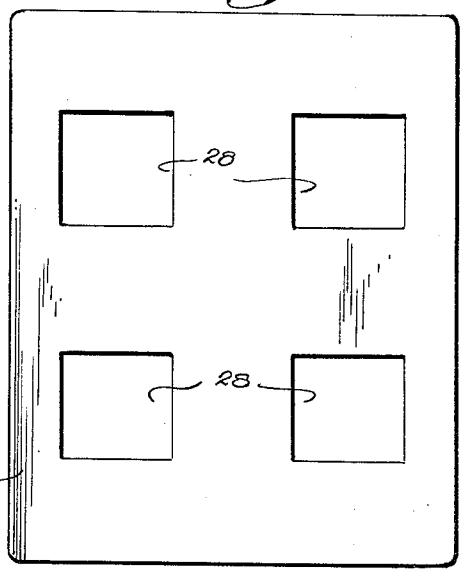


Fig. 7

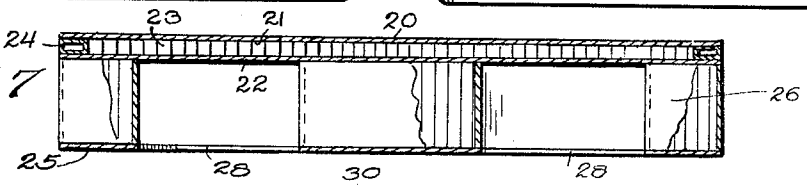
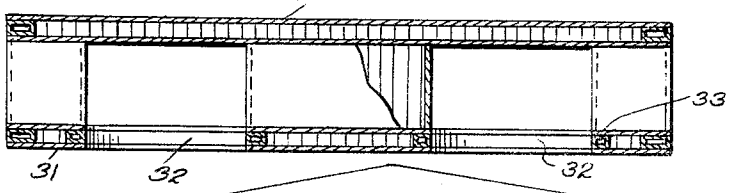


Fig. 9



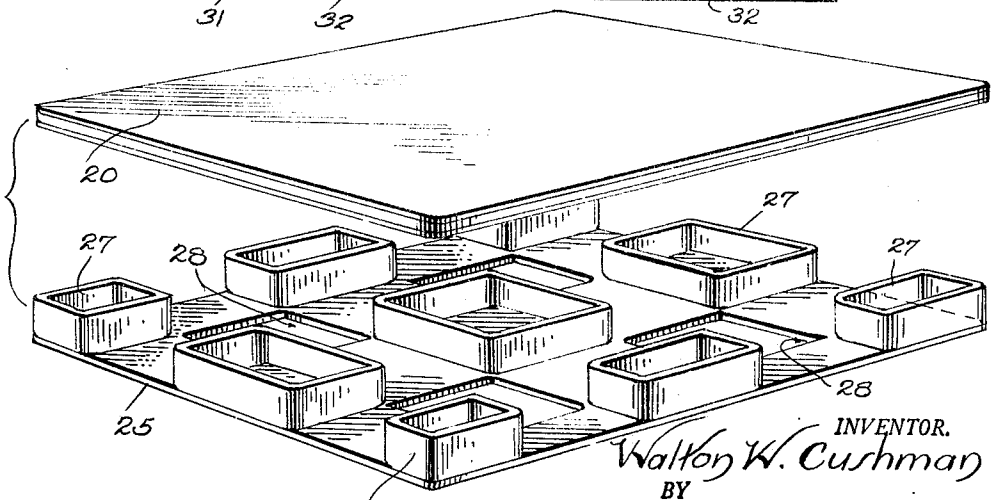


Fig. 8

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Patented Mar. 13, 1951 2,544,657

UNITED STATES PATENT OFFICE

2,544,657

PALLET

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Application September 5, 1947, Serial No. 772,415

3 Claims. (Cl. 248—120)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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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.

The present invention relates to pallets and skids of the general type now extensively used in conjunction with fork-lift trucks for the storing, handling and transportation of various merchandise, and has for its primary object to provide a composite pallet of sturdy construction and yet one which is relatively light in weight.

A further object of the invention resides in the provision of such a pallet which is capable of being stacked for the purpose of conserving shipping and storage space.

Another object of the invention consists in providing a pallet capable of receiving in any one of its four edges, the forks of a fork-lift truck, and which may be used with either hand or power operated trucks.

A still further object of the invention resides in the provision of a pallet formed of metal and paper, wherein the paper is of cellular construction and is so arranged as to stiffen and reinforce the metallic elements.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, in which,

Figure 1 is a plan view of one form of the invention, partly broken away to show the interior construction for reinforcing the platform element.

Figure 2 is a side elevational view, partly broken away, showing the construction of the binding element of the platform.

Figure 3 is an end elevational view of the pallet.

Figure 4 is a fragmentary view, partly in section, showing how the pallets are adapted to stack for shipping and storage purposes.

Figure 5 is a plan view, partly broken away, of a modified form of pallet.

Figure 6 is a bottom plan view of a pallet shown in Figure 5.

Figure 7 is an edge view, partly broken away, of a modified construction of pallet.

Figure 8 is a perspective view of the pallet of Figure 5 with the upper panel or platform raised and the cellular spacing and reinforcing members removed to more clearly show the metal bands or pockets surrounding the spacing and reinforcing elements; and

Figure 9 is an edge view, partly broken away, of a still further modified construction of pallet.

Referring to the drawings more specifically and

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particularly to Figs. 1 to 4, inclusive, the platform portion of the pallet comprises two sheet metal plates indicated by the numerals 1 and 2. These plates are vertically spaced and are held in this spaced relationship by a spacing element indicated by the numeral 3 and composed of paper formed to provide a cellular construction each cell of which is of hexagonal form to provide a unit such as the well-known honeycomb. The paper forming this spacing and reinforcing element may be stiffened by coating or impregnating it with shellac or other suitable stiffening material and it will be noted that the walls forming the cells extend in a direction normal to the planes of the spaced plates 1 and 2 thereby reinforcing the plates against bending and providing a light but rigid platform.

The spacer 3 is securely attached to the adjacent plates 1 and 2 by any suitable cement and the exterior edges thereof are protected against damage by a binder 4 here indicated as a hollow tubular member, square in cross section, and mounted in the space between the plates at the edges thereof. The adjacent ends of this tubular member may be welded or otherwise connected as indicated by the numeral 5.

For supporting the body portion of the pallet in spaced relationship to the dock or other surface on which it may be placed, a plurality of legs 6 are employed. In the present illustration, nine of these legs are provided and are so spaced as to permit the entrance of the forks of a fork-lift truck into any one of the four edges of the pallet. These legs may be drawn from sheet metal and are provided on their upper ends with the outwardly directed flanges 7 by means of which the legs may be rigidly cemented to the lower plate 2 of the body of the pallet. The legs are of hollow formation and tapered downwardly so as to adapt them to receive in their upper ends the legs of an adjacent pallet which is stacked thereon. To this end the platform directly above each of the legs is provided with an opening 8 conforming in size and shape to the exterior of a leg at a point substantially above its lower end. The stiffening honeycomb material adjacent to each of these openings may be protected by a hollow tubular metal binder 9 which is mounted in the space between the panels 1 and 2 and surrounds the opening 8.

In the modified construction shown in Figs. 5, 6, 7, and 8, the pallet is formed of an upper panel 20 composed of upper and lower metal sheets 21 and 22, respectively, spaced apart by honeycomb material 23, the latter being provided with a hol-

low metal binder **24**. This construction is identical with the panel member shown in Figures 1 to 4, inclusive, except that the panel **20** is continuous throughout and has no openings such as provided in the first form of the invention for the reception of supporting legs **6**. In this second form of the invention, in lieu of the legs **6**, the upper panel **20** is spaced from a lower plate or panel **25** by spacing members **26** formed of stiffened paper in the general shape of honeycomb material, but the width of the paper forming the cells is substantially greater than that of the paper forming the cells employed as a spacing element between the metal plates **21** and **22**. In the present illustration, nine of these spacing and reinforcing members **26** are employed to support and reinforce the panel member **20** in its relation to the lower plate or panel **25**. The spacers **26** are cemented to the upper and lower panels **20** and **25** and each of them is preferably enveloped on its sides by a metal sheet **27** wrapped therearound and having its ends suitably secured to each other. And in this instance, similarly to the arrangement of the legs in Figs. 1 to 4, inclusive, the spacing and reinforcing elements **26** and their binders **27** are spaced apart in such a manner as to permit the forks of a fork-lift truck to enter the edges of the composite pallet from any one of four directions.

In order that this modified form of pallet may be employed in conjunction with a hand operated fork lift truck the bottom panel **25** is provided with four openings **28** to permit the lowering of the wheels of the hand operated truck into contact with the dock or other surface on which the pallet may be rested.

In the modified construction shown in Figure 9, the pallet is substantially identical to that shown in Figures 5 to 8, inclusive, except that in lieu of a lower plate of single thickness such as shown in Figures 5 to 8, inclusive, a panel formed of spaced sheets similar to the upper panel is employed and the lower panel is provided with openings corresponding to the openings **28** of Figures 5 to 8, inclusive. In this form of the invention the upper panel is indicated by numeral **30** and the lower panel by numeral **31**. The openings in the lower panel **31**, which are so positioned as to permit the wheels of a hand operated fork-lift truck to pass therethrough and contact the supporting surface for the pallet, are indicated by the numeral **32** and the spacing material between the plates forming the lower panel is protected at the cutouts **32** by hollow tubular metal bindings **33** similar to the other binding elements used in the several other forms of the invention, for protecting the honeycomb material at exposed points.

As hereinbefore indicated the spacing and reinforcing members used in connection with the metal sheets in the various forms of pallet disclosed herein are formed of paper shaped to provide a honeycomb construction and they are arranged with the cells and the walls of the cells extending perpendicularly to the plates between which the material is disposed, and the paper walls of this cellular construction are stiffened by coating or impregnating the paper with a suitable stiffening medium. This construction of spaced metal sheets of relatively light weight spaced apart and reinforced by stiffened paper of cellular

formation provides an extremely strong and rigid platform or panel and yet one which is extremely light in weight, and this feature of the construction is carried through each of the several forms of the invention.

From the foregoing description and the attached drawings it will be apparent to those skilled in the art that I have devised a composite pallet adapted to receive the forks of a fork-lift truck in any one of its four edges; that the construction as shown in Figs. 1 to 4, inclusive, is capable of being stacked for the purpose of conserving shipping and storing space, and that in each form of the invention the pallet is of extremely light weight although reinforced to provide maximum strength and durability.

In compliance with the patent statutes I have described what I now consider to be the preferred forms of construction, but inasmuch as various minor changes may be made in the structural details without departing from the spirit of the invention, it is intended that all such changes be included within the scope of the appended claims.

I claim:

1. A stackable pallet comprising a body formed of metal sheets spaced apart by a spacing element composed of a cellular paper body, a metal binding strip disposed between the sheets at the edges thereof and encircling the spacing element, said body provided with a plurality of openings extending therethrough, and tapered tubular legs in alignment with said openings.

2. A stackable pallet comprising a body formed of metal sheets spaced apart by a spacing element composed of a cellular paper body, a metal binding strip disposed between the sheets at the edges thereof, and encircling the spacing element, said body provided with a plurality of openings therethrough, secondary metal binding strips disposed between said sheets and encircling the openings, and tapered tubular legs in alignment with said openings.

3. A stackable pallet comprising a body formed of metal sheets spaced apart by a spacing element composed of a cellular paper body, a metal binding strip disposed between the sheets at the edges threof, and encircling the spacing element, said body provided with a plurality of openings therethrough, metal binding strips disposed between said sheets and encircling the openings, and tapered tubular legs in alignment with said openings.

WALTON W. CUSHMAN.

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