

Nov. 22, 1949

J. V. SPROLLE

2,489,054

PALLET

Filed Sept. 7, 1946

3 Sheets-Sheet 1

Fig. 1.

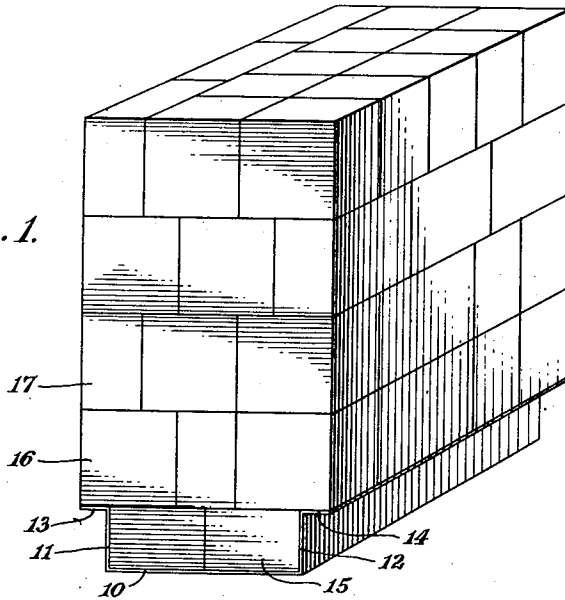


Fig. 2.

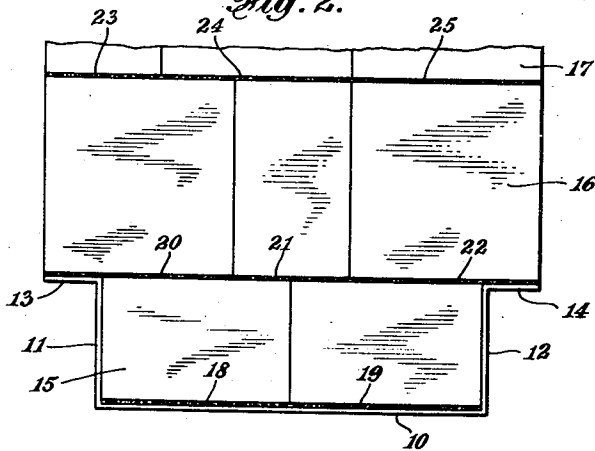
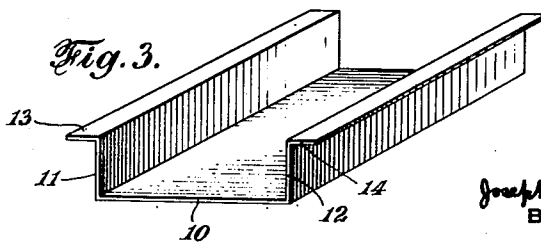


Fig. 3.



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Fig. 4.

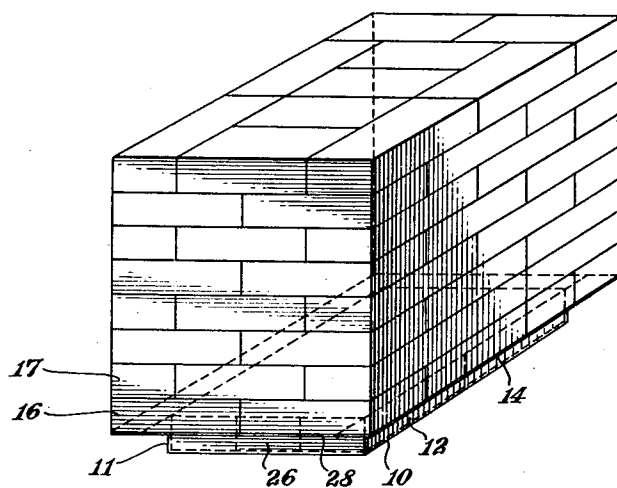


Fig. 5.

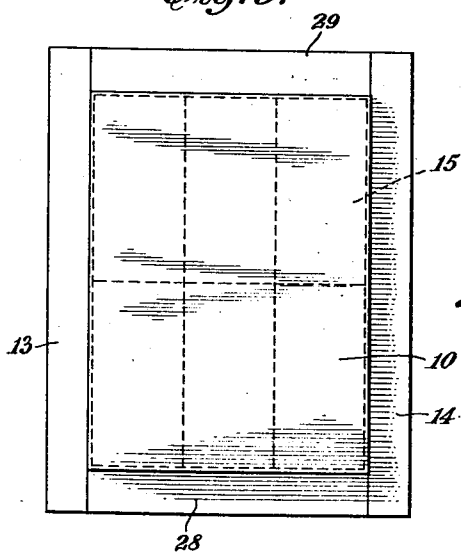
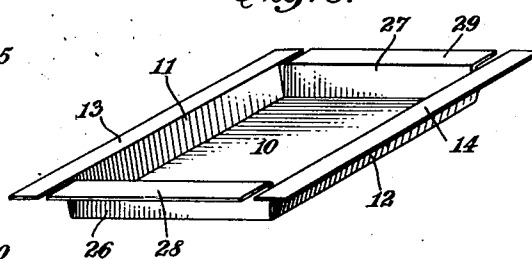


Fig. 6.



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Fig. 7.

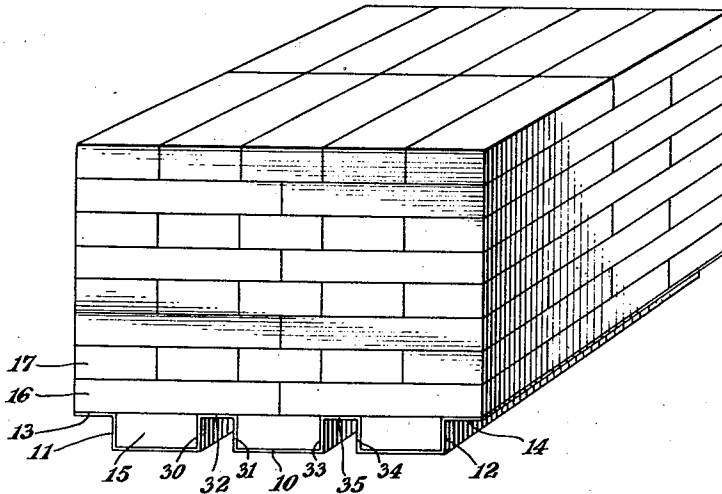


Fig. 8.

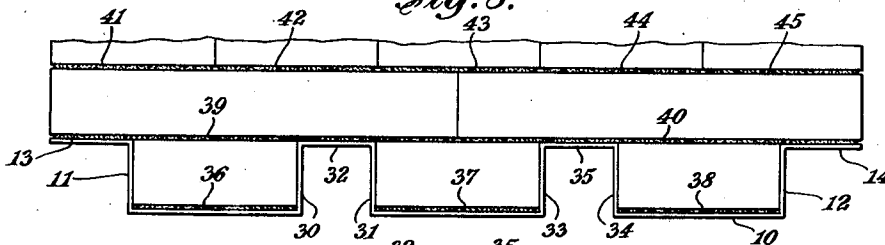


Fig. 9.

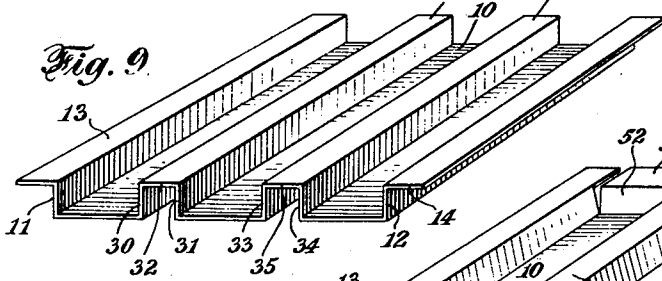
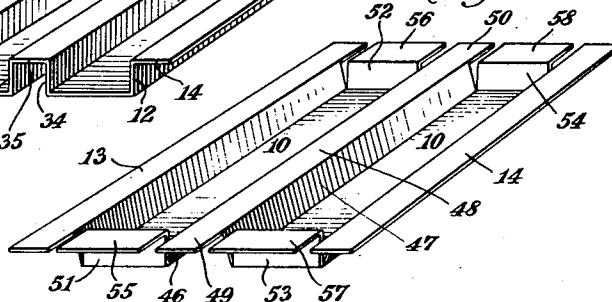


Fig. 10.



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UNITED STATES PATENT OFFICE

2,489,054

PALLET

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Application September 7, 1946, Serial No. 695,385

4 Claims. (Cl. 206-46)

It is known in the art of handling packages to stack a number of them on a pallet to form a so-called palletized unit which may be picked up by mechanical devices such as fork-lift trucks and carried to and from warehouses, freight cars and the like. This speeds up the handling, with a consequent reduction in costs, and also facilitates the effective storing in warehouses and loading in conveyances. Pallets commonly used for this purpose have been made of wood and sometimes of fibre board; some consisting of a single platform with spacers or legs of some sort on the under side so that the forks of the truck may be inserted underneath the platform in order to lift the unit, while others have consisted of a double platform with spacers so that the forks may be inserted in between in order to lift the unit. Sometimes the packages have been secured to the wooden pallet, and at other times not. The cost of these and other pallets heretofore in use has been such that they have not been expendable. As a result, if they were to accompany shipments in order to avoid the cost of repalletizing at the destination, the expense of returning them would be involved.

The principal objects of the present invention are to provide an improved palletized package unit of simplified construction, formed with an improved pallet which is light in weight and is so inexpensive as to be economically expendable. The invention provides a palletized unit which may be shipped as such, thus affording an opportunity for more efficient and effective car loading, and may be removed and handled as such at the destination.

Other and further objects and features of the invention will appear or be pointed out hereinafter in the specification and claims.

I shall now describe my invention with reference to the accompanying drawings, in which:

Fig. 1 is a somewhat diagrammatic perspective view of a completely assembled palletized package unit according to one embodiment of my invention;

Fig. 2 is an enlarged end elevational view of the lower portion of Fig. 1, designed to indicate the adhesive between the packages and between the packages and the pallet;

Fig. 3 is a perspective view of the pallet of Fig. 1;

Fig. 4 is a somewhat diagrammatic perspective view of a completely assembled palletized package unit according to another embodiment of my invention, the dotted lines indicating the flanges

which in this embodiment extend out on all four sides of the pallet;

Fig. 5 is a bottom plan view of Fig. 4, the dotted lines indicating the packages which rest on the pallet between the side walls;

Fig. 6 is a perspective view of the pallet of Fig. 4;

Fig. 7 is a somewhat diagrammatic perspective view of a completely assembled palletized package unit according to still another embodiment of my invention;

Fig. 8 is an enlarged end elevational view of the lower portion of Fig. 7, designed to indicate the adhesive between the packages and between the packages and the pallet;

Fig. 9 is a perspective view of the pallet of Fig. 7; and

Fig. 10 is a perspective view of a pallet illustrating still another embodiment of my invention.

Referring more particularly to said drawings and to the embodiment shown in Figs. 1 to 3 inclusive, the numeral 10 designates the pallet which is bent to provide vertical side walls 11 and 12 having outwardly extending horizontal flanges 13 and 14 respectively. The pallet 10 according to the invention is formed of a single sheet of light-weight flexible composition material such as plain or corrugated fibre-board or the like.

The size of the pallet and the height of the side walls 11 and 12 are so designed with respect to the particular packages to be palletized, that a layer of the packages may be laid on the pallet to fill out completely the space between the side walls and that the top of the layer will be in line with the top of the flanges 13 and 14.

In building up the unit, adhesive is first applied to the bottom surface of the packages as, for example, by passing the packages over an adhesive-applying roller or rollers. A layer 15 of the packages is then laid on and adhesively secured to the pallet. A second layer 16 is then laid on and adhesively secured to the first layer 15. The packages of this second layer 16 are so disposed as to extend out over flanges 13 and 14 to which the layer is also adhesively secured. A third layer 17 is then laid on and adhesively secured to the second layer 16. Succeeding layers are laid on and secured in the same manner to the preceding layer.

In Fig. 2, an enlarged view, 18 and 19 indicate the adhesive on the bottom of the packages in the lower layer of packages; 20, 21 and 22 indicate the adhesive on the bottom of the packages in the second layer; and 23, 24 and 25 indicate the adhesive

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on the bottom of the packages in the third layer. Succeeding layers are of course similar. Glue or any other suitable adhesive may be employed. The amount of adhesive to be used will depend, of course, upon the load to be carried by the particular units under consideration. It is not always necessary to cover the whole bottom of each package with adhesive, but is sometimes sufficient merely to apply several strips of adhesive thereto.

It will be observed that a unit of packages is built up having an overhang to the bottom of which the pallet flanges are secured, so that lifting points are provided underneath the flanges and thus underneath the overhang. This assembled unit is substantially rigid since all the packages are adhesively secured together and to the pallet including its flanges. The rigidity of the package unit tends to strengthen the pallet, and the pallet tends to strengthen the package unit.

In Figs. 4, 5 and 6, I have illustrated the invention as applied to a four-way lift unit. Here, in addition to the vertical side walls 11 and 12 with their horizontal flanges 13 and 14 respectively, the pallet 10 is provided with vertical end walls 26 and 27 having longitudinal outwardly extending horizontal flanges 28 and 29 respectively. In order to show the shape of the blank from which the pallet is formed, the pallet in Fig. 6 is shown spread slightly open; but, when the unit is assembled, the edges of the side walls and flanges are moved into engagement as illustrated in Figs. 4 and 5 so as to form in effect a continuous flange extending around all four sides. By virtue of this construction, the forks of the lift truck may be inserted underneath the flanges from any one of four directions. By way of example, the packages shown in this embodiment of the invention are of different size and shape, and are arranged differently, from those illustrated in the embodiment of Figs. 1, 2 and 3.

In the embodiment illustrated in Figs. 7, 8 and 9, the pallet 10 is bent at intermediate points to provide two arches therein, one of which is formed of vertical side walls 30 and 31 connected by the flat horizontal bridge portion 32, while the other is formed of vertical side walls 33 and 34 connected by the flat horizontal bridge portion 35. The arches are of such height that the bridge portions thereof lie in the same plane as the flanges 13 and 14. Also this height corresponds to the height of the packages, so that when the first layer of packages is laid on the pallet between the arches, the top of this layer, the bridge portions 32 and 35, and the flanges 13 and 14 will all lie in the same horizontal plane. In this embodiment of the invention, the second layer of packages 16 is adhesively secured not only to the first layer 15 and the flanges 13 and 14, but also to the bridge portions 32 and 35. This is shown on an enlarged scale in Fig. 8, in which 36, 37 and 38 indicate the adhesive on the bottom of the packages in the lower layer of packages; 39 and 40 indicate the adhesive on the bottom of the packages in the second layer; and 41, 42, 43, 44 and 45 indicate the adhesive on the bottom of the packages in the third layer. The arches in the pallet provide channels in the underside thereof into which lifting forks may be inserted. Thus the construction shown is designed to accommodate four lifting forks, since it is in all instances necessary that forks be placed under the flanges 13 and 14. Here again, by way of example, the packages shown in Fig. 7 are different in size, shape and arrangement from those shown

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in the preceding figures. Obviously, more or less than two arches may be provided if desired.

Fig. 10 illustrates the application of the four-way lift feature to the form of pallet having an intermediate arch. In this figure, as in Fig. 6, the pallet is shown as spread slightly apart in order that the shape of the blank will more clearly appear. A single arch is shown formed of the vertical side walls 46 and 47 connected by the flat horizontal top or bridge portion 48. At its ends the top portion 48 is provided with extended portions 49 and 50, which serve as part of the end flanges. Also, the two portions of the pallet 10 that lie between the arch and the side walls are provided at their ends with extended portions bent to form vertical end walls 51, 52 and 53, 54 having longitudinal outwardly extending horizontal flanges 55, 56 and 57, 58 respectively. These flanges lie in the same horizontal plane as the flanges 13 and 14. As will be evident, when the unit is assembled, the edges of the extended portions 49, 50 and the flanges 13, 14, 55, 56, 57, 58 will be moved into engagement so as to form in effect a continuous flange extending around all four sides.

In order to secure the requisite stability and strength in the palletized unit, at least some of the packages in the different layers should be so arranged as to extend across spaces between packages in preceding layers in order to provide an interlocking effect so as to prevent the sagging, buckling or spreading apart of the stack of packages. This interlock should be provided in both directions, that is, transversely and longitudinally of the pallet. Various arrangements of the packages may be used to accomplish the interlock. These arrangements will, of course, be influenced by the size and shape of the packages and the load to be carried. By way of example, different sizes and shapes of packages, and arrangements, have been illustrated in Figs. 1, 4 and 7 respectively.

It will be understood that in all embodiments of the invention the packages in each layer are adhesively secured to the packages in the preceding layer.

While I have shown and described the side walls as being of such height with respect to the dimensions of the packages that when a layer of packages is laid on the pallet between the side walls the top of the layer will be in line with the top of the flanges, it will be obvious that the height of the side walls could be made to correspond with the combined height of two or more layers of the packages without departing from the spirit of my invention.

By providing a pallet having the horizontal outwardly extending flanges, by filling the intermediate space on the pallet with packages up to the level of the flanges, by arranging the packages above this level so as to extend out over the flanges, by stacking the packages so as to interlock them, by adhesively securing the packages together and to the pallet including its flanges, a combination has been produced which permits the use of a pallet of the utmost simplicity formed merely of a single sheet of comparatively inexpensive light-weight flexible composition material. A mutual bracing and strengthening effect is secured between the pallet and the packages which enables relatively heavy loads to be carried by such a pallet without sagging, buckling or spreading apart.

The term "composition material" as used herein is intended to include not only plain and cor-

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rugated fibre-board but also any other sheet material having similar characteristics as to cost, weight and flexibility, and which may be glued or otherwise adhesively secured to the packages.

The term "packages" is intended to include not only cartons and boxes, but also filled bags and other containers, of oblong generally-rectangular shape.

I claim:

1. A palletized package unit, including a pallet consisting of a sheet of composition material bent to provide side walls having outwardly extending flanges, packages having a height substantially equal to the height of said side walls laid on said sheet and substantially filling the space between said walls, a second layer of packages laid on and adhesively secured to said first-named packages and extending over and adhesively secured to said outwardly extending flanges, and additional layers of packages in turn laid on and adhesively secured to the immediately preceding layer, some packages of said layers extending transversely and some longitudinally of said sheet across spaces between the packages of a preceding layer.

2. A palletized package unit, including a pallet consisting of a sheet of composition material bent to provide side and end walls having outwardly extending flanges lying in a common plane, packages having a height substantially equal to the height of said side and end walls laid on said sheet and substantially filling the space between said walls, a second layer of packages laid on and adhesively secured to said first-named packages and extending over and adhesively secured to said outwardly extending flanges, and additional layers of packages in turn laid on and adhesively secured to the immediately preceding layer, some packages of said layers extending transversely and some longitudinally of said sheet across spaces between the packages of a preceding layer.

3. A palletized package unit, including a pallet consisting of a sheet of composition material bent to provide an intermediate flat-topped arch ex-

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tending longitudinally thereof and side walls having outwardly extending flanges, said flanges lying substantially in the plane of the top of said arch, packages having a height substantially equal to the height of said side walls laid on said sheet and substantially filling the space between said walls, a second layer of packages laid on and adhesively secured to said first-named packages and to the top of said arch and extending over and adhesively secured to said outwardly extending flanges, and additional layers of packages in turn laid on and adhesively secured to the immediately preceding layer, some packages of said layers extending transversely and some longitudinally of said sheet across spaces between the packages of a preceding layer.

4. A palletized package unit, including a pallet consisting of a sheet of composition material bent to provide side walls having outwardly extending flanges, packages having a height substantially equal to the height of said side walls laid on said sheet and substantially filling the space between said walls, a second layer of packages laid on and adhesively secured to said first-named packages and extending over and adhesively secured to said outwardly extending flanges, and additional layers of packages in turn laid over and adhesively secured to the immediately preceding layer, the packages and pallet constituting a substantially rigid unit, and the outwardly extending flanges providing lifting points spaced from the bottom of said pallet.

JOSEPH V. SPROLLE.

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