Aug. 10, 1965 C. M. SULLIVAN 3,199,468

NESTABLE PALLETS

Filed April 23, 1962

FIG. 1.

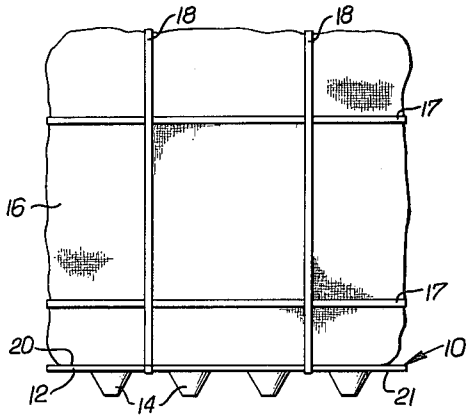


FIG. 2.

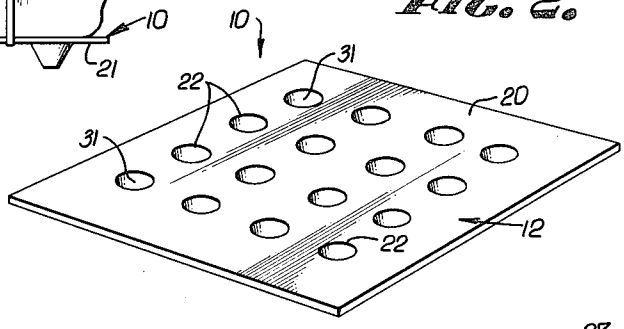


FIG. 3.

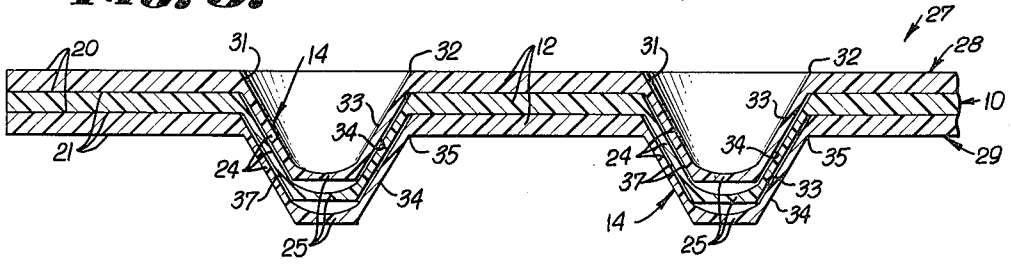
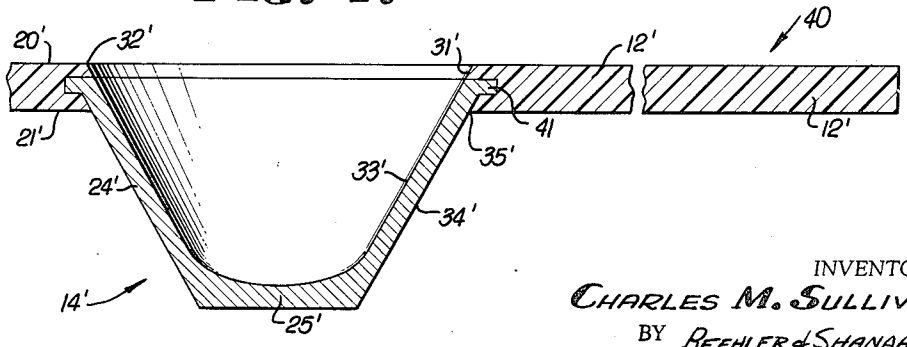


FIG. 4.



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NESTABLE PALLETS

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This invention relates to improvements in portable platforms for lift trucks, more commonly referred to as loading pallets or skids.

Pallets of the class to which this invention relates are used extensively for storing, handling and transporting numerous kinds of goods. Essentially, they are formed of a platform and a plurality of legs, the legs being spaced apart to accommodate the fork arms of the lift truck extending under the platform, preferably from any side of the platform. When not loaded or otherwise being used, they are usually stacked, and for many business arrangements the empty pallets are required to be returned to the supplier of the shipped goods. Various pallet structures have been proposed and many have been put to use which are adapted to be nested so as to occupy less storage space and less return shipping volume; but of all of the types of nesting pallets known to me, none are fully nestable.

It is an important object of this invention to provide improved pallets of the above-mentioned character which can be nested in a stack to occupy a minimum of storage or shipping space.

The pallets of this invention fit together with the platform of one being flush against the platform of another. This feature permits the use of two or more pallets for lifting extra heavy loads which a single platform might not be strong enough to sustain.

General objects of this invention are to provide pallets of the above-mentioned character which are simply and rugged in construction, reliable in service, and economical to manufacture.

Further objects and advantages of the invention will appear in the following part of this specification wherein the details of construction and manner of nesting for two preferred embodiments are described with reference to the accompanying drawing in which:

FIG. 1 is a side elevation of a loaded pallet of this invention.

FIG. 2 is a perspective view of the top of the pallet.

FIG. 3 is a vertical section through a portion of a stack of nested pallets according to this invention.

FIG. 4 is a vertical section through a portion of a modified form of pallet embodying this invention.

Referring to the drawing in greater detail, the pallet shown in FIGURES 1 and 2 is designated generally by reference numeral **10**. It comprises a flat platform **12** and a plurality of legs **14** integral with the platform. To illustrate its use, the pallet **10** is shown in FIGURE 1 as supporting a load **16** bound by horizontally extending straps or bands **17** and bound to the platform by vertically extending bands **18**.

The top surface of the platform is designated by numeral **20**, and its undersurface by numeral **21**, the planes of the top and undersurfaces being parallel to each other. The platform of the illustrated embodiment is square. It has a plurality of openings **22** extending therethrough and the legs **14** are in axial alignment with the openings **22** respectively. For illustration purposes the pallet **10** is shown as having sixteen openings **22** and legs **14**, they being spaced apart throughout the area of the platform to accommodate the fork arms of a lift truck (not shown) extended between the legs, preferably from any edge of the platform, for lifting the platform, it being understood, of course, that a pallet of this invention may have as few as four legs, for example.

The legs **14** are hollow and of frusto-conical configuration, each having a conical side wall **24** and a flat bottom wall **25** extending parallel to the platform. The illustrated pallet **10** is made of reinforced plastic material and is designed to be molded as a unit of the platform **12** and integral legs **14**, an especially advantageous material for forming the pallet being fiberglass, e.g. glass fiber reinforced polyester resin.

In FIGURE 3 there is shown a stack of three pallets, the stack being designated generally by reference numeral **27** and including the pallet **10** nested between identical pallets **28** and **29**. The legs **14** of panel **10** extend into respective legs of the bottom pallet **29**, and the legs of the top pallet **28** extend into respective legs of the intermediate pallet **10**. It will be noted that the pallets nest together with the under surface **21** of an upper pallet being flush throughout its area against the top surface **20** of adjacent lower pallets in the stack. This feature of flush nesting by the pallets or this invention permits storage of the pallets in stacked relationship in a minimum space and also permits the use of two or a greater number of pallets for a single load.

The pallets **10**, **28** and **29** being unitary molded structures, i.e. the legs **14** are molded integral with their respective platforms **12**, there is no clear line of demarcation between the legs and the platforms; but, for the purposes of convenience in describing the details of the structure of a pallet, it will be assumed that the leg portions of the pallet extend from and below the undersurface **21**. Thus, each platform opening **22** may be considered as being defined by an inside frusto-conical surface **31** which extends from the top surface **20** to the plane of the undersurface **21**. The inside surface **31** is inclined at an acute angle (about 60° in the illustrated embodiments) from the top surface **20**, it meeting the top surface **20** along a circular edge **32**. The inside surface of the side wall **24** of the leg is designated by reference numeral **33** and it is inwardly inclined and continuous with the inside surface **31**. The outside surface of a leg **14** is designated by reference numeral **34**, it being frusto-conical and parallel to the inside surface **33**. It meets the undersurface **21** of the platform along a circle designated by reference numeral **35**, which is herein referred to as the base line of the outside surface of the leg. The side wall **24** of each leg is thinner than the platform **12**. To provide for full nesting of one pallet in another with the adjacent platform surfaces being flush against one another, the figure (here a circle) defined by the base line **35** is not greater than the circle of the edge **32**. Also the circle of base line **35** is axially aligned with the circle of the edge **32**. In the illustrated embodiment the circle defined by base line **35** is slightly smaller than that defined by the edge **32**, whereby when the pallets are nested, as shown in FIGURE 3, there is a narrow space **37** between the side walls of the nested legs. Were the figure defined by base line **35** congruent with that of the edge **32**, the legs would nest flush one within the other.

Inasmuch as the bottom wall **25** of a leg of the top pallet **28**, for example, is spaced above its corresponding bottom wall in the pallet **10**, such bottom walls may be made to the thickness of the platform **12**, or may be rounded on the inside as illustrated. It will be apparent, also, that were the side walls of the legs inclined at a greater angle than in the illustrated embodiment from the platform, then, of course, the side walls of the legs would necessarily be relatively thinner than in the illustrated embodiment to provide for full nesting as taught by this invention.

Referring to FIGURE 4, the pallet shown therein is designated generally by reference numeral **40**, it being the same in all respects to the above described pallet **10** with the exception that the leg **14'** of pallet **40** is formed

of metal, the platform 12' being of molded reinforced plasitcs. The metal legs 14' have an outwardly extending flange 41 around that end of the leg opposite its bottom wall 25' to provide for reliable securement of the leg in the molded platform.

While the invention has herein been illustrated and described in what is conceived to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

Having described the invention, what is claimed as new in support of Letters Patent is:

1. A pallet stackable and nestable with identical pallets for storage and for supporting extra-heavy loads, said pallet comprising:

a flat multi-sided platform formed of a molded plastic material rigid at all sections between its peripheral edges, said platform having parallel top and under surfaces and a plurality of spaced apart openings therethrough, each opening being defined by an inside surface of the platform which is inclined at an acute angle of about 60° from the top surface and meets the top surface along a peripheral edge;

a plurality of hollow legs molded integrally with said platform and of the same plastic material, said legs being respectively in axial alignment with the openings thereof,

each leg having a bottom wall extending parallel to said platform and a peripherally continuous side wall integral at its top with said platform and at its bottom with said bottom wall,

the inside and outside surfaces of said side wall being parallel and spaced from each other less than the thickness of said platform,

the outside surface of said side wall being inclined from said under surface at an angle equal to said acute

angle of about 60° and meeting the bottom of said platform along a base line, said base line being of the same general configuration as said peripheral edge but slightly smaller in size,

the inside surface of said side wall of each leg being inclined at said acute angle of about 60° and forming a smooth continuation of said inclined inside surface of the corresponding opening of said platform,

whereby said pallet will nest with an identical pallet with the legs of one pallet extending into the legs of the other with the platforms of the two pallets in engagement with each other and with the outside surface of each leg of said one pallet spaced minutely from the inside surface of the leg of the other pallet into which it extends.

2. A pallet as defined in claim 1 in which the bottom wall of each leg provides a flat bottom surface meeting the outside surface of the leg in a peripheral edge, the bottom wall of each legs providing an upper surface facing toward the corresponding opening of said platform and meeting the inside surface of the leg at a peripherally closed base line to form a pocket, the peripheral edge of the bottom wall of said one pallet fitting closely into said pocket of the other pallet in which it nests.

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