Oct. 1, 1963 H. O. HAUSERMANN 3,105,599

BARREL LOADING

Filed Nov. 13, 1959

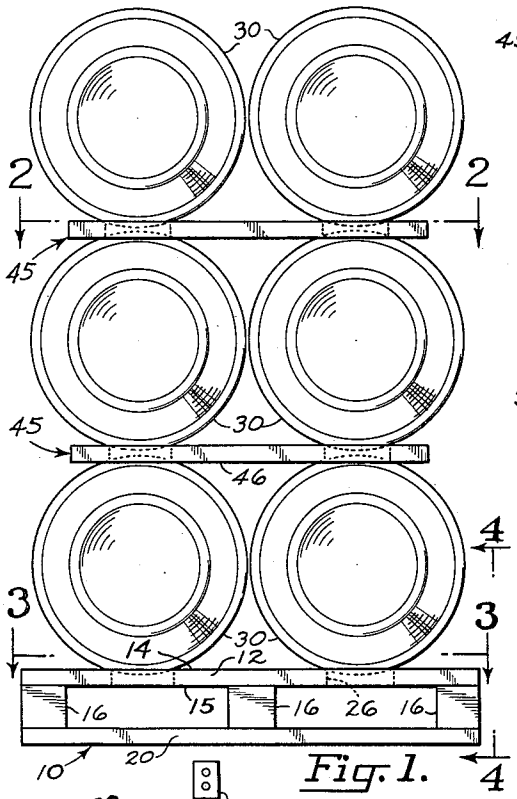

Fig. 1.

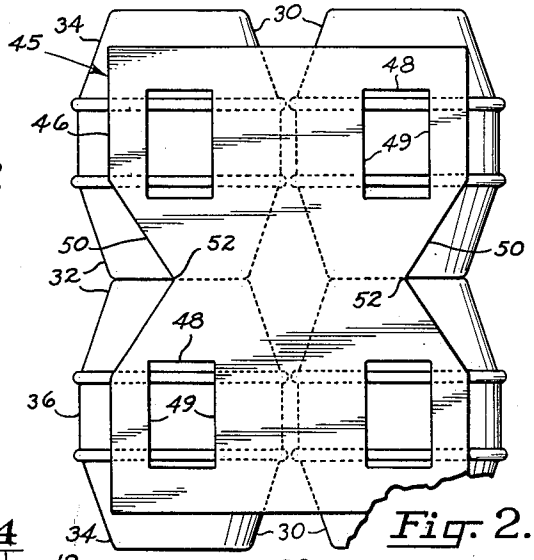

Fig. 2.

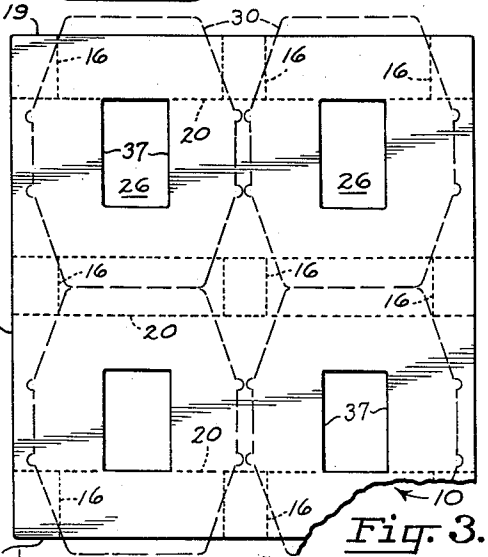

Fig. 3.

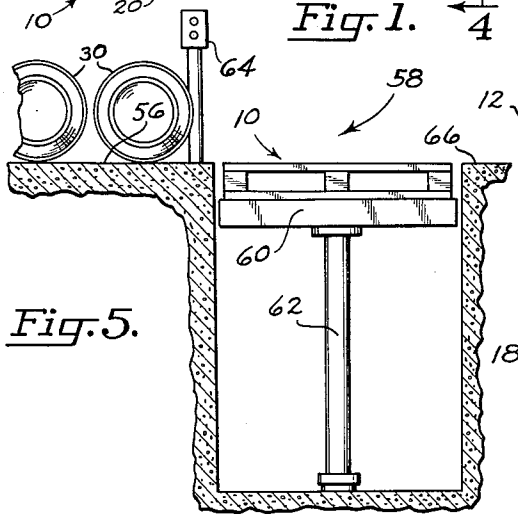

Fig. 5.

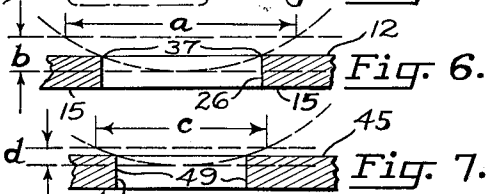

Fig. 6.

Fig. 7.

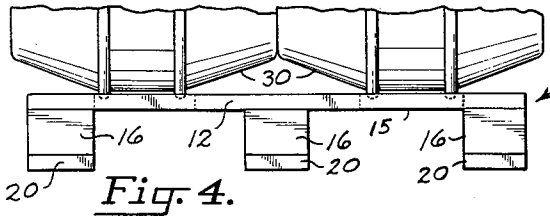

Fig. 4.

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BARREL LOADING

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This invention relates to the handling of barrels, and more particularly to a novel construction enabling the expeditious stacking of barrels in vertically spaced tiers and subsequent transport of these barrels from one location to another and/or storage of the barrels. The invention has particular utility in connection with the handling of beer kegs, which because of their size and weight are difficult to move other than by rolling and difficult to shift from a horizontal to an on-end position. The invention thus is discussed in connection with beer kegs or barrels, but it should be understood that the invention is applicable to the handling of related objects wherein similar problems of moving and storage exist.

In the past it has been customary to stand beer kegs on end, during storage or during their transport in a vehicle. Kegs are usually rolled to the vicinity of their final stacked position, and this requires manhandling of the kegs to place them on end. The on-end position of a keg is not a stable one. Plural kegs arranged on end and in vertically spaced tiers are susceptible to inadvertently being dislodged, as a corner keg is easily kicked out of place with the result that a large quantity of barrels falls to the ground. Thus this type of stacking has not been used in transport vehicles, and kegs are either stored in one level only, or if stored in two levels, supported on distinct platforms. Pallet handling of kegs also usually has relied upon standing the kegs on end, and this requires turning of the keg and produces an unstable arrangement.

This invention contemplates a pallet and slip sheet construction for stacking kegs wherein multilayers of beer barrels may be stored or transported with the barrels on their sides and in snug adjacency. The barrels seat themselves in position, and tend to lock themselves from relative movement. The result is a stable arrangement ideally suited for the transport of kegs over short or long distances. Using the pallet and slip sheet construction of the invention, tiers of barrels or kegs three high have been transported, and tiers five and six high have been stacked for storage with entirely satisfactory results.

According to this invention, the pallet takes the form of an expensive, substantially flat-topped panel that forms the supporting means in the pallet. This panel is substantially flat, to accommodate the easy rolling of a beer keg thereon. The panel is supported above the ground by a spacing means, preferably by critically placed blocks, to enable the forks of a fork lift tractor or similar lifting device to be inserted under the panel, from any side of the panel. Formed in the pallet are plural apertures or cutouts that are to receive the bottom sides of beer kegs with the kegs in a horizontal position. Each cut out is made small enough to hold a keg so that its bottom side does not protrude through the thickness of the panel and below the bottom thereof, and thus kegs nested on the pallet are not contacted when the forks of a fork lift tractor are inserted beneath the panel. Barrels

placed on the pallet have ends that are snugly adjacent each other, and sides in close proximity.

To stack an upper tier of barrels over a lower tier, slip sheets are used which have apertures or cutouts conforming in size substantially to the size of the cutouts just described. Each cutout seats on the top side of a lower barrel, and seats the bottom side of an upper barrel. The cutouts are of such size that the barrels of the lower tier are kept out of contact with the barrels of the upper tier superimposed thereover. The barrels of the upper tier align themselves with the barrels of the lower tier.

Thus it is an object of the invention to provide an improvided pallet construction which accommodates easy rolling of beer kegs onto the pallet and nesting of the kegs in position with the kegs snugly packed thereon.

Another object of the invention is to provide a pallet that employs a panel of relatively simple construction as a supporting means, the latter being effective to hold the bottom sides of beer kegs firmly in place and above possible contact with the forks of a fork lift truck inserted beneath the pallet, and to provide such a pallet that is capable of being lifted from all sides.

Still another object of the invention is to provide a slip sheet for stacking one tier of barrels or kegs over another, such a slip sheet taking the form of a panel having cutouts effective to seat on the top sides of a lower tier of barrels and seat the lower sides of an upper tier of barrels.

Another object of the invention is to provide a pallet and slip sheet construction that enables the stacking of barrels on their sides and in tiers, one over another, with the barrels of an upper tier aligned with the barrels of a lower tier. This is important for space reasons, as most barrels are longer than they are wide, and many vehicles can only be fully loaded if the barrels of successive tiers are aligned and extend all in the same direction.

Still another object of the invention is to provide a novel slip sheet that acommodates easy rolling of a barrel therefrom without displacement of the slip sheet by reason of the barrel being near its edge.

Still another object of the invention is to provide an improved pallet construction that may be made economically from readily available materials such as plywood, composition board, etc.

Still another object of the invention is to provide an improved method for loading barrels on a pallet.

Other objects and advantages are attained by the invention, which is described hereinbelow in conjunction with the accompanying drawings, wherein:

FIG. 1 is an end view of a pallet loaded with three vertically spaced tiers of barrels, with the barrels on their sides and with the bottom tier supported on the pallet and adjacent tiers separated by a slip sheet as contemplated by this invention;

FIG. 2 is a view along the line 2—2 in FIG. 1 illustrating the profile of a slip sheet and notches indented therein to accommodate rolling of a barrel on and off the sheet;

FIG. 3 is a view along the line 3—3 in FIG. 1 illustrating the profile of the pallet, and showing in dotted outline how the beer barrels may rest thereon;

FIG. 4 is a side view of a pallet supporting a bottom tier of barrels and illustrating how the pallet may be

picked up from one of its sides by the forks of a fork lift tractor;

FIG. 5 is an illustration of a loading station of the type that may be employed for stacking barrels as contemplated by this invention; and

FIGS. 6 and 7 are enlarged views illustrating how cutouts present in the construction seat the sides of barrels.

Referring now to the drawings, at **10** is indicated generally a pallet adapted to rest on the floor and normally used to support the bottom tier of a stack of barrels. Considering the construction of the pallet, it comprises an expansive panel **12** having a substantially flat top surface **14** and a bottom **15**. The panel in the embodiment illustrated is substantially rectangular in outline. The panel may be made from any of various materials having requisite strength and rigidity. In practice, a plywood panel has been found entirely satisfactory, this material being relatively light, strong and inexpensive.

Secured to the bottom of the panel, at the four corners of the panel, approximately centrally between adjacent corners, and at the center of the panel, are spacer blocks **16** that constitute spacing means holding panel **12** above floor level. These are aligned in rows extending along the length and transversely of the panel, as shown in FIG. 3. Secured to the underside of the spacer blocks and parallel to a set of opposed end edges **18**, **19** of the panel are strengthener slats or boards **20**. The strengtheners connect rows of blocks adjacent end edges **18**, **19**, and a center row of blocks disposed between these end edges. The spacer blocks and strengtheners together support panel **12** above the floor so as to permit the insertion of the forks of fork lift tractor beenath the panel. Note that the construction described accommodates the insertion of such forks from any of the four sides of the panel.

Formed in panel **12** and arranged in plural rows are elongated cutouts **26** that constitute seating means for barrels. These are in substantial alignment in a direction extending transversely and longitudinally of the cutouts. The cutouts are shaped to receive or seat middle portions of the bottom sides of barrels with the barrels or kegs disposed horizontally and aligned with the cutouts.

Barrels such as may be stacked using the pallet of the invention are indicated at **30**. The form of barrel shown is typical of a keg design presently used in the distribution of beer. The barrels illustrated have tapered ends **32**, **34**, and intermediate the ends a central band portion, or belly band **36**, of larger diameter than the ends.

When a barrel is properly nested in a cutout **26**, the bottom of its belly band lodges in the cutout as best shown in FIGS. 1, 4 and 6 and the ends of a barrel are held above panel **12**. The belly band **36** has a width that is less than the length of a cutout. The side edges **37** defining a cutout are spaced close enough to hold a barrel above bottom **15** of panel **12**. This is to prevent a belly band from coming in contact with the tines or forks of any fork lift that may be inserted beneath the panel. Thus each cutout has a width that is less than the horizontal span of the barrel band or middle of the barrel with the barrel on its side and measuring across the barrel at a level spaced radially inwardly from its bottom a distance equal to the thickness of the panel, such horizontal span being indicated at *a* and such panel thickness being indicated at *b* in FIG. 6. The ends of adjacent cutouts in a longitudinal direction are spaced a distance less than twice the length of the tapered end of a barrel. By reason of this spacing, end-adjacent barrels may be moved to a position in the cutouts where their ends come into snug contact, by shoving the barrels toward each other. Considering the lateral spacing of the cutouts, the centers of adjacent cutouts are spaced apart a distance substantially equal to the diameter of a barrel and thus when barrels are stacked in the cutouts their sides are closely adjacent. As a result of the construction described, barrels nested into the cutouts bear upon each other and in a manner of speaking lock themselves in position.

As already indicated according to this invention, barrels may be stacked in tiers as shown in FIG. 1. Between adjacent tiers of barrels, and holding an upper tier on the lower tier is what is referred to herein as a slip sheet, indicated generally at **45**. Each slip sheet has a rectangular outline of somewhat smaller dimension than the outline of panel **12**. This prevents slip sheets from coming into contact with each other when pallets are stacked side by side.

Each slip sheet comprises a flat-topped panel, indicated at **46**, which like panel **12** may also be made of plywood and the like. Formed in the panel **46** of the slip sheet are elongated and rectangular cutouts **48**, corresponding to cutouts **26** in panel **12**. These cutouts have the same spacing with relation to each other as do cutouts **26**, and have a size generally corresponding to the size of cutouts **26**. During stacking of barrels, a slip sheet is placed over a tier of barrels with top side portions of the belly bands of the barrels in the tier protruding upwardly into the bottoms of the cutouts. A subsequent tier of barrels may be nested on the slip sheet with bottom portions of their belly bands protruding downwardly into the tops of the cutouts. The cutouts have a length which may be the same as the length of cutouts **26**. Sides **49** of the cutouts **48** are spaced closed enough together to keep the barrels of an upper tier out of contact with the barrels of a lower tier. Thus each cutout has a width that is less than the horizontal span of a barrel band with the barrel on its side and measuring across the barrel at a level spaced radially inwardly from its bottom a distance equal to one-half the thickness of panel **46** (such horizontal span and one-half panel thickness being indicated at *c* and *d*, respectively in FIG. 7).

Indented into the side edges of slip sheet **45** are notches, indicated at **50**. These have a V-shaped outline, and the apex **52** of a notch is disposed inwardly from the outline of the slip sheet approximately in line with the longitudinal centers of cutouts **48**. The notches are important in loading and unloading barrels from the slip sheet. In unloading, for example, when the first barrels are unloaded they roll off without difficulty, since the remaining barrels of the tier serve to hold the slip sheet down and in place. The last barrel to be removed, however, must be rolled off one edge of the slip sheet without any weight holding down the opposite edge. To prevent the slip sheet from kicking up and causing possible injury to a workman the notches are provided, and these enable a barrel to be rolled off the slip sheet with the barrel leaving the slip sheet at a location spaced inwardly from the outline thereof and near the line of support provided the sheet by the lower tier of barrels.

According to this invention, barrels may be stacked in tiers employing a loading station **58** such as illustrated in FIG. 5. Referring to this figure, **56** indicates a support surface over which barrels are rolled on their sides to the loading station **58**. The loading station is equipped with an elevator **60**, moved up and down by means of vertically shiftable shaft **62**. To load a stack of barrels, a pallet is placed on elevator **60** and the elevator adjusted using a control box **64** until the top surface **14** of the pallet is substantially flush with surface **56**. With the top in this position barrels are readily rolled onto the pallet and over its top surface into a seating position in the cutouts. On completion of one tier of barrels, the elevator is lowered until the level of the top of a slip sheet placed over this tier of barrels is substantially flush with support surface **56**. At this time barrels may be loaded onto the slip sheet. After the slip sheet is fully loaded, the elevator may then again be lowered to bring a slip sheet placed on the just made tier of barrels into line with support surface **56**. This may be repeated until an appropriate number of tiers

have been prepared. On completion of the stacking of barrels, elevator 60 is raised to lift pallet 12 above floor level, indicated at 66. In this position the forks of a fork lift tractor may be inserted underneath panel 12 and the pallet transported to another location, either for storage purposes or to prepare it for transport. It will be seen that the entire operation requires only rolling of barrels into position.

From the above it should be obvious that the invention has a number of advantages over constructions known in the past. The pallets are relatively simple in construction, and economical to manufacture and to maintain. They add little to the weight of the stack. The pallet may be picked up from any of its four sides, which is a decided advantage in loading and unloading vehicles. The barrels are maintained on their sides and not on end, and once a stack is prepared, the barrels on one tier assist in holding the barrels of an adjacent tier in place, through the slip sheet provided. The barrels of successive tiers are aligned with the barrels of the lowest tier and all extend in one direction. This is an advantage since it permits stacking of barrels in more confined space.

While there has been described an embodiment of the invention, it is appreciated that changes in the arrangement and/or parts are possible without departing from the invention. It is desired to cover all modifications and variations that would be apparent to one skilled in the art, and that come within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. The combination of a barrel disposed on its side; said barrel having a band portion extending circumferentially thereabout intermediate its ends, which is substantially cylindrical in over-all outline, and ends of smaller diameter than said band portion on opposite sides of said band portion; a horizontal panel disposed under said barrel having a substantially flat top surface that provides a rolling surface; means supporting said panel above the ground; and means located inwardly of the side margins of said panel defining a cavity on the top of the panel which seats the bottom of said barrel while supporting the barrel with the ends thereof above the plane of said top surface; said means defining said cavity including a set of oppositely disposed edges that engage the band portion of the barrel on opposite sides of the barrel and that are spaced close enough together to hold the bottom of the barrel at an elevation above the base of said panel; said top surface of said panel surrounding said cavity on all sides, and including portions that extend beneath the ends of said barrel.

2. The combination of a tier of barrels; said tier comprising plural rows of barrels with the barrels disposed on their sides and aligned in directions extending longitudinally and transversely of the barrels; a horizontal panel disposed under the barrels in said tier having a substantially flat top surface that provides a rolling surface; means supporting said panel above the ground; and means located inwardly of the side margins of said panel defining on the top of said panel a plurality of cavities, with a separate one of said cavities seating each barrel in said tier; the means defining each of said cavities including a set of oppositely disposed edges that engage the barrel seated therein on opposite sides of the barrel, and that are spaced close enough together to hold the bottom of the barrel at an elevation above the base of said panel; said top surface of said panel surrounding each of said cavities on all sides and extending in a flat expanse between adjacent cavities.

3. In combination with a pair of barrels disposed on their sides and stacked one above the other in vertical alignment; each of said barrels having a band portion extending circumferentially thereabout intermediate its ends, which is substantially cylindrical in over-all outline, and ends of smaller diameter than said band portion on opposite sides of said band portion; a slip sheet interposed between the barrels and holding them in their vertically stacked position; said slip sheet comprising a panel, and means located inwardly of the side margins of said panel defining first and second vertically aligned cavity portions; said first cavity portion extending downwardly from the top of the panel and seating the bottom of the upper one of said barrels and said second cavity portion extending upwardly from the bottom of the panel and seating the top of the lower one of said barrels; the means defining each of said cavity portions including a first set of oppositely disposed edges that engage the band portion of the barrel at circumferentially spaced locations and a second set of oppositely disposed edges positioned at points spaced axially of the barrel and on either side of the band portion of the barrel that are operable to limit axial shifting of the barrel; said panel having over the top thereof a substantially flat rolling surface that surrounds on all sides said first cavity portion and that extends under the ends of the said upper one of said barrels; said rolling surface accommodating the rolling of said last-mentioned barrel into and out of its seated position in said first cavity portion.

4. A pallet for stacking barrels on their sides where each barrel has a band portion of substantially cylindrical overall outline that gridles the barrel and ends of smaller diameter than the band portion on opposite sides of the band portion; said pallet comprising a substantially rectangular supporting panel having an expansive and flat top surface that provides a rolling surface for the barrels; means located inwardly from the side margins of said panel defining plural substantially rectangular apertures for seating the bottoms of the barrels; said apertures extending through said panel and being distributed in rows approximately paralleling both sets of sides of said panel; the means defining each of said apertures including one set of oppositely disposed edges that engage a barrel seated in the aperture at points spaced circumferentially on the band portion of the barrel, and another set of oppositely disposed edges substantially normal to said one set that bound the band portion of a barrel seated in the aperture at points spaced axially on the barrel; adjacent apertures in said panel being separated by an expanse of said flat top surface; said one set of oppositely disposed edges being spaced apart from each other a distance which is less than the horizontal span of a barrel band portion with the barrel on its side and measuring across the barrel band portion at a level spaced radially inwardly from the bottom of the barrel a distance equal to the thickness of said panel, whereby a barrel seated in an aperture has the bottom thereof held above the base of said panel; and means supporting said panel above the ground.

5. In the stack of barrels on their sides where each barrel has a band portion of substantially cylindrical overall outline that gridles the barrel and ends of smaller diameter than the band portion on each side of the band portion; a slip sheet for stacking the barrels in vertically spaced tiers; said slip sheet comprising a substantially rectangular panel having an expansive and flat top surface that provides a rolling surface for the barrels; and means spaced inwardly from the side margins of the said panel defining substantially rectangular apertures that extend through the panel and that are distributed over the panel in rows paralleling both sets of sides of the panel; each of said apertures providing a means for seating the top side of a barrel below the slip sheet and the bottom side of a barrel above the slip sheet; each of said apertures having a width that is less than the horizontal span of a barrel band portion with the barrel on its side and measuring across the barrel band portion at a level spaced radially from bottom of the barrel a distance equal to one-half the thickness of the panel; each of said apertures having a length that exceeds the width of a barrel band portion and that is less than the length of a barrel; adjacent aper-

tures in said panel being separated by expanses of said top surface.

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