

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN OR RELATING TO PALLETS

(71) We, GPG HOLDINGS LIMITED, of Cranford, Blackdown, Leamington Spa, Warwickshire, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a pallet as used for the carriage and storage of beer kegs and conventionally known as a "keg Pallet" (although, of course, a keg pallet may be used for the carriage and storage of other substantially cylindrical bodies such as drums, pipes and barrels).

Conventionally, a keg pallet comprises substantially parallel, longitudinally extending and laterally spaced cross bearers and substantially parallel, laterally extending and longitudinally spaced main bearers which interconnect the cross bearers and provide upper and lower decks for the pallet. Provided in the main bearers are substantially part circular recesses (each of which may be formed as a continuous surface or as an array of keg support points located on a substantially part circular arc) some of which recesses are located in the upper deck and some of which are located in the lower deck; the recesses in the upper deck provide keg seats within which can be located in stable manner one or more kegs for carriage or storage on the pallet and the recesses in the lower deck provide saddle seats so that the pallet can be located in stacked and stable manner on underlying kegs located in the saddle seats — such form of keg pallet will hereinafter be referred to as "the kind specified".

Several forms of construction have hitherto been proposed for keg pallets of the kind specified, the oldest being of solid wood with the cross and main bearers in the form of beams which are bolted or otherwise secured together. During rough handling of such wooden pallets as, for example, by them being dropped or being

impacted by the tines of a fork lift truck, the main bearers tend to split along the grain so that portions of them break away (particularly over their portions at the ends of the part circular recesses). In an attempt to overcome this problem the solid wooden beam main bearers were replaced by plywood beams but these were found to delaminate after a time, possibly accelerated by the plywood drying out. In a further proposal keg pallets were formed of steel tubes or with wooden main bearers and steel tube cross bearers; such constructions however proved to be extremely heavy and the steel tubes were frequently bent by fork lift tines when entering the pallet. A more recent proposal is to mould keg pallets as one piece in plastics material. However, in view of the large dimensions and complexity of the moulding tools, plastics pallets are expensive. Further, bearing in mind the loads and rough usage to which a keg pallet may be subjected, it has been found that if a plastics pallet has sufficient stiffness or rigidity to accommodate its intended loads, generally it has insufficient impact resistance to absorb shock forces to which it may be subjected, for example when dropped — vice versa, if a plastics pallet has sufficient impact resistance then its stiffness or rigidity is likely to be insufficient for its intended loads. A still further and considerable disadvantage of a one piece plastics moulded keg pallet is that in the event of it being cracked or broken it is usually uneconomical and unsafe to repair.

It is an object of the present invention to provide a keg pallet which alleviates the disadvantages, as aforementioned, of hitherto proposed constructions.

According to the present invention there is provided a keg pallet of the kind specified in which the cross bearers are of wood and the main bearers comprise individual mouldings in plastics material which are secured to the cross bearers.

The composite wood/plastics keg pallet

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in accordance with the present invention can be constructed, by appropriate selection of the plastics material, design of the main bearers and by use of wooden cross bearers of appropriate dimensions, to have a degree of stiffness or rigidity and impact resistance which meet fully the commercial requirements of keg pallets. Further, the pallet can be light in weight, the main bearers are not susceptible to splitting and by securing the main bearers to the cross bearers (for example as by bolts or screws) so that they are removable, any bearer in the pallet can be changed for another similar bearer in the event that it becomes damaged.

A main bearer can be moulded to have at least one keg seat in the upper deck of the pallet and at least one saddle seat in the lower deck of the pallet; in such construction the main bearer will usually be moulded to define one or more entry apertures for the tines of a fork lift truck and also to define two or more recesses or ports spaced along its length to receive the wooden cross bearers in substantially complementary manner. For reasons which will become apparent from the following description, the aforementioned recesses or ports are preferably tapered substantially over their depth which receives the cross bearers. Alternatively, or in addition, a main bearer can be moulded to have one or more substantially part circular recesses which can be used either as keg seats or saddle seats; in such construction a pair of main bearers are secured to the cross bearers in overlying relationship with one inverted relative to the other so that one main bearer of the pair provides keg seats in the upper deck of the pallet and the other provides saddle seats in the lower deck of the pallet — a space will usually be provided between the pair of overlying main bearers to permit entry for the tines of a fork lift truck.

A main bearer can be moulded as a box-like section or as an open framework with appropriate rib or web reinforcement. The main bearers may be injection moulded in solid plastics material (such as polypropylene or high density polythene) or can be foam moulded to have a cellular wall structure in an appropriate plastics material such as high density polyethylene.

Embodiments of a keg pallet of the kind specified and constructed in accordance with the present invention will now be described, by way of example only, with reference to the accompanying illustrative drawings in which:—

Figure 1 is a perspective view of one form of keg pallet of the present invention;

Figure 2 is part section of the pallet taken on the line II—II of Figure 1;

Figure 3 is a half side elevation of a plastics moulded main bearer suitable for use in a further form of keg pallet of the present invention;

Figure 4 is a half plan view of the main bearer shown in Figure 3;

Figure 5 is a section taken on the line V—V of the main bearer shown in Figure 3; and

Figure 6 is a section taken on the line VI—VI of the main bearer shown in Figure 3.

Referring to Figures 1 and 2, the keg pallet comprises three parallel cross bearers 1 in the form of solid wooden beams of square section. Suitable woods for the beams are red pine or oak. These cross bearers 1 extend longitudinally and are laterally spaced as shown.

Interconnecting the cross bearers 1 are eight similar, parallel and laterally extending main bearers 2. The main bearers 2 are arranged in four longitudinally spaced pairs with the main bearers in each pair overlying each other on opposite sides of the cross bearers 1. Each of the main bearers has two part circular recesses 3 in the edge thereof remote from the cross bearers 1. The recesses 3 are spaced over the lengths of their respective main bearer and are disposed in two parallel rows in both the upper and lower decks of the pallets. The recesses 3 in the upper deck of the pallet are intended to provide keg seats within which several beer kegs can be seated in a stable manner for carriage or storage. The recesses 3 in the lower deck provide saddle seats by which the pallet can be located in stacked and stable manner on underlying beer kegs which are received in the saddle seats.

Each of the main bearers 2 is moulded as one piece in plastics material to be of box-like section having closed walls 4 and reinforcing ribs or webs 5. A wall 4 of each main bearer abuts in face-to-face manner the three cross bearers and each pair of overlying main bearers are removably secured to the wooden cross bearers as by bolts 6 (see Figure 2) and, if required, by drive screws or nails 7.

As will be seen from Figure 1, the overlying main bearers 2 in each pair are spaced by the interposed cross bearers 1 to provide a gap which serves as an entry port for the tines of a fork lift truck which may be employed to handle the pallet.

In the second embodiment of the keg pallet the two overlying main bearers 2 in each pair as shown in Figures 1 and 2 are effectively replaced by a single main bearer (as shown in Figures 3 to 6) which is moulded as one piece in plastics material to provide the recesses 3 for both the keg seats in the upper deck of the pallet and the

saddle seats in the lower deck of the pallet. The main bearer in Figures 3 to 6 is of open framework construction and includes webs or ribs which provide appropriate reinforcement and rigidity to the bearer. The open framework construction defines three ports 8 which are spaced along the length of the bearer and further defines a pair of elongated apertures 9 which are located alternately between the ports 8. The ports 8 are substantially complementary in shape to the section of the cross bearers 1 which latter they receive. Four of the main bearers as shown in Figures 3 to 5 are located in a substantially parallel and longitudinally spaced array on the three cross bearers 1 (in similar disposition to the four pairs of main bearers shown in Figure 1). The four main bearers are then removably secured to the three cross bearers, for example by bolts or screws which pass through holes 10 communicating with the ports 8.

The apertures 9 are provided as appropriate entry ports for the tines of a fork lift truck.

Each of the main bearers as above described and illustrated is preferably injection moulded in solid plastics material such as polypropylene or high density polythene although other mouldings are envisaged such as in foam plastics to provide a cellular wall structure of, for example high density polyethylene.

The plastics moulded main bearers are not necessarily rigidly secured to the wooden cross bearers, on the contrary a limited degree of movement may be desirable between the bearers so that the structure can undergo a limited amount of deformation without damage thereto when subjected to shock loading as, for example, may occur if the pallet is dropped on a corner or edge. With this in mind it will be seen from Figures 5 and 6 that the side walls which define the ports 8 are tapered (substantially over their depth which receives the cross bearers 1) at an angle α which will usually be in the order of $1\frac{1}{2}^\circ$ to 4° and preferably 2° . This tapering of the ports 8 is desirable (but not essential) since it both facilitates location of the cross bearers in the ports and permits a limited amount of rocking moving between cross bearers and main bearers if the latter are subjected to shock loading.

If required a keg pallet can be constructed from wooden cross bearers and an assembly of main bearers which comprises both the form shown in Figures 1 and 2 and the form shown in Figures 3 to 6.

WHAT WE CLAIM IS:—

1. A keg pallet of the kind specified in which the cross bearers are of wood and the

main bearers comprise individual mouldings in plastics material which are secured to the cross bearers.

2. A keg pallet as claimed in claim 1 in which the cross bearers are solid wooden beams.

3. A keg pallet as claimed in either claim 1 or claim 2 in which the main bearers are removable secured to the cross bearers by bolts.

4. A keg pallet as claimed in any one of the preceding claims in which at least one of the main bearers provides at least one keg seat in the upper deck of the pallet and at least one saddle seat in the lower deck of the pallet.

5. A keg pallet as claimed in any one of the preceding claims in which at least one of the main bearers defines one or more entry apertures for receiving the tines of a fork lift truck.

6. A keg pallet as claimed in any one of the preceding claims in which at least one of the main bearers defines recesses or ports which are spaced along its length and which receive the wooden cross bearers in substantially complementary manner.

7. A keg pallet as claimed in claim 6 in which the recesses or ports are tapered substantially over their depth which receives the cross bearers to facilitate location of the cross bearers therein and to permit a limited amount of rocking movement between the or each main bearer having such tapered recess or parts and the cross bearers which they receive.

8. A keg pallet as claimed in any one of the preceding claims in which at least one pair of main bearers is secured to the cross bearers with the main bearers of the or each pair in overlying relationship and with one main bearer of the or each pair inverted relative to the other main bearer of that pair so that a recess in said one main bearer provides a keg seat and a recess in said other main bearer provides a saddle seat.

9. A keg pallet as claimed in claim 8 wherein the main bearers in overlying relationship in the or each pair are interspaced by the cross bearers to permit entry for the tines of a fork lift truck.

10. A keg pallet as claimed in any one of the preceding claims in which at least one main bearer is moulded as a box-like section with rib or web reinforcement.

11. A keg pallet as claimed in any one of the preceding claims in which at least one main bearer is moulded as an open framework.

12. A keg pallet as claimed in any one of the preceding claims in which at least one main bearer is injection moulded in solid plastics material such as polypropylene or high density polythene.

13. A keg pallet as claimed in any one of



saddle seats in the lower deck of the pallet. The main bearer in Figures 3 to 6 is of open framework construction and includes webs or ribs which provide appropriate reinforcement and rigidity to the bearer. The open framework construction defines three ports 8 which are spaced along the length of the bearer and further defines a pair of elongated apertures 9 which are located alternately between the ports 8. The ports 8 are substantially complementary in shape to the section of the cross bearers 1 which latter they receive. Four of the main bearers as shown in Figures 3 to 5 are located in a substantially parallel and longitudinally spaced array on the three cross bearers 1 (in similar disposition to the four pairs of main bearers shown in Figure 1). The four main bearers are then removably secured to the three cross bearers, for example by bolts or screws which pass through holes 10 communicating with the ports 8.

The apertures 9 are provided as appropriate entry ports for the tines of a fork lift truck.

Each of the main bearers as above described and illustrated is preferably injection moulded in solid plastics material such as polypropylene or high density polythene although other mouldings are envisaged such as in foam plastics to provide a cellular wall structure of, for example high density polyethylene.

The plastics moulded main bearers are not necessarily rigidly secured to the wooden cross bearers, on the contrary a limited degree of movement may be desirable between the bearers so that the structure can undergo a limited amount of deformation without damage thereto when subjected to shock loading as, for example, may occur if the pallet is dropped on a corner or edge. With this in mind it will be seen from Figures 5 and 6 that the side walls which define the ports 8 are tapered (substantially over their depth which receives the cross bearers 1) at an angle α which will usually be in the order of $1\frac{1}{2}^\circ$ to 4° and preferably 2° . This tapering of the ports 8 is desirable (but not essential) since it both facilitates location of the cross bearers in the ports and permits a limited amount of rocking moving between cross bearers and main bearers if the latter are subjected to shock loading.

If required a keg pallet can be constructed from wooden cross bearers and an assembly of main bearers which comprises both the form shown in Figures 1 and 2 and the form shown in Figures 3 to 6.

WHAT WE CLAIM IS:—

1. A keg pallet of the kind specified in which the cross bearers are of wood and the

main bearers comprise individual mouldings in plastics material which are secured to the cross bearers.

2. A keg pallet as claimed in claim 1 in which the cross bearers are solid wooden beams.

3. A keg pallet as claimed in either claim 1 or claim 2 in which the main bearers are removable secured to the cross bearers by bolts.

4. A keg pallet as claimed in any one of the preceding claims in which at least one of the main bearers provides at least one keg seat in the upper deck of the pallet and at least one saddle seat in the lower deck of the pallet.

5. A keg pallet as claimed in any one of the preceding claims in which at least one of the main bearers defines one or more entry apertures for receiving the tines of a fork lift truck.

6. A keg pallet as claimed in any one of the preceding claims in which at least one of the main bearers defines recesses or ports which are spaced along its length and which receive the wooden cross bearers in substantially complementary manner.

7. A keg pallet as claimed in claim 6 in which the recesses or ports are tapered substantially over their depth which receives the cross bearers to facilitate location of the cross bearers therein and to permit a limited amount of rocking movement between the or each main bearer having such tapered recess or parts and the cross bearers which they receive.

8. A keg pallet as claimed in any one of the preceding claims in which at least one pair of main bearers is secured to the cross bearers with the main bearers of the or each pair in overlying relationship and with one main bearer of the or each pair inverted relative to the other main bearer of that pair so that a recess in said one main bearer provides a keg seat and a recess in said other main bearer provides a saddle seat.

9. A keg pallet as claimed in claim 8 wherein the main bearers in overlying relationship in the or each pair are interspaced by the cross bearers to permit entry for the tines of a fork lift truck.

10. A keg pallet as claimed in any one of the preceding claims in which at least one main bearer is moulded as a box-like section with rib or web reinforcement.

11. A keg pallet as claimed in any one of the preceding claims in which at least one main bearer is moulded as an open framework.

12. A keg pallet as claimed in any one of the preceding claims in which at least one main bearer is injection moulded in solid plastics material such as polypropylene or high density polythene.

13. A keg pallet as claimed in any one of



the preceding claims in which at least one main bearer is foam moulded to have a cellular wall structure in plastics material such as high density polyethylene.

- 5 14. A keg pallet as claimed in claim 1 and substantially as herein described with reference to Figures 1 and 2 of the accompanying illustrative drawings.

- 10 15. A keg pallet as claimed in claim 1 and assembled with main bearers substantially as herein described with reference to

Figures 3 to 6 of the accompanying illustrative drawings.

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