

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) COLLAPSIBLE PALLETS

(71) We, NIPPON KOKAN KABUSHIKI KAISHA, a corporation organised under the laws of Japan, of 2, 1-chome, Otemachi, Chiyoda ku, Tokyo, Japan, and REDEIAKTIEBOLAGET HELSINGBORG, a corporation organised under the laws of Sweden, of Post Box 41, Helsingborg, Sweden, 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:—

The present invention relates to collapsible pallets for heavy articles in general and in particular such pallets which are suitable for carrying automobiles.

The invention provides a collapsible pallet for heavy articles such as automobiles, the pallet being made of metal and comprising a base having two ends and two sides, only the two ends being provided with barriers which, when the pallet is erected, extend substantially thereacross, these barriers being in the form of respective end structures pivotally mounted across each end of the base, the end structures both being pivotable inwardly to lie over the base without overlapping each other when the pallet is collapsed, and at least one of the end structures being pivotable outwardly at least to a position substantially parallel with the base, and releasable supports for holding the end structures upright relative to the base when the pallet is erected, the end structures being free to pivot when the supports are released.

An embodiment of the present invention will now be described, by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of one embodiment of the present invention;

Fig. 2 is a side view of the pallet of Fig. 1 as an automobile is being loaded;

[Price 25p]

Fig. 3 is a side view of two such pallets stacked on top of one another when erected; and

Fig. 4 is a side view of two such pallets stacked together when collapsed.

In the drawings, a base 1 is made of steel frames and the upper side being arbitrarily provided with movable rings 19 for lashing down an automobile. On the side of the frame are provided a number of forklift access pockets 20.

End structures 2 and 3 are provided at both ends of the base and when the pallet is erected these form barriers extending across the ends of the base. End 2 is fixed with a pivot pin 4 in such a way as to allow said wall to swing inwardly through 90 degrees.

On both the ends of an upper beam 5 mounted between square pillars 6, 6' forming part of the end 2 are inserted rotatable hoisting rings 7, 7'. A central reinforcing piece 14 is provided. Supports 8, 8' are pivoted on both sides of end structure 2 in such a way that they can swing inwardly through 90 degrees on pivots 9, 9' which are provided on support pillars 6, 6'. Sleeves 10, 10' are provided at the lower free ends of supports 8, 8' so that the supports can be fixed to lugs 11, 11' provided projectedly on the upper surface of the base 1, by means of bolts 13, 13'.

End structure 3 is similarly constructed, but in this case the supports 17, 17' are free to swing both inwardly and outwardly through a total angle of approximately 180 degrees, on pivots such as at 16, and the end structure is provided with a plurality of re-enforcing pieces 14. The end structure 3 is arranged to pivot 90 degrees or more both inwardly and outwardly about the pivot 15 so that it swings through a total angle of 180 degrees or so. The free end of each support 17, 17' can be secured

with bolts 13, 13' to lugs 11, 12 by way of sleeve 18 provided at the lower free end thereof.

In actual use, the pallet is erected as is shown in Fig. 1. Forklift pockets 20 are utilized for carrying pallets with a forklift truck and rings 7, 7' are used for slinging the pallet on wire ropes when it is being hoisted by cranes and the like. When an automobile is to be placed on the pallet, the supports 17, 17' are opened outward by undoing bolts 13, 13' and then end structure 3 is opened outwardly until it is approximately parallel with the floor 1 as shown in Fig. 2. The automobile is moved on to the pallet using the end 3 as a ramp, and fixed firmly to lashing rings 19 on top of the base 1. Then end structure 3 and supports 17, 17' are brought back to their original positions and secured by bolts 13, 13'.

It is also possible to stack such pallets in two or more layers as shown in Fig. 3 by inserting the ends of support pillars 6, 6' into cavities in the base of the pallets. By pulling out bolts 13, 13' supports 8, 8', 17, 17' and ends 2 and 3 can be folded inwards to collapse the pallets for storage as shown in Fig. 4, in which condition they take very little storage space.

In the foregoing description, an embodiment of the present invention where only one of the end structures swings through 180 degrees has been described. However, both of the end structures as well as all the supports can be made so that they swing through 180 degrees or so.

WHAT WE CLAIM IS:—

1. A collapsible pallet for heavy articles such as automobiles, the pallet being made of metal and comprising a base having two ends and two sides, only the two ends being provided with barriers which, when the pallet is erected, extend substantially thereacross, these barriers being in the form of respective end structures pivotally mounted across each end of the base, the end structures both being pivotable inwardly to lie over the base without overlapping each other when the pallet is collapsed, and at least one of the end structures being pivotable outwardly at least to a position

substantially parallel with the base, and releasable supports for holding the end structures upright relative to the base when the pallet is erected, the end structures being free to pivot when the supports are released.

2. A pallet according to claim 1, in which both end structures are outwardly pivotable to similar positions.

3. A pallet according to claim 1 or claim 2, in which respective supports are swung on pivots at one side or at opposite sides of each end structure, the supports on both end structures being swingable through substantially a right angle inwardly, and the supports on the or each outwardly swingable end structure being swingable through substantially a right angle outwardly also.

4. A pallet according to claim 3, in which all the supports are swingable outwardly through substantially a right angle.

5. A pallet according to any one of the preceding claims, in which there are lashing points on the base, access for lifting forks at at least one side of the base, the supports are adapted to be secured by bolts to the base to erect the pallet, the sides of each end structures are respective square pillars joined by a beam at their free ends, and hoisting rings are provided where the upper beam joins the pillars.

6. A pallet according to any one of the preceding claims, wherein at least one of the outwardly pivotable end structures is adapted to form a loading ramp for a vehicle.

7. A pallet according to any one of the preceding claims, adapted for stacking with other similar pallets, and wherein the end structures are sufficiently tall, when upright, for a vehicle to be contained in each stacked pallet.

8. A pallet constructed and arranged to operate substantially as hereinbefore described with reference to the accompanying drawings.

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with bolts 13, 13' to lugs 11, 12 by way of sleeve 18 provided at the lower free end thereof.

In actual use, the pallet is erected as is shown in Fig. 1. Forklift pockets 20 are utilized for carrying pallets with a forklift truck and rings 7, 7' are used for slinging the pallet on wire ropes when it is being hoisted by cranes and the like. When an automobile is to be placed on the pallet, the supports 17, 17' are opened outward by undoing bolts 13, 13' and then end structure 3 is opened outwardly until it is approximately parallel with the floor 1 as shown in Fig. 2. The automobile is moved on to the pallet using the end 3 as a ramp, and fixed firmly to lashing rings 19 on top of the base 1. Then end structure 3 and supports 17, 17' are brought back to their original positions and secured by bolts 13, 13'.

It is also possible to stack such pallets in two or more layers as shown in Fig. 3 by inserting the ends of support pillars 6, 6' into cavities in the base of the pallets. By pulling out bolts 13, 13' supports 8, 8', 17, 17' and ends 2 and 3 can be folded inwards to collapse the pallets for storage as shown in Fig. 4, in which condition they take very little storage space.

In the foregoing description, an embodiment of the present invention where only one of the end structures swings through 180 degrees has been described. However, both of the end structures as well as all the supports can be made so that they swing through 180 degrees or so.

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substantially parallel with the base, and releasable supports for holding the end structures upright relative to the base when the pallet is erected, the end structures being free to pivot when the supports are released.

2. A pallet according to claim 1, in which both end structures are outwardly pivotable to similar positions.

3. A pallet according to claim 1 or claim 2, in which respective supports are swung on pivots at one side or at opposite sides of each end structure, the supports on both end structures being swingable through substantially a right angle inwardly, and the supports on the or each outwardly swingable end structure being swingable through substantially a right angle outwardly also.

4. A pallet according to claim 3, in which all the supports are swingable outwardly through substantially a right angle.

5. A pallet according to any one of the preceding claims, in which there are lashing points on the base, access for lifting forks at at least one side of the base, the supports are adapted to be secured by bolts to the base to erect the pallet, the sides of each end structures are respective square pillars joined by a beam at their free ends, and hoisting rings are provided where the upper beam joins the pillars.

6. A pallet according to any one of the preceding claims, wherein at least one of the outwardly pivotable end structures is adapted to form a loading ramp for a vehicle.

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