

(12) UK Patent Application (19) GB (11) 2 274 832 (13) A

(43) Date of A Publication 10.08.1994

(21) Application No 9402032.8

(22) Date of Filing 03.02.1994

(30) Priority Data

(31) 9302293 (32) 05.02.1993 (33) GB

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(51) INT CL<sup>5</sup>

**B65D 6/18 25/04**

(52) UK CL (Edition M )

**B8P PC3B  
U1S S1069 S1274**

(56) Documents Cited

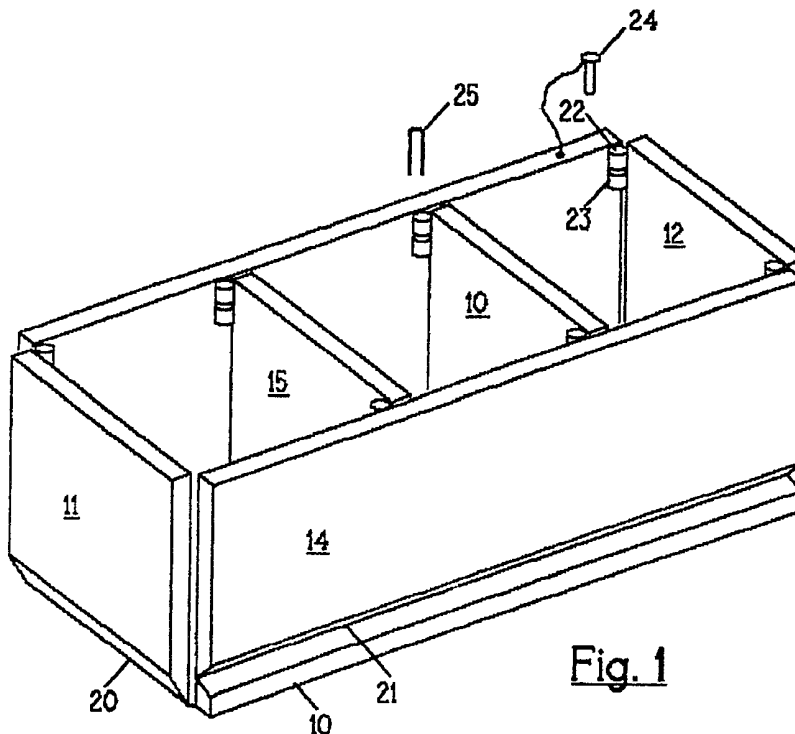
**GB 2221894 A GB 0779715 A US 4266670 A  
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(58) Field of Search

**UK CL (Edition M ) B8P PAX PC3B PC3C PC3X PE1X  
PE2J PJ PM  
INT CL<sup>5</sup> B65D  
Online database:W.P.I.**

(54) Packing system for goods

(57) A collapsible crate (container) has sides 11 - 14 that fold down onto a base panel 10 and at least one internal partition (divider) 15, 16 that also folds down onto the base. The base has an anti-slip mat on its underside, and may have feet capable of preventing the anti-slip mat coming into contact with the ground. There may be handles and/or hand holes at suitable points on the upper edges of the sides, and pockets at convenient locations, eg on the outside of one or more of the sides.



**Fig. 1**

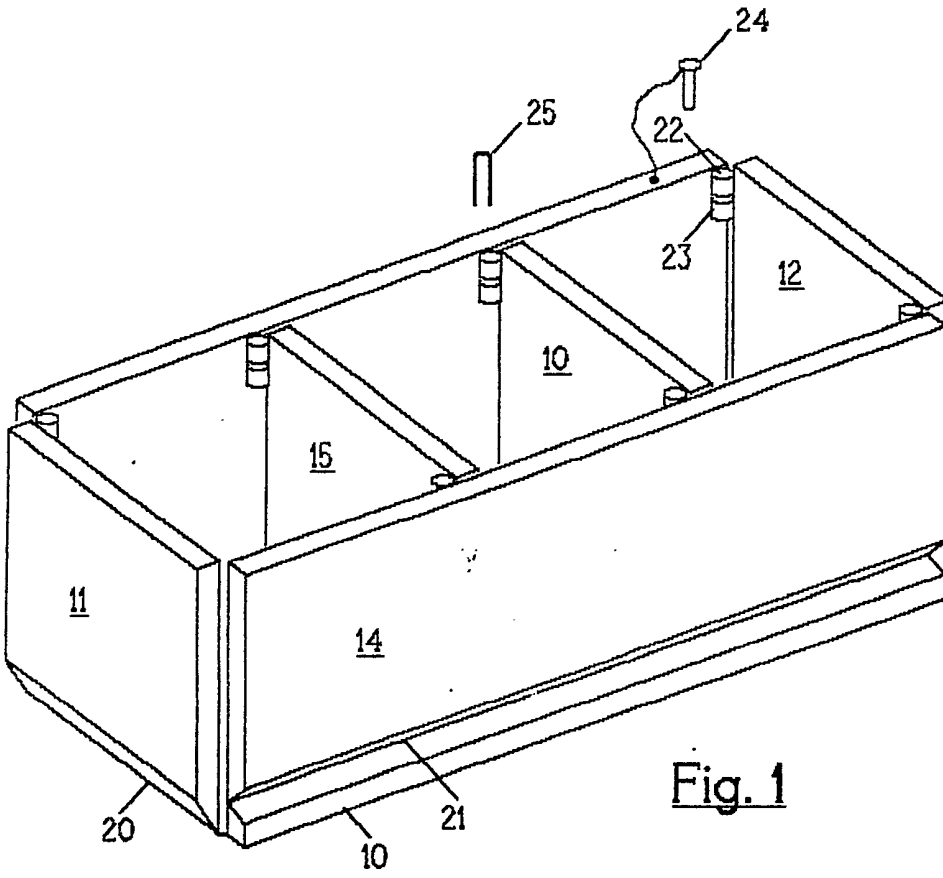


Fig. 1

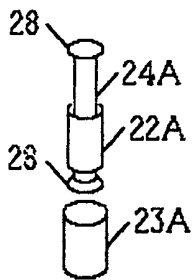


Fig. 3

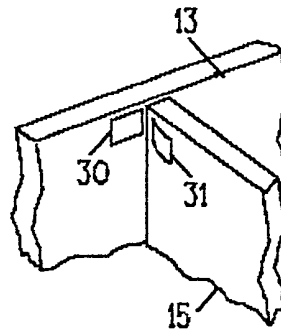


Fig. 2

## Packing System for Goods

This invention relates to packing systems for goods.

Goods at supermarkets, nurseries or other large retail outlets are normally sold either packed in an unstructured way in plastic bags or loose. In the latter case, the shopper is left to pack the goods for themselves, in their own shopping bags, plastic bags which are normally provided free by the store, or in cardboard boxes which are often provided by the store (as discarded containers of the goods received by the store). The use of plastic bags is by far the commonest of these various forms of packing.

Once the goods have been packed in plastic bags and taken by the shopper, the shopper then has to transport them home. Various forms of transport are of course possible, but by far the commonest is private vehicles. The shopper thus has to pack the goods in the vehicle.

The usual procedure is for the shopper to place the bags in the luggage area ("boot") at the back of the car. However, this has the disadvantage that the bags are loose in the boot, and so are liable to slide around and fall over, with the goods falling out of them. At best, this makes it inconvenient to unload them, as the goods have to be repacked in the bags again. At worst, this can result in damage to the goods themselves if they are fragile (eg eggs, packets of flour, and bottles), and resultant damage to other goods (eg from broken eggs, broken bottles, or their contents) and/or to the boot of the vehicle.

Currently, shoppers use various techniques to try to minimize these adverse possibilities. They can try to tie the handles of the plastic bags together (though this will often be difficult if not impossible, and will make it impossible to reuse them). They will often try to pack the bags firmly in the boot, but this is rarely effective. Some put the bags in the footwells of unoccupied seats in the passenger compartment of the vehicle, but this is inconvenient and often not feasible.

The main object of the present invention is to provide an improved packing system for goods.

According to its main feature, the present invention provides a collapsible crate (container) having sides that fold down onto the base and at least one internal partition (divider) that also folds down onto the base. Preferably also the base has anti-slip means on its underside. Further features of the invention will become apparent from the following more detailed description.

The crate can conveniently comprise a square or rectangular base panel with non-skid means on its underside and having a plurality of further panels (4 side panels and at least one internal partition) hinged to it to lie flat on it or fold upwards from it, these panels forming the main pieces of the crate.

A shopper can therefore keep the present crate in the boot or back of their vehicle. In most cases, the user will normally keep the crate in the open state, so that they can place their shopping bags in the partitioned sections when they have gone shopping. However, if they need to use the boot of the vehicle for some other purpose, they can readily pack the crate into the collapsed state. It will be realized, however, that the crate can also be used for other purposes.

The crate is preferably of sufficient strength and robustness to sustain substantial loads on it when it is collapsed. This allows it to be left on the floor of the boot when collapsed, with other loads being placed on top of it, rather than having to be removed from the boot when collapsed.

The partitions divide the crate into compartments which are preferably roughly 400 mm cube. This size is suitable for holding a well filled shopping bag. A preferred arrangement is for the crate to have 3 compartments, although the number of compartments is not critical; 2 or 4 (in the latter case, in either a 1x4 or a 2x2 layout) are also convenient.

The crate is preferably erectable in two stages, the first stage being the erection of the sides and the second the erection of the internal partitions. This allows the erection to be stopped after the first stage, giving a crate which can be used for a single large load. Preferably also the partitions are erectable individually, so that for a crate with more than 1 partition, the sizes of the compartments can be varied by varying the number of partitions erected.

The crate may be provided with hand holds (handles and/or hand holes) at suitable points on the upper edges of the sides, so that it can be lifted and moved about while in the erected state.

Pockets may be provided at convenient locations, eg on the outside of one or more of the sides. Such a pocket can be used eg for holding a shopping list. The sides of the crate may also include provision for advertising banners to be incorporated therein.

The crate preferably has anti-skid means on the underside of its base. This holds it in place in the boot of the vehicle, preventing it from sliding around and possibly overturning, and so giving additional security for the goods stored in it.

The anti-skid means may comprise an anti-slip base mat attached to the underside of the base. The mat may be made from rubber (preferably with an anti-slip ridge pattern like that of a car mat). The mat may be attached to the base either permanently (eg by a suitable adhesive) or detachably (eg by means of Velcro™ type fasteners). Alternatively, the anti-skid means may comprise an integral part of the body of the base of the crate, the material being of suitably high friction and/or the underside of the base being formed with a suitable non-skid ridge pattern. Another possible form of non-skid means is an anti-slip base mat attached to the underside of the base and coöperating with a corresponding mat fixed (eg by adhesive) to the floor of the boot. The anti-slip mat may be made of Velcro or rubber (conveniently with a plurality of suckers); the corresponding mat would be made of Velcro or rubber as appropriate.

The crate may be provided with fixed, detachable, or folding feet, to prevent the anti-slip device coming into contact with the ground. For this, it is obviously necessary that the base should be strong enough to bear the weight of the expected contents of the crate.

The main pieces or panels of the crate can all conveniently be of similar construction. The requirement of each of these components is that it shall be reasonably stiff, strong, and durable, and they can be made of any convenient material with these properties. Thus wood, metal, plastic coated hardboard, strong cardboard, or suitable resilient plastics material can be used. These main panels can be hinged together by any convenient means, eg strips of flexible

woven material, or thin regions of resilient plastics material (if such material is used for the main panels or as a coating for panels of hardboard or the like).

The sides and partitions are provided with suitable fasteners to hold them together when the crate is erected. The fastenings may be made of wood, metal, Velcro or plastic as appropriate to the basic materials used for the base, sides, and partitions of the container. They may be bolts, clips, pins-and-slots, tapes, etc. The connectors may be made of the same material as the main panels of the crate, eg as plastic extensions of plastic coated cardboard.

One suitable form of fastener is a pair of hollow tubes attached one to each of the two edges to be fastened together, the two tubes meeting end to end, with a pin being inserted through them to lock them together. (Of course, for a partition, the edge of the partition is joined to a line running up the side of a side panel of the crate.) The pin is preferably captive in the upper tube, is longer than and having enlarged ends of greater diameter than that tube (the lower tube being of greater diameter, so that the enlarged lower end of the pin can enter it). Another suitable form of fastener is a pair of Velcro pads, one attached directly to one of the two pieces (side panel, end panel, or partition) to be joined and the other on a flap attached to the other piece to be joined.

The panels along at least the longer pair of parallel sides may be joined, at or near their top edges, by strips of flexible but inelastic material. These strips will perform two functions. First, they will hold those sides at the desired distance apart, preventing any possibility of the crate bursting open should the fasteners come undone for any reason (eg inefficient fastening or overstrain). Second, they will form guides defining the positions of the cross panels lying at right angles to the panels which they join. These strips will not themselves hold the cross panels in position, but will make it easier to locate those panels in the proper positions for the fasteners to be fastened.

To enable the crate to be folded up flat, the base preferably has slightly raised portions at along at least some edges, so that the sides can fold flat over the thickness of the partitions when they have been folded flat against the base. The base can also have suitable small steps to accommodate the partitions. Further fasteners may be provided on the final pieces to be folded, and the pieces onto which they are folded, to hold the collapsed crate compactly in its collapsed state.

A crate embodying the invention will now be described in more detail, in simplified form, with reference to the drawings, in which:

Fig. 1 is a perspective view of the crate in its erected state;

Fig. 2 is a detail of a modification of the crate; and

Fig. 3 is a detail of a preferred form of attachment means.

Referring to Fig. 1, the crate comprises a base panel 10, four side panels 11-14 (panels 11 and 12 being end panels), and two internal partition panels 15 and 16. The side panels and partitions are all attached to the base panel to hinge thereon. Panel 11 is hinged along line 20, to lie flat on the base panel 10, and partitions 15 and 16 are similarly hinged to lie flat on the base panel. The side panel 12 is hinged to line over the adjacent partition 16, and the side panel 14 is hinged along a line 21 on a slightly upstanding edge of the base panel 10 to lie flat over the thickness of the partition 16 and the end panel 12. Side panel 13 is hinged along a slightly higher line again to lie flat over the opposite side panel 13.

The side panels and partitions are provided with fastening means for each of the joins. Considering the join of panels 12 and 13, panel 12 has a tube 22 attached to it and panel 13 has a tube 23 attached to it. The two tubes are aligned when the two panels are properly positioned, and a pin 24 is dropped down through the two tubes to hold the panels together. Similar fastening means are provided at the other joins. The pin 24 may be held captive by a cord, as shown. Instead of straight pins, U-shaped pins may be used, as shown at 25.

Fig. 2 shows a modified form of fastening. A Velcro pad 30 is attached flat on the inner surface of the panel 13, and a cooperating Velcro pad 31 is attached to the partition 15 in the form of a flap hinged to the edge of the partition.

Fig. 3 shows a preferred form of pin-and-tube fastening means, in which the pin 24A is kept captive in the upper tube 22A by means of enlargements 28 at its ends. The lower tube 23A is of slightly greater diameter than the upper

tube 22A, so that it can receive the enlarged lower end of the pin. In this arrangement, the pin is of course permanently in one of the tubes.

It is also desirable for the crate to be fastened together when in the collapsed condition. Additional fastening means may be provided on the outside of suitable panels for this purpose. If, for example, the crate is folded by folding down first the interior partitions 15 and 16 and the end panels 11 and 12, then the side panel 13, and finally the side panel 14, the upper edge of panel 14 will need to be fastened to the lower end of panel 13. Horizontal tubes, or Velcro pads, may therefore be provided at the top outer edge of panel 14 and the bottom outer edge of panel 13.

Alternatively, however, the fastening means at the top inner corners of these panels may be sufficiently accessible to enable them to be used to hold the crate in its collapsed condition. However, these fastening means will be separated from each other by the width of the crate, so extended pins will be required.

A compromise arrangement may be adopted, in which additional fastening means are provided at the bottom of panel 14 to engage with the existing fastening means at the inside top of panel 13 (which will lie directly beneath panel 14).



## Claims

1 A collapsible crate (container) having sides that fold down onto the base and at least one internal partition (divider) that also folds down onto the base.

2 A collapsible crate according to claim 1 wherein the base has anti-slip means on its underside.

3 A collapsible crate according to claim 2 wherein the anti-skid means comprise an anti-slip base mat attached to the underside of the base of the crate.

4 A collapsible crate according to claim 2 wherein the anti-skid means comprise an integral part of the body of the base of the crate, the material being of suitably high friction and/or the underside of the base being formed with a suitable non-skid ridge pattern.

5 A collapsible crate according to any previous claim having feet capable of preventing the anti-slip device coming into contact with the ground.

6 A collapsible crate according to any previous claim comprising a square or rectangular base panel having a plurality of further panels (4 side panels and at least one internal partition) hinged to it to lie flat on it or fold upwards from it, these panels forming the main pieces of the crate.

7 A collapsible crate according to claim 6 having 2, 3, or 4 compartments.

8 A collapsible crate according to any previous claim erectable in two stages, the first stage being the erection of the sides and the second the erection of the internal partitions.

9 A collapsible crate according to any previous claim having hand holds (handlés and/or hand holes) at suitable points on the upper edges of the sides.

10 A collapsible crate according to any previous claim having pockets may be provided at convenient locations, eg on the outside of one or more of the sides.

11 A collapsible crate according to any previous claim wherein the main pieces or panels of the crate are of wood, metal, plastic coated hardboard, strong cardboard, or suitable resilient plastics material.

12 A collapsible crate according to any previous claim including fasteners, for holding the sides and partitions together when the crate is erected, each comprising a pair of hollow tubes attached one to each of the two edges to be fastened together, the two tubes meeting end to end, with a pin being inserted through them to lock them together.

13 A collapsible crate according to claim 12 wherein the pin is captive in the upper tube, is longer than and has enlarged ends of greater diameter than that tube, and the lower tube is of greater diameter, so that the enlarged lower end of the pin can enter it.

14 A collapsible crate according to any previous claim wherein the panels along at least the longer pair of parallel sides are joined, at or near their top edges, by strips of flexible but inelastic material.

15 A collapsible crate according to any previous claim wherein the base has slightly raised portions at along at least some edges, to that the sides can fold flat over the thickness of the partitions when they have been folded flat against the base.

16 A collapsible crate according to any previous claim including further fasteners on the final pieces to be folded, and the pieces onto which they are folded, to hold the collapsed crate compactly in its collapsed state.

17 Any novel and inventive feature or combination of features specifically disclosed herein within the meaning of Article 4H of the International Convention (Paris Convention).

<b>Relevant Technical Fields</b>	Search Examiner MIKE HENDERSON
(i) UK Cl (Ed.M)      B8P (PC3B, PC3C, PC3X, PAX, PM, PJ, PE1X, PE2J)	Date of completion of Search 4 MARCH 1994
(ii) Int Cl (Ed.5)      B65D	
<b>Databases (see below)</b>	Documents considered relevant following a search in respect of Claims :- 1-16
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.	
(ii) ONLINE DATABASE: WPI	

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| <b>A:</b> Document indicating technological background and/or state of the art.   | <b>&amp;:</b> Member of the same patent family; corresponding document.   |

Category	Identity of document and relevant passages	Relevant to claim(s)
Y	GB 2221894 A (HOPKINS) Claim 5 particularly relevant	2-4
X,Y	GB 779715 (McCLELLAND) whole specification relevant	X:Claim 1, 6-9,11 Y:Claim 2-4, 10,12
Y	US 4266670 (MYKLEBY) whole specification relevant	12
X,Y	US 4189056 (MAJEWSKI) whole specification relevant	X:Claim 1, 8,11 Y:Claim 2-4, 10,12
Y	US 4015741 (FRAHM et al) whole specification relevant	12
Y	US 3977521 (MURPHY) whole specification relevant	10

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