



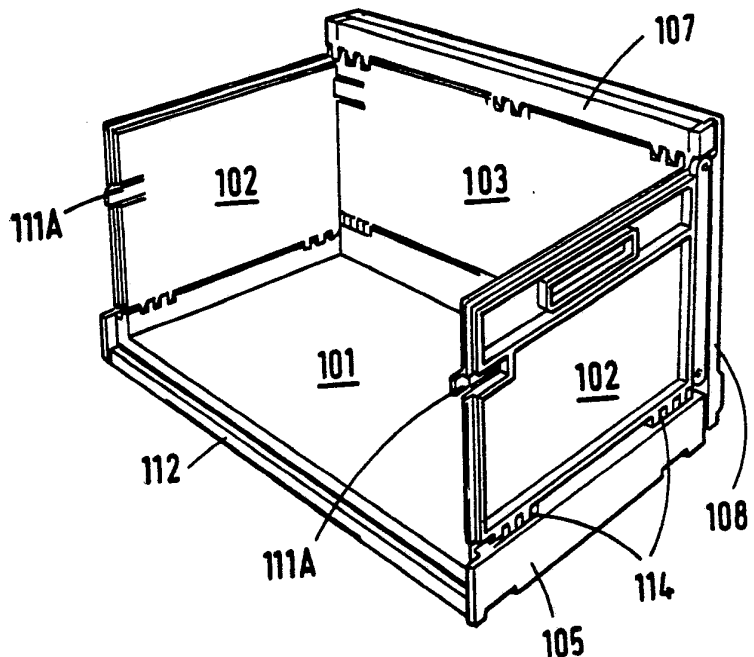
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: TRANSIT BOX

(57) Abstract

A foldable transit box preferably of plastics material has a base; two end walls each locatable in an upward position on the base and foldable inwardly; a back wall (103) locatable in an upward position on the base and foldable inwardly. The two end walls and the back wall being interconnectable to maintain the three walls in a relatively fixed position when located in an upward position on the base to support the box in an erected condition and when a number of such boxes are stacked one upon the other. A top lid (108) is connectable to the back wall and end walls and a front wall (112) is openable, when a number of the boxes are in a stacked position, to allow access to the interior of the box. A catch is connected to the top lid and at least one of the other end walls or front wall. The base, front and end walls, and lid are conveniently of rigid construction and the interconnection between the base, front and end walls, and the lid, in a fully assembled or closed position of the box being arranged to prevent opening of any portion of the box other than by first opening the catch means. Preferably the box includes an interlocking system located on the base (105) for stacking the base on a lower container when the box is in the erected position. Preferably, the box also includes storage slot in the base in which the front wall is stored when the box is in the access position with the front open. A lip (11) on the front wall can extend up the front wall when it is in its stored position.



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TRANSIT BOX

This invention relates to transit boxes, that is boxes which can be used for the transportation of goods and which are stackable on receipt.

05 Various forms of transit box made from different types of material are known. The essence of a transit box is that, when not in use for movement of materials, it should foldable so as to minimise for storage space particularly if the box is to be returned to the original supplier of the goods. It is also advantageous if such boxes are stackable. A
10 problem until now has been that, even where a box meets these requirements, it may be difficult to gain access to the contents of the box once they are stacked. There is therefore a need for a construction of a transit box which can be folded to minimum bulk when empty, which is stackable, and which permits access to the contents of the box even when
15 stacked.

According to the present invention there is provided transit box comprising a base; two end walls each locatable in an upward position in relation to the base and foldable inwardly; a back wall locatable in
20 an upward position in relation to the base and foldable inwardly, the interconnection between the two end walls and the back wall being arranged to maintain the three walls in a relatively fixed position when located in an upward position on the base to support the box in an erected condition and when a number of such boxes are stacked one upon
25 the other; a top lid connectable to the back wall and end walls; a front wall which is openable, when a number of the boxes are in a stacked position to allow access to the interior of the box; and catch means connected to the top lid and at least one of the other end walls or front wall; said base, front and end walls, and lid being of rigid
30 construction, the interconnection between the base, front and end walls, and the lid in a fully assembled or closed position being arranged to prevent opening of any portion of the box other than by first opening the catch means.

35 In a preferred form the box will be manufactured from plastics material and the connection between the various parts of the box i.e.

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end walls to base, back wall to base and top to back wall can be by hinging which can either be by conventional hinging structures utilising a hinge pin or by narrower portions of plastics material integrally formed with the respective wall and base which permits hinging of the

5 elements about each other. The ends when in their upright position can be provided with connecting means to the rear wall or with other devices locking into the base to maintain them in the upright position. Preferably the top is hingedly connected to the back wall and will fold outwardly away from the rest of the box down the back of the back wall.

10 The side walls are preferably provided with a locating rib around the wall, for example a T-section, which strengthens the wall and also can provide locking means for at least the top lid and the front wall. Thus the ends can be provided with ribs to extend into grooves in the lid and into grooves in one or more of the ends, back wall and front wall or the

15 lip thereof.

The base can comprise a raised plinth with two grooves arranged to receive the edges of the front wall. Locking means can be provided to lock the lip to the inner edge of the top lid when in the fully erected

20 closed position. In a desired form the lip will be slightly angled so as to permit the hand to reach the outer surface of the lip when in the upright closed position so releasing such lock permitting pulling outwardly of the front wall and thereafter disposal into the base as described above. The height of the lip should be such that on storage in

25 the base when the rest of the walls are in the fully folded position the edge of the lip is approximately co-planar with the upper surface of the folded back wall or other top wall in the folded structure. The hinging point of the back wall can be slightly above the floor level of the base so permitting the back wall to fall down to a horizontal position across

30 the ends folded in the fully folded position.

In another embodiment of the present invention the transit box is constructed to permit opening thereof when in the stacked position, the front panel being removable and storeable in an access space in the

35 base. In one modification of this concept the front panel is hinged to a member slidable in the base so that it cannot be removed completely from the base. In a further modification the top lip structure is in

two hinged sections which simplifies opening of the top lip and complete folding of the box. Conveniently such a transit box comprises a base, two ends locatable in upright position in relation to the base and foldable inwardly, a back wall connectable to the base to fold inwardly, 5 a top lip connectable to the back wall and ends and a front which in the closed position is lockable to the base and the top lip, said transit box being provided with a receiving means in the base to receive the front wall when the latter is in the access position. In one such embodiment the top lip is in two portions, a minor rear portion hingedly connected to the back wall and a major front portion extending from the 10 rear portion to the front of the transit box and being hingedly connected to the rear portion. The dimensioning of the two portions are preferably such that when the rear portion is raised into a vertical position and the front portion is rotated about the hingeable connection to the back 15 portion to depend rearwardly of the raised back portion and the back wall the lower edge of the front portion of the top lid is no lower than the bottom edge of the transit box.

The reason for the top lid being in two portions is that the width of the box i.e. from front to back dimension, is often more than 20 the height of the box. If the top lid extends from front to back in one solid portion when it is rotated as to lie down the back of the box it would be longer than the height of the box which means that it cannot lie against the back surface of the box. Also in the fully folded position it may extend somewhat beyond the edges of the box. It is convenient 25 therefore to provide the top lid in two hingeable portions bringing it within the folded dimensions of the base.

The top lid can be provided with a hinged front flap which in one position can lie in a recess in the top lid and the other position is dependent from the front edge of the top lid to lie against the 30 front wall. A breakable security device can be provided to connect the flap and the front wall and the flap can contain details of the contents of the box and simultaneously act as a lock for the box where evidence of breach of the box is required. Normally the front wall is simply disposable by unlocking from the base and side walls and sliding 35 into a recess in the base of the box. Where the boxes are stacked the wall can of course be slid into a base of a box above or below the one

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which it belongs if desired. In an embodiment of the invention there can be provided a longitudinal member running the length of the box i.e. from end wall to end wall and slidable in the base to stops at the front of the box. The front wall is then hinged to said longitudinal member so
5 that although moveable in and out of the base it can never be removed completely from the base. The dimensioning must be such that the depth of the box i.e. from front to back is sufficient to permit both front wall and the sliding longitudinal member that the lid when fully housed into the base protrudes slightly from the front may be acceptable under
10 certain conditions. When the front wall is in closed position i.e. upright against the end walls, locking devices can be provided to grip the front wall against the edges of the end walls.

Conveniently the box is assembled from rigid panel members which resist collapse of the box particularly during transit. In a preferred
15 form the panel members will be formed from rigid plastics material with appropriate ribbing to strengthen the panels.

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings in which:-

20 Fig. 1 is a perspective view of the box in a partially folded or "fully open" position;

Fig. 2 is a cross-sectional view of the box in fully folded position;

Fig. 3 is a perspective view of the box in a fully closed and
25 assembled position;

Fig. 4 is a perspective view of a second embodiment of a box in partially folded or "fully opened" position;

Fig. 5 is an end view of the box in a fully folded position;

Fig. 6 is a cross-sectional view of the box in a fully folded
30 position;

Fig. 7 is a perspective view of the box in a fully closed and assembled position; and

Fig. 8 is an end view of two stacked boxes, upper with the top lid opened, lower with top lid closed.

35 Referring to Figs. 1 to 3 the box comprises a base member 1 at each end of which is an end wall 2 which will usually be hinged to the base wall to be foldable down towards the other wall the height of the

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end walls usually being such that on folding down the upper edges will be adjacent and not overlap. Alternatively, the end wall and base can be provided with grooves, ridges or other means for holding the end walls in position on the base. A back wall 3 is hingedly mounted at 4, by a
5 conventional hinge pin arrangement or by an integrally moulded plastics hinge, to the base which hinging point can be on a low side wall along the back of the base. The back wall has flap catches 3B which assist in locking the end walls relative to the back wall and are released by
10 pressing on the ends of the catches. Thus the flap catches assist in securely holding the end walls and back wall in an upright position. A top wall or lid 6 will pivot about hinges 3A at the top of the back wall and will fold down behind the back wall as shown in Figs. 1 and 2 and then on folding the back down over the two end walls the top will then form the
15 upper surface of the fully folded box. The top does not extend all the way across the box but will end a short distance before the front so as to leave room for the lip which will be described shortly.

The end walls can have a ridge or rib 7 extending about the periphery of at least part of the end. This rib can be formed in a
20 strengthening beam also extending about all or part of the end wall. This rib can act as a locating groove in the top (not shown) and back wall and base to assist in holding the box in an assembled position. Additional means such as hooks can be provided to hold the end walls in upright position in relation to the back wall. As already stated, the
25 rib if in the lower edge of the end walls can be located in a corresponding groove in the base if no hinging means is provided. Other strengthening ribs for example supporting the hinges can be provided in the end walls as well as ventilation openings and handles or holding means 8. The front wall 9 of the container has a ridge or lip 11. The
30 front wall in the totally closed position of Fig. 3 locates in the forward portion of the base with the ribs of the end walls extending into grooves not shown. Alternatively the front wall can be lifted out of its locating position simply by pulling forward and away from the box.

35 The base is so constructed as to provide grooves into which the main body of the front wall can be slid and held although alternative

means, such as runners, of holding the front wall in the base can be provided; when so placed the box is in the "access" position. When fully pushed home in the base the edge or lip 11 will then extend upwardly providing a lip 11 at the front of the box to assist both in
5 identification of the contents of the box and to hold the contents into the box.

The extent to which the lip 11 extends upwardly in the access position or across the top of the box in the closed position will depend
10 on the degree of access required. If the lip extends too far there may be difficulty in removing the front wall from the box in the fully stacked position.

The dimensions and structure of the base will be such as to allow
15 the container to be stacked on top of another container in which the top is in the closed position, or on top of a fully folded box as shown in Fig. 2. The lip can be provided with a locking means 12 which as shown in Fig. 3 will lock with the top wall when all are in the fully assembled position.

20

In use the box will be assembled into its fully assembled position by erecting the two ends by hinging about or locking into the base, if necessary, locking or attaching the back wall, bringing the top down over the box and placing the front in its closed position. The box and its
25 contents when it reaches its destination can then be stacked still fully closed. When access is desired for the contents the top/lip is unlocked, the front wall pulled forward and away from the box and then placed in its storage position in the base. When the box is fully emptied it can be folded fully leaving the lip slightly upstanding as
30 shown in Fig. 2 so that there is a relatively smooth upper surface.

The box is normally be made of plastics material but can be made of other rigid material such as strong cardboard or from combinations of these materials.

Although not shown, at least a portion of the lip can be slanted
35 somewhat downwardly when in the fully assembled position so that the inner edge is in contact with the top lid but a space or recess is left

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in the stacked position to allow access to the lock. This recess can extend the whole length of the lip or along a portion adjacent to the lock and allows removal of the front wall upon release of the lock.

5 Referring now to Fig. 4 there is shown another embodiment of a transit box in which a base 105 is provided in plinth form with a floor, a recess and two grooves (not shown) into which a front wall 112 can be slid. Two end walls 102 are dismountable as described in the embodiment just described as is a rear wall 103. The top lid comprises two sections,
10 a rearward section portion 107 hingeably mounted by an integral hinge for example, to the back wall 103 and major portion 108 hingeably connected to the front edge of portion 107. In the fully closed position as shown in Fig. 5 the lid will extend across the entire top surface of the box. The front portion can be folded back across portions 107 which can then
15 be raised into a vertical position so that the front portion 108 lies against the back wall of the box but does not descend all the way to the base of the box. The front portion 108 can contain a recess 110 in its undersurface into which a label portion 109 hingeably connected to front edge of the portion 108 can be received. The label portion 109 can
20 alternatively be hinged downwardly and be placed against the front wall 12 and can be lockable thereto. The front wall 112 can be provided with two locking portions 111 inter-connectable with locking portions 111a, for example in the form of flap catches, on the end walls 102. As shown in Figs. 5 and 6, in folding, the two end walls are folded onto the
25 base. The rear wall 103 is hinged with a conventional hinge pin arrangement to a base portion 113 the upper edge of which is slightly above the plane of the two folded down end walls so permitting the rear wall 103 when folded down over the end walls to lie flat. The back portion 107 of the top lid is then parallel and extending from the rear wall 103 with
30 the remaining portion 108 being folded back across the top. Hinges 114 show the hinging connection between the end walls and the base 105 of the box. Fig. 8 shows the manner in which two such boxes are stacked one on top of the other in their erect condition whilst still allowing the front wall to be folded down, without moving other containers in

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in the stack, and received into the box of the transit box on runners 105A or alternatively in a groove (not shown) The front wall 112 pivots downwardly in the direction of arrow 112A about hinge pins (not shown) at the lower edges thereof and then is movable in the direction of arrow 112B to lie on the runners 105A within the base 105.

In an alternative embodiment the construction of the front wall unlike the previous constructions need not be stowable in the base and folding down of the front wall leaves sufficient opening to allow access 10 into the container.

Such a construction resembles that of the embodiment described above with reference to Figs. 5 to 8. except that the front wall 112 would have a lower portion permanently mounted on the base and hingeably 15 connected to the upper portion of the front wall. The catch retaining integrity of the whole construction would be the catch of label portion 109 lockable to the front wall 112. Catches, such as flap catches, are provided to interlock back wall 103 with end walls 102 at a time when the top wall 108 and front wall 112 are in the open position. The 20 interconnection of hinges such as 114, using hinge pins for example, and the hinges (integral hinges) joining top wall portions 107, 108 to back wall 103 together with tongue and grooving as described in the embodiment just described above application ensures the integrity of the construction and once the top lid is locked to the front wall 112 by 25 catch in 109 this integrity will be maintained until that catch is released or unsealed. The rigid vertical walls with their ribbing provide for the necessary strength during transportation of the box and other handling. The ribbing further serves to support the hinges thus strengthening those hinges. In the above embodiments transit boxes 30 are described which comprise a base member, two ends locatable in upright position in relation to the base and foldable inwardly, a back wall connectable to the base to fold inwardly, a top lid connectable to the back wall and ends and a front wall which in a closed position is lockable to the base and top lid and in front open position for the box 35 is storable in an access position in the base. This structure is stackable on a lower container and therefore the transit box is capable of resisting forces during use so that there is no collapse of the box in

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transit and yet the box must be easily foldable to a disassembled position.

The interlocking means of the end walls and the back wall to the base is preferably by a hinge so that the walls are permanently connected to the base. The interconnection could be by an angled groove and tongue or clip whereby, once the back wall and end walls have been attached to the base, they can only be removed by opening of both the front wall and top lid. Particularly, the end walls can be connected to the back wall by one or more catches, such as flap catches, which hold the structure in assembled position even in the absence of the front wall and the top lid although once the front wall and the top lid have been attached and locked together with the base and other walls these back catches may become redundant.

The end walls and back wall can be provided with interconnecting grooves or locking arrangement to assist in the interconnection of the various panels forming the sides and top and front to ensure rigidity and interlocking in the final assembled structure. Similarly, the top lid can be hinged to the back wall and have an interconnecting arrangement, particularly in the form of tongue and groove structures, to ensure retention of the walls together in the final assembled structure. A typical structure is as described above in relation to Figs. 5 to 8.

The front wall as described in the earlier patent embodiments can be completely removable and stowable in the base which is provided with a receiving area for the front wall. Alternatively, there can be a lower portion of the front wall attachable to the base or forming a permanent part of the base, the upper portion of the front wall being hingeable about the lower portion so as to fold out and down and provide access to the interior when desired. In such a construction the front wall must be capable of being opened freely even though the top lid is in place on the transit box. If therefore the top lid has a downward flange which lies over the front wall in the fully assembled position this must be hingeable so as to release the front wall if desired.

35

The front wall also can have catches attaching it to the end walls so as to preserve the integrity of the structure when the top

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lid is locked to the front wall. The structure of the top lid can be as described in the earlier embodiment of Figs. 5 to 8.

The important feature of the top lid construction in the 5
embodiments described above is that, when the box is in fully assembled structure, the final closure of the catch joining the top lid with, particularly, the front wall results in an interlocked structure which does not permit any panel to be moved or removed without releasing the catch. When this catch is then appropriately sealed the integrity of the 10
transit box on receipt can be quickly verified and no opportunity exists for pilfering of the contents. As already stated, preferably some of the walls will be permanently hinged to other walls or alternatively interlocked by means of tongue and groove structures which give the final total interlocked effect on locking of the final catch. The catch, 15
depending on the hinging, will be between the top lid and front wall but the top lid could be hingedly connected to an end wall rather than a back wall and the catch could then be between the opposed end wall and the top lid or between the top lid and either or both of the back and front walls.

20

Conveniently, the box is lockable as described above and this lock has provision to receive a seal to ensure against pilfering of the contents of the box during transit.

25

The lip 109 in Figs. 5 to 8 is preferably transparent to allow information thereunder on the front wall to be seen.

CLAIMS:

1. A transit box comprising a base; two end walls each locatable in an upward position in relation to the base and foldable inwardly; a back wall locatable in an upward position in relation to the base and foldable inwardly, the interconnection between the two end walls and the back wall being arranged to maintain the three walls in a relatively fixed position when located in an upward position on the base to support the box in an erected condition and when a number of such boxes are stacked one upon the other; a top lid connectable to the back wall and end walls; a front wall which is openable, when a number of the boxes are in a stacked position to allow access to the interior of the box; and catch means connected to the top lid and at least one of the other end walls or front wall; said base, front and end walls, and lid being of rigid construction, the interconnection between the base, front and end walls, and the lid in a fully assembled or closed position being arranged to prevent opening of any portion of the box other than by first opening the catch means.
2. A transit box according to claim 1, wherein the box includes storage means in which the front wall is stored when the box is in the access position with the front open.
3. A transit box according to claim 1 or 2, including interlocking means at least located on the base for stacking the said base on a lower container when the box is in the erected position.
4. A transit box according to any one of the preceding claims, wherein the front wall has an upwardly extending lip arranged to extend slightly across the top of the box to lock with the top lid.
5. A transit box according to claim 4, wherein at least a portion of the lip is slanted to provide access to the back between the lip and top wall when the box is in the closed position.

6. A transit box according to any one of the preceding claims, wherein the end walls fold onto the base, the back wall onto the end walls, the top lid overlies the back wall, and the upper line of a lip on which the rear wall is pivotally mounted on the base is substantially co-planar with the outer surface of the top wall.
7. A transit box according to claim 1, 2 or 3 in which the rigidity of the walls is provided by ribs which provide rigid panels for the walls and supports for hinges about which the walls are pivotally mounted, the ribs being located in grooves in at least the top and front walls and or in the back wall.
8. A transit box according to claims 1, 2, 3 or 7, wherein the front wall comprises two hingedly connected portions, the upper portion being the major part of the front wall and being foldable outwardly and downwardly about the hinge connection.
9. A transit box according to any one of the preceding claims, wherein the end walls are hingedly connected to the base and the back wall is hingedly connected to the base and the top lid is hingedly connected to the upper edge of the back wall.
9. A transit box according to claim 8, in which the end walls are provided with ribs which locate in grooves in at least the top and front walls and optionally in the back wall.
10. A transit box according to claim 1, 2 or 3 wherein the top lid is in two hinged portions a rear portion being hingedly connected to the back wall and the front edge of the said rear portion being hingedly connected to the rear portion of the top lid remote from the front edge of the box.
11. A transit box according to any one of the preceding claims, in which the front wall is hingedly connected to a member slidable in the base and not removable from the base.

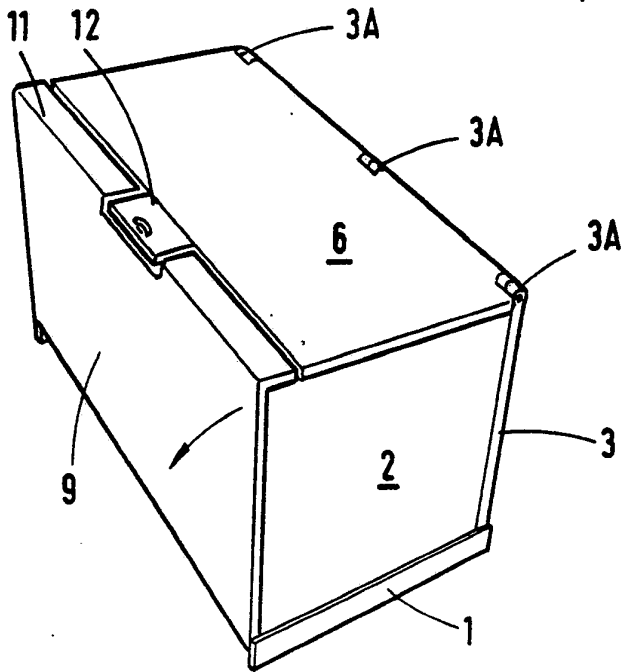


Fig. 3

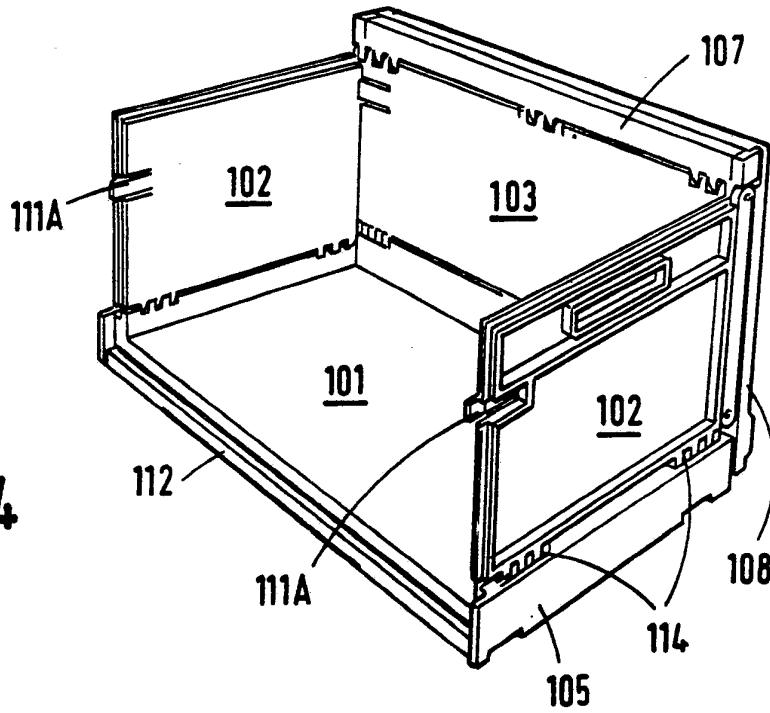


Fig. 4

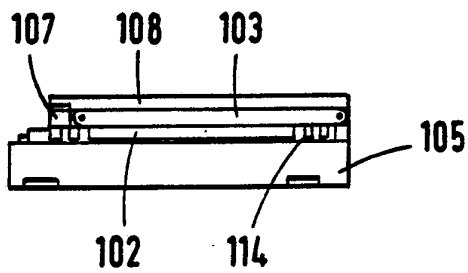


Fig. 5

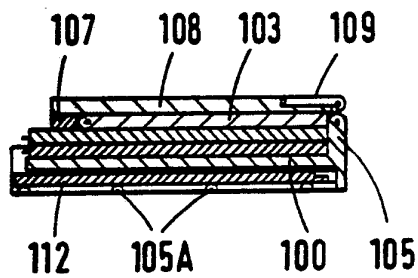


Fig. 6

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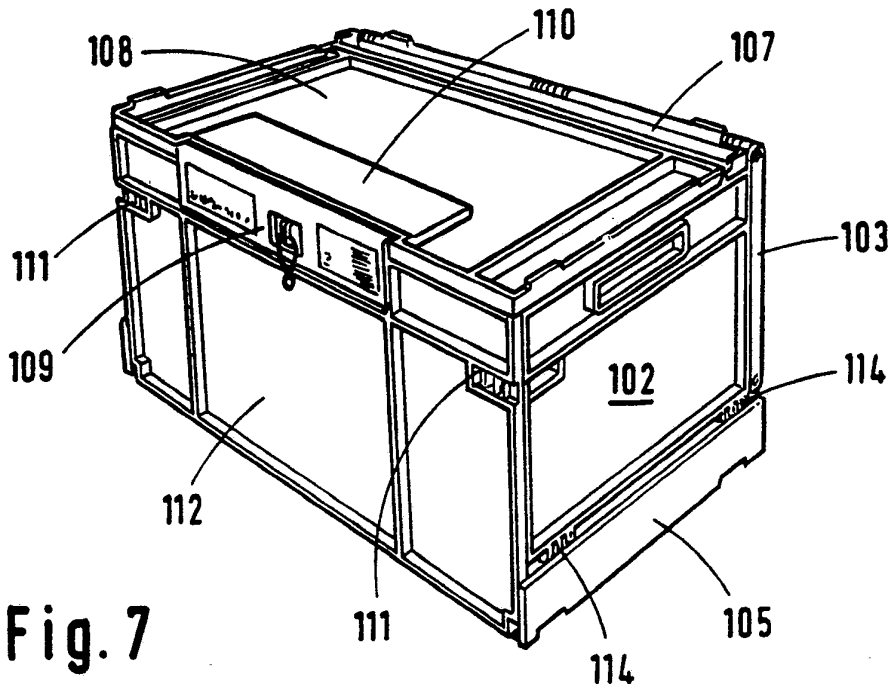


Fig. 7

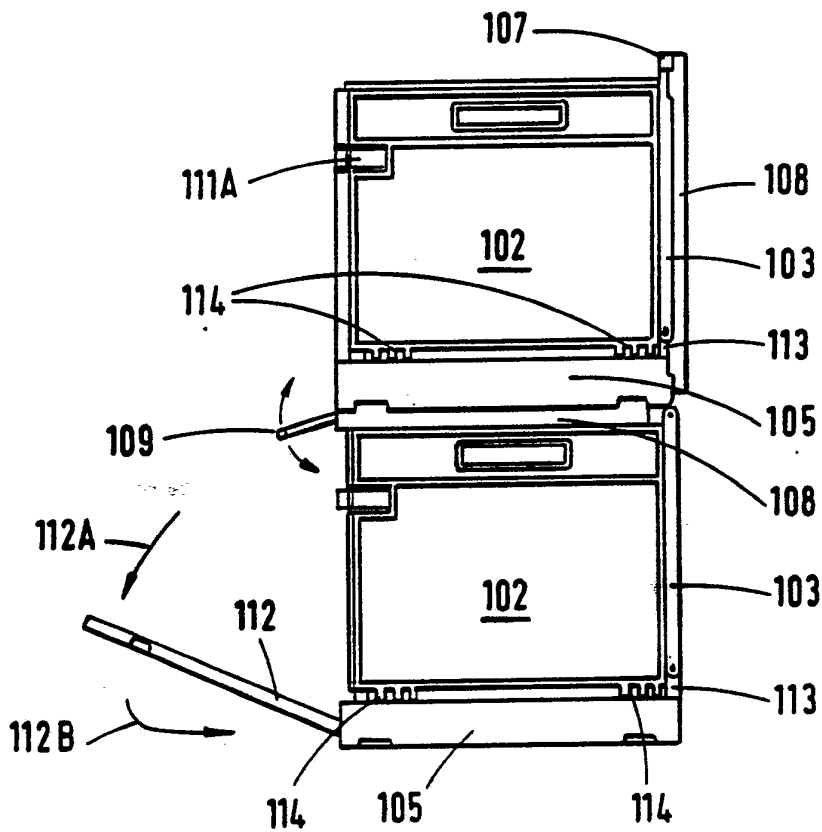



Fig. 8

INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 88/00696

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC ⁴ : B 65 D 19/18; B 65 D 8/14		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC ⁴	B 65 D	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	DE, A1, 3500427 (FRIEDRICH) 10 July 1986 see figures 3-5	1,3,6-8
	--	
A	CA, A, 1159379 (CARTER) 27 December 1983 see figures 3-8	1,3,6-8
	--	
A	EP, A, 0211116 (GYENGE et al.) 25 February 1987 see figures 1,2,12; page 7, lines 15-18; page 14, lines 24-27; page 15, lines 1-8; page 17, lines 18-25	1,6-9
	--	
A	FR, A, 2327150 (SZABO) 6 May 1977 see figures 1,2,4,5,9	1,6,9
	--	
A	US, A, 4052084 (PROPST) 4 October 1977 see figure 7; column 3, lines 58-63; column 4, lines 20-29	1,8

<p>¹⁰ Special categories of cited documents: ¹⁸</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
8th December 1988	29. 12. 88	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	 T.K. WILLIS	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

GB 8800696
SA 24103

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 20/12/88. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A- 3500427	10-07-86	None	
CA-A- 1159379	27-12-83	None	
EP-A- 0211116	25-02-87	JP-A- 62004048 US-A- 4674647	10-01-87 23-06-87
FR-A- 2327150	06-05-77	None	
US-A- 4052084	04-10-77	US-A- 4134601	16-01-79