(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 867 375 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
30.09.1998 Bulletin 1998/40

(51) Int Cl.[6]: **B65D 43/16**, E05D 11/00, E05D 7/10

(21) Application number: **98302013.2**

(22) Date of filing: **18.03.1998**

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **27.03.1997 GB 9706432**

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(54) Container with hinged lid

(57) A container in which the lid 16 is attached to the body of the container by a hinge arrangement. When the hinge arrangement is assembled, knuckles 30 on the lid 16 are interleaved with knuckles 20 formed along the upper edge of the container walls. Each of the knuckles 20, 30 has an elongate bore formed to receive a single hinge pin along the common line 22, 36. When the lid 16 is closed, tab 34 projects through the socket 24 into the interior of the knuckle 20, thereby preventing the hinge being pulled apart.

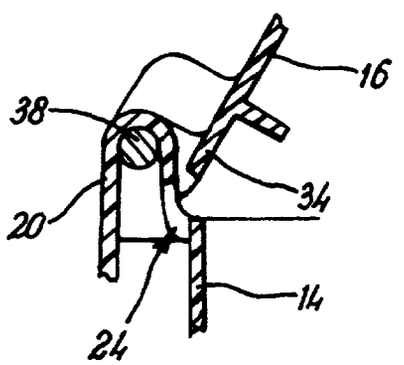

FIG. 4

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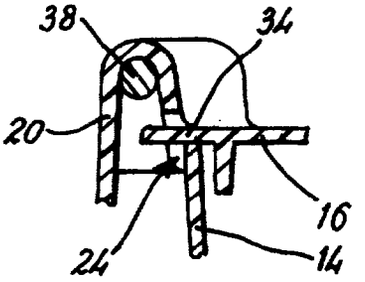

FIG. 6

Description

The present invention relates to containers and in particular to lidded containers.

Reusable delivery containers of synthetic plastics material are used for many purposes, including delivery of goods to retail premises. A common size for such containers is 600mm long and 400mm wide. Some of these containers have lids, which may be hinged to the container body. A known design of hinged lid container is shown in Fig. 1.

The container 10 has a body 12 consisting of a base (not shown) and four upstanding walls 14. Two lid portions 16 (one of which is shown open) are hinged to the walls 14 along the top edges 17 to open or close the container. The hinges are formed by a line of knuckles on a lid portion, interleaved with a line of knuckles formed along the top edge of a wall, the two sets of knuckles being connected either by a hinge pin extending through the line of interleaved knuckles, or by the knuckles snap-fitting together.

The lid portions 16 interengage when the lids are closed.

Containers like that shown in Fig. 1 are used for many security applications, primarily for security against pilfering of retail goods. The lids can be sealed shut, such as by a security tag or lock. However, it has been found that in known designs, external forces applied to the hinges, for instance by levering or prising the lids away from the body, can cause damage to the hinges, including breaking or distorting the hinge pin, which then allows the lids to be removed easily from the box. Arrangements in which the hinge pin is plastic are particularly prone to such failure.

It is an object of the present invention to provide an improved container.

According to the invention, there is provided a container comprising a lid attached to the body of a container by a hinge arrangement which has first and second hinge leaves, there being cooperating formations associated with the hinge arrangement which, at least in one relative orientation of the hinge leaves, engage to prevent the leaves being pulled apart.

The cooperating portions may be a projection formed on one leaf and a corresponding socket formed on the other leaf.

Preferably the cooperating formations engage when the lid is closed, to prevent access to the interior of the container through pulling apart of the hinge arrangement.

The hinge arrangements may comprise knuckles formed on the leaves and interleaved to receive a hinge pin. The cooperating formations may be surfaces of, or formed in, the knuckles. Alternatively, the cooperating formations may be remote from the hinge. The cooperating formations may incorporate arrangements which resist disengagement.

The cooperating formations may comprise part cylindrical surfaces centred in the hinge axis and turning into alignment and engagement as the hinge leaves move relative to each other.

One arrangement according to the present invention will now be described in more detail, by way of example only, and with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a known container;

Fig. 2 is a partial elevation of the hinge leaf formed along the top of a container wall, viewed from within the container;

Fig. 3 is a partial plan view of a hinge leaf formed along one edge of a lid portion;

Figs. 4 to 7 are vertical sections through the assembled hinge, viewed along the hinge axis; and

Figs. 8 and 9 are vertical sections between two knuckles of an alternative hinge arrangement.

Figs. 2 to 7 show aspects of a modified hinge arrangement according to the present invention, for use in a container which is otherwise as shown in Fig. 1.

One leaf of the hinge between the container body and the lid is formed as a series of upstanding knuckles 20 along the upper edge of the container walls and each having an elongate bore formed to receive a hinge pin along the line 22 in Fig. 2. Each knuckle 20 also has a slot or socket 24 formed through its wall, below the normal centre line 22 of the hinge pin. Adjacent knuckles 20 are separated by spaces 26.

The lid 16 is formed with a line of knuckles 30, adjacent knuckles being separated by a space 32 in which a projection in the form of a tab 34 is located. The knuckles 30 are, like the knuckles 20, pierced by elongate bores for receipt of a hinge pin along the line 36. The dimensions of the tab 34 are such as to allow it to be received in a socket 24, as will be described.

When the hinge arrangement is assembled, knuckles 30 are interleaved with knuckles 20 and a single hinge pin (which may be of metal or plastics) is threaded through the aligned bores through the knuckles, along the common line 22,36. Figs. 4 to 7 show the hinge assembled in this manner.

Fig. 4 shows the lid 16 partially closed. The hinge pin 38 is captured in the line of knuckles, allowing hinging. The tab 34 is clear of the socket 24 by virtue of the relative angles of the container body and lid. As the lid continues to close, a relative angle is reached (Fig. 5) at which the tab 34 begins to enter the socket 24. The fully closed position is illustrated in Fig. 6, with the tab 34 projecting through the socket 24 into the interior of the knuckle 20, projecting substantially beyond the walls of the socket 24.

Fig. 7 shows the situation if an attempt is made to

force access to the container by pulling apart the hinge arrangement just described. If the lid is forced up in a manner which could damage the hinge pin 38, the knuckles 30 will rise relative to the knuckles 20 as shown, but so too the tab 34 rises relative to the socket 24. By appropriate dimensioning of the tab and socket, the arrangement can ensure that the tab 34 abuts the upper wall of the socket 24 to prevent further upward movement before the hinge pin has been distorted unacceptably or at all. This is the position reached in Fig. 7. No further upward movement of the lid is possible relative to the container body, because of the engagement between the tab 34 and the socket 24. The hinge pin and thus the integrity of the hinge is therefore assured.

It is to be appreciated that movement in the perpendicular direction (in the plane of the lid portion 16) is not possible by virtue of engagement between the two lid portions where they meet.

In an alternative (not shown) the tab 34 could be shaped to reach down below the hinge and engage with a socket formed further down the container wall. In either alternative, the tab could be barbed, or otherwise formed to resist removal of the tab from the socket, thereby further enhancing security.

Figs. 8 and 9 show a further alternative. Knuckles 50 on the walls carry cylindrical extensions 52, centred on the axis of the hinge pin 54. Further cylindrical extensions 56 are carried by knuckles (not shown) of the lid, and are also centred on the hinge pin 54. Consequently, the extensions 52,56 turn relative to one another as the lid is opened and closed. With the lid open (Fig. 8) they are away from each other, and the extensions 56 can pass through gaps 58 between extensions 52, to allow the hinge to be assembled and disassembled. As the lid closes, the extensions reach the position of Fig. 9, where they overlie each other and will abut to prevent the hinge being pulled apart.

It is envisaged that this arrangement could function without a hinge pin, if appropriate arrangements are made to allow assembly but prevent unwanted disassembly as the hinge turns.

It will be apparent that many variations and modifications can be made to the arrangement described above without departing from the scope of the present invention. In particular, the tab and socket could be reversed as between the container body and lid, or could be moved to different positions in the hinge. Other forms of interengaging formations could be used instead. Interengagement could be provided at all, many or only some positions along the line of the hinge, according to the degree of security required.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

Claims

1. A container comprising a lid attached to the body of a container by a hinge arrangement which has first and second hinge leaves, there being cooperating formations associated with the hinge arrangement which, at least in one relative orientation of the hinge leaves, engage to prevent the leaves being pulled apart.

2. A container according to claim 1, in which the cooperating portions are a projection formed on one leaf and a corresponding socket formed on the other leaf.

3. A container according to claims 1 or 2, in which the cooperating formations engage when the lid is closed, to prevent access to the interior of the container through pulling apart of the hinge arrangement.

4. A container according to any preceding claim, in which the hinge arrangements comprise knuckles formed on the leaves and interleaved to receive a hinge pin.

5. A container according to claim 4, in which the cooperating formations are surfaces of, or formed in, the knuckles.

6. A container according to any of claims 1 to 4, in which the cooperating formations are remote from the hinge.

7. A container according to any preceding claim, in which the cooperating formations incorporate arrangements which resist disengagement.

8. A container according to any preceding claim, in which the cooperating formations comprise part cylindrical surfaces centred in the hinge axis and turning into alignment and engagement as the hinge leaves move relative to each other.

9. A container substantially as described above with reference to the accompanying drawings.

10. Any novel subject matter or combination including novel subject matter disclosed herein, whether or not within the scope of or relating to the same invention as any of the preceding claims.

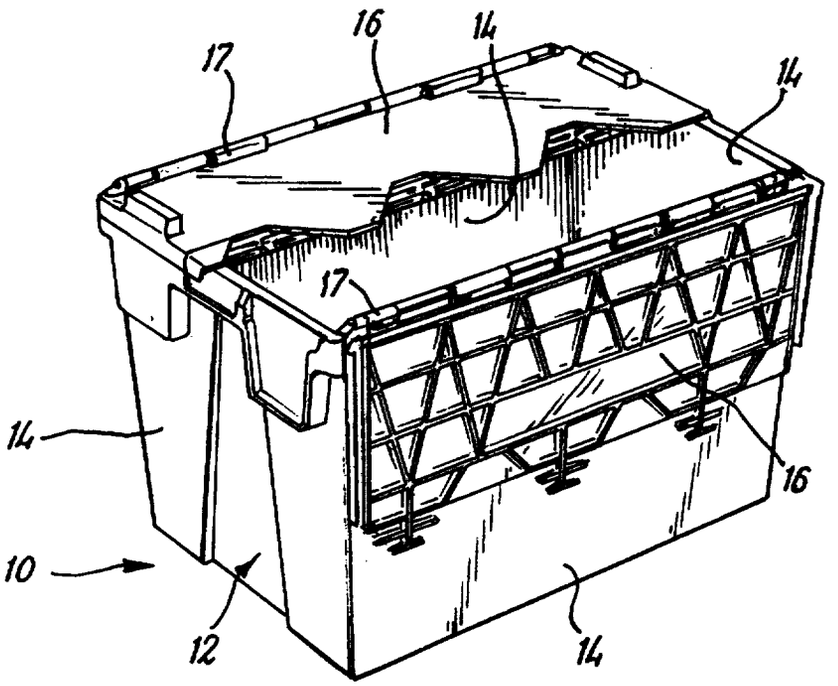

FIG. 1

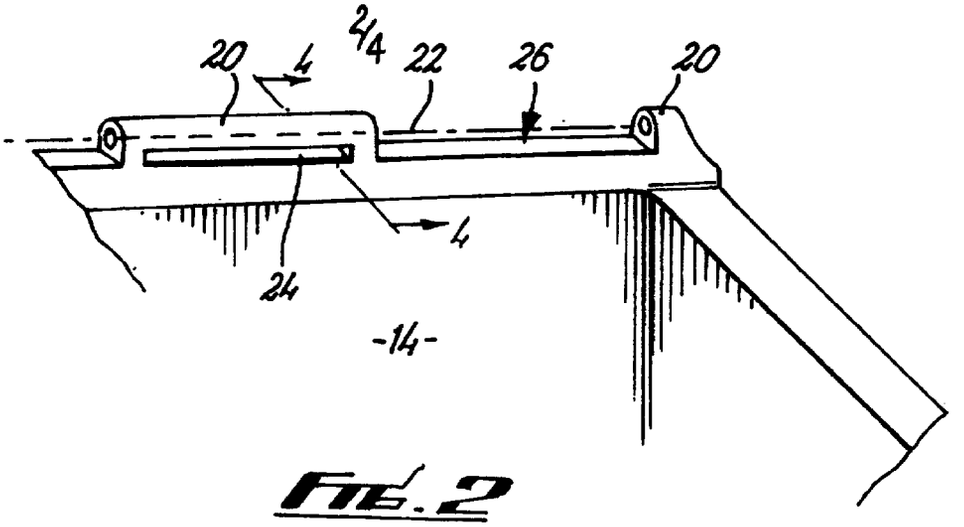

FIG. 2

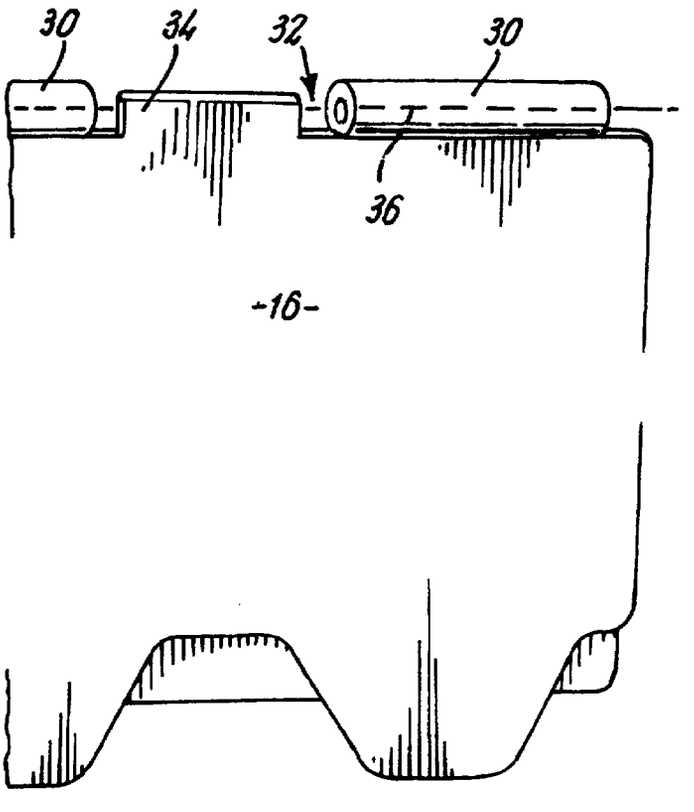

FIG. 3

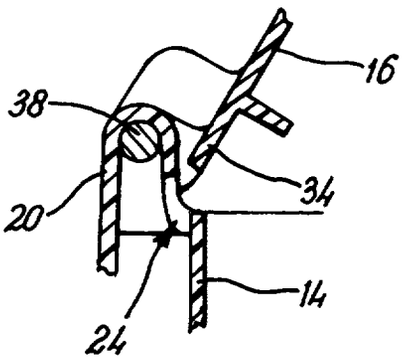

FIG. 4

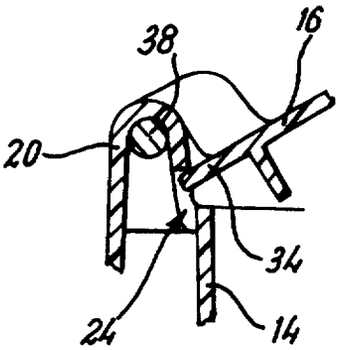

FIG. 5

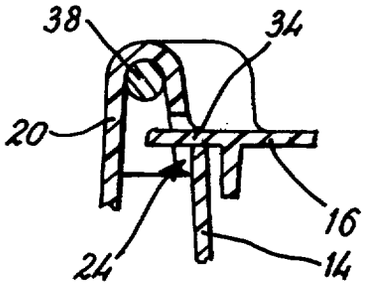

FIG. 6

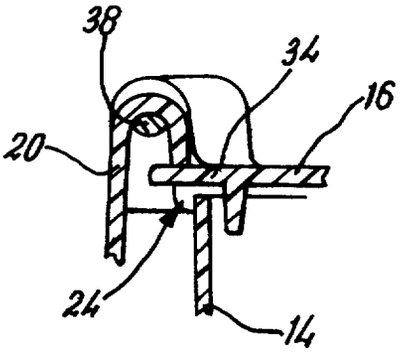

FIG. 7

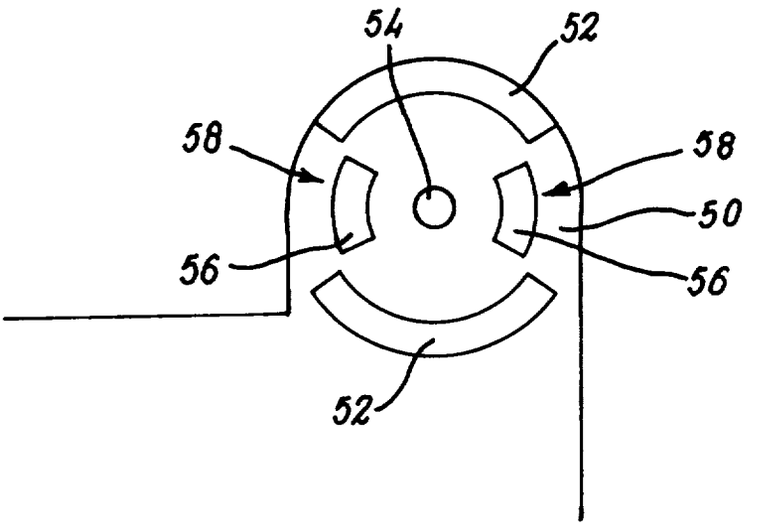

FIG. 8

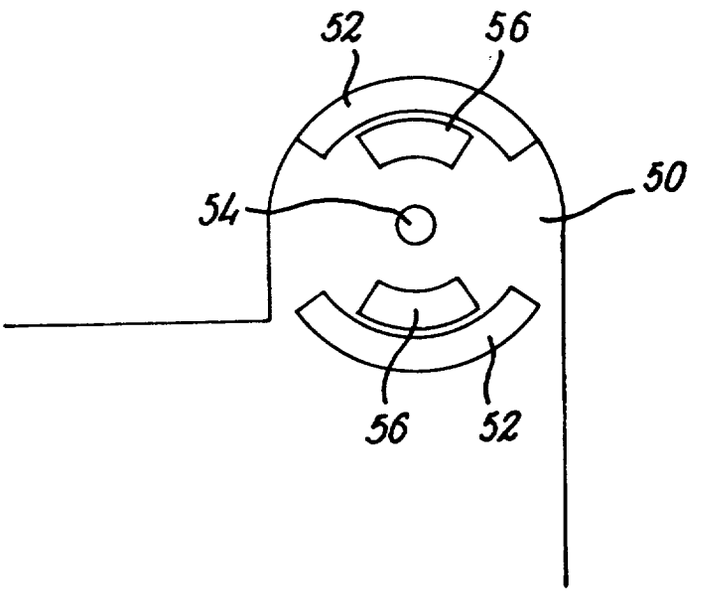

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 98 30 2013

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE 33 41 855 A (OTTO BERNS GMBH) 13 June 1985 * page 7, line 14 - page 10, line 2 * * figures 1-11 *	1-10	B65D43/16 E05D11/00 E05D7/10
X	FR 2 555 237 A (THIRIET PHILIPPE) 24 May 1985 * page 3, line 21 - page 3, line 37 * * page 4, line 30 - page 5, line 5 * * figures 1,2 *	1-5	
A	EP 0 356 322 A (ALLIBERT SA) 28 February 1990 * page 2, column 1, line 46 - page 2, column 2, line 11 * * page 3, column 3, line 43 - page 3, column 4, line 29 * * figure 2 *	1,6,7	
A	EP 0 070 611 A (CURVER BV) 26 January 1983 * abstract * * figure 13 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D
B65F
E05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 July 1998	Farizon, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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