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(54) Title: BOX WITH LID AND HANDLE

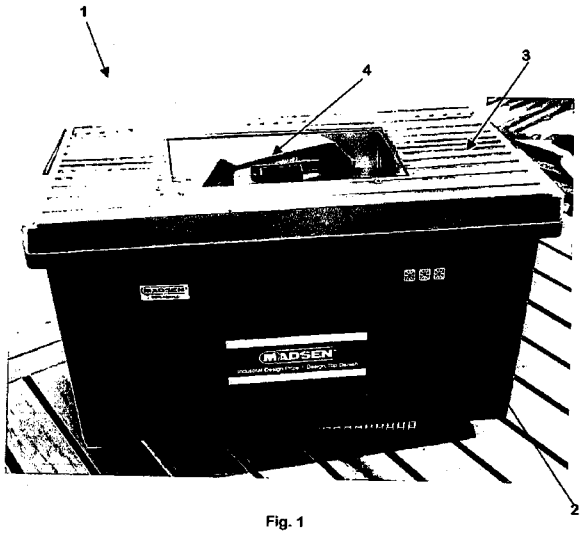


Fig. 1

(57) Abstract: A storage device (1) comprising a box (2) having a lid (3) with a handle (4), where the lid is locked to the box by a horizontal movement of the handle. The handle (4) has a male part adapted to be penetrated into a female part provided in the box or in the box and the lid in order to lock or unlock the lid from the box. When the lid is locked to the box the handle (4) is displaced somewhat 20° in relation to the length direction of the box. In this way a very simple way to provide a box with a handle having a locking mechanism, that constitutes only machining of three parts, namely the box (2) the lid (3) and the handle (4). Moreover a very ergonomic design for a users point of view is achieved. Further it is advantageous that a user has achieved a very ergonomic design of the handle, when the user transport the storage device, due to the direction of the handle in relation to the length direction of the storage device under transport.

BOX WITH LID AND HANDLE

The invention relates to a storage device comprising a box provided with a lid and a handle, where the handle has locking means adapted to lock the lid to the box.
Such storage devices are well known in the art.

EP 1520 660 B1 discloses a storage device comprising a box having a lid and a handle.
In order to lock the lid to the box, a handle is adapted to operate a locking mechanism, such that when the handle is swung from a vertical orientation to a horizontal orientation, then the locking mechanism will release the lid form the box.
When the handle is swung from the horizontal orientation to the vertical orientation, then the lid will be locked from the box.
The locking mechanism itself consists of a locking element that is adapted to be fixed in two recesses in the handle, depending how the orientation of the handle is provided. In other words a somewhat complex locking mechanism as far manufacturing costs of the device is involved.

It is also noted, that when the known box is carried, the orientation of the handle is parallel with the box, which is not the most suitable direction in relation to the direction of a users hand, when the user transport the storage device.

A further example of known storage devices having a lid not hinged to the box, can be seen in to WO 2009/149965 Al.

On this background it is an object of the invention to reach to a storage device that is simpler constructed than the known devices. Moreover it should also be more ergonomic designed, in the sense that a user obtains a more comfortable feeling, when carrying transporting the storage device.

The object of the invention is achieved in a storage device of the kind defined in the introductory part of claim 1, that is characteristic in that, the locking means consist of a male part and a counter part, such as a female part, where the mail part constitutes of a part of the handle, whereas the counter part is provided in the box or in the box and the lid, and in that the male part is operated by a horizontal swivelling of the handle, such that when the lid is locked to the box, then the direction of the handle is approximately 20° displaced in relation to the lengthwise direction of the box.

In this way a simple storage box build up of few components are achieved as well as a very ergonomic design is incorporated.

It is an advantage if as stated in claim 2, that the 20° direction of displacement of the handle in relation to the direction of the lengthwise direction of the box, depends whether a left hand- or a right hand user uses it.

To implement the storage device with few components, it is advantageous if as

stated in claim 3, that the male part has a vertical part, passing through a hole in the lid, and in that the vertical part is terminated by a horizontal part or as stated in claim 4, that the male part has a horizontal part, and a vertical part that is passing through a hole in the lid, said horizontal part is terminated by an oblique - angled taper

More expedients embodiments of the invention are outlined in claim 5 - 8.

Especially as stated claim 9, that the lid is coupled to the box by at least two L-formed top profile on the top of the box, said profiles being coupled to a corresponding plurality of downward pointing L formed profiles in the bottom of the lid, and where the taper is arranged to be seated in a channel provided between the L-formed profiles, thereby locking the profiles to each other and the lid to the box, a very robust

coupling of the lid to the box as a secure locking of the L- formed profiles during transportation of the storage device is achieved.

For an easier manufacturing of the components, that define the storage device, it is an advantage, if as stated in claim 10, that the handle has an extended vertical part that passes through a hole in the lid, said extended part is terminated by an elastic taper, having bigger dimensions than the hole in the lid.

To secure the lid properly to the storing device box during transport it is expedient, if as stated in claim 11, the horizontal bar is vertical moveable in a slot and a depression as well, said depression is narrower than the longer slot, and where the slot and the depression both are provided in the box.

The invention will now be more fully explained in connection with the drawings, in which

Fig. 1 shows a basic storage device according to the invention,

Fig. 2 - 7 shows in cross sectional different embodiments of storage devices having lids hinged to the storage device,

Fig. 8 - 11 shows in cross sectional different embodiments of storage devices having lids not hinged to the storage device,

Fig. 12 - 14 and fig. 18, shows in cross sectional different embodiments of alternative versions of these of fig. 2-7,

Fig. 15 -17 shows different alternatives in cross sectional embodiments of storage devices having lids not hinged to the storage device,

Fig 19 - fig 20 shows in cross sectional a storage device having an incorporated lock that locks the lid the storage device during transport of the storage device,

Fig 21 - 23 shows from above a storage device with a handle adapted, when a user wish to shift between right and left hand.

Fig. 24, 25 shows schematic in cross sectional an embodiment of a storage device in which the lid of the storage device is coupled to the box by profiles, whereas

fig 26- 27 shows from above how the lid is locked to the storage device in fig. 24 and fig. 25 by use of the principles according to the invention.

As seen from fig. 1 a storage device according to the invention is designated with the number 1.
The storage devise consists of a box 2, having a lid 3, that can be fixed to the box 2 by an hinge or can be loosely or otherwise placed on the top of the box as explained later.
Further a handle 4 is located on the lid 3, said handle is adapted to lock or unlock the lid from the box 2.

Fig. 2 and fig 3. shows the box 2 having its lid 3 connected to the box 2 by a hinge 6.
The handle 4 is equipped with a vertical extension part 7, that passes through the lid 3.
This vertical part is equipped with a horizontal part 8.
The handle can be moved in a horizontal direction fx. 20° in relation to the lengthwise direction of the box 2.
In this way it is possible to lock or unlock the lid from the box, since when the handle is arranged in the lengthwise direction of the box, it will have no connection to the box, whereas when it takes the position in fig. 3 it will pass through a hole 10 in the box 2 and then lock the lid to the box 2.
In other words it is very simply to lock and unlock the lid from the box by a simple movement of the handle in a horizontal direction, and as it will be further explained later, a very ergonomic effect for a user is obtained.

The fig. 4 version differs from fig. 2 in that the lid 3 is equipped with a hole 12 in a vertical extension part 5 that is adapted to led the horizontal extended part 8 pass through the hole 12, and then contribute to a stronger lock of the lid 3 to the box 2.
The fig. 5 version differs from fig. 4 in, that a further hole 10a is provided in the box 2 near the hinge 6, and again giving a stronger lock of the lid 3 to the box 2.

The version in fig. 6 differs from the version in fig. 4 in that the extended vertical part 5 is placed outside the box 2, whereas the fig. 7 version shows combinations on the versions in fig. 4 -6.

Now coming to the versions shown in fig. 8 - 10, they differs basically in that the hinge 6 in fig 2 - 7 are omitted.

The fig 8 version has in stead of a hinge a horizontal extended prolonged part 8b that is and led through a hole 10b in the box 2.

The fig. 9 version corresponds to the fig 8 version but have its extended parts led through holes 12a , 12b in vertical parts of the lid.

The fig. 10 version corresponds to that of the fig. 7 version, but differs in that the extended vertical part 8d passes through two further holes in the box 2 and four extended vertical parts in the lid 3.

Fig. 11 corresponds to the fig. 10 version where the extended horizontal part is prolonged and led through two holes in the box 2 but only two holes 12, 12b in the vertical extended part 8c the lids.

The versions of fig. 12 - 14 has replaced the holes in the box 2 by at least one edge 14, that is adapted to retake up the extended horizontal part 8 of the handle 4.

The fig. 15 and 16 versions correspond to the fig. 12 - 14, but without hinges.

The versions in fig 17 and 18 differ from the foregoing versions in that the handle 4 at its underside is equipped with an elastic taper 15, adapted to be penetrated in a hole 16 in the lid 4.
In this way it is easy to manufacture the handle as a sole component that is easy to mount and being not replaceable in the slot in the hole 16 due to the elastic properties of the taper 15.

In order to secure the lid properly to the storage box, especially during transport, a modified slot 10 with an extra depression in the box is presented in fig. 19 and fig. 20.

According to fig. 19 and fig. 20, it is seen that the extended vertical part 7 of the handle 4 is terminated by the horizontal part 8, that is moveable in a longer slot 10 and a narrower depression 24, both of which are provided in the wall of the box. When a user presses the handle downwards, his force will apply a movement to the handle downwards and able the user to swing the handle in a horizontal movement, that offers him the possibility to lock and unlock the handle, so that the lid will be unlocked from or locked to the box, in the same way as already explained earlier.
The lid can afterwards be released from the box 2, when the user presses the handle downwards and free the horizontal bar 8 from the depression 24. He can then swing the handle in an opposite horizontal direction in order to release the horizontal part 8 from the slot 10 and lift the lid from the box.

In order to adapt the invention to all users, i.e. right or left handed users attention is drawn to fig. 21 to fig 23.

In these figures the box 2 with handle 4 and the lid is seen from above.

In fig. 21 it is seen that the direction of the handle 4, has the same direction as the length of the box itself.

In fig. 22 the handle is moved left about 20°relative to the length of the box direction resulting in that the horizontal extended part 8 accesses the hole holes in the box or the lid as earlier explained.
In fig 23. is seen that the handle 4 is again moved 20° relative to the length of the box but now to the right in relation to the length of the box.
In both situations it is noted that when a user transport the storage device the handle will fit to the orientation of the users hand.

In other word the lengthwise direction if the storage devise will not seek to be affected through the users hand forces. In normal position of a users hand it is directed about 20° in relation to direction of his view.

From above it can be concluded, that a very ergonomic design of a storage box having a lot of other advantages is the result of the invention.

The four last figures 24 - 27 demonstrates a storage box where the lid is releasable couple to the box by using special profiling between the lid an the box.
The basic idea of how the details how the lid is coupled to the box can be found in the above mentioned WO 2009/140965 Al.

For these reasons only the necessary parts of the coupling in order to understand the use of the invention are explained here.

In the figures 24 designates couplings means in form of a top formed L-profile 27 in a lid that is adapted to be coupled to means 30 that are arranged to form a hole or a passage 23 that is adapted to accommodate a taper 19. This taper 19 terminates ,cf. fig. 27, in such a way, that when the taper is placed as shown in fig. 24 and 27, then the lid will be locked or unlocked to the not shown box.

As already explained the handle is moveable in horizontal direction in order to lock or unlock the lid to the box, incorporating al the advantageous as ergonomic lift and so on.

Even that the invention is explained in relation to especially of tool boxes it is noted, that within the scope of the claims , the invention can be used in connection with a lot of other boxes, such as handbags, beaty boxes, coffers and the like.

CLAIMS

1. A storage device (1) comprising a box (2) provided with a lid (3) and a handle (4), where the handle has locking means adapted to lock the lid to the box, characterized in, that the locking means consist of a male part and a counter part, such as a female part, where the mail part constitutes of a part of the handle (4), whereas the counter part is provided in the box (2) or in the box and the lid, and in that the male part is operated by a horizontal swivelling of the handle (4), such that when the lid (3) is locked to the box, then the direction of the handle is approximately 20° displaced in relation to the lengthwise direction of the box.

2. A storage device according to claim 1 characterized in, that the 20° direction of displacement of the handle in relation to the direction of the lengthwise direction of the box, depends whether a left hand- or a right hand user uses it.

3. Storage device according to claim 1 or 2, characterized in, that the male part has a vertical part (7), passing through a hole in the lid (3), and in that the vertical part (7) is terminated by a horizontal part (8).

4. Storage device according to claim 1 or 2, characterized in, that the male part has a horizontal part (8), and a vertical part (7) that is passing through a hole in the lid, said horizontal part (8) is terminated by an oblique - angled taper (19).

5. A storage device according to claim 1 - 4, characterized in, that the lid is hinged to the box, and in that the female part consist of a hole, such as a slot, in the box and a hole in the lid, or consist of two holes, such as two slots in the lid, and one hole in the box.

6. A storage device according to claim 1 - 4, characterized in, that the lid is only locked to the box by the male part having an extended part (7) passing through a hole in the lid, said extended part has two symmetrical horizontal parts, and in that the female parts consist of two holes in the box or two holes in the box and the lid or four holes in the ltd and two holes in the box.

7. A storage device according to claims 1 - 4, characterized in, that the lid is hinged to the box and that the counter part, consists of an edge (14) in the box or consist of an edge and a hole in the ltd or consists of two edges and a hole in the lid.

8. A storage device according to claim 1- 4 characterized in, that the lid is only locked to the box by the male part having an extended part (7) passing through a hole in the lid, said extended part has two symmetrical horizontal parts, and in that the counter parts consist of two edges (14,14a) in the box or consist of two holes in the lid and two edges in the box.

9. A storage device according to claim 4, characterized in, that the lid is coupled to the box by at least two L-formed top profile (27) on the top of the box, said profiles being coupled to a corresponding plurality of downward pointing L formed profiles in the bottom of the lid and where the taper (19) is arranged to be seated in a channel (23) provided between the L-formed profiles, thereby locking the profiles to each other and the lid to the box.

10. A storage box according to claim 1 - 9, characterized in, that the handle has an extended vertical part (16) that passes through a hole in the lid, said extended part is terminated by an elastic taper (15) having bigger dimensions than the hole in the lid.

11. A storage device according to claim 1 - 9, characterized in, that the horizontal bar (8) is vertical moveable in a slot (10) and

a depression (24) as well, said depression is narrower than the longer slot, and where the slot and the depression both are provided in the box.

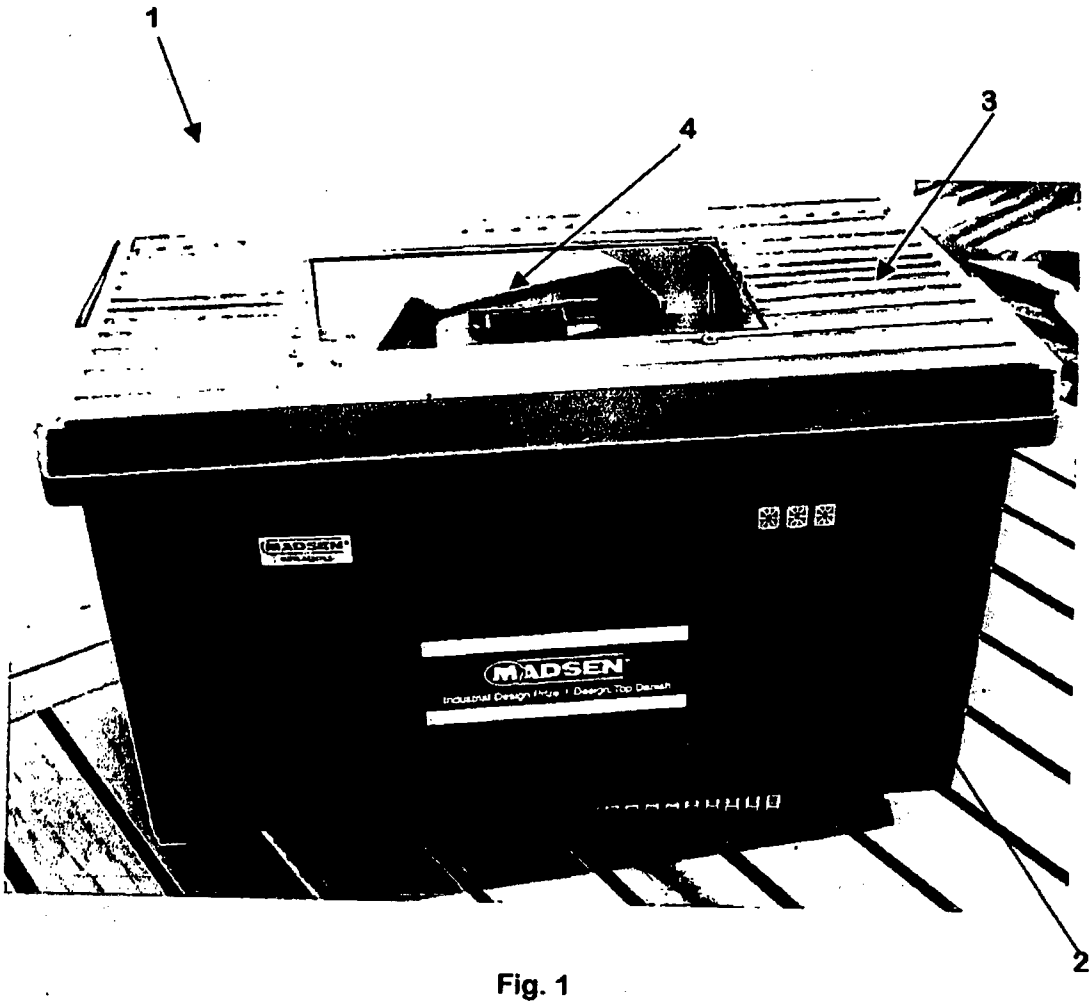


Fig. 1

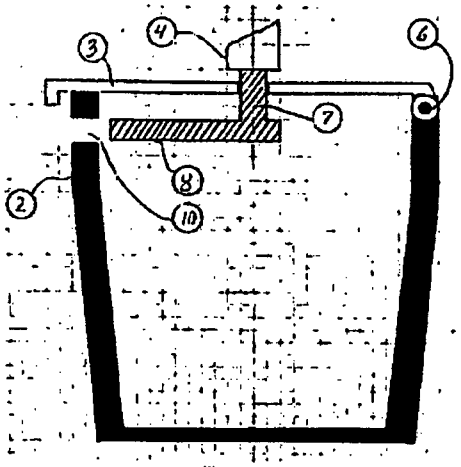


Fig. 2

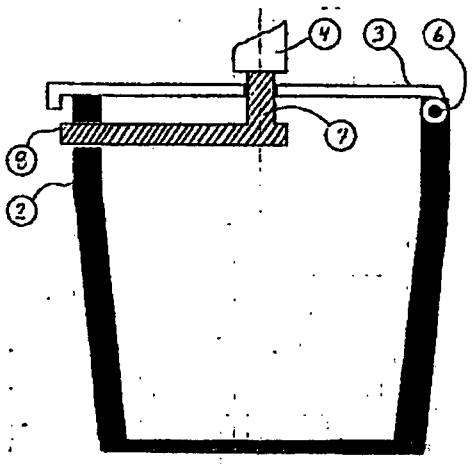


Fig. 3

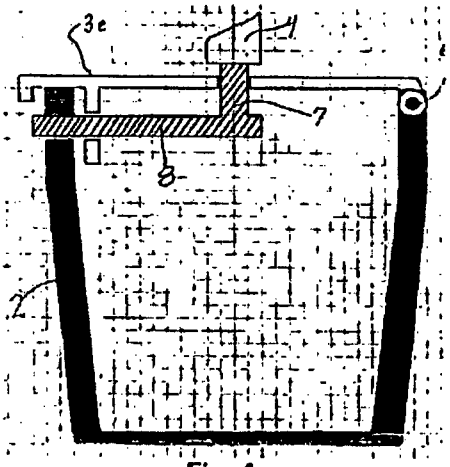


Fig. 4

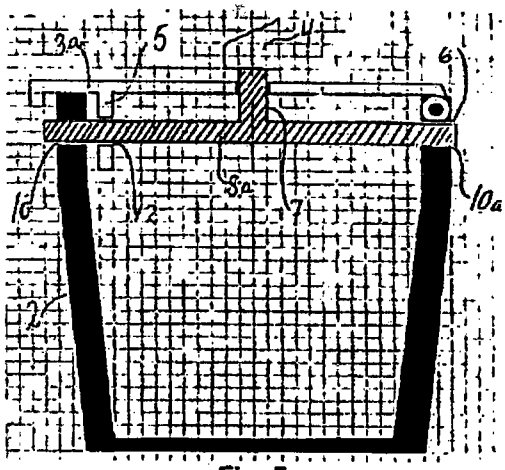


Fig. 5

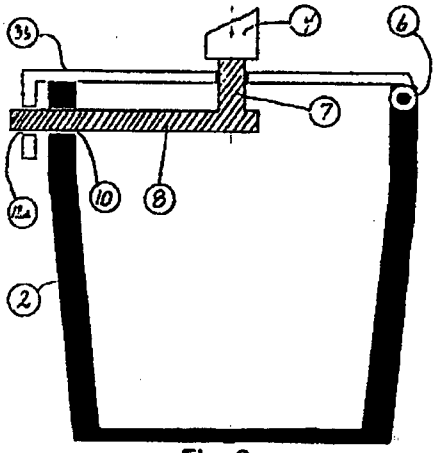


Fig. 6

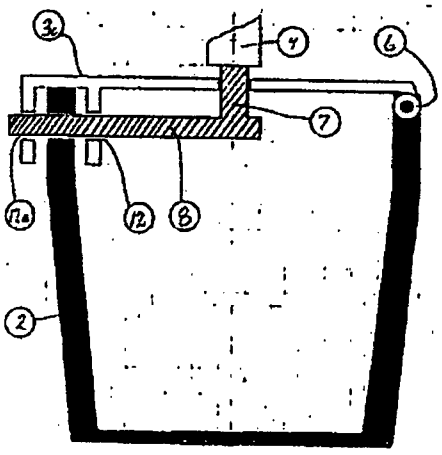
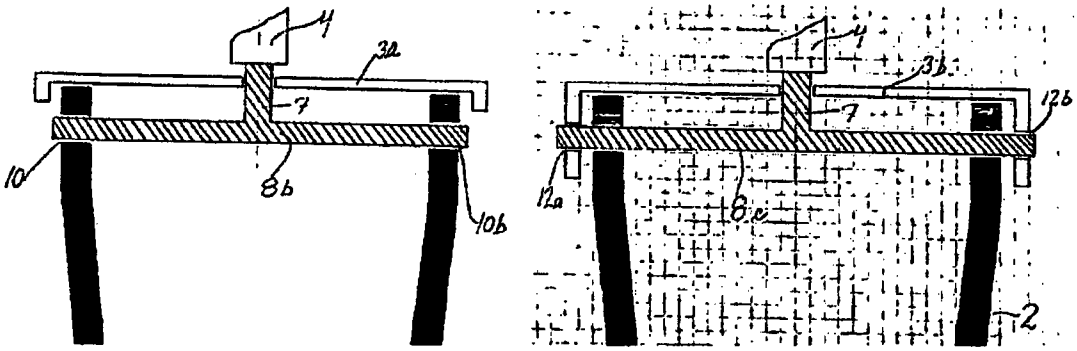


Fig. 7


4
3a
7
10
8b
10b
4
3b
7
12b
12a
8c
2

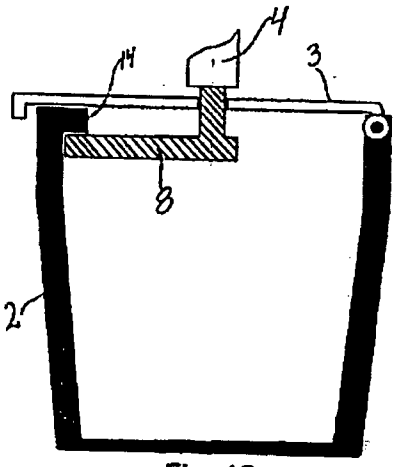


Fig. 12

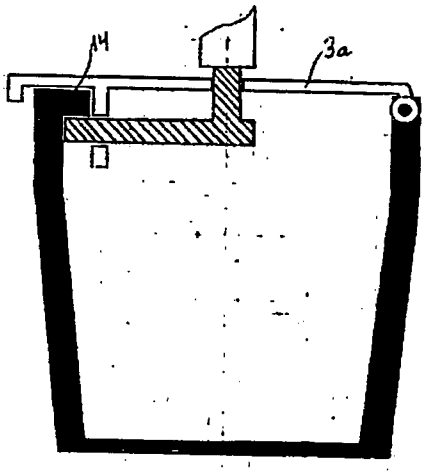


Fig. 13

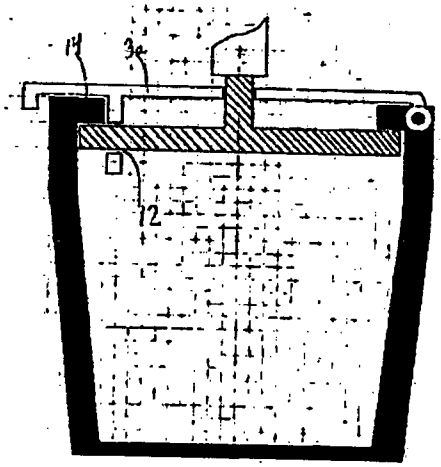


Fig. 14

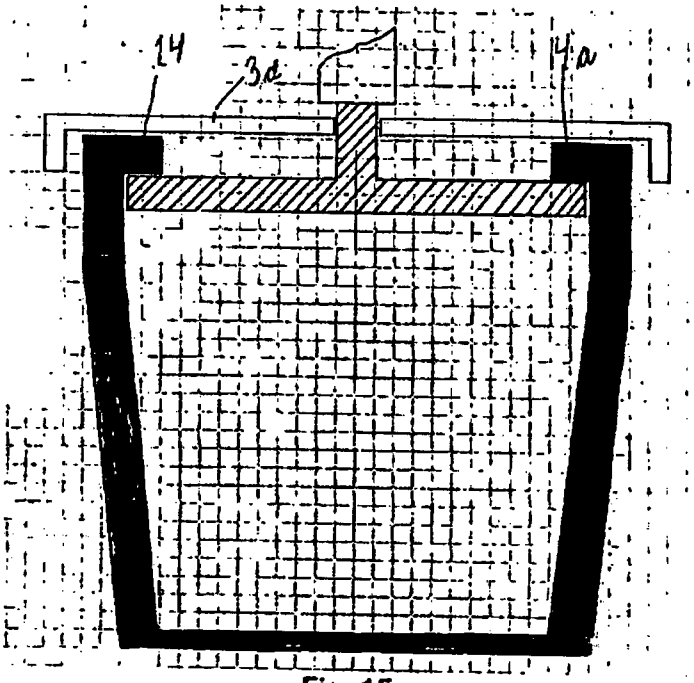


Fig. 15

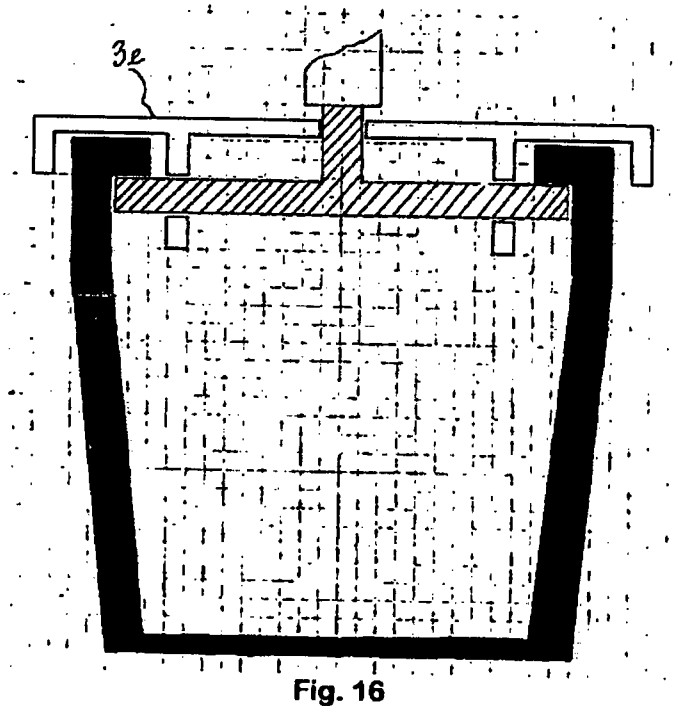


Fig. 16

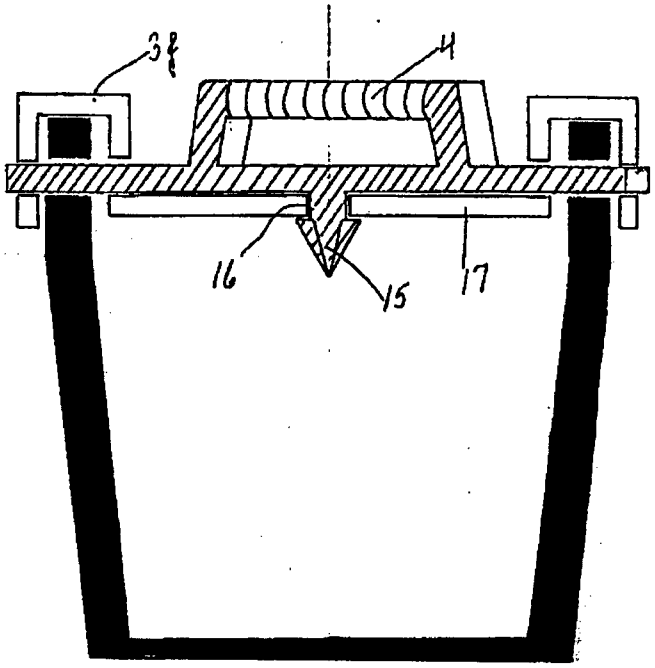


Fig. 17

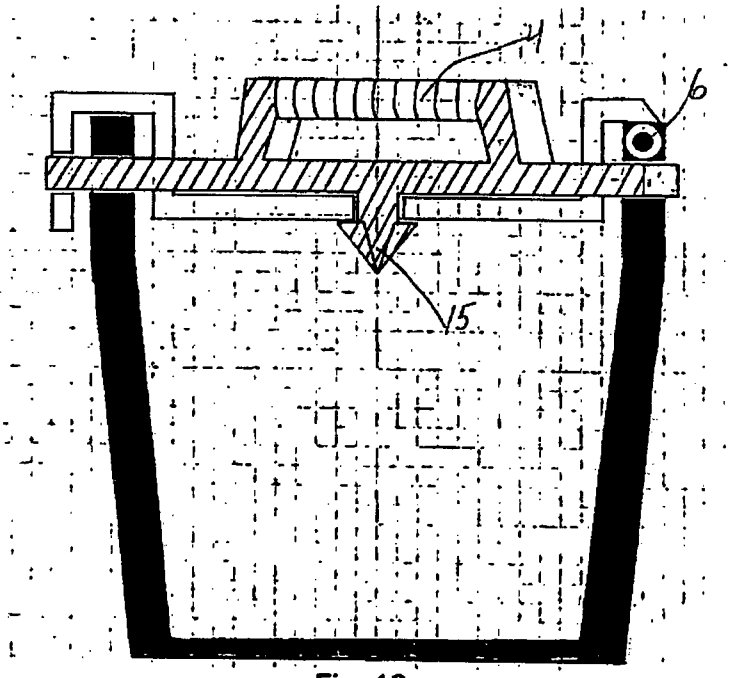


Fig. 18

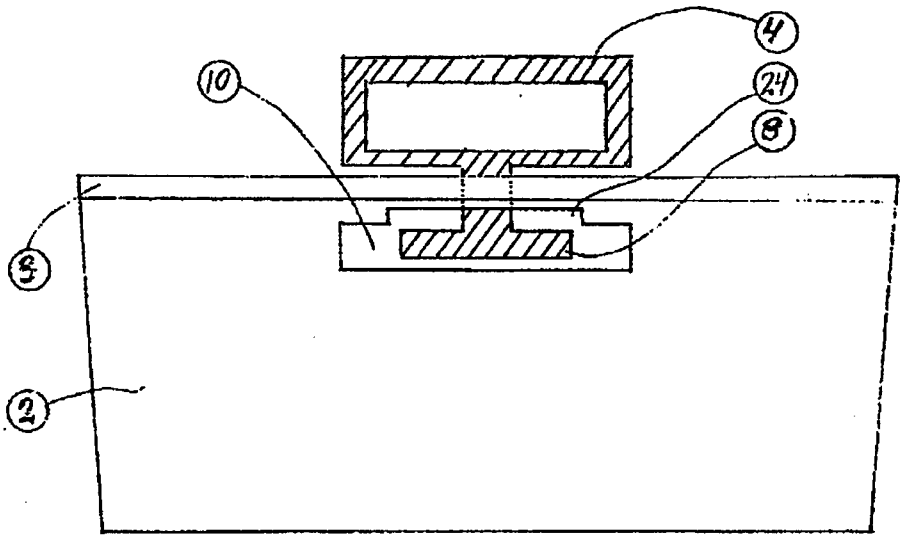


Fig. 19

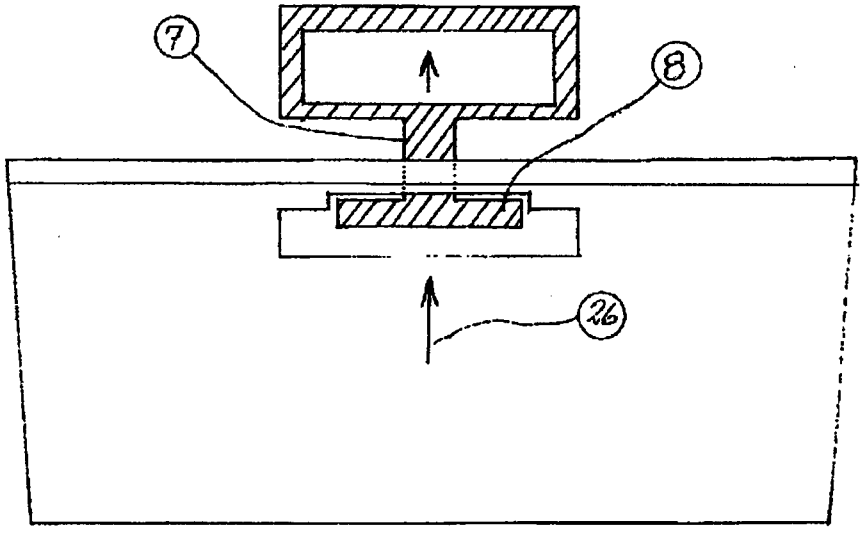


Fig. 20

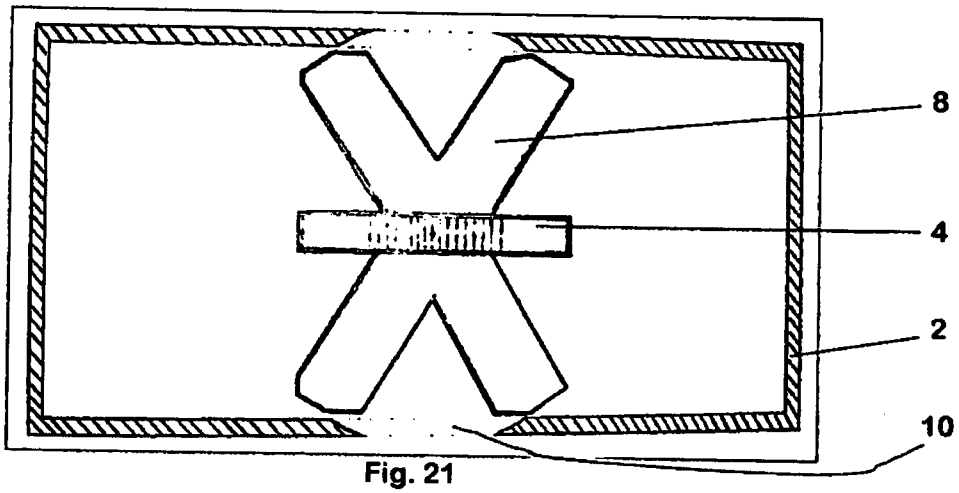


Fig. 21

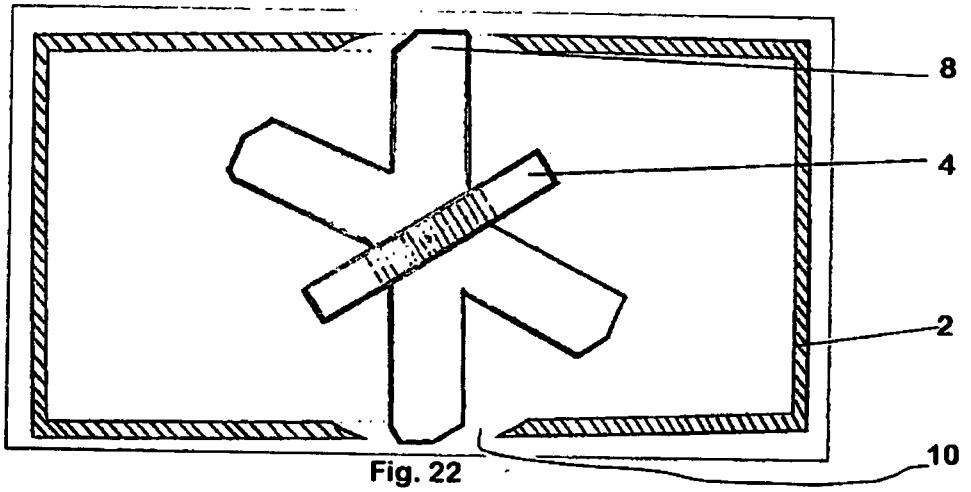


Fig. 22

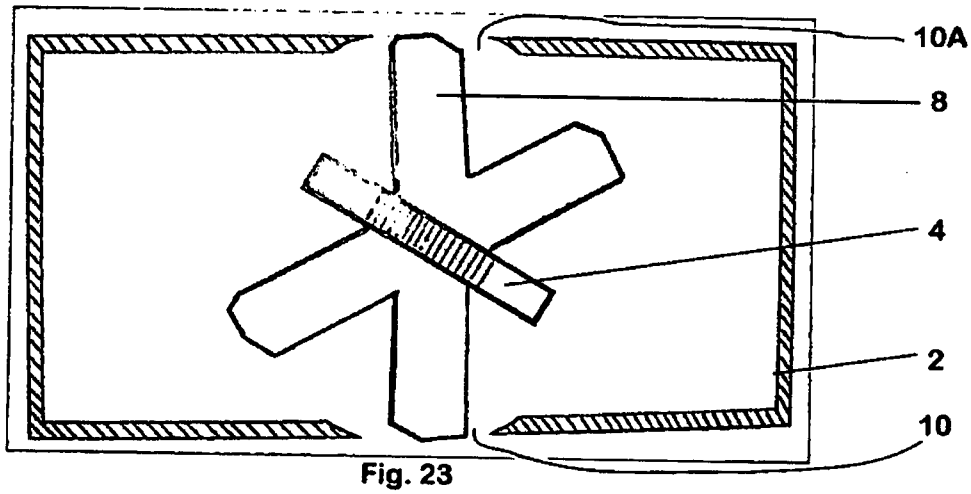


Fig. 23

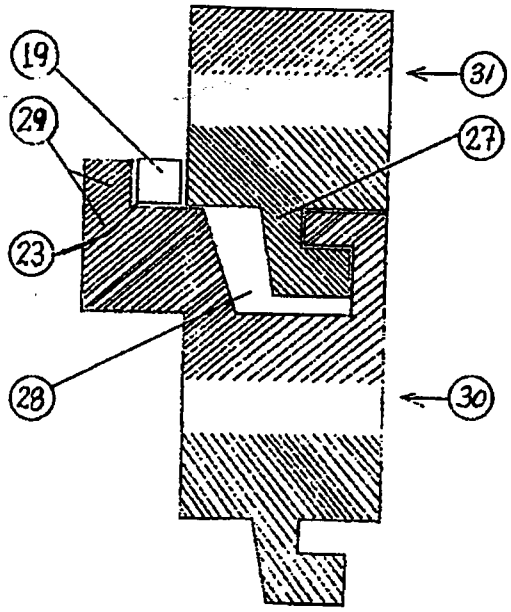


Fig. 24

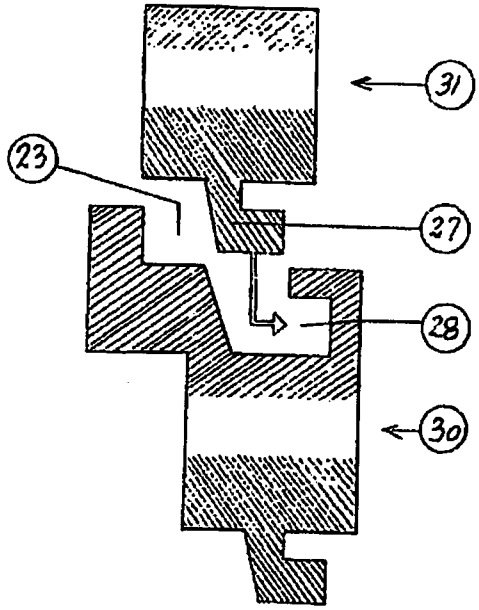


Fig. 25

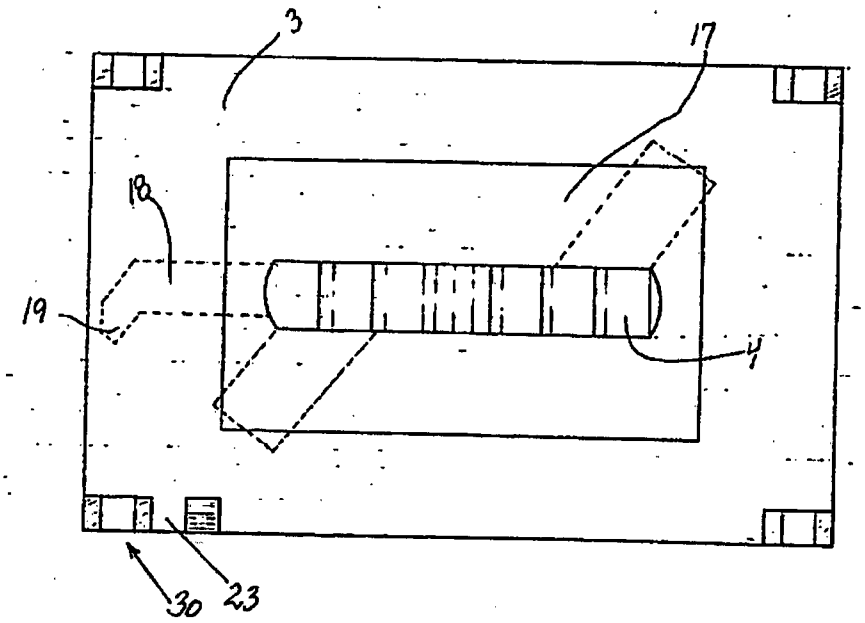


Fig. 26

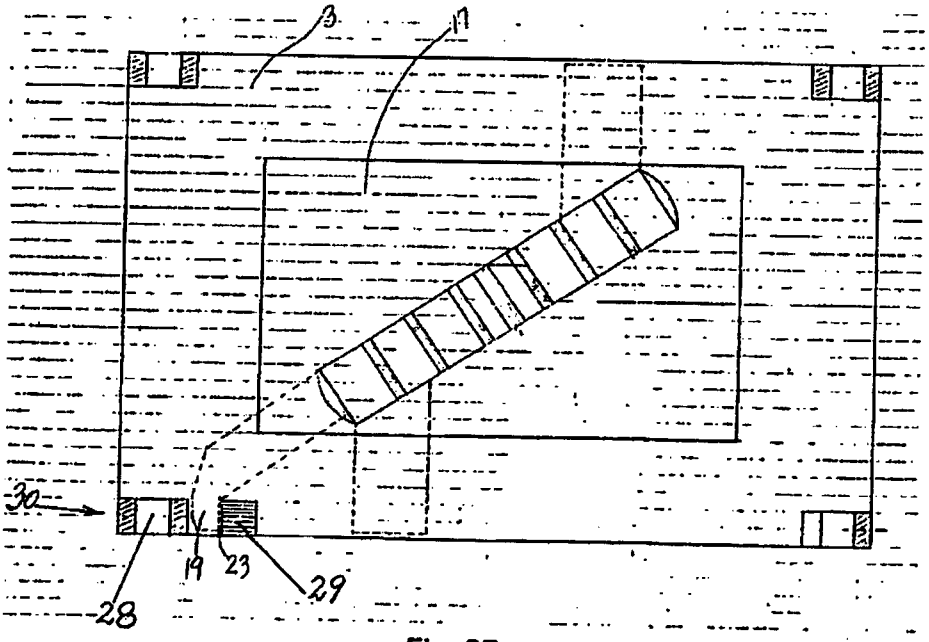


Fig. 27

INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2011/000061

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D25/28 B65D43/26 A45C13/28 B25H3/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D A45C B25H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 23 22 358 Al (STOCKSMEI ER) 14 November 1974 (1974-11-14) page 1, line 21 - page 2, line 30 page 6, line 3 - page 30; figure 1	1,2
A	EP 1 520 660 A2 (ZAG IND LTD [IL]) 6 Apri l 2005 (2005-04-06) cited in the appl icati on paragraph [0043] - paragraph [0045] ; figures 11-3 , 11	1
A	EP 0 668 129 Al (IND TAYG S L [ES]) 23 August 1995 (1995-08-23) col umn 2, line 3 - line 37; figure 4	1
A	US 2 437 099 A (LOUIS KRUPP) 2 March 1948 (1948-03-02) col umn 2, line 7 - line 35; figures 1-3	1

-/- ·

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 September 2011	22/09/2011

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Newell, Philip

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INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2011/000061

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2009/140965 A (MADSEN) 26 November 2009 (2009-11-26) cited in the application the whole document	9

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/DK2011/000061

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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EP 1520660 A2	06-04-2005	US 2005072789 A1	07-04-2005
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		US 2011139665 A1	16-06-2011