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(71) Applicant
Georg Knoblauch
Hahnlestrasse 24, Industriegebiet Reid,
D 7928 Glengen/Brenz, Federal Republic of Germany

(72) Inventors
Georg Rau
Werner Hiltzler
Gerhard Riess

(74) Agent and/or Address for Service
Hughes Clark & Co
63 Lincoln's Inn Fields, London, WC2A 3JU,
United Kingdom

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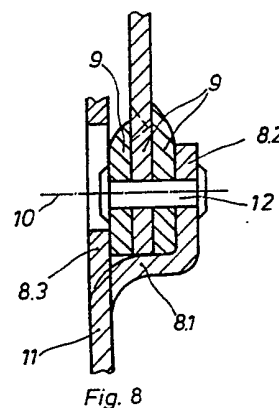
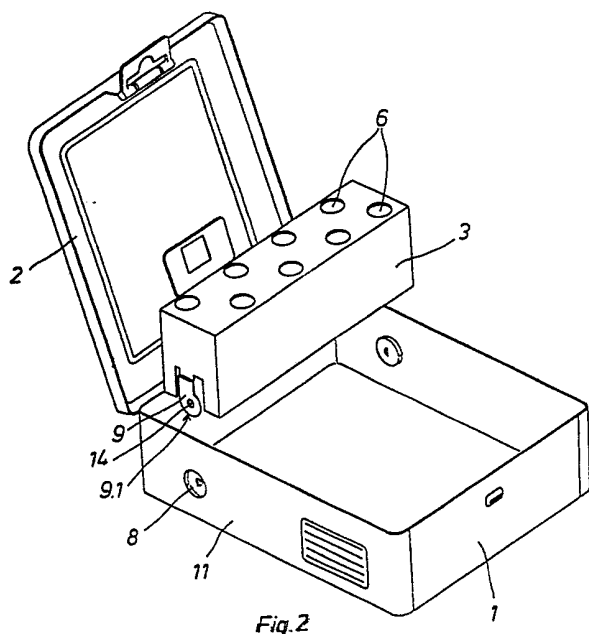
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(54) Box for storing elongate articles

(57) A box for storing tools such as twist drills comprises a container in which at least one pivotal insert (3) for receiving the tools is pivoted between two side walls (11). The pivotal insert (3) mounted within the container by cooperation of mounting tongues (9) with shells formed on the walls (11). Each shell (8) has a part-cylindrical bottom (8.1) which is concentric with the pivot axis (10) of the insert (3). One edge of the bottom (8.1) is connected to a side wall (11) while the opposite edge carries a mounting plate (8.2) which is parallel to the side wall (11) and carries the pivot member (12) for the pivotal insert. At its free end each of the mounting tongues (9) is provided with a mounting surface (9.1) in the form of a circular arc which corresponds to the internal radius of the cylindrical mounting shell (8).



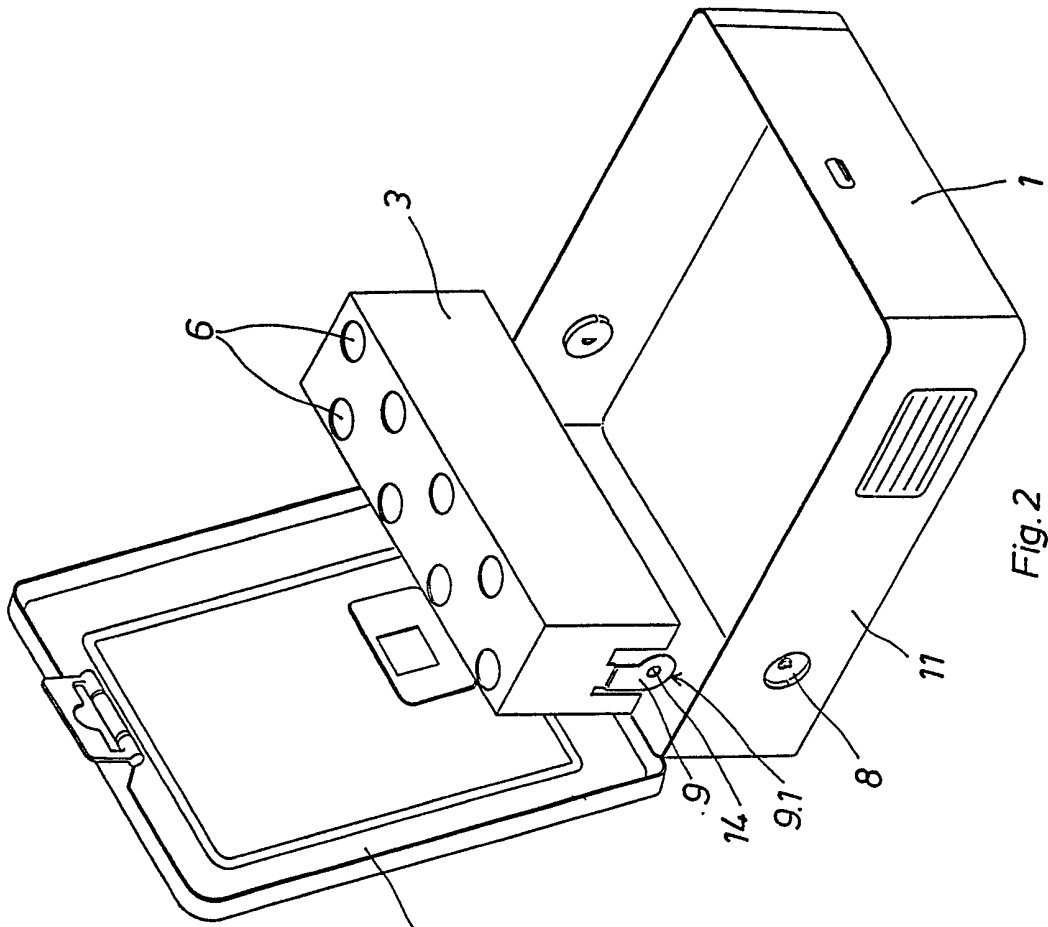


Fig. 1

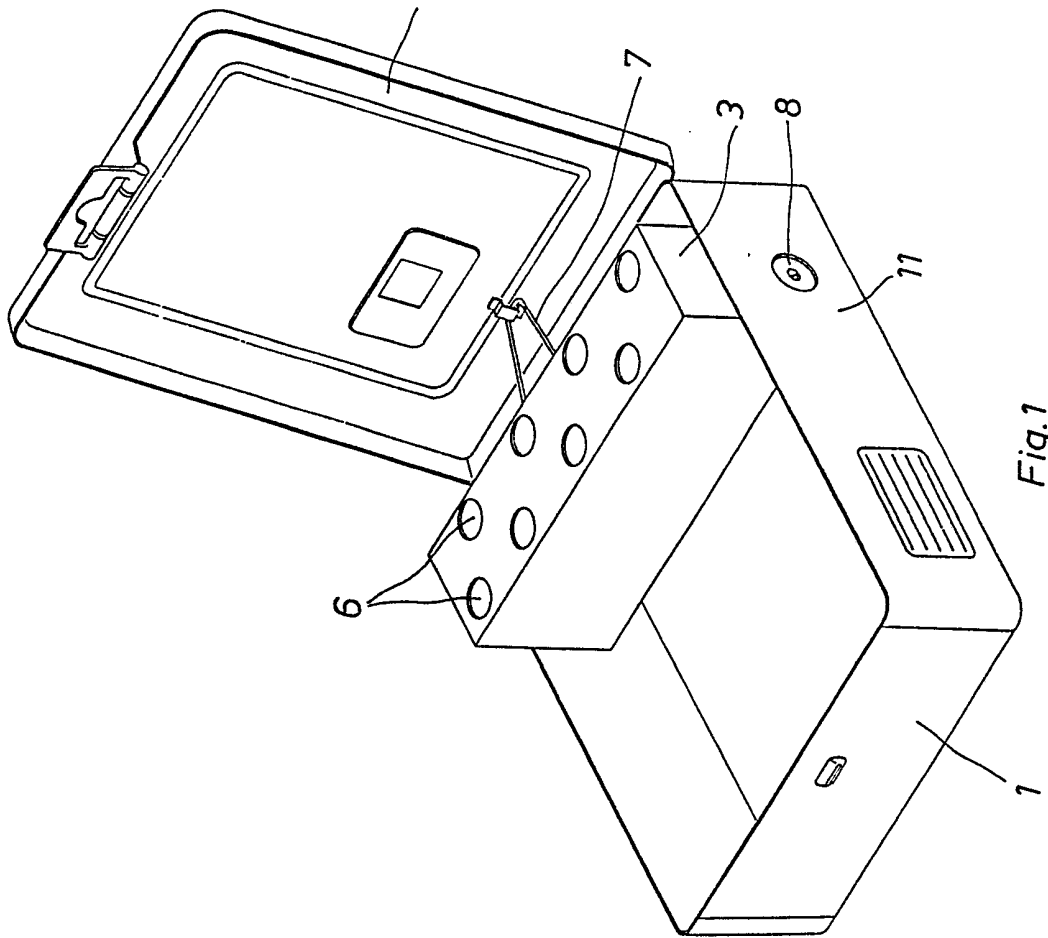


Fig. 2

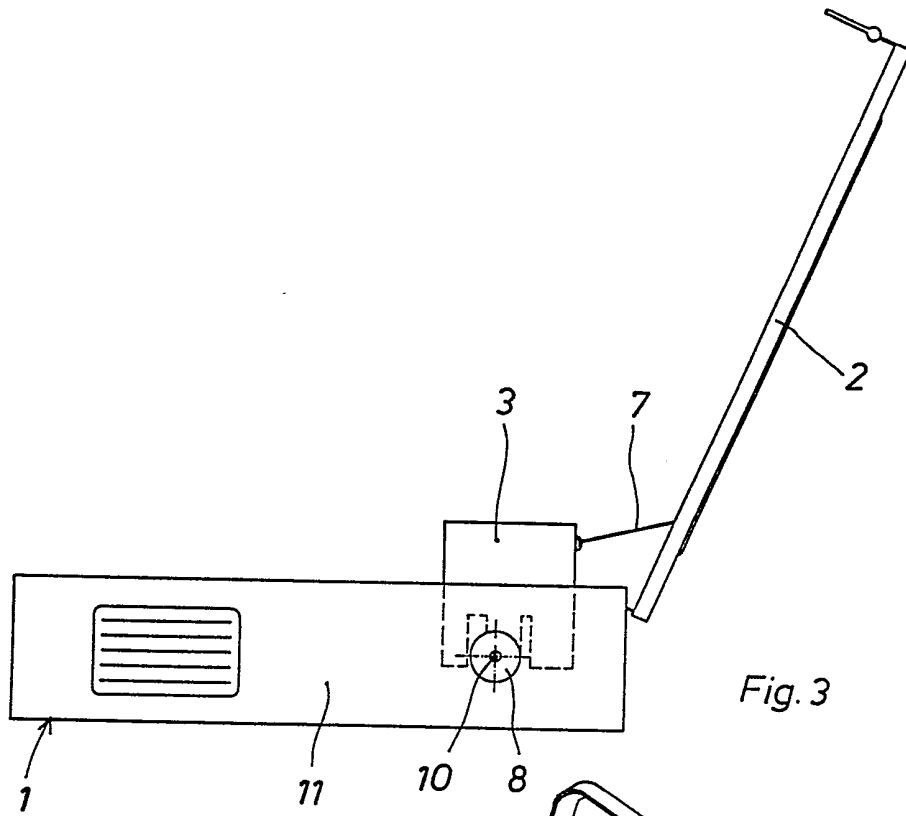


Fig. 3

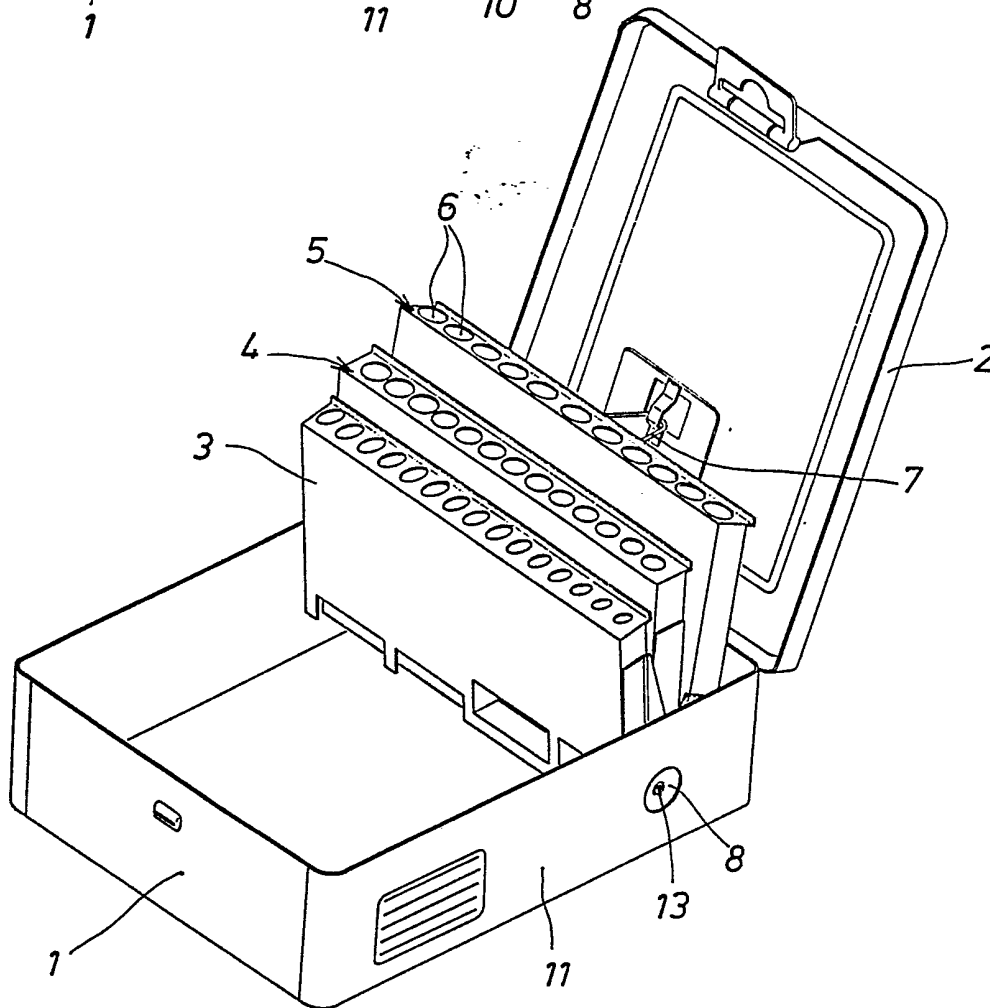


Fig. 4

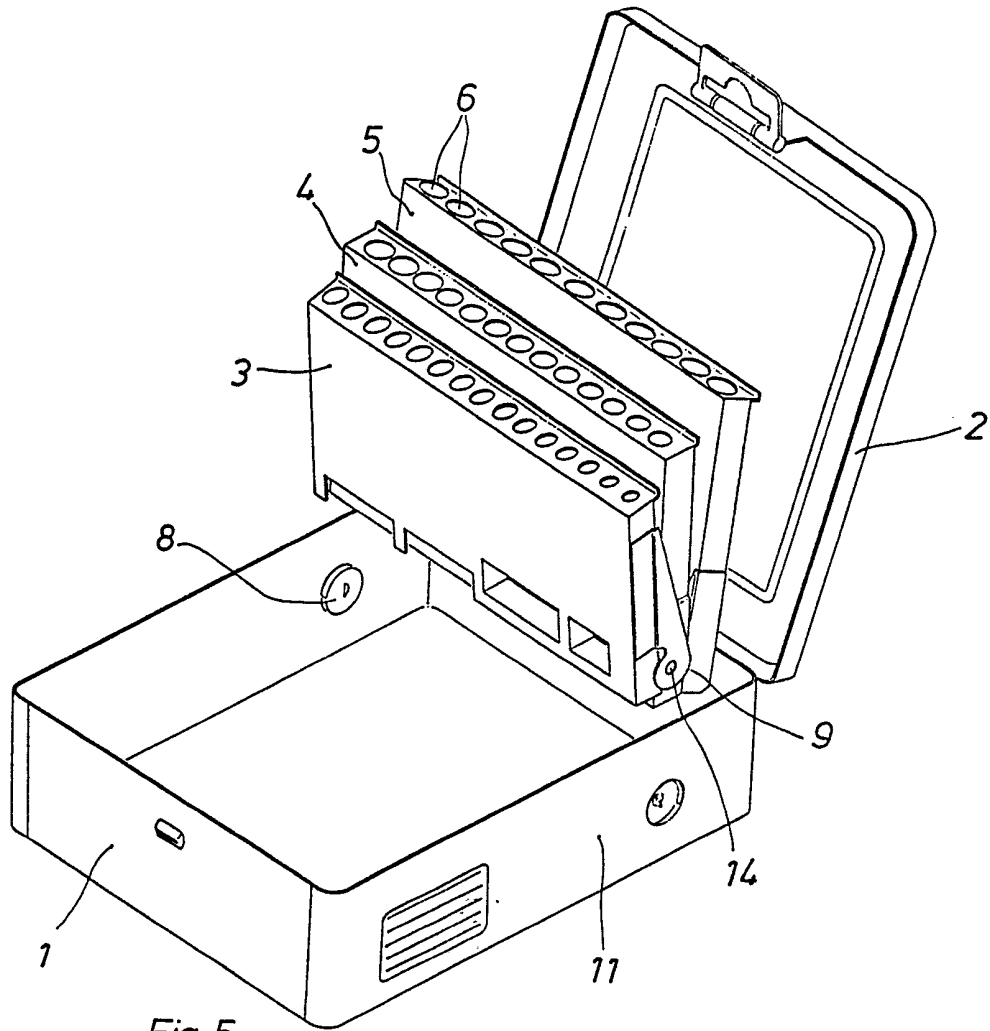


Fig. 5

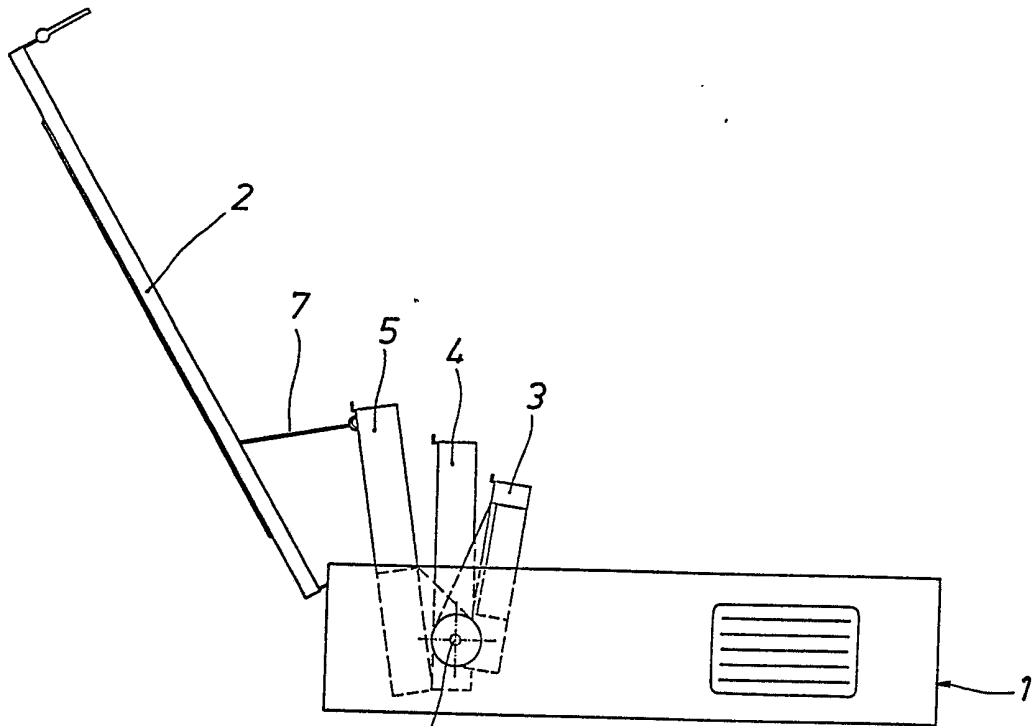


Fig. 6

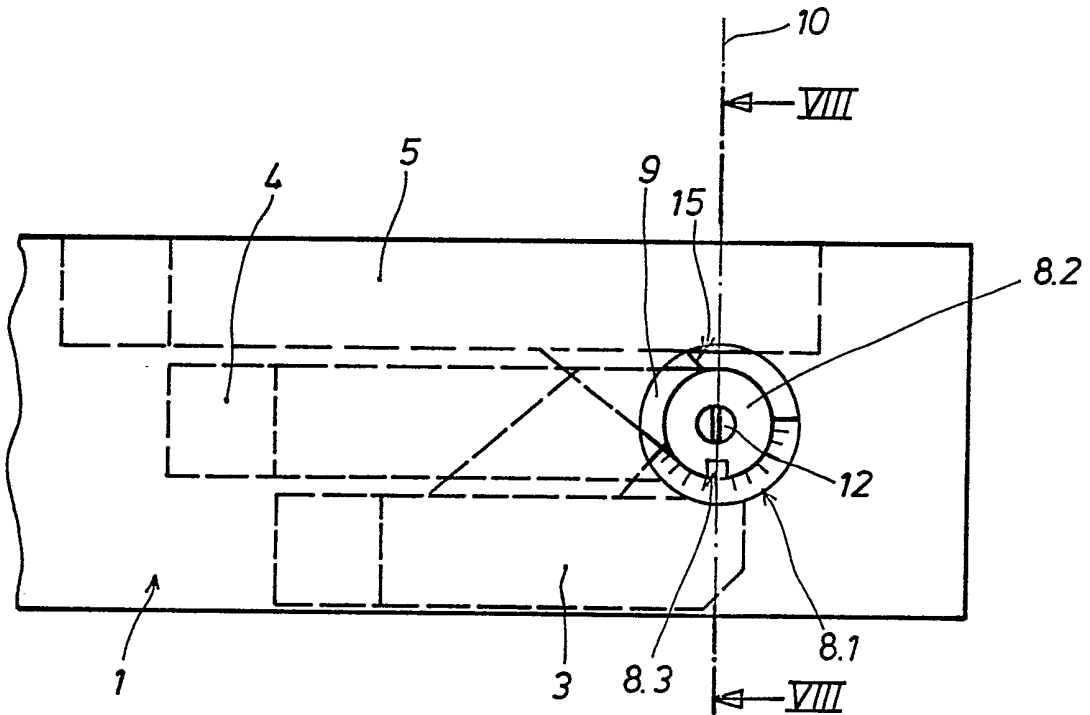


Fig. 7

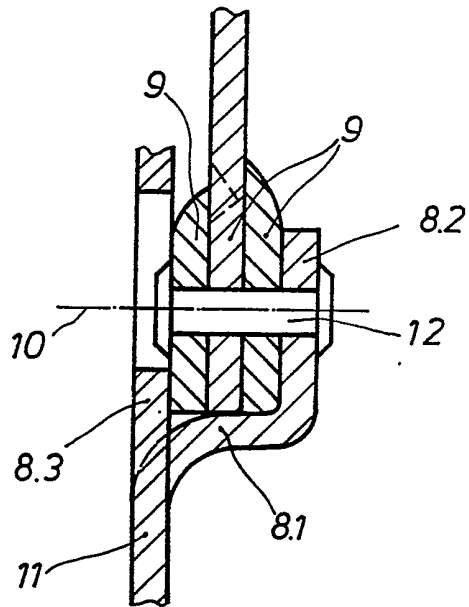


Fig. 8

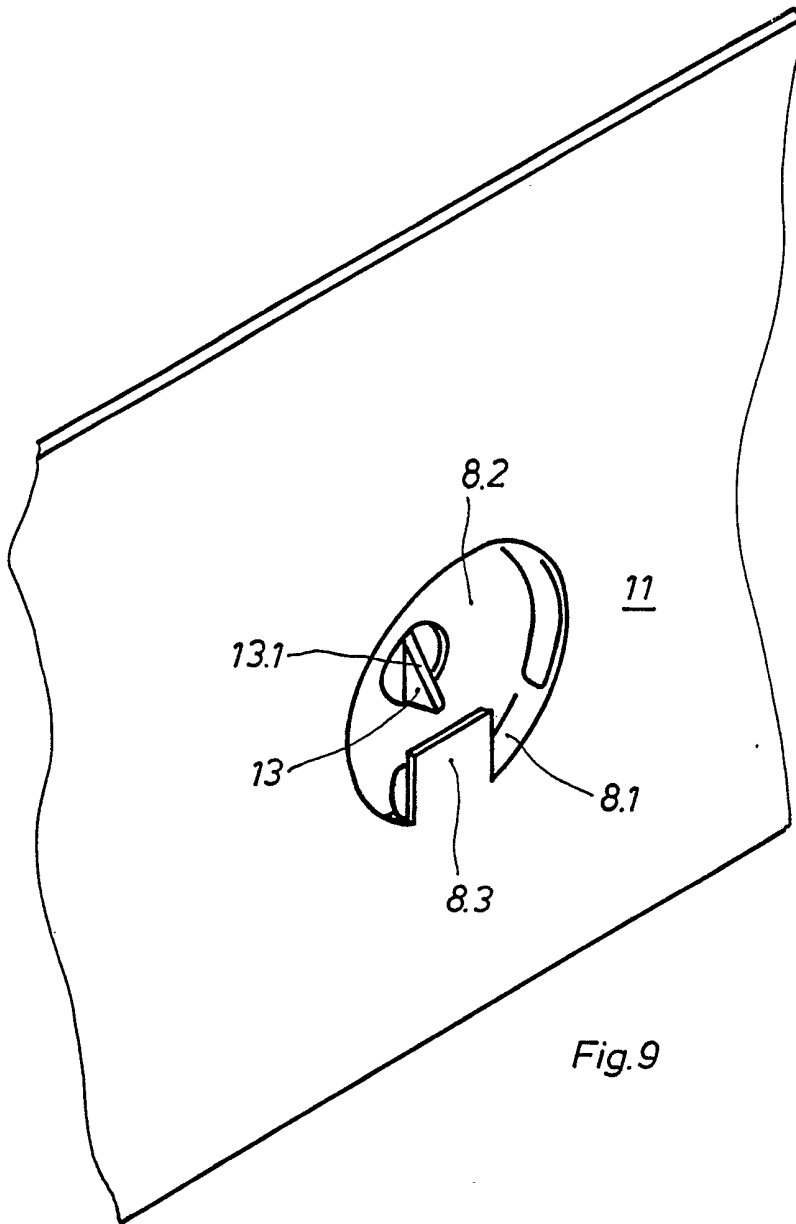


Fig.9

BOX FOR STORING ELONGATE ARTICLES

The invention relates to a box for storing elongate articles, in particular tools such as twist drills, taps or the like, comprising a container in which at least one pivotal insert which is mounted pivotably between two side walls of the container is disposed for receiving the articles, and a lid which closes the container and which is pivotably connected thereto.

A box of that kind is known for example from German Patent Specification No. 2461766. The box described therein has proved successful in practice but, when the pivotal inserts are fitted with comparatively heavy tools, overloading of the mountings carrying the pivotal insert may occur particularly when a plurality of pivotal inserts are to be mounted together at the common mounting means.

The invention is based on the problem of so designing a box of the kind set forth in the opening part of this specification that the mounting means bearing the pivotal inserts can carry very high forces without that region suffering from deformation or damage or breakage of the mounting shaft.

In accordance with the invention that problem is solved by providing that the mounting means for the pivotal insert or each pivotal insert is in the form of a mounting shell for receiving at least one mounting tongue connected to a said the pivotal insert, the mounting shell having a cylindrical mounting shell bottom concentric with respect to the pivot axis of the pivotal insert or inserts, and one edge of the mounting shell bottom, in the axial direction thereof, being connected to the side wall, while the axially opposite edge of the mounting shell bottom carries a mounting plate which is directed parallel to the side wall and which carries a pivot member for the pivotal insert or inserts, and wherein at the free end of the mounting tongue or each tongue is provided at its end with a mounting surface in

the form of a circular arc, the radius thereof corresponding to the internal radius of the cylindrical mounting shell bottom.

The advance achieved by the present invention is essentially that the pivotal inserts can be supported by way of their mounting surfaces substantially over the entire length of the mounting shell bottom so that even high forces can be readily transmitted from the pivotal insert to the container.

10 In a preferred embodiment of the invention, the mounting shell bottom, in cross-section, is of a configuration which at a maximum is in the form of a semicircular arc. That arrangement provides that the mounting shell is open at one side thereof so that in the
15 assembly operation the pivotal inserts can be readily inserted from the open side into the mounting shell. In that connection it is also advantageous if the mounting plate is in the form of a round disc which is concentric with respect to the pivot axis. In an embodiment of the
20 invention which is particularly simple and therefore preferred the bearing shell is cut free from the side wall and shaped outwardly in a bead-like configuration.

As the essential loading of the pivotal inserts is carried by the mounting shell bottom the pivot member may
25 be formed in a particularly simple manner by a rivet which is connected in a central bore in the mounting plate. However it is also possible for the pivot member to be formed by a mounting pin which is connected to the mounting plate and which, after insertion of the mounting
30 tongues into the mounting shell, is installed through the mounting bushes in the form of slots, in the mounting tongues. In that way there is no need for a special working step for fixing the rivet in the mounting plate. In that connection it is also particularly advantageous
35 if the mounting pin is formed in one piece with the mounting plate and is bent therefrom.

In that connection it is also possible for the

mounting pin to be erected into its position of use prior to fitting of the pivotal inserts, in which case it is provided that on its side remote from the mounting shell bottom the mounting pin has an inclined run-on surface 5 for the mounting tongue. In that way the mounting shell including the mounting pin can already be prepared in terms of production procedure in such a way that the pivotal inserts only have to be pressed into the mounting shell, temporary resilient deformation of the mounting 10 tongues being produced by way of the inclined run-on surfaces on the mounting pins.

Furthermore, in an advantageous embodiment it is further provided that disposed on each of the mounting tongues is a radially outwardly projecting projection 15 forming a pivot abutment for the edge of the mounting shell bottom. In that way, in relation to boxes in which the pivotal insert is entrained and moved into an erect position by the cover, that arrangement provides that, when the box is opened, the pivotal insert takes up a 20 predetermined position which is particularly advantageous in terms of removing the tools. In that connection it is also advantageous if, with a plurality of pivotal inserts, the projections are arranged relatively to each other in slightly displaced relationship with each other 25 in the direction of pivotal movement, with respect to the pivot axis. That arrangement ensures that the individual pivotal inserts automatically open up in a fan-like configuration.

Finally, a support tongue may be connected to the 30 side wall, the support tongue projecting into the free cross-sectional area of the side wall which is formed by the portion which is cut free for the mounting shell, towards the pivot axis, wherein the support tongue prevents the mounting tongues from slipping off, 35 particularly when using a mounting plate which is cut free from the side wall, more specifically if bending radii which are formed in the outward shaping operation

promote the mounting tongues slipping off in that way. Desirably the support tongue is then arranged in the region of the mounting shell bottom and is cut free therefrom.

5 In order that the invention may be clearly understood and readily carried into effect boxes in accordance therewith will now be described, by way of example, with reference to the accompanying drawings, in which:

10 Fig. 1 is a perspective view of one embodiment of a box according to the invention with a pivotal insert;

Fig. 2 shows the arrangement illustrated in Fig. 1 but prior to installation of the pivotal insert;

15 Fig. 3 is a side view of the arrangement shown in Fig. 1;

Fig. 4 is a view corresponding to that shown in Fig. 1 of an embodiment with three pivotal inserts;

Fig. 5 is a view corresponding to that shown in Fig. 2 of the arrangement shown in Fig. 4;

20 Fig. 6 is a view corresponding to that shown in Fig. 3 of the arrangement shown in Fig. 4;

Fig. 7 is a detail view of the pivotal mounting means for the pivotal inserts;

25 Fig. 8 is a view in section through the arrangement shown in Fig. 7, taken along line VIII-VIII; and

Fig. 9 shows a detail view of the pivotal mounting means in a further embodiment.

The boxes illustrated in the drawings are provided for storing for example a plurality of drills in a given
30 sequence in respect of diameters. However, if they are of a correspondingly different configuration, they may also be used for receiving other, in particular heavy tools. The boxes comprise a parallelepipedic bottom portion 1 which can be closed by a lid 2 pivotally
35 connected to one side of the bottom portion 1. Arranged within the bottom portion 1 for receiving the tools (not shown) are one or more pivotal inserts 3, 4, 5 which can

be formed by sheet metal members and which at their upper end face have receiving openings 6 for the insertion of for example drills. The pivotal inserts 3, 4, 5 are entrained by way of a loop member 7 when the lid 2 is 5 opened, and in that way automatically take up an erect position.

The mounting means for the pivotal inserts 3, 4, 5 is in the form of a mounting shell 8 for receiving mounting tongues 9 which are connected to the pivotal 10 inserts 3, 4, 5. The mounting shell 8 has a cylindrical mounting shell bottom 8.1 which is concentric relative to the pivot axis 10 of the pivotal insert 3, 4, 5. The one edge of the mounting shell bottom 8.1 as considered in the axial direction thereof is connected to the side wall 15 1 while the axially opposite edge of the mounting shell bottom 8.1 carries a mounting plate 8.2 which is directed parallel to the side wall 11 and carries the pivot shaft for the pivotal inserts 3, 4, 5. At its free end each of the mounting tongues 9 is provided at its end face with a 20 mounting surface 9.1 which is in the form of a circular arc and the radius of which corresponds to the internal radius of the cylindrical mounting shell bottom 8.1. In cross-section the mounting shell bottom 8.1 is of a configuration which at maximum is in the form of a 25 semicircular arc so that the pivotal inserts 3, 4, 5 can subsequently be inserted into the mounting shell 8, in the assembly operation.

The mounting plate 8.2 is in the form of a round disc which is concentric with respect to the pivot axis 30 10, in which respect it is cut out of the side wall 11 and shaped outwardly in a bead-like configuration.

As shown in Figs. 7 and 8, the pivot member may be formed by a rivet 12 which is connected in a central bore in the mounting plate 8.2. However it is also possible 35 to adopt the option shown in Fig. 9, providing that the pivot member is formed by a mounting pin 13 which is connected to the mounting plate 8.2 and which after

insertion of the mounting tongues 9 into the mounting shell 8, is erected to pass through the mounting bushes 14 in the form of slots in the mounting tongues 9. In that arrangement the mounting pin 13 may be formed in one 5 piece with the mounting plate 8.2 and may be cut free therefrom. It is then also possible for the mounting pin 13 which has already been cut free to be bent up into the direction of the pivot axis 10, perpendicularly to the mounting plate 8.2 after the operation of inserting 10 the pivotal inserts 3, 4, 5.

The operation of fitting the pivotal inserts 3, 4, 5 is substantially facilitated in particular when the mounting pin 13 has an inclined run-on surface 13.1 for the mounting tongue 9, at the side of the mounting pin 13 15 which is remote from the mounting shell bottom 8.1, as can be seen in particular from Fig. 9. In that case, when the mounting pin 13 is already erected, the pivotal inserts 3, 4, 5 can simply be pushed into the mounting shell 8, a minor amount of resilient deformation being 20 produced by way of the inclined surface 13.1 until the mounting pin 13 engages into the mounting bushes 14 in the pivotal inserts 3, 4, 5.

In addition, a radially outwardly projecting projection may be provided on each of the mounting 25 tongues 9, to form a pivotal abutment for the edge of the mounting shell bottom 8.1. When the box has a plurality of pivotal inserts 3, 4, 5, the projections 15 are arranged relative to each other with respect to the pivot axis 10 in slightly displaced relationship with each 30 other in the direction of pivotal movement, thereby providing that the pivotal inserts 3, 4, 5 automatically open out in a fan configuration when the lid is opened.

Finally, a support tongue 8.3 may be connected to the side wall 11. The support tongue 8.3 projects into 35 the free cross-sectional area formed in the side wall 11 by the portion which is cut free for providing the mounting shell 8, towards the pivot axis, and prevents

the mounting tongues 9 slipping out, in particular when using a mounting plate 8.2 which is cut free from the side wall 11, more specifically if bending radii which are formed in the outward shaping operation encourage the 5 mounting tongues in slipping off in that way. In that case the support tongue 8.3 is advantageously disposed in the region of the mounting shell bottom 8.1 and is cut free therefrom.

CLAIMS:

1. A box for storing elongate articles, comprising a container in which at least one pivotal insert which is mounted pivotably between two side walls of the container
5 is disposed for receiving the articles, a lid which closes the container and which is pivotably connected thereto, and mounting means for the pivotal insert or each pivotal insert in the form of a mounting shell for receiving at least one mounting tongue connected to a
10 said the pivotal insert, the mounting shell having a cylindrical mounting shell bottom concentric with respect to the pivot axis of the pivotal insert or inserts, and one edge of the mounting shell bottom, in the axial direction thereof, being connected to the side wall,
15 while the axially opposite edge of the mounting shell bottom carries a mounting plate which is directed parallel to the side wall and which carries a pivot member for the pivotal insert or inserts, and wherein at the free end of the mounting tongue or each tongue is
20 provided at its end with a mounting surface in the form of a circular arc, the radius thereof corresponding to the internal radius of the cylindrical mounting shell bottom.
2. A box according to Claim 1, in which mounting shell
25 bottom in cross-section is of a configuration which at maximum is in the form of a semicircular arc.
3. A box according to Claim 1 or Claim 2, in which the mounting plate is in the form of a round disc which is concentric with respect to the pivot axis.
- 30 4. A box according to any of Claims 1 to 3, in which the mounting shell is cut free from the side wall and is shaped outwardly in a bead-like configuration.
5. A box according to any of Claims 1 to 4, in which the pivot member is formed by a rivet which is carried in
35 a central bore in the mounting plate.
6. A box according to any of Claims 1 to 4, in which the pivot member is formed by a mounting pin which is

connected to the mounting plate and which, after insertion of the mounting tongue or tongues into the mounting shell, is inserted through a mounting bush, in the mounting tongue or each tongue.

5 7. A box according to Claim 6, in which the mounting pin is formed in one piece with the mounting plate and is bent free therefrom.

8. A box according to Claim 6 or Claim 7, in which the mounting pin, at its side remote from the mounting shell
10 bottom, has an inclined run-on surface for the mounting tongue or tongues.

9. A box according to Claims 1 to 8, in which there is provided on the mounting tongue or each mounting tongue a radially outwardly projecting projection which forms a
15 pivot abutment for the edge of the mounting shell bottom.

10. A bottom according to Claim 9, in which with a plurality of pivotal inserts, the projections are arranged relatively to each other in slightly displaced relationship in the direction of pivotal movement,
20 relative to the pivot axis.

11. A box according to any one of Claims 6 to 10, in which connected to the side wall is a support tongue which projects into the free cross-sectional area of the side wall and which is formed from a portion which is cut
25 free to provide the mounting shell.

12. A box according to Claim 11, in which the support tongue is arranged in the region of the mounting shell bottom and is cut free therefrom.

13. A box substantially as hereinbefore described with
30 reference to Figs. 1 to 3 of the accompanying drawings.

14. A box substantially as hereinbefore described with reference to Figs. 4 to 8 of the accompanying drawings.

15. A box substantially as hereinbefore described with reference to Fig. 9 of the accompanying drawings.

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