

- [54] **RECEPTACLE WITH HINGED CLOSURE FLAPS**
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220/29, 38, 334, 331

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[57] **ABSTRACT**

A receptacle for storing long articles, including a rectangular container having article-receiving openings at one end. Hingedly-connected closure flap means are provided for normally closing the container openings, said closure flap means comprising a pair of normally closed opposed vertically arranged closure flaps. The hinge means that connect the lower ends of the closure flaps are connected for vertical sliding movement relative to the end walls of the container, whereby when the closure flaps are hingedly opened, they may be displaced vertically downwardly to a position in which the closure flaps are locked open and enclose the container.

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14 Claims, 5 Drawing Figures

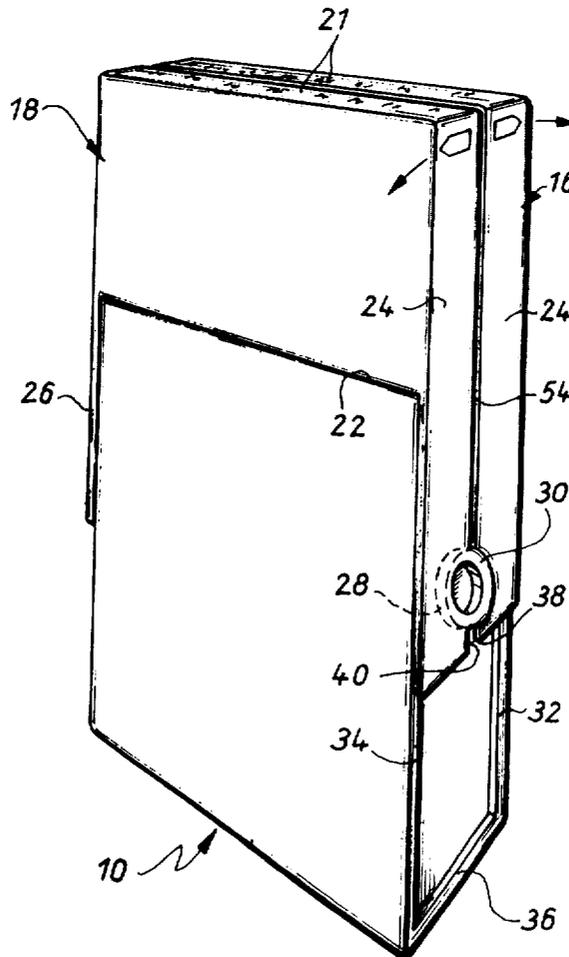


Fig. 1

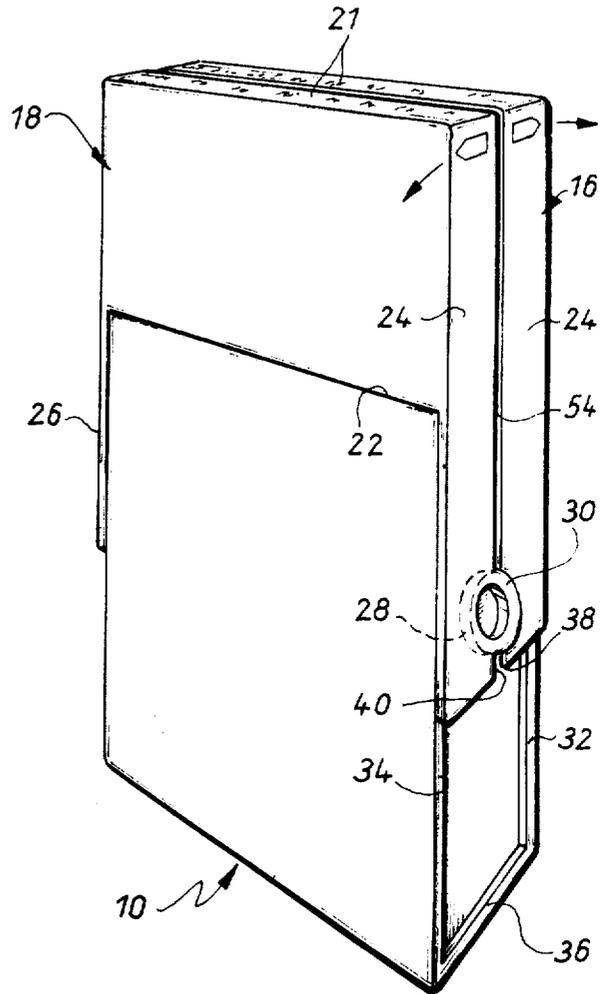
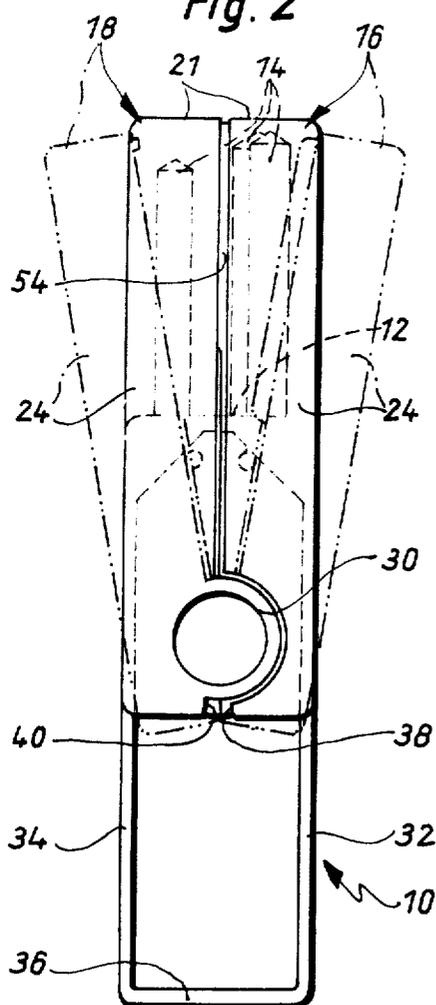
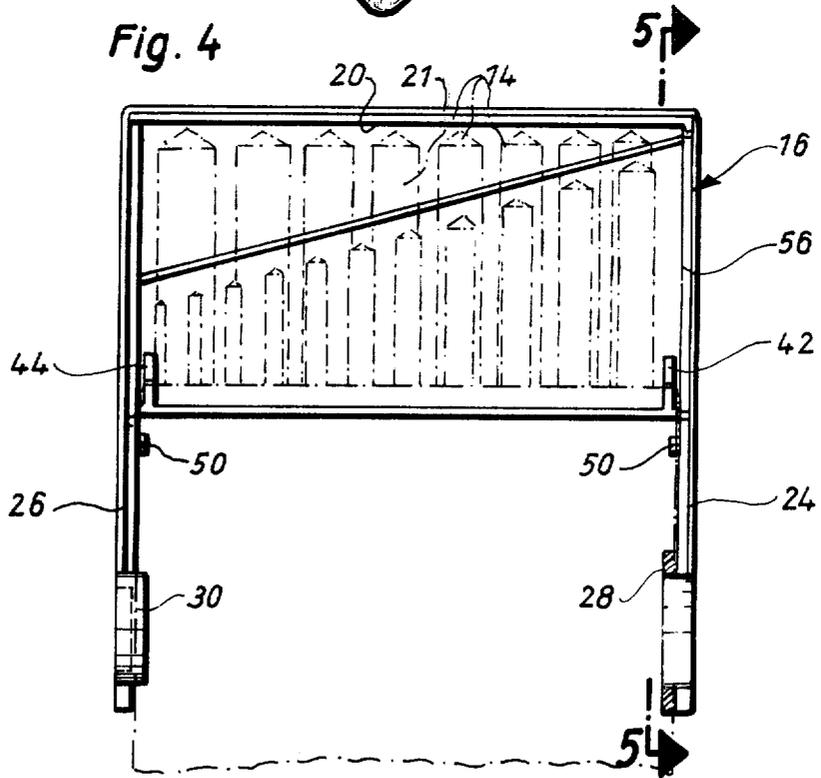
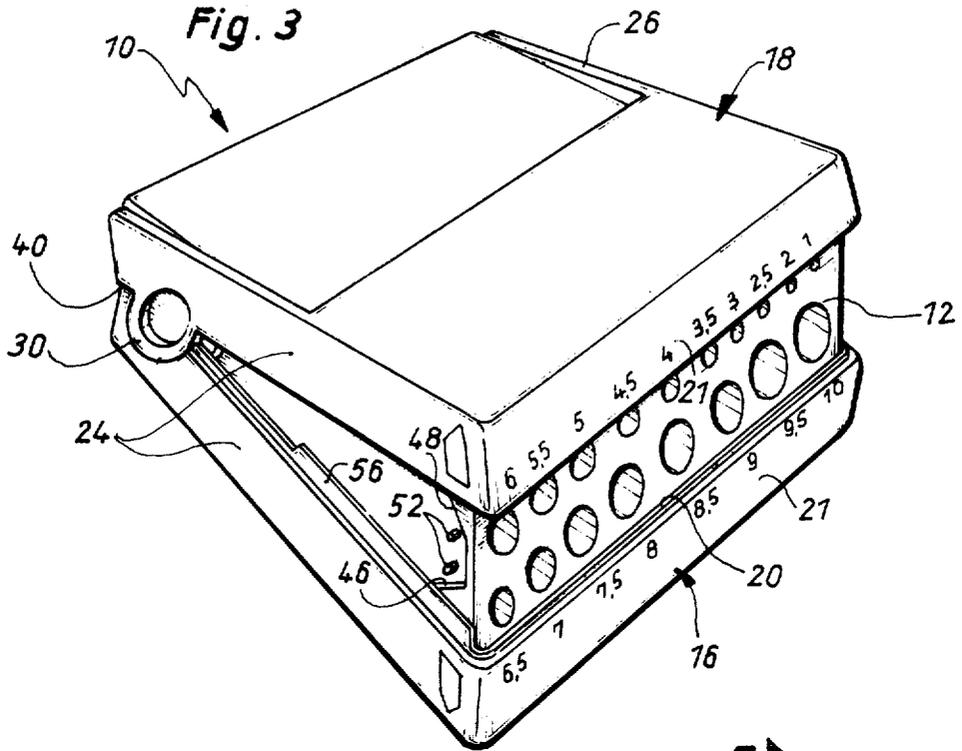


Fig. 2





RECEPTACLE WITH HINGED CLOSURE FLAPS

The invention relates to a receptacle for storing elongated articles, particularly tools, such as twist drills, thread taps and the like, comprising an upright square-shaped container having blind holes on its upper side for inserting the articles, and a pair of tray-shaped closure flaps which are supported on opposite sides of the container, which flaps are laterally pivotable to enclose the articles when not in use and are retained in their closed position by closing means.

Receptacles of this type for storing drills and/or thread taps are already known. In these known embodiments the closing flaps are individually connected with the sides of the container (German Utility Model No. 1,764,559, German Utility Model No. 1,895,600). To open the receptacle, the closing flaps are laterally pivoted until they are supported on the bearing surface of the container. Therefore, these receptacles are relatively bulky when in the open position, as tools can only be easily removed from the box when the latter is in the upright position.

The problem underlying the invention is to improve conventional boxes in such a manner that, when in the open position, the closure flaps do not project away from the container in an obstructive manner and that, even when the open container is tilted, tools may be advantageously removed therefrom.

In accordance with a primary object of the present invention, this problem is solved by providing on the container normally-closed hingedly connected closure flaps which are operable to an open condition for sliding displacement downwardly relative to the container. Receptacles designed in accordance with the invention are therefore characterized in that, when open, the receptacle has approximately the same height as its central container which, as a result of the slightly laterally pivoted closure flaps, is somewhat broader on the side where the tools are inserted into the container than on its bearing side. Therefore, even when open this receptacle represents a handy article which may be advantageously used when open even when the surrounding space is limited (for example, inside a tool chest or tool bag), and the container may be tilted also in the open position without the closure flaps preventing the removal of tools. In a preferred embodiment, the height of the container is substantially equal to the length of the sides of the closure flap which are guided along oppositely lying sides of the container.

In accordance with a further object, the container is designed so that the closure flaps can be pivoted outwardly through a predetermined opening angle to an open condition, this opening angle being retained when the flaps move over their entire path of movement on the container. The arrangement and guiding of the closing members on the container can be effected in a variety of ways. In any case it is advantageous to arrange the closing members on the container so that no additional elements are required on either the container or closing flaps to minimize expenditure and simplify the assembly of the receptacle as far as possible. It is therefore provided in accordance with the invention for the side portions of the closure flaps to be designed at their lower ends as telescopically mounted hinge members.

The opening angle of the flaps may be simply determined in this connection by providing each of the tele-

scopically mounted hinge members of the sides of the closure flaps with a stop face which, when in contact with one another, define the opening angle of the closure flap. In this connection the automatic locking of the flaps in their open position on the container may be simply effected if, in accordance with another feature of the invention, the inner sides of the closing flaps are each provided with at least one projection which, when the flaps move relative to the container, bears against the adjacent wall of the container to lock the closure flaps in their open position.

In order to permit the side portions of the flaps supporting the hinge members on the container to be guided in a particularly technically simple manner, the inner hinge member of the telescopically mounted hinge members on the closure flaps is annular and slidably guided along the associated wall of the container between webs which extend along the lateral edges of the container. These webs therefore form lateral guide strips or bars between which the annular hinge member engages. In this connection the lower end position of the closure flaps on the container located in their opening position may be simply fixed by a further web which is moulded to the corresponding lower edge of the container and forms a stop for the ring-shaped hinge members. In accordance with another object, the box is also constructed so that, if the closure flaps slide upwardly on the container, they are automatically pivoted back again into their closed position. This may be simply effected if in the vicinity of the upper end of the container the guide faces, which are formed by the lateral webs and guide the hinge members of the flaps, are upwardly and inwardly inclined, and if the inner sides of the closure flaps supporting the hinge members are each provided with a cylindrical extension some distance from the hinge members, which extensions bear against the converging guide faces when the closure flaps are moved in the direction of the upper side of the container. In this connection the extensions provided on the inner sides of the closure flaps are each advantageously associated with a stop on the side walls of the container in the area in which the extensions are located near to the latter when the closure flaps are in the closed position, with which stops the extensions are locked in the closed position of the flaps. The extensions together with the stops therefore form part of the closing means of the flaps. To ensure that the closure of the separating joint between the closure flaps is as dustproof as possible, a web directed towards the oppositely lying side of the opposite closure flap is also provided on at least one side of at least one other closing flap, which webs grip the rear of the oppositely lying side of the opposite closure flap when the flaps are in the closed position, thereby providing the separating joint between the closure flaps with an inwardly directed seal. Furthermore, the separating joint may also be closed from above in the same manner.

In accordance with another feature of the invention, indicia relating to technical details (particularly, diameter sizes) may be arranged on the outer side of the front wall of the flaps connecting the side portions, which details are coordinated with the various tool insert openings provided on the upper face of the container so that the position of the required tool can be rapidly seen when using such a box. Finally, the container and the closure flaps may be manufactured in a known manner by plastic moulded sections to which

the extensions, webs, projections and stops are moulded in one piece. Other objects of the invention will become apparent from a study of the following specification when viewed in the light of the accompanying drawing, in which:

FIG. 1 is a perspective view of a closed upright box;

FIG. 2 is an end view of the box of FIG. 1;

FIG. 3 is a perspective view of an open tilted box;

FIG. 4 is an inner view of one of the closing flaps of the box; and

Fig. 5 is a sectional view taken along the line 5—5 of FIG. 4.

The tool box shown in FIGS. 1 to 3 comprises a rectangular container 10 standing on its end and including an upper face 12 which contains two rows of blind holes for the insertion of drills 14. The area in which the drills project out of the container is enclosed by two closure flaps 16, 18. Therefore, when not in use they are protected from external influences. Moreover, the closure flaps provide support for the drills in the box.

To remove a drill, the closure flaps are pivoted apart in the direction of the arrows shown in FIG. 1, the flaps being pivotable towards one another into a predetermined angular position illustrated by the opening angle in FIG. 5. The two closure flaps can be jointly moved downwardly along the side walls of the container until the inner surfaces 20 of their upper front walls 21 are located adjacent the upper edges 22 of the container. In this connection, as soon as the closure flaps are pivoted outwardly relative to the container, they are locked in their open position, the result of which will be described in more detail further on. The closure flaps each include two side walls 24, 26, the height of which is substantially equal to the height of the container. For this reason the box, when open, has substantially the same height as the container. In this connection the locking of the closure flaps on the container in their open position makes it possible to tilt the open box, as shown in FIG. 3, without the closure flaps preventing the removal of drills.

The closure flaps are arranged on the container in the following manner. Their side walls 24, 26 are hinged together at their lower ends by hinge members which positively engage in one another and are therefore pivotable about a common axis. Whereas in this connection an annular receiving portion 28 is moulded to one side wall, an inwardly directed, cup-shaped cylindrical bearing portion 30 is preferably moulded to the other side wall of the same closure flap. The bearing portion 30 of each of the adjacent side walls 24, 26 of the closure flaps engages positively in the annular receiving portion 28 to provide the mutual pivotable arrangement of the closure flaps. This mutual bearing also makes it possible to move the closure flaps along the narrow sides of the container. For the guiding of the hinge members of the closure flaps on the narrow sides of the container, guide webs 32, 34 project along its edges and perpendicular to the narrow sides of the container and a web 36 is provided on the bottom edge of said narrow sides. The annular receiving portion 28 acting as a hinge member engages between these webs so that it is guided sideways. The lower position of the closure flaps is fixed by the web 36 which acts as a stop. The opening angle of the two closure flaps is similarly defined by the hinge members 28, 30 of the sides, the hinge members in positive engagement each including stop faces 38 and 40 (FIG. 5) which bear against one

another when the closure flaps are in the open position.

As already mentioned above, the closure flaps are locked in their open position on the container from the moment when they are moved, in the open position, downwardly toward the bottom of the container. This is effected by two projections 42, 44, which are each moulded to the inner sides of the closure flaps directly next to their side portions, each of said projections bearing against the outer side of the adjacent wall of the container when the closure flaps are moved (see FIG. 5).

Furthermore, the embodiment is designed so that, when the closure flaps are moved in the direction of the upper face 12 of the container, they automatically pivot inwardly into their closed position. For this purpose the lateral webs 32, 34 in the vicinity of the upper side of the container define guide faces 46, 48 which are inclined upwardly and inwardly. Each guide face is associated with, for example, a cylindrical extension 50 on the inside of the adjacent side of the closure flaps. When the closure flaps are moved in the direction of the upper side of the container, these cylindrical extensions come into contact with the converging guide faces, whereupon the flaps are automatically moved towards one another. On the sides of the container in the vicinity of the guide faces 46, 48, the cylindrical extensions 50 are each associated with a stop 52, for example in the form of a small raised portion, which lock the cylindrical extensions 50 on the associated side wall of the container when the closure flaps are in the closed position. The parts 50, 52 therefore form a device for closing the box.

For the tight sealing of the separating joint 54 located in the closed position between the flaps, a web 56 projecting in the direction of one side of oppositely lying sides of the flaps is moulded to the other side, and these webs grip the rear of the oppositely lying side when the closure flaps are in the closed position. Such a web can also be provided along the inner edge 20 of the front wall 21 of the flaps.

As can be seen in FIG. 3, two rows of tool insert openings, for example, are provided on the upper face 12 of the container. Each of the insert openings belonging to a row of openings on the front wall 21 of the adjacent closure flap is associated with a corresponding size to serve as a guide to which opening is intended for which tool diameter.

What is claimed is:

1. A receptacle for storing elongated articles such as drills, thread taps or the like, comprising
 - a. a rectangular container (10) having a bottom wall and vertical pairs of side and end walls, respectively, the top portion of said container containing at least one article-receiving opening;
 - b. closure means for closing the container opening, comprising
 1. a pair of normally-closed opposed tray-shaped closure flaps (16, 18) each having a pair of side walls (24, 26) adjacent the upper portions of the end walls of said container, respectively; and
 2. hinge means (28, 30) pivotally connecting the lower ends of the side walls of said closure flaps, each of said hinge means comprising a pair of telescopically arranged members one of which is an annular receiving portion (28) and the other of which is a cylindrical bearing portion (30); and

- c. guide means (32, 34) connecting said hinge means for vertical movement relative to the end walls of said container, respectively, whereby upon pivoting of the closure flaps apart to an open position relative to the container, said hinge means and said closure flaps are downwardly displaceable to a retracted position in which the closure flaps are locked open and the container is housed substantially completely within the closure flaps.
2. A receptacle for storing elongated articles such as drills, thread taps or the like, comprising
- a rectangular container (10) having a bottom wall and vertical pairs of side and end walls, respectively, the top portion of said container containing at least one article-receiving opening;
 - closure means for closing the container opening, comprising
 - a pair of normally-closed opposed tray-shaped closure flaps (16, 18) each having a pair of side walls (24, 26) adjacent the upper portions of the end walls of said container, respectively; and
 - hinge means (28, 30) pivotally connecting the lower ends of the side walls of said closure flaps;
 - guide means (32, 34) connecting said hinge means for vertical movement relative to the end walls of said container, respectively, whereby upon pivoting of the closure flaps apart to an open position relative to the container, said hinge means and said closure flaps are downwardly displaceable to a retracted position in which the closure flaps are locked open and the container is housed substantially completely within the closure flaps; and
 - projection means (42, 44) arranged on the inner surface of each of said closure flaps for engagement with the side walls of said container to lock said closure flaps in their open position when said flaps and said hinge means are displaced downwardly relative to said container.
3. A receptacle for storing elongated articles such as drills, thread taps or the like, comprising
- a rectangular container (10) having a bottom wall and vertical opposed pairs of side and end walls, respectively, the top portion of said container containing at least one article-receiving opening;
 - closure means for closing the container opening, comprising
 - a pair of normally-closed opposed tray-shaped closure flaps (16, 18) each having a pair of side walls (24, 26) adjacent the upper portions of the end walls of said container, respectively; and
 - hinge means (28, 30) pivotally connecting the lower ends of the side walls of said closure flaps, each of said hinge means comprising a pair of telescopically arranged members; and
 - guide means (32, 34) connecting said hinge means for vertical movement relative to the end walls of said container, respectively, said guide means comprising vertical web means (32, 34) on the end walls of said container for slidably receiving said telescopic hinge members, respectively, whereby upon pivoting of the closure flaps apart to an open position relative to the container, said hinge means and said closure flaps are downwardly displaceable to a retracted position in which the closure flaps

are locked open and the container is housed substantially completely within the closure flaps.

4. A receptacle as defined in claim 3, wherein the height of the container is substantially equal to the length of the sides of the closure flaps.

5. A receptacle as claimed in claim 3, wherein the closure flaps are adapted to open to a predetermined angle and to maintain the said angle over their entire path of movement on the container.

6. A receptacle as claimed in claim 3, wherein each of the telescopically mounted hinge members of the closure flaps is provided with a stop face (38, 40), and wherein the stop faces, when in contact with one another, define the predetermined opening angle of the closure flaps.

7. A receptacle as claimed in claim 3, wherein the lateral webs of the container for receiving an inner hinge member therebetween are connected by a further web (36) which is moulded on the associated lower edge of the container and which forms a stop for the sides of the closing flap.

8. A receptacle as claimed in claim 3, wherein the lateral webs include guide faces (46, 48) which are upwardly and inwardly inclined in the region of the upper end of the container, each of the inner sides of the side portions of the flaps which support the hinge members being provided with an extension spaced from the hinge members, which extensions bear against the converging guide faces when the closure flaps are moved in the direction of the upper side of the container to automatically pivot the closure flaps into their closed position.

9. A receptacle as defined in claim 8, and further including stop means (52) arranged on the container end walls for engagement by said extensions when said closure flaps are in the closed positions, thereby to limit the upwardly extent of displacement of said closure flaps relative to said container.

10. A receptacle as claimed in claim 3, wherein a web (56) is provided on at least one side of at least one closure flap, so as to extend towards the opposite closing flap, said web being adapted to grip the rear of the opposite closure flap when the flaps are in the closed position to form a seal of the joint between the flaps.

11. A receptacle as claimed in claim 10, wherein the closure flaps also comprise a further web gripping the rear surface of the front wall of the other closure flap, which front wall connects the side portions of said other closure flap.

12. A receptacle as defined in claim 3, wherein said container, said closure flaps, said hinge means and said web means are formed from a synthetic plastic material.

13. A receptacle as claimed in claim 3, wherein the container has blind holes in its upper side for defining said article-receiving opening.

14. A receptacle as claimed in claim 13, wherein technical indicia, such as diameter sizes, are carried on the outer side of the front walls of the closing flaps which details are co-ordinated with the various tool insert openings provided on the upper face of the container.

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