Espacenet

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ADAPTER DEVICE FOR A PORTABLE CLEANING APPLIANCE AND CLEANING DEVICE HAVING AN ADAPTER DEVICE AND A CLEANING APPLIANCE

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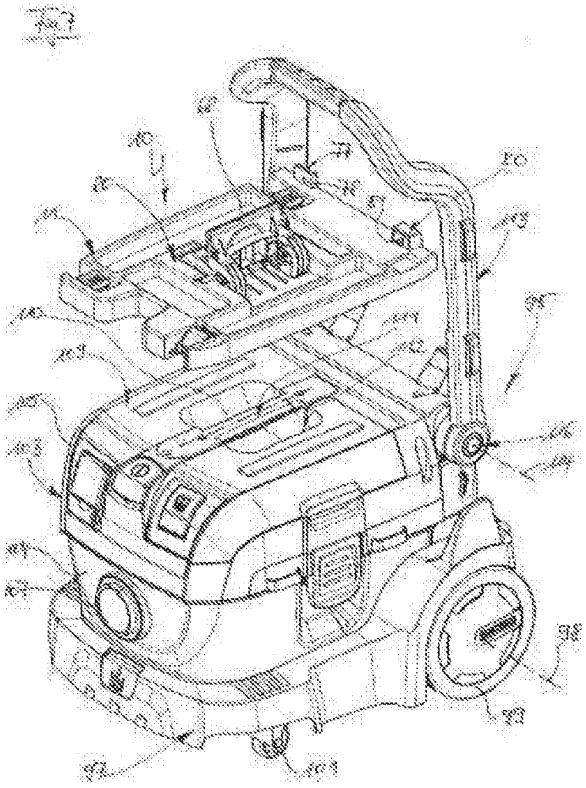
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Abstract of WO2011009480 (A1)

The invention relates to an adapter device (10) for the arrangement of a container (120) on the housing (105) of a portable cleaning appliance (95). The adapter device (10) comprises an adapter plate (11), which can be placed on the top surface (109) of the housing (105) and which has a storage surface (20) on the top side for placing the container (120), and a locking device (60) for detachably locking the adapter plate (11) to the housing (105) of the cleaning appliance (95) without tools. The invention further relates to a cleaning device comprising a cleaning appliance (95) and such an adapter device (10).

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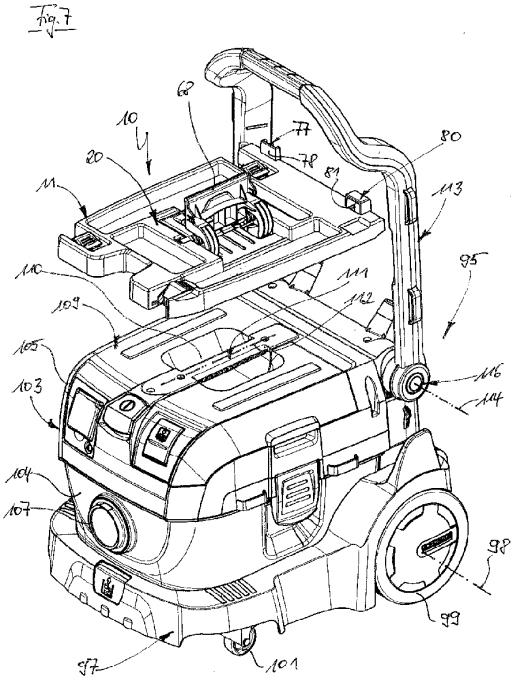
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(54) Title: ADAPTER DEVICE FOR A PORTABLE CLEANING APPLIANCE AND CLEANING DEVICE HAVING AN ADAPTER DEVICE AND A CLEANING APPLIANCE

(54) Bezeichnung : ADAPTERVORRICHTUNG FÜR EIN TRAGBARES REINIGUNGSGERÄT SOWIE REINIGUNGSEINRICHTUNG MIT EINER ADAPTERVORRICHTUNG UND EINEM REINIGUNGSGERÄT



(57) Abstract: The invention relates to an adapter device (10) for the arrangement of a container (120) on the housing (105) of a portable cleaning appliance (95). The adapter device (10) comprises an adapter plate (11), which can be placed on the top surface (109) of the housing (105) and which has a storage surface (20) on the top side for placing the container (120), and a locking device (60) for detachably locking the adapter plate (11) to the housing (105) of the cleaning appliance (95) without tools. The invention further relates to a cleaning device comprising a cleaning appliance (95) and such an adapter device (10).

(57) Zusammenfassung: Adaptervorrichtung (10) für die Anordnung eines Behälters (120) am Gehäuse (105) eines tragbaren Reinigungsgerätes (95). Die Adaptervorrichtung (10) umfasst eine Adapterplatte (11), die auf die Deckfläche (109) des Gehäuses (105) aufsetzbar ist und oberseitig eine Stellfläche (20) aufweist zum Abstellen des Behälters (120), sowie eine Verriegelungseinrichtung (60) zum werkzeuglosen lösbaren Verriegeln der Adapterplatte (11) mit dem Gehäuse (105) des Reinigungsgerätes (95). Reinigungseinrichtung mit einem Reinigungsgerät (95) und einer derartigen Adaptervorrichtung (10).

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— *mit internationalem Recherchenbericht (Artikel 21 Absatz 3)*

Adaptervorrichtung für ein tragbares Reinigungsgerät sowie Reinigungseinrichtung mit einer Adaptervorrichtung und einem Reinigungsgerät

Die Erfindung betrifft eine Adaptervorrichtung für die Anordnung eines Behälters am Gehäuse eines tragbaren Reinigungsgerätes.

Außerdem betrifft die Erfindung eine Reinigungseinrichtung mit einem tragbaren Reinigungsgerät, das ein Gehäuse aufweist, und mit einer Adaptervorrichtung der voranstehenden Art.

Tragbare Reinigungsgeräte kommen beispielsweise in Form tragbarer Staubsauger oder tragbarer Hochdruckreinigungsgeräte zum Einsatz. Sie werden zum Beispiel auf Baustellen aber auch an sonstigen Einsatzorten benutzt. Die Reinigungsgeräte können vom Benutzer getragen werden. Häufig sind die Reinigungsgeräte auch verfahrbar und weisen hierzu geeignete Laufräder auf.

Die Reinigungsgeräte werden zum Transport zu einem Einsatzort in vielen Fällen in einem Transportfahrzeug positioniert, und da in den meisten Fällen der Stauraum des Transportfahrzeuges beschränkt ist, werden auf den Reinigungsgeräten während des Transportes Behälter abgestellt, beispielsweise Werkzeugkoffer oder sonstige Behälter, die Utensilien aufnehmen. Erreicht das Transportfahrzeug sein Ziel, so werden die Behälter ebenso wie das Reinigungsgerät dem Transportfahrzeug entnommen und anschließend zum eigentlichen Einsatzort getragen.

Aus der EP 0 916 302 B1 ist ein Reinigungsgerät in Form eines Staubsaugers bekannt, dessen Gehäuse oberseitig eine Deckfläche ausbildet mit einer Vertiefung, in die ein Behälter eingesetzt werden kann. Der Behälter ist dadurch auf der Deckfläche des Gehäuses gegen Verrutschen gesichert. Zusätzlich kann der Behälter mit Hilfe von Arretierungselementen in der Vertiefung der Deckfläche arretiert werden. Dies hat den Vorteil, dass der Staubsauger zusammen mit dem Behälter vom Benutzer in Form einer einzigen Transporteinheit bewegt werden kann. Allerdings ist es erforderlich, dass der Behälter exakt die Ausmaße der Vertiefung an der Deckfläche des Staubsaugers aufweist. Behälter und Staubsauger müssen also in ihren Ausmaßen exakt aneinander angepasst sein.

Aufgabe der vorliegenden Erfindung ist es, eine Vorrichtung bereitzustellen, mit deren Hilfe ein Behälter am Gehäuse eines tragbaren Reinigungsgerätes angeordnet werden kann zum gemeinsamen Transport des Reinigungsgerätes zusammen mit dem Behälter.

Diese Aufgabe wird erfindungsgemäß durch eine Adaptervorrichtung mit den Merkmalen von Patentanspruch 1 gelöst. Die erfindungsgemäße Adaptervorrichtung umfasst eine Adapterplatte, die auf das Gehäuse des Reinigungsgerätes aufsetzbar ist. Außerdem umfasst die Adaptervorrichtung eine Verriegelungseinrichtung, mit deren Hilfe die Adapterplatte werkzeuglos mit dem Gehäuse des Reinigungsgerätes lösbar verriegelt werden kann. Die Adapterplatte weist oberseitig eine Stellfläche auf zum Abstellen des Behälters.

In die Erfindung fließt der Gedanke mit ein, dass durch die Bereitstellung einer Adapterplatte, die einerseits, nämlich auf ihrer Unterseite, an das Gehäuse eines tragbaren Reinigungsgerätes angepasst ist, und die andererseits, nämlich auf ihrer Oberseite, eine ebene Stellfläche für einen zusammen mit dem

Reinigungsgerät zu transportierenden Behälter aufweist, auf einfache Weise eine kompakte Transporteinheit bestehend aus dem Behälter, der Adapterplatte und dem Reinigungsgerät gebildet werden kann zum gemeinsamen Transport. Die Adapterplatte ist auf das Gehäuse des Reinigungsgerätes aufsetzbar und kann anschließend mittels der Verriegelungseinrichtung mit dem Gehäuse des Reinigungsgerätes werkzeuglos verriegelt werden. Die Verriegelungseinrichtung wirkt mit dem Gehäuse des Reinigungsgerätes zusammen. Oberseitig kann auf die Adapterplatte der Behälter, beispielsweise ein Werkzeug- oder Zubehörkoffer, aufgesetzt werden. Der Behälter kann bei Bedarf von der Adapterplatte abgenommen werden, zusätzlich kann auch die Adapterplatte vom Reinigungsgerät gelöst werden. Das Verriegeln und Entriegeln der Adapterplatte mit dem Gehäuse des Reinigungsgerätes erfolgt ohne Einsatz eines speziellen Werkzeuges, insbesondere ist es nicht erforderlich, die Adapterplatte mit dem Reinigungsgerät beispielsweise zu verschrauben.

Die Adaptervorrichtung erweitert somit die Einsatzmöglichkeiten des Reinigungsgerätes dahingehend, dass ein Behälter, vorzugsweise ein Werkzeug- oder Zubehörkoffer, auf dem Reinigungsgerät abgestellt und gemeinsam mit diesem transportiert werden kann.

Vorzugsweise ist die Adapterplatte mittels der Verriegelungseinrichtung mit einem hintergreifbaren Gehäuseteil des Gehäuses des Reinigungsgerätes werkzeuglos lösbar verriegelbar. Als hintergreifbares Gehäuseteil kann beispielsweise eine Gehäuselasche, ein hintergreifbarer Gehäusevorsprung oder dergleichen zum Einsatz kommen. Zusätzliche Verriegelungselemente am Reinigungsgerät können dadurch entfallen.

Von besonderem Vorteil ist es, wenn die Adapterplatte mittels der Verriegelungseinrichtung mit einem Tragegriff des Reinigungsgerätes werkzeuglos lös-

bar verriegelbar ist. Der Tragegriff ist bevorzugt an einer Oberseite des Gehäuses des Reinigungsgerätes angeordnet. Der Tragegriff ist üblicherweise sehr stabil ausgestaltet und an das Gewicht des Reinigungsgerätes angepasst, so dass die Verriegelung der Adapterplatte mit dem Tragegriff mechanisch sehr belastbar ausgestaltet werden kann.

Günstigerweise umfasst die Verriegelungseinrichtung mindestens ein Verriegelungsglied, das zwischen einer Verriegelungsstellung und einer Freigabestellung hin und her bewegbar an der Adapterplatte gehalten ist. In der Verriegelungsstellung des mindestens einen Verriegelungsgliedes ist die Adapterplatte unbeweglich am Gehäuse des Reinigungsgerätes festgelegt. Hierzu kann das mindestens eine Verriegelungsglied beispielsweise ein an der Oberseite des Reinigungsgerätes angeordnetes hintergreifbares Gehäuseteil, insbesondere einen Tragegriff hintergreifen oder umgreifen. Soll die Adapterplatte vom Reinigungsgerät gelöst werden, so kann hierzu das mindestens eine Verriegelungsglied ohne Einsatz eines Werkzeuges in seine Freigabestellung überführt werden, in der es das Gehäuse freigibt.

Besonders vorteilhaft ist es, wenn die Verriegelungseinrichtung eine vom Benutzer ergreifbare Verriegelungshandhabe aufweist, die mit dem mindestens einen Verriegelungsglied verbunden ist. Mittels der Verriegelungshandhabe kann der Benutzer das mindestens eine Verriegelungsglied auf einfache Weise ohne Einsatz eines zusätzlichen Werkzeuges zwischen seiner Verriegelungsstellung und seiner Freigabestellung hin und her bewegen.

Bei einer vorteilhaften Ausführungsform steht die Verriegelungshandhabe in der Freigabestellung des mindestens einen Verriegelungsgliedes aus der Stellfläche der Adapterplatte hervor und in der Verriegelungsstellung des mindestens einen Verriegelungsgliedes steht die Verriegelungshandhabe aus der

Stellfläche der Adapterplatte nicht hervor. Die Stellfläche wird bei einer derartigen Ausgestaltung von der Verriegelungshandhabe allenfalls dann beeinträchtigt, wenn die Verriegelungshandhabung eine Position einnimmt, in der das mindestens eine Verriegelungsglied seine Freigabestellung einnimmt. In dieser Stellung kann die Adapterplatte vom Reinigungsgerät abgenommen werden. Befindet sich jedoch das mindestens eine Verriegelungsglied in seiner Verriegelungsstellung, so ist die Verriegelungshandhabe derart angeordnet, dass sie aus der Stellfläche nicht hervorsteht und daher das Abstellen eines Behälters auf der Stellfläche nicht beeinträchtigt.

Es kann beispielsweise vorgesehen sein, dass die Verriegelungshandhabe plattenförmig ausgestaltet ist, wobei sie in der Verriegelungsstellung des mindestens eines Verriegelungsgliedes in der Ebene der Stellfläche oder unterhalb der Ebene der Stellfläche verläuft.

Damit der Benutzer die Verriegelungshandhabe auf einfache Weise ergreifen kann, ist es von Vorteil, wenn die Verriegelungshandhabe hintergreifbar ist.

Das mindestens eine Verriegelungsglied ist bei einer vorteilhaften Ausführungsform der Erfindung um eine Schwenkachse verschwenkbar. Es kann somit zwischen seiner Verriegelungsstellung und seiner Freigabestellung hin und her geschwenkt werden. Die Schwenkachse ist bevorzugt parallel zu einer Längsachse eines oberseitig am Gehäuse des Reinigungsgerätes angeordneten Tragegriffs ausrichtbar.

Günstigerweise umfasst die Verriegelungseinrichtung zwei starr miteinander verbundene und im Abstand zueinander angeordnete Verriegelungsglieder. Dies erhöht die mechanische Belastbarkeit der Verriegelungseinrichtung und der mit dem Tragegriff verriegelten Adapterplatte.

Bevorzugt verbindet die Verriegelungshandhabe die beiden Verriegelungsglieder starr miteinander.

Das mindestens eine Verriegelungsglied ist vorteilhafterweise haken- oder bügelartig ausgestaltet und untergreift in der Verriegelungsstellung ein Gehäuseteil des Reinigungsgerätes, beispielsweise einen Tragegriff.

Bei einer bevorzugten Ausführungsform weist die Adapterplatte oberseitig eine erste Vertiefung auf, die die Verriegelungshandhabe aufnimmt. In der Verriegelungsstellung des mindestens einen Verriegelungsgliedes kann die Verriegelungshandhabe vollständig in die erste Vertiefung der Adapterplatte eintauchen, so dass die Stellfläche der Adapterplatte durch die Verriegelungshandhabe nicht beeinträchtigt ist.

Besonders vorteilhaft ist es, wenn die Verriegelungshandhabe in der Verriegelungsstellung des mindestens einen Verriegelungsgliedes die erste Vertiefung zumindest teilweise abdeckt und die Stellfläche der Adapterplatte erweitert.

Wie bereits erläutert, ist die Adaptervorrichtung für tragbare Reinigungsgeräte vorgesehen. Damit das Reinigungsgerät auch dann getragen werden kann, wenn die Adapterplatte mit dem Gehäuse des Reinigungsgerätes verriegelt ist, ist bei einer vorteilhaften Ausführungsform der Erfindung vorgesehen, dass die Adaptervorrichtung eine Trageeinrichtung aufweist mit mindestens einem Tragegriff, der vom Benutzer umgreifbar ist. Ist die Adapterplatte mit dem Gehäuse des Reinigungsgerätes verriegelt, so kann mit Hilfe des Tragegriffes der Adaptervorrichtung die komplette Reinigungseinrichtung bestehend aus dem Reinigungsgerät und der Adaptervorrichtung getragen werden.

Günstigerweise ist der Tragegriff der Adaptervorrichtung zwischen einer Tragestellung, in der er aus der Stellfläche der Adapterplatte hervorsteht, und einer Ruhestellung, in der er aus der Stellfläche der Adapterplatte nicht hervorsteht, hin und her bewegbar. Der Tragegriff ist somit zum Tragen der Adaptervorrichtung mitsamt dem Reinigungsgerät für den Benutzer auf einfache Weise im Bereich der Stellfläche zugänglich, aus der er in seiner Tragestellung hervorsteht. Soll jedoch ein Behälter auf die Stellfläche abgestellt werden, so kann der Tragegriff der Adaptervorrichtung in eine Ruhestellung überführt werden, in der er aus der Stellfläche nicht hervorsteht und damit die Größe der Stellfläche auch nicht beeinträchtigt.

Bevorzugt ist der Tragegriff der Adaptervorrichtung um eine Schwenkachse verschwenkbar. Dies erleichtert das Überführen des Tragegriffes der Adaptervorrichtung aus seiner Ruhestellung in seine Tragestellung und zurück in die Ruhestellung. In jeder Stellung ist der Tragegriff der Adaptervorrichtung für den Benutzer auf einfache Weise zugänglich. Die Schwenkachse ist bevorzugt parallel zu einer Längsachse eines oberseitig am Gehäuse des Reinigungsgerätes angeordneten Tragegriffs ausrichtbar.

Es kann vorgesehen sein, dass die Adapterplatte oberseitig eine zweite Vertiefung aufweist, die den Tragegriff aufnimmt. In seiner Ruhestellung kann der Tragegriff der Adaptervorrichtung vollständig in die zweite Vertiefung der Adapterplatte eintauchen. Bei Bedarf kann der Benutzer den Tragegriff der Adaptervorrichtung aus der zweiten Vertiefung der Adapterplatte entnehmen und in seine Tragestellung überführen, in der er aus der Stellfläche hervorsteht.

Von Vorteil ist es, wenn der Tragegriff der Adaptervorrichtung in seiner Ruhestellung die zweite Vertiefung zumindest bereichsweise ausfüllt und die Stellfläche der Adapterplatte erweitert.

Günstigerweise ist die Trageeinrichtung der Adaptervorrichtung an der Adapterplatte verschwenkbar gelagert.

Von Vorteil ist es, wenn die Verriegelungseinrichtung an der Trageeinrichtung der Adaptervorrichtung gehalten ist. Dies vereinfacht die Handhabung der Adaptervorrichtung sowohl beim Verriegeln mit dem Gehäuse des Reinigungsgerätes als auch beim Tragen zusammen mit dem Reinigungsgerät. Außerdem ermöglicht es die Halterung der Verriegelungseinrichtung an der Trageinrichtung, in einem ersten Montageschritt die Verriegelungseinrichtung an der Trageinrichtung zu montieren, und in einem zweiten Montageschritt kann dann die aus der Verriegelungseinrichtung und der Trageinrichtung bestehende Baueinheit an der Adapterplatte montiert werden. Dadurch können die Montagekosten gering gehalten werden.

Es kann vorgesehen sein, dass die Verriegelungseinrichtung und die Trageinrichtung starr miteinander verbunden und beweglich an der Adapterplatte gehalten sind. Hierbei kann vorgesehen sein, dass die aus der Verriegelungseinrichtung und der Trageeinrichtung bestehende Baueinheit zwischen einer ersten Stellung, in der das mindestens eine Verriegelungsglied ein Gehäuseteil des Reinigungsgerätes hintergreift und der Tragegriff der Adaptervorrichtung seine Ruhestellung einnimmt, über eine zweite Stellung, in der das mindestens eine Verriegelungsglied ebenfalls das Gehäuseteil des Reinigungsgerätes hintergreift, der Tragegriff der Adaptervorrichtung aber seine Tragestellung einnimmt, und einer dritten Stellung, in der das mindestens eine Verriegelungsglied das Gehäuseteil des Reinigungsgerätes freigibt und der Tragegriff der

Adaptervorrichtung eine Außerbetriebstellung einnimmt, hin und her bewegt werden kann. Je nach Stellung der aus der Verriegelungseinrichtung und der Trageeinrichtung bestehenden Baueinheit kann die Adapterplatte mit dem Gehäuseteil des Reinigungsgerätes verriegelt oder entriegelt sein und es kann der Tragegriff der Adaptervorrichtung seine Ruhestellung oder auch seine Tragestellung einnehmen.

Bei einer bevorzugten Ausgestaltung der Erfindung ist die Verriegelungseinrichtung an der Trageeinrichtung beweglich gelagert ist. Dies gibt die Möglichkeit, die Verriegelungseinrichtung relativ zur Trageeinrichtung zu bewegen. Insbesondere kann bei einer derartigen Ausführungsform das mindestens eine Verriegelungsglied zwischen seiner Verriegelungsstellung und seiner Freigabestellung hin und her bewegt werden, ohne dass dabei die Trageeinrichtung ihre Lage relativ zur Adaptervorrichtung verändern muss. Umgekehrt kann der Tragegriff seine Position relativ zur Adaptervorrichtung verändern, ohne dass die Stellung der Verriegelungseinrichtung verändert werden muss. Es kann dadurch der Tragegriff zwischen seiner Ruhestellung und seiner Tragestellung hin und her bewegt werden, ohne dass dies die Verriegelung der Adapterplatte mit dem Gehäuse des Reinigungsgerätes beeinflusst.

Bei einer vorteilhaften Ausführungsform ist vorgesehen, dass die Verriegelungseinrichtung an der Trageeinrichtung verschwenkbar gelagert ist.

Günstigerweise sind die Verriegelungseinrichtung und die Trageeinrichtung an der Adapterplatte gehalten, wobei sie unabhängig voneinander jeweils um mindestens 90° um eine gemeinsame Schwenkachse verschwenkbar sind. Hierbei kann die gemeinsame Schwenkachse parallel zu einer Längsachse eines oberseitig am Gehäuse des Reinigungsgerätes angeordneten Tragegriffs ausrichtbar sein.

Die Montage der Adaptervorrichtung wird bei einer vorteilhaften Ausführungsform dadurch vereinfacht, dass die Verriegelungseinrichtung mit der Trageeinrichtung verrastbar ist.

Wie bereits erläutert, kann auf die Stellfläche der Adapterplatte ein Behälter, beispielsweise ein Werkzeug- oder Zubehörkoffer abgestellt werden. Hierbei ist es von Vorteil, wenn die Adapterplatte mindestens ein aus der Stellfläche hervorstehendes Anschlagelement aufweist, an das der Behälter anlegbar ist. Das Anschlagelement erleichtert die Positionierung des Behälters auf der Stellfläche der Adapterplatte.

Günstigerweise weist mindestens ein Anschlagelement eine Ausnehmung auf zur Aufnahme eines Vorsprunges des Behälters. Der Behälter kann beispielsweise zapfenförmige Vorsprünge aufweisen, die von einer Ausnehmung eines Anschlagelementes der Adaptervorrichtung aufgenommen werden.

Besonders vorteilhaft ist es, wenn die Adaptervorrichtung mindestens ein Arretierungselement aufweist zum Arretieren des Behälters an der Stellfläche der Adapterplatte. Ein unbeabsichtigtes Lösen des Behälters von der Stellfläche kann dadurch zuverlässig verhindert werden.

Bevorzugt ist mindestens ein Arretierungselement in einer oberseitigen Vertiefung der Adapterplatte beweglich, insbesondere verschwenkbar gelagert. Es kann zum Arretieren des Behälters aus der zugeordneten Vertiefung der Adapterplatte herausbewegt, insbesondere herausgeschwenkt werden, um dann mit einem komplementären Arretierungselement des Behälters zusammenzuwirken.

Wie eingangs erwähnt, betrifft die Erfindung nicht nur eine Adaptervorrichtung der voranstehend genannten Art sondern auch eine Reinigungseinrichtung mit einer derartigen Adaptervorrichtung und mit einem tragbaren Reinigungsgerät.

Bevorzugt umfasst das Reinigungsgerät ein hintergreifbares Gehäuseteil, beispielsweise eine Gehäuselasche oder einen Gehäusevorsprung oder dergleichen, und die Verriegelungseinrichtung der Adaptervorrichtung wirkt mit dem hintergreifbaren Gehäuseteil zusammen zum werkzeuglosen lösbaren Verriegeln der Adapterplatte mit dem Gehäuse. Zusätzliche Verriegelungselemente am Reinigungsgerät sind folglich zum Verriegeln der Adapterplatte nicht erforderlich.

Von ganz besonderem Vorteil ist es, wenn das Reinigungsgerät einen Tragegriff aufweist und die Adapterplatte der Adaptervorrichtung mittels der Verriegelungseinrichtung mit dem Tragegriff werkzeuglos lösbar verriegelbar ist.

Der Tragegriff ist bei einer vorteilhaften Ausgestaltung der Erfindung an der Oberseite des Gehäuses des Reinigungsgerätes angeordnet. Insbesondere kann vorgesehen sein, dass der Tragegriff in eine oberseitige Deckfläche des Gehäuses integriert ist, auf die die Adapterplatte aufsetzbar ist.

Das Reinigungsgerät ist bevorzugt als Staubsauger ausgestaltet. Es kann allerdings auch vorgesehen sein, dass das Reinigungsgerät in Form eines Hochdruckreinigers ausgebildet ist.

Bei einer besonders bevorzugten Ausführungsform der erfindungsgemäßen Reinigungseinrichtung weist das Reinigungsgerät einen verfahrbaren Sockel auf, an dem Laufräder drehbar gelagert sind, sowie ein auf dem Sockel angeordnetes Reinigungsaggregat mit einem Griffbügel, wobei das Reinigungsag-

gregat das Gehäuse aufweist, mit dem die Adapterplatte verriegelbar ist, und wobei der Griffbügel in einer aufgerichteten Stellung im Wesentlichen senkrecht zur Stellfläche der am Gehäuse arretierten Adapterplatte ausgerichtet ist. Bei einer derartigen Ausführungsform ist das Reinigungsgerät mittels des Sockels verfahrbar, und nach Verriegeln der Adapterplatte mit dem Gehäuse des Reinigungsgerätes kann ein Behälter auf die Stellfläche der Adapterplatte aufgestellt werden, der sich dann auch am aufgerichteten Griffbügel abstützen kann. Der Griffbügel ist in seiner aufgerichteten Stellung im Wesentlichen senkrecht zur Stellfläche der Adapterplatte ausgerichtet. Der Behälter kann daher über die Adapterplatte hinausragen und sich in seinem hinausragenden Bereich am Griffbügel abstützen.

Von besonderem Vorteil ist es, wenn das Reinigungsgerät zusammen mit mindestens einem auf der Stellfläche der Adapterplatte angeordneten Behälter um eine gemeinsame Drehachse von zwei Laufrädern verschwenkbar ist. Das Reinigungsgerät kann dann zusammen mit der am Reinigungsgerät arretierten Adaptervorrichtung und dem mindestens einen Behälter nach Art einer Sackkarre verfahren werden. Der Behälter ist mittels der Adaptervorrichtung zuverlässig auf dem Reinigungsgerät positionierbar, bevorzugt ist er an der Adapterplatte arretierbar. Hierbei ist es von besonderem Vorteil, wenn der Behälter oberseitig einen Tragegriff aufweist, so dass der Benutzer den Behälter zusammen mit der Adaptervorrichtung und dem Reinigungsgerät tragen kann, nachdem zuvor in einem ersten Schritt die Adapterplatte am Gehäuse des Reinigungsgerätes arretiert wurde und danach der Behälter an der Adapterplatte arretiert wurde. Der Benutzer kann dann wählen, ob er die komplette Reinigungseinrichtung mitsamt dem oberseitig angeordneten Behälter um die gemeinsame Drehachse zweier Laufräder des Reinigungsgerätes verschwenkt und das Reinigungsgerät mit dem Behälter nach Art einer Sackkarre verfährt, oder ob er, beispielsweise zur Überwindung einer Stufe, den Behälter mitsamt

dem Reinigungsgerät und der dazwischen angeordneten Adaptervorrichtung am Tragegriff des Behälters anhebt.

Die nachfolgende Beschreibung einer bevorzugten Ausführungsform der Erfindung dient im Zusammenhang mit der Zeichnung der näheren Erläuterung. Es zeigen:

Figur 1: eine perspektivische Darstellung einer erfindungsgemäßen Adaptervorrichtung;

Figur 2: eine Draufsicht auf die Adaptervorrichtung aus Figur 1;

Figur 3: eine Schnittansicht der Adaptervorrichtung längs der Linie 3-3 in Figur 2;

Figur 4: eine Darstellung der Adaptervorrichtung nach Art einer Explosionszeichnung;

Figur 5: eine perspektivische Darstellung der Adaptervorrichtung, wobei ein Tragegriff seine Tragestellung und eine Verriegelungseinrichtung ihre Verriegelungsstellung einnehmen;

Figur 6: eine perspektivische Darstellung der Adaptervorrichtung, wobei der Tragegriff seine Ruhestellung und die Verriegelungseinrichtung ihre Freigabestellung einnehmen;

Figur 7: eine perspektivische Darstellung einer erfindungsgemäßen Reinigungseinrichtung nach Art einer Explosionszeichnung mit einem Reinigungsgerät und einer Adaptervorrichtung, wobei eine Verrie-

gelungseinrichtung der Adaptervorrichtung ihre Freigabestellung einnimmt;

Figur 8: eine perspektivische Darstellung der Reinigungseinrichtung, wobei die Adaptervorrichtung mit dem Reinigungsgerät verriegelt ist;

Figur 9: eine perspektivische Darstellung der Reinigungseinrichtung, wobei die Adaptervorrichtung mit dem Reinigungsgerät verriegelt ist und ein Tragegriff der Adaptervorrichtung seine Tragestellung einnimmt, und

Figur 10: eine perspektivische Darstellung der Reinigungseinrichtung mit zwei darauf angeordneten Behältern.

In den Figuren 1 bis 6 ist eine erfindungsgemäße Adaptervorrichtung 10 dargestellt, die auf die Deckfläche eines Gehäuses eines in den Figuren 7 bis 10 dargestellten Reinigungsgerätes aufgesetzt werden kann und ihrerseits eine Stellfläche bildet für einen Behälter, wie er beispielsweise in Figur 10 dargestellt ist.

Die Adaptervorrichtung 10 weist eine Adapterplatte 11 auf, die in der Draufsicht im Wesentlichen rechteckförmig ausgestaltet ist, wobei sie an einem vorderen Rand 12 eine zentrale Einbuchtung 13 aufweist. Ein hinterer Rand 15 der Adapterplatte 11 ist geradlinig ausgebildet, und ein erster Längsrand 16 weist ebenso wie ein zweiter Längsrand 17 eine geringfügig konvex nach außen gekrümmte Gestalt auf. Die beiden Längsränder 16 und 17 sind einander abgewandt und verbinden jeweils den hinteren Rand 15 mit dem vorderen Rand 12.

Die Oberseite 19 der Adapterplatte 11 weist eine ebene Stellfläche 20 auf sowie eine mittige, im Wesentlichen U-förmige erste Vertiefung 22 und eine sich daran anschließende, rechteckförmige zweite Vertiefung 24, an die sich, dem zweiten Längsrand 17 benachbart, eine dritte rechteckförmige Vertiefung 26 anschließt. Dem ersten Längsrand 16 benachbart weist die Adapterplatte 11 auf ihrer Oberseite 19 eine vierte rechteckförmige Vertiefung 28 auf, und der zentralen Einbuchtung 13 benachbart ist zwischen der dritten und der vierten Vertiefung 26, 28 eine fünfte rechteckförmige Vertiefung 30 angeordnet.

Im Übergangsbereich zwischen der ersten und der zweiten Vertiefung 22, 24 sind in die Oberseite 19 fluchtend zueinander eine erste Rastausnehmung 34 und eine zweite Rastausnehmung 36 eingeformt. In die beiden Rastausnehmungen 34 und 36 ist eine Trageeinrichtung 38 eingerastet. Die Trageeinrichtung 38 umfasst einen U-förmigen Tragbügel 40 mit einem ersten Tragschenkel 41 und einem zweiten Tragschenkel 42, die über einen stegartigen Tragegriff 43 einstückig miteinander verbunden sind. Auf ihren einander abgewandten Außenseiten 45 bzw. 46 tragen die beiden Tragschenkel 41 und 42 an ihrem freien Ende einen ersten Gelenkstift 48 bzw. einen zweiten Gelenkstift 49. Die beiden Gelenkstifte sind fluchtend zueinander ausgerichtet und können mit der ersten Rastausnehmung 34 bzw. mit der zweiten Rastausnehmung 36 verrastet werden. Die beiden Gelenkstifte 48 und 49 definieren eine Schwenkachse 51, die senkrecht zum hinteren Rand 15 verläuft und um die die Trageeinrichtung 38 verschwenkt werden kann, nachdem die Gelenkstifte 48 und 49 mit den Rastausnehmungen 34 und 36 verrastet wurden. Dies gibt die Möglichkeit, den Tragbügel 40 und damit auch den Tragegriff 43 zwischen einer Ruhestellung, in der er vollständig in die U-förmige erste Vertiefung 22 eintaucht, und einer Tragestellung, in der der Tragbügel 40 senkrecht zur Stellfläche 20 ausgerichtet ist und der Tragegriff 43 vom Benutzer umgriffen werden kann, hin und her zu schwenken. Der Tragbügel 40 und damit auch

der Tragegriff 43 steht in der Tragestellung, wie sie beispielsweise in Figur 5 dargestellt ist, aus der Stellfläche 20 hervor. In der Ruhestellung hingegen füllt der Tragbügel 40 die erste Vertiefung 22 vollständig aus und erweitert somit die ebene Stellfläche 20. Dies wird insbesondere aus Figur 1 deutlich.

An ihren einander zugewandten Innenseiten 54 bzw. 55 tragen die beiden Tragschenkel 41 und 42 fluchtend zu den Gelenkstiften 48 und 49 einen dritten Gelenkstift 57 bzw. einen vierten Gelenkstift 58. Mit diesen Gelenkstiften ist eine Verriegelungseinrichtung 60 der Adaptervorrichtung 10 verrastet. Die Verriegelungseinrichtung 60 weist hierzu zwei Rastklemmen 62, 63 auf, die mit dem dritten bzw. vierten Gelenkstift 57, 58 verrastet werden können, wobei die Verriegelungseinrichtung 60 um die Schwenkachse 51 relativ zur Trageeinrichtung 38 zwischen einer in Figur 5 dargestellten Verriegelungsstellung und einer in Figur 6 dargestellten Freigabestellung hin und her geschwenkt werden kann.

Die Verriegelungseinrichtung 60 umfasst ein erstes Verriegelungsglied in Form eines ersten Verriegelungsbügels 65 und ein zweites Verriegelungsglied in Form eines zweiten Verriegelungsbügels 66, die identisch ausgestaltet sind und über eine starre, plattenförmig ausgebildete Verriegelungshandhabe 68 miteinander verbunden sind. Den beiden Verriegelungsbügeln 65 und 66 ist im Boden 70 der zweiten Vertiefung 24 jeweils eine Durchbrechung 71 bzw. 72 zugeordnet, die in der Verriegelungsstellung der Verriegelungseinrichtung 60 von den Verriegelungsbügeln 65 bzw. 66 durchgriffen werden kann. In der Verriegelungsstellung stehen daher die Verriegelungsbügel 65 und 66 mit ihren freien Endabschnitten 74 bzw. 75 unterseitig aus der Adapterplatte 11 hervor. Dies wird insbesondere aus Figur 3 deutlich.

Die plattenförmige Verriegelungshandhabe 68 überdeckt in der Verriegelungsstellung der Verriegelungseinrichtung 60 zumindest einen Teilbereich der zweiten Vertiefung 24 und erweitert daher in der Verriegelungsstellung die Stellfläche 20. Vom Benutzer kann die Verriegelungshandhabe 68 in der Verriegelungsstellung der Verriegelungseinrichtung 60 hintergriffen werden. Der Benutzer kann hierzu im Übergangsbereich zwischen der zweiten Vertiefung 24 und der dritten Vertiefung 26 hinter die Verriegelungshandhabe 68 greifen. Anschließend kann er die Verriegelungshandhabe 68 zusammen mit den Verriegelungsbügeln 65 und 66 um die Schwenkachse 51 nach außen verschwenken in die in Figur 6 dargestellte Freigabestellung. In dieser Stellung erreichen die freien Endabschnitte 74 und 75 der Verriegelungsbügel 65 und 66 die Höhe des Bodens 70 der zweiten Vertiefung 24, sie stehen aber nicht mehr unterseitig aus der Adapterplatte 11 hervor.

Im Bereich des hinteren Randes 15 trägt die Adapterplatte 11 an ihrer Oberseite 19 einen aus der Stellfläche 20 herausragenden ersten Anschlag 77 mit einer im Wesentlichen senkrecht zur Stellfläche 20 ausgerichteten ersten Anschlagfläche 78. Und im Abstand zum ersten Anschlag 77 steht im Bereich des hinteren Randes 15 ein zweiter Anschlag 80 aus der Stellfläche 20 hervor, wobei der zweite Anschlag 80 der dritten Vertiefung 26 zugewandt eine rechteckförmige Ausnehmung 81 aufweist.

Im Bereich zwischen dem ersten Anschlag 77 und der vierten Vertiefung 28 weist die Adapterplatte 11 an ihrer Oberseite 19 eine sechste Vertiefung 83 auf, die in den ersten Längsrand 18 einmündet und in der ein erstes Arretierungselement in Form eines ersten Rastbügels 85 verschwenkbar gelagert ist.

Zwischen der vierten Vertiefung 28 und dem vorderen Rand 12 der Adapterplatte 11 ist in die Oberseite 19 eine siebte Vertiefung 87 eingeformt, die im

Wesentlichen identisch ausgestaltet ist wie die sechste Vertiefung 83 und die in den ersten Längsrand 16 einmündet. In der siebten Vertiefung 87 ist ein zweites Arretierungselement in Form eines zweiten Rastbügels 88 verschwenkbar gelagert. Der zweite Rastbügel 88 ist identisch ausgestaltet wie der erste Rastbügel 85.

Zwischen der dritten Vertiefung 26 und dem vorderen Rand 12 der Adapterplatte 11 ist in die Oberseite 19 eine achte Vertiefung 90 eingeformt, die im Wesentlichen identisch ausgestaltet ist wie die sechste und siebte Vertiefung, wobei sie allerdings um 90° gedreht ist und in den vorderen Rand 12 einmündet. In der achten Vertiefung 90 ist ein drittes Arretierungselement in Form eines dritten Rastbügels 91 verschwenkbar gelagert, der identisch ausgebildet ist wie der zweite Rastbügel 88 und der erste Rastbügel 85.

Wie bereits erwähnt, kommt die Adaptervorrichtung 10 für die Anordnung eines Behälters am Gehäuse eines tragbaren Reinigungsgerätes zum Einsatz. Ein derartiges Reinigungsgerät ist in den Figuren 7 bis 10 in Form eines Staubsaugers 95 dargestellt. Dieser umfasst einen Sockel 97 mit zwei um eine gemeinsame Drehachse 98 frei drehbaren hinteren Laufrädern, von denen in Zeichnung nur ein hinteres Laufrad 99 dargestellt ist, und mit zwei vorderen Laufrädern, von denen in der Zeichnung nur ein vorderes Laufrad 101 dargestellt ist. Mittels der Laufräder 99, 101 kann der Sockel 97 entlang einer Bodenfläche verfahren werden.

Auf den Sockel 97 ist ein Saugaggregat 103 aufgesetzt, das ein Gehäuseunterteil 104 und ein Gehäuseoberteil 105 aufweist. Das Gehäuseunterteil 104 bildet in üblicher Weise einen Schmutzsammelbehälter aus, in den über einen Saugeinlass 107 Saugluft zusammen mit Sauggut eingesaugt werden kann. An den Saugeinlass 107 kann in üblicher Weise ein Saugschlauch angeschlossen

werden, der an seinem freien Ende eine Saugdüse trägt. Derartige Saugschläuche und Saugdüsen sind dem Fachmann an sich bekannt und daher in der Zeichnung nicht dargestellt.

Das Gehäuseoberteil 105 nimmt in üblicher Weise eine Saugturbine auf, die von einem Elektromotor angetrieben wird. Mittels der Saugturbine kann der Schmutzsammelbehälter des Gehäuseunterteils 104 mit Unterdruck beaufschlagt werden.

An seiner Oberseite weist das Gehäuseoberteil 104 eine Deckfläche 109 auf mit einer zentralen Vertiefung 110, die stegartig von einem Tragegriff 111 überbrückt ist. Mittels des Tragegriffes 111 kann der Staubsauger 95 vom Benutzer getragen werden.

Am Gehäuseoberteil 105 ist in einem rückwärtigen Bereich ein im Wesentlichen U-förmiger Griffbügel 113 um eine Schwenkachse 114 verschwenkbar gelagert. Der Griffbügel 113 kann um die Schwenkachse 114 zwischen einer in den Figuren 7 bis 10 dargestellten ausgeschwenkten oder aufgerichteten Stellung und einer in der Zeichnung nicht dargestellten eingeschwenkten Stellung hin und her verschwenkt werden. Mittels einer Feststelleinrichtung 116, die am freien Ende zumindest eines Schenkels des Griffbügels 113 angeordnet ist, kann der Griffbügel 113 in seiner ausgeschwenkten Stellung arretiert werden.

Die Adaptervorrichtung 10 kann auf die Deckfläche 109 des Staubsaugers 95 aufgesetzt werden, wobei die Schwenkachse 51 der Trageinrichtung 38 und der Verriegelungseinrichtung 60 parallel zu einer Längsachse 112 des Tragegriffs 111 ausgerichtet ist. Anschließend kann die Adapterplatte 11 mit dem Tragegriff 114 des Staubsaugers 95 verriegelt werden, indem die Verriege-

lungseinrichtung 60 ausgehend von ihrer in Figur 7 dargestellten Freigabestellung in die in Figur 8 dargestellte Verriegelungsstellung verschwenkt wird. In der Verriegelungsstellung hintergreifen die freien Endabschnitte 74 und 75 der Verriegelungsbügel 65 und 66 den Tragegriff 111 des Staubsaugers 95. Der Tragegriff 111 bildet somit ein hintergreifbares Gehäuseteil des Staubsaugers 95 aus, mit dem die Adapterplatte 11 mittels der Verriegelungseinrichtung 60 werkzeuglos lösbar verriegelt werden kann. Die Adapterplatte 11 ist dadurch an der Deckfläche 109 unbeweglich gehalten. Anschließend kann auf die Stellfläche 20 der Adapterplatte 11 ein Behälter 120 aufgestellt werden, wie er in Figur 10 dargestellt ist. Auf den Behälter 120 kann ein weiterer Behälter 122 positioniert sein. Der Behälter 120 kann zur Ausrichtung an der Stellfläche 20 derart positioniert werden, dass er mit einem Seitenbereich an der ersten Anschlagfläche 78 des ersten Anschlages 77 anschlägt und mit einem seitlichen zapfenförmigen Vorsprung in die Ausnehmung 81 des zweiten Anschlages 80 eingreift. Anschließend kann der Behälter 120 mittels der Rastbügel 85, 88 und 91 an der Stellfläche 20 arretiert werden. Der Behälter 20 bildet dann gemeinsam mit der Adaptervorrichtung 10 und dem Staubsauger 95 eine kompakte Transporteinheit aus, die mittels der Laufräder 99 und 101 des Sockels 97 an einer Bodenfläche entlang verfahren werden kann. Außerdem kann die Transporteinheit um die gemeinsame Drehachse 98 nach hinten verschwenkt und dann nach Art einer Sackkarre bewegt werden.

Falls kein Behälter 120 auf der Stellfläche 20 der am Tragegriff 111 des Staubsaugers 95 arretierten Adapterplatte 11 aufgestellt ist, kann die Adaptervorrichtung 10 zusammen mit dem Staubsauger 95 vom Benutzer angehoben werden. Hierzu kann der Benutzer den Tragbügel 40 ausgehend von seiner Ruhestellung, in der er vollständig in die erste Vertiefung 22 eintaucht, in seine Tragestellung verschwenken, in der der Tragebügel und vor allem der Tragegriff 43 aus der Stellfläche 20 hervorstehen, so dass der Benutzer den

Tragegriff 43 mit einer Hand umgreifen kann. Dies wird insbesondere aus Figur 9 deutlich.

Die Adaptervorrichtung 10 gibt somit die Möglichkeit, auf den Staubsauger 95 einen Behälter 120 aufzustellen, obwohl die Deckfläche 109 des Staubsaugers 95 zumindest in Teilbereichen gewölbt und im Übrigen mit Erhebungen versehen ist. Hierzu definiert die Adapterplatte 11 auf ihrer Oberseite 19 eine ebene Stellfläche 20 zum Abstellen des Behälters 120, wobei die Stellfläche 20 zur leichteren Positionierung des Behälters 120 nach oben abstehende Anschläge 77 und 80 aufweist. Mittels der Verriegelungseinrichtung 60 kann die Adapterplatte 11 auf einfache Weise am Gehäuse 105 des Staubsaugers 95 arretiert werden, so dass die aus der Adaptervorrichtung 10 und dem Staubsauger 95 gebildete Reinigungseinrichtung vom Benutzer am Tragegriff 43 getragen werden kann.

Die Adaptervorrichtung 10 kann vom Benutzer bedarfsweise eingesetzt werden, wobei er sie ohne Einsatz eines speziellen Werkzeuges am Gehäuse 105 des Staubsaugers 95 festlegen und von dieser auch ohne Werkzeug wieder lösen kann.

PATENTANSPRÜCHE

1. Adaptervorrichtung für die Anordnung eines Behälters (120) am Gehäuse (105) eines tragbaren Reinigungsgerätes (95), dadurch gekennzeichnet, dass die Adaptervorrichtung (10) eine Adapterplatte (11) aufweist, die auf das Gehäuse (105) aufsetzbar ist und oberseitig eine Stellfläche (20) aufweist zum Abstellen des Behälters (120), sowie eine Verriegelungseinrichtung (60) zum werkzeuglosen lösbaren Verriegeln der Adapterplatte (11) mit dem Gehäuse (105) des Reinigungsgerätes (95).

2. Adaptervorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Adapterplatte (11) mittels der Verriegelungseinrichtung (60) mit einem hintergreifbaren Gehäuseteil (111) des Gehäuses (105) des Reinigungsgerätes (95) werkzeuglos lösbar verriegelbar ist.

3. Adaptervorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Adapterplatte (11) mittels der Verriegelungseinrichtung (60) mit einem Tragegriff (111) des Reinigungsgerätes (95) werkzeuglos lösbar verriegelbar ist, der an einer Oberseite des Gehäuses (105) des Reinigungsgerätes (95) angeordnet ist.

4. Adaptervorrichtung nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, dass die Verriegelungseinrichtung (60) mindestens ein Verriegelungsglied (65, 66) aufweist, das zwischen einer Verriegelungsstellung und einer Freigabestellung hin und her bewegbar an der Adapterplatte (11) gehalten ist.

5. Adaptervorrichtung nach Anspruch 4, dadurch gekennzeichnet, dass die Verriegelungseinrichtung (60) eine vom Benutzer ergreifbare Verriegelungshandhabe (68) aufweist, die mit dem mindestens einen Verriegelungsglied (65, 66) verbunden ist.

6. Adaptervorrichtung nach Anspruch 5, dadurch gekennzeichnet, dass die Verriegelungshandhabe (68) in der Freigabestellung des mindestens einen Verriegelungsgliedes (65, 66) aus der Stellfläche (20) der Adapterplatte (11) hervorsteht und in der Verriegelungsstellung des mindestens einen Verriegelungsgliedes (65, 66) aus der Stellfläche (20) der Adapterplatte (11) nicht hervorsteht.

7. Adaptervorrichtung nach Anspruch 5 oder 6, dadurch gekennzeichnet, dass die Verriegelungshandhabe (68) plattenförmig ausgestaltet ist und in der Verriegelungsstellung des mindestens einen Verriegelungsgliedes (65, 66) in der Ebene der Stellfläche (20) oder unterhalb der Ebene der Stellfläche (20) angeordnet ist.

8. Adaptervorrichtung nach einem der Ansprüche 4 bis 7, dadurch gekennzeichnet, dass das mindestens eine Verriegelungsglied (65, 66) um eine Schwenkachse (51) verschwenkbar ist.

9. Adaptervorrichtung nach einem der Ansprüche 4 bis 8, dadurch gekennzeichnet, dass die Verriegelungseinrichtung (60) zwei starr miteinander verbundene und im Abstand zueinander angeordnete Verriegelungsglieder (65, 66) aufweist.

10. Adaptervorrichtung nach Anspruch 9, dadurch gekennzeichnet, dass die Verriegelungshandhabe (68) die beiden Verriegelungsglieder (65, 66) starr miteinander verbindet.

11. Adaptervorrichtung nach einem der Ansprüche 4 bis 10, dadurch gekennzeichnet, dass das mindestens eine Verriegelungsglied (65, 66) haken- oder bügelartig ausgestaltet ist und in der Verriegelungsstellung ein Gehäuseteil (111) des Reinigungsgerätes (95) untergreift.

12. Adaptervorrichtung nach einem der Ansprüche 5 bis 11, dadurch gekennzeichnet, dass die Adapterplatte (11) oberseitig eine erste Vertiefung (22) aufweist, die die Verriegelungshandhabe (68) aufnimmt.

13. Adaptervorrichtung nach einem der voranstehenden Ansprüche, dadurch gekennzeichnet, dass die Adaptervorrichtung (10) eine Trageeinrichtung (38) aufweist mit mindestens einem Tragegriff (43), der vom Benutzer umgreifbar ist.

14. Adaptervorrichtung nach Anspruch 13, dadurch gekennzeichnet, dass der Tragegriff (43) zwischen einer Tragestellung, in der er aus der Stellfläche (20) der Adapterplatte (11) hervorsteht, und einer Ruhestellung, in der er aus der Stellfläche (20) der Adapterplatte (11) nicht hervorsteht, hin und her bewegbar ist.

15. Adaptervorrichtung nach Anspruch 13 oder 14, dadurch gekennzeichnet, dass der Tragegriff (43) der Adaptervorrichtung (10) um eine Schwenkachse (51) verschwenkbar ist.

16. Adaptervorrichtung nach Anspruch 14 oder 15, dadurch gekennzeichnet, dass die Adapterplatte (11) oberseitig eine zweite Vertiefung (24) aufweist, die den Tragegriff (43) aufnimmt.

17. Adaptervorrichtung nach einem der Ansprüche 13 bis 16, dadurch gekennzeichnet, dass die Trageeinrichtung (39) der Adaptervorrichtung (10) an der Adapterplatte (11) verschenkbar gelagert ist.

18. Adaptervorrichtung nach einem der Ansprüche 13 bis 17, dadurch gekennzeichnet, dass die Verriegelungseinrichtung (60) an der Trageeinrichtung (38) gehalten ist.

19. Adaptervorrichtung nach Anspruch 18, dadurch gekennzeichnet, dass die Verriegelungseinrichtung (60) an der Trageeinrichtung (38) beweglich gelagert ist.

20. Adaptervorrichtung nach einem der voranstehenden Ansprüche, dadurch gekennzeichnet, dass die Adapterplatte (11) mindestens ein aus der Stellfläche (20) hervorstehendes Anschlagelement (77, 80) aufweist, an das der Behälter (120) anlegbar ist.

21. Adaptervorrichtung nach Anspruch 20, dadurch gekennzeichnet, dass mindestens ein Anschlagelement (80) eine Ausnehmung (81) aufweist zur Aufnahme eines Vorsprunges des Behälters (120).

22. Adaptervorrichtung nach einem der voranstehenden Ansprüche, dadurch gekennzeichnet, dass die Adaptervorrichtung (10) mindestens ein Arretierungselement (85, 88, 91) aufweist zum Arretieren des Behälters (120) an der Stellfläche (20) der Adapterplatte (11).

23. Adaptervorrichtung nach Anspruch 22, dadurch gekennzeichnet, dass mindestens ein Arretierungselement (85, 88, 91) in einer oberseitigen Vertiefung (83, 87, 90) der Adapterplatte (11) beweglich gelagert ist.

24. Reinigungseinrichtung mit einem tragbaren Reinigungsgerät (95), das ein Gehäuse (104, 105) aufweist, und mit einer Adaptervorrichtung (10) nach einem der voranstehenden Ansprüche.

25. Reinigungseinrichtung nach Anspruch 24, dadurch gekennzeichnet, dass das Gehäuse (105) des Reinigungsgerätes (95) ein hintergreifbares Gehäuseteil (111) aufweist, mit dem die Verriegelungseinrichtung (60) zusammenwirkt zum werkzeuglosen lösbaren Verriegeln der Adapterplatte (11) mit dem Gehäuse (105).

26. Reinigungseinrichtung nach Anspruch 24 oder 25, dadurch gekennzeichnet, dass das Reinigungsgerät (95) einen Tragegriff (111) aufweist und die Adapterplatte (11) der Adaptervorrichtung (10) mittels der Verriegelungseinrichtung mit dem Tragegriff (111) werkzeuglos lösbar verriegelbar ist.

27. Reinigungseinrichtung nach Anspruch 24, 25 oder 26, dadurch gekennzeichnet, dass das Reinigungsgerät als Staubsauger (95) ausgestaltet ist.

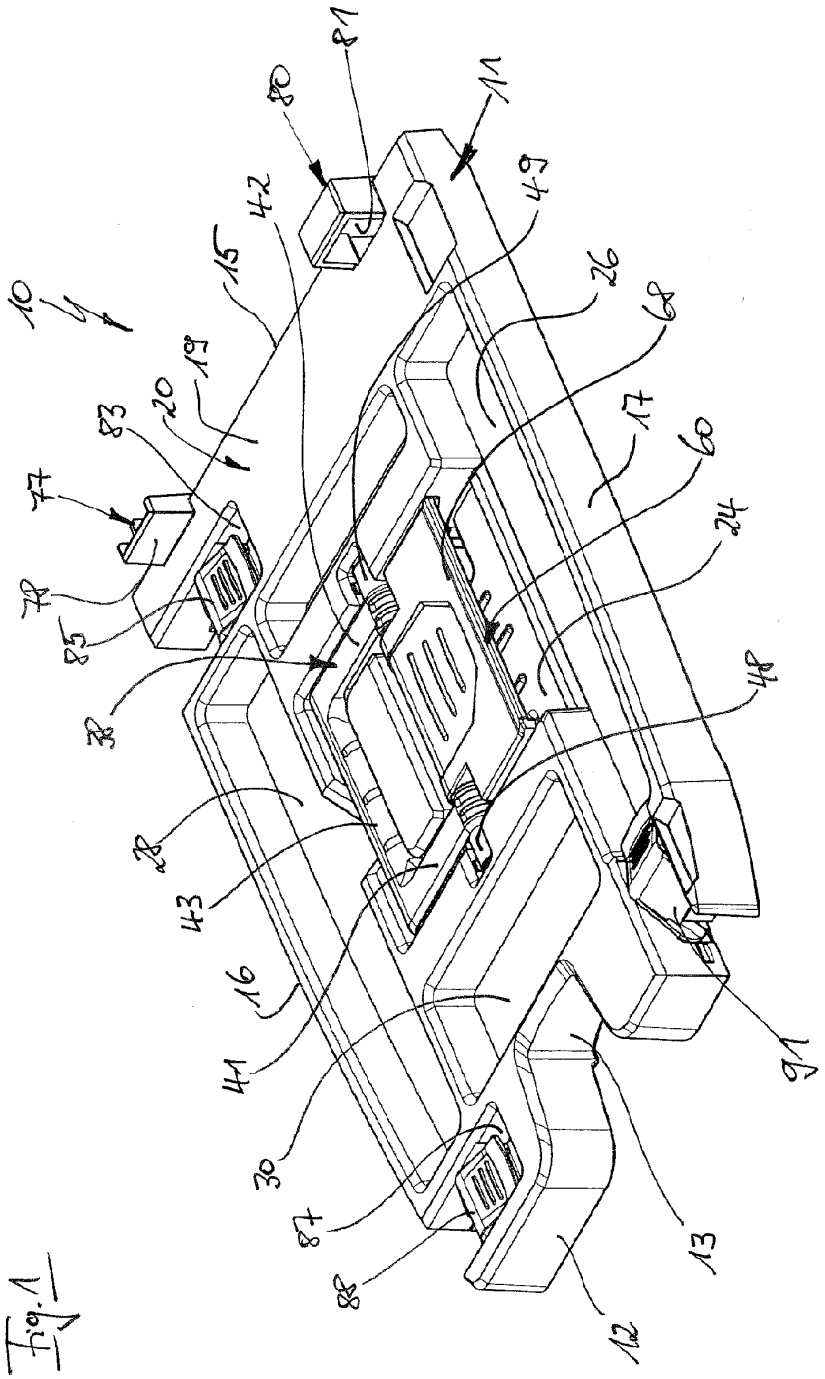

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Fig. 1

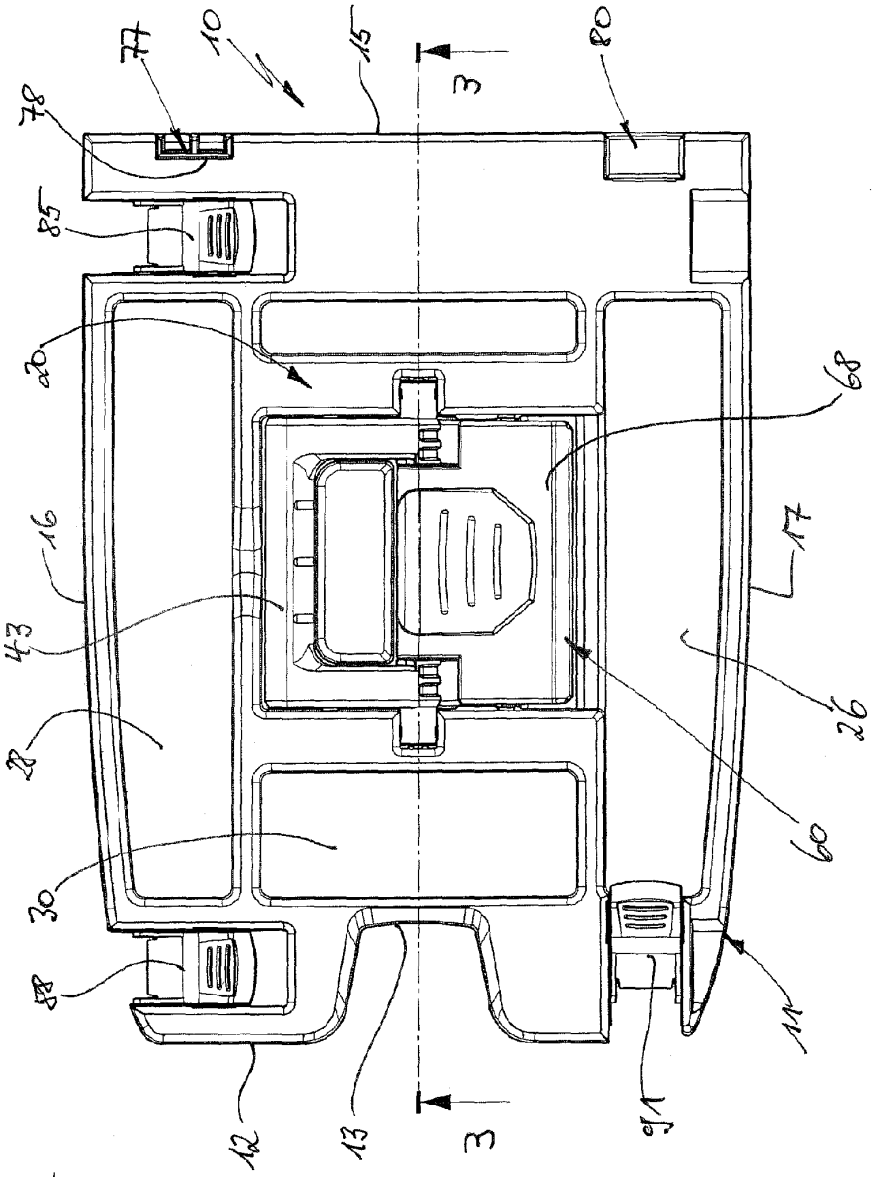


Fig.2

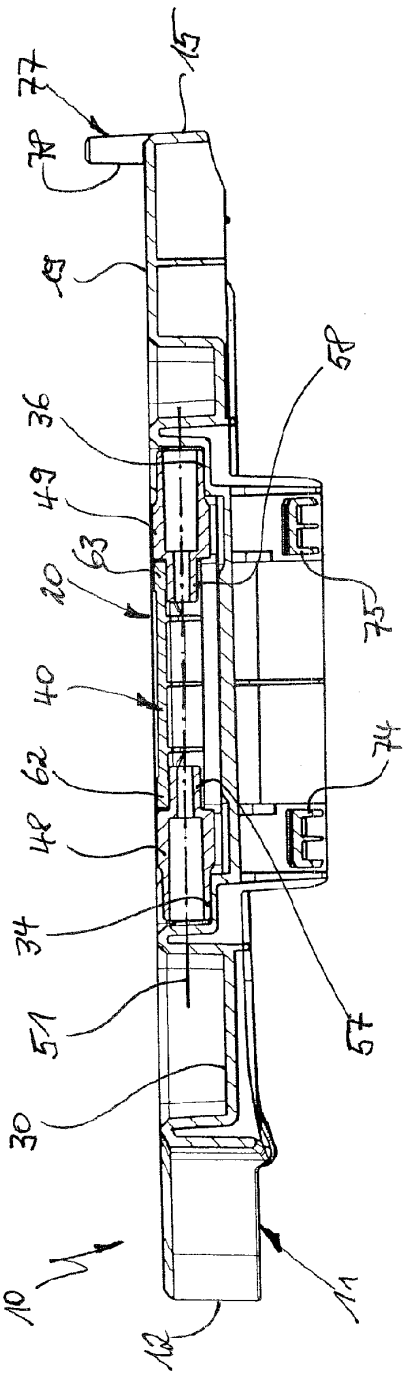


Fig. 3

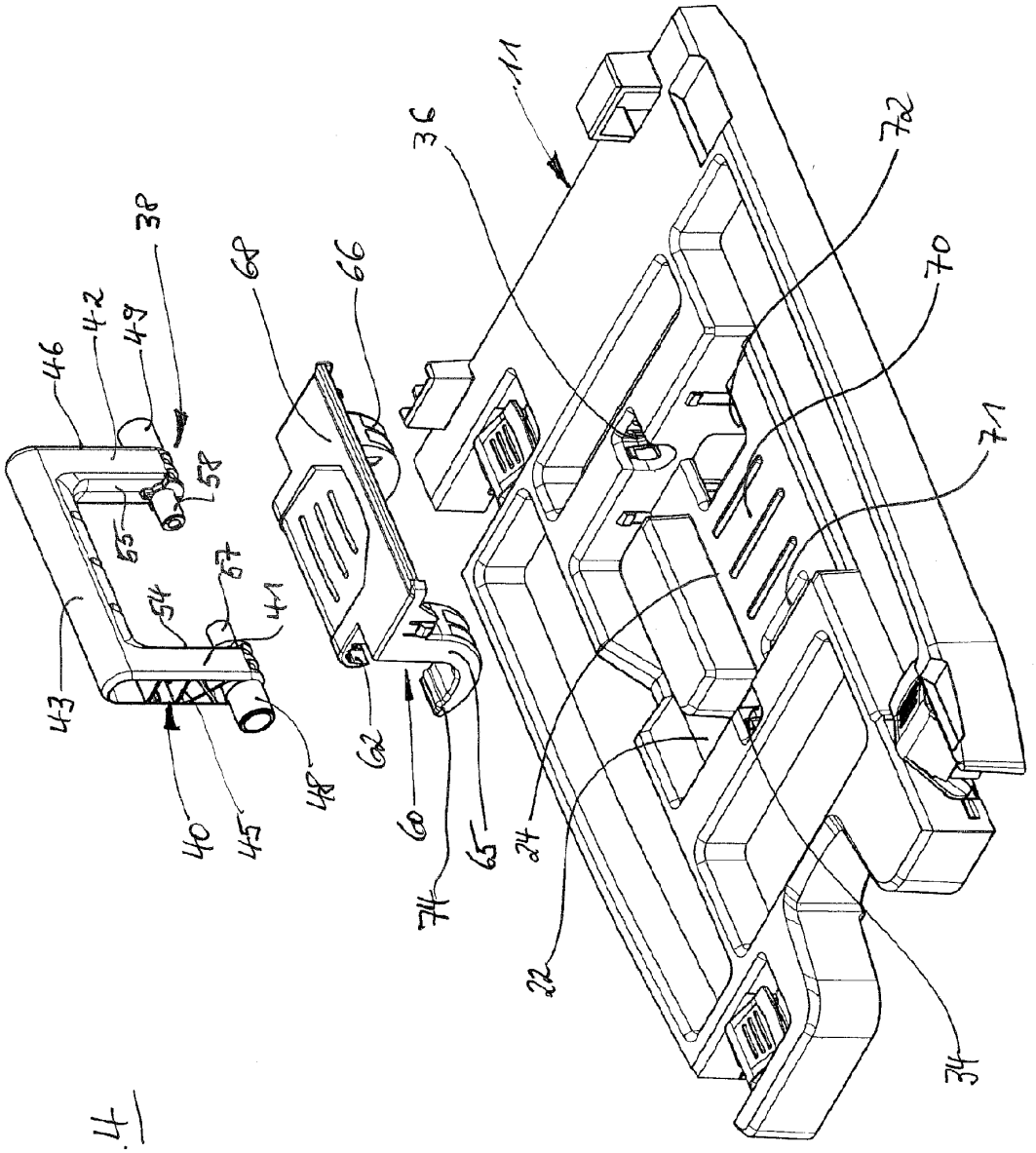

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Fig. 4

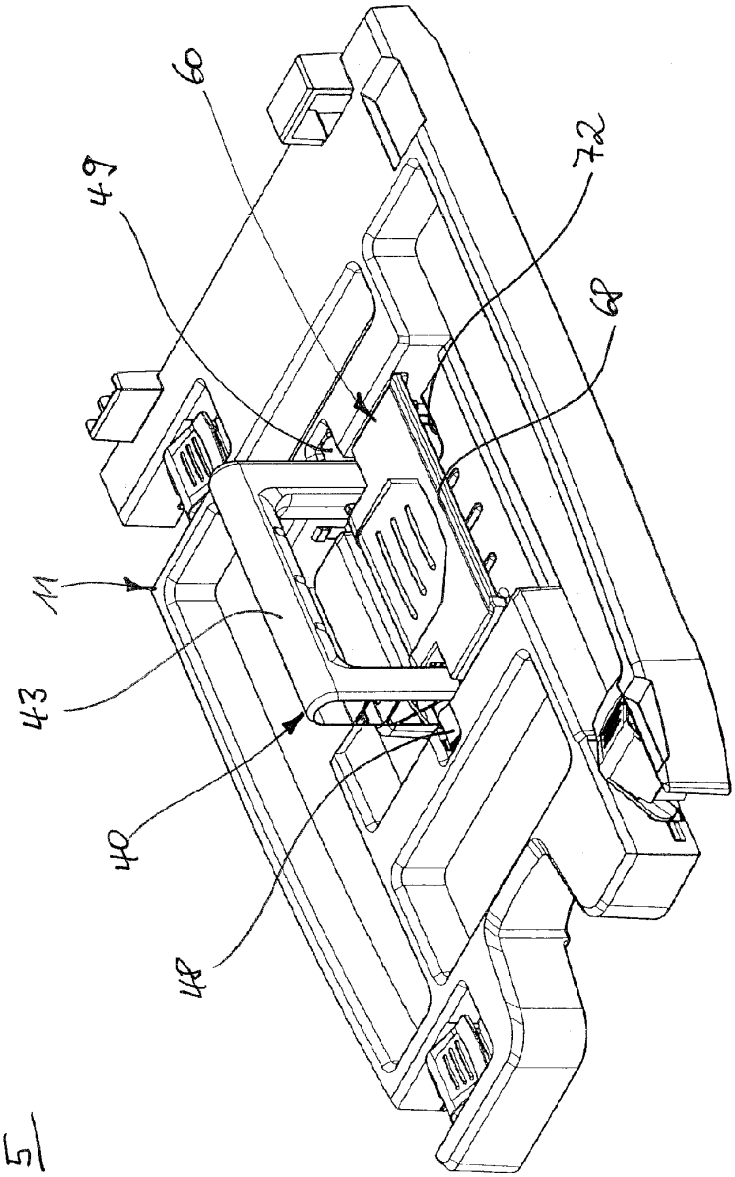


Fig. 5

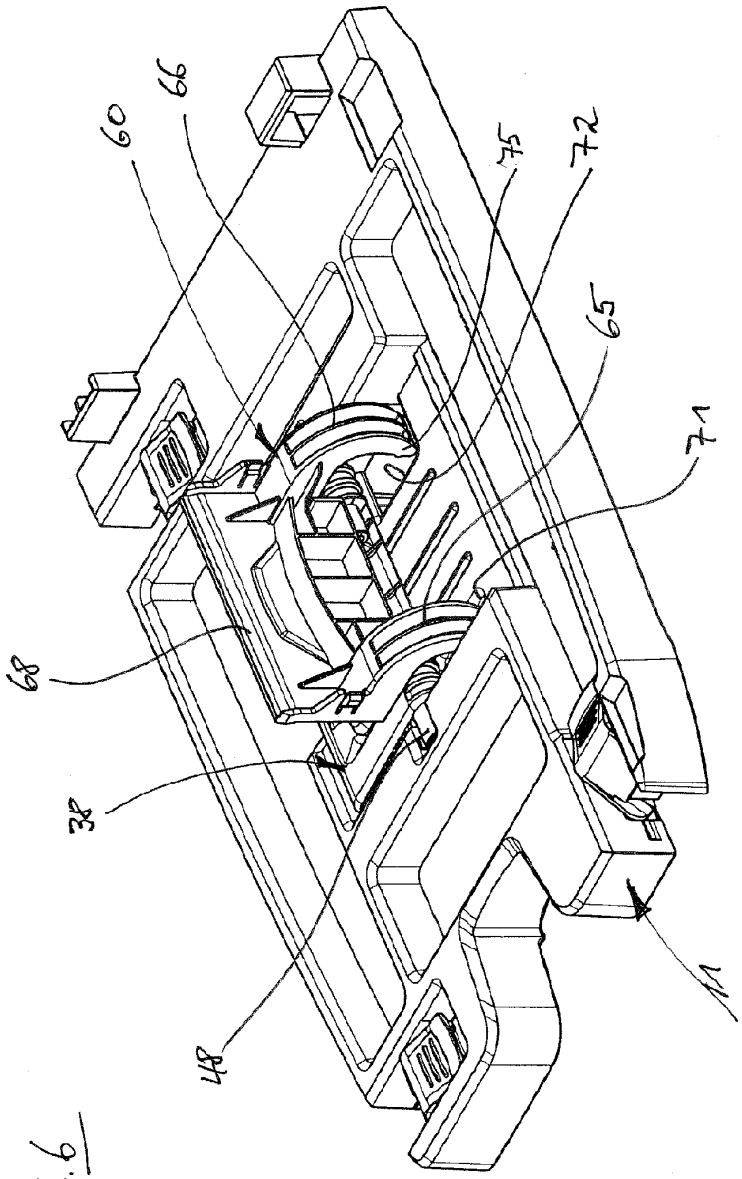


Fig. 6

Fig. 7

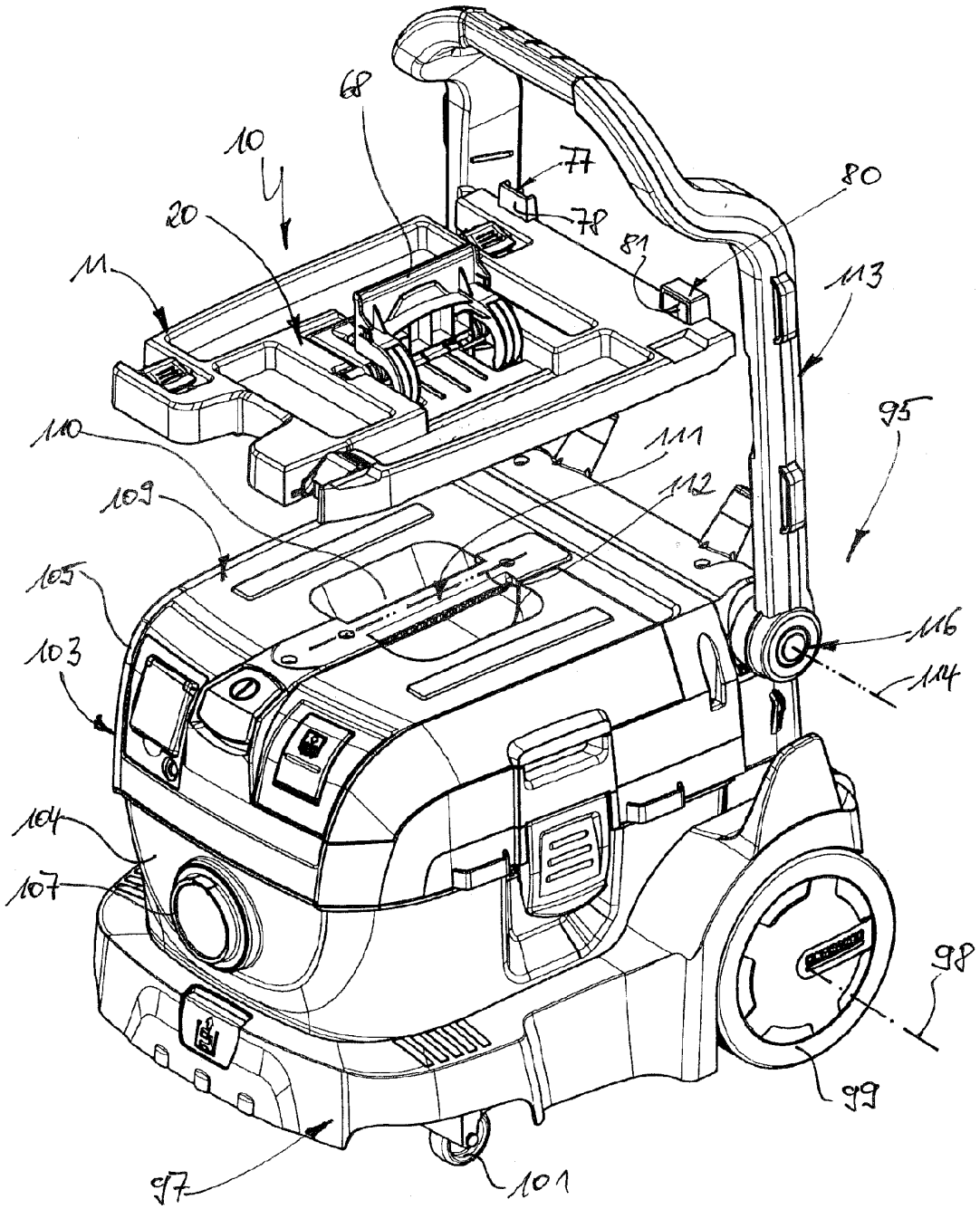

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Fig. 8

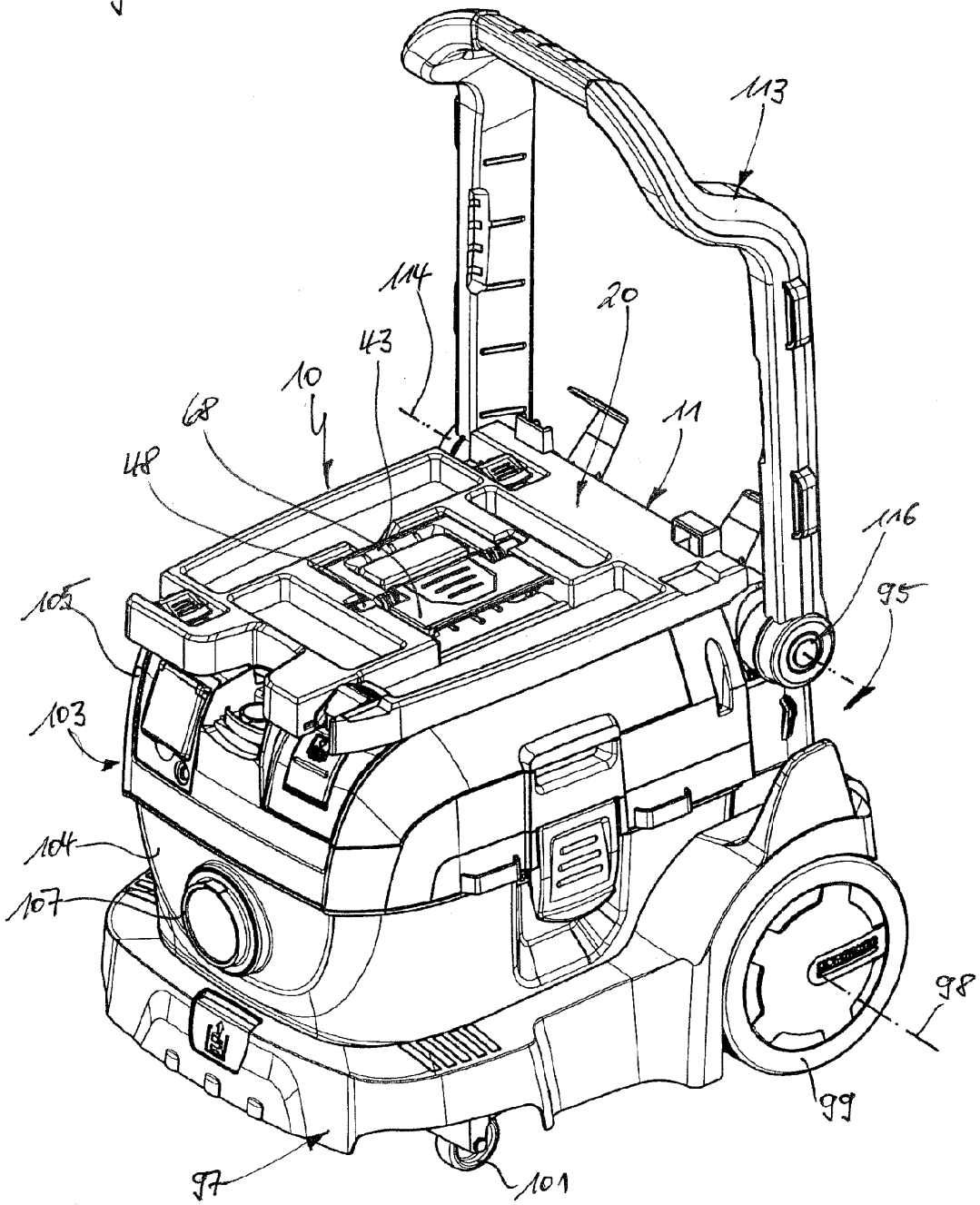


Fig. 9

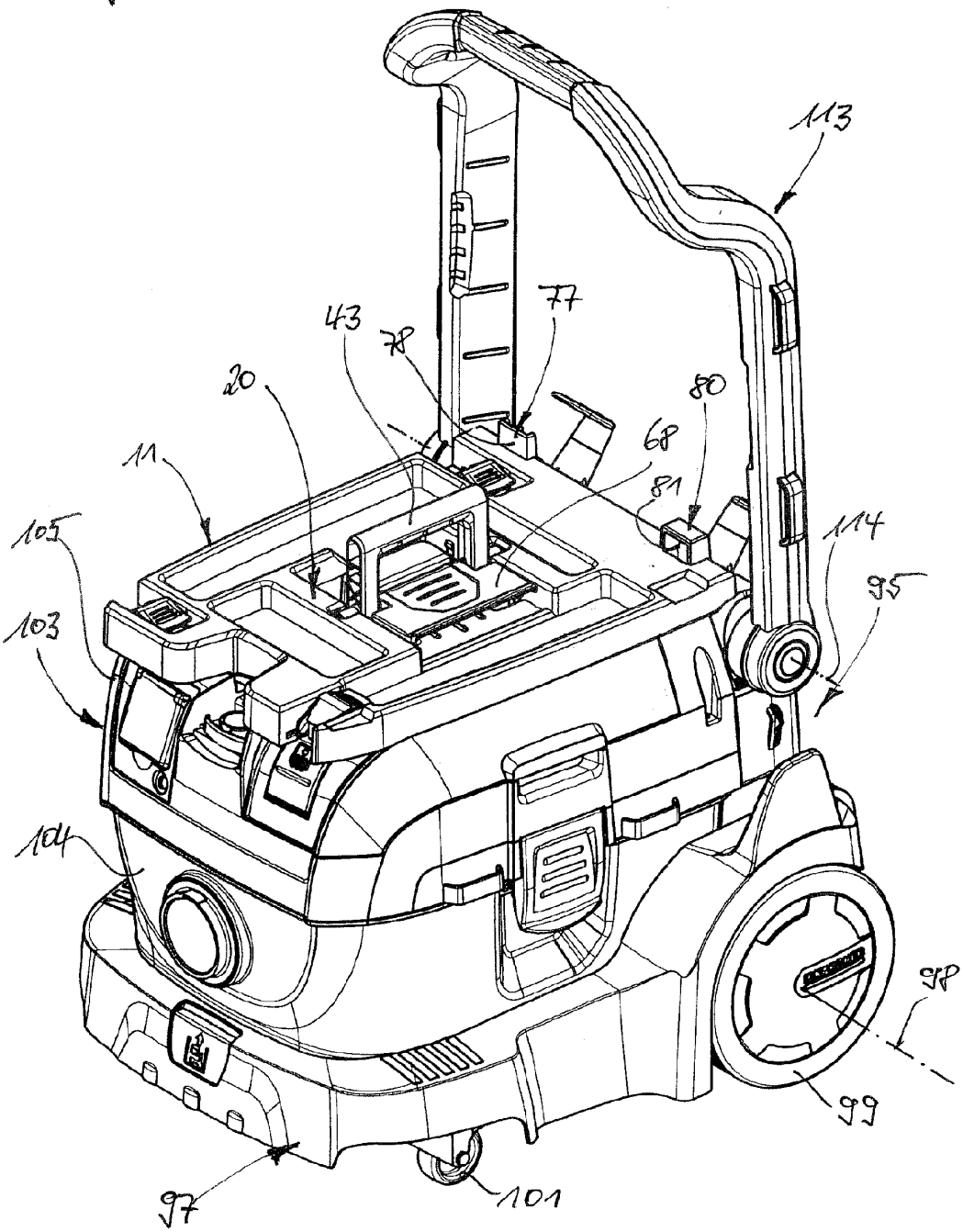
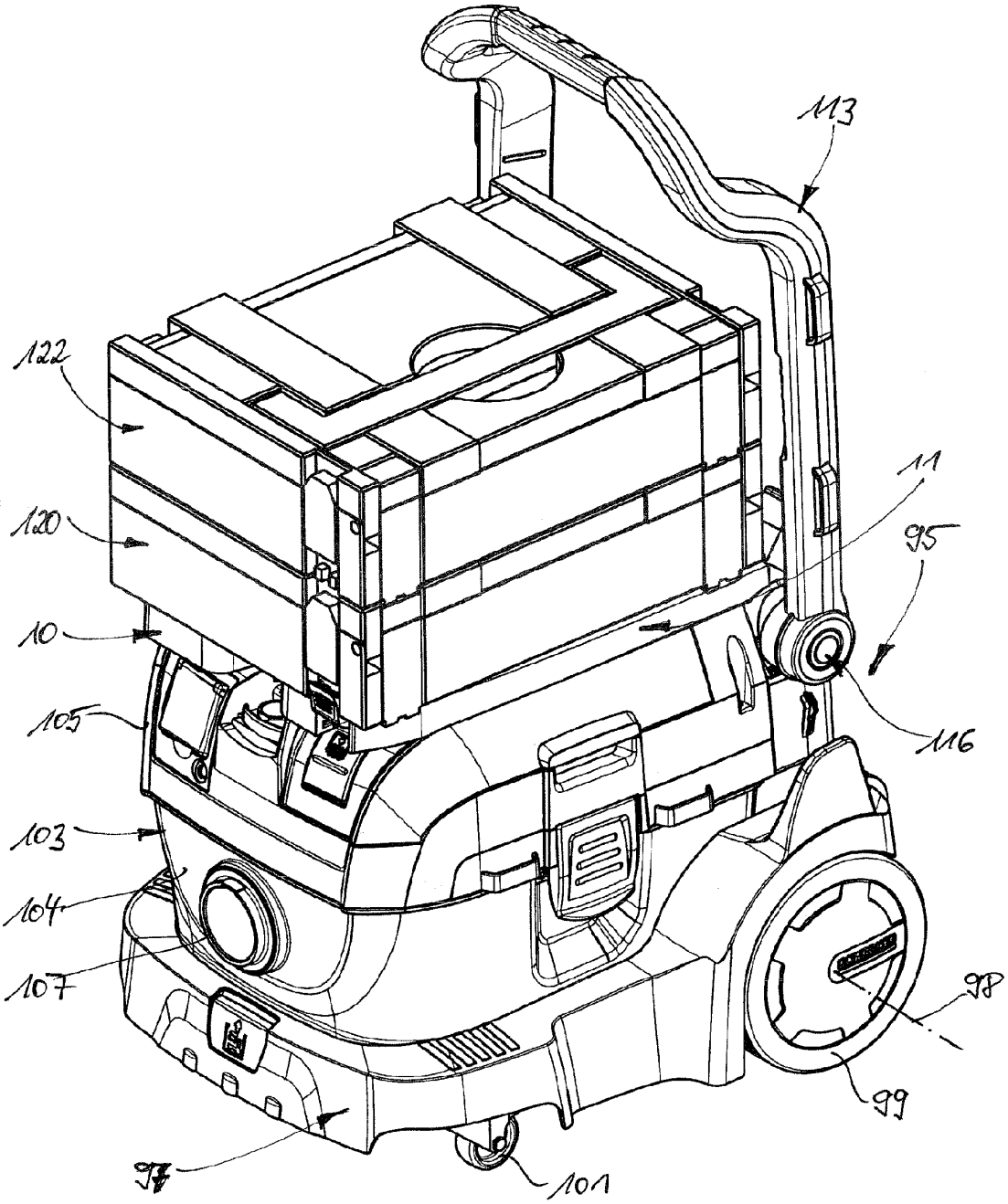


Fig. 10



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/059320

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47L9/00 B25H3/00
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)
A47L 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.
A	EP 0 916 302 A2 (FESTO TOOLTECHNIC GMBH & CO [DE] FESTO TOOLTECHNIC GMBH & CO TTS TOOLT) 19 May 1999 (1999-05-19) cited in the application the whole document	1,20-27
A	EP 1 269 903 A2 (FESTOOL GMBH [DE]) 2 January 2003 (2003-01-02) abstract paragraph [0025] figures 1,3	1,22, 24-27
A	EP 1 424 170 A1 (VALENTINI GUIDO [IT]) 2 June 2004 (2004-06-02) abstract paragraphs [0005], [0007] paragraph [0013] figure 3	1,20,22, 24,27

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 March 2010	14/04/2010

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	Baumgärtner, Ruth

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2009/059320

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0916302 A2	19-05-1999	DE 19750543 A1	20-05-1999
EP 1269903 A2	02-01-2003	DE 10130995 A1	16-01-2003
EP 1424170 A1	02-06-2004	AT 413949 T	15-11-2008
		ES 2316694 T3	16-04-2009
		US 2004103494 A1	03-06-2004

Form PCT/ISA/210 (patent family annex) (April 2005)

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP2009/059320

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
INV. A47L9/00 B25H3/00
ADD.

Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
A47L B25H

Recherchierte, aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)
EPO-Internal

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr
A	EP 0 916 302 A2 (FESTO TOOLTECHNIC GMBH & CO [DE] FESTO TOOLTECHNIC GMBH & CO TTS TOOLT) 19. Mai 1999 (1999-05-19) in der Anmeldung erwähnt das ganze Dokument -----	1,20-27
A	EP 1 269 903 A2 (FESTOOL GMBH [DE]) 2. Januar 2003 (2003-01-02) Zusammenfassung Absatz [0025] Abbildungen 1,3 -----	1,22, 24-27
A	EP 1 424 170 A1 (VALENTINI GUIDO [IT]) 2. Juni 2004 (2004-06-02) Zusammenfassung Absätze [0005], [0007] Absatz [0013] Abbildung 3 -----	1,20,22, 24,27

☐ Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen ☒ Siehe Anhang Patentfamilie

* Besondere Kategorien von angegebenen Veröffentlichungen :
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"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
31. März 2010	14/04/2010

Name und Postanschrift der Internationalen Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Baumgärtner, Ruth

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Formblatt PCT/ISA/210 (Blatt 2) (April 2005)

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen, die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/EP2009/059320

Im Recherchenbericht angeführtes Patentdokument		Datum der Veröffentlichung	Mitglied(er) der Patentfamilie		Datum der Veröffentlichung
EP 0916302	A2	19-05-1999	DE	19750543 A1	20-05-1999
EP 1269903	A2	02-01-2003	DE	10130995 A1	16-01-2003
EP 1424170	A1	02-06-2004	AT	413949 T	15-11-2008
			ES	2316694 T3	16-04-2009
			US	2004103494 A1	03-06-2004

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B25H 3/02 (2006.01)

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PCT/AU2011/001103

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25 August 2011 (25.08.2011)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **DEMAIN TECHNOLOGY PTY LTD** [AU/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **VAN DER LINDE, Benjamin Luke** [AU/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU). **SCRIMSHAW, David Leigh** [AU/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU). **CONNOR, Paul Francis** [AU/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU). **MILLER, Paul** [AU/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU). **EYERS, Ben** [GB/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU). **NETZLER, Sion** [GB/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU). **LASTMAN, Lucas** [AU/AU]; Level 1, 13 Corporate Drive, Heatherton, VIC 3202 (AU).

(74) Agent: **SMOORENBURG PINI PATENT & TRADE MARK ATTORNEYS**; PO Box 515, Ringwood VIC 3134 (AU).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,

[Continued on next page]

(54) Title: SYSTEM FOR STORAGE AND TRANSPORT

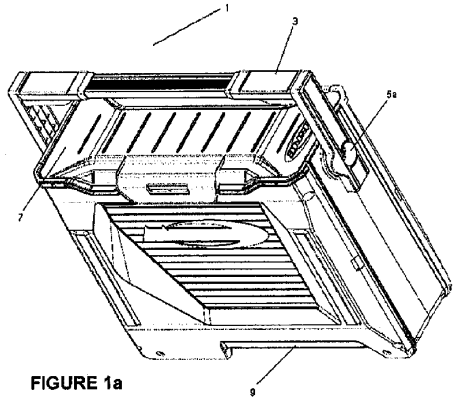


FIGURE 1a

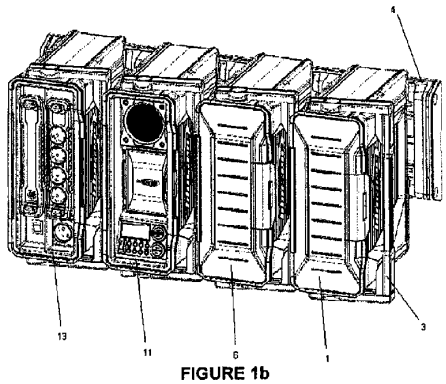


FIGURE 1b

(57) Abstract: The invention relates to a storage system for storing devices including: a frame for demountably supporting multiple carry cabinets, each carry cabinet being adapted to receive a device, characterised in that, said devices can be inserted or removed through a port in their respective carry cabinet while said multiple carry cabinets are mounted on the frame, and said devices can be transported in their respective carry cabinets when each of said carry cabinets are demounted from the frame.

WO 2013/026084 A1

HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

SYSTEM FOR STORAGE AND TRANSPORT

FIELD OF INVENTION

The present invention relates to a system for storage and transport of devices. In one form, the invention relates to a system for storage and transport of handheld power tools and accessories.

It will be convenient to hereinafter describe the invention in relation to power tools and their use by tradesmen and do-it-yourself (DIY) home handymen, however it should be appreciated that the present invention is not limited to that use only. The present invention has application to a wide range of devices, uses and users.

BACKGROUND ART

It is to be appreciated that any discussion of documents, devices, acts or knowledge in this specification is included to explain the context of the present invention. Further, the discussion throughout this specification comes about due to the realisation of the inventor and/or the identification of certain related art problems by the inventor. Moreover, any discussion of material such as documents, devices, acts or knowledge in this specification is included to explain the context of the invention in terms of the inventor's knowledge and experience and, accordingly, any such discussion should not be taken as an admission that any of the material forms part of the prior art base or the common general knowledge in the relevant art in Australia, or elsewhere, on or before the priority date of the disclosure and claims herein.

Tradesmen and others who earn their living in the construction and building industry need to keep their tools in close proximity to their principal workplace. For example, those in a workshop or factory will typically keep their power tools stored adjacent their workshop or work bench. The storage means may range from haphazard organisation of boxes, to hanging the devices on a shadow board or placing them on steel shelving units or in a cupboard. Accessories are typically stored nearby, or in the case of small items such as drill bits, kept in storage drawers or trays. Storage is made more difficult by the variety of ways in which power tools are packaged for sale to consumers ranging from robust hinged cases to flimsy plastic bags intended for disposal.

Many tradesmen who carry out on-site work have to store their power tools in lockable boxes and cupboards in the rear of a vehicle such as a van or utility truck. In order to avoid the time and inconvenience of shifting tools between the vehicle and a principal workplace or worksite many tradesmen purchase two sets of tools.

Similarly, as the cost of power tools has diminished individuals in a domestic environment often possess a wide variety of power tools for DIY projects or hobbies. For example, individuals often own a range of handheld devices such as power drills, AC high speed drills, hammer drills, angle grinders, circular saw, jigsaws, sanders and so forth. They also typically own a range of accessories such as drill bits, sanding papers, sanding belts, cutting blades, battery packs, torches and other lighting, battery chargers, power extension leads and multipoint plugs. Individuals commonly have the power tools stored in a garage or shed, in a disorganised state, packaged or unpackaged, in cupboards or on shelves. This degree of disorganisation makes it particularly difficult for an individual if they need to find and pack up devices and relevant accessories and transport them any distance or use them at locations around their home.

SUMMARY OF INVENTION

An object of the present invention is to provide a system for storage of devices in and area where they may be used, and transport to and from an area where they may be used.

Another object of the present invention is to provide a system for storage and transport of devices that is suitable for professionals and amateurs.

Another object of the present invention is to provide a system for storage and transport of devices and accessories that allows their ready interchange and rearrangement.

A further object of the present invention is to alleviate at least one disadvantage associated with the related art.

It is an object of the embodiments described herein to overcome or alleviate at least one of the above noted drawbacks of related art systems or to at least provide a useful alternative to related art systems.

In a first aspect of embodiments described herein there is provided a storage system for storing devices including:

- a frame for demountably supporting multiple carry cabinets, each carry cabinet being adapted to receive a device,

characterised in that,

- said devices can be inserted or removed through a port in their respective carry cabinet while said multiple carry cabinets are mounted on the frame, and
- said devices can be transported in their respective carry cabinets when each of said carry cabinets are demounted from the frame.

The frame to which the carry cabinets are mounted may be fixed free-standing, or mobile free-standing. Alternatively, the frame may be attached to a fixed structure such as a wall, or form part of a fixed structure.

Typically the carry cabinets of the storage system can be changed between a mounted and a demounted configuration respectively by engaging and disengaging a latch between the carry cabinet and frame. In a particularly preferred embodiment a simple form of latch is used, comprising one or more rails and correspondingly shaped slot(s). The rail may be integral with, or alternatively attached to the frame. The slot of the latch may be defined by a piece of metal or other material sharply curved to form a hook.

In one preferred option, the system includes two or more mountings for carry cabinets. This may be preferred for carry cabinets designed for particularly large or heavy devices. For example, the carry cabinet could include two or more hooks that can engage with two or more rails associated with the frame.

Preferably the mounting is lockable. For example the rail may include a cam that connects mounted carry cabinets such that when the cam is rotated, the carry cabinets are locked to the rail. This could be useful to prevent theft, and stop the carry cabinets accidentally demounting if for example, they were mounted to a frame in the rear of a van or truck.

Carry Cabinet

In another aspect of embodiments described herein there is provided a carry cabinet suitable for use in the storage system of the present invention.

Typically each carry cabinet is of square or rectangular cross section so that multiple carry cabinets can be mounted side-by-side or one on top of the other. Typically the rear end of a rectangular or square carry cabinet includes at least one hook or other engagement means for engaging and disengaging the frame, thus mounting and demounting the carry cabinet on the frame.

Optimally, the positions of the mounted carry cabinets are interchangeable so that they may be arranged and re-arranged in any convenient order.

Typically each carry cabinet includes a fixed or detachable handle. The handle may for example, be used in a first, raised position for manual transportation and a second, retracted position when the carry cabinet is mounted on the frame. The handle may be moved between the first and second positions by rotation about pivots located at either end of the handle. This may make it easier to access the port, and/or the handle may act as a 'spacer' between adjacent carry cabinets. Optimally the handle can be rotated in one direction only so that all handles on mounted carry cabinets are identically oriented.

Preferably a releasable retainer holds the handle in the raised position. For example the retainer may comprise a detent to check the rotational motion of the handle. This will stop the handle falling into the second position which may be inconvenient for example, when the carry cabinet is being mounted on the frame. The retainer may be manually disabled with light manual pressure.

The port may be, for example, an opening, or open side in the carry cabinet. Preferably the carry cabinet includes a cover, such as a hinged door associated with the port. The cover may be adapted to be detached, or swung, rotated, slid, or otherwise moved to allow full access to the port. Typically the cover is transparent or translucent so that it is possible to identify the contents of the carry cabinet when the cover closes over the port.

In a particularly preferred embodiment the carry cabinets can be disassembled for flat packing. For example, if the carry cabinets are constructed of rectangular panels the side and end panels can be stacked for better freight and storage logistics and to take up minimal retail shelf space.

The interior of the carry cabinet may be configured in any convenient manner such as to receive and firmly hold a device, such as a power tool, or accessories for the device. It is important that the cabinet holds the device or

accessories firmly when mounted, when being transported and during mounting/dismounting from the frame. The carry cabinet may, if convenient, be configured to receive an insert consisting of some or all of the packaging in which the device was sold. This would include packaging such as 'cradles' or 'storage docks'. These could for example, be sold with power tools. The storage docks could be constructed of robust plastic material. In a particularly preferred embodiment the storage dock can be slidably inserted along slots in the carry cabinet, preferably using a handle. The handle may be adapted to act as a spacer for at least one other adjacent insert and may, for example prevent a storage dock being inserted in the wrong position.

Preferably the interior of the carry cabinet may be configured using inserts comprising removable dividers or drawers. For example the interior surface of the carry cabinet may be able to slidably receive one or more dividers at one or more positions for location or support of a drawer, or device, or accessory, with or without packaging. Thus a single design of carry cabinet can be adapted to house a wide range of sizes of devices and accessories, thus avoiding the need to design and manufacture multiple housings. Preferably the dividers will interlock with the interior surface of the carry cabinet to provide bracing and thus rigidity and strength.

A removable divider in the form of a flat plate located underneath a drawer may provide support, while a removable divider in the form of a flat plate located above a drawer may enclose the contents so that they do not fall out. The divider may also include a releasable latch for retaining the drawer. Typically the drawers can be slidably positioned in the carry cabinet and readily removed. Optimally they may be slid out at a downward angle so the contents can be easily seen and accessed. The drawers would typically be used for small accessories such as drill bits, cutting blades and batteries.

Shelf

Preferably the storage system includes a shelf removably attached to the frame, or a wall or other structure adjacent the frame. The shelf or shelves may be located at any convenient positions on the frame. Typically the shelf would be elevated, located adjacent the lower surface of mounted carry cabinets.

The shelf may be adapted to support or be used in concert with the devices and accessories in the carry cabinets. For example the shelf may include electrical mountings or connections with wiring to the mains hidden within the frame. The shelf may also include drawers, recesses or other physical supports for devices or accessories.

The shelf may be connected to the frame for shipping and transport to avoid any warping in transit.

Bench

Preferably the storage system includes a bench removably attached to the frame. The bench may be located at any convenient position on the frame. Typically the bench would be located such that carry cabinets could be mounted above or optionally below the bench.

In a particularly preferred embodiment the storage system of the present invention is a bench, that is, the frame consists or comprises a bench that may be free standing, mobile free standing or attached to a structure such as a wall or floor.

Cover

The storage system may include an openable cover or 'hood' which can move from a first, open position to a second, closed position. In the closed position the cover typically encloses the shelf and/or mounted carry cabinets and may be lockable.

It may be convenient to attach the cover to the frame, or a rail forming part of a latch for mounting and demounting the carry cabinets, or a wall or other structure adjacent the frame. Typically the cover is attached to the frame using a pivot or spring mechanism.

Devices and Accessories

The devices contained in the carry cabinets are typically chosen from the group comprising drilling apparatus, cutting apparatus, grinding apparatus, impact drilling apparatus, screw driving apparatus and combinations thereof. For example the devices may include common AC or DC power tools such as power drills, high speed drills, hammer drills, angle grinders, circular saw, jigsaws, sanders and so forth.

The accessories are typically items used in conjunction with power tools or associated with the relevant type of work. For example, accessories would include drill bits, sanding papers, sanding belts, cutting blades and battery packs for use with the power tools. Accessories would also include torches and other lighting, battery chargers, power extension leads and multipoint plugs which contribute to carrying out the relevant work.

In a preferred embodiment, a carry cabinet can carry a device and a draw adapted to store accessories for the device. For example the interior of the draw may be configured to hold the accessories to keep them organised, make them easy to identify and stop them moving about when the carry cabinet is moved. In a particularly preferred embodiment accessories are sold separately from a drawer. Alternatively the accessories may be sold with a drawer functioning as packaging, enabling them to be fitted directly into a carry cabinet.

Some of the many accessories that can be used with the system of the present invention are power and light modules. These include work lights, spotlights, multi-power point strips optionally with retractable power cords. These are particularly valuable for those using power tools. It is particularly convenient to have these stored in carry cabinets, readily demountable to transport to a workplace indoor or outdoor. Alternatively they may be adapted for removable attachment to the frame, particularly the rail, or the shelf where they are held secure. Furthermore a multi-power point strip can be oriented horizontally for ease of use and connection when mounted on the frame or on the shelf and oriented vertically in the carry cabinet.

Another accessory that can be used with the system of the present invention is an audio/communications device. For example the audio/communications device may include functionality derived from mobile phone connection (eg iPhone dock, blutooth connectivity), audio connection (eg for mp3 players, CD player, iPods), AM/FM/digital radio and any other convenient audio or communications means. In a particularly preferred embodiment the audio/communications device includes a charging mat to charge audio or communications devices, particularly mobile phones or mp3 players.

Locating these devices within a carry cabinet creates a low cost, robust, transportable audio module for use at a worksite, particularly outdoor worksites.

The audio/communications device may be plugged into an external power source such as the electricity mains or an electricity generator, or operated by battery, or any other convenient means. In a particularly preferred embodiment the audio/communications device can be powered by plugging into a controller for a drill head or other tool part.

Optimally any speaker internal or integral to the audio/communications device may be improved, for example, by conversion from mono to stereo by coupling to an external speaker/sub woofer/ amp.

Other aspects and preferred forms are disclosed in the specification and/or defined in the appended claims, forming a part of the description of the invention.

In essence, embodiments of the present invention stem from the realization that cabinets can be adapted for storage and transport of devices and accessories that allows their ready interchange and rearrangement while maintaining the ability to readily access the devices and accessories.

Advantages provided by the present invention comprise the following:

- ability to add to the fundamental system on an 'as needs' basis, buying only what is needed at any particular time;
- the system can be used and afforded by professionals or amateurs;
- allows devices to be readily put in order, identified, rearranged, stored and transported;
- provides universal use/interchangeability of the carry cabinets allowing multiple uses and re-uses;
- devices and accessories can be kept secure at any convenient locus such as a workshop or vehicle and transported therefrom.

Further scope of applicability of embodiments of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the disclosure herein will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

Further disclosure, objects, advantages and aspects of preferred and other embodiments of the present application may be better understood by those skilled in the relevant art by reference to the following description of embodiments taken in conjunction with the accompanying drawings, which are given by way of illustration only, and thus are not limitative of the disclosure herein, and in which:

- Figure 1 illustrates a carry cabinet for use with the storage system of the present invention in (a) a perspective view when dismounted, and (b) in a perspective view while mounted with three other carry cabinets;
- Figure 2 illustrates a perspective view of single carry cabinet mounted on a frame according to the storage system of the present invention;
- Figure 3 illustrates a perspective view of the single carry cabinet and frame of Figure 2 combined with a shelf;
- Figure 4 illustrates a perspective view of multiple carry cabinets mounted on the frame of Figure 2;
- Figure 5 illustrates a perspective view of multiple carry cabinets mounted on the frame of Figure 2 in combination with a shelf and cover; and
- Figure 6 illustrates a perspective view of the storage system as depicted in Figure 5 with the cover in the closed position.

DETAILED DESCRIPTION

Figure 1a depicts a carry cabinet 1 suitable for use in the storage system of the present invention. In this embodiment the carry cabinet is of rectangular cross section and includes a handle 3 rotatable about pivots 5a, 5b (5b not visible in this view) at either end of the handle 3. The handle is depicted in a first, raised position for manual transportation, held in that position by a detent (not visible in this view). The detent may be overcome with medium manual pressure and the handle 3 may rotated in one direction only about the pivots 5a, 5b to provide unfettered access the opaque cover 7 covering the port. The port substantially comprises an open side in the carry cabinet 1 and the cover 7 comprises a hinged door which in this view is shown to be closed over the port. When the cover 7 is open it permits full access to the interior of the carry cabinet 1 so that a device may be inserted or removed.

One end 9 of the carry cabinet 1 includes a hook or other engagement means for engaging and disengaging the frame as the carry cabinet is mounted and dismounted.

Figure 1b depicts the carry cabinet 1 of Figure 1a mounted on a frame 4 according to the storage system of the present invention. The handle 3 can be seen in the lowered position, having been rotated out of the raised position shown in Figure 1a. Three other carry cabinets are also demountably supported on the frame 4. The rear surfaces of the carry cabinets include latches (not visible in this view) for engaging the frame 4. Two of the carry cabinets 1, 6 include hinged doors and can be used to store devices such as power tools. Carry cabinet 13 includes a removable multi-point power board, other power outlets and a work light. Carry cabinet 11 includes an audio/communications device including a speaker, AM/FM/digital radio and audio connection for an mp3 players or iPod.

Figure 2 depicts a further embodiment of a carry cabinet 2 mounted on a frame 10 according to the storage system of the present invention. The frame 10 can demountably support multiple carry cabinets however for clarity, only one is shown in this drawing. The rear surface of the carry cabinet 2 includes a hook-like formation 12 for engaging a corresponding shaped rail or ridge 14 on the frame 10. The carry cabinet 2 includes an opaque cover 8. Thus it is possible to identify any device inside the carry cabinet 2. Opening the opaque cover 8 provides access to the device.

Figure 3 depicts the carry cabinet 2 and frame 10 of Figure 2 combined with a shelf 15 attached to the lower edge of the frame 10. The shelf 15 can be used to support useful items. In this embodiment the carry cabinet 2 is adapted to support a drawer 19 for storing accessories such as drill bits for use with the power drill 12.

Figure 4 illustrates multiple carry cabinets 2, 20-24 mounted on the frame 10 of Figure 2. The cabinets may be readily re-arranged and put in a different order. In this arrangement it is easy for the user to find and collect the devices and accessories he needs and demount their carry cabinet. Alternatively the user can re-pack the device(s) and accessories in a single carry cabinet.

Each carry cabinet 2, 20-24 is adapted to support a drawer 19, 30-34 for storing accessories. Each carry cabinet 2, 20-23 stores one or more devices.

Carry cabinet 24 stores a multi-point power board 42 including an extendible power cord (not visible).

Figure 5 illustrates multiple carry cabinets 2,20-24 mounted on the frame 10 of Figure 2 in combination with a shelf 15, drawers 19,30-34 for storing accessories and a hood (cover) 40. The cover 40 is pivotally attached to either end of the frame 10 and in this view is shown in the open position. Also in this view, the cover 8 is lifted to show the interior of the carry case 2, and drawer 19 is extended to show how it has a downward slope to provide a user with an adequate view and adequate access to the contents.

Figure 6 illustrates the storage system as depicted in Figure 5, with the cover 40 in the closed position, enclosing the mounted carry cabinets 2, 20-24. The cover 40 can be locked to the frame 10 and/or shelf 15 to keep the carry cabinets secure.

While this invention has been described in connection with specific embodiments thereof, it will be understood that it is capable of further modification(s). This application is intended to cover any variations uses or adaptations of the invention following in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice within the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth.

As the present invention may be embodied in several forms without departing from the spirit of the essential characteristics of the invention, it should be understood that the above described embodiments are not to limit the present invention unless otherwise specified, but rather should be construed broadly within the spirit and scope of the invention as defined in the appended claims. The described embodiments are to be considered in all respects as illustrative only and not restrictive.

Various modifications and equivalent arrangements are intended to be included within the spirit and scope of the invention and appended claims. Therefore, the specific embodiments are to be understood to be illustrative of the many ways in which the principles of the present invention may be practiced. In the following claims, means-plus-function clauses are intended to cover structures

as performing the defined function and not only structural equivalents, but also equivalent structures.

"Comprises/comprising" and "includes/including" when used in this specification is taken to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof. Thus, unless the context clearly requires otherwise, throughout the description and the claims, the words 'comprise', 'comprising', 'includes', 'including' and the like are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of "including, but not limited to".

CLAIMS

1. A storage system for storing devices including:
   - a frame for demountably supporting multiple carry cabinets, each carry cabinet being adapted to receive a device,

   characterised in that,
   - said devices can be inserted or removed through a port in their respective carry cabinet while said multiple carry cabinets are mounted on the frame, and
   - said devices can be transported in their respective carry cabinets when each of said carry cabinets are demounted from the frame.

2. A storage system according to claim 1 wherein the devices are chosen from the group comprising electric tools, battery powered tools, electronic devices, electrical devices and combinations thereof.

3. A storage system according to claim 2 wherein the devices are chosen from the group comprising drilling apparatus, cutting apparatus, grinding apparatus, impact drilling apparatus, screw driving apparatus and combinations thereof.

4. A storage system according to claim 1 wherein a carry cabinet can be changed between a mounted and a demounted configuration respectively by engaging and disengaging a latch between the carry cabinet and frame.

5. A storage system according to claim 4 wherein the latch comprises a rail and correspondingly shaped slot.

6. A storage system according to claim 5 wherein the frame includes multiple rails, each interlocked to an adjacent rail.

7. A storage system according to claim 4 wherein the carry cabinets can be releasably locked to the frame.

8. A storage system according to claim 1 wherein each carry cabinet includes a handle which can be used in a first, raised position for manual transportation and a second, retracted position when the carry cabinet is mounted on the frame.

9. A storage system according to claim 8 wherein the handle is rotatable in one direction for changing between the first and second positions and includes a releasable retainer for holding the handle in the raised position.

10. A storage system according to claim 1 wherein the frame may be used for demountably supporting one or more of said devices.

11. A storage system according to claim 10 wherein the device supported by the frame is chosen from the group comprising a power module, a multi-point power outlet having a retractable cord, a light module, an audio device, a communications device, charging mat for an electronic device or combinations thereof.

12. A storage system according to claim 10 wherein the device is an audio module which is powered by an external power supply when the carry cabinet is demounted.

13. A storage system according to claim 12 wherein the audio module may be connected to an external speaker.

14. A storage system according to claim 1 which comprises a bench.

15. A storage system according to claim 1 which comprises a panel which is suitable for use as a work bench, the panel being horizontally mounted on the frame and above or below said mounted carry cabinets.

16. A storage system according to claim 1 which comprises a panel which is suitable for use as a shelf, the panel being horizontally mounted on the frame adjacent said carry cabinets and suitable for demountably supporting one or more of said devices.

17. A storage system according to claim 16 wherein the device supported by the panel is chosen from the group comprising a power module, a multi-point power outlet having a retractable cord, a light module, an audio module, a communications interface, charging mat for an electronic device or combinations thereof.

18. A storage system according to claim 17 wherein the panel is demountable from the frame.

19. A storage system according to claim 1 which comprises an openable cover for enclosing said mounted carry cabinets.

20. A storage system according to claim 5 which comprises an openable cover which is mounted to the frame.

21. A storage system according to claim 1 wherein the frame comprises a base member for location at floor level, which supports members on which the carry cabinets may be mounted, and wherein the frame is either fixed, freestanding, or mobile freestanding.

22. A carry cabinet suitable for use with the storage system of claim 1 wherein each carry cabinet is further adapted to receive at least one insert chosen from the group comprising drawers, dividers, shelves, storage docks and combinations thereof.

23. A storage dock suitable for being received in the carry cabinet of claim 22, the storage dock including a handle adapted to act as a spacer for at least one other adjacent insert.

24. A carry cabinet according to claim 22 wherein the insert is slidably received in a carry cabinet and adapted to releasably receive device accessories by interference fit.

25. A carry cabinet according to claim 22, each carry cabinet including a port for insertion or removal of the device, wherein the carry cabinet includes a cover associated with the port.

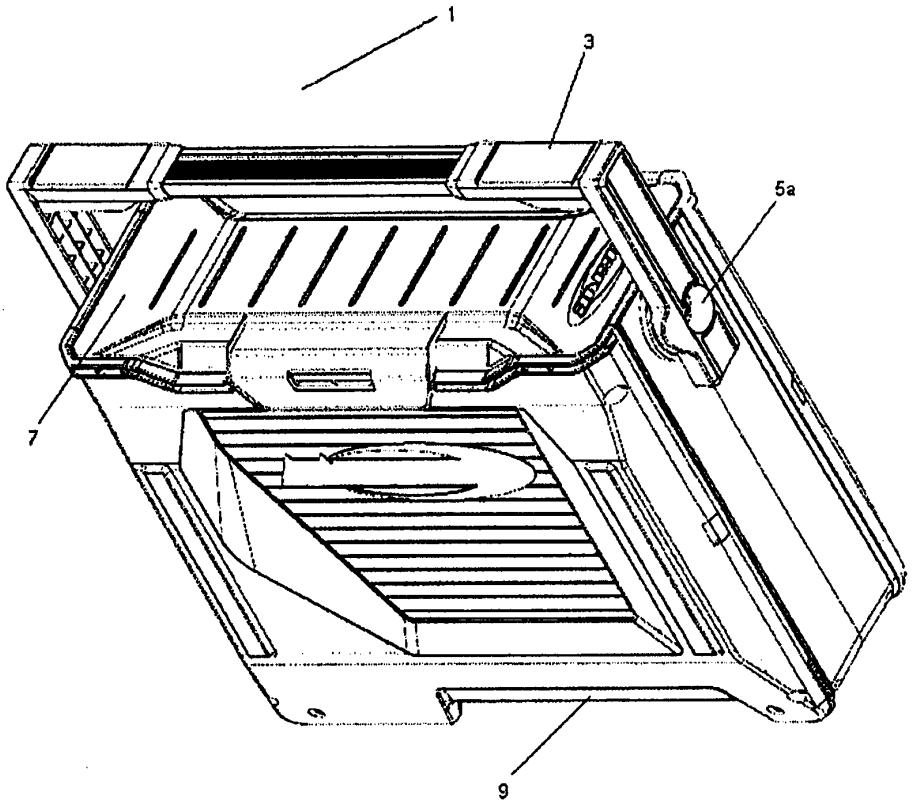


FIGURE 1a

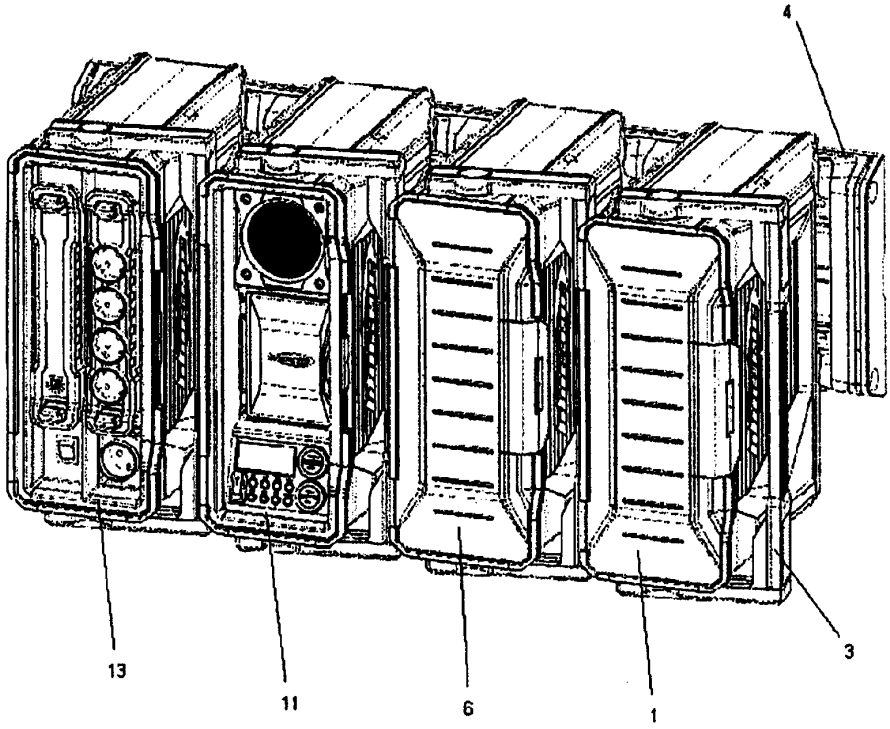


FIGURE 1b

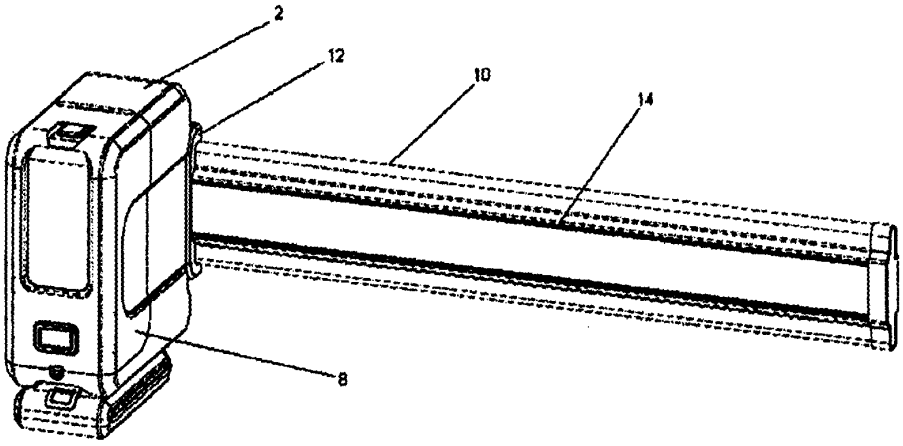


FIGURE 2

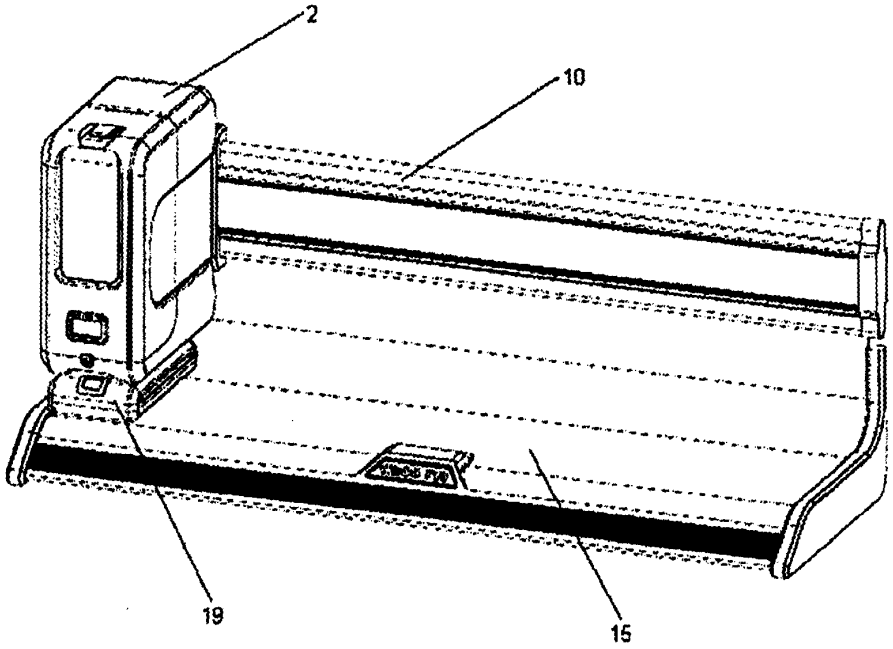


FIGURE 3

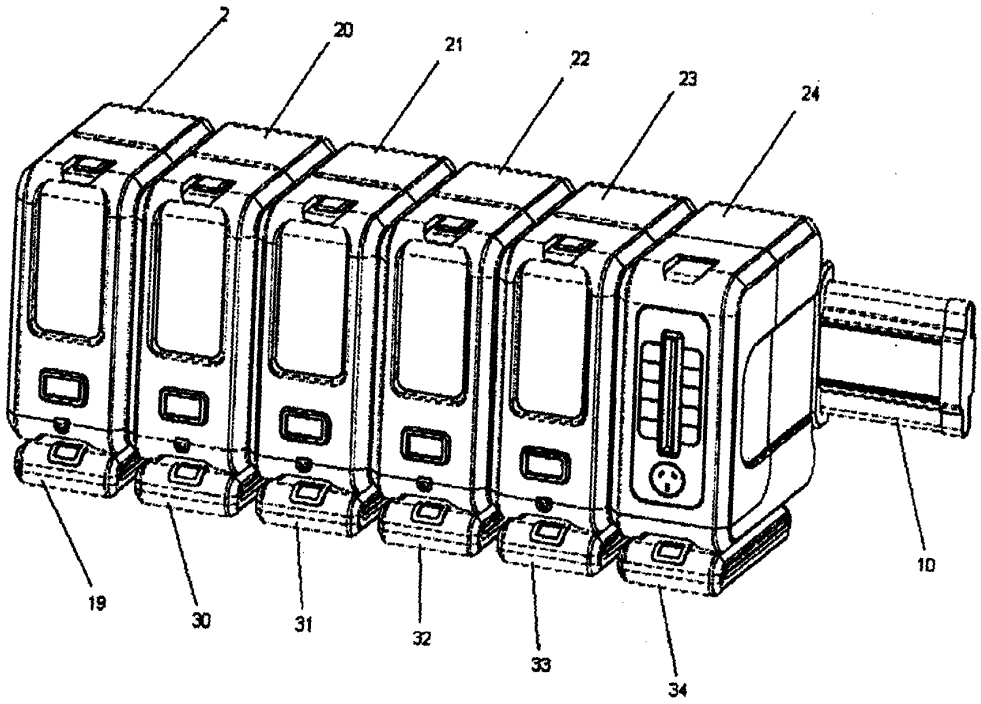


FIGURE 4

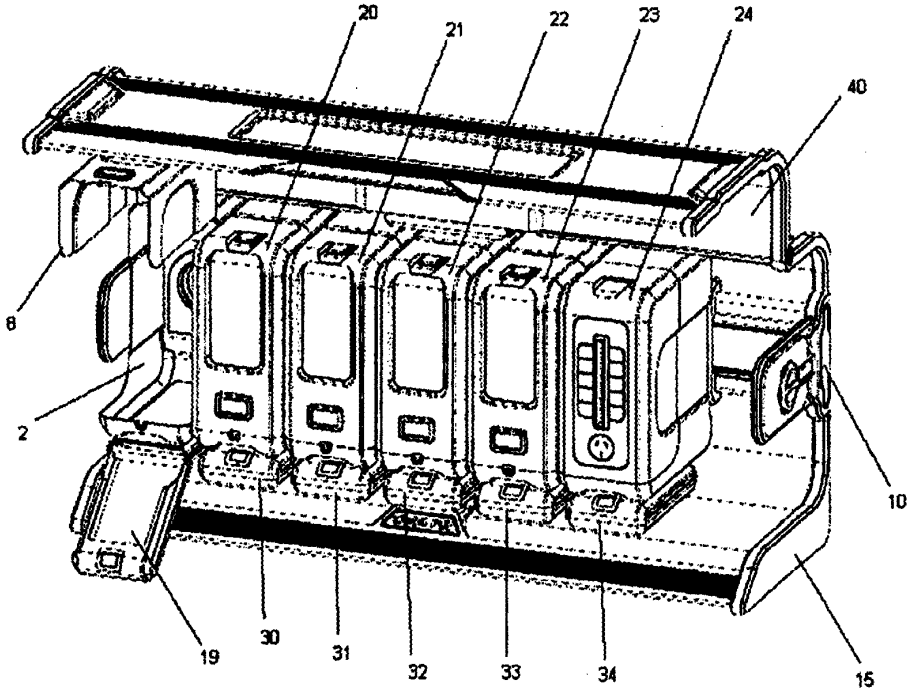


FIGURE 5

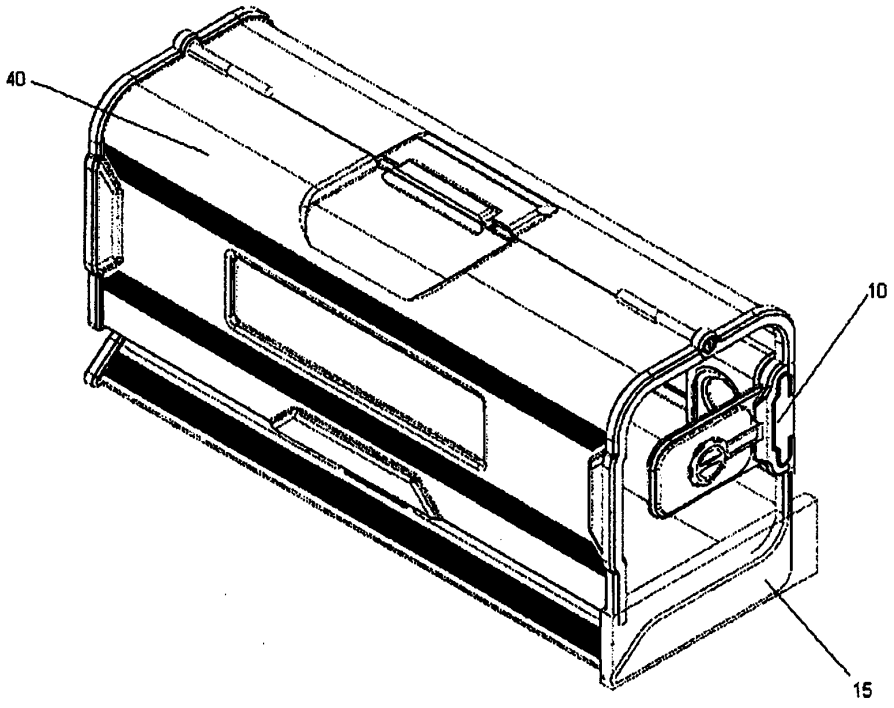


FIGURE 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2011/001103

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

B25H 3/00 (2006.01) ***B25H 3/02*** (2006.01) ***B25H 3/04*** (2006.01)

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)

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 practicable, search terms used)
WPI, EPODOC: IPC, ECLA B25H 3/00, 3/02, 3/04 A47F 3/00, 3/08 A47B 47/00, 81/00, 87/00 B65G 1/00/LOW & Key words (stor+, rack+, magazine+, rail+, shel+, hook+, attach+, detach+, suspend+, demount+, hold+, support+, container+, case+, carry+, transport+, box+, cabinet?, tool+, device+, accessor+, medical+, electrical+, communicat+,)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5984441 A (STOKHUIJZEN) 16 November 1999. Abstract, figs 1-7 & column 2 lines 10-50	1-4,6,7,10-19,22-25
X	US 20100224527 A1 (HUANG) 9 September 2010 Abstract, figs 1-12 & paras 0003-0005	1-8, 10-25
X	DE 202009012602 U1 (KWB KARL W BURMEISTER GMBH & CO KG) 27 January 2011-09-29 English abstract retrieved from EPODOC database & FIGS 1-8	1-3, 6-19,21-25

☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 September 2011	05/10/2011
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. +61 2 6283 7999	Authorized officer **SARAVANAMUTHU PONNAMPALAM** AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : (02) 6283 2070

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU2011/001103

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian 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		Patent Family Member					
US	5984441	AU	16754/97	EP	0820367	WO	9728931
US	2010224527	CA	2694801	CN	101837854	EP	2226163
DE	202009012602U	WO	2011033012				

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

— *of inventorship (Rule 4.17(iv))*

[Continued on next page]

(54) Title: A CABINET OF STORAGE UNITS

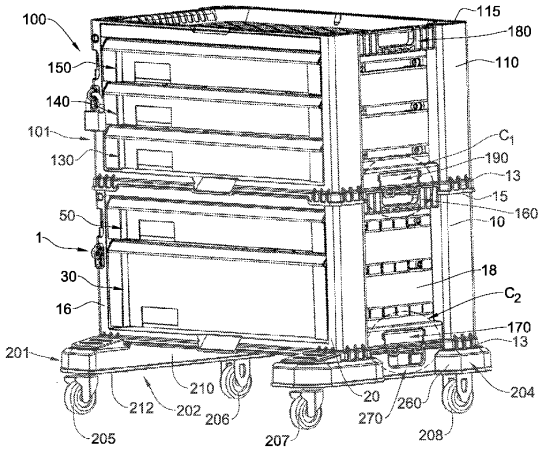


Fig. 18A

(57) Abstract: A cabinet comprising: a housing; two or more storage units, each accommodated within the housing and displaceable between a closed position in which a majority of the storage unit is disposed within the housing and an open position in which the storage unit projects from the housing to an extent greater than in said closed position; and a blocking mechanism comprising two or more blocking members, each associated with its corresponding storage unit and configured for selectively arresting said corresponding storage unit in its closed position; the blocking mechanism being displaceable between an unblocked state in which each one of the storage units is free to be displaced from its closed position to its open position and a blocked state in which at least one and no more than all but one of the storage units are arrested in their closed position by their corresponding blocking members. The association between the blocking mechanism and the storage units is such that, when said blocking mechanism is in its unblocked position, displacement of one of said storage units from its closed position to its open position induces displacement of the blocking mechanism from its unblocked state to its blocked state.

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Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

A CABINET OF STORAGE UNITS

TECHNOLOGICAL FIELD

The presently disclosed subject matter relates to cabinets having at least one storage unit.

BACKGROUND

Storage cabinets are used to store parts, such as nuts, bolts, and nails, and tools, such as screw drivers, wrenches, and utility knives. These cabinets typically include storage units in the form of drawers, having a predetermined arrangement and size. The drawers are usually arranged from upper side to lower side of the cabinet. The drawers can slide horizontally into and out of the cabinet. Sliding drawers are commonly built into tool cabinets, kitchen cabinets, desks, dining room cabinetry, office furniture, and the like to provide more convenient access to storage space therein.

GENERAL DESCRIPTION

According to one aspect of the presently disclosed subject matter, there is provided a cabinet comprising:

a housing;

two or more storage units, each accommodated within the housing and displaceable between a closed position in which the majority of the storage unit is disposed within the housing and an open position in which the storage unit projects from the housing to an extent greater than in said closed position; and

a blocking mechanism comprising two or more blocking members, each associated with its corresponding storage unit and configured for selectively arresting said corresponding storage unit in its closed position; the blocking mechanism being displaceable between an unblocked state in which each one of the storage units is free to be displaced from its closed position to its open position and a blocked state in which at least one and no more than all but one of the storage units are arrested in their closed position by their corresponding blocking members;

the association between the blocking mechanism and the storage units is such that, when said blocking mechanism is in its unblocked position, displacement of one of said storage units from its closed position to its open position induces displacement of the blocking mechanism from its unblocked state to its blocked state.

The term "majority of the storage unit" may be interpreted with respect to any one of the following: length of the storage unit measured along the direction of its displacement with respect to the housing, nominal dimensions of the storage unit, volume of the storage unit and weight of the storage unit.

The blocking mechanism is configured for preventing more than one storage unit being in their open position at the same time, thereby reducing the probability of tipping over of the cabinet, for example, due to shifting of the center of gravity thereof.

According to one example, at least one of the storage units is a drawer.

According to another example, at least one of the storage units is an assortment box.

The association between the blocking mechanism and the storage units can also be such that displacement of one storage unit from its open position to its closed position induces displacement of the blocking mechanism from its blocked state to its unblocked state.

The storage units can comprise a restricting arrangement associated with the blocking mechanism so that in the blocked state of the blocking mechanism, the blocking mechanism obstructs the restricting arrangement, to thereby prevent displacement thereof from their closed position to their open position. In particular, the restricting arrangement can be constituted by restricting portions of the storage units. In the blocked state, the blocking members are aligned with the corresponding restricting portions of the storage units so that during an attempt to displace a blocked storage unit from its closed position to its open position, the blocking members are configured to engage corresponding restricting portions of the restricting arrangement to thereby obstruct of the storage units and prevent their above displacement.

The cabinet can further comprise a following arrangement associated, on the one hand, with the blocking mechanism, and on the other hand with the storage units. The following arrangement is associated with said storage units such that displacement of one storage unit from its closed position to its open position entails displacement of the following arrangement from its inoperative state to its operative state. The following

arrangement is associated with said blocking mechanism such that displacement of the following arrangement from its inoperative state to its operative state entails displacement of the blocking mechanism from its unblocked state to its blocked state. Thus, displacement of a single storage unit from its closed position to its open position entails displacement of the blocking mechanism from the unblocked state to the blocked state.

The following arrangement can comprise two or more following members configured for association with each of the two or more storage units respectively. According to a particular design, the following arrangement can be a part of the blocking mechanism, i.e. the following members can be integrally formed with the blocking mechanism.

Each of the storage units can be configured with a guiding portion associated with its corresponding following member, so that during the displacement of the storage unit between its closed position and its open position, the corresponding following member slidingly engages its corresponding guiding portion (e.g. cam and following configuration), thereby changing the operative state of the following arrangement between its inoperative state and its operative state, respectively.

During the engagement of the following member with its corresponding guiding portion, the following member can rest on the guiding portion and slide along its length.

The blocking mechanism can be in the form of a single-molded member. In particular, both the blocking members and the following members can be integrally formed therewith and constitute portions of the single-molded member.

Each blocking member and following member can be constituted by a single blocking-following member. In particular, a first portion (e.g. a side surface) of the blocking-following member can constitute the blocking member and a second portion (e.g. a bottom end) of the blocking-following member can constitute the following member.

The storage units can be arranged within the cabinet along a longitudinal axis, and the blocking mechanism can have an elongated shape and can extend along said longitudinal axis.

According to one example, the longitudinal axis can be a vertical axis along which the blocking mechanism is configured to be displaced between its blocked state and its unblocked state.

In particular, the blocking mechanism can be displaced in the upward direction, when displaced from its unblocked state to its blocked state, and in the downward direction, when displaced from its blocked state to its unblocked state.

According to another example, the longitudinal axis can be a horizontal axis along which the blocking mechanism is configured to be displaced between its blocked state and its unblocked state.

The blocking mechanism can be normally urged into its unblocked state by virtue of gravity forces.

The blocking mechanism can further comprise a biasing arrangement configured for biasing the blocking mechanism from its blocked state towards its unblocked state.

The biasing arrangement can be constituted by a compression spring.

The biasing arrangement can be disposed at the uppermost end of the blocking mechanism.

Each guiding portion can be provided with a ramp portion configured to displace the corresponding following member while sliding thereon, thereby displacing the following arrangement towards its operative state, and consequentially, displacing the blocking mechanism towards its blocked state.

The blocking-following member can be sized for passing between the corresponding restricting and guiding portions during the displacement of the storage unit between its closed position and its open position.

The blocking-following member can have a predetermined width which, during the displacement of the storage unit from its closed to its open position, allows the blocking-following member to pass by the corresponding restricting portion before engaging a lower end of the ramp portion, so as to allow the blocking-following member to be displaced in the upper direction when sliding on the ramp portion.

Each of the storage units can have a cavity defined by a base section, a front wall, a first sidewall and a second sidewall, each having a first and a second exterior surface, respectively. The guiding portion of each storage unit can protrude from one of the first and the second exterior surfaces.

The restricting portion of each storage unit can protrude from one of the first and the second exterior surfaces.

At least one of the storage units can further have an intermediate position in which the storage unit projects from the housing to an extent greater than in the closed

position and smaller than in the open position. In the intermediate position, the blocking mechanism is in its unblocked state, thereby allowing more than one storage unit to be displaced to its open position.

In the closed position of the storage unit, a lower end of the ramp portion can be spaced from the blocking-following member along the guiding portion to an intermediate distance, so that the storage unit can be displaced from its closed position to its intermediate position without displacing the blocking mechanism to its blocked state.

The intermediate distance can be such that when all the storage units are in their intermediate position, there is no danger of tipping over of the cabinet.

Each of the blocking members can protrude out of the blocking mechanism towards the respective storage unit.

The cabinet can have a front wall. The blocking members can be disposed along a first plane and the restricting portions can be disposed along a second plane, such that the first plane is closer to the front wall than the second plane.

Each of the following members can protrude out of the blocking mechanism towards the respective storage unit.

The following members can be disposed along the first plane.

Each storage unit can include at least one slide mechanism configured for mounting the storage unit to the housing and facilitating the displacement of the storage unit between its closed position and its open position.

For example, each storage unit can include two slide mechanisms, connected to the first and the second sidewalls of the storage unit, respectively.

The guiding portion can be constituted by a portion of the slide mechanism.

According to another aspect of the presently disclosed subject matter, there is provided a cabinet comprising:

a housing;

one or more storage units, each accommodated within the housing and displaceable between a closed position in which the majority of the storage unit is disposed within the housing and an open position in which the storage unit projects from the housing to an extent greater than in said closed position;

a locking mechanism configured with one or more locking members, each associated with its corresponding storage unit and configured for selectively arresting

said corresponding storage unit in its closed position; the locking mechanism being displaceable between an unlocked state in which each of the storage units is free to be displaced from its closed position to its open position and a locked state in which all the storage units are arrested in their closed position by their corresponding locking members.

The locking mechanism is configured to control the ability of a user to open at least one of the storage units of the cabinet. This control can be important for different safety and/or security reasons in which a user should be prevented from opening the storage units. For example, the locking mechanism can be used for locking all the storage units at their closed position in order to prevent children from opening them and being exposed to their interior content.

It is appreciated that the above cabinet can also be provided with a blocking mechanism according to the previous aspect of the present application, thereby preventing a user from opening more than one storage unit at a time.

According to one example, the storage unit is a drawer.

According to another example, the storage unit is an assortment box.

The storage units can comprise an arresting arrangement associated with the locking mechanism so that in the locked state of the locking mechanism, the locking mechanism obstructs the arresting arrangement, to thereby prevent displacement thereof from their closed position to their open position. In particular, the arresting arrangement can be constituted by arresting portions of the storage units. In the locked state, the locking members are aligned with respective arresting portions of the storage units so that during an attempt to displace a locked storage unit from its closed position to its open position, the locking members are configured to engage corresponding arresting portions of the arresting arrangement to thereby obstruct of the storage units and prevent their above displacement.

The locking mechanism can be in the form of a single-molded member. In particular, the locking members can be integrally formed therewith and constitute portions of the single-molded member.

The storage units can be arranged within the cabinet along a longitudinal axis, and the locking mechanism can have an elongated shape and can extend along the longitudinal axis.

According to one example, the longitudinal axis can be a vertical axis along which the locking mechanism is configured to be displaced between its locked state and its unlocked state.

In particular, the locking mechanism can be displaced in the downward direction, when displaced from its locked state to its unlocked state, and in the upward direction, when displaced from its unlocked state to its locked state.

According to another example, the longitudinal axis can be a horizontal axis along which the locking mechanism is configured to be displaced between its locked state and its unlocked state.

The locking members can be sized for passing beneath the corresponding arresting portions during the displacement of the storage unit between its closed position and its open position.

Each of the storage units can have a cavity defined by a base section, a front wall, a first sidewall and a second sidewall, each having a first and a second exterior surface, respectively. The arresting portion of each storage unit can protrude from one of the first and the second exterior surfaces.

Each of the locking members can protrude out of the locking mechanism towards the respective storage unit.

The cabinet can have a front wall. The locking members can be disposed along a first plane and the arresting portions can be disposed along a second plane, such that the first plane is closer to the front wall than the second plane.

The locking mechanism can comprise an actuator for displacing the locking mechanism between its unlocked state and its locked state.

The actuator can have an actuator cavity configured to accommodate at least one finger of a user for allowing him to displace the locking mechanism between its unlocked state and its locked state.

The front wall of the cabinet can have a front edge. The front edge can have an actuator window configured for providing access to the actuator cavity.

The actuator can be configured with an indicating member, visible via an indicating window formed in the front edge of the cabinet, and configured for indicating the state in which the locking mechanism is disposed.

The indicating member can have a first portion with a first color associated with the locked state of the locking mechanism, and a second portion with a second color

associated with the unlocked state of the locking mechanism. The indicating window is configured to provide visual access to one of the first and the second portions at a time, thereby indicating the state at which the locking mechanism is disposed.

The locking mechanism can further include a securing member protruding therefrom and formed with a securing recess therein. The front edge of the cabinet can be formed with an elongate opening configured for receiving therethrough the securing member. The opening in the front edge of the cabinet can be formed with a raised rim extending about the opening, and being formed with a locking recess.

The arrangement is such that the securing member can assume a first position with respect to the elongate opening, corresponding to a locked state of the locking mechanism, in which the securing recess is aligned with the locking recess of the raised rim, and a second position in with respect to the elongate opening, corresponding to a locked state of the locking mechanism, in which the securing recess is misaligned with the locking recess of the raised rim.

In the first position of the securing member, a member of a lock can be received via the locking recess and the securing recess so as to fix the locking mechanism in its locked state.

Each storage unit can include at least one slide mechanism configured for mounting the storage unit to the housing and facilitating the displacement of the storage unit between its closed position and its open position.

According to still another aspect of the presently disclosed subject matter, there is provided a modular assembly of cabinets, which are configured to be modularly stacked on each other, comprising:

a first cabinet and a second cabinet, each comprising a housing with a base section, a top section and sidewalls extending therebetween, at least one of the sidewalls being provided with at least one upper latching mechanism disposed closer to said top section and at least one lower latching mechanism disposed closer to said base section; and

a support structure comprising at least one support latching mechanism, the support structure being configured to be disposed under a lowermost cabinet of the assembly, so as to provide support to the assembly;

the lower latching mechanism of the first cabinet being selectively engageable with the upper latching mechanism of the second cabinet or with the support latching

mechanism, and the lower latching mechanism of the second cabinet being selectively engageable with the upper latching mechanism of the first cabinet or with the support latching mechanism, thereby allowing modular latched stacking of the first cabinet, the second cabinet and the support structure to each other.

The assembly of cabinets allows selectively stacking the cabinets on each other and on the support structure so that each one of the cabinets is latched to its neighboring cabinet by corresponding upper and lower latching mechanisms while the lowermost cabinet is latched to the support structure by the corresponding lower latching mechanism and the support latching mechanism.

The base section can have a base rim and the top section can have a top rim. The base rim of the first cabinet can correspond in shape and size to the top rim of the second cabinet, so as to allow the first cabinet to be modularly stacked on the second cabinet. The base rim of the second cabinet can correspond in shape and size to the top rim of the first cabinet, so as to allow the second cabinet to be modularly stacked on the first cabinet.

The support structure can have a top section and a base section. The top section can have a support top rim. The support top rim can correspond in shape and size to the base rim of the first cabinet and to the base rim of the second cabinet, so as to allow the first cabinet or the second cabinet to be disposed on the support structure and latched thereto.

The support structure can further have sidewalls extending between the top section and the base section. At least one of the sidewalls of the support structure can be is provided with the support latching mechanism.

The support latching mechanism can be disposed closer to the support top rim than to the base section.

The sidewalls of the support structure can include a right support sidewall, a left support sidewall and a rear support sidewall.

The support structure can be constituted by two separate support members, each including its respective right and left support sidewall.

Each support member can have at least one support connecting portion configured to engage with a corresponding cabinet connecting portion formed within the first and the second bottom for disposing the first or the second cabinet on the support structure.

The support connecting portion can be constituted by a support connecting protrusion, and the cabinet connecting portion can be constituted by a cabinet connecting recess configured to receive said support connecting protrusion.

The support structure can comprise a plurality of wheels mounted to the bottom structure thereof for allowing displacement of the assembly.

The first upper latching mechanism can be similar to the second upper latching mechanism, and the first lower latching mechanism can be similar to the second lower latching mechanism.

The walls of the first and the second cabinets can be generally coplanar with each other when the cabinets are stacked on each other.

The sidewalls of the first and the second cabinets can include a right sidewall, a left sidewall, a rear sidewall and a front sidewall. The front sidewall can have a front opening formed therein configured to receive at least one storage unit into the respective cabinet.

According to one example, the storage unit is a drawer.

According to another example, the storage unit is an assortment box.

According to one example, the lower latching mechanism can comprise a latch recess formed within the respective sidewall, configured for accommodating therein a pivotally rotatable latch member. The latch member can be configured with at least one tongue.

According to still one example, the upper latching mechanism can be a detachably attachable unit.

According to still one example, the upper latching mechanism can comprise a recess formed therein with at least one catch member configured for selectively engaging with the at least one tongue of the latch member.

According to another example, the upper latching mechanism can comprise a latch recess formed within the respective sidewall, configured for accommodating therein a pivotally rotatable latch member. The latch member can be configured with at least one tongue.

According to still another example, the lower latching mechanism can be a detachably attachable unit.

According to still another example, the lower latching mechanism can comprise a recess formed therein with at least one catch member configured for selectively engaging with the at least one tongue of the latch member.

The support latching mechanism can comprise a recess formed therein with at least one catch member configured for selectively engaging with the at least one tongue of the latch member.

The upper latching mechanism can be used as a gripping member configured to be gripped by a user for raising the respective cabinet, while the recess is used for accommodating the user's fingers therein.

The structure of the sidewalls, the top section and the base section of the first and the second cabinets can be similar to each other.

In particular, the first and the second cabinets can be similar to each other.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to better understand the subject matter that is disclosed herein and to exemplify how it may be carried out in practice, embodiments will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

Fig. 1A is a front left isometric view of a cabinet, in accordance with one example of the presently disclosed subject matter;

Fig. 1B is a rear left isometric view of the cabinet of **Fig. 1A**;

Fig. 2A is a front left isometric view of a lower drawer of the cabinet of **Fig. 1A**;

Fig. 2B is an enlarged view of a portion A_1 of **Fig. 2A**;

Fig. 2C is a front left isometric view of an upper drawer of the cabinet of Fig. 1A;

Fig. 2D is an enlarged view of a portion A_2 of **Fig. 2A**;

Fig. 2E is a front left isometric view of a housing of the cabinet of **Fig. 1A**, with the drawers being removed;

Fig. 3 is a rear isometric view of a blocking mechanism of the cabinet of **Fig. 1A**;

Fig. 4A is the cabinet of **Fig. 1A**, with its housing removed therefrom;

Fig. 4B is an enlarged view of a portion A_3 of **Fig. 4A**;

Fig. 5A is a rear left isometric view of the cabinet of **Fig. 1A**, with its housing removed therefrom;

Fig. 5B is an enlarged view of a portion A_4 of **Fig. 5A**;

Figs. 5C to **5E** are rear isometric views of the portion A_4 of **Fig. 5B**, presented during consecutive steps of operation of the drawer;

Fig. 6A is a front left isometric view of the cabinet of the **Fig. 1A** with one drawer shown in its open position and another drawer shown in its closed position;

Fig. 6B is a rear left isometric view of the cabinet of the **Fig. 6A**;

Fig. 7A is the cabinet of **Fig. 6A**, with its housing removed therefrom;

Fig. 7B is an enlarged view of a portion A_5 of **Fig. 7A**;

Fig. 8A is a rear left isometric view of the cabinet of **Fig. 6A**, with its housing removed therefrom;

Fig. 8B is an enlarged view of a portion A_6 of **Fig. 8A**;

Fig. 9A is a front right isometric view of a cabinet, in accordance with another example of the presently disclosed subject matter;

Fig. 9B is a rear right isometric view of the cabinet of **Fig. 9A**;

Fig. 10A is a front right isometric view of a lower drawer of the cabinet of **Fig. 9A**;

Fig. 10B is an enlarged view of a portion B_1 of **Fig. 10A**;

Fig. 10C is a front right isometric view of an upper drawer of the cabinet of **Fig. 9A**;

Fig. 10D is an enlarged view of a portion B_1' of **Fig. 10C**;

Fig. 10E is a front right isometric view of a housing of the cabinet of **Fig. 9A**, with the drawers being removed;

Fig. 11 is a front isometric view of a locking mechanism of the cabinet of **Fig. 9A**, according to another aspect of the presently disclosed subject matter;

Fig. 12A is the cabinet of **Fig. 9A**, with its housing removed therefrom;

Fig. 12B is an enlarged view of a portion B_2 of **Fig. 12A**;

Fig. 13A is a rear right isometric view of the cabinet of **Fig. 9A**, with its housing removed therefrom;

Fig. 13B is an enlarged view of a portion B_3 of **Fig. 13A**;

Fig. 14A is a front right isometric view of the cabinet of the **Fig. 9A** with one drawer shown in its open position and another drawer shown in its closed position;

Fig. 14B is a rear right isometric view of the cabinet of the **Fig. 14A**;

Fig. 15A is the cabinet of Fig. 14A, with its housing removed therefrom;

Fig. 15B is an enlarged view of a portion B_4 of **Fig. 15A**;

Fig. 16A is a rear right isometric view of the cabinet of **Fig. 15A**, with its housing removed therefrom;

Fig. 16B is an enlarged view of a portion B_5 of **Fig. 16A**;

Fig. 17A is an enlarged view of a portion B_6 of **Fig. 9A**;

Fig. 17B is an enlarged view of a portion B_7 of **Fig. 14A**;

Fig. 18A is a front left isometric view of a modular assembly of cabinets, in accordance with another aspect of the presently disclosed subject matter;

Fig. 18B is an enlarged view of a portion C_1 of **Fig. 18A**;

Fig. 18C is an enlarged view of a portion C_2 of **Fig. 18A**;

Fig. 19 is an exploded view of the housing of **Fig. 2E**;

Fig. 20A is a front isometric view of an upper latching mechanism of the cabinets of **Fig. 18A**;

Fig. 20B is a rear isometric view of an upper latching mechanism of the cabinets of **Fig. 18A**;

Fig. 21A is a front isometric view of a lower latching mechanism of the cabinets of **Fig. 18A**;

Fig. 21B is a rear isometric view of a lower latching mechanism of the cabinets of **Fig. 18A**;

Fig. 22A is a front isometric view of a supporting structure of the assembly of **Fig. 18A**;

Fig. 22B is an enlarged view of a portion C_3 of Fig. 22A;

Figs. 23A and **23B** are an isometric view of a cabinet of assortment boxes; and

Figs. 24A and **24B** are an isometric view of an assortment box of the cabinet of **Figs. 23A** and **23B**.

DETAILED DESCRIPTION OF EMBODIMENTS

Attention is first directed to Figs. 1A to 2E, 6A and 6B of the drawings illustrating a cabinet in accordance with one example of the presently disclosed subject matter, generally designated **1**. The cabinet **1** comprises a housing **10** and two storage units in the form of drawrs, including a lower drawer **30** and an upper drawer **50**, each

accommodated within the housing **10** and slidingly displaceable between a closed position in which the drawer is disposed within the housing **10** and an open position in which the drawer projects from the housing **10**. The drawers **30** and **50** are vertically stacked within the housing **10** along a vertical axis **Y**. In Figs. 1A and 1B, the drawers **30** and **50** are in their closed position, and in Figs. 6A and 6B, the drawer **30** is in its open position and the drawer **50** is in its closed position.

As shown in Fig. 2E, the housing **10** has a base section **12** with a base rim **13**, a top section **14** with a top rim **15**, a right sidewall **16**, a left sidewall **18**, a front frame **20** with an opening therein and a rear wall **22**. The front frame **20** has a right front edge **19** and a left front edge **21**. The housing **10** further has a housing cavity **23** defined by the base section **12**, the top section **14**, the sidewalls **16** and **18**, and the walls **20** and **22**. The housing cavity **23** is configured to accommodate the drawers **30** and **50** therein.

It is appreciated that the number of the drawers is not limited to two. An example of a cabinet with three drawers in presented in Fig. 18A. According to the present example, the drawer **30** occupies a space of two drawers, each having dimensions similar to those of the drawer **50**.

As shown in Fig. 2A, the drawer **30** has a front wall **32**, a rear wall **34**, a right sidewall **36**, a left sidewall **38** and a base section (not seen). The front and rear walls **32** and **34**, the right and left sidewalls **36** and **38**, and the base section of the drawer **30** define together a cavity **31** configured for accommodating work tools and appliances. The right sidewall **36** has a right exterior surface **37** and the left sidewall **38** has a left exterior surface **39**.

As shown in Figs. 2C, the drawer **50** has a front wall **52**, a rear wall **54**, a right sidewall **56**, a left sidewall **58** and a base section **60**. The front and rear walls **52** and **54**, the right and left sidewalls **56** and **58**, and the base section **60** define together a cavity **51** configured for accommodating work tools and appliances. The right sidewall **56** has a right exterior surface **57** and the left sidewall **58** has a left exterior surface **59**.

Each of drawers **30** and **50** is slidingly displaceable with respect to the housing **10** by two slide mechanisms interconnecting each drawer to the housing **10**. Each of the two slide mechanisms is a full-extension mechanism being disposed at a respective sidewall of each drawer. The description below is made for example to a left slide mechanism **2** of the drawer **30**.

The slide mechanism **2** (the location of which is generally shown in Fig. 1A) has the following three members: a first member **4** (shown in Figs. 2A and 2B) protruding from the left sidewall **38** and extending between the front wall **32** and the rear wall **34**; a second member (not seen) protruding from the left sidewall **18** of the housing **10** towards the drawer **30** and extending between the front wall **20** and the rear wall **22**; and an intermediate member **6** (shown in Figs. 4A and 4B) slidingly disposed between the first and the second members. The existence of the intermediate member **6** allows the drawer **30** to fully extend out of the housing **10** in its open position (as shown for example in Figs. 6A and 6B). As shown in Figs. 6A and 6B, in the fully extended position of the slide mechanism **2**, one half of the intermediate member **6** is engaging the first member **4**, and another half of the intermediate member **6** is engaging the second member of the slide mechanism **2**, thereby providing support to the drawer **30** with respect to the housing **10**.

Reference is now made to Figs. 3, 4A to 4B and 5A to 5B, in which a blocking mechanism **70** of the cabinet **1** is illustrated, in accordance with one aspect of the presently disclosed subject matter. The blocking mechanism **70** is disposed within the cabinet **1** behind the front edge **21**, between the left sidewall **18** of the housing **10** and the left sidewalls **38** and **58** of the drawers **30** and **50**. The blocking mechanism **70** is mechanically associated with the drawers **30** and **50** for preventing more than one drawer from being displaced to its open position at the same time.

The blocking mechanism **70** is mechanically associated with the drawers **30** and **50** such that, when these drawers are in their closed position, displacement of one drawer from its closed position to its open position induces displacement of the blocking mechanism **70** which, in turn, arrests each of the other drawers in its closed position. The structure of the blocking mechanism **70** and its way of operation will now be described.

The blocking mechanism **70** is a single-molded elongate member oriented within the housing **10** along the vertical axis **Y**. The blocking mechanism **70** has three blocking-following members **71a**, **71b** and **71c**, each associated with its corresponding drawer (if accommodated within the housing **10**) for selectively arresting said corresponding drawer in its closed position. Each of the blocking-following members **71a**, **71b** and **71c** is a blocking member and a following member integrally formed in a single member. As shown in Figs. 4A and 4B, the blocking-following member **71b** is

associated with the drawer **30**, the blocking-following member **71c** is associated with the drawer **50**, and the blocking-following member **71a** is not associated with a specific drawer since the drawer **30** occupies a space of two drawers as mentioned above. The blocking-following members **71a**, **71b** and **71c** laterally are integrally formed with the blocking mechanism **70** and constitute portions thereof. The blocking-following members **71a**, **71b** and **71c** protrude from the blocking mechanism towards their corresponding drawers of the cabinet **1**.

According to the example of the drawings, the blocking mechanism **70** is vertically displaceable along the axis **Y** between a downward unblocked state (shown in Figs. 4A, 4B, 5A and 5B) in which each one of the drawers **30** and **50** is free to be displaced from its closed position to its open position and an upward blocked state (shown in Figs. 7A, 7B, 8A and 8B) in which the drawer **50** is arrested in its closed position by its corresponding blocking-following member **71c**, while the drawer **30** is in its open position. The blocking mechanism **70** is normally urged into its unblocked state by virtue of gravity forces.

As shown in Fig. 3, the blocking mechanism **70** further has a biasing arrangement **79** disposed at the uppermost end thereof and configured for biasing the blocking mechanism **70** towards its unblocked state. The biasing arrangement **79** is constituted by a biasing spring arm configured to engage the top wall **14** of the housing **1**, when the blocking mechanism is in its blocked state, and consequently to be bent. The elastic nature of the biasing arrangement **79** allows the arm to assume its original shape, thereby facilitating the displacement of the blocking mechanism **70** to its unblocked state, when possible.

It should be indicated that the description below is made to a particular example according to which the drawer **30** is displaced to its open position, while the drawer **50** is arrested in its closed position by virtue of the blocking mechanism **70**. It is appreciated that if the drawer **50** is displaced to its open position instead of the drawer **30**, the drawer **30** will be arrested in its closed position by virtue of the blocking mechanism **70** in the same manner as the drawer **50** is arrested when the drawer **30** is displaced to its open position.

Reference is now made again to Figs. 2A to 2D, 3, 4A to 4B and 5A to 5B in order to describe the mechanical association between the blocking mechanism **70** and

the drawers **30** and **50** when the drawer **30** is displaced from its closed position to its open position.

As clearly shown in Fig. 2B and 5B, the drawer **30** has a restricting portion **42** and a guiding portion **43** which are mechanically associated with the blocking-following member **71b**. The restricting portion **42** and the guiding portion **43** protrude from the left exterior surface **39** towards the left sidewall **18** of the housing **10**, and particularly towards to blocking mechanism **70**. The guiding portion **43** is disposed along and under the first element **4** of the slide mechanism **2**. The guiding portion **43** has three portions: a first straight portion **43a**, a ramp portion **43b** and a second straight portion **43c**. The the ramp portion **43b** has a lower end **45** which is disposed between the first straight portion **43a** and the ramp portion **43b**.

As clearly shown in Fig. 2D and 5B, the drawer **50** has a restricting portion **62** and a guiding portion **63** which are mechanically associated with the blocking-following member **71c**. The restricting portion **62** and the guiding portion **63** protrude from the left exterior surface **59** towards the left sidewall **18** of the housing **10**, and particularly towards to blocking mechanism **70**. The guiding portion **63** is disposed along and under the first element of the slide mechanism of the drawer **50**.

As shown in Fig. 3, each of the blocking-following members **71a, 71b** and **71C** has respectively two portions: a side blocking portion **72a**, **72b** and **72c** and a bottom following portion **73a**, **73b** and **73c**. Each of the blocking portions **72a**, **72b** and **72c** constitutes a blocking member which is mechanically associated with the restricting portion of its corresponding drawer and each of the following portions **73a**, **73b** and **73c** constitutes a following member which is mechanically associated with the guiding portion of its corresponding drawer. In particular, the blocking portion **72b** is mechanically associate with the restricting portion **42**, the blocking portion **72c** is mechanically associate with the restricting portion **62**, the following portion **73b** is mechanically associate with the guiding portion **43**, and the following portion **73c** is mechanically associate with the guiding portion **63**.

The association between the restricting portion **62** and the blocking-following members **71c** and particularly with its blocking portion **72c** is such that in the blocked state of the blocking mechanism **70**, when the drawer **30** is in its open position and the drawer **50** is in its closed position, the blocking portion **72c** obstructs the restricting portion **62**, to thereby prevent displacement thereof into its open position.

In a similar manner, the association between the restricting portion **42** and the blocking-following members **71b** and particularly with its blocking portion **72b** is such that in the blocked state of the blocking mechanism **70**, when the drawer **50** is in its open position and the drawer **30** is in its closed position, the blocking portion **72b** obstructs the restricting portion **42**, to thereby prevent displacement thereof into its open position.

As shown in Fig. 5B, the blocking-following members **71a**, **71b** and **71c** are disposed along a first plane which passes through line **AA** and which is substantially parallel to the front frame **20** of the housing **10**. As further shown in this figure, the restricting portions **42** and **62** are disposed along a second plane which passes through line **BB** and which is substantially parallel to the first plane. The first plane is closer to the front frame **20** than the second plane, and both planes are disposed in proximity to the front frame **20**.

The blocking-following member **71b** is sized for passing between the restricting portion **42** and the guiding portion **43** during the displacement of the drawer **30** between its closed position and its open position.

In a similar manner, the blocking-following member **71c** is sized for passing between the restricting portion **62** and the guiding portion **63** during the displacement of the drawer **50** between its closed position and its open position.

In order to describe the mechanical association between the guiding portion **43** and the following portion **73b**, reference is now made particularly to Fig. 5B and additionally to Figs. 5C to 5E, which illustrate the steps of displacement of the drawer **30** from its closed position to its open position, and consequent displacement of the blocking mechanism **70** to its blocked state. As shown in Fig. 5B, when the drawer **30** is in its closed position, the following portion **73b** rests on the guiding portion **43**. As shown in Fig. 5C, when the drawer **30** begins its displacement along a horizontal axis **X** to its open position, the following portion **73b** slides over the first straight portion **43a** of the guiding portion **43** until it reaches the lower end **45** of the ramp portion **43b**. Upon further displacement of the drawer **30** along the axis **X** to its open position, as shown in Fig. 5D, the following portion **73b** engages the ramp portion **43b** and slides along its length. Due to the inclined structure of the ramp portion **43b**, the following portion **73b**, and consequentially the entire blocking mechanism **70** is urged to displace in the upward direction towards the blocked state of the blocking mechanism **70**. As

shown in Fig. 5E, the following portion **73b** has passed the ramp portion **43b**, and as a result of that, the blocking mechanism **70** is disposed in its blocked state. In this state of the blocking mechanism **70**, the blocking-following member **71c** is arresting the drawer **50** in its closed position. A detailed explanation of the blocked state of the blocking mechanism **70** is provided below. Further displacement of the drawer **30** from its position in Fig. 5E to its open position in Figs. 6A and 6B does not influence on the blocking mechanism **70**, which is already in its blocked state.

Reference is now made particularly to Fig. 5B, in which the following distances are used:

W_1 – the width of the blocking following member **72**;

W_2 – the distance between the projection of the restricting member **42** on the first straight portion **43a** and the lower end **45**;

W_3 – the distance between the blocking portion **72b** and the lower end **45**; and

W_4 – the length of a horizontal portion **42'** of the restricting portion **42**.

As seen in Fig. 5B, since W_1 is smaller than W_2 ($W_1<W_2$), during its sliding along the first straight portion **43a** along a distance of W_4, the blocking-following member **71b** is able to pass by the restricting portion **42,** and particularly its horizontal portion **42'**, before engaging the lower end **45** and starting to vertically displace in the upward direction. Only after passing by the restricting portion **42** and engaging the ramp portion **43b**, the blocking-following member **71b** starts to vertically displace in the upward direction together with the entire blocking mechanism **70**. Thus, since the blocking portion **72b** is disposed behind the restricting portion **42**, the blocking mechanism in its blocked state arrest the drawer **30** in its closed position.

In addition to the open and the closed positions of the drawers **30** and **50**, these drawers also have an intermediate position in which the drawer projects from the housing to an extent greater than in the closed position and smaller than in the open position, while the blocking mechanism **70** is still in its unblocked state.

The maximal extent to which the drawers can be displaced and still be in the intermediate position is defined by the distance W_3, which is shown in Fig. 5B.

Since the displacement of the drawer **30** to its intermediate position does not entail displacement of the blocking mechanism **70**, the drawer **50** which is not arrested in its closed position, can also be displaced to its intermediate position. The intermediate distance W_3 can be such that when all the drawers of the cabinet, i.e., the

drawer **30** and the drawer **50** are in their intermediate position, there is no danger of tipping over of the cabinet.

It should be indicated that in the intermediate position of the drawer **30**, the blocking mechanism **70**, and particularly its following portion **73b**, rests on the first straight portion **43a** of the guiding portion **43**. In this position, the gravity forces which are constantly applied on the blocking mechanism **70** will not cause any displacement of the blocking mechanism **70** in the downward direction. Therefore, the drawer **30** will not be displaced from this position due to the existence of these gravity forces.

When the displacement of the drawer **30** from its closed position is stopped in a position in which the following portion **73b** rests on the ramp portion **43b**, the gravity forces that are constantly applied on the blocking mechanism **70** may cause the blocking mechanism **70** to move in the downward direction, thereby causing the following portion **73b** to slide on the ramp portion **43b** towards the first straight portion **73a** which in turn will entail displacement of the drawer **30** to its intermediate or closed position.

When the displacement of the drawer **30** from its closed position is stopped in a position in which the following portion **73b** rests on the second straight portion **43c,** the gravity forces that are constantly applied on the blocking mechanism **70** will not cause any displacement of the blocking mechanism **70** in the downward direction. Therefore, the drawer **30** will not be displaced from this position due to the existence of these gravity forces.

Reference is now made to Figs. 7A, 7B, 8A and 8B in order to describe the mechanical association between the blocking mechanism **70** and the drawers **30** and **50** when the drawer **30** is in its open position and the drawer **50** is arrested in its closed position by the blocking mechanism **70**.

In the blocked state of the blocking mechanism **70**, when the drawer **30** is in its open position, the blocking portion **72c** is aligned with the restricting portion **62** so that during an attempt to displace the drawer **50** from its closed position to its open position, the blocking portion **72c** engages the restricting portion **62** to thereby obstruct the drawer **50** and prevent its displacement to its open position.

Upon displacement of the drawer **30** back to its closed position, the blocking mechanism reverts to its unblocked state by virtue of gravity forces and the operation of the biasing arrangement **79** which tends to revert to its original shape and thereby bias the blocking mechanism **70** to its unblocked state.

Attention is now directed to Figs. 9A to 10E, 14A and 14B of the drawings illustrating a cabinet in accordance with another example of the presently disclosed subject matter, generally designated **301**. The cabinet **301** comprises a housing **310** and two storage units in the form of drawers, including a lower drawer **330** and an upper drawer **350**, each accommodated within the housing **310** and slidingly displaceable between a closed position in which the drawer is disposed within the housing **310** and an open position in which the drawer projects from the housing **310**. The drawers **330** and **350** are vertically stacked within the housing **310** along a vertical axis **Y**. In Figs. 9A and 9B, the drawers **330** and **350** are in their closed position, and in Figs. 14A and 14B, the drawer **330** is in its open position and the drawer **350** is in its closed position.

As shown in Fig. 10E, the housing **310** has a base section **312** with a base rim **313**, a top section **314** with a top rim **315**, a right sidewall **316**, a left sidewall **318**, a front frame **320** with an opening therein and a rear wall **322**. The front frame **320** has a right front edge **319** and a left front edge **321**. The housing **310** further has a housing cavity **323** defined by the base section **312**, the top section **314**, the sidewalls **316** and **318**, and the walls **320** and **322**. The housing cavity **323** is configured to accommodate the drawers **330** and **350** therein.

It is appreciated that the number of the drawers is not limited to two. An example of a cabinet with three drawers in presented in Fig. 18A. According to the present example, the drawer **330** occupies a space of two drawers, each having dimensions similar to those of the drawer **350**.

As shown in Fig. 10A, the drawer **330** has a front wall **332**, a rear wall **334**, a right sidewall **336**, a left sidewall **338** and a base section (not seen). The front and rear walls **332** and **334**, the right and left sidewalls **336** and **338**, and the base section of the drawer **330** define together a cavity **331** configured for accommodating work tools and appliances. The right sidewall **336** has a right exterior surface **337** and the left sidewall **338** has a left exterior surface **339**.

As shown in Figs. 10C, the drawer **350** has a front wall **352**, a rear wall **354**, a right sidewall **356**, a left sidewall **358** and a base section **360**. The front and rear walls **352** and **354**, the right and left sidewalls **356** and **358**, and the base section 3**60** define together a cavity **351** configured for accommodating work tools and appliances. The right sidewall **356** has a right exterior surface **357** and the left sidewall **358** has a left exterior surface **359**.

Each of drawers **330** and **350** is slidingly displaceable with respect to the housing **10** by two slide mechanisms interconnecting each drawer to the housing **10**. Each of the two slide mechanisms is a full-extension mechanism being disposed at a respective sidewall of each drawer.

Reference is now made to Figs. 9A to 14B in which the cabinet **301** is illustrated with a locking mechanism **390** disposed therein, in accordance with another aspect of the presently disclosed subject matter. The locking mechanism **390** is disposed within the housing **310** in proximity to the right front edge **319**, between the right sidewall **316** of the housing **310** and the right sidewalls **336** and **356** of the drawers **330** and **350**. The locking mechanism **390** is mechanically associated with the drawers **330** and **350** for controlling the ability of a user to open at least one of the drawers **330** and **350** of the cabinet **301**. This control allows selectively arresting all the drawers of the cabinet **301**, i.e., the drawers **330** and **350**, in their closed position and respectively releasing the drawers **330** and **350** from their arrested position, and thereby allowing each one of the drawers to be displaced to its open position.

As shown in Figs. 11, 12A, 12B, 13A and 13B, the locking mechanism **390** is a single-molded elongate member oriented within the housing **310** along the vertical axis **Y**. The locking mechanism **390** has three locking members **391**, **392** and **393**, each associated with its corresponding drawer (if accommodated within the housing **310**) for selectively arresting the drawers **330** and **350** in their closed position, and respectively allowing the drawers **330** and 350 to be displaced to their open position. The locking member **392** is associated with the drawer **330**, the locking member **393** is associated with the drawer **360**, and the locking member **391** is not associated with any specific drawer since the drawer **330** has a double depth as mentioned above. The locking members **391**, **392** and **393** are integrally formed with the locking mechanism **390** and constitute a portion thereof.

The locking mechanism **390** is vertically displaceable along the axis **Y** between an upward locked state (shown in Figs. 12A, 12B, 13A and 13B) in which the drawers **330** and **350** of the cabinet **301** are arrested in their closed position by their corresponding locking members **392** and **393**, and a downward unlocked state (shown in Figs. 15A, 15B, 16A and 16B) in which each of the drawers **330** and **350** of the cabinet **301** is free to be displaced from its closed position to its open position.

The locking mechanism **390** further comprises a stopping element **388** protruding therefrom. When the locking mechanism **390** is displaced to its upward locked state, the stopping element **388** is configured to be received in a corresponding first cavity (not shown) formed within the housing **310**, and thereby to be stopped at the locked state. This function of the stopping element **388** will prevent from gravity forces to displace the locking mechanism to its downward unlocked state. When the locking mechanism **390** is displaced to its unlocked state, the stopping element **388** is configured to be received in a corresponding second cavity (not shown) formed within the housing **310**, and thereby to be stopped at the unlocked state. When the stopping element **388** is received within the first and the second cavities, the user may feel or hear a 'click', which can provide indication and feedback regarding the state of the locking mechanism **390**.

As shown in Figs. 10A, 10B, 13A and 13B, the drawer **330** has an arresting portion **344** which is configured to be mechanically associated with the locking member **392** by arresting this drawer in its closed position, and the drawer **350** has an arresting portion **364** (shown in Fig. 13B) which is configured to be mechanically associated with the locking member **393** by arresting this drawer in its closed position. The arresting portions **344** and **364** protrude from the right exterior surfaces **337** and 3**57**, respectively, towards the right sidewall **316** of the housing **310**, and particularly towards to locking mechanism 3**90**.

According to Fig. 13B, the locking members **391**, **392** and **393** are disposed along a third plane which passes through line **CC** and which is parallel to the front frame **320** of the housing **310**, and the arresting portions **344** and **364** are disposed along a fourth plane which passes through line **DD** and which is parallel to the third plane. The third plane is closer to the front frame **320** than the fourth plane, and both planes are disposed in proximity to the front frame **320**.

As shown in Fig. 13B, in which the locking mechanism **390** is in its locked state, the mechanical association between the arresting portions **344** and **364** and the locking members **392** and **393** is such that the locking members **392** and **393** are aligned with their corresponding arresting portions **344** and **366**. In this position of the locking mechanism **390**, during an attempt to displace one of the drawers **330** and **350** from its closed position to its open position, the corresponding locking member **392** or **393**

engages the corresponding arresting portion **344** or **364** to thereby obstruct the drawer and prevent displacement thereof to its open position.

Reference is now made particularly to Figs. 15A, 15B, 16A, 16B, 17A and 17B, in which the locking mechanism **390** is displaced to its unlocked state, allowing any one of the drawers **330** and **350** to be displaced to its open position. According to the particular example of these figures, the drawer **330** is displaced to its open position.

In the unlocked state of the locking mechanism **390**, this mechanism is vertically displaced in a downward direction, thereby causing the locking members **392** and **393** to be misaligned with the arresting portions **344** and **364** and to be disposed under these portions. This disposition of the locking members **392** and **393** with respect to the arresting portions **344** and **364** allows any of the drawers to be displaced to its open position without engaging its corresponding locking member. As shown for example in Fig. 16B, the drawer **330** is displaced to its open position by to the fact that the locking member 3**92** was misaligned with its arresting portion **344**. Due to the existence of the blocking mechanism **370** in the cabinet **301**, only if the drawer **330** will be displaced to its closed position, the drawer **350** will be allowed to be displaced to its open position since the arresting portion **364** is misaligned with the locking member **393**.

Reference is now made to Figs. 9A, 11, 17A and 17B in which further elements of the locking mechanism **390** are presented. The locking mechanism **390** has an actuator **394** configured for displacing the locking mechanism between its unlocked state and its locked state. The actuator has an actuator cavity **395** configured to accommodate at least one finger of a user for allowing him to displace the locking mechanism between its unlocked state and its locked state. The right front edge **319** has an actuator window **324** configured for providing access to the actuator cavity **395**. The actuator **394** has an upward state corresponding to the locked state of the locking mechanism **390** and a downward state corresponding to the unlocked state of the locking mechanism **390**.

As shown in Fig. 17A, in which the locking mechanism **390** is disposed in its locked state, the actuator cavity **395** is disposed in its upward state. In order to displace to locking mechanism **390** to its unlocked state, the user can apply a downwardly directed pushing force on the actuator **394** and against the stopping element **388** which is received within the first cavity. This will result in displacement of the locking mechanism **390** to its unlocked state which is shown in Fig. 17B.

The actuator **394** is configured with an indicating member 3**96** (shown in Fig. 11), visible via an indicating window **325** (shown in Figs. 17A and 17B) formed within the right front edge **319** of the housing **310**, and configured for indicating the state in which the locking mechanism **390** is disposed to the user. The indicating member **396** has a first portion **397** with a first color associated with the locked state of the locking mechanism **390**, and a second portion **398** with a second color associated with the unlocked state of the locking mechanism **390**. The indicating window **325** is configured to provide visual indication of one of the first and the second portions **397** and **398** at a time, thereby indicating respectively the state at which the locking mechanism **90** is disposed. It should be appreciated that indication by means other than color can be applied. These means can include text, touch, etc.

In Fig. 17A it is shown that the first portion **397** is visible via the indicating window **325**, and in Fig. 17B it is shown that the second portion **398** is visible via the indicating window **325**.

The locking mechanism **390** further includes a securing member **399** protruding therefrom and formed with a securing recess **389** therein. The right front edge **319** of the housing 3**10** is formed with an elongate opening **326** configured for receiving therethrough the securing member **399**. The elongate opening **326** is formed with a raised rim **327** extending about the opening, and being formed with a locking recess **328**.

As shown in Fig. 17A, in the locked state of the locking mechanism **390**, the locking recess **328** is aligned with the securing recess **389**, so that a shackle **309** of a lock **308** can be received through the locking recess **328** and the securing recess **389** so as to fix the locking mechanism **390** in its locked state.

As shown in Fig. 17B, in the unlocked state of the locking mechanism **390**, the locking recess **28** is misaligned with the securing recess **389**, so that the shackle **309** cannot be received within the locking recess **328** and the securing recess **389** at the same time because the rim **327** obstructs a portion of the securing recess **389**. The In this position, the lock **308** cannot be used for fixing the locking mechanism in its unlocked state.

Reference is now made to Figs. 18A to 24B, in which modular assembly **100** of cabinets illustrated, in accordance with another aspect of the presently disclosed subject matter.

The modular assembly **100** includes the cabinet **1**, a cabinet **101** and a support structure **201** which are modularly stacked on each other, while the support structure **201** provides support to the whole assembly. In general, the modular assembly **100** can include more than two cabinets which can be modularly stacked on each other, while the lowermost cabinet is disposed on the support structure **201**.

The cabinet **1** comprises the housing **10** and the two drawers **30** and **50**. As described above with reference to Fig. 2E, the housing **10** has the following elements: the base section **12** with the base rim **13**, the top section **14** with the top rim **15**, the right sidewall **16**, the left sidewall **18**, the front frame **20** and the rear wall **22**.

The housing **10** further comprises two upper latching mechanisms and two lower latching mechanisms. The upper latching mechanisms include a right upper latching mechanism (not seen) and a left upper latching mechanism **160**, and the lower latching mechanisms include a right lower latching mechanism (not seen) and a left lower latching mechanism **170**. The right upper latching mechanism of the housing **10** is formed within the right sidewall **16** and partially in the top rim **15**. The left upper latching mechanism **160** is formed within the left sidewall **18** and partially in the top rim **15**. The right lower latching mechanism of the housing **10** is formed within the right sidewall **16** and partially in the bottom rim **13**. The left lower latching mechanism **170** is formed within the left sidewall **18** and partially in the bottom rim **13**.

The cabinet **101** comprises a housing **110** (shown in Fig. 19) which is similar in its structure to the housing **10,** with three storage units in the form of drawers **130**, **140** and **150** accommodated therein. As shown in Fig. **19**, the housing **110** has a base section **112** with a base rim **113**, a top section **114** with a top rim **115**, a right sidewall **116**, a left sidewall **118**, a front frame **120** with an opening therein and a rear wall **122**.

The housing **110** further comprises two upper latching mechanisms and two lower latching mechanisms. The upper latching mechanisms include a right upper latching mechanism **151** (shown in Fig. 19) and a left upper latching mechanism **180**, and the lower latching mechanisms include a right upper mechanism **141** (shown in Fig. 19) and a left lower latching mechanism **190**. The right upper latching mechanism of the housing **110** is formed within the right sidewall **116** and partially in the top rim **115**. The left upper latching mechanism **180** is formed within the left sidewall **118** and partially in the top rim **115**. The right lower latching mechanism of the housing **110** is formed within the right sidewall **116** and partially in the bottom rim **113**. The left lower

latching mechanism **190** is formed within the left sidewall **118** and partially in the bottom rim **113**. When the cabinets **1** and **101** are stacked on each other, their front wall, rear wall and sidewalls are generally coplanar with each other.

As shown in Figs. 18A and 22A, the support structure **201** is constituted by two support members, including a right support member **202** and a left support member **204**, each configured to be latched under its respective sidewall of the lowermost cabinet of the assembly. According to the present example, the lowermost cabinet is constituted by the cabinet **1**.

The right support structure **202** has a housing **210** and the left support structure **204** has a housing **260**. The housing **210** has a base section **212**, a top section **214** with a top rim **215**, a right sidewall (not seen) and a left sidewall **218**. The housing **260** has a base section **262**, a top section **264** with a top rim **265**, a right sidewall (not seen) and a left sidewall **268**.

The top section **214** has two support connecting portions **281** and **282** extending therefrom, and the top section **264** has two support connecting portions **283** and **284** extending therefrom. Each of the support connecting portions **281**, **282**, **283** and **284** is configured to be received within a corresponding cabinet connecting portion (not seen) formed within the bottom sections **12** and **112** for selectively disposing the cabinets **1** and **101** on the support structure **201**.

The support connecting portions **281**, **282**, **283** and **284** are constituted by protruding element, and the cabinet connecting portions are constituted by corresponding recesses configured to receive the protruding elements.

The right support member **202** has two wheels **205** and **206** mounted to the base section **212**, and the left support member **204** has two wheels **207** and **208** mounted to the base section **262**. The wheels **205**, **206**, **207** and **208** are for allowing displacement of the assembly from place to place.

The support structure **201** includes two support latching mechanisms, including a right support latching mechanism (not seen) disposed in the right support member **202**, and a left support latching mechanism **270** disposed in the left support member **204**. The right support latching mechanism of the housing **210** is formed within the right sidewall of the housing **210** and partially in the top rim **215**. The left support latching mechanism **270** is formed within the left sidewall **268** and partially in the top rim **265**.

The modular assembly **100** of cabinets allows selectively stacking the cabinets **1** and **101** on each other and on the support structure **201** so that each one of the cabinets is latched to its neighboring cabinet by corresponding upper and lower latching mechanisms while the lowermost cabinet of the modular assembly is latched to the support structure by the corresponding lower latching mechanisms which is latched to the support latching mechanisms. In other words, the cabinets **1** and **101** can be stacked on top of each other such that in one configuration the cabinet **1** is disposed on the cabinet **101** and latched thereto, and in another configuration, the cabinet **101** is disposed on the cabinet **1** and latched thereto. In addition, the lowermost cabinet of the assembly can be latched to the support structure **201** by using the same latching mechanism of the lowermost cabinet which is used for latching this cabinet to another cabinet, as detailed below.

As shown in Fig. 18A, the base rim **113** of the cabinet **101** correspond in shape and size to the top rim **15** of the cabinet **1**, so that the base rim **113** rests on the top rim **15**. It should be indicated that the base rim **13** of the cabinet **1** corresponds in shape and size to the top rim **115** of the cabinet **101**, so as to allow the cabinet **1** to be modularly stacked on the cabinet **101**.

In addition, the base rim **13** correspond in shape and size to the support rim **265,** so that the base rim **13** rests on the the support rim **265**. It should be indicated that the base rim **113** also correspond in shape and size to the support rim **265,** so as to allow the base rim **113** rests on the the support rim **265** when the cabinet **101** is disposed on the support structure **201**.

As further shown in Fig. 18A, the left lower latching mechanism **190** of the cabinet **101** is latched to the left upper latching mechanism **160** of the cabinet **1**, and the left lower latching mechanism **170** of the cabinet **1** is latched to the left support latching mechanism **270** of the support structure **201**. Although it is not seen in Fig. 18A, the right lower latching mechanism **141** of the cabinet **101** is latched to the right upper latching mechanism of the cabinet **1**, and the right lower latching mechanism of the cabinet **1** is latched to the right support latching mechanism of the support structure **201**.

It is appreciated that the cabinets **1** and **101** can be replaced with each other, so that the cabinet **1** is stacked on the cabinet **101** and latched thereto, and the cabinet **101** is stacked on the support structure **201** and latched thereto by its right and left lower latching mechanisms of the cabinet **101** and the support latching mechanisms.

Reference is now made to Figs. 20A and 20B to describe the structure of the left upper latching mechanism **160**, which is similar in its structure to the left upper latching mechanism **180** and to the right upper latching mechanisms of the cabinets **1** and **101**. Due to this similarity, the description below with respect to left upper latching mechanism **160** is relevant to the other upper latching mechanisms as well.

The left upper latching mechanism **160** is a detachably attachable unit having a front surface **161** and a rear surface **162**. The rear surface **162** includes two fixing members **163** and **164**, each of which is configured to be received within its corresponding cavity within the left wall **118**. One example of such a cavity is shown in Fig. 19, and designated as **166**. The cavity **166** is configured for receiving a fixing member of the left upper latching mechanism **180**. Fig. 19 illustrates the way in which the left upper latching mechanism **180** can be mounted to the left sidewall **118**.

The front surface **161** has a recess **167** formed therein with two catch members **168** and **169**, each configured for selectively engaging with a corresponding portion of the lower latching mechanism **190**.

The right and the left upper latching mechanisms of the cabinets **1** and **101** can be further used as gripping members for allowing a user to grip the respective cabinet and raise it. In this case, the recess which is formed within the respective upper latching mechanism, such as the recess **167**, can be used for accommodating the user's fingers when being gripped.

It should be indicated that the left and the right upper latching mechanisms are attachable to the cabinets **1** and **101** is a lateral direction, so as to support the weight of the cabinet when griped and raised by a user. The attachment in the lateral direction is provided by the direction of the fixing members **163** and **164** and their respective cavities, which is along the axis **X**. Since the axis **X** is perpendicular to the axis **Y** in which the cabinet is raised, the support to the weight of the cabinet is provided.

Reference is now made to Figs. 19, 21A and 21B to describe the structure of the left lower latching mechanism **190**, which is similar in its structure to the left lower latching mechanism **170** and to the right lower latching mechanisms of the cabinets **1** and **101**. Due to this similarity, the description below with respect to left lower latching mechanism **190** is relevant to the other lower latching mechanisms as well.

The left lower latching mechanism **190** is constituted by a latch member **191** (shown in Figs. 21A and 21B), a latch recess **192** (shown in Fig. 19) formed within the

sidewall **118**. The latch member **191** is a pivotally rotatable member having two pivoting elements **193** and **194**, disposed at the upper end of thereof. The pivoting elements **193** and **194** are configured to be received within corresponding cavities formed in the latch recess **192**. One example of such a cavity is shown in Fig. 19, and designated as **195**. When the latch member **191** is mounted within the latch recess **192,** the pivoting element **194** is configured to be received in the cavity **195**. The latch member **191** has two tongues **196** and **197** disposed at the lower end thereof. When the left lower latching mechanism **190** is engaged with the left upper latching mechanism **160**, the latch member **191** is rotated towards the recess **167**, so that the tongue **196** is received within the catch member **169**, and the tongue **197** is received within the catch member **168,** thereby latching the left lower latching mechanism **190** to the left upper latching mechanism **160** .

As shown in Fig. 22B, the left support latching mechanism **270** has a support recess **271** formed therein with two catch members **272** and **273**, each configured for selectively engaging with a corresponding tongue of the left lower latching mechanism **170**. According to another example, in which the cabinet **101** is the lowermost cabinet, the left lower latching mechanism **190** is engaged and latched with the left support latching mechanism **270** by the tongue **196** which is received within the catch member **272** and by the tongue **197** which is received within the catch member **273**.

Turning now to Figs. 18B and 18C, which summarizes the manner according to which the latching mechanisms of the left side of the modular assembly **100** are latched to each other. Fig. 18B illustrates the latching of the left lower latching mechanism **190** to the left upper latching mechanism **160**. In this figure it is shown that the two tongues of the latch member **191** are received within their corresponding catch members. Fig. 18C illustrates the latching of the left lower latching mechanism **170** to the left support latching mechanism **270**. In this figure it is shown that the two tongues of the latch member of the left lower latching mechanism **170** are received within their corresponding catch members **272** and **273**.

Although not detailed above, the latching mechanisms of the right side of the modular assembly **100** are latched to each other in a similar manner at those of the left side.

Reference is now made particularly to Figs. 23A to 24B, which illustrate another example of a cabinet **401**. The cabinet **401** can be modularly integrated within the

modular assembly of the presently disclosed subject matter, and in particular to be stacked above or below each one of the cabinets **1** and **101**, or above the support structure **201**. As part of the modular assembly, the cabinet **401** can also be stacked with another cabinet which is similar the cabinet **401**.

The cabinet **401** comprises a housing **410** which is similar in its exterior structure to the housings **10** and **110** with three storage units in the form of assortment boxes **430**, **440** and **450** accommodated therein. The housing **410** has a base section with a base rim **413**, a top section **414** with a top rim **415**, a right sidewall (not shown), a left sidewall **418**, a front frame **420** with an opening therein and a rear wall **422**.

The housing **410** further comprises two upper latching mechanisms and two lower latching mechanisms. The upper latching mechanisms include a right upper latching mechanism (not shown) and a left upper latching mechanism **480**, and the lower latching mechanisms include a right upper mechanism (not shown) and a left lower latching mechanism **490**. The right upper latching mechanism of the housing **410** is formed within the right sidewall and partially in the top rim **415**. The left upper latching mechanism **480** is formed within the left sidewall **418** and partially in the top rim **415**. The right lower latching mechanism of the housing **110** is formed within the right sidewall and partially in the bottom rim **413**. The left lower latching mechanism **490** is formed within the left sidewall **418** and partially in the bottom rim **413**.

For example, in order to connect the cabinet **401** to the cabinet **1**, when the cabinet **401** is disposed on the cabinet **1**, the right lower latching mechanism of the housing **410** has to be engaged with the right upper latching mechanism of the cabinet **1** and the left lower latching mechanism **490** has to be engaged with the left upper latching mechanism **160** of the cabinet **1**.

The assortment boxes **430**, **440** and **450** are configured to be inserted into and extracted from the housing **410**. As shown in Fig. 23B, the assortment box **430** is extracted from the housing **410**.

Reference is now made to Figs. 24A and 24B, in which the assortment box **430** is illustrated. As shown in these figures, the assortment box **430** has an assortment box housing **432** and a cover **434** pivotally articulated thereto. The assortment box **430** is convertible between a closed position in which the cover **434** covers the assortment box housing **432** (shown in Fig. 24A) and an open position shown in Fig. 24B in which the cover **434** provides access to the interior of the assortment box housing **432**. The

housing **434** has a right rail (now shown) and a left rail **435** in form of a recess, which is configured to receive a corresponding elongated protruding member of the housing **410** so as to allow the assortment box **430** to slide within the housing **410**.

CLAIMS:

1. A cabinet comprising:

a housing;

two or more storage units, each accommodated within the housing and displaceable between a closed position in which a majority of the storage unit is disposed within the housing and an open position in which the storage unit projects from the housing to an extent greater than in said closed position; and

a blocking mechanism comprising two or more blocking members, each associated with its corresponding storage unit and configured for selectively arresting said corresponding storage unit in its closed position; the blocking mechanism being displaceable between an unblocked state in which each one of the storage units is free to be displaced from its closed position to its open position and a blocked state in which at least one and no more than all but one of the storage units are arrested in their closed position by their corresponding blocking members;

the association between the blocking mechanism and the storage units is such that, when said blocking mechanism is in its unblocked position, displacement of one of said storage units from its closed position to its open position induces displacement of the blocking mechanism from its unblocked state to its blocked state.

2. A cabinet according to Claim 1, wherein the association between the blocking mechanism and the storage units is further such that displacement of one storage unit from its open position to its closed position induces displacement of the blocking mechanism from its blocked state to its unblocked state.

3. A cabinet according to Claim 1 or 2, wherein the storage units comprise a restricting arrangement associated with the blocking mechanism so that in the blocked state of the blocking mechanism, the blocking mechanism obstructs the restricting arrangement, to thereby prevent displacement of the storage units from their closed position to their open position.

4. A cabinet according to Claim 3, wherein the restricting arrangement is constituted by restricting portions of the storage units, so that in the blocked state, the blocking members are aligned with the corresponding restricting portions of the storage units so that during an attempt to displace a blocked storage unit from its closed position to its open position, the blocking members are configured to engage corresponding

restricting portions of the restricting arrangement to thereby obstruct of the storage units and prevent their displacement.

5. A cabinet according to any one of the preceding claims, further comprising a following arrangement associated with the blocking mechanism and with the storage units; said following arrangement being associated with said storage units such that displacement of one storage unit from its closed position to its open position entails displacement of the following arrangement from its inoperative state to its operative state, and said following arrangement being associated with said blocking mechanism such that displacement of the following arrangement from its inoperative state to its operative state entails displacement of the blocking mechanism from its unblocked state to its blocked state.

6. A cabinet according to Claim 5, wherein the following arrangement comprises two or more following members configured for association with each of the two or more storage units respectively.

7. A cabinet according to Claim 6, wherein each of the storage units is configured with a guiding portion associated with its corresponding following member, so that during the displacement of the storage unit between its closed position and its open position, the corresponding following member slidingly engages its corresponding guiding portion, thereby changing the operative state of the following arrangement between its inoperative state and its operative state, respectively.

8. A cabinet according to Claim 7, wherein during the engagement of the following member with its corresponding guiding portion, the following member is configured to rest on the guiding portion and slide along its length.

9. A cabinet according to Claim 7 or 8, wherein each of the guiding portion is provided with a ramp portion configured to displace the corresponding following member while sliding thereon, thereby displacing the following arrangement towards its operative state, and consequentially, displacing the blocking mechanism towards its blocked state.

10. A cabinet according to any one of claims 6 to 9, wherein each said blocking member and said following member is constituted by a single blocking-following member so that a first portion of the blocking-following member constitutes the blocking member and a second portion of the blocking-following member constitutes the following member.

11. A cabinet according to Claim 10, wherein the blocking-following member is sized for passing between the corresponding restricting and guiding portions during the displacement of the storage unit between its closed position and its open position.

12. A cabinet according to Claim 10 or 11, wherein the blocking-following member has a predetermined width which, during the displacement of the storage unit from its closed to its open position, allows the blocking-following member to pass by the corresponding restricting portion before engaging a lower end of the ramp portion, so as to allow the blocking-following member to be displaced in the upper direction when sliding on the ramp portion.

13. A cabinet according to any one of the preceding claims, wherein the storage units are arranged within the cabinet along a longitudinal axis, and the blocking mechanism has an elongated shape extending along said longitudinal axis.

14. A cabinet according to Claim 13, wherein the longitudinal axis is a vertical axis along which the blocking mechanism is configured to be displaced between its blocked state and its unblocked state.

15. A cabinet according to any one of the preceding claims, wherein the blocking mechanism is normally urged into its unblocked state by virtue of gravity forces.

16. A cabinet according to any one of the preceding claims, wherein the blocking mechanism comprises a biasing arrangement configured for biasing the blocking mechanism from its blocked state towards its unblocked state.

17. A cabinet according to any one of the preceding claims, wherein the cabinet has a front wall, the blocking members are disposed along a first plane and the restricting portions are disposed along a second plane, such that the first plane is closer to the front wall than the second plane.

18. A cabinet comprising:

a housing;

one or more storage units, each accommodated within the housing and displaceable between a closed position in which a majority of the storage unit is disposed within the housing and an open position in which the storage unit projects from the housing to an extent greater than in said closed position; and

a locking mechanism configured with one or more locking members, each associated with its corresponding storage unit and configured for selectively arresting said corresponding storage unit in its closed position; the locking mechanism being

displaceable between an unlocked state in which each of the storage units is free to be displaced from its closed position to its open position and a locked state in which all the storage units are arrested in their closed position by their corresponding locking members.

19. A cabinet according to Claim 18, wherein the storage units comprise an arresting arrangement associated with the locking mechanism so that in the locked state of the locking mechanism, the locking mechanism obstructs the arresting arrangement, to thereby prevent displacement thereof from their closed position to their open position.

20. A cabinet according to Claim 19, wherein the arresting arrangement is constituted by arresting portions of the storage units; and wherein in the locked state, the locking members are aligned with respective arresting portions of the storage units so that during an attempt to displace a locked storage unit from its closed position to its open position, the locking members are configured to engage corresponding arresting portions of the arresting arrangement to thereby obstruct of the storage units and prevent their displacement.

21. A cabinet according to any one of Claims 18 to 20, wherein the storage units are be arranged within the cabinet along a longitudinal axis, and the locking mechanism has an elongated shape extending along the longitudinal axis.

22. A cabinet according to Claim 21, wherein the longitudinal axis is a vertical axis along which the locking mechanism is displaceable between its locked state and its unlocked state.

23. A cabinet according to any one of Claims 18 to 22, wherein the locking members are sized for passing beneath the corresponding arresting portions during the displacement of the storage unit between its closed position and its open position.

24. A cabinet according to any one of Claims 18 to 23, wherein the cabinet has a front wall, the locking members are disposed along a first plane and the arresting portions are disposed along a second plane, such that the first plane is closer to the front wall than the second plane.

25. A cabinet according to any one of Claims 18 to 24, wherein the locking mechanism comprises an actuator for displacing the locking mechanism between its unlocked state and its locked state.

26. A cabinet according to Claim 25, wherein the actuator has an actuator cavity configured to accommodate at least one finger of a user for allowing him to displace the locking mechanism between its unlocked state and its locked state.

27. A modular assembly of cabinets configured to be modularly stacked on each other, said modular assembly comprising:

a first cabinet and a second cabinet, each comprising a housing with a base section, a top section and sidewalls extending therebetween, at least one of the sidewalls being provided with at least one upper latching mechanism disposed closer to said top section and at least one lower latching mechanism disposed closer to said base section; and

a support structure comprising at least one support latching mechanism, the support structure being configured to be disposed under a lowermost cabinet of the assembly, so as to provide support to the assembly;

the lower latching mechanism of the first cabinet being selectively engageable with the upper latching mechanism of the second cabinet or with the support latching mechanism, and the lower latching mechanism of the second cabinet being selectively engageable with the upper latching mechanism of the first cabinet or with the support latching mechanism, thereby allowing modular latched stacking of the first cabinet, the second cabinet and the support structure to each other.

28. A modular assembly according to Claim 27, wherein the base section has a base rim and the top section has a top rim. The base rim of the first cabinet is corresponding in shape and size to the top rim of the second cabinet, so as to allow the first cabinet to be modularly stacked on the second cabinet; and wherein the base rim of the second cabinet is corresponding in shape and size to the top rim of the first cabinet, so as to allow the second cabinet to be modularly stacked on the first cabinet.

29. A modular assembly according to Claim 27 or 28, wherein the support structure has a top section and a base section, and the top section has a support top rim; and wherein the support top rim is corresponding in shape and size to the base rim of the first cabinet and to the base rim of the second cabinet, so as to allow the first cabinet or the second cabinet to be disposed on the support structure and latched thereto.

30. A modular assembly according to Claim 29, wherein the support latching mechanism is disposed closer to the support top rim than to the base section than to the base section.

31. A modular assembly according to any one of Claims 27 to 30, wherein the support structure further comprises sidewalls extending between the top section and the base section, at least one of the sidewalls of the support structure being provided with the support latching mechanism.

32. A modular assembly according to any one of Claims 27 to 31, wherein the first upper latching mechanism is similar to the second upper latching mechanism, and the first lower latching mechanism is similar to the second lower latching mechanism.

33. A modular assembly according to any one of Claims 27 to 32, wherein the lower latching mechanism comprises a latch recess formed within the respective sidewall, configured for accommodating therein a pivotally rotatable latch member.

34. A modular assembly according to Claim 33, wherein the upper latching mechanism comprises a recess formed therein with at least one catch member configured for selectively engaging with the at least one tongue of the latch member.

35. A modular assembly according to Claim 34, wherein the upper latching mechanism constitutes a gripping member configured to be gripped by a user for raising the respective cabinet, while the recess of the upper latching mechanism is used for accommodating the user's fingers therein.

36. A modular assembly according to any one of Claim 27 to 35, wherein the first and the second cabinets are similar to each other.

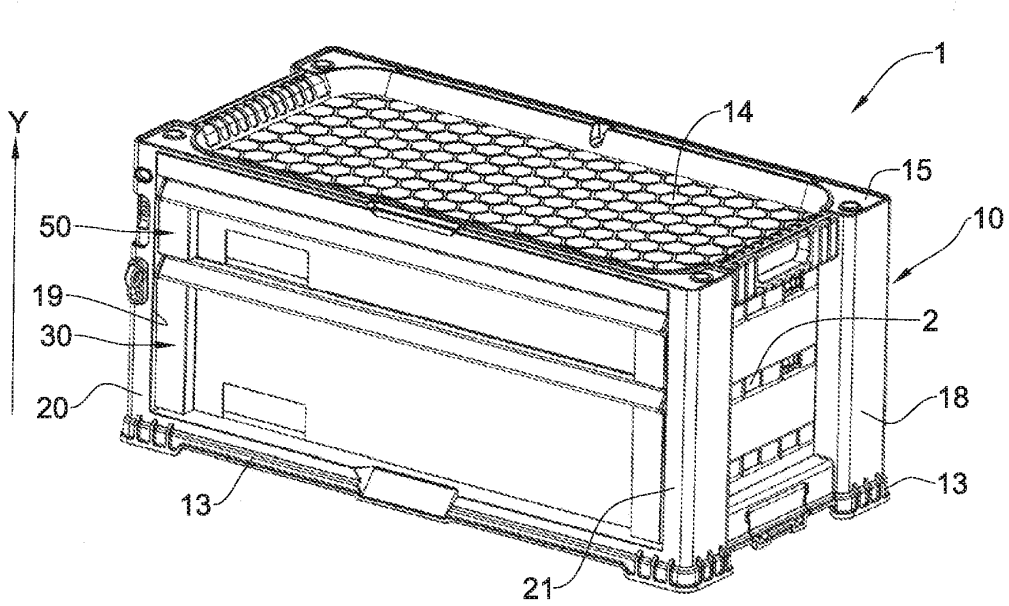


Fig. 1A

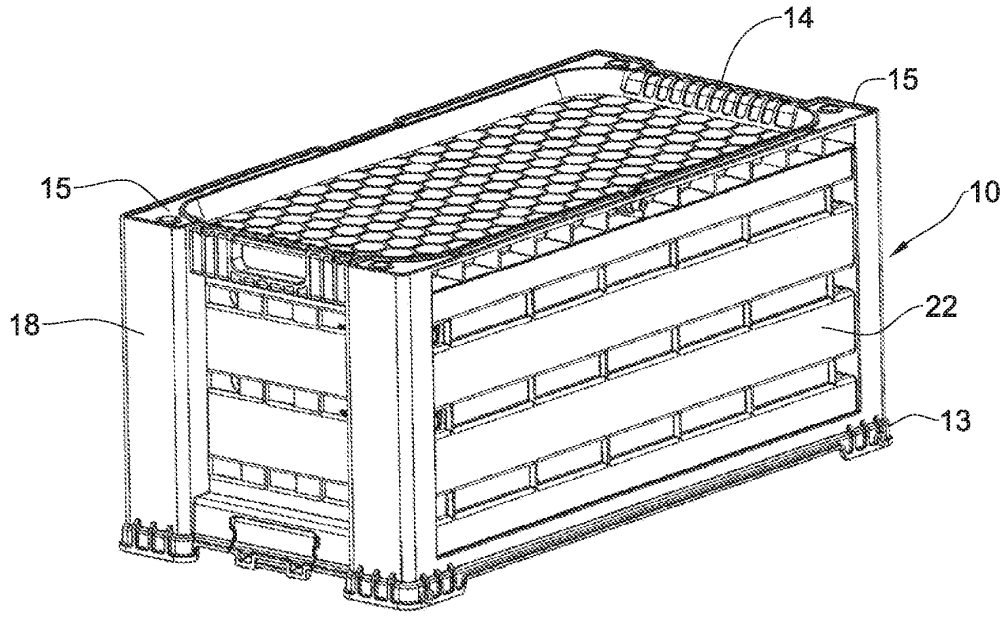


Fig. 1B

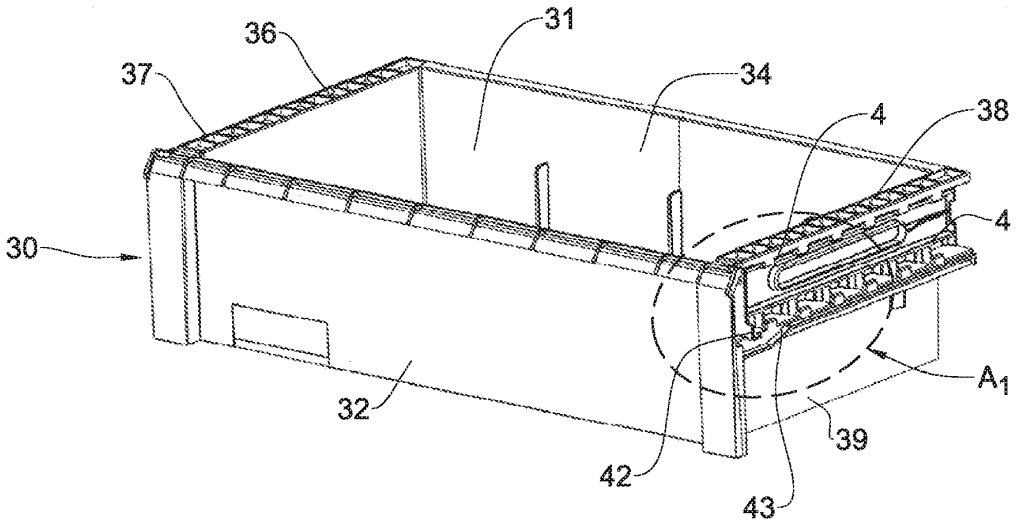


Fig. 2A

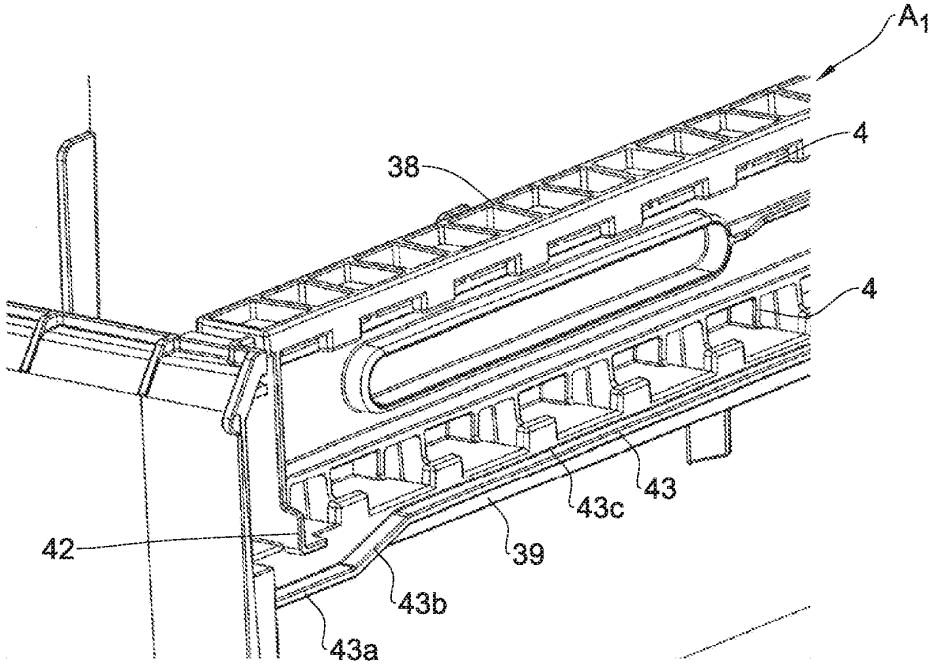


Fig. 2B

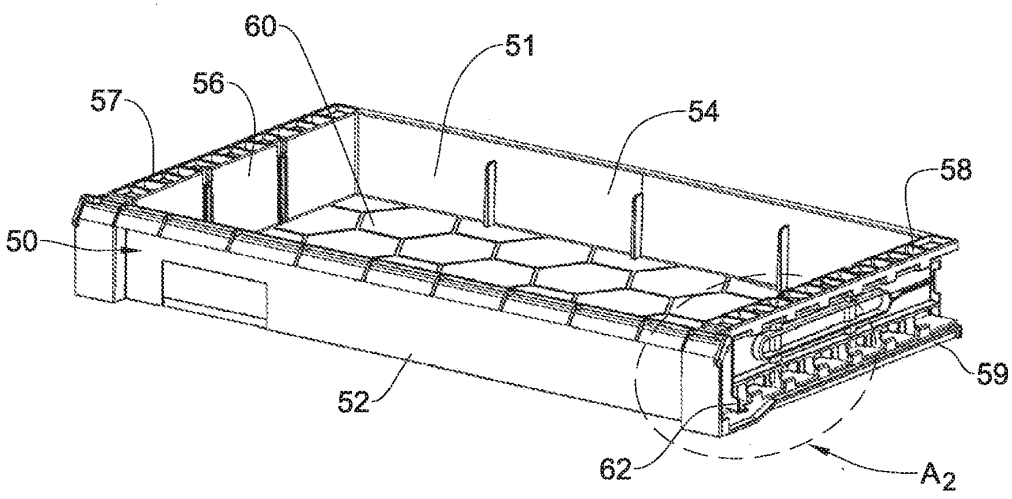


Fig. 2C

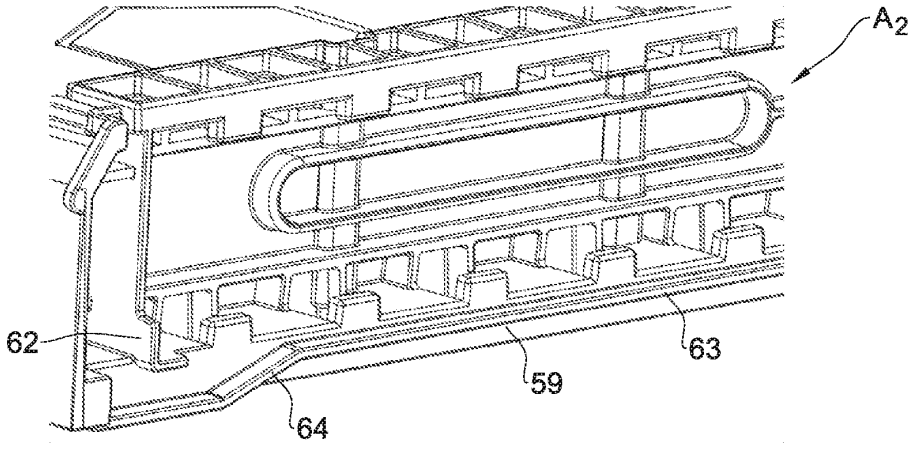


Fig. 2D

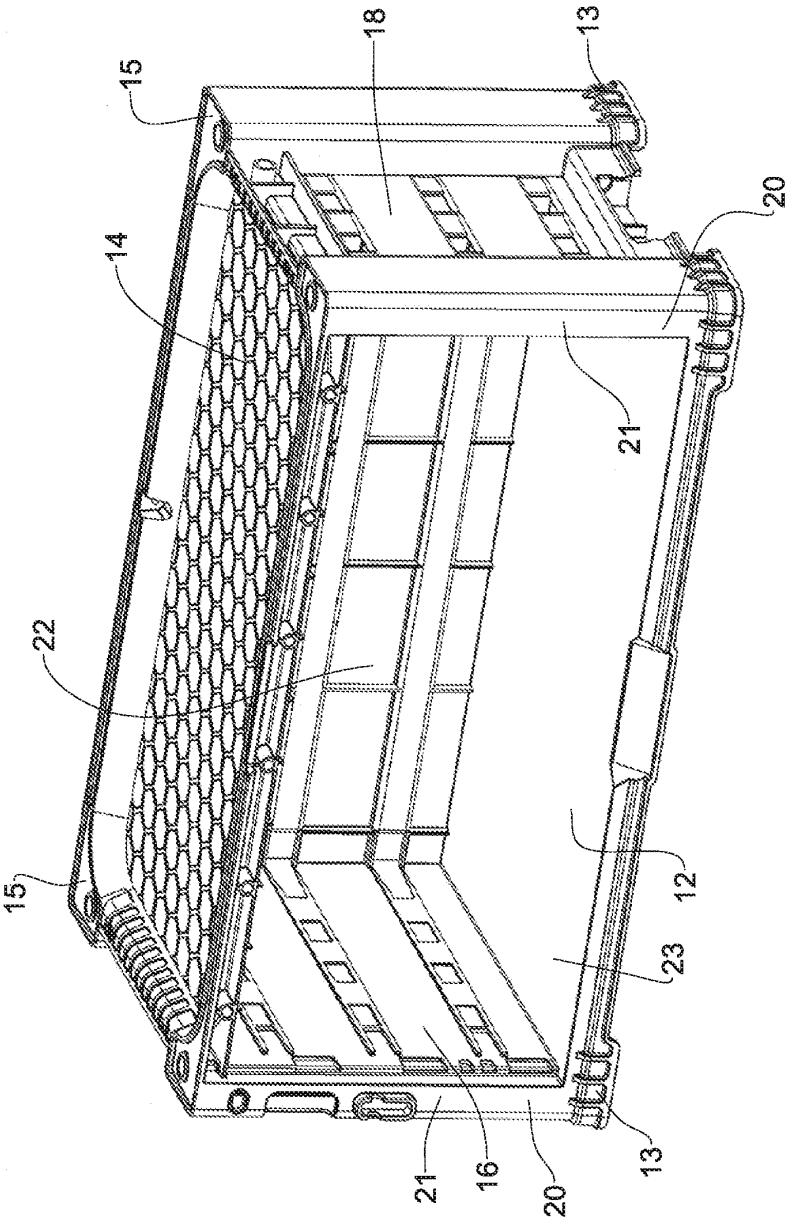


Fig. 2E

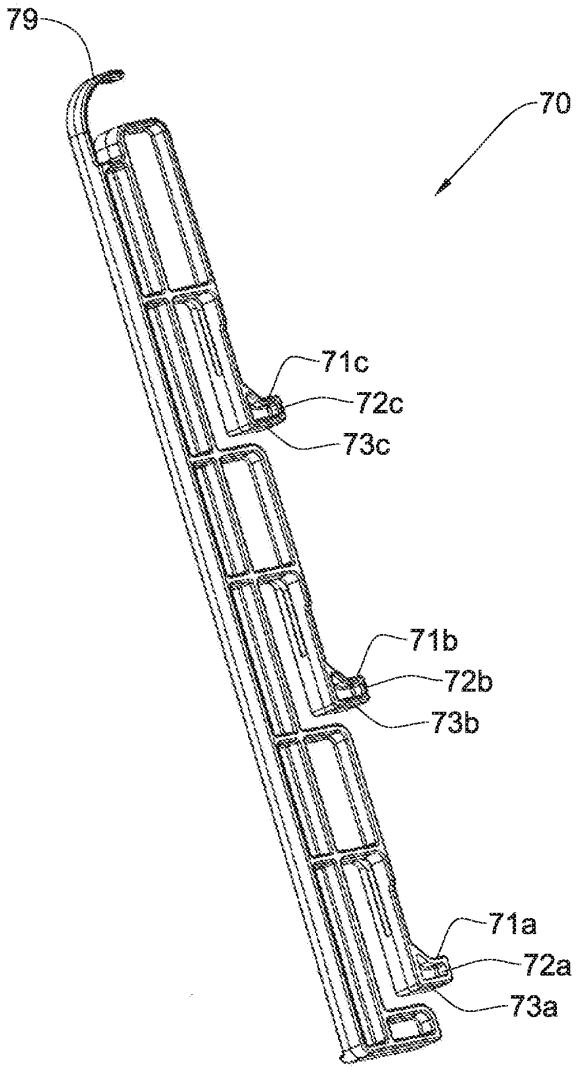


Fig. 3

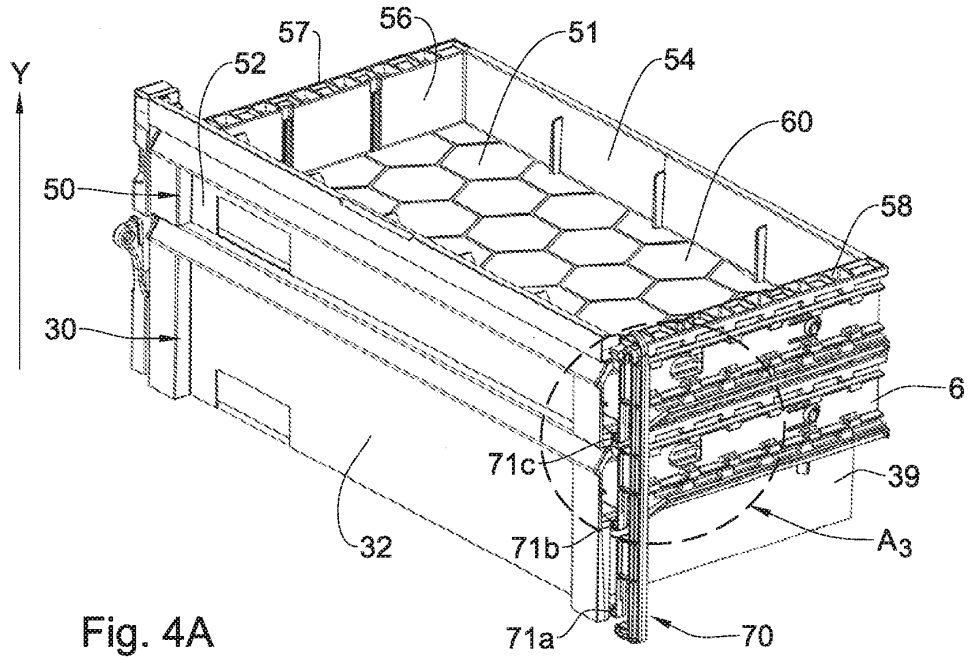

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Fig. 4A

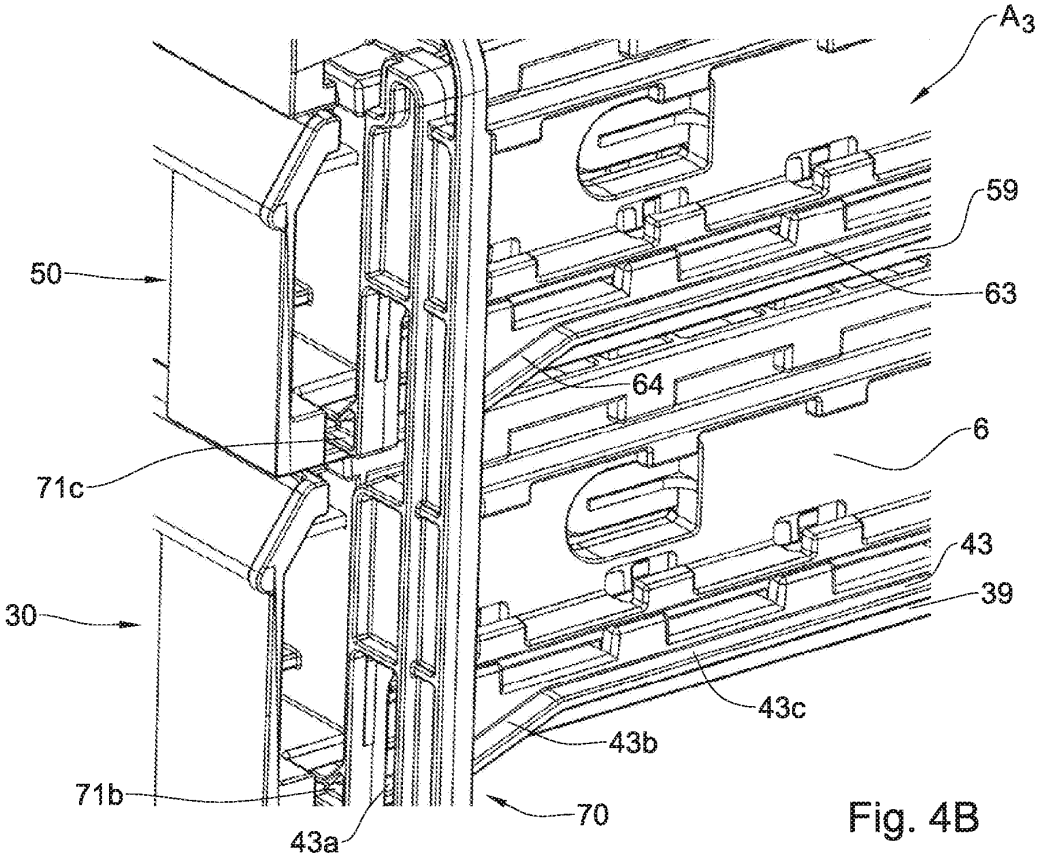

A3
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43c
43b
71b
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43a

Fig. 4B

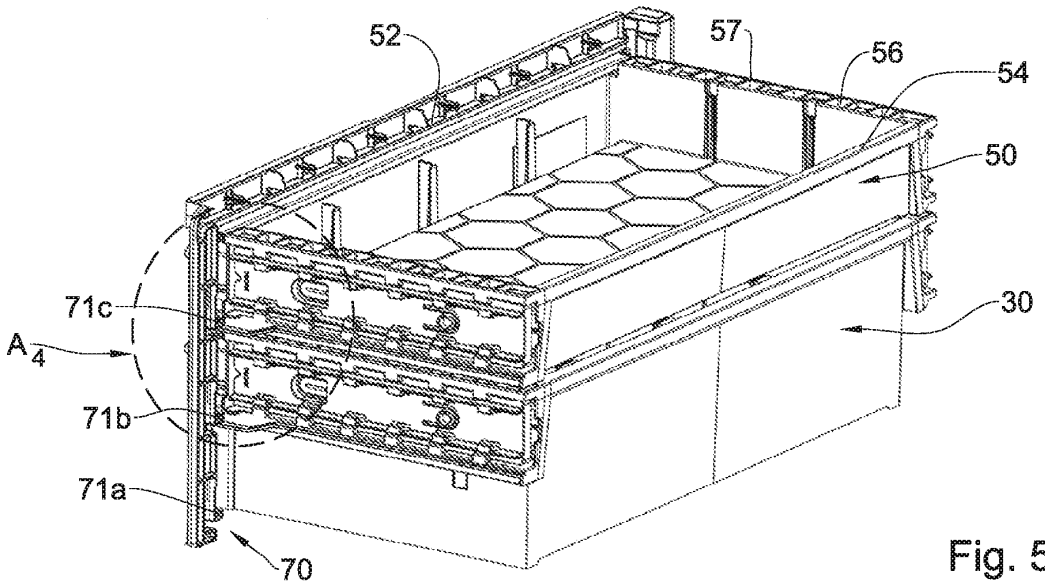

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Fig. 5A

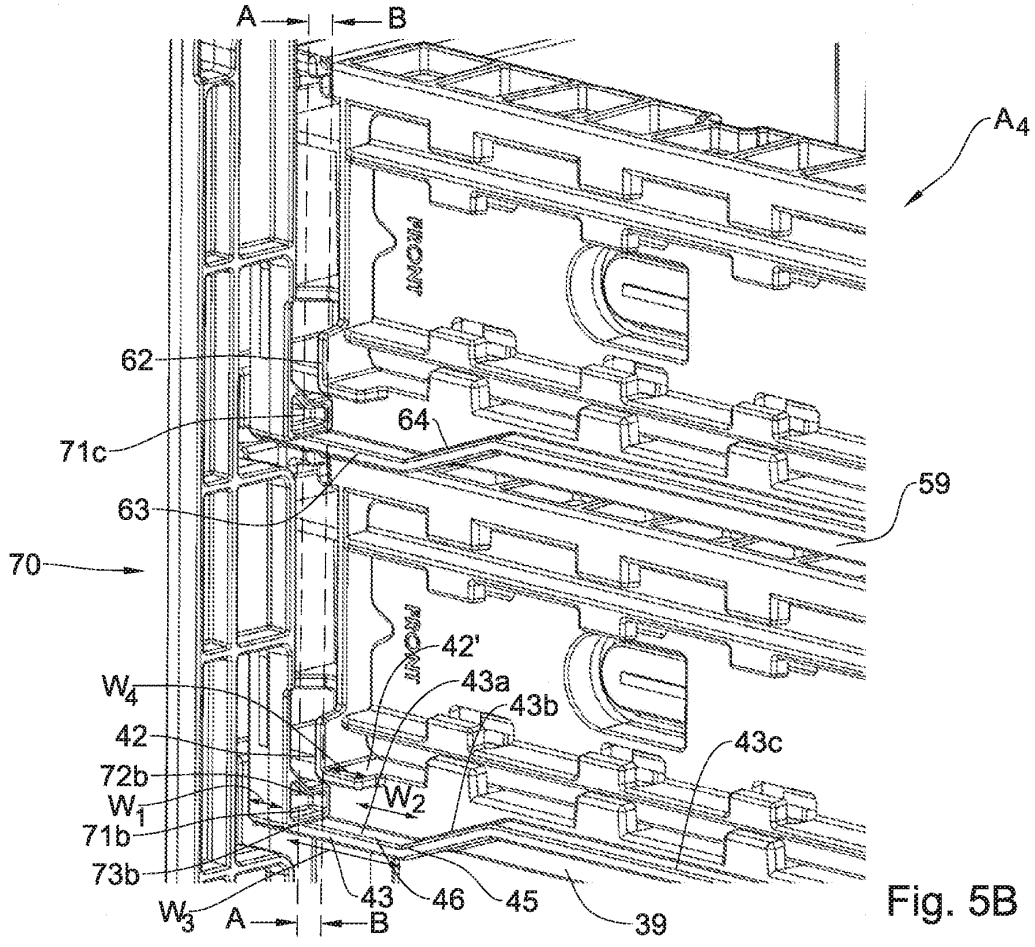

A
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A4
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71c
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W4
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43c
72b
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71b
73b
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W3
A
B
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Fig. 5B

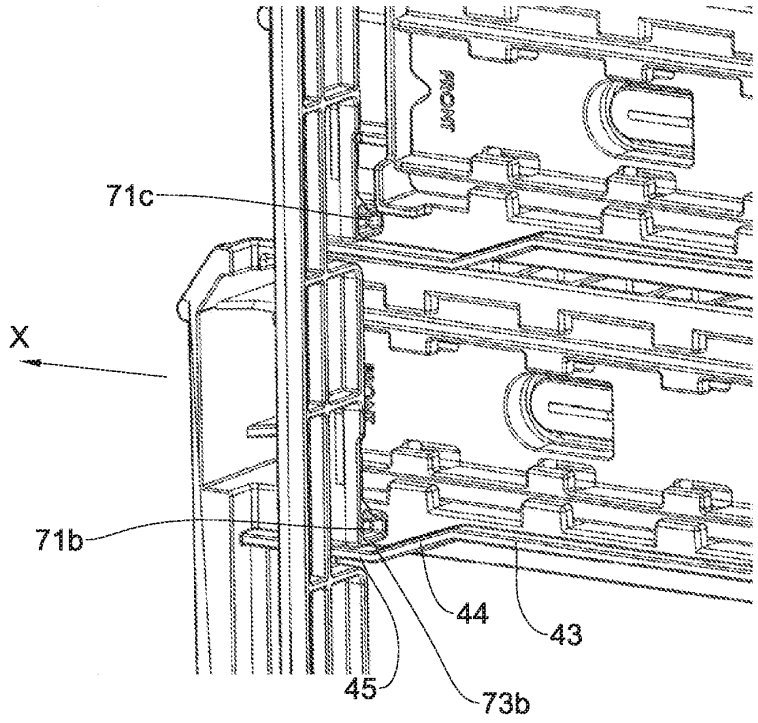


Fig. 5C

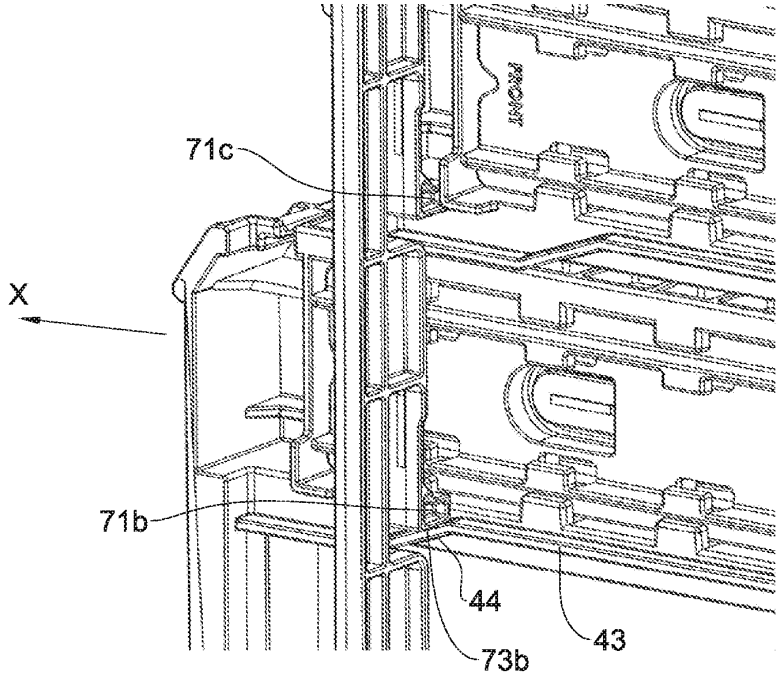


Fig. 5D

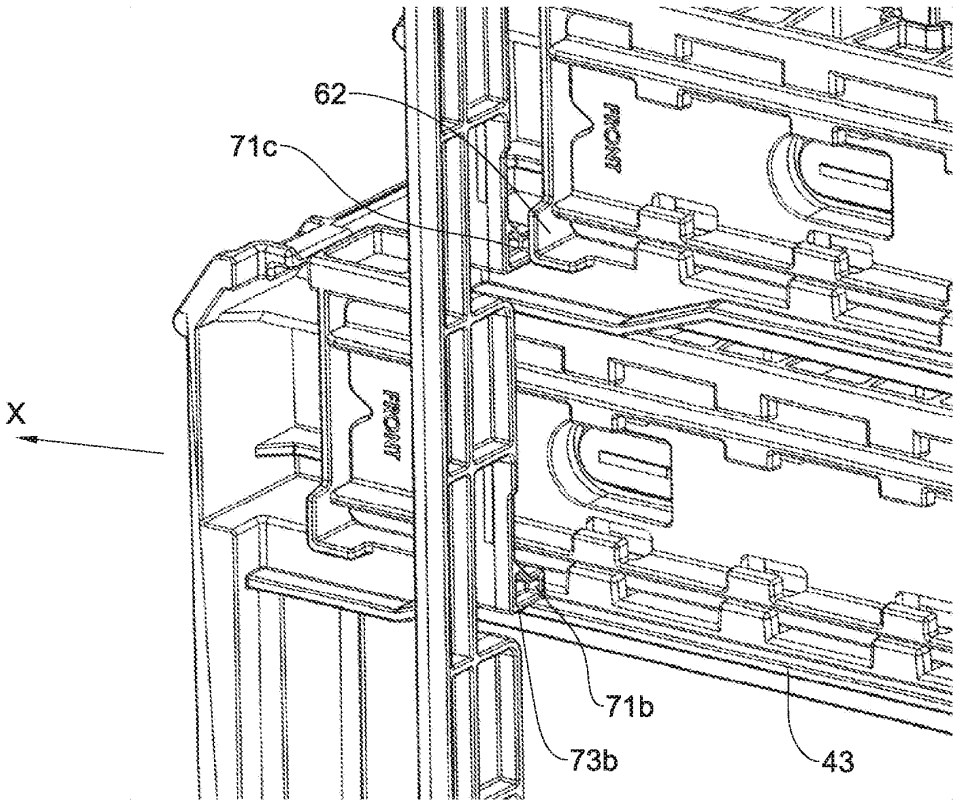


Fig. 5E

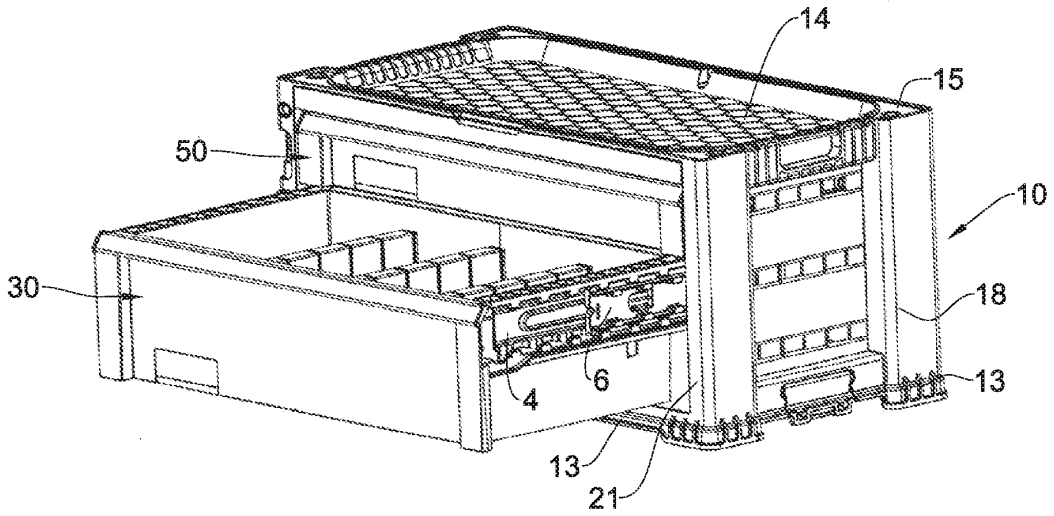


Fig. 6A

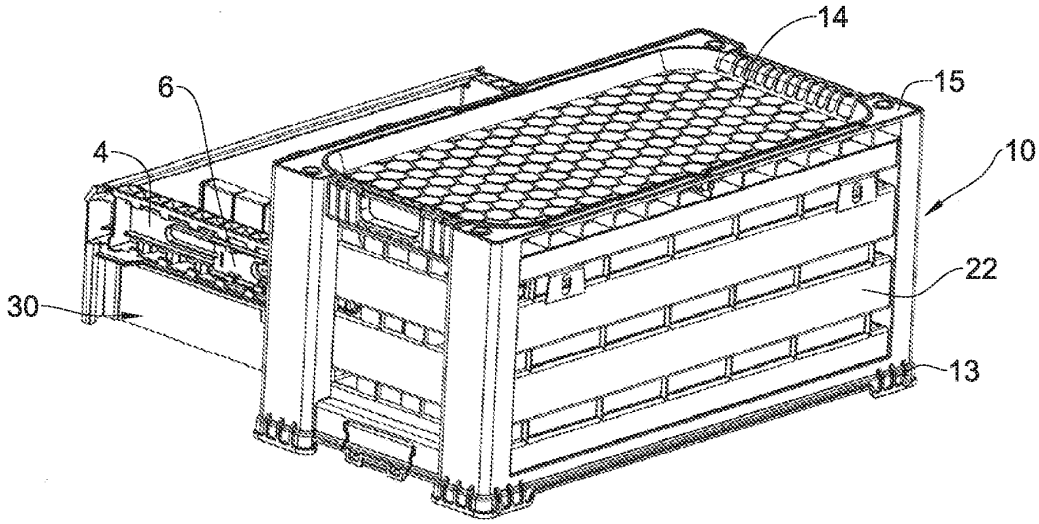


Fig. 6B

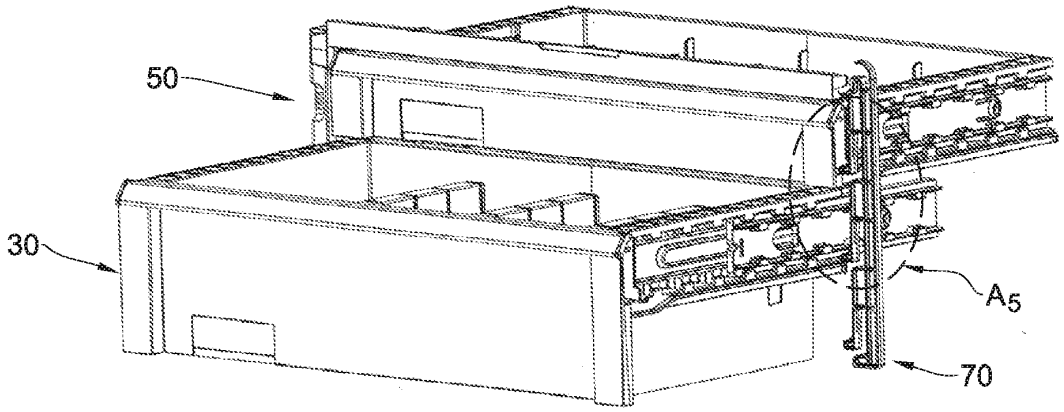


Fig. 7A

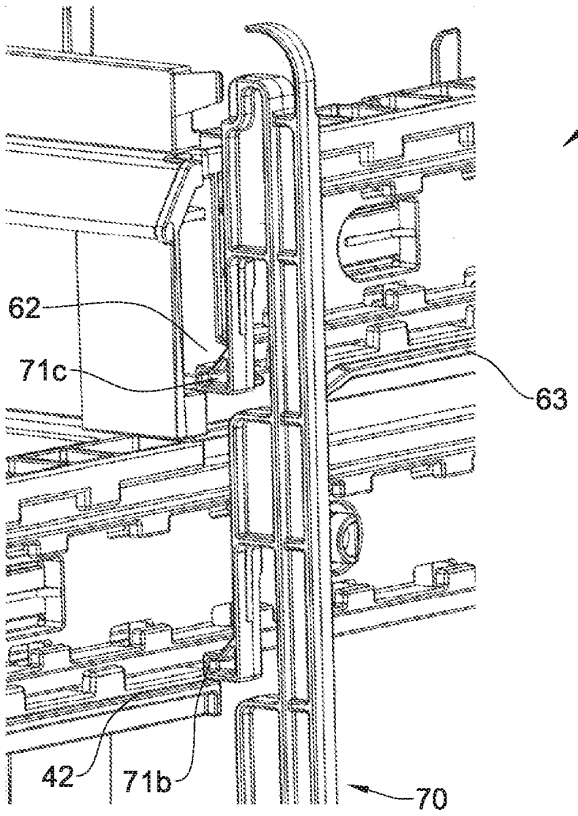


Fig. 7B

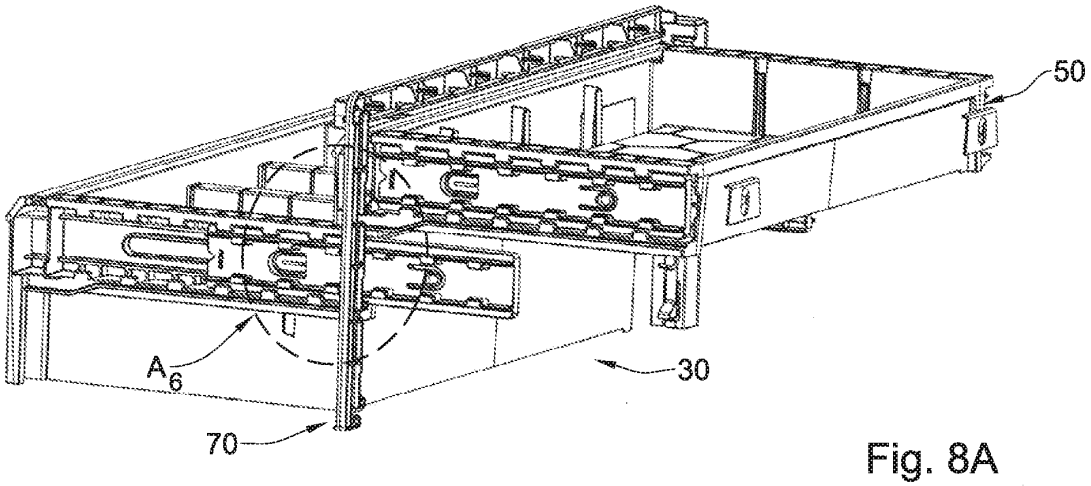


Fig. 8A

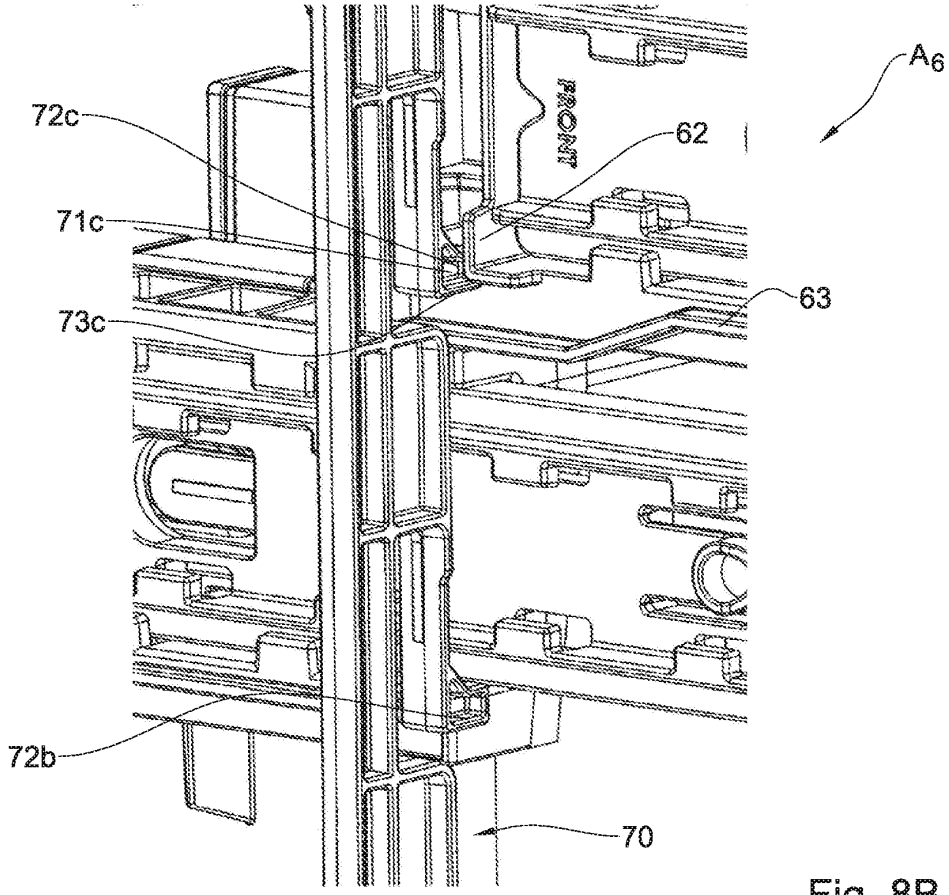


Fig. 8B

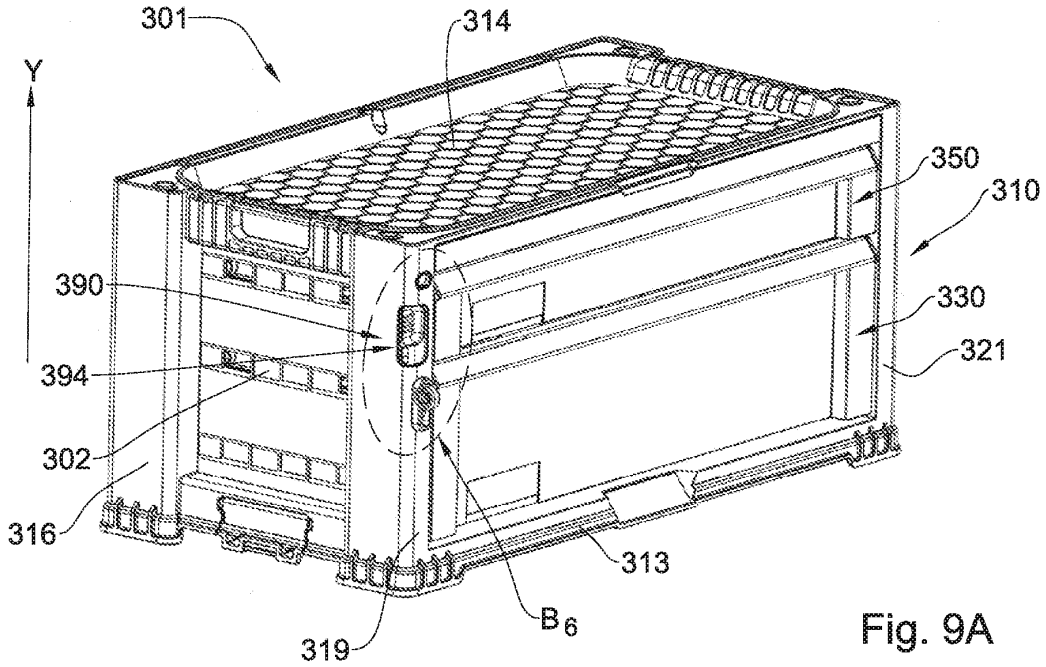

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Fig. 9A

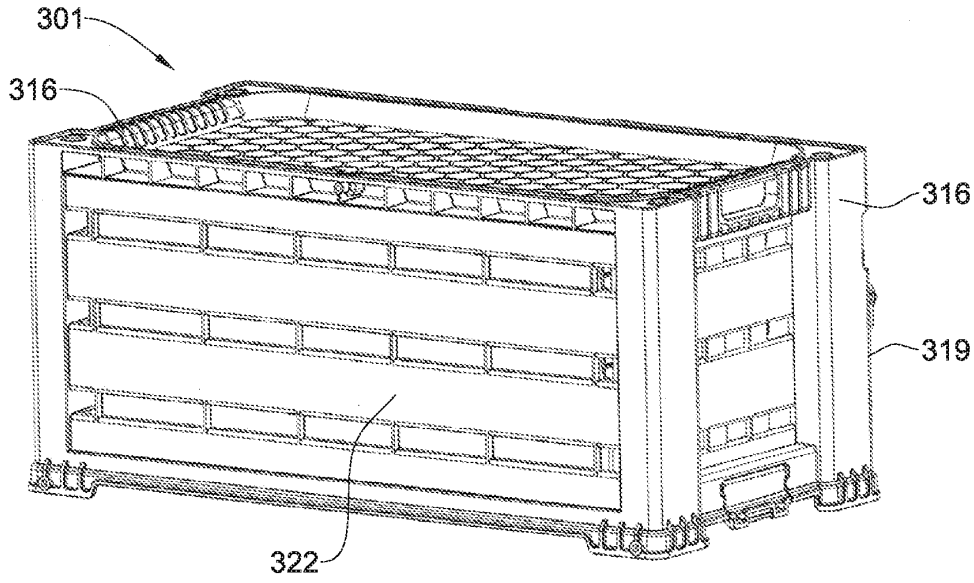

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Fig. 9B

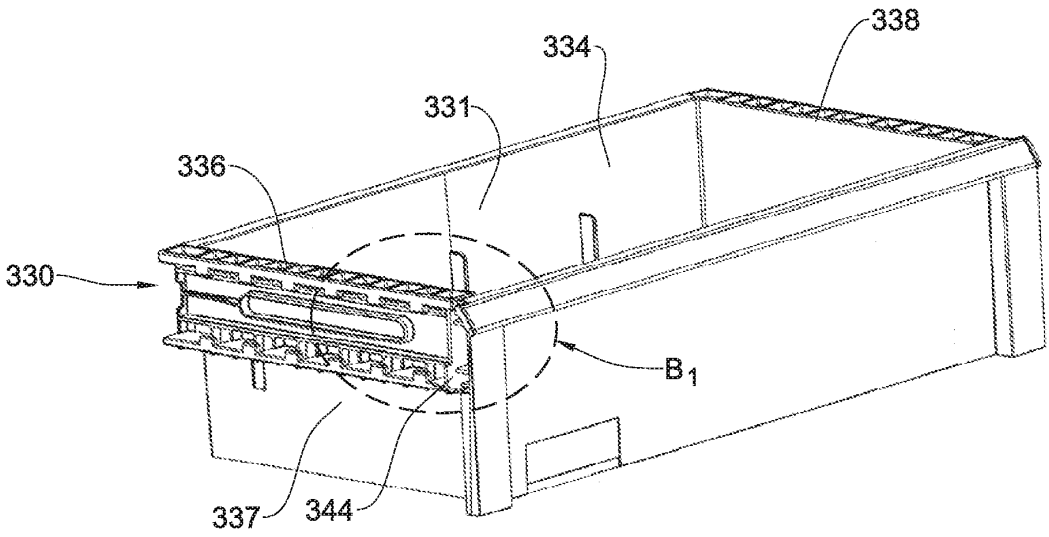


Fig. 10A

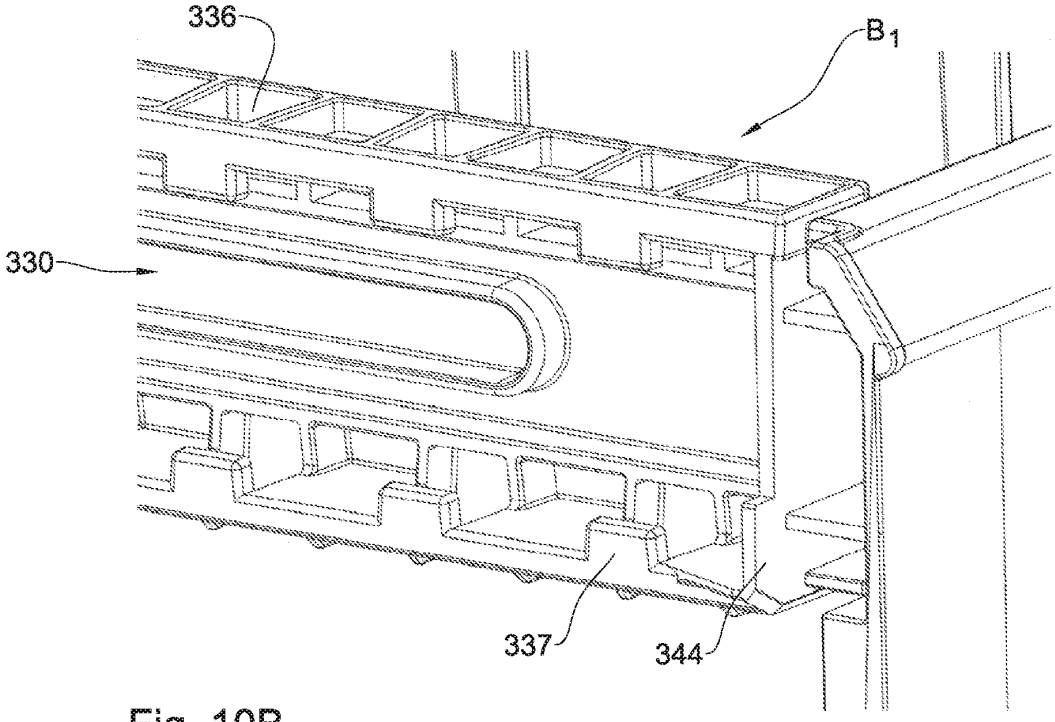


Fig. 10B

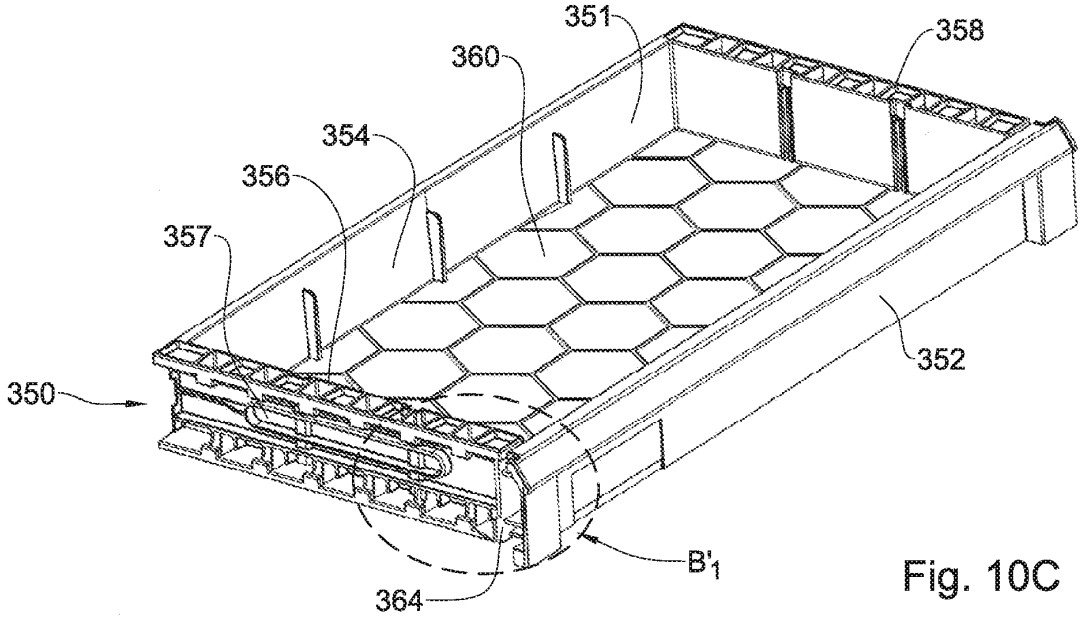


Fig. 10C

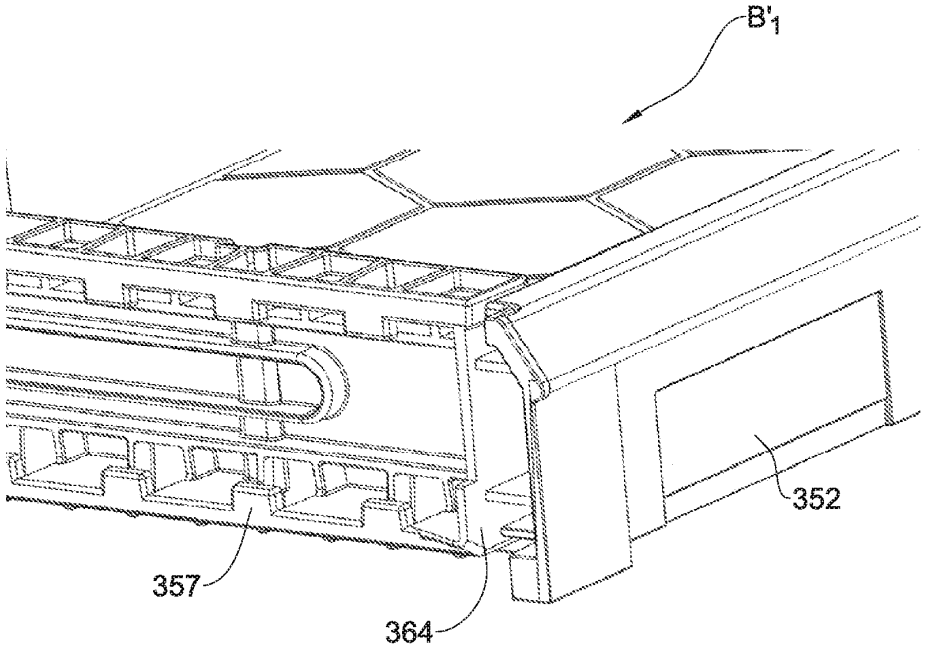


Fig. 10D

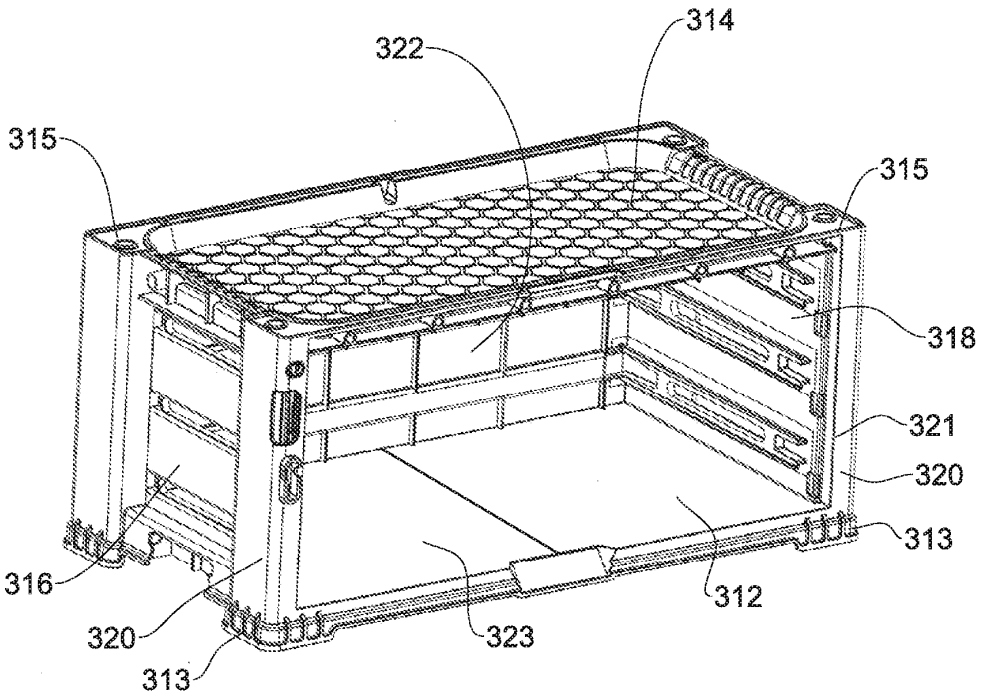


Fig. 10E

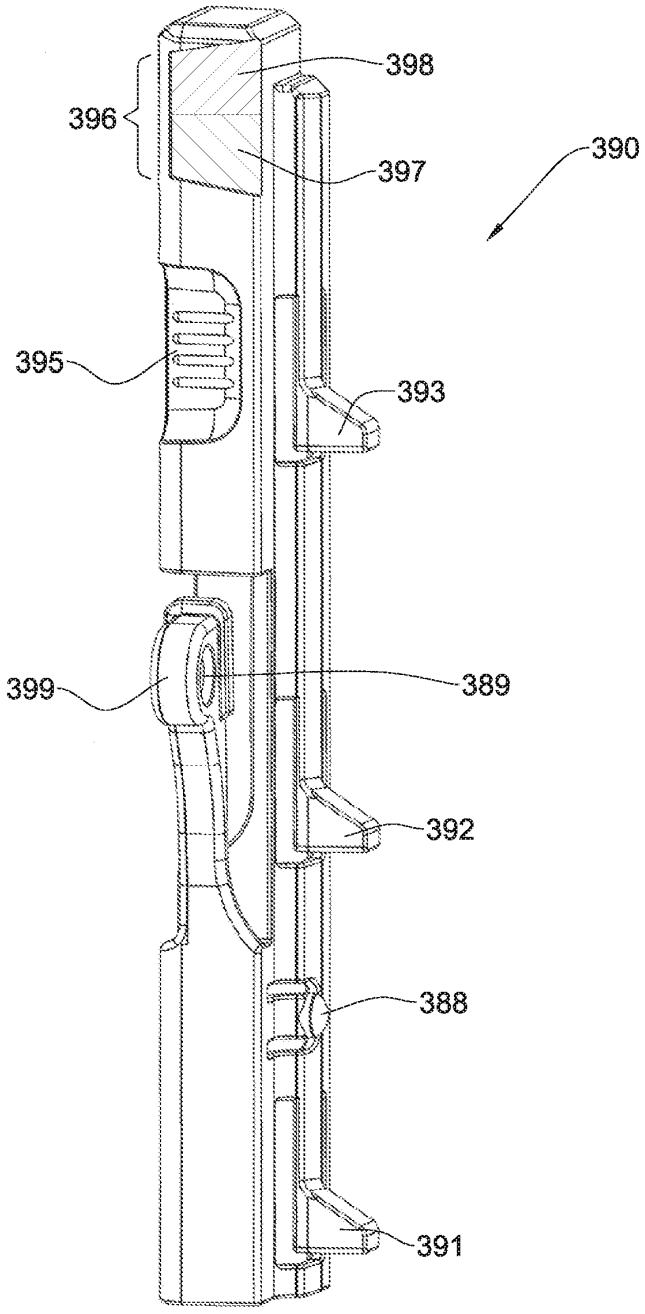


Fig. 11

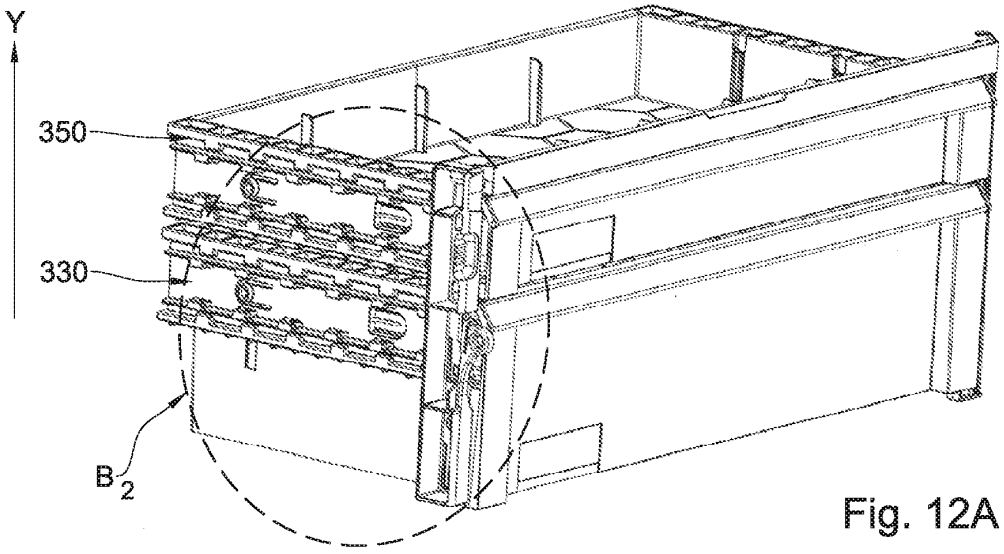


Fig. 12A

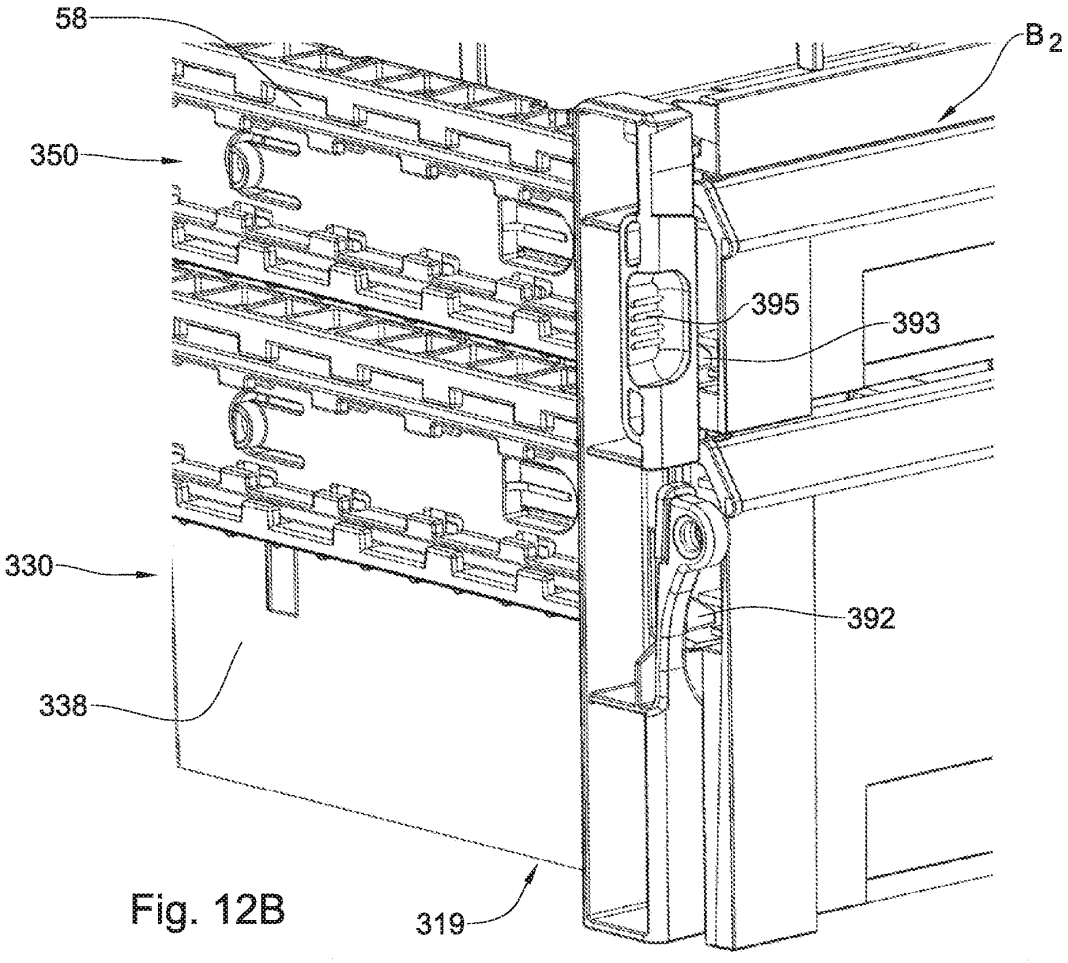


Fig. 12B

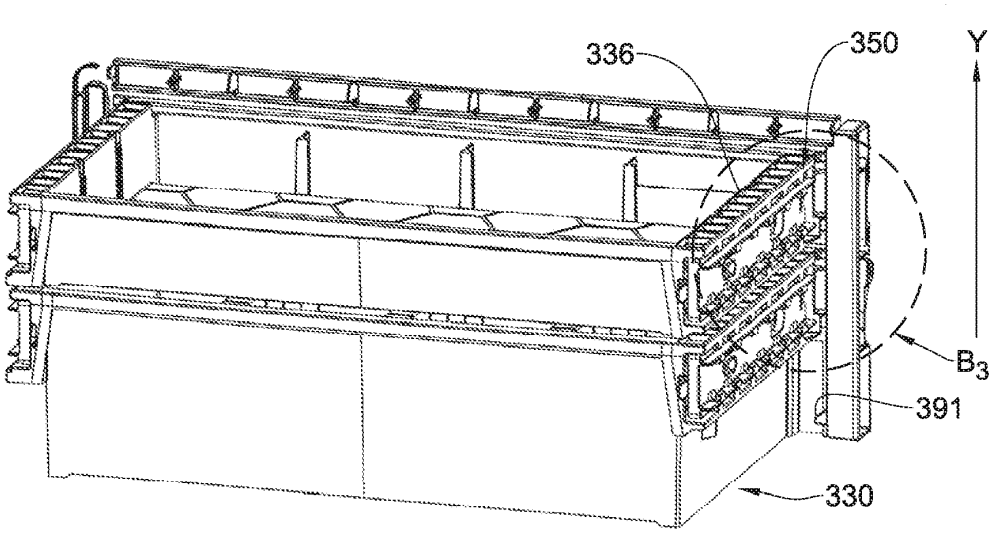


Fig. 13A

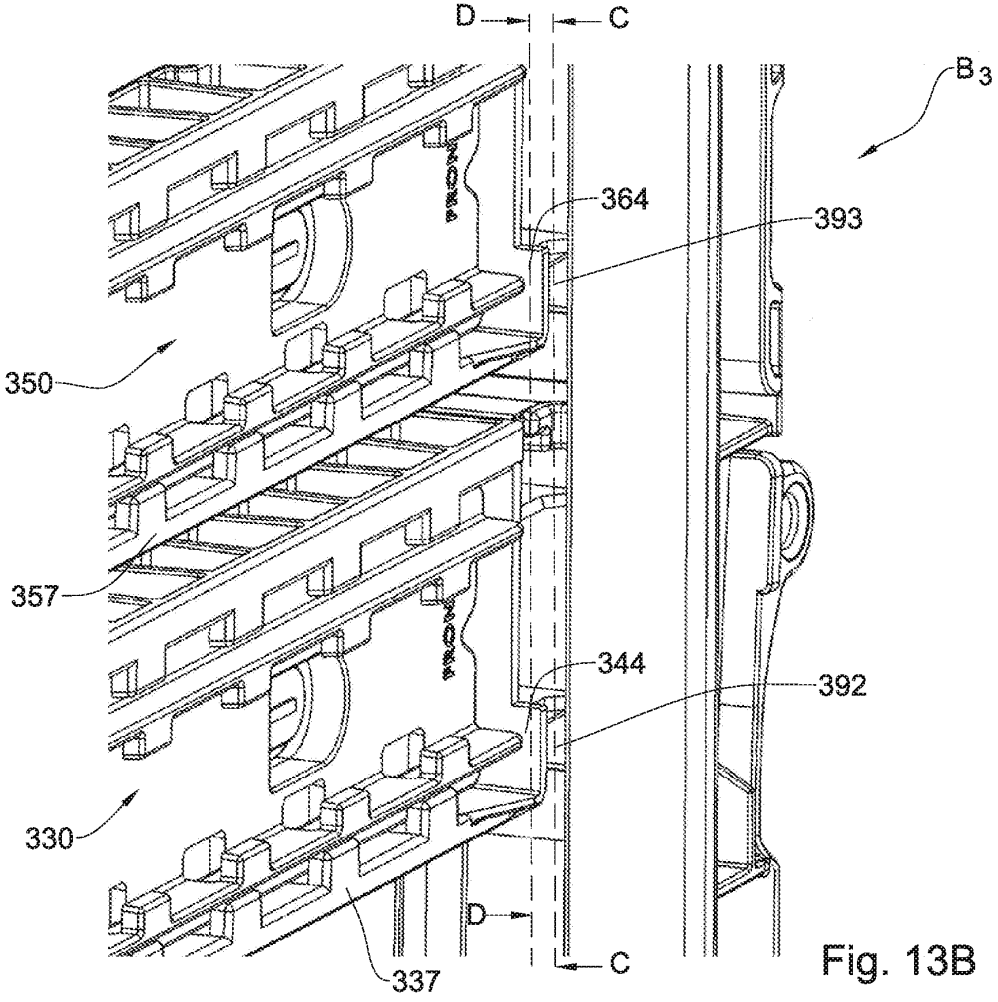


Fig. 13B

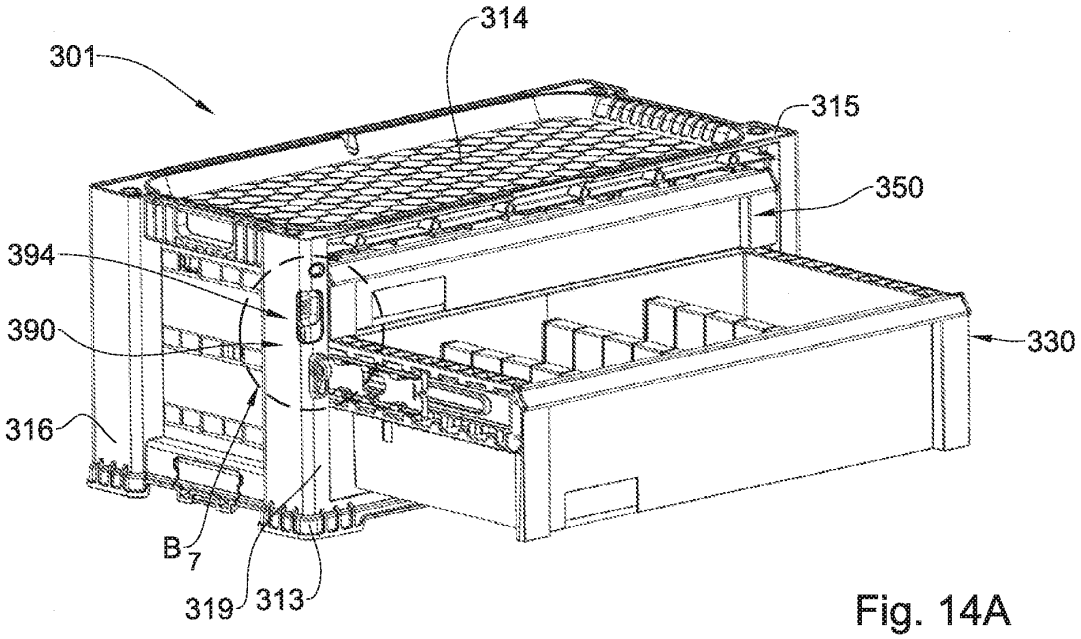


Fig. 14A

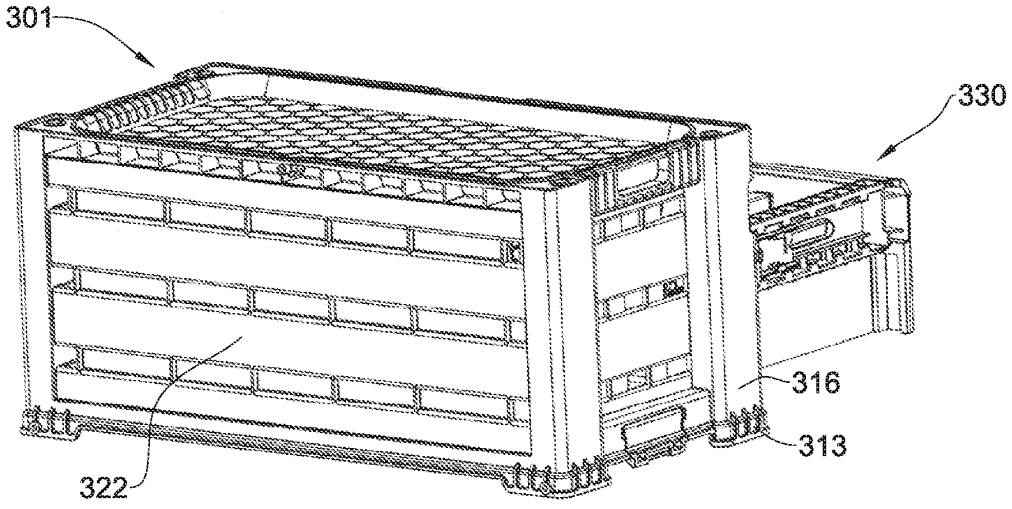


Fig. 14B

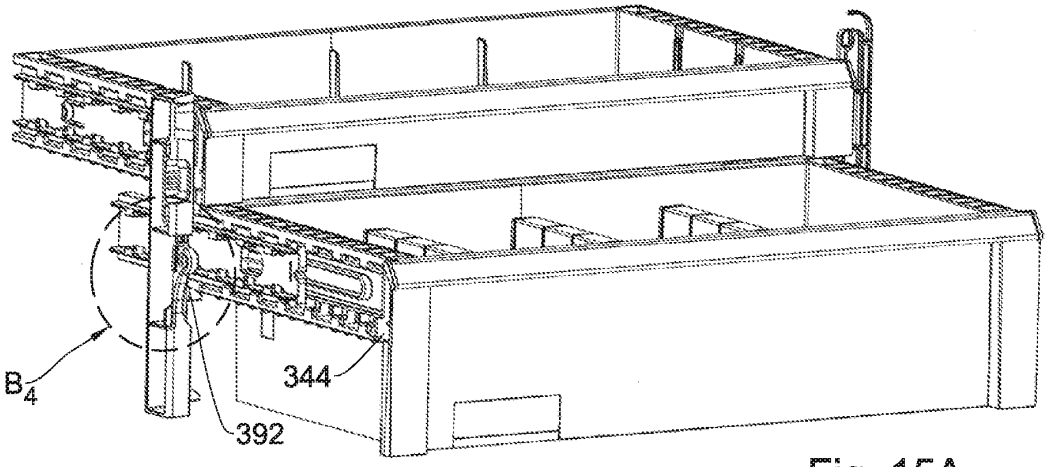


Fig. 15A

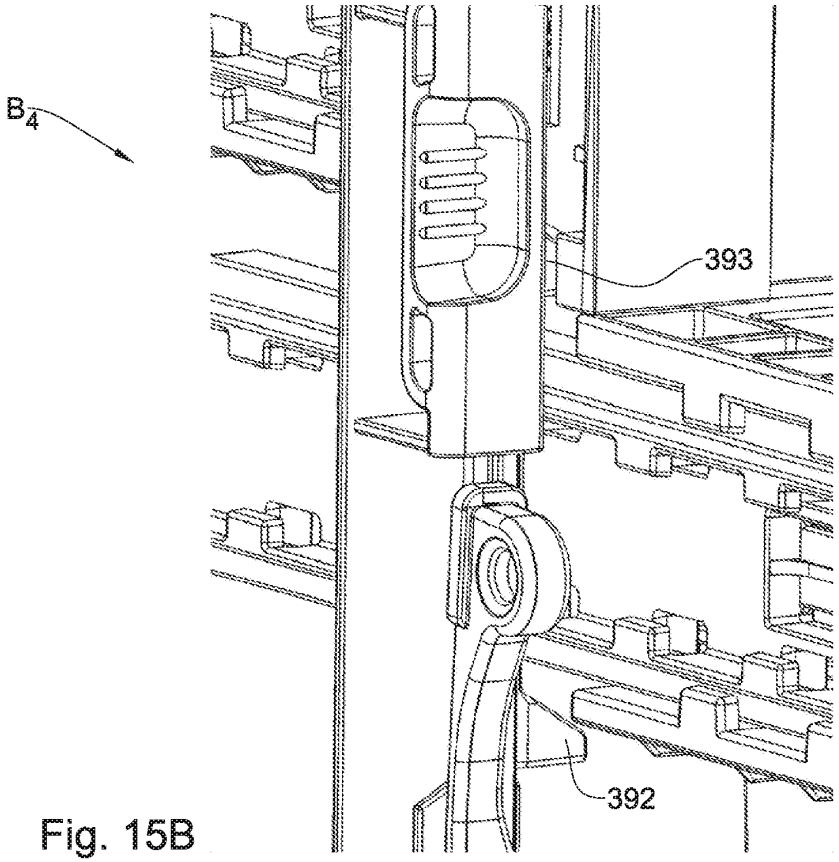


Fig. 15B

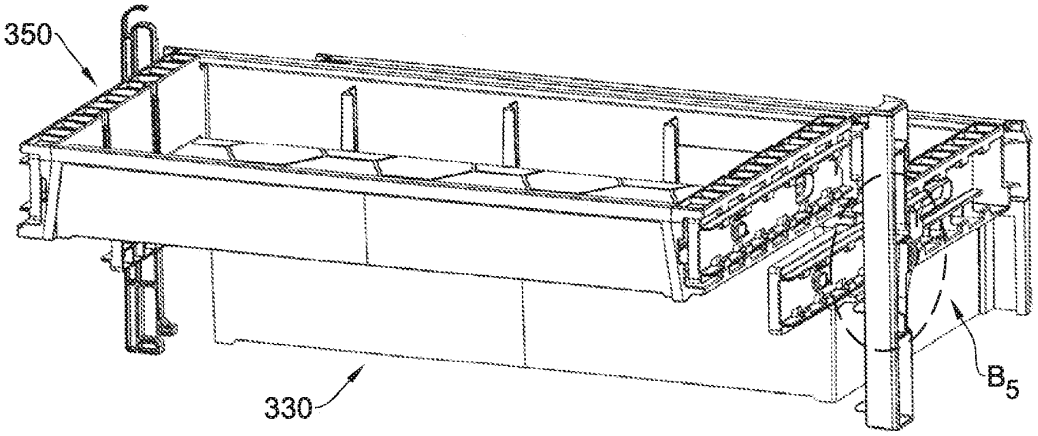


Fig. 16A

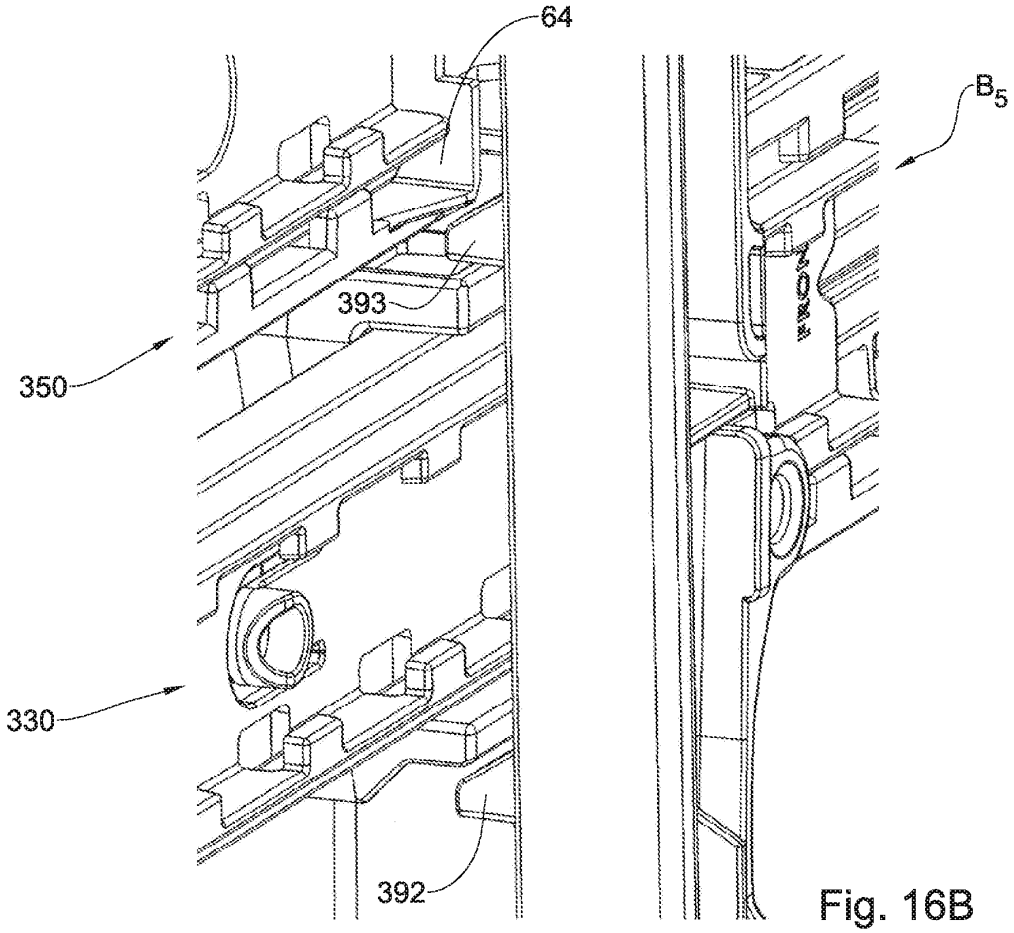


Fig. 16B

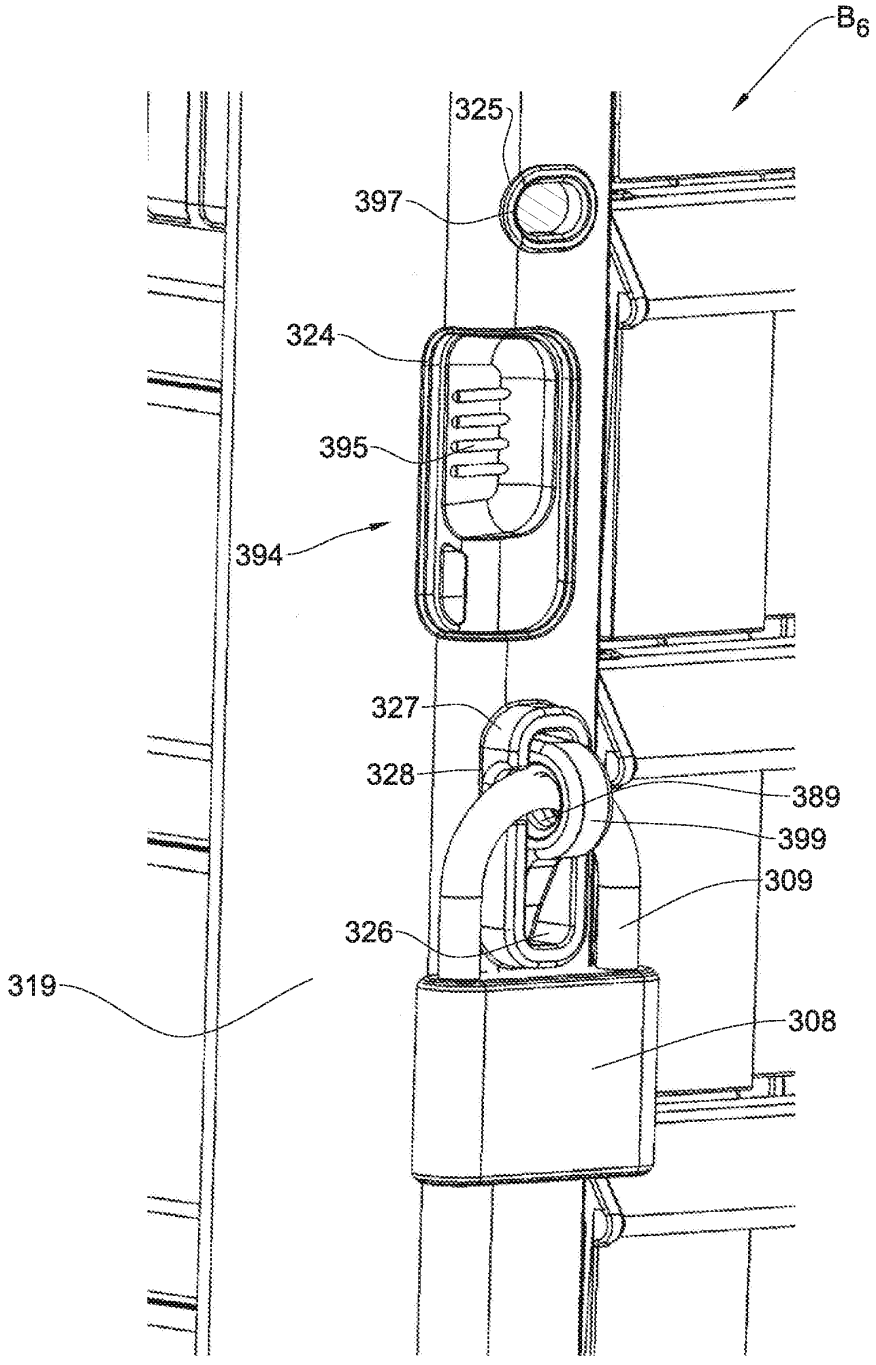


Fig. 17A

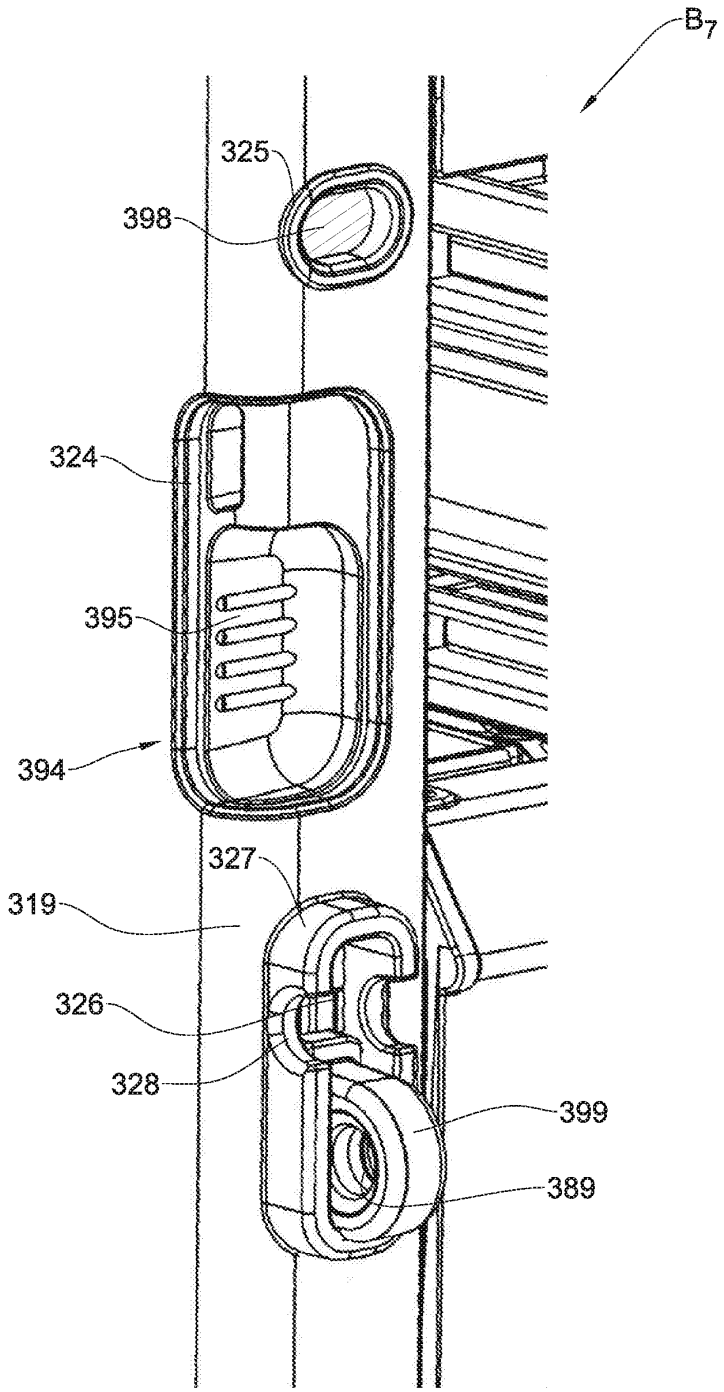


Fig. 17B

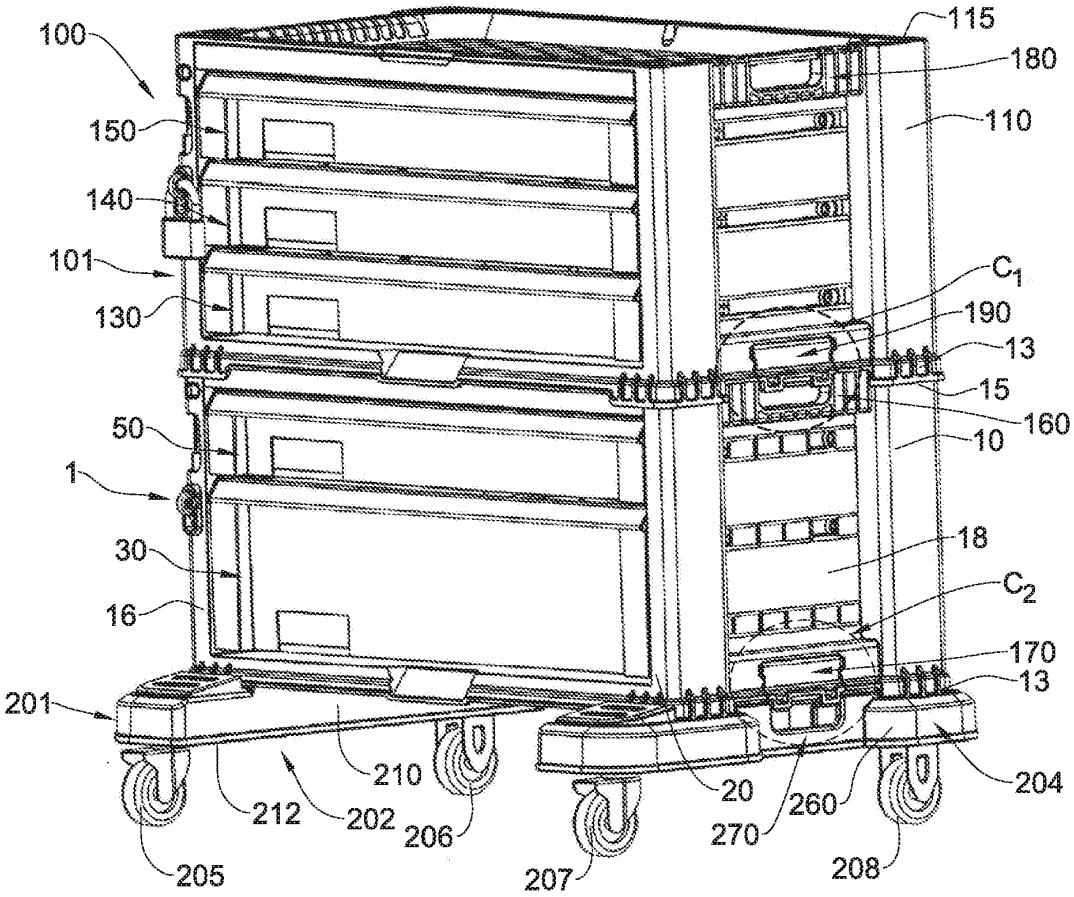

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Fig. 18A

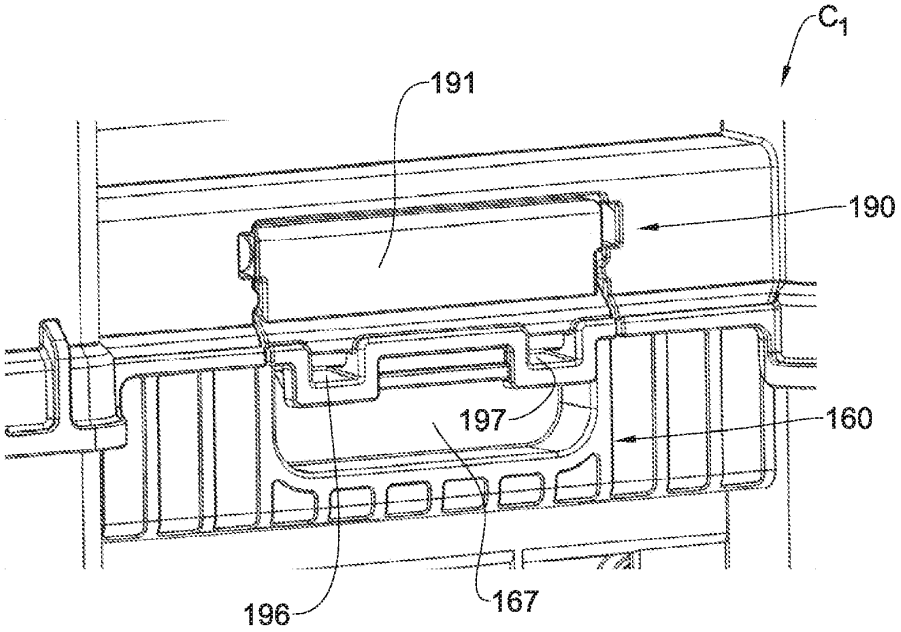


Fig. 18B

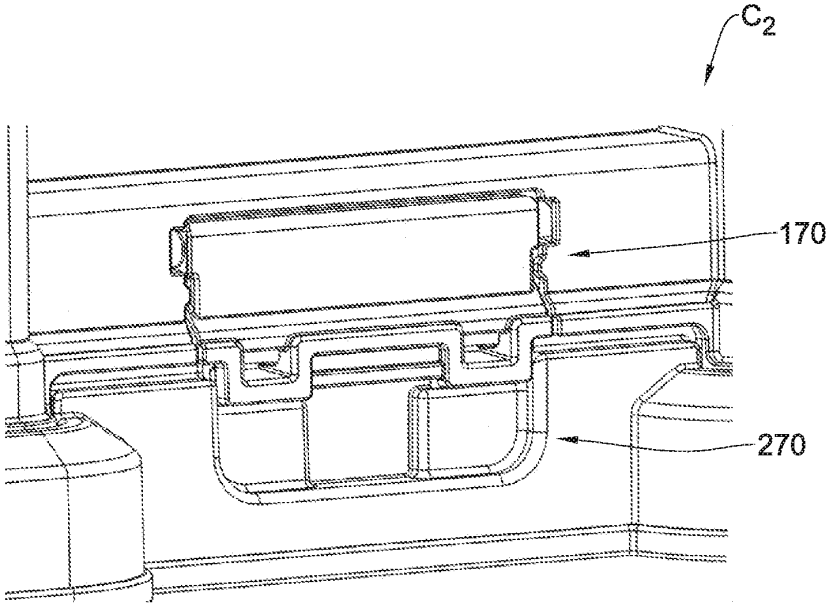


Fig. 18C

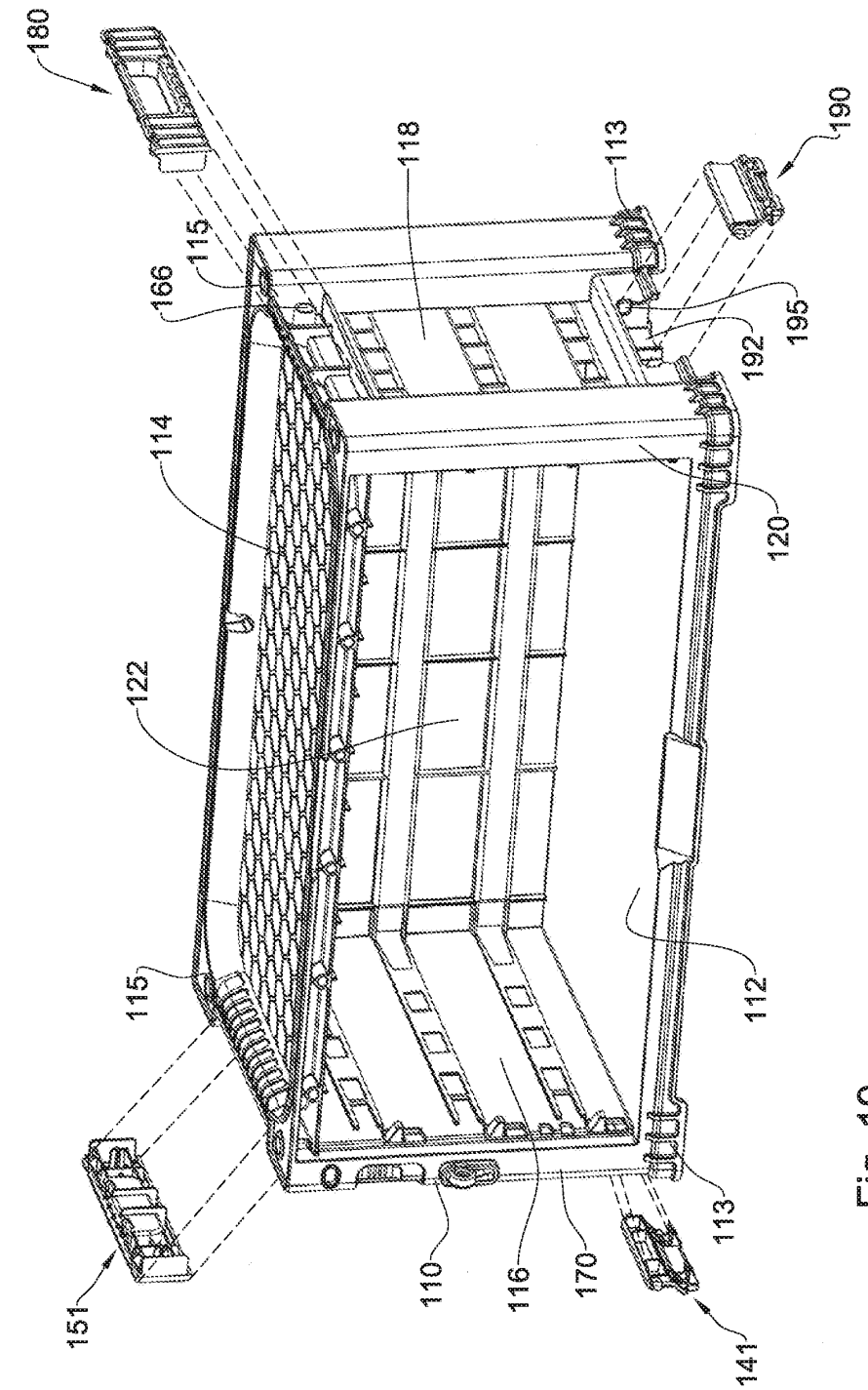

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Fig. 19

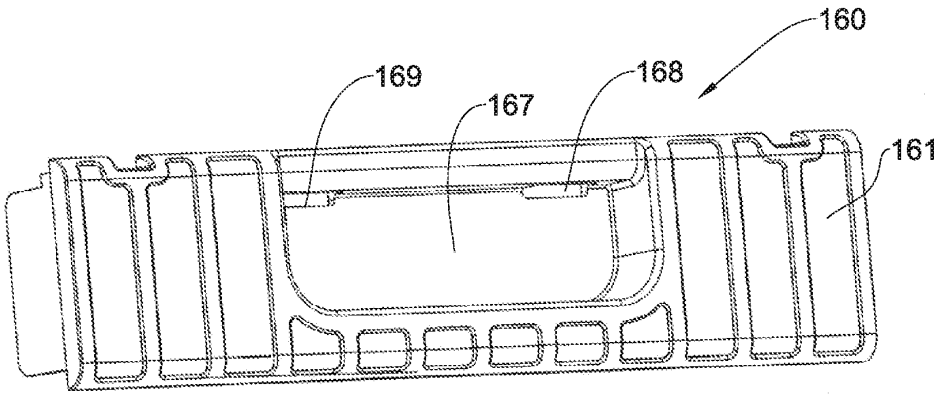


Fig. 20A

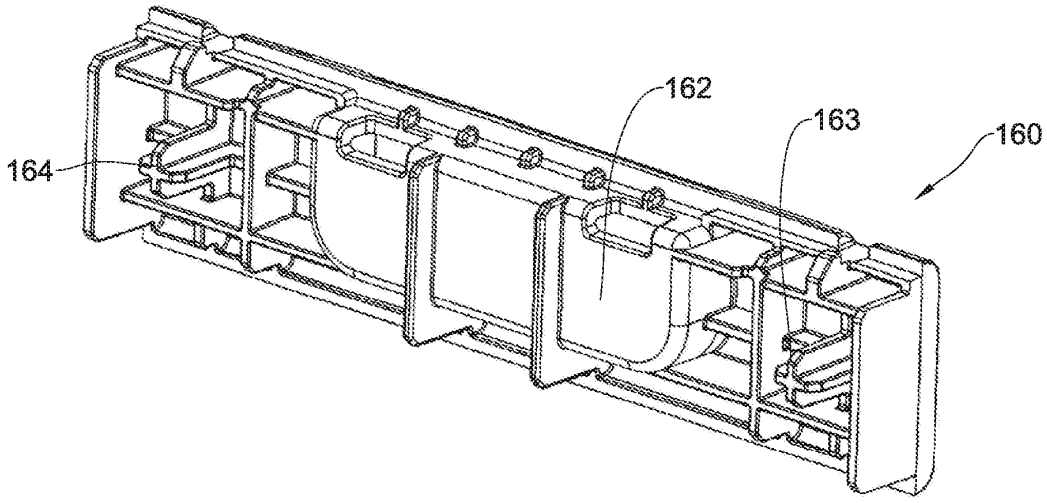


Fig. 20B

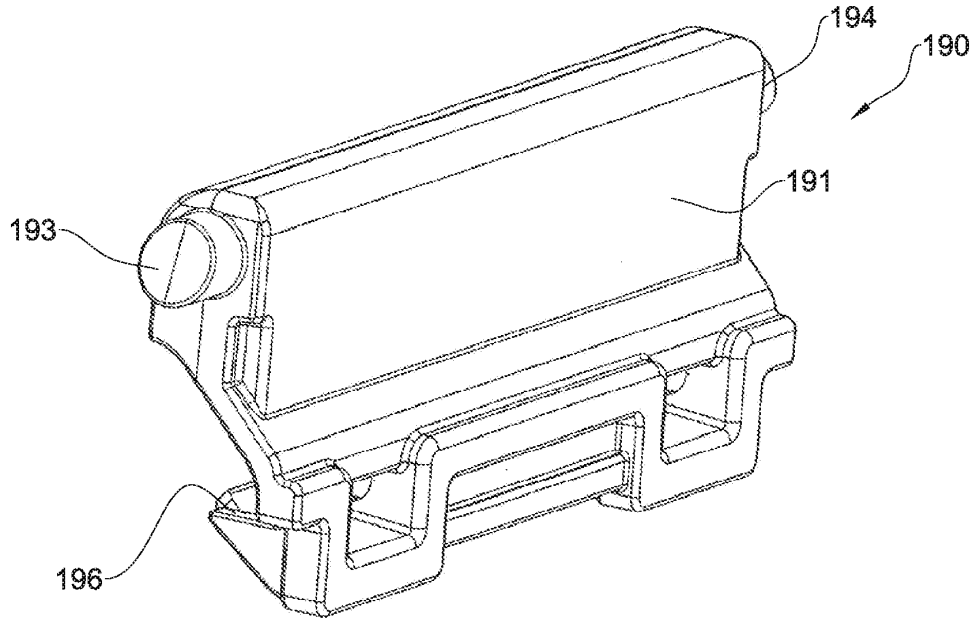


Fig. 21A

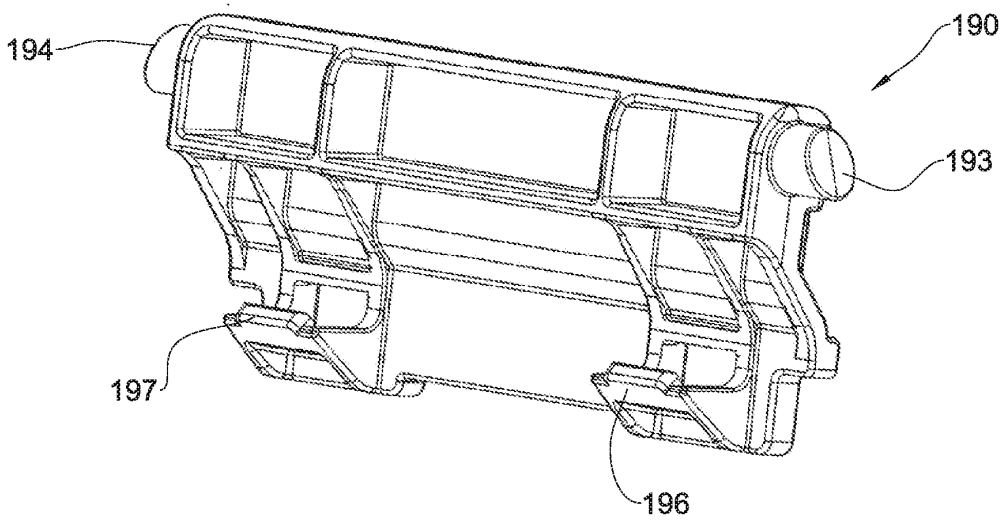


Fig. 21B

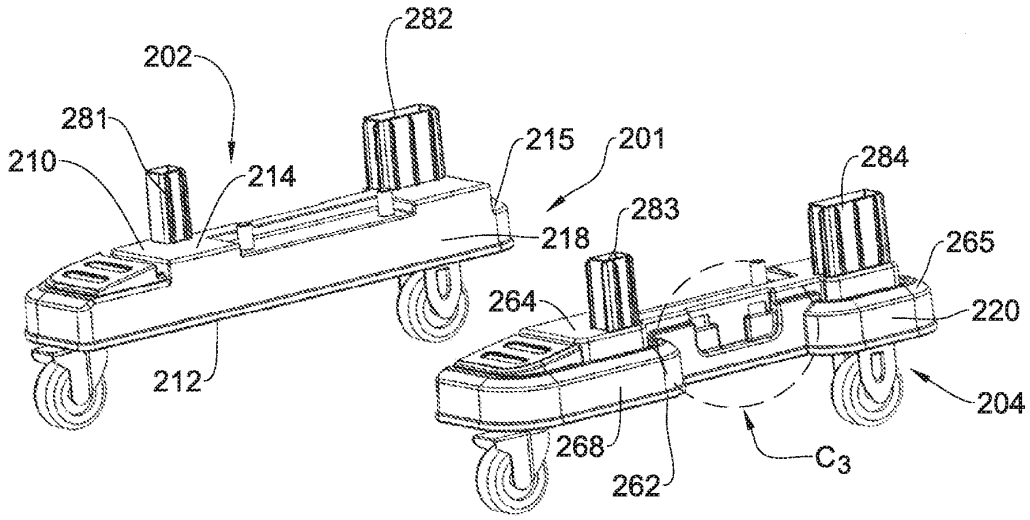


Fig. 22A

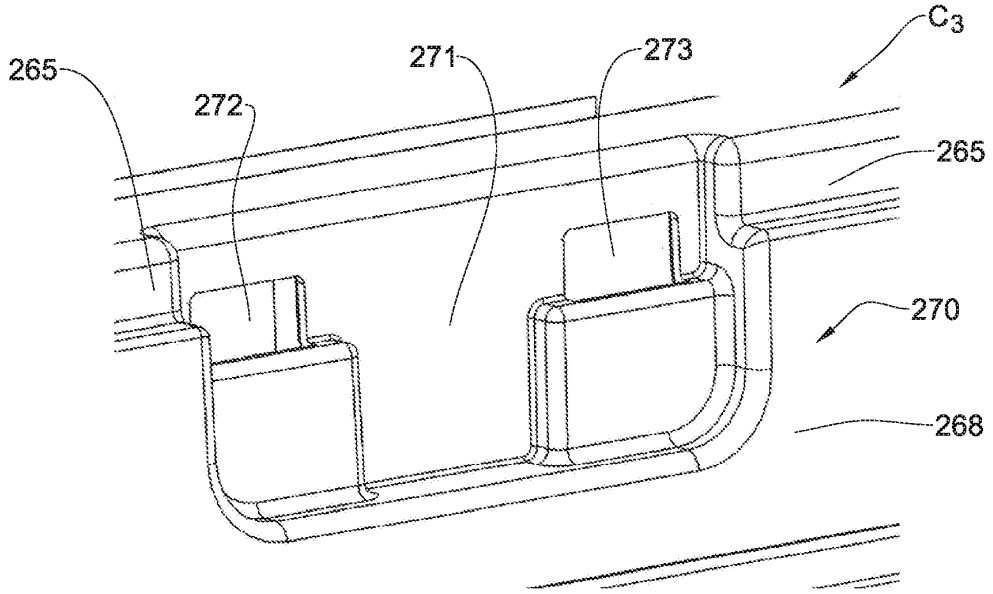


Fig. 22B

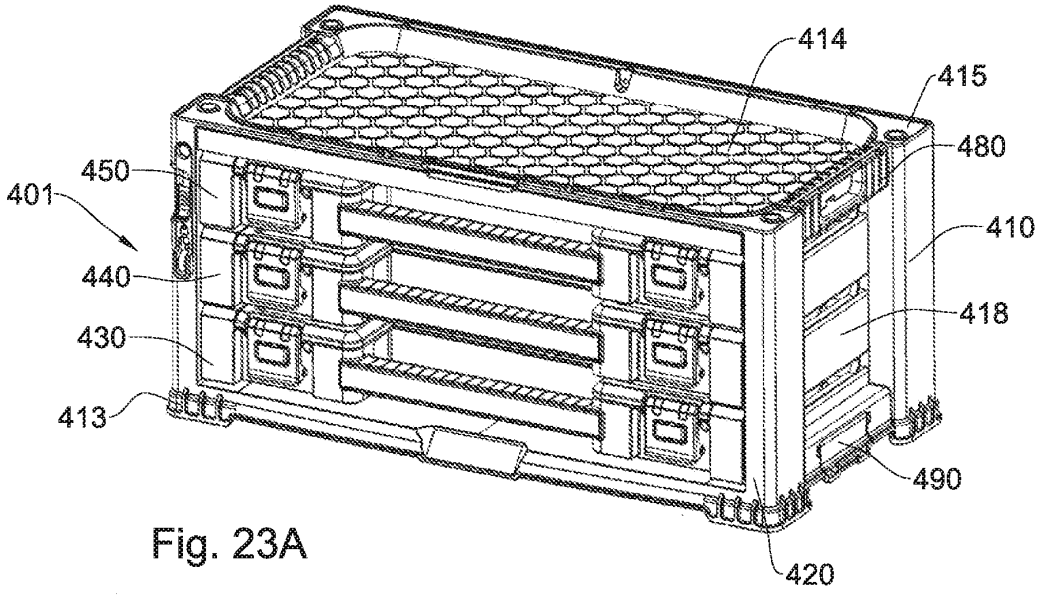


Fig. 23A

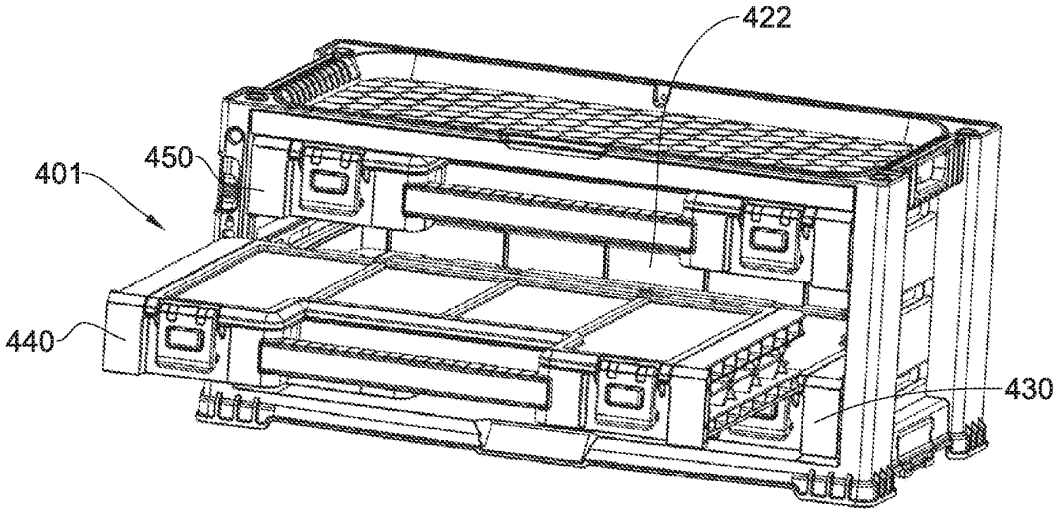


Fig. 23B

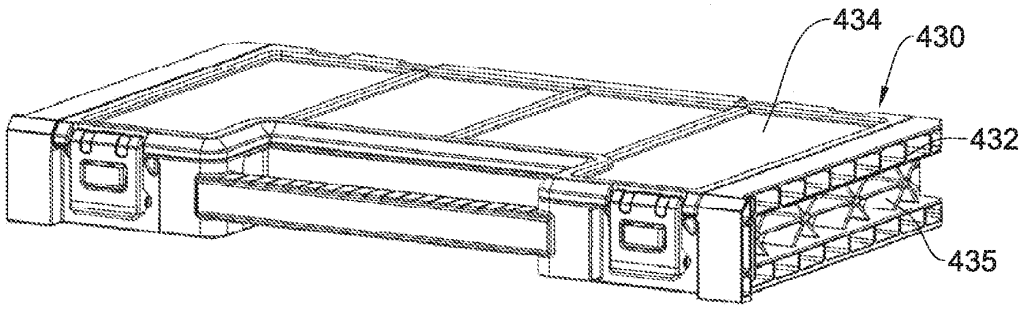


Fig. 24A

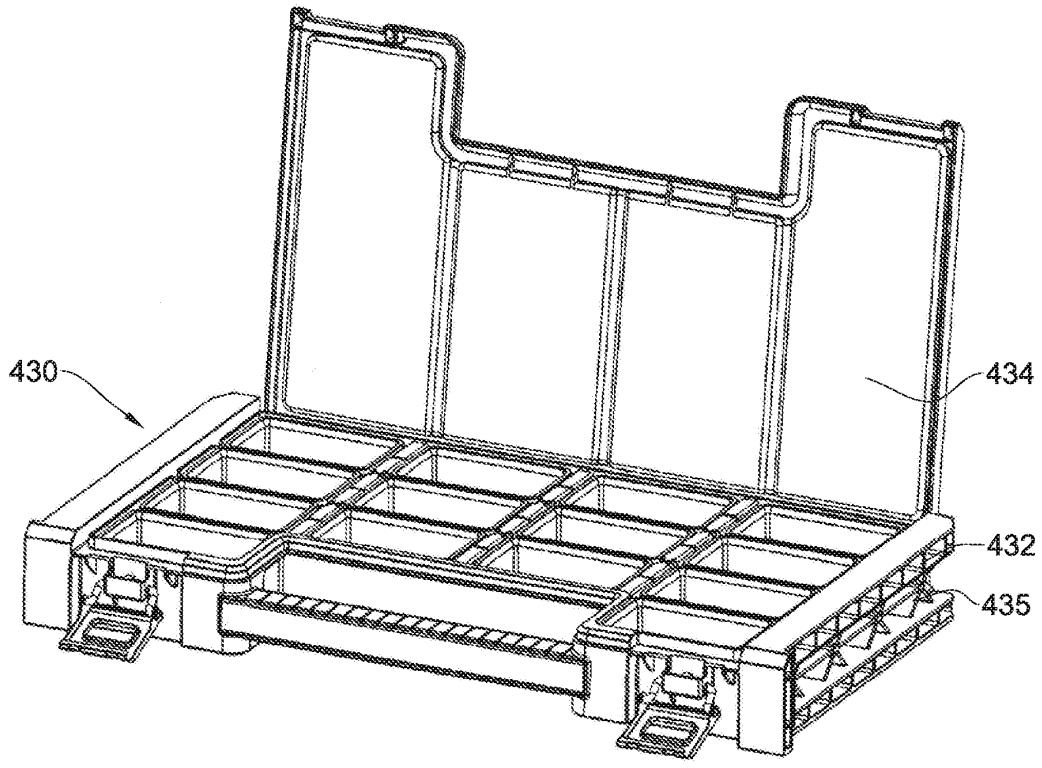


Fig. 24B

Espacenet

Bibliographic data: WO2017212840 (A1) — 2017-12-14

ARTICLE STORAGE CASE

Inventor(s): FURUTA YOSHIHISA [JP] ± (古田　義久)

Applicant(s): GENESIS CO LTD [JP] ± (株式会社ジェネシス)

Classification: - international: ***B65D21/02; B65D21/036***
- cooperative: **B65D21/0212 (KR, US); B65D21/0228 (EP); B65D25/30 (US); B65D43/021 (US)**

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Priority number(s): JP20160113832 20160607

Also published as: CN107848664 (A) EP3466826 (A1) EP3466826 (A4) JP2017218191 (A) KR20180111968 (A) more

Abstract of WO2017212840 (A1)

This invention addresses the problem of providing an article storage case that can be inexpensively formed, has an excellent workability with regards to performing linking work, and has a high stability when stacked. In order to solve the above problem, there is provided a substantially cubic or cuboid article storage case (1) having an upward opening (2), wherein: a convex part (3) serving also as a leg is formed on the lower surface of a bottom wall so that when cases are stacked, the convex part (3) fits into the upward opening (2) of the lower case; upper tongue pieces (5), (5) projecting inwards or outwards are respectively formed near the center of the upper edge of opposing side walls (4), (4); and lower tongue pieces (7), (7), which project in the opposite direction to the upper tongue pieces (5), (5) and which engage with the upper tongue pieces (5), (5) to link the cases to each other when the cases are stacked, are formed on the lower surface of the bottom wall.

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(30) 優先権データ：
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(72) 発明者: 古田 義久 (**FURUTA Yoshihisa**); 〒4300856 静岡県浜松市中区中島１丁目３０番８号 Shizuoka (JP).

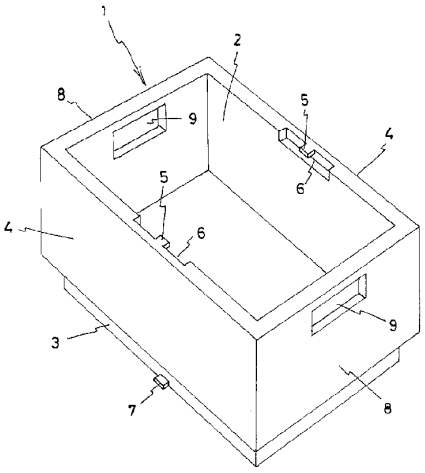
(74) 代理人: 岩根 正敏 (**IWANE Masatoshi**); 〒1780064 東京都練馬区南大泉５－３３－４ Tokyo (JP).

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(84) 指定国(表示のない限り、全ての種類の広域保護が可能): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), ユーラシア (AM, AZ, BY, KG, KZ, RU, TJ, TM), ヨーロッパ (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS,

(54) **Title:** ARTICLE STORAGE CASE

(54) 発明の名称： 物品収納ケース



(57) **Abstract:** This invention addresses the problem of providing an article storage case that can be inexpensively formed, has an excellent workability with regards to performing linking work, and has a high stability when stacked. In order to solve the above problem, there is provided a substantially cubic or cuboid article storage case (1) having an upward opening (2), wherein: a convex part (3) serving also as a leg is formed on the lower surface of a bottom wall so that when cases are stacked, the convex part (3) fits into the upward opening (2) of the lower case; upper tongue pieces (5), (5) projecting inwards or outwards are respectively formed near the center of the upper edge of opposing side walls (4), (4); and lower tongue pieces (7), (7), which project in the opposite direction to the upper tongue pieces (5), (5) and which engage with the upper tongue pieces (5), (5) to link the cases to each other when the cases are stacked, are formed on the lower surface of the bottom wall.

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［続葉有］

SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

添付公開書類：

— 国際調査報告（条約第21条(3)）

(57) 要約：安価に形成できると共に、連結作業性が良好であり、しかも積み重ね状態の安定性の高い物品収納ケースを提供することを課題とする。上記課題を解決するため、上方に開口（２）を有する略立方体形状或いは略直方体形状の物品収納ケース（１）において、底壁下面に脚部を兼ねた凸部（３）を形成し、該凸部（３）を積み重ねた際の下方ケースの上記上方開口（２）に嵌入させる構成とすると共に、対向する側壁（４），（４）の上端中央付近にそれぞれ内方或いは外方に向けて突出する上方舌片（５），（５）を形成し、該上方舌片（５），（５）と積み重ねた際に係合してケース同士を連結する上記上方舌片（５），（５）とは逆方向に向けて突出する下方舌片（７），（７）を底壁下面に形成した物品収納ケースとした。

明　細　書

発明の名称 ： 物品収納ケース

技術分野

[0001] 本発明は、物品収納ケースに関し、詳しくは、積み重ねたケース同士を容易に連結することができる、物品収納ケースに関するものである。

背景技術

[0002] 工場等において、部品を収納して保管・運搬するために、プラスチック等によって型成形された、上方に開口を有する略立方体形状或いは略直方体形状の物品収納ケースが多用されている。

そして、このような物品収納ケースは、積み重ねた際にズレを防止し、積み重ね状態の安定性を高めるために、底壁下面に脚部を兼ねた凸部を形成し、該凸部を積み重ねた際の下方ケースの上方開口に嵌入させるように構成されている（例えば、特許文献１，２）。 また、積み重ね状態の更なる安定性を図るために、積み重ねたケース同士を連結する構成を有する物品収納ケースも開発されている（例えば、特許文献３）。

先行技術文献

特許文献

[0003] 特許文献1：特開２００４－１２３２２１号公報

特許文献1：特開２００４－３２９０３５号公報

特許文献3：特開平９－１６９３３９号公報

発明の概要

発明が解決しようとする課題

[0004] しかしながら、上記した特許文献１，２に開示されたような、単なる凸部の開口への嵌入のみでは、トラックによる輸送時等に受ける、下から突き上げるような衝撃が加わった場合には、容易に嵌入が外れてしまい、積み重ねがズレることから荷崩れが生じ易いものであった。また、積み重ねたケースを持ち上げる際には、例え空の状態のケースであっても、最下段のケースを

持って持ち上げなければならず、腰をかがめる作業が必要となるなど、作業者に負担を強いるものであった。

一方、特許文献３に開示されたような、積み重ねたケース同士を連結する構成を有するものにあっては、上記した問題は生じないものの、該特許文献３に開示された連結構造は、ケースの上部開口縁部に鋼製の連結具を回動自在に取り付け、該連結具を回動させて相手方ケースの上縁及び／又は連結具に係合させるものであるため、連結具による結合動作が必須となり、その作業が煩わしいものであったと共に、連結手段が大掛かりなものであり、構造も複雑になってコスト高となっていた。

[0005] 本発明は、上述した背景技術が有する課題に鑑みなされたものであって、その目的は、安価に形成できると共に、連結作業性が良好であり、しかも積み重ね状態の安定性の高い物品収納ケースを提供することにある。

課題を解決するための手段

[0006] 上記した目的を達成するため、本発明は、次の〔１〕～〔６〕に記載した物品収納ケースとした。

〔１〕上方に開口を有する略立方体形状或いは略直方体形状の物品収納ケースにおいて、底壁下面に脚部を兼ねた凸部を形成し、該凸部を積み重ねた際の下方ケースの上記上方開口に嵌入させる構成とすると共に、対向する側壁の上端中央付近にそれぞれ内方或いは外方に向けて突出する上方舌片を形成し、該上方舌片と積み重ねた際に係合してケース同士を連結する上記上方舌片とは逆方向に向けて突出する下方舌片を底壁下面に形成したことを特徴とする、物品収納ケース。

〔２〕上記上方舌片の周辺に凹部が形成されていることを特徴とする、上記〔１〕に記載の物品収納ケース。

〔３〕上記上方舌片が側壁上端面より突出して形成されていることを特徴とする、上記〔１〕に記載の物品収納ケース。

〔４〕上記上方舌片の下面に係合凹部が形成され、上記下方舌片の上面に前記上方舌片の係合凹部に嵌入する係合凸部が形成されていることを特徴と

する、上記〔１〕に記載の物品収納ケース。

〔５〕上記上方舌片が長辺側の対向する側壁に形成され、上記下方舌片が底壁下面の上記脚部を兼ねた凸部に形成されていることを特徴とする、上記〔１〕に記載の物品収納ケース。

〔６〕上記ケースの上記上方開口を閉塞する矩形の蓋体であり、該蓋体の下面に凸部を形成し、該凸部を上記ケースの上記上方開口に嵌入させる構成とすると共に、該凸部に上記ケースに形成された上方舌片と係合する舌片を形成したことを特徴とする、上記〔１〕に記載の物品収納ケース。

発明の効果

[0007] 上記した本発明に係る物品収納ケースによれば、ケースを互いに連結するための特別な別部品を付加する必要がなく、上方舌片と下方舌片とをケースに型成形等により一体的に形成すればよいので、製造コストの低減が図れると共に、リサイクルが容易な物品収納ケースを提供することができる。

また、上記した本発明に係る物品収納ケースによれば、上方舌片と下方舌片との係合によって積み重ねたケース同士を連結するものであるため、その連結作業性は良好であり、また信頼性の高い連結が可能なものとなる。

図面の簡単な説明

[0008] [図1]本発明に係る物品収納ケースの一実施形態を示した斜視図である。

[図2]図１に示した物品収納ケースを積み重ねる途中の状態を示した一部切り欠き側面図である。

[図3]図１に示した物品収納ケースを２段積み重ねた状態を示した一部切り欠き側面図である。

[図4]図１に示した物品収納ケースを３段積み重ね、最上段の物品収納ケースを持って垂直方向に持ち上げた状態を示した一部切り欠き側面図、および要部を拡大して示した断面図である。

[図5]図１に示した物品収納ケースを３段積み重ね、最下段の物品収納ケースを持って横方向に倒した状態を示した一部切り欠き側面図、および要部を拡大して示した断面図である。

[図6]本発明に係る物品収納ケースの蓋体を下方から観た斜視図である。

[図7]図１に示した物品収納ケースを５段積み重ね、最上段の物品収納ケースに蓋体を装着した状態を示した一部切り欠き側面図、および要部を拡大して示した断面図である。

[図8]本発明に係る物品収納ケースの他の実施形態を示した斜視図である。

[図9]図８に示した物品収納ケースの平面図である。

[図10]図８に示した物品収納ケースの底面図である。

[図11]上方舌片及び下方舌片の変形例を示した要部斜視図である。

[図12]上方舌片及び下方舌片の他の変形例を示した要部斜視図である。

発明を実施するための形態

[0009] 以下、上記した本発明に係る物品収納ケースの実施形態を、図面を参照しながら詳細に説明する。

[0010] 本発明に係る物品収納ケース１は、例えばプラスチックによってその全体が一体成形されたもので、図１に示すように、略直方体形状で、上方に開口２を有している。また、底壁下面に脚部を兼ねた凸部３が形成され、該凸部３が積み重ねた際の下方ケースの上記上方開口２に嵌入し、積み重ね状態の安定性が図られている。

[0011] 物品収納ケース１の長辺側の対向する側壁４，４の上端中央付近には、それぞれ内方に向けて突出する上方舌片５，５が形成され、該上方舌片５の周辺に凹部６がそれぞれ形成されている。また、底壁下面に形成された上記脚部を兼ねた凸部３には、前記上方舌片５，５と積み重ねた際に係合してケース同士を連結する外方に向けて突出する下方舌片７，７が形成されている。また、短辺側の対向する側壁８，８の外面側の上方中央付近には、取っ手９，９が形成されている。

[0012] 上記のように構成された本発明に係る物品収納ケース１は、積み重ねる際に、図２に示したように、下方のケース１Ａの上方舌片５，５の下方に、上方のケース１Ｂの下方舌片７，７がそれぞれ入り込むように上方舌片５の周辺に形成された上記凹部６を利用して挿入することにより、図３に示したよ

うに、下方のケース１Ａの上方舌片５の下方に上方のケース１Ｂの下方舌片７が位置するように積み重ねられ、容易に積み重ねたケース１Ａ，１Ｂ同士を縦方向に抜けないように連結することができる。

[0013] 上記のようにして積み重ねられた物品収納ケース１Ａ，１Ｂ，１Ｃは、例えば持ち上げる際においては、図４に示したように、最上段の物品収納ケース１Ｃを持って持ち上げることにより、その積み重ねられた全ての物品収納ケース１Ａ，１Ｂ，１Ｃを持ち上げることができるものとなる。また、図５に示したように、積み重ねられた物品収納ケース１Ａ，１Ｂ，１Ｃの最下段のケース１Ａを持って横方向に倒した場合においても、下端を支点として上方舌片５と下方舌片７とが当接して抜けが防止されるため、横方向に倒した状態でも積み重ねがバラけず、搬送が可能なものとなる。

上記した作用は、特に空の状態の物品収納ケース１の搬送作業の際に効果的に現れ、作業者の負担を大きく軽減することができるものとなる。

[0014] また、上記のようにして積み重ねられた物品収納ケース１Ａ，１Ｂ、１Ｃ・・は、トラックによる輸送時等において、下から突き上げるような衝撃が加わった場合にも、上方舌片５と下方舌片７とが当接して抜けが防止されるため、物品収納ケースがズレ難いものとなる。

上記した作用は、積み重ねられた物品収納ケース１Ａ，１Ｂ，１Ｃ・・の輸送時において、その荷崩れを効果的に防止することができるものとなる。

[0015] 図６は、本発明に係る物品収納ケースに用いる蓋体を下方から観た斜視図である。この蓋体５０は、例えばプラスチックによってその全体が一体成形された矩形形状のもので、下面に凸部５１を有し、該凸部５１を上記ケース１の上記上方開口２に嵌入させる構成となっている。また、凸部５１には、上記ケース１の側壁上端に設けた上方舌片５，５と係合する外方に向けて突出する舌片５２，５２が形成されている。

[0016] 上記した蓋体５０は、例えば図７に示したように、５段に積み重ねた本発明に係る物品収納ケース１Ａ，１Ｂ，１Ｃ，１Ｄ，１Ｅの最上段のケース１Ｅの開口２を閉塞するのに用いられる。蓋体５０の装着に際しては、上記し

たケース同士の連結と同様に、ケース１Ｅの上方舌片５，５の下方に、蓋体５０の舌片５２，５２がそれぞれ入り込むように上方舌片５の周辺に形成された上記凹部６を利用して挿入することにより、図７に示したように、ケース１Ｅの上方舌片５の下方に蓋体５０の舌片５２が位置するように装着され、容易にケース１Ｅから蓋体５０が外れないように装着することができる。

[0017] 上記のようにして最上段のケース１Ｅの開口２が蓋体５０によって閉塞された積み重ねられた物品収納ケース１Ａ，１Ｂ，１Ｃ，１Ｄ，１Ｅは、トラックによる輸送時等において、下から突き上げるような衝撃が加わった場合にも、上記したようにケース同士の連結により荷崩れが生じないと共に、蓋体５０はケース１から外れないため、収納した物品が跳ね上げられて散乱することもない。

[0018] 図８は、本発明に係る物品収納ケースの他の実施形態を示した斜視図である。

このケース１０は、薄肉のプラスチックによりその全体が形成され、フランジ１１、リブ１２を適所に配することにより、その剛性が図られている。長辺側の対向する側壁１３，１３の上端中央付に形成された上方舌片１４，１４は、側壁上端面より突出して形成され、その周辺には凹部１５がそれぞれ形成されている。これにより、上方舌片１４の肉厚が確保されていると共に、後記する下方舌片１６の挿入を容易なものとしている。

[0019] また、図１０に示したように、底壁下面には脚部を兼ねた凸部１７が形成されている。この凸部１７は、線状に形成されており、コーナー部に形成されたＬ字状凸部１７ａと、長辺側の中央付近に形成されたＩ字状凸部１７ｂとからなる。これらの凸部１７ａ，１７ｂは、積み重ねた際の下方ケースの上方開口１８に内嵌し、積み重ね状態の安定性が図られている。

Ｉ字状凸部１７ｂ，１７ｂには、上記上方舌片１４，１４と積み重ねた際に係合してケース同士を連結する外方に向けて突出する下方舌片１６，１６が設けられている。また、下方のフランジ１１には、図８に示したように、上記した側壁上端面より突出して形成され上方舌片１４，１４を避ける凹み

１９，１９が設けられている。

この実施形態に係る物品収納ケース１０においても、上記したケース１と同様の作用、効果が得られる。

[0020] 以上、本発明に係る物品収納ケースの実施形態を説明したが、本発明は、何ら既述の実施形態に限定されるものではなく、特許請求の範囲に記載した本発明の技術的思想の範囲内において、さらに種々の変形及び変更が可能であることは当然である。

例えば、上記実施形態においては、略直方体形状の物品収納ケース１，１０につき説明したが、略立方体形状の物品収納ケースとしてもよい。また、ケースに形成する上方舌片５或いは１４及び下方舌片７或いは１６は、内方或いは外方に向けて突出する単なる板状のものであってもよいが、図１１、図１２に示したように、上方舌片２０の下面に係合凹部２１が形成され、下方舌片２２の上面に前記上方舌片の係合凹部に嵌入する係合凸部２３が形成されているものとしてもよい。このような係合部２１，２３を形成した舌片２０，２２とした場合には、当接する際にセンタリングが図れ、より積み重ねたケース同士のズレが防止できるものとなる。

[0021] また、上記実施形態においては、上方舌片５或いは１４は、内方に向けて突出するように形成され、下方舌片７或いは１６は、外方に向けて突出するように形成されたものにつき説明したが、両者がそれぞれ逆方向、すなわち上方舌片は外方、下方舌片は内方に向けて、それぞれ突出するように形成してもよい。

なお、上記した下方舌片についての変形は、蓋体５０に形成する舌片５２についても、同様に実施することができる。また、蓋体５０に形成する凸部５１についても、図１０に示した線状の凸部としてもよく、また場合によっては点状に存在する凸部としてもよい。

[0022] 更に、本発明に係る物品収納ケースは、工場等における部品を収納するケースばかりでなく、ビール瓶を収納するケース、更には野菜を収納するケース等、収容する物品の種類は何ら問わない。また、材質も何ら限定されず、

プラスチック製、木製、金属製等の種々の材料を利用して本発明に係る物品収納ケースを製造することができる。更に言えば、本発明に係る物品収納ケースは、全体が一体的に形成されている必要はなく、多部品を組み合わせて構成されていてもよく、また組み立て式の物品収納ケースであってもよい。

産業上の利用可能性

[0023] 以上、説明した本発明に係る物品収納ケースは、安価に形成できると共に、連結作業性が良好であり、しかも段積み状態の安定性の高い物品収納ケースとなるため、工場等における部品を収納するケース、ビール瓶を収納するケース、更には野菜を収納するケース等に、幅広く利用できるケースとなる。

符号の説明

[0024]
１，１Ａ，１Ｂ，１Ｃ，１０　物品収納ケース
２，１８　開口
３，１７　脚部を兼ねた凸部
４，１３　長辺側の側壁
５，１４，２０　上方舌片
６，１５　凹部
７，１６，２２　下方舌片
８　短辺側の側壁
９　取っ手
１１　フランジ
１２　リブ
１７ａ　Ｌ字状凸部
１７ｂ　Ｉ字状凸部
１９　凹み
２１　係合凹部
２３　係合凸部
５０　蓋体

５１　凸部

５２　舌片

請求の範囲

[請求項1] 上方に開口を有する略立方体形状或いは略直方体形状の物品収納ケースにおいて、底壁下面に脚部を兼ねた凸部を形成し、該凸部を積み重ねた際の下方ケースの上記上方開口に嵌入させる構成とすると共に、対向する側壁の上端中央付近にそれぞれ内方或いは外方に向けて突出する上方舌片を形成し、該上方舌片と積み重ねた際に係合してケース同士を連結する上記上方舌片とは逆方向に向けて突出する下方舌片を底壁下面に形成したことを特徴とする、物品収納ケース。

[請求項2] 上記上方舌片の周辺に凹部が形成されていることを特徴とする、請求項１に記載の物品収納ケース。

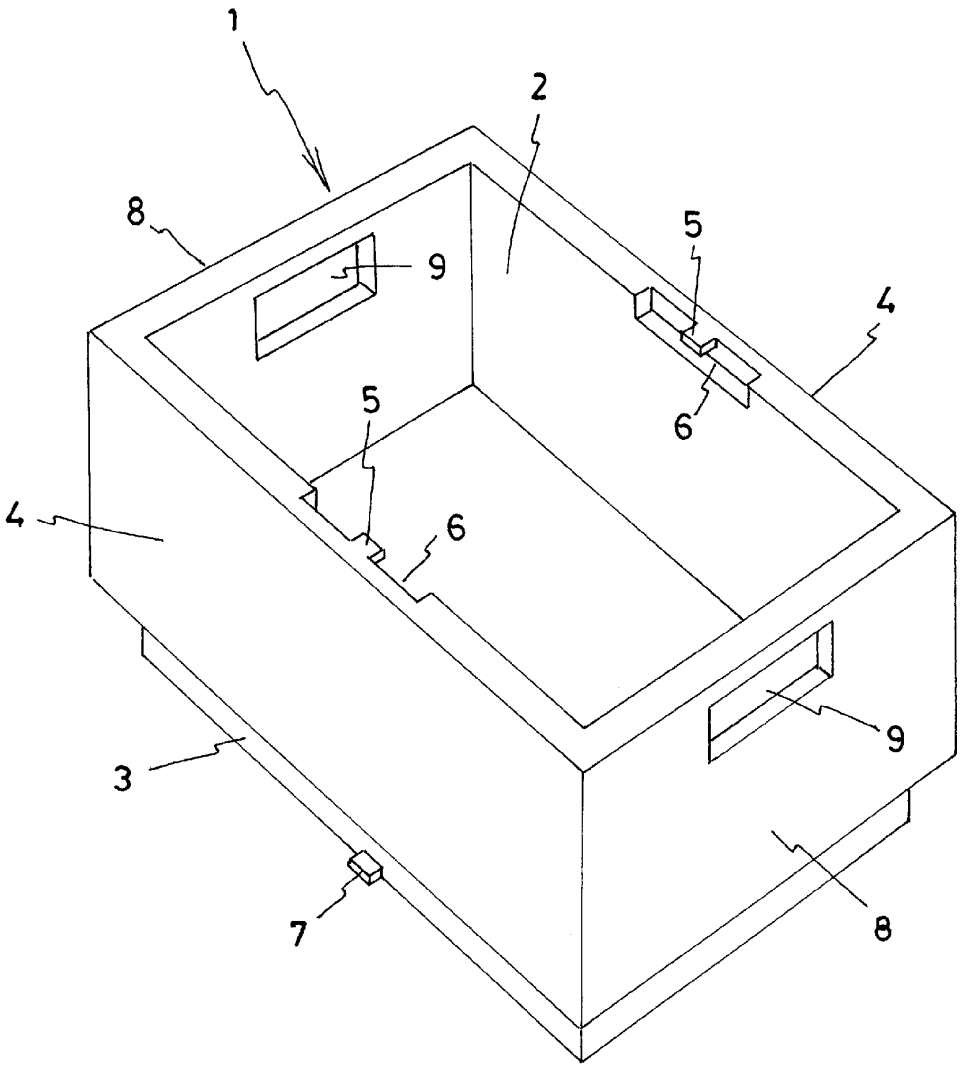
[請求項3] 上記上方舌片が側壁上端面より突出して形成されていることを特徴とする、請求項１に記載の物品収納ケース。

[請求項4] 上記上方舌片の下面に係合凹部が形成され、上記下方舌片の上面に前記上方舌片の係合凹部に嵌入する係合凸部が形成されていることを特徴とする、請求項１に記載の物品収納ケース。

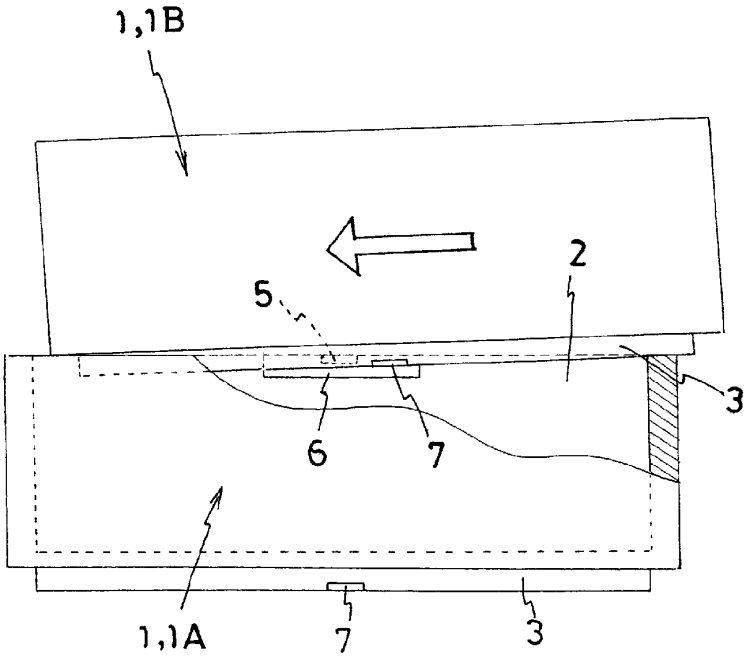
[請求項5] 上記上方舌片が長辺側の対向する側壁に形成され、上記下方舌片が底壁下面の上記脚部を兼ねた凸部に形成されていることを特徴とする、請求項１に記載の物品収納ケース。

[請求項6] 上記ケースの上記上方開口を閉塞する矩形の蓋体であり、該蓋体の下面に凸部を形成し、該凸部を上記ケースの上記上方開口に嵌入させる構成とすると共に、該凸部に上記ケースに形成された上方舌片と係合する舌片を形成したことを特徴とする、請求項１に記載の物品収納ケース。

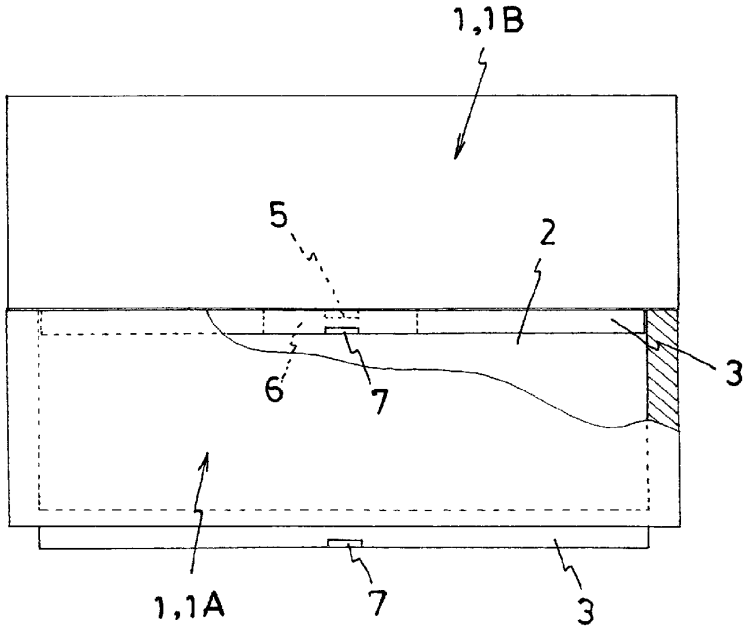
[図1]



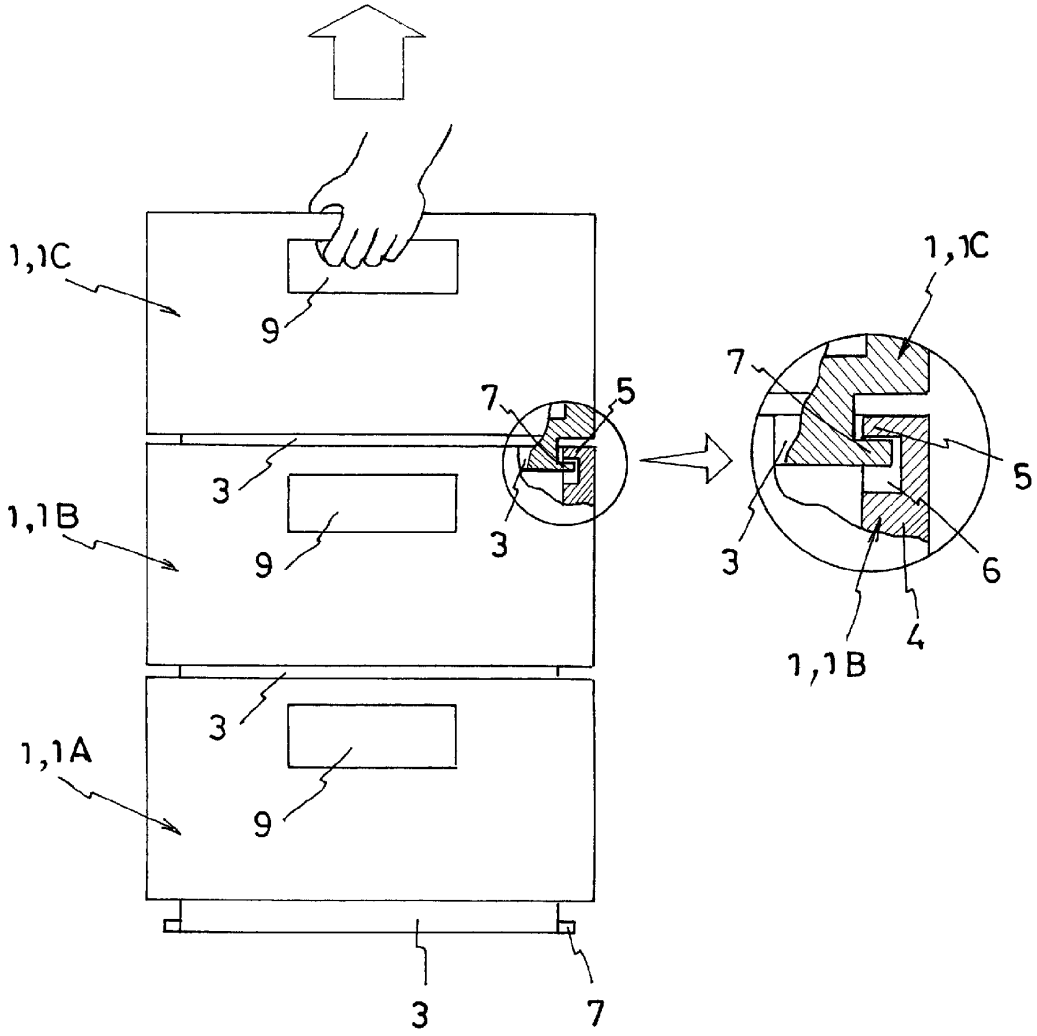
[図2]



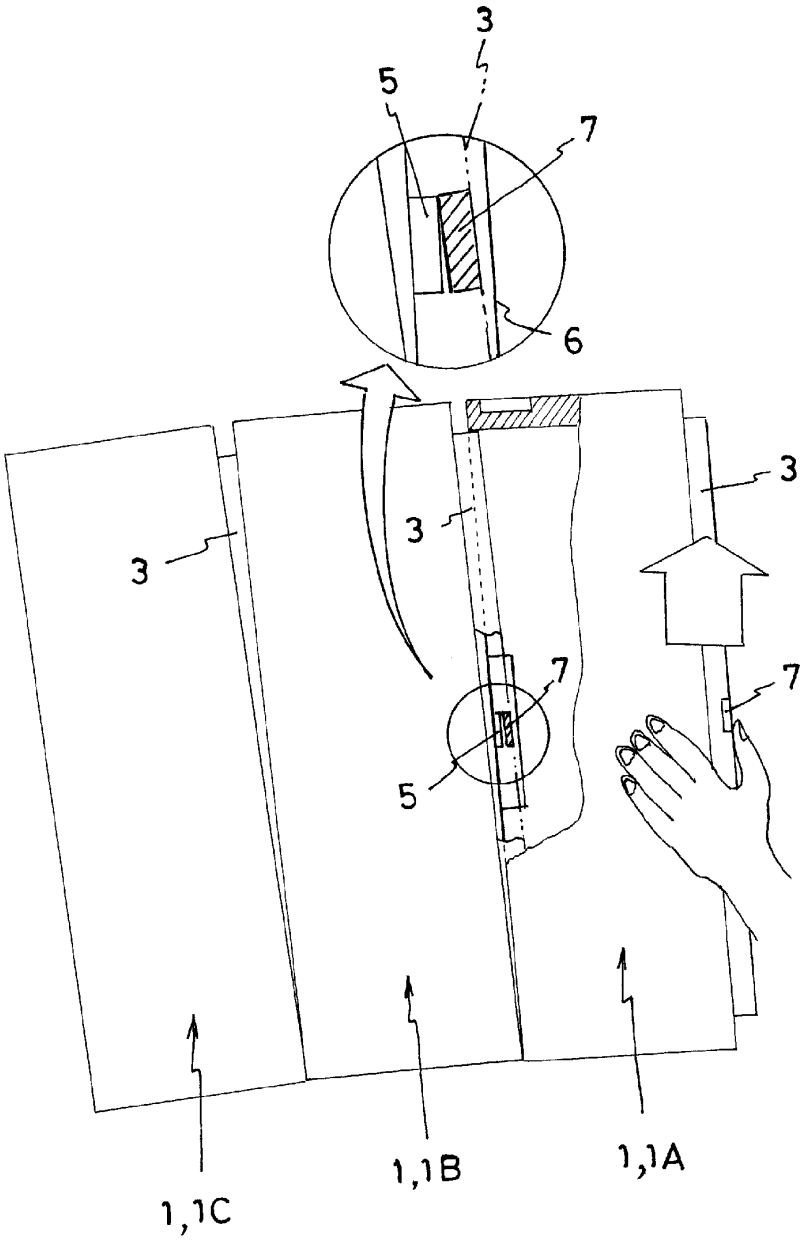
[図3]



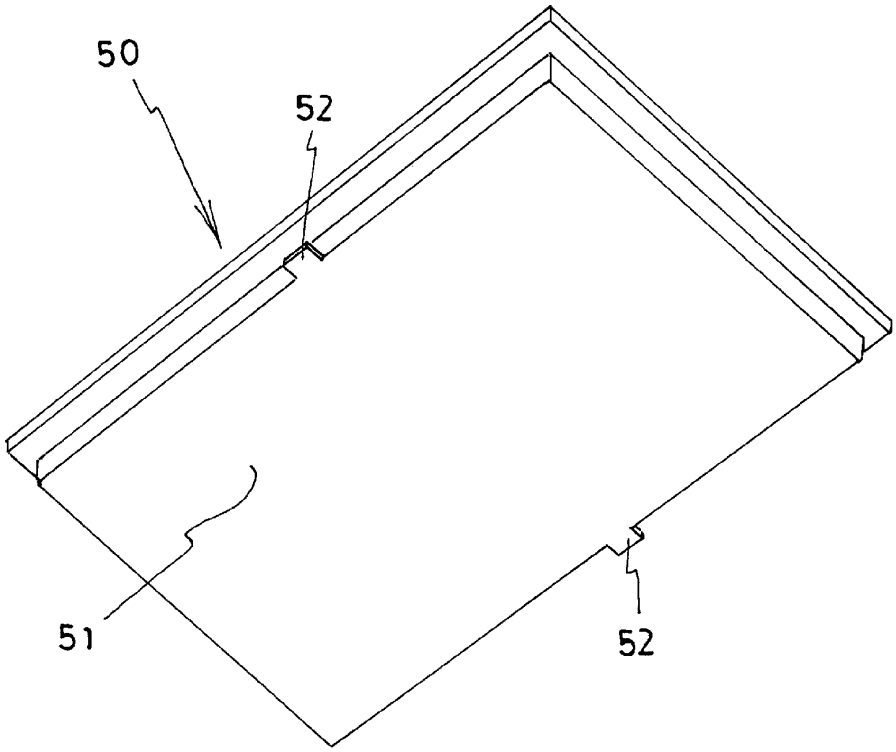
[図4]



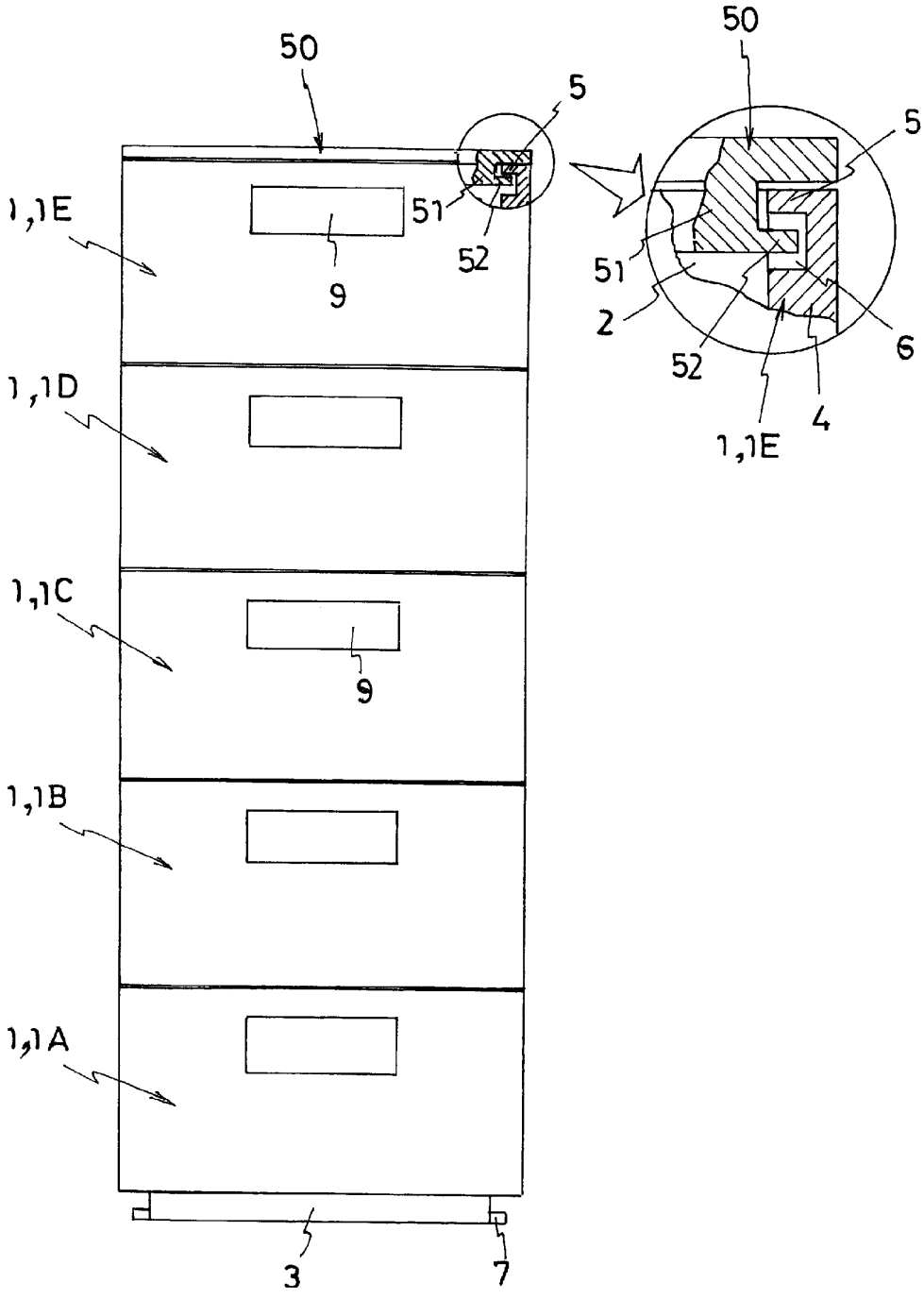
[図5]



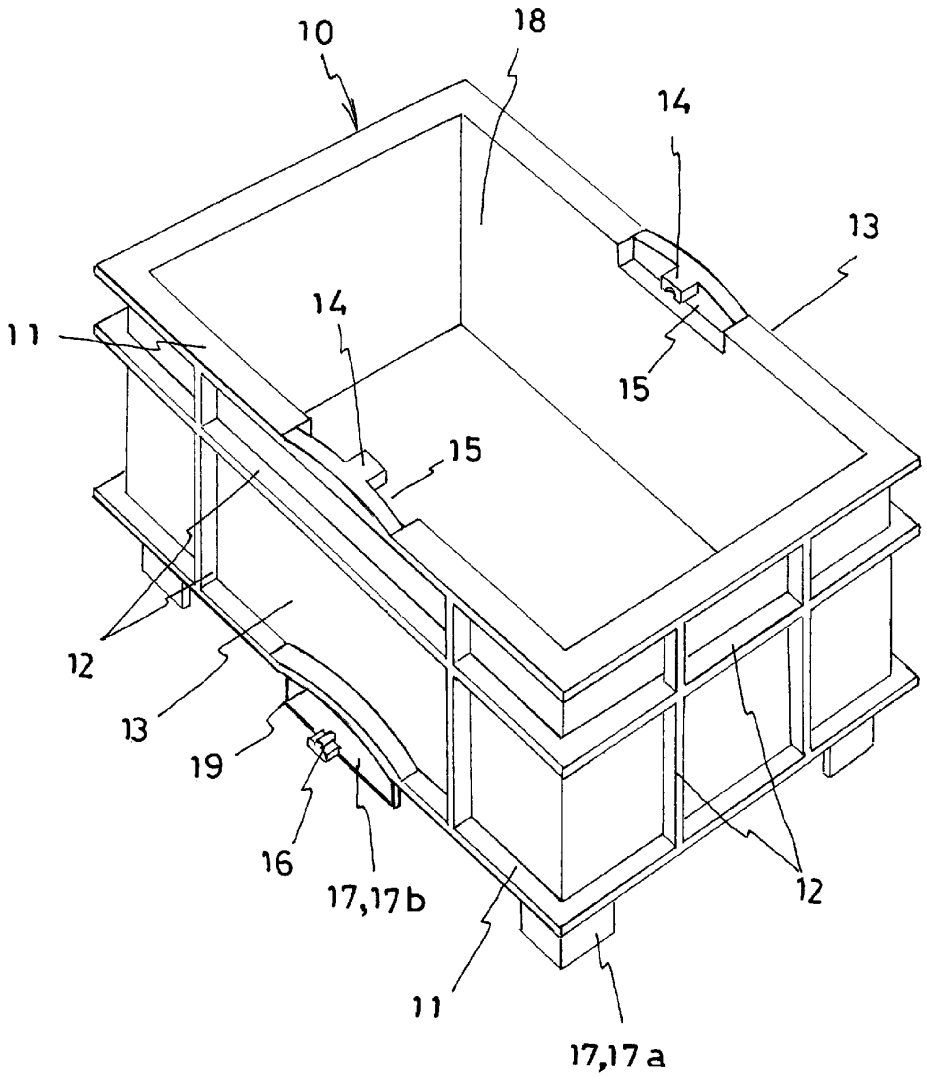
[図6]



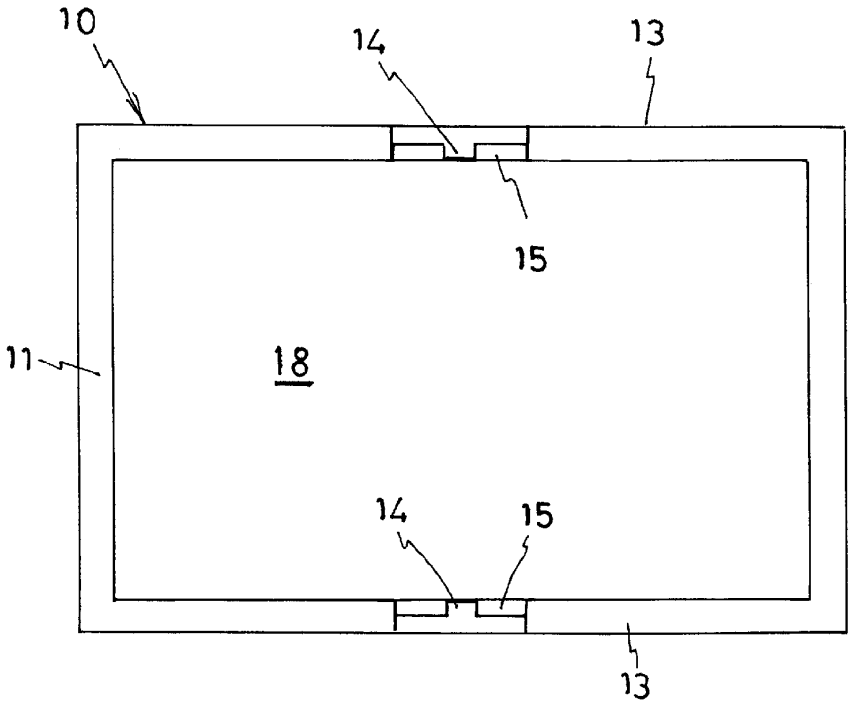
[図7]



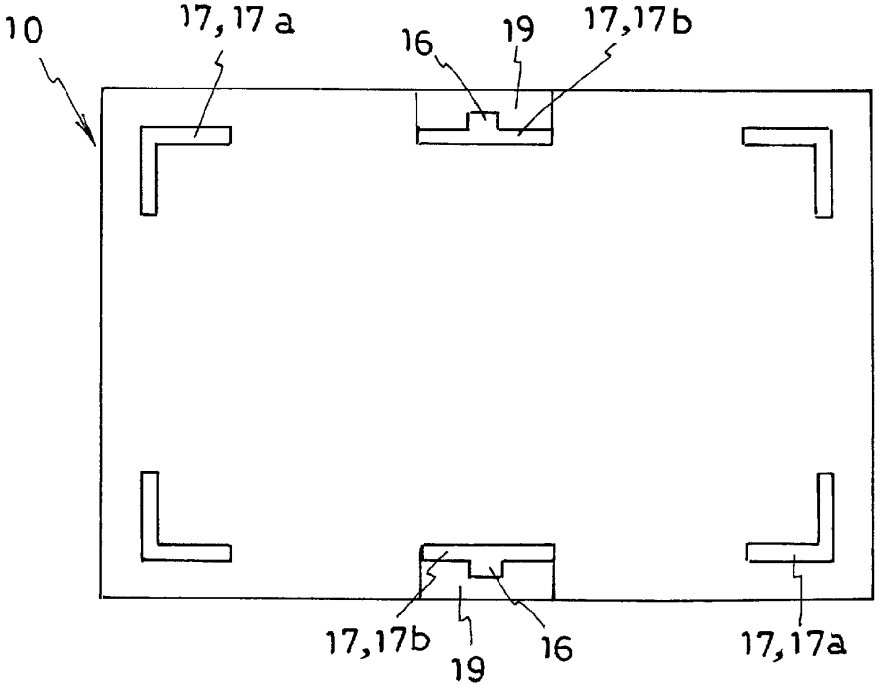
[図8]



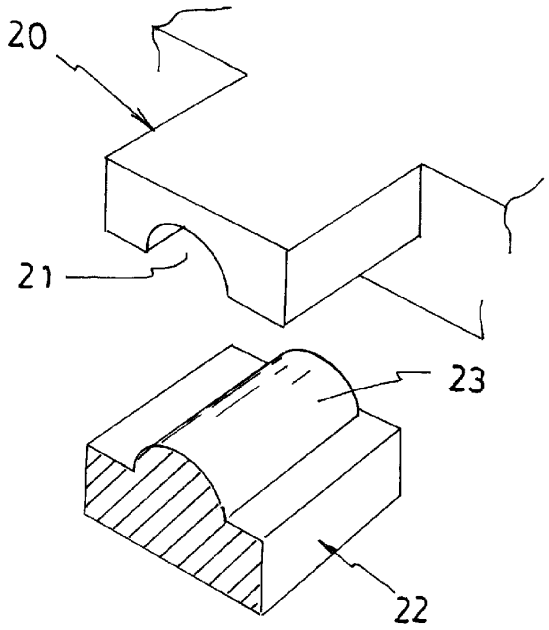
[図9]



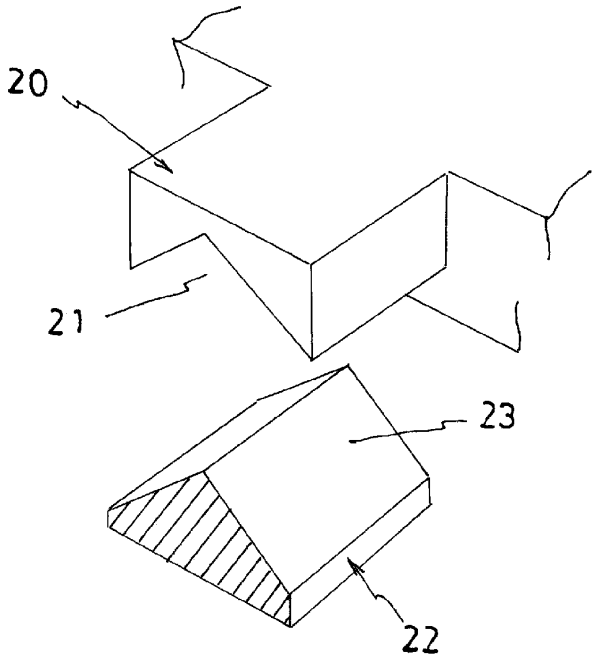
[図10]



[図11]



[図12]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2017/017322

A. CLASSIFICATION OF SUBJECT MATTER
B65D21/02(2006.01)i, *B65D21/036*(2006.01)i

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)
B65D21/02, B65D21/036

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2017
Kokai Jitsuyo Shinan Koho 1971-2017 Toroku Jitsuyo Shinan Koho 1994-2017

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 141008/1972(Laid-open No. 096229/1974) (Aiho Kagaku Kabushiki Kaisha), 20 August 1974 (20.08.1974), specification, page 1, line 18 to page 2, line 19; fig. 1 to 3 (Family: none)	1,2,5,6 3,4
A	JP 40-033175 Y1 (Sekisui Chemical Co., Ltd.), 19 November 1965 (19.11.1965), (Family: none)	3

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"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)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"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
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 June 2017 (13.06.17)	20 June 2017 (20.06.17)
Name and mailing address of the ISA/ Japan Patent Office 3-4-3,Kasumigaseki,Chiyoda-ku, Tokyo 100-8915,Japan	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2017/017322

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 07-136011 A (Gifu Plastic Industry Co., Ltd.), 30 May 1995 (30.05.1995), (Family: none)	3
A	JP 2009-029516 A (Ingenious Designs L.L.C.), 12 February 2009 (12.02.2009), & US 2009/0026158 A1 & EP 2018816 A1 & KR 10-2008-0061347 A & CN 101352283 A	4
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 027142/1975(Laid-open No. 108943/1976) (Katashi AOKI), 31 August 1976 (31.08.1976), (Family: none)	5

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

国際調査報告

国際出願番号　ＰＣＴ／ＪＰ２０１７／０１７３２２

Ａ．　発明の属する分野の分類（国際特許分類（ＩＰＣ））

Int.Cl.　B65D21/02(2006.01)i, B65D21/036(2006.01)i

Ｂ．　調査を行った分野

調査を行った最小限資料（国際特許分類（ＩＰＣ））

Int.Cl.　B65D21/02, B65D21/036

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報	１９２２－１９９６年
日本国公開実用新案公報	１９７１－２０１７年
日本国実用新案登録公報	１９９６－２０１７年
日本国登録実用新案公報	１９９４－２０１７年

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

Ｃ．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求項の番号
X	日本国実用新案登録出願47-141008号（日本国実用新案登録出願公開49-096229号）の願書に添付した明細書及び図面の内容を撮影したマイクロフィルム（アイホー化学株式会社）1974.08.20，明細書第１頁第１８行－第２頁第１９行，第１－３図（ファミリーなし）	１，２，５，６
A	JP 40-033175 Y1（積水化学工業株式会社）1965.11.19，（ファミリーなし）	３，４
A	JP 07-136011 A（岐阜プラスチック工業株式会社）1995.05.30，（ファミリーなし）	３
A	JP 07-136011 A（岐阜プラスチック工業株式会社）1995.05.30，（ファミリーなし）	３

☑　Ｃ欄の続きにも文献が列挙されている。

☐　パテントファミリーに関する別紙を参照。

＊　引用文献のカテゴリー
「Ａ」特に関連のある文献ではなく、一般的技術水準を示すもの
「Ｅ」国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの
「Ｌ」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献（理由を付す）
「Ｏ」口頭による開示、使用、展示等に言及する文献
「Ｐ」国際出願日前で、かつ優先権の主張の基礎となる出願の日の後に公表された文献
「Ｔ」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「Ｘ」特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Ｙ」特に関連のある文献であって、当該文献と他の１以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「＆」同一パテントファミリー文献

国際調査を完了した日 １３．０６．２０１７	国際調査報告の発送日 ２０．０６．２０１７
国際調査機関の名称及びあて先 日本国特許庁（ＩＳＡ／ＪＰ） 郵便番号１００－８９１５ 東京都千代田区霞が関三丁目４番３号	特許庁審査官（権限のある職員）　３Ｎ　３４８６ 新田　亮二 電話番号　０３－３５８１－１１０１　内線　３３６１

様式ＰＣＴ／ＩＳＡ／２１０（第２ページ）（２０１５年１月）

Ｃ（続き）．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び　部の箇所が関連するときは、その関連する箇所の表示	関連する請求項の番号
Ａ	JP 2009-029516 A (インジニアス　デザインズ　エルエルシー) 2009.02.12, & US 2009/0026158 A1 & EP 2018816 A1 & KR 10-2008-0061347 A & CN 101352283 A	4
Ａ	日本国実用新案登録出願50-027142号(日本国実用新案登録出願公開51-108943号)の願書に添付した明細書及び図面の内容を撮影したマイクロフィルム（青木固）1976.08.31,（ファミリーなし）	5

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IPR2024-01401

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

REINHOLD COHN AND PARTNERS
POB 13239
Tel Aviv 6113102
Israel

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	21 Jun 2020
Applicant's or agent's file reference 2701160HDM	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/IL2020/050433	International filing date *(day/month/year)* 12 Apr 2020
Applicant KETER PLASTIC LTD. et al	

1. [X] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   How? Directly to the International Bureau preferably through ePCT or on paper to:
   The International Bureau of WIPO, 34, chemin des Colombettes, 1211 Geneva 20, Switzerland
   (Facsimile No.: +41 22 338 82 70)

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within **22 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45*bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/ Israel Patent Office Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel Email address: pctoffice@justice.gov.il	Authorized officer KING Liat LiatKi@justice.gov.il Telephone No. 972-73-3927316

Form PCT/ISA/220 (revised January 2019)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
2701160HDM		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/IL2020/050433	12 Apr 2020	11 Apr 2019
Applicant		
KETER PLASTIC LTD. et al		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 7 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☒ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2020/050433

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2020/050433

A. CLASSIFICATION OF SUBJECT MATTER
IPC (20200101) H05K 7/14, A47B 96/02, A47B 57/42, A47B 57/40, F16M 13/02
CPC (20190101) H05K 7/14, A47B 96/028, A47B 57/425, A47B 57/408, F16M 13/02
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)
IPC (20200101) H05K 7/14, A47B 96/02, A47B 57/42, A47B 57/40, F16M 13/02
CPC (20190101) H05K 7/14, A47B 96/028, A47B 57/425, A47B 57/408, F16M 13/02

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 practicable, search terms used)
Databases consulted: Esp@cenet, Google Patents, Orbit

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2013146551 A1 ELECTROLUX HOME PROD INC. 13 Jun 2013 (2013/06/13) The whole document	1-26
A	US 2011174939 A1 PARTS EXPRESS INTERNATIONAL INC. 21 Jul 2013 (2013/07/21) The whole document	27,28
A	US 20090236482 A1 SS3 STORAGE SYSTEMS L.L.C 24 Sep 2009 (2009/09/24) The whole document	1-26
A	US 20180153312 A1 BUCK JAMES; GANNON GREG; POLVERE DENNIS; KITELEY ADAM P 07 Jun 2018 (2018/06/07) The whole document	1-26
A	US 5538213 A BROWN OFFICE SYSTEMS INC. 23 Jul 1996 (1996/07/23) The whole document	1-26

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"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)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"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
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 Jun 2020	21 Jun 2020

Name and mailing address of the ISA:	Authorized officer
Israel Patent Office Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel Email address: pctoffice@justice.gov.il	BITTON Oren Telephone No. 972-73-3927228

Form PCT/ISA/210 (second sheet) (revised January 2019)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2020/050433

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 0711098 D0 PROTREND CO LTD. 10 Dec 2008 (2008/12/10) The whole document	1-26
A	GB 2110076 A OSTLING BERNT; JOHANSSON PER OLOF 15 Jun 1983 (1983/06/15) The whole document	27,28
A	US 20130068903 A1 PEERLESS IND INC?[US]; PEERLESS IND INC. 21 Mar 2013 (2013/03/21) The whole document	27,28

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IL2020/050433

Patent document cited search report	Publication date	Patent family member(s)	Publication Date
US 2013146551 A1	13 Jun 2013	US 2013146551 A1	13 Jun 2013
		US 8881660 B2	11 Nov 2014
		AU 2012347415 A1	26 Jun 2014
		AU 2012347415 B2	18 May 2017
		BR 112014013850 A2	13 Jun 2017
		CN 104768423 A	08 Jul 2015
		CN 104768423 B	04 Aug 2017
		EP 2787865 A2	15 Oct 2014
		KR 20140108673 A	12 Sep 2014
		RU 2014127887 A	10 Feb 2016
		WO 2013086495 A2	13 Jun 2013
		WO 2013086495 A3	26 Mar 2015
US 2011174939 A1	21 Jul 2013	US 2011174939 A1	21 Jul 2011
		US 8235341 B2	07 Aug 2012
US 20090236482 A1	24 Sep 2009	NONE	
US 20180153312 A1	07 Jun 2018	NONE	
US 5538213 A	23 Jul 1996	US 5538213 A	23 Jul 1996
GB 0711098 D0	10 Dec 2008	GB 0711098 D0	18 Jul 2007
		GB 2449934 A	10 Dec 2008
		GB 2449934 B	31 Aug 2011
GB 2110076 A	15 Jun 1983	GB 2110076 A	15 Jun 1983
		GB 2110076 B	11 Sep 1985
		DE 3242544 A1	09 Jun 1983
		FR 2517240 A1	03 Jun 1983

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IPR2024-01401

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IL2020/050433

Patent document cited search report	Publication date	Patent family member(s)	Publication Date
		SE 8107083 A	28 May 1983
		SE 441254 B	23 Sep 1985
US 20130068903 A1	21 Mar 2013	NONE	

Form PCT/ISA/210 (patent family annex) (revised January 2019)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2020/050433

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet):

* This International Searching Authority found multiple inventions in this international application, as follows:

Invention/s 1	A coupling member comprises a locking portion, said side walls comprise a first locking lug with first locking recess, and a second locking lug with second locking recess, said first locking recess is deeper than said second locking recess; wherein the coupling member is further configured with an obstructing plunger, at which the plunger at least partially projects into the first locking recess, and an unlocked position at which the plunger is retracted into the space and out of the first locking recess.	Claim/s 1-26
Invention/s 2	A tolerance cancelation mechanism comprising a fastener member pivotally articulated at a pivot point to a portion of a wall coupling member, wherein the fastener member is pivotable between at least one locked position at which a locking portion of the arc surface extends beyond a proximal bearing wall portion, and an unlocked position at which the locking portion does not exceed said proximal wall portion.	Claim/s 27,28

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Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

REINHOLD COHN AND PARTNERS
POB 13239
Tel Aviv 6113102
Israel

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	21 Jun 2020
Applicant's or agent's file reference 2701160HDM	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IL2020/050433	12 Apr 2020	11 Apr 2019

International Patent Classification (IPC) or both national classification and IPC
IPC (20200101) H05K 7/14 A47B 96/02 A47B 57/42 A47B 57/40 F16M 13/02
CPC (20190101) H05K 7/14 A47B 96/028 A47B 57/425 A47B 57/408 F16M 13/02

Applicant
KETER PLASTIC LTD. et al

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [x] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized officer
Israel Patent Office Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel Email address: pctoffice@justice.gov.il	19 Jun 2020	BITTON Oren Telephone No. 972-73-3927228

Form PCT/ISA/237 (cover sheet) (revised January 2019)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IL2020/050433

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   [X] the international application in the language in which it was filed.

   [ ] a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. [ ] This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. [ ] forming part of the international application as filed:

      [ ] in the form of an Annex C/ST.25 text file.

      [ ] on paper or in the form of an image file.

   b. [ ] furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. [ ] furnished subsequent to the international filing date for the purposes of international search only:

      [ ] in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      [ ] on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. [ ] In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IL2020/050433

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:

   ☐ paid additional fees.

   ☐ paid additional fees under protest and, where applicable, the protest fee.

   ☐ paid additional fees under protest but the applicable protest fee was not paid.

   ☐ not paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with.

   ☒ not complied with for the following reasons:

   The following separate inventions have been identified:
   Invention 1: Claims Nos. 1-26 which refer to
   A coupling member comprises a locking portion, said side walls comprise a first locking lug with first locking recess, and a second locking lug with second locking recess, said first locking recess is deeper than said second locking recess; wherein the coupling member is further configured with an obstructing plunger, at which the plunger at least partially projects into the first locking recess, and an unlocked position at which the plunger is retracted into the space and out of the first locking recess.

   Invention 2: Claims Nos. 27-28 which refer to
   A tolerance cancelation mechanism comprising a fastener member pivotally articulated at a pivot point to a portion of a wall coupling member, wherein the fastener member is pivotable between at least one locked position at which a locking portion of the arc surface extends beyond a proximal bearing wall portion, and an unlocked position at which the locking portion does not exceed said proximal wall portion.

   The said inventions are not linked so as to form a single general inventive concept. Consequently, the present application does not meet the requirement of unity of invention, as there is no single inventive concept underlying the plurality of the claimed inventions in the present application, in the sense of Rule 13.1 PCT.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☒ all parts.

   ☐ the parts relating to claims Nos. _____

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IPR2024-01401

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IL2020/050433

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-28	YES
	Claims		NO
Inventive step (IS)	Claims	1-28	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

2. Citations and explanations:

1. Reference is made to the following documents:

D1: US2013146551 (A1) (ELECTROLUX HOME PROD INC) (13-06-2013)
D2: US2011174939 (A1) (PARTS EXPRESS INTERNATIONAL INC) (21-07-2011)

2. Allowable subject matter

The subject matter of claims 1-26 seems to meet the requirements of Articles 33(2) and 33(3) PCT with respect to novelty and inventive step.

Regarding claim 1, document D1 is considered as the closest prior art, D1 discloses (the references in parentheses applying in this document):
A coupling member having at a proximal side a utility portion (side support 34) attachable to a utility module (shelf assembly 20), and at a distal side mounting portion attachable to a wall mount (adjustment rails 204), said mounting portion comprises two parallelly disposed side walls (support arms 62) with a locking portion (hanger members 60) at a distal end thereof, configurable for snug arresting within a locking slot (apertures 206) of a wall mount; wherein the coupling member is further configured with an obstructing plunger (extended portion 78) slidingly displaceable within a space between the side walls, between a locked position.

However, neither D1 nor any other document cited in the search report teaches or suggests, alone or in combination, that the first locking lug with an associated first locking recess, and a second locking lug with an associated second locking recess, said first locking recess is deeper than said second locking recess

It is maintained that the first locking recess and the second locking recess providing axial support oriented in both forward and backward direction, and the coupling member is secure from axial displacement, prevented from articulation or detaching from the wall mount.

Therefore, the subject-matter of claims 1-26 meets the criteria set out in PCT Articles 33(2)-(3).
The subject matter of claims 27-28 seems to meet the requirements of Articles 33(2) and 33(3) PCT with respect to novelty and inventive step.

Regarding claim 27, document D2 is considered as the closest prior art, D2 discloses (the references in parentheses applying in this document):
A tolerance cancelation mechanism (mounting device 10) for a wall coupling member articulable to a wall mount, the wall coupling member (hanging bracket 44) comprising a tolerance cancelation mechanism comprising a fastener member (display bracket 42) pivotally articulated at a pivot point to a portion of a wall coupling member (fig.1).

However, neither D1 nor any other document cited in the search report teaches or suggests, alone or in combination, that the engaging arc surface at which a locking portion of the arc surface extends beyond a proximal bearing wall portion of the wall coupling member, and an unlocked position at which the locking portion does not exceed said proximal wall portion.
It is maintained that the tolerance cancelation mechanism, configured for eliminating or substantially reducing freedom degree between a wall mount and a designated coupling member.

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Therefore, the subject-matter of claims 27-28 meets the criteria set out in PCT Articles 33(2)-(3).

3. Industrial Applicability
The invention defined in the claims 1-28 is considered to meet the requirements of industrial applicability under Article 33(4) of the PCT.

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רשות הפטנטים
ISRAEL PATENT OFFICE
سلطة براءات الاختراع

משרד המשפטים
MINISTRY OF JUSTICE | وزارة العدل

Ministry of Justice **Israel Patent Office**	**Search Strategy** (ISA/IL)
PCT Application Number: PCT/IL2020/050433	
Examiner name: BITTON Oren	Completion Date: 7 June 2020

Search Details		
Search Description	**Status**	**Comments**
Search restricted by date	☒ None	
Documents cited in the application	☒ Considered ☐ Not applicable	
Applications/publications of the same applicant(s)/inventor(s)	☒ Searched	
Earlier search results	☐ Considered ☒ Not applicable	

AI-based patent search
☒ An AI-based search was carried out based on the full text (title, abstract, claims, description)

Database 1 (Patents):			
☐ Derwent Innovation	☒ Orbit (FamPat)	☐ PatBase	☐ STN – Patent Collection
☐ PATENTSCOPE	☐ Espacenet	☐ Google Patents	☐ Other:

Query:

16 (COUPLER+)/AB/DESC/ODES/TI/TX AND ((KETER)/PA/OPA OR ("KETER")/NPAN OR ("ABM ITALIA")/NPAN OR ("ADAMS MANUFACTURING")/NPAN OR ("ALLIBERT HOME FRANCE")/NPAN OR ("ALLIBERT SANITAIRE")/NPAN OR ("BATH DISTRIBUTION SANITAIRE FRANCE")/NPAN OR ("BATH FOURNITURES")/NPAN OR ("BATH HOLDING FRANCE")/NPAN OR ("BATH TOILETTES & ACCESSOIRES")/NPAN OR ("CURVER FRANCE")/NPAN OR ("CURVER GERMANY")/NPAN OR ("CURVER LUXEMBOURG")/NPAN OR ("CURVER PLASTICS IBERIA")/NPAN OR ("CURVER POLAND SP ZOO")/NPAN OR ("EUROPEAN PLASTIC GROUP FRANCE")/NPAN OR ("HOVAC BELGIUM")/NPAN OR ("JARDIN NETHERLANDS")/NPAN OR ("NEW BATH")/NPAN OR ("SPACE FRANCE")/NPAN OR ("SHANGHAI KETER POLYMER MATERIAL")/NPAN OR ("CURVER NETHERLANDS")/NPAN OR ("EOS INDUSTRIPLAST")/NPAN OR ("INDUSTRIAL MOULDINGS")/NPAN)

43 (COUPL+ OR HINGE+)/AB/DESC/ODES/TI/TX AND (A47B-057/408)/IPC/CPC

ILPO Guideline 50.22, Form Nu. 1, Edition Nu. 1

Israel Patent Office
Technology Park, Bldg. 5, Malcha, Jerusalem, 9695101, Israel
E-mail address: PCToffice@justice.gov.il

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Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
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Electronic Acknowledgement Receipt	
EFS ID:	40578665
Application Number:	16752441
International Application Number:	
Confirmation Number:	9540
Title of Invention:	Utility Assembly and Coupling Mechanism
First Named Inventor/Applicant Name:	Yaron Brunner
Customer Number:	142078
Filer:	Derek Howard Campbell/Andrea Dietzel
Filer Authorized By:	Derek Howard Campbell
Attorney Docket Number:	066749-2584
Receipt Date:	16-SEP-2020
Filing Date:	24-JAN-2020
Time Stamp:	17:25:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	066749-2584_IDS_Transmittal.pdf	81691 f8c063eb3016b4828ed2e78059b95e50b7a0486d	no	2
Warnings:					

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	066749-2584_SB08.pdf	107763 24df324960ad6b8ff9d78b41a3eb88adb9ba34e7	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	DE402018201520.pdf	308784 15a2360f403cc7d3619aa002d441790c4bc30d0c	no	5
Warnings:					
Information:					
4	Foreign Reference	GB2110076A.pdf	488837 c14542084a5b13d9b29e827b32ed7162b61a6145	no	9
Warnings:					
Information:					
5	Foreign Reference	GB2449934A.pdf	1129734 dd673d8bf0b35eeee6fe8953102676e51d8f7bbe2	no	47
Warnings:					
Information:					
6	Foreign Reference	JP2013022972A.pdf	748449 d20ebca5012f5f4e19c747ef87475fe72b062db0	no	17
Warnings:					
Information:					
7	Foreign Reference	JP2013022976A.pdf	386996 79aca07e1b0ab1620394cf2b2e58654292917227	no	10
Warnings:					
Information:					
8	Foreign Reference	WO2007121746A2.pdf	487273 c9872bea8817ed407e7a47b752af6ed9bc638f5e	no	14
Warnings:					
Information:					

9	Foreign Reference	WO2009140965A1.pdf	1487726 3c9eea8b341777301f1a38cca215509c40a70585	no	24
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Information:					
10	Foreign Reference	WO2011009480A1.pdf	1779568 07c304586959a472f4c09183c6c35f82ee8cfe36	no	44
Warnings:					
Information:					
11	Foreign Reference	WO2013026084A1.pdf	1048311 31492d75d2d055459322d0f5fb2df18ec6195aae	no	25
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Information:					
12	Foreign Reference	WO2014125488A2.pdf	4154605 878e4d46ee1039e1a59ad3430ee9ad9c70942066	no	72
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Information:					
13	Foreign Reference	WO2017212840A1.pdf	795657 707c3fb709c23f62cdb28eb7ce4cba0154298685	no	26
Warnings:					
Information:					
14	Other Reference-Patent/App/Search documents	ISR_WO.pdf	470447 7248be4a514ef6fd770aaa9d4d0ca3d651e199fc	no	14
Warnings:					
Information:					
		Total Files Size (in bytes):	13475841		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Milwaukee Electric Tool Corporation
Title:	Utility Assembly and Coupling Mechanism
Appl. No.:	16/752,441
Filing Date:	January 24, 2020
Examiner:	WEINERTH, GIDEON R
Art Unit:	3736
Confirmation Number:	9540

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Submitted herewith on Form PTO/SB/08 is a listing of the documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR § 1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR § 1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

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TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b)(3), before the mailing date of the first Office action on the merits.

RELEVANCE OF EACH DOCUMENT

The relevance of the foreign-language document(s) is shown in the figures of foreign-language documents, in the accompanying English language search report/office action from a related foreign application, and/or are described in the English-language abstract and/or machine translation submitted herewith, where available. An English non-machine translation of the foreign-language document is not readily available. However, the absence of such translation does not relieve the PTO from its duty to consider the submitted foreign language document (37 CFR §1.98 and MPEP §609).

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

Although Applicant believes that no fee is required for this Request, the Commissioner is hereby authorized to charge any additional fees which may be required for this Request to Deposit Account No. 18-0882.

Respectfully submitted,

Date September 16, 2020

By /Derek H. Campbell/

Reinhart Boerner Van Deuren s.c.
Customer Number: 142078
Telephone: (414) 298-8374
Facsimile: (414) 298-8097

Derek H. Campbell
Attorney for Applicant
Registration No. 70,608

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IPR2024-01401

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/752,441	01/24/2020	Yaron Brunner	066749-2584

CONFIRMATION NO. 9540

142078
Reinhart (Milwaukee Tool)
ATTN: TRAVIS MCDONNELL, PARALEGAL
1000 NORTH WATER STREET
SUITE 2100
MILWAUKEE, WI 53202

PUBLICATION NOTICE

OC000000118512098

Title: Utility Assembly and Coupling Mechanism

Publication No.US-2020-0223585-A1
Publication Date:07/16/2020

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: May 28, 2020

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	16/752,441
Filing Date	January 24, 2020
First Named Inventor	Yaron Brunner
Art Unit	3736
Examiner Name	John G. Pickett
Attorney Docket Number	066749-2584

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	D668,869	10-16-2012	Yamamoto et al.	
	A2	D815,831	04-24-2018	Tonelli	

UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*)	Filing Date of Cited Document MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	A3	KR 3008066040000	07-22-2015	Woojubon Co. LTD		
	A4	KR 3008496000000	04-15-2016	Hwang, Hyung Keun		
	A5	JP D1180963	08-04-2003	Name not in English		
	A6	JP D1395116	08-16-2010	Toyoharu Senda		
	A7	JP D1455321	11-12-2012	Name not in English		
	A8	JP D1625407	02-25-2019	Name not in English		
	A9	TW 206875	05-21-1993	Name not in English		
	A10	TW D192092	08-11-2018	Name not in English		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]

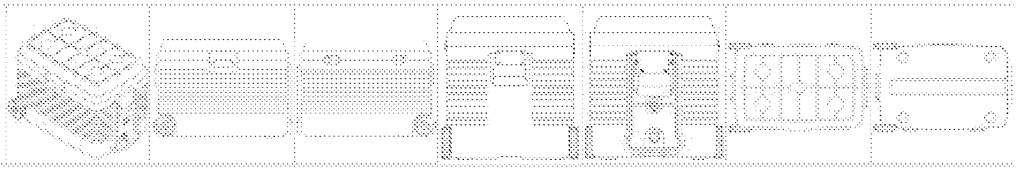
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

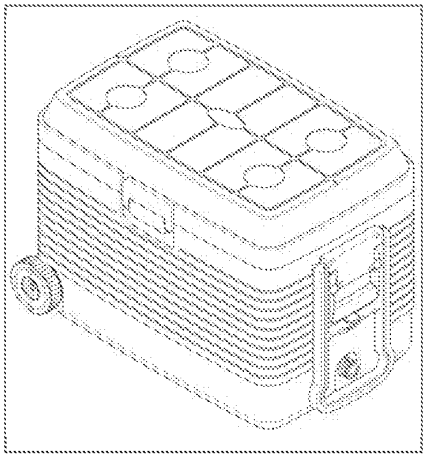
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All Images View

[M001] 

(21) Application No(Date)	3020140037803(2014.07.31)
(71) Applicant	WOOJUBON CO.,LTD
(11) Publication No(Date)	(2015.07.22) Full-doc Down
(65) Open Pub. No(Date)	
(11) Registration No(Date)	3008066040000(2015.07.14)
(30) Priority No.(Date)	
Legal Status	Registered
Examination Status(Date)	Decision to grant (General)(2015.06.04)
Retroacted Section(Date)	(2014.07.31)
Trial Info	
Original Application No.	
Related Application No.	
Design Type	Basic Public
(52) Design Class.	C53251
(51) Locarno Class.	07-07

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(45) 공고일자 2015년07월22일
(11) 등록번호 30-0806604
(24) 등록일자 2015년07월14일

(52) 분류 C5-3251
(51) 국제분류 07-07
(21) 출원번호 30-2014-0037803
(22) 출원일자 2014년07월31일

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(74) 대리인
조의제

담당심사관 : 마태성

(54) 명칭 **아이스박스**

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IPR2024-01401

디자인도면

물품류

제7류

디자인의 대상이 되는 물품

아이스박스

디자인의 설명

1. 재질은 금속재 및 합성수지재임.

2. [도면 1.1]은 디자인의 전체적인 형상을 표현한 것임.

3. [도면 1.2]은 디자인의 정면부분을 표현한 것이고, [도면 1.3]은 디자인의 배면부분을 표현함 것임.

4. [도면 1.4]은 디자인의 좌측면부분을 표현한 것이고, [도면 1.5] 디자인의 우측면을 표현한 것임.

5. [도면 1.6]은 디자인의 평면부분을 표현한 것이고, [도면 1.7]은 디자인의 저면부분을 표현한 것임.

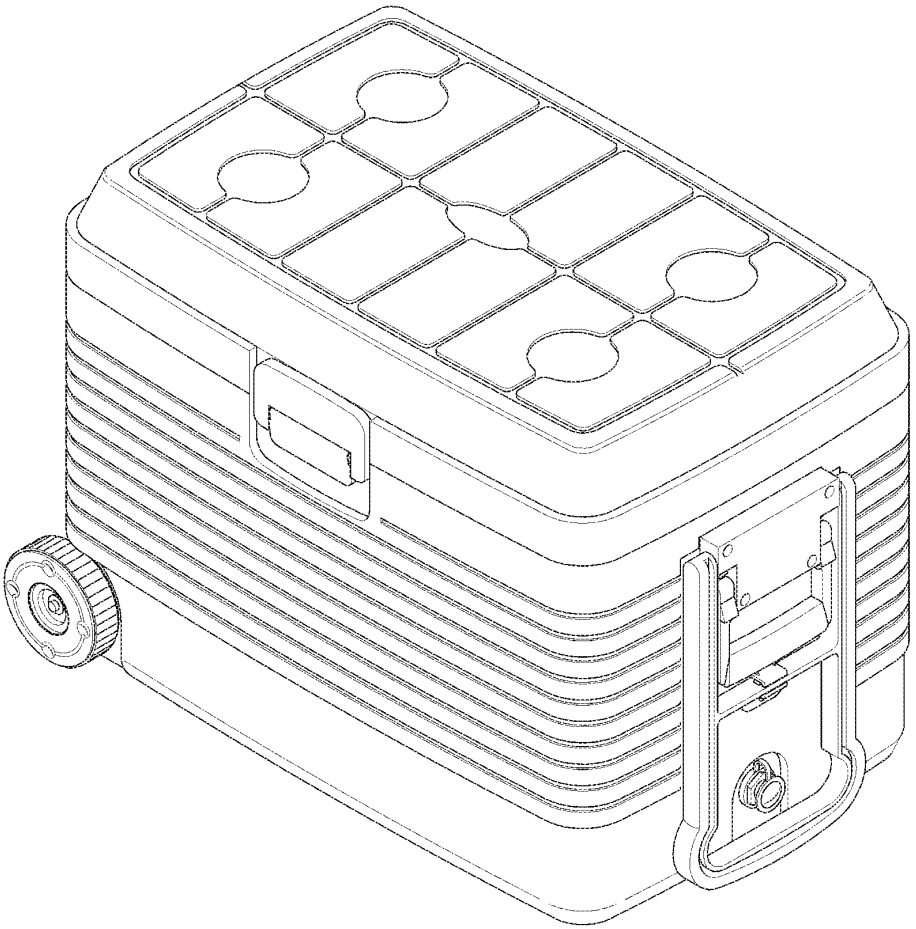
6. 본 디자인은 음식물을 녹지않게 보관하는 아이스박스로 우측면의 손잡이와 좌측의 바퀴가 구비되어 이동이 용이하게 되어 있음.

디자인 창작 내용의 요점

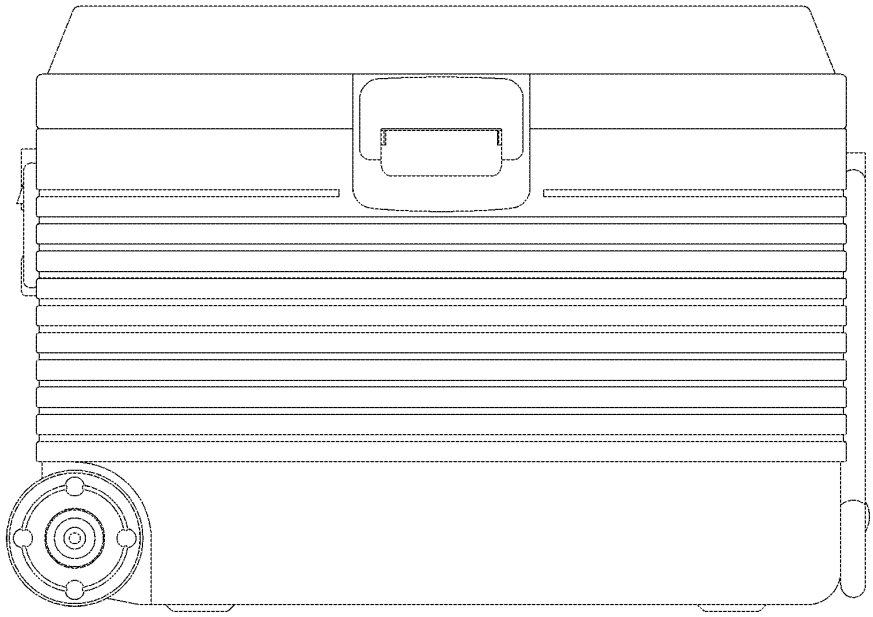
본원 '아이스박스' 디자인의 형상 및 모양의 결합을 디자인의 창작내용의 요점으로 함.

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2003 - Page 842
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

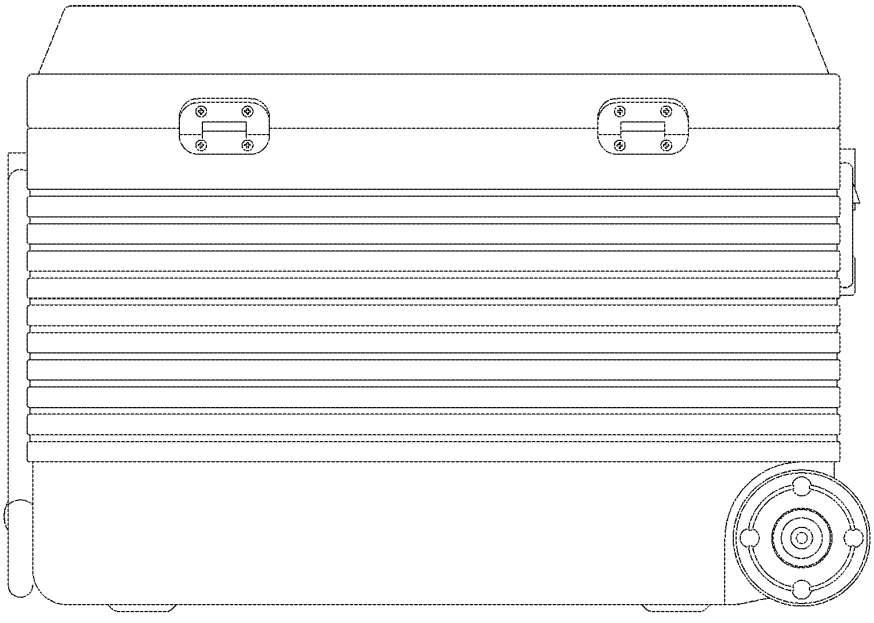
도면 1.1



도면 1.2

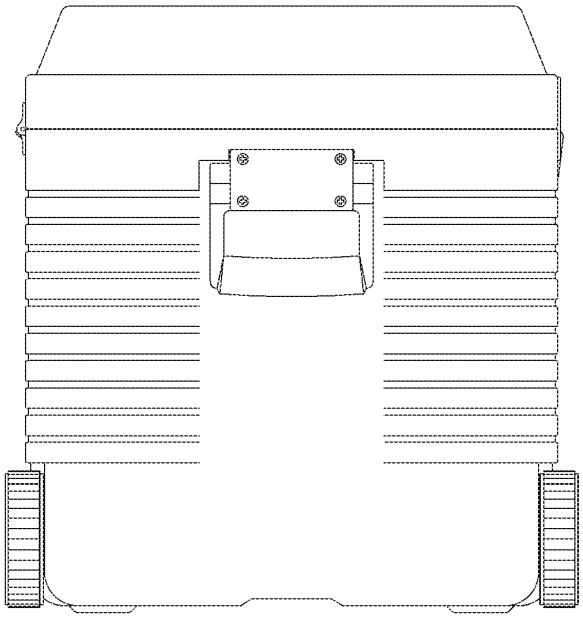


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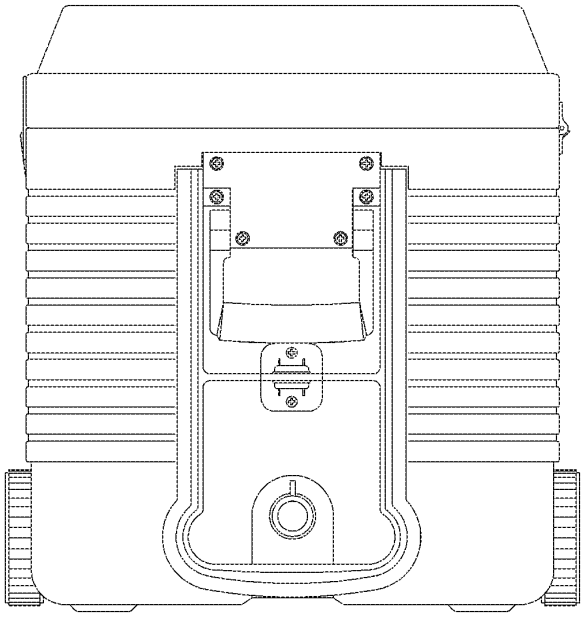


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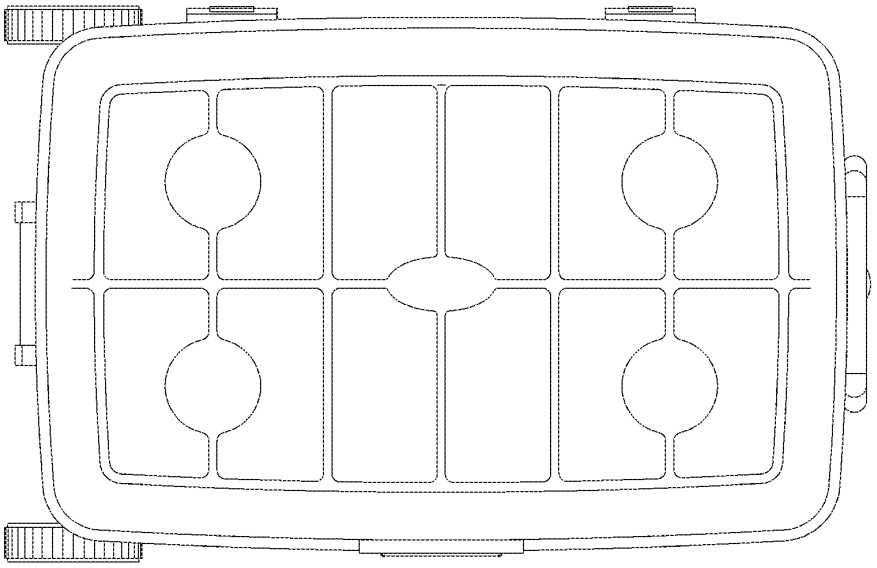
도면 1.4



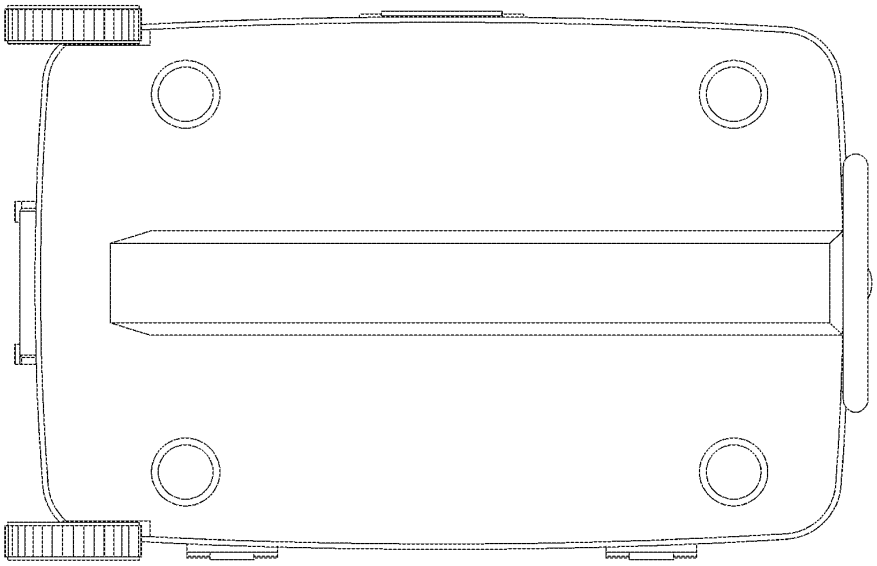
도면 1.5



도면 1.6

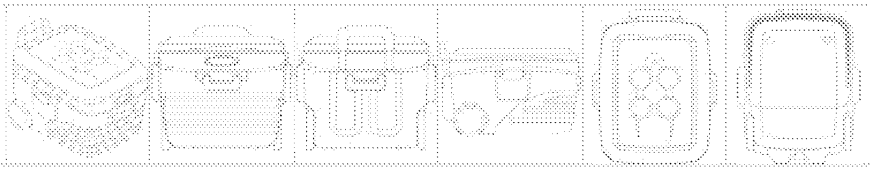


도면 1.7



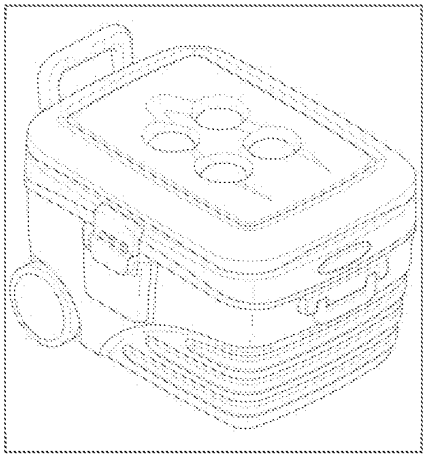
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Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

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[M001] 

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Original Application No.	
Related Application No.	
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(74) 대리인
오종환

담당심사관 : 마태성

(54) 명칭 아이스박스

디자인도면

물품류

제7류

디자인의 대상이 되는 물품

아이스박스

디자인의 설명

1. 재질은 합성수지 및 금속임.

2. 본원 아이스박스 디자인은, 레저 활동시 야외에서 음식을 조리하기 위한 음식물 및 각종 가재도구를 보관하는 용도로 사용하는 것으로, 설정량 이상으로 음식물을 저장할 경우 참고도면 1.1과 같이 저장부의 체적이 가변되는 것임.

3. [도면 1.1]은 본원디자인의 전체적인 형태를 표현한 것임.

4. [도면 1.2]는 본원디자인의 정면부분을 표현한 것임.

5. [도면 1.3]은 본원디자인의 배면부분을 표현한 것임.

6. [도면 1.4]는 본원디자인의 좌측부분을 표현한 것이며, 우측부분은 좌측부분과 대칭임.

7. [도면 1.5]는 본원디자인의 평면부분을 표현한 것임.

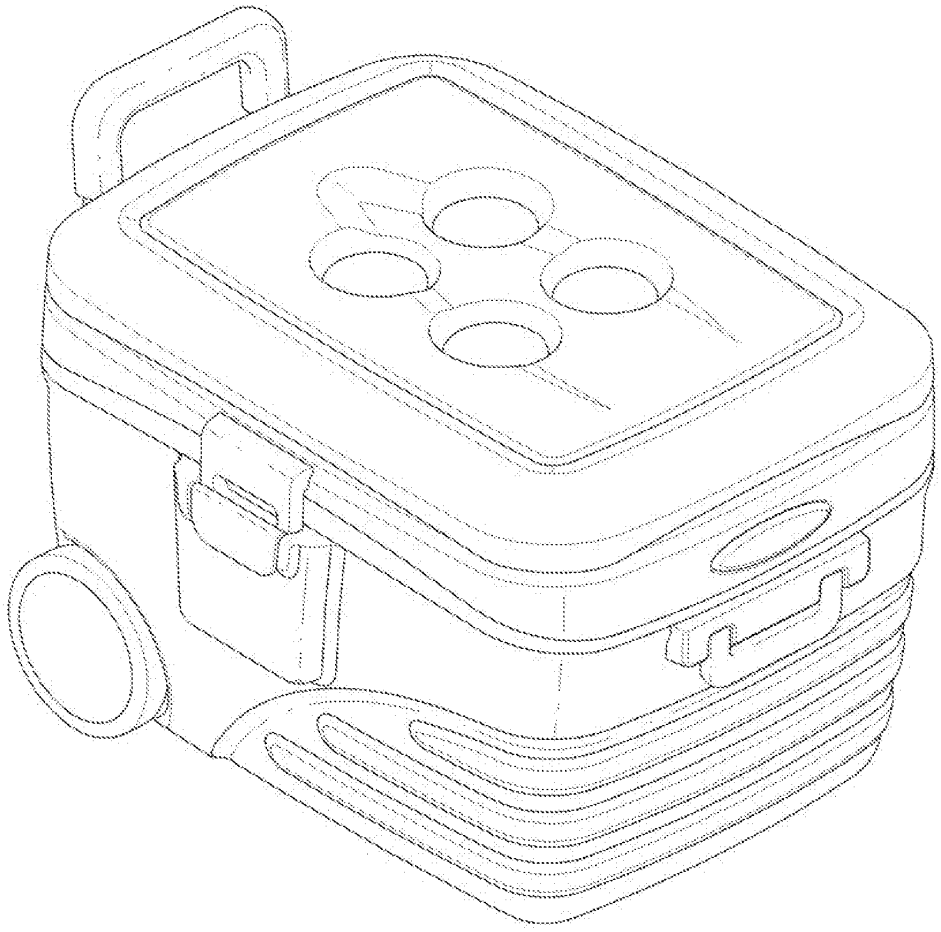
8. [도면 1.6]은 본원디자인의 저면부분을 표현한 것임.

9. [참고도면 1.1]은 사용상태도로서, 본원디자인의 커버가 열린상태로 저장부 체적이 가변된 상태를 표현한 것임.

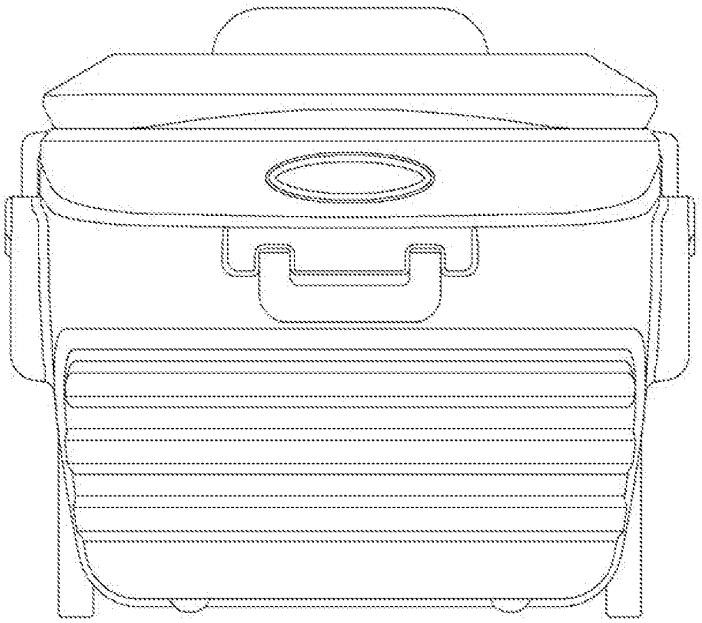
디자인 창작 내용의 요점

본원 '아이스박스'의 형상과 모양의 결합을 디자인 창작내용의 요점으로 함.

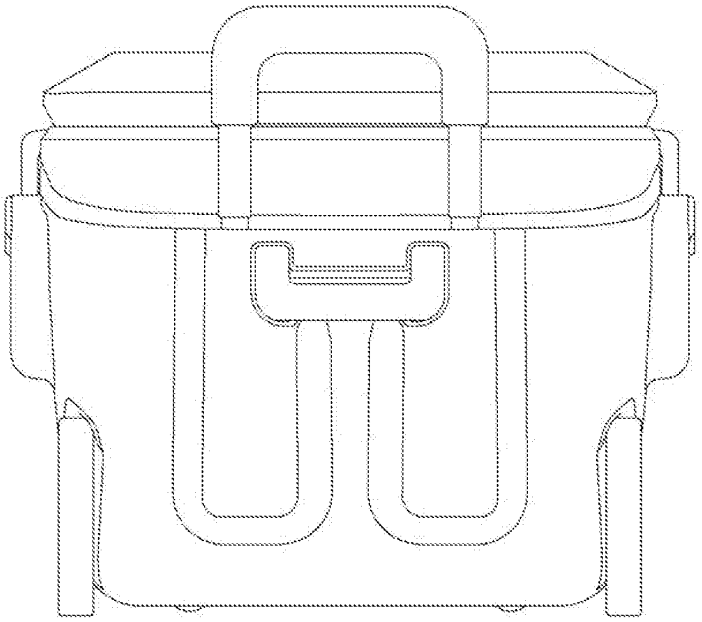
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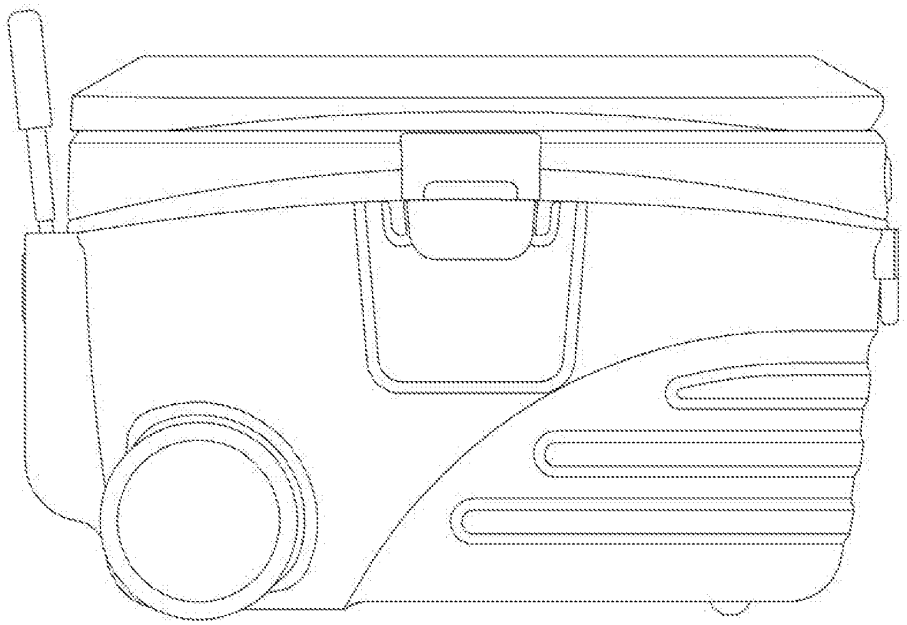
도면 1.2



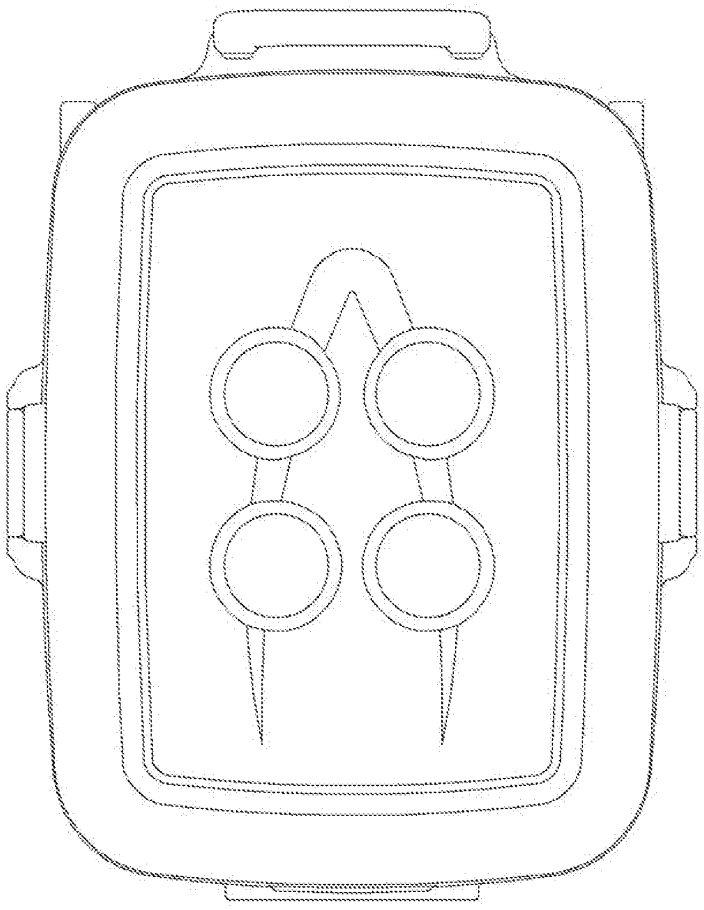
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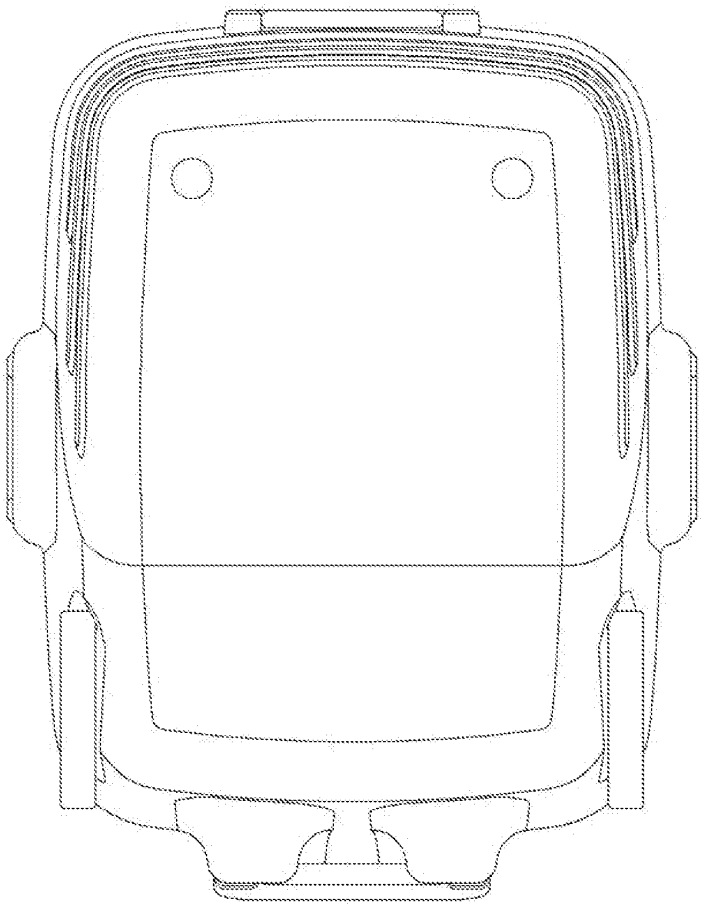
도면 1.4



도면 1.5



도면 1.6

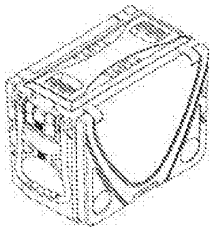


참고도면1.1

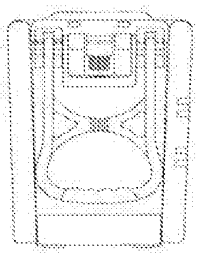
사용상태도



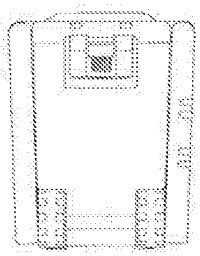
（１９）【発行国・地域】日本国特許庁（ＪＰ）
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（１１）【登録番号】意匠登録第１１８０９６３号（Ｄ１１８０９６３）
（２４）【登録日】平成１５年６月１３日（２００３．６．１３）
（５４）【意匠に係る物品】テーブル付きクーラーボックス
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（５１）【国際意匠分類（参考）】０７－０１、０７－０７、０７－９９
（２１）【出願番号】意願２００２－２６７６４（Ｄ２００２－２６７６４）
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（７２）【創作者】
【氏名】李　文　嵩
【住所又は居所】台湾台中市工業區一路６０之２號８樓之２
（７３）【意匠権者】
【識別番号】５００１７７５８１
【氏名又は名称】立群企業有限公司
【住所又は居所】台湾台中市工業區一路６０之２號８樓之２
（７４）【代理人】
【識別番号】１００００７０１５０
【弁理士】
【氏名又は名称】伊東　忠彦
（７４）【代理人】
【識別番号】１００００９１２１４
【弁理士】
【氏名又は名称】大貫　進介
（７４）【代理人】
【識別番号】１００１０７７６６
【弁理士】
【氏名又は名称】伊東　忠重
【審査官】原田　雅美
【図面】
【斜視図】



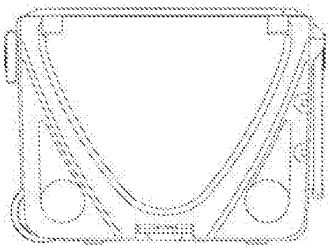
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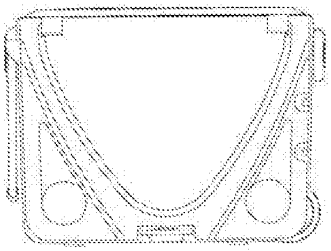
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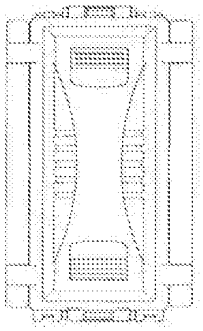
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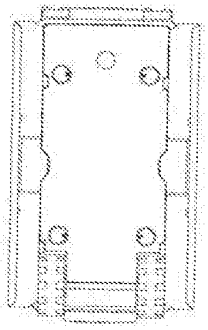
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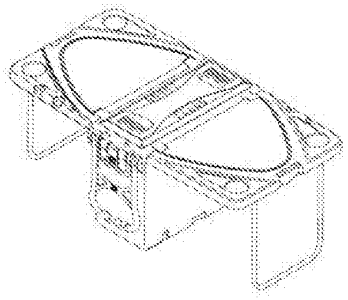
【平面図】



【底面図】



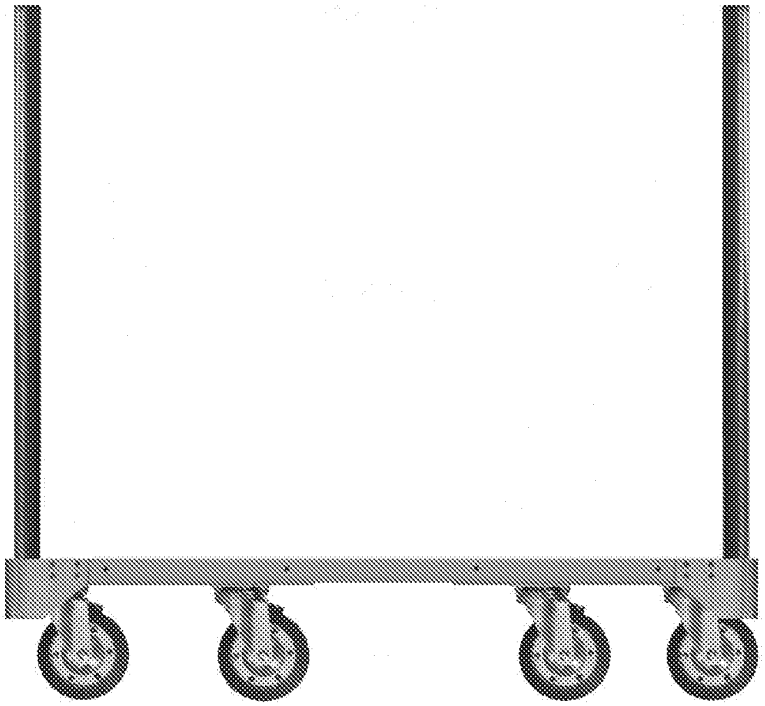
【可動式プレートを広げた状態を表す参考図】



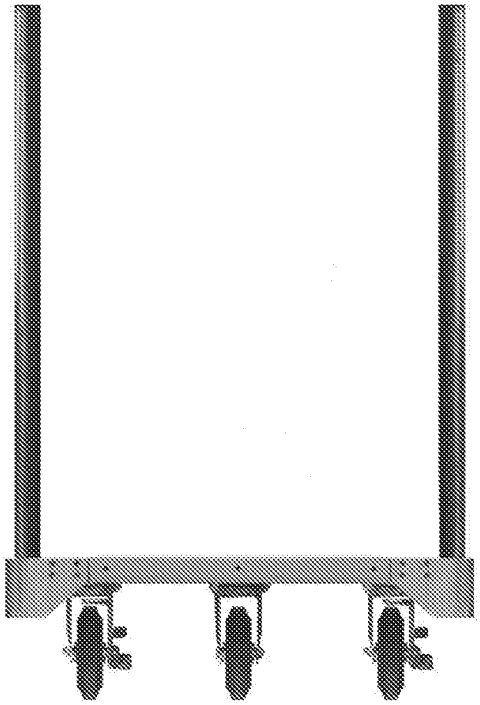
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（５４）【意匠に係る物品】運搬台車
【本意匠の意匠登録番号】意匠登録第１３７３７５７号（Ｄ１３７３７５７）
【本意匠に係る他の関連意匠の意匠登録番号】意匠登録第１３７４０４９号（Ｄ１３７４０４９）
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（５１）【国際意匠分類（参考）】１２－０１、１２－０２、１２－０８、１２－１１、２１－０３
（２１）【出願番号】意願２００８－１４８４７（Ｄ２００８－１４８４７）
（２２）【出願日】平成２０年６月１１日（２００８．６．１１）
（７２）【創作者】
【氏名】千田　豊治
【住所又は居所】東京都渋谷区恵比寿１丁目８番５－７号　ジーオーピー株式会社内
（７３）【意匠権者】
【識別番号】５９７１４４４８４
【氏名又は名称】ジーオーピー株式会社
【住所又は居所】東京都渋谷区恵比寿１－８－５東洋ビル７Ａ
（７４）【代理人】
【識別番号】１００７８６９５
【弁理士】
【氏名又は名称】久保　司
【審査官】本多　誠一
（５６）【参考文献】意登１３７３７５７　意登１３７４０４９
（５５）【意匠に係る物品の説明】本願意匠に係る物品は荷物を載置して手押し等で運搬する運搬台車に関するもので、フレームを格子状に区画し、この区画を選択してキャスターの天板を取り付けてキャスターを設けるが、キャスターは平面長方形の縦長台車本体に対して縦に３列２個ずつ計６輪のキャスターを設けた。この６輪のキャスターの配置は中央の列が縦長台車本体の前後端近くに位置し、左右の列が比較的中央部に間隔を存して位置することにより、縦長台車本体の中央横ラインを対称軸として、外向き先端尖りの三角形配置に対称的になるようにした。また、台車本体の四隅のコーナー部に手押し棒が挿着される挿入孔を形成し、この挿入孔に手押し棒を着脱自在に立設した。
【図面】
【斜視図】



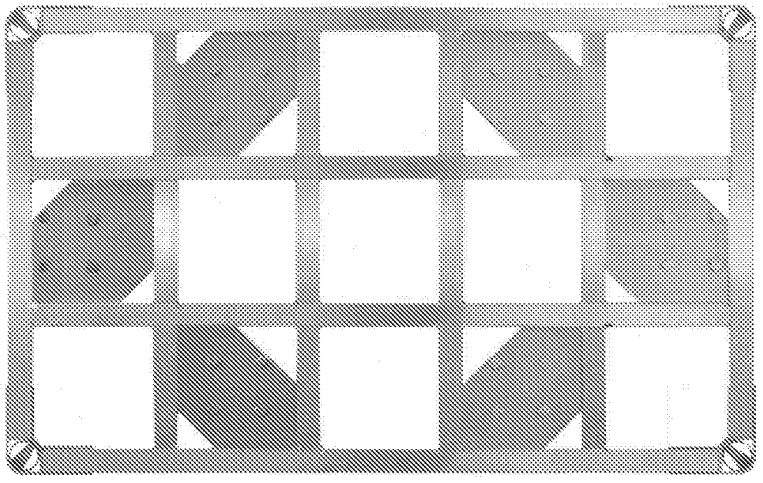
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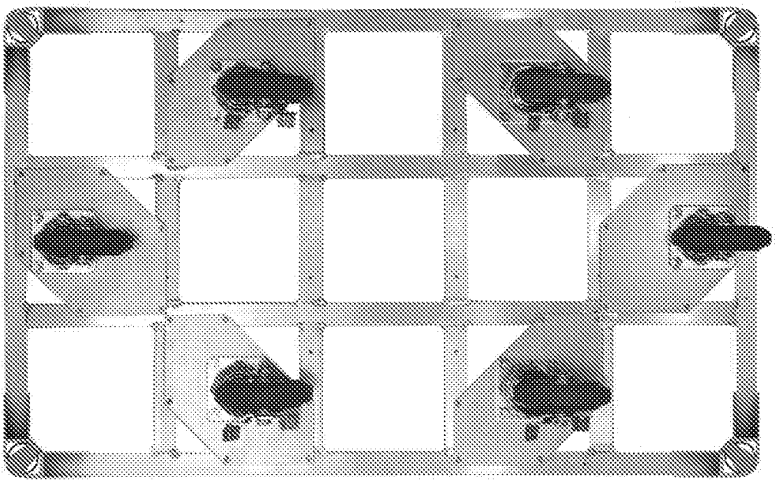
【右側面図】



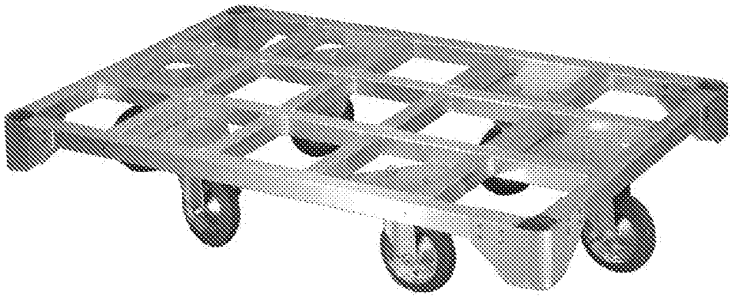
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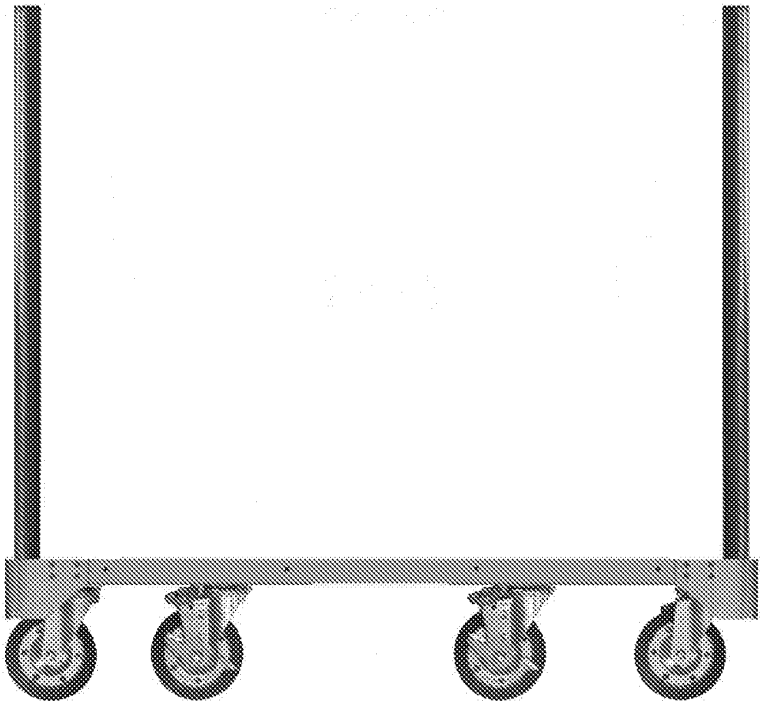
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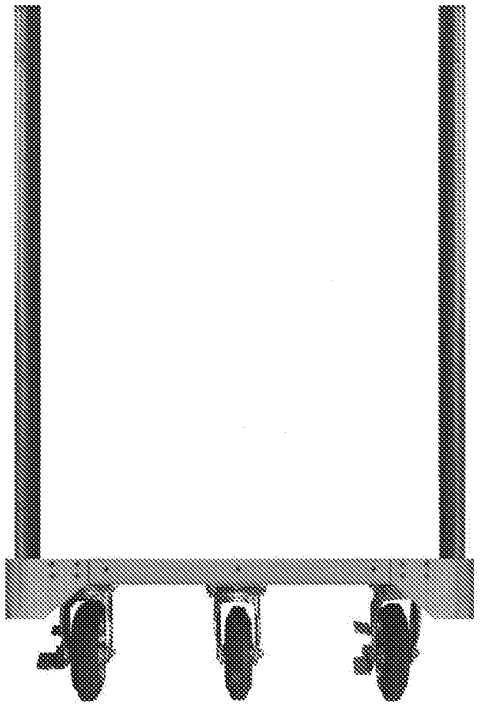
【手押し棒を外した状態の参考図】



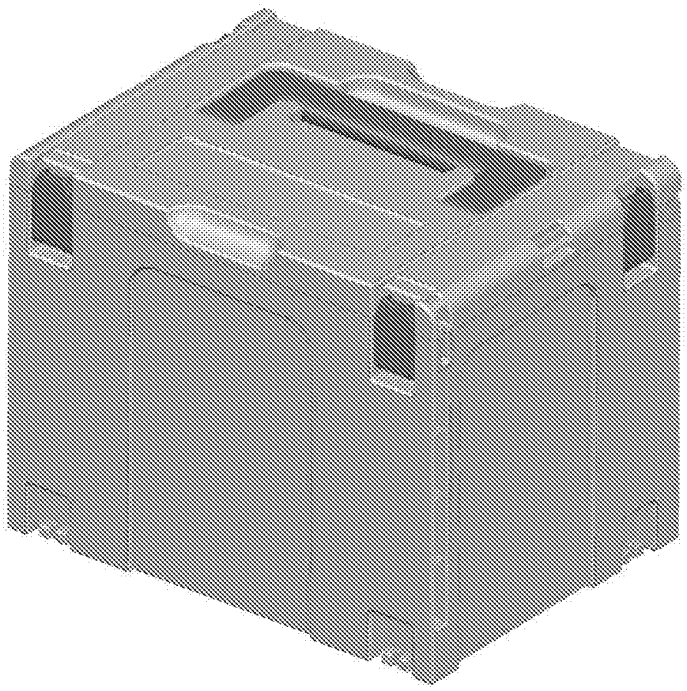
【背面図】



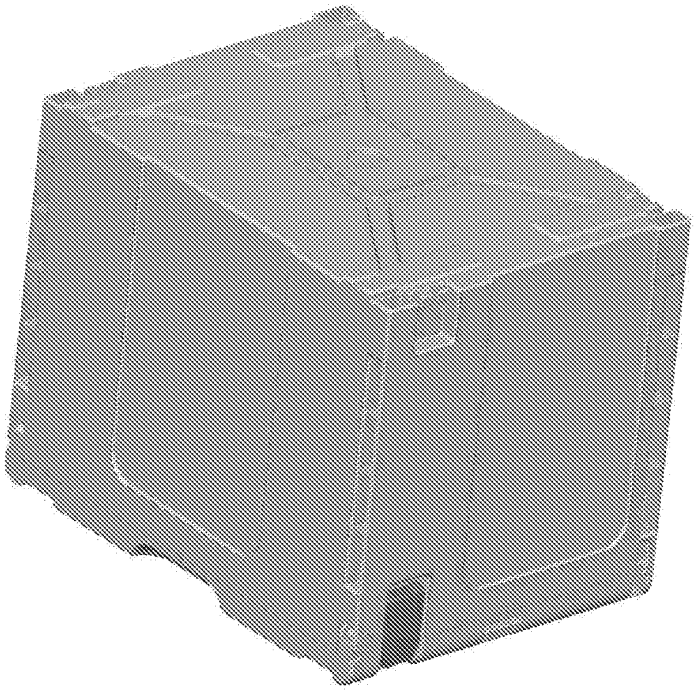
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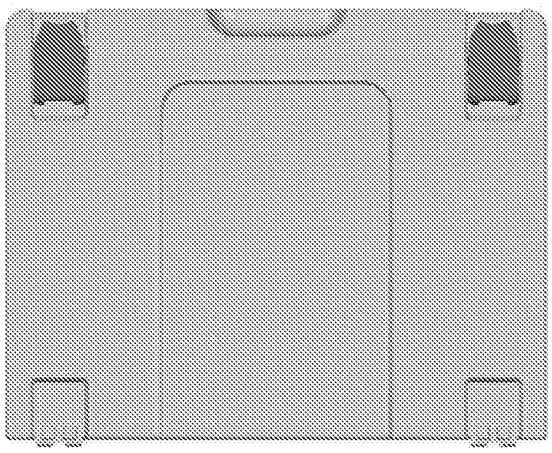
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（４５）【発行日】平成２４年１１月１２日（２０１２．１１．１２）
（１２）【公報種別】意匠公報（Ｓ）
（１１）【登録番号】意匠登録第１４５５３２１号（Ｄ１４５５３２１）
（２４）【登録日】平成２４年１０月１２日（２０１２．１０．１２）
（５４）【意匠に係る物品】工具用ケース
【本意匠の意匠登録番号】意匠登録第１４３４６０３号（Ｄ１４３４６０３）
【本意匠に係る他の関連意匠の意匠登録番号】意匠登録第１４３４８３０号（Ｄ１４３４８３０）、意匠登録第１４３４８３１号（Ｄ１４３４８３１）、意匠登録第１４３４８３２号（Ｄ１４３４８３２）、意匠登録第１４５５３１８号（Ｄ１４５５３１８）、意匠登録第１４５５３１９号（Ｄ１４５５３１９）、意匠登録第１４５５３２０号（Ｄ１４５５３２０）
（５２）【意匠分類】Ｋ１－５３
（５１）【国際意匠分類（参考）】０３－０１，０８－０５
（２１）【出願番号】意願２０１２－３１４２（Ｄ２０１２－３１４２）
（２２）【出願日】平成２４年２月１５日（２０１２．２．１５）
（７２）【創作者】
【氏名】古河　清澄
【住所又は居所】愛知県安城市住吉町３丁目１１番８号　株式会社マキタ内
（７２）【創作者】
【氏名】山本　裕司
【住所又は居所】愛知県安城市住吉町３丁目１１番８号　株式会社マキタ内
（７３）【意匠権者】
【識別番号】０００１３７２９２
【氏名又は名称】株式会社マキタ
【氏名又は名称原語表記】ＭＡＫＩＴＡ　ＣＯＲＰＯＲＡＴＩＯＮ
【住所又は居所】愛知県安城市住吉町３丁目１１番８号
【住所又は居所原語表記】３－１１－８　Ｓｕｍｉｙｏｓｈｉ－ｃｈｏ，Ａｎｊｏ－ｓｈｉ，Ａｉｃｈｉ　４４６－８５０２　ＪＡＰＡＮ
【審査官】生亀　照恵
（５５）【意匠の説明】添付図面中に表された濃淡は、いずれも立体表面の形状を特定するためのものである。
【図面】
【平面側からの斜視図】



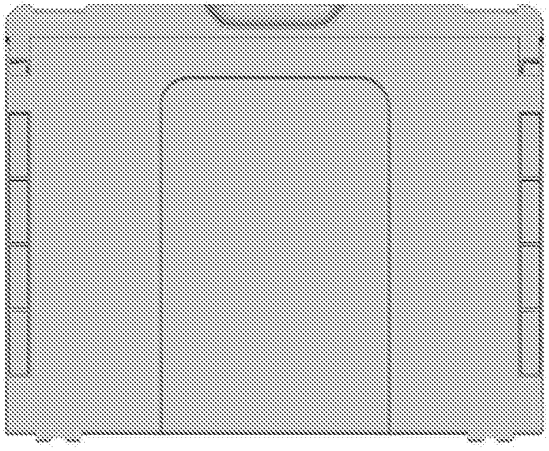
【底面側からの斜視図】



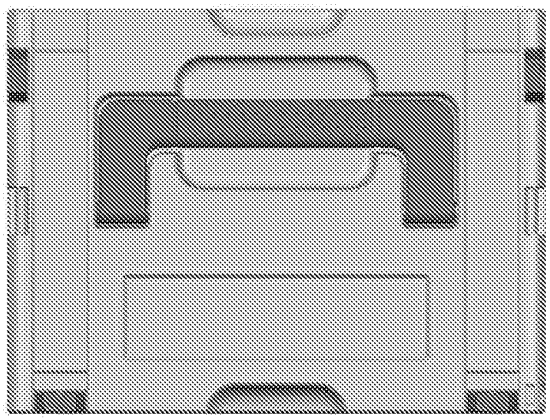
【正面図】



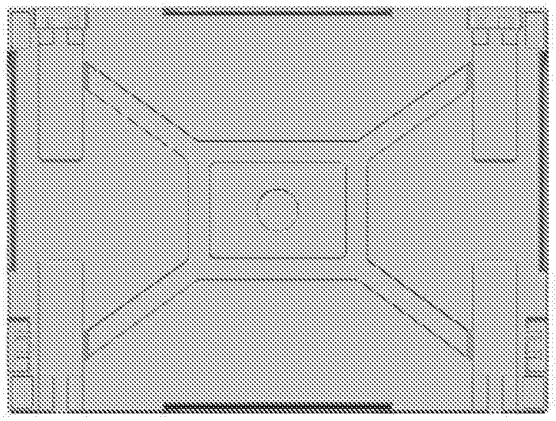
【背面図】



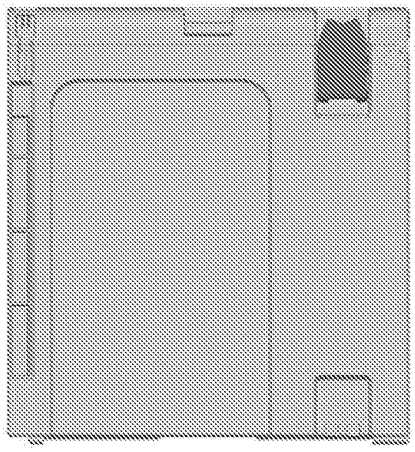
【平面図】



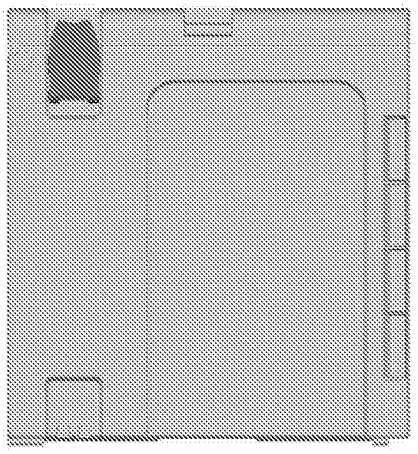
【底面図】



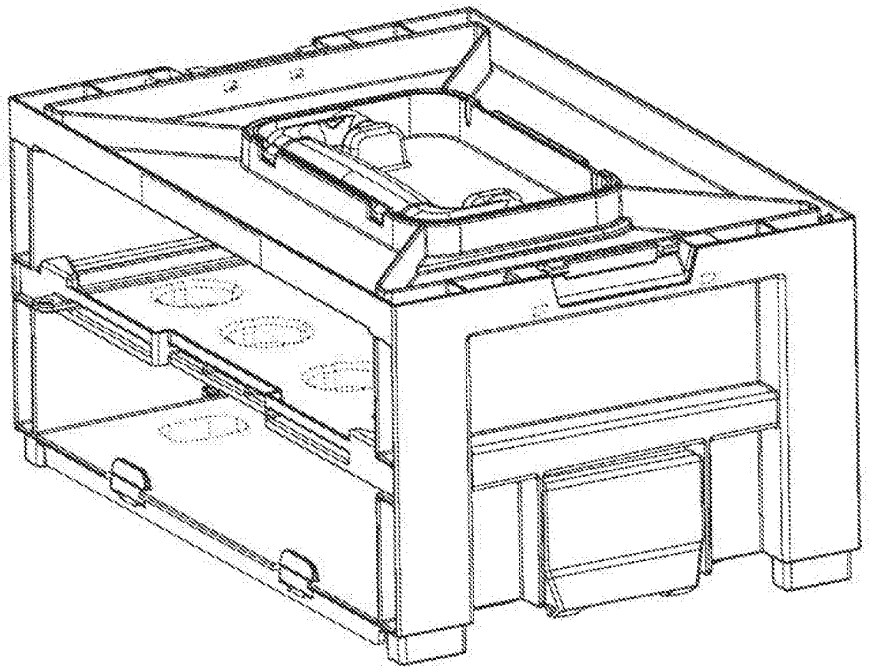
【右側面図】



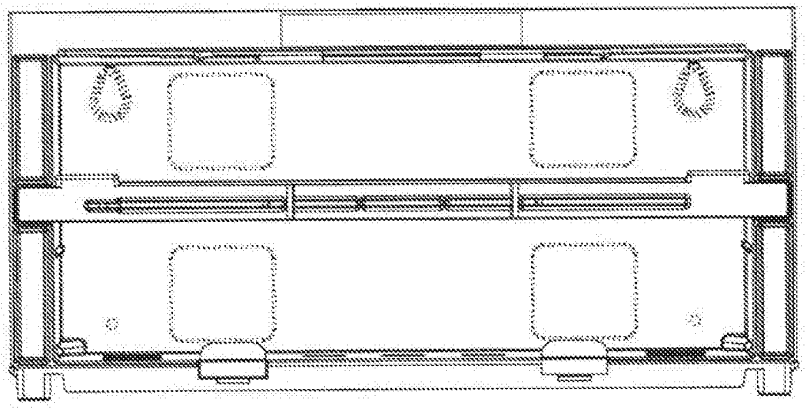
【左側面図】



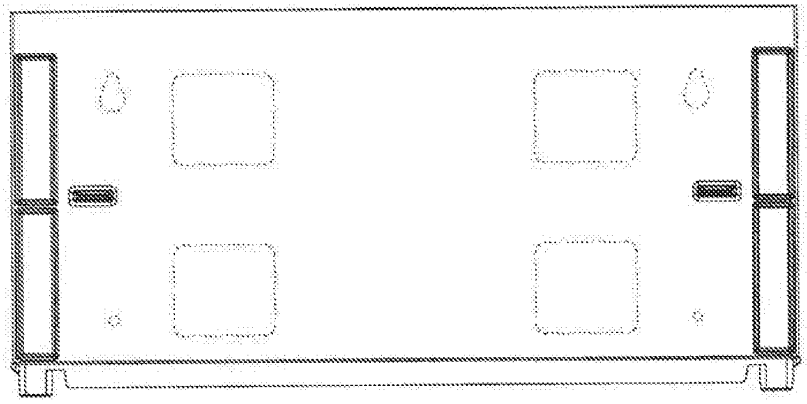
（１９）【発行国・地域】日本国特許庁（ＪＰ）
（４５）【発行日】平成３１年２月２５日（２０１９．２．２５）
（１２）【公報種別】意匠公報（Ｓ）
（１１）【登録番号】意匠登録第１６２５４０７号（Ｄ１６２５４０７）
（２４）【登録日】平成３１年２月１日（２０１９．２．１）
（５４）【意匠に係る物品】工具箱
【部分意匠】
（５２）【意匠分類】Ｋ１－５３
（５１）【国際意匠分類】Ｌｏｃ（１１）Ｃｌ．３－０１
（２１）【出願番号】意願２０１８－１８８３４（Ｄ２０１８－１８８３４）
（２２）【出願日】平成３０年８月３０日（２０１８．８．３０）
（３１）【優先権主張番号】００４７３６１４８－０００１
（３２）【優先日】平成３０年３月２日（２０１８．３．２）
（３３）【優先権主張国・地域又は機関】欧州連合知的財産庁（ＥＭ）
（７２）【創作者】
【氏名】ピーター　トーマス　ダンバーグ
【住所又は居所】デンマーク　４８００　ニュークビン　ファルスター　トフテヴェジェ　９
（７３）【意匠権者】
【識別番号】５１７００６５５５
【氏名又は名称】ラーコ　エー／エス
【住所又は居所】デンマーク　ＤＫ－４８００　ニュークビン　エフ　オー　トレビー　プラタンヴェジュ　１９
（７４）【代理人】
【識別番号】１００１１２７３７
【弁理士】
【氏名又は名称】藤田　考晴
（７４）【代理人】
【識別番号】１００１３６１６８
【弁理士】
【氏名又は名称】川上　美紀
（７４）【代理人】
【識別番号】１００１９６１１７
【弁理士】
【氏名又は名称】河合　利恵
【審査官】八重田　季江
（５５）【意匠の説明】実線で表した部分が、部分意匠として意匠登録を受けようとする部分である。
【図面】
【斜視図】



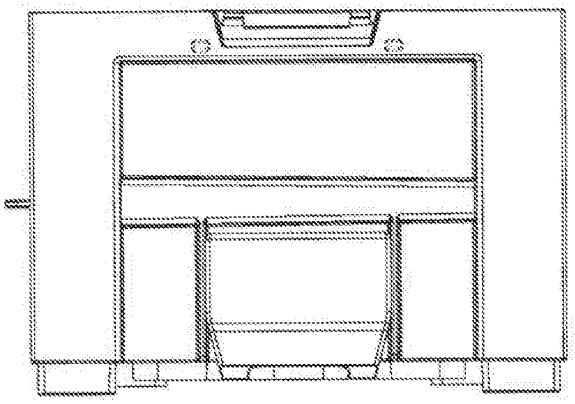
【正面図】



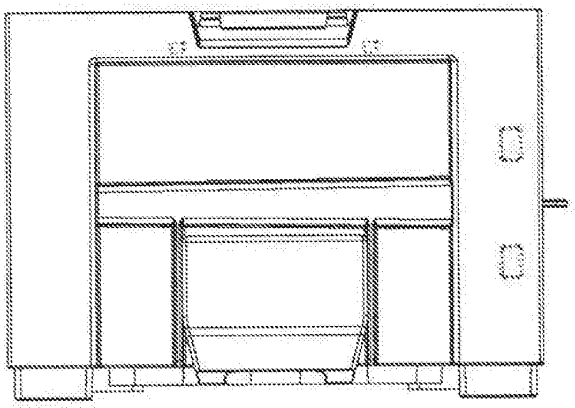
【背面図】



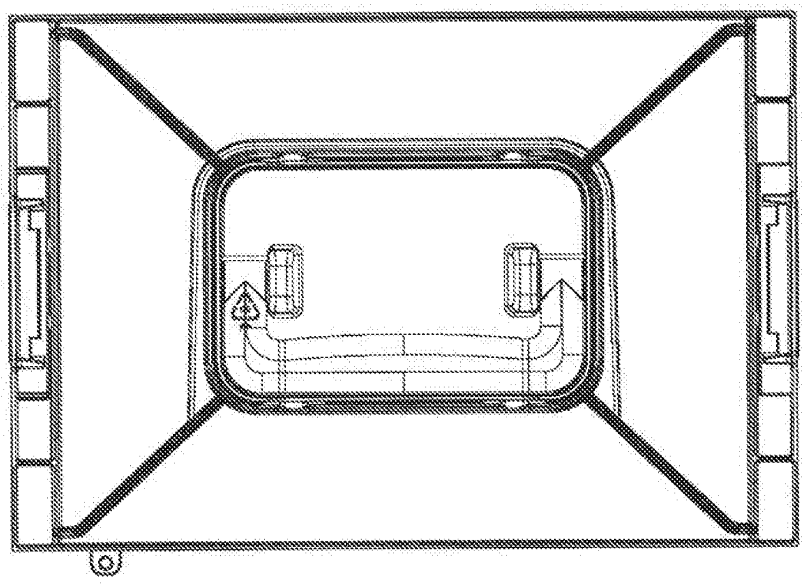
【右側面図】



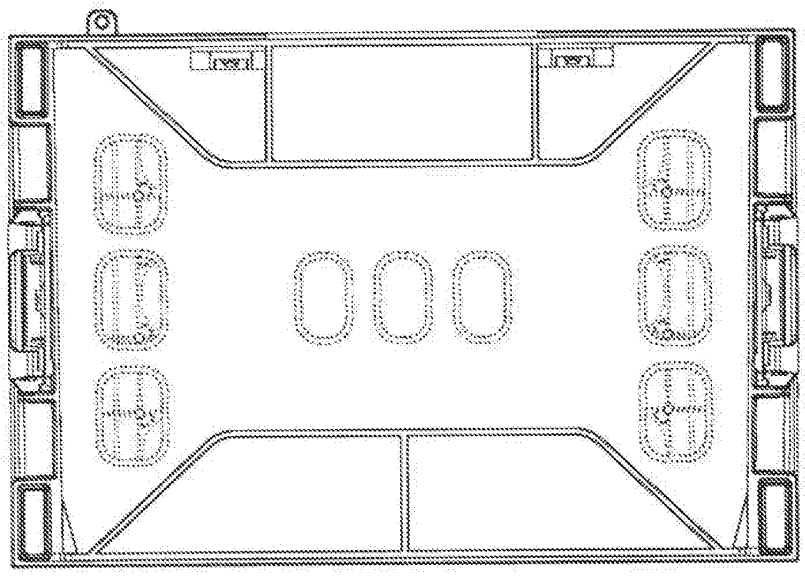
【左側面図】



【平面図】



【底面図】



（５６）【参考文献】意登１３０７８２７

206875

申請日期	82.1.5
案號	82300111
類別	30/021

（以上各欄由本局填註）

公告本

以

新式樣專利圖說

一、創作名稱	中文	工具箱
	英文	
二、創作人	姓名	陳昆鎮
	籍貫（國籍）	中華民國
	住、居所	台中縣大甲鎮中山路一段609巷6號
三、申請人	姓名（名稱）	陳昆鎮
	籍貫（國籍）	中華民國
	住、居所（事務所）	台中縣大甲鎮中山路一段609巷6號
	代表人姓名	

（請先閱讀申請書之注意事項再填寫本頁各欄）

經濟部中央標準局員工消費合作社印製

本規格尺度適用中國國家標準(CNS)甲4規格(210×297公釐)

206875

四、創作說明

本創作係提供一種工具箱之新式樣，尤指一種在整體造型上予人設計清新，具有造型比例統一調合之美感。

本創作在整體設計上，係由複數可分離元件及對稱外殼體所結合，首先係對稱外殼體併合成型，再則嵌入複數可分離元件而完成整體造型；本造型外觀出人意表使生優美之感受，新穎脫俗，具有工業上利用價值以及新穎性及進步性之創意，令人能生一定創作性之趣味感；相互對稱之外殼體予人特殊視覺效果，再結合複數可分離元件，使其比例統一調合，一致的律動感，產生獨特創意之美感。綜上所述，本創作實已符合新式樣專利之要件，謹爰依法提出專利申請。

五、圖面說明

附圖一：係本創作之立體圖。
附圖二：係本創作之前視圖。
附圖三：係本創作之俯視圖。
附圖四：係本創作之右側視圖。
附圖五：係本創作之左側視圖。
附圖六：係本創作之後視圖。
附圖七：係本創作之仰視圖。
附圖八：係本創作之立體展開圖。
附圖九：係本創作之實施例圖。

附註：本案已向　　國（地區）申請專利，申請日期：　　案號：

六、申請專利範圍

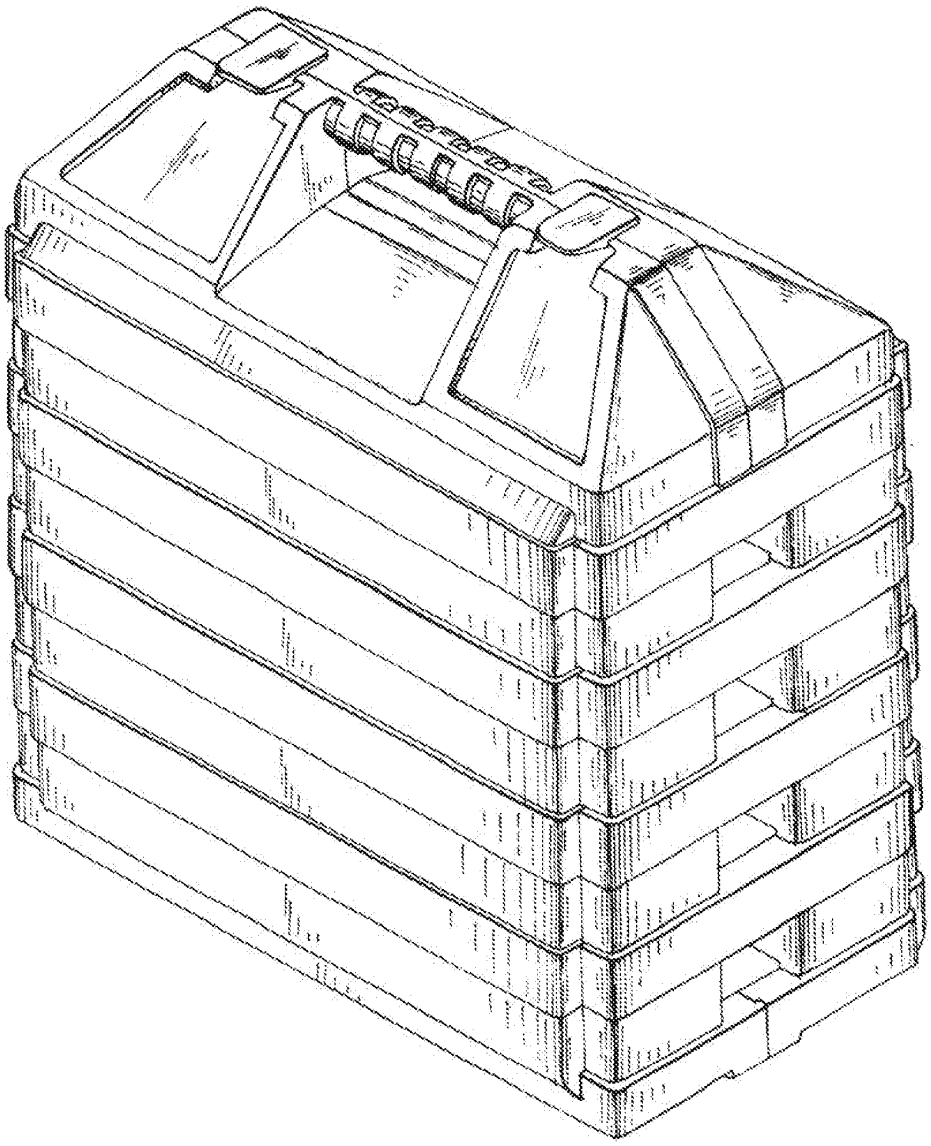
一種如附圖所示之「工具箱」之形狀者。

經濟部中央標準局員工消費合作社印製

本紙張尺度適用中國國家標準(CNS)甲4規格(210×297公釐)

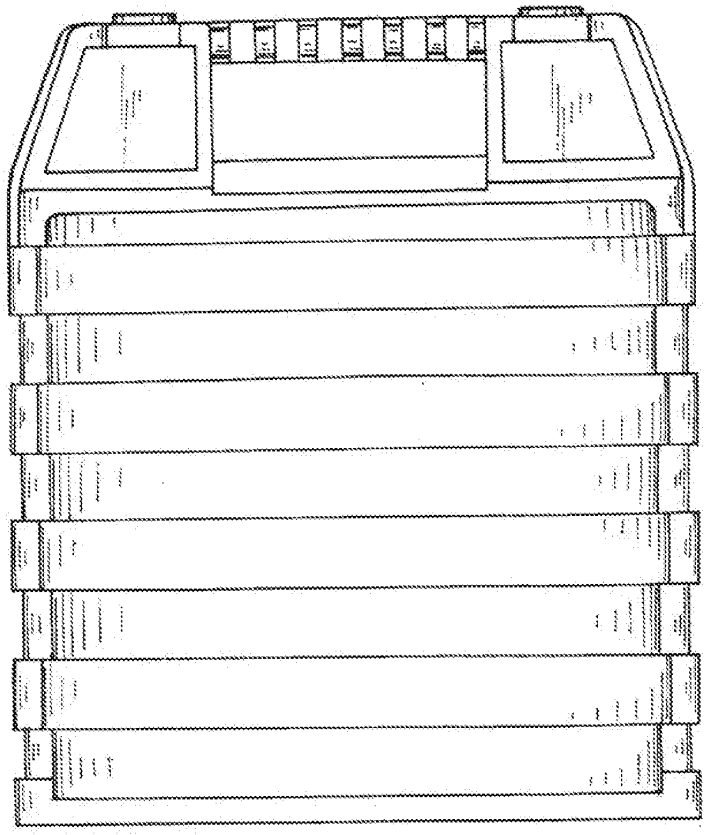
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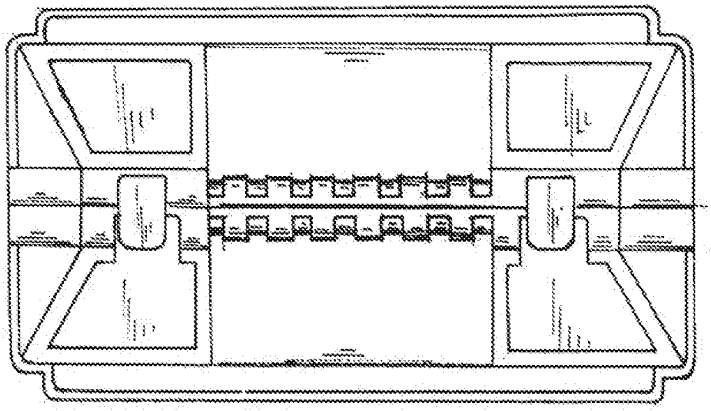


第一图

206875

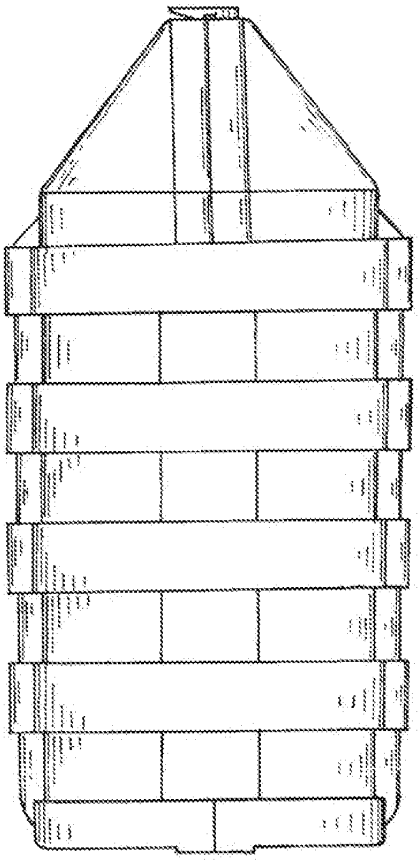


第二圖

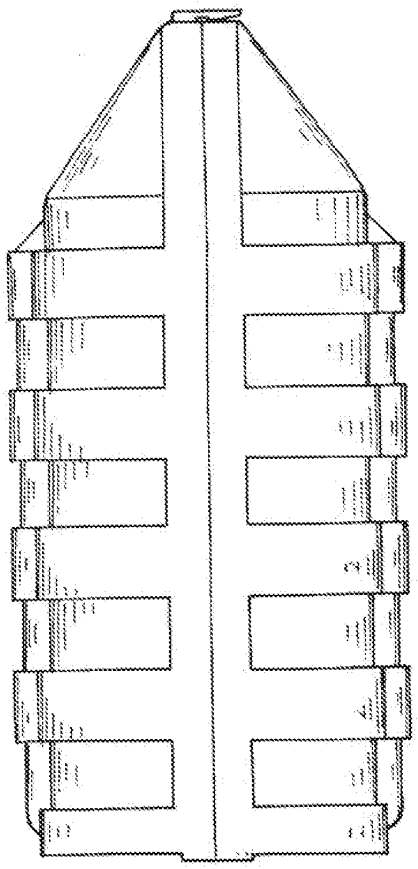


第三圖

206875

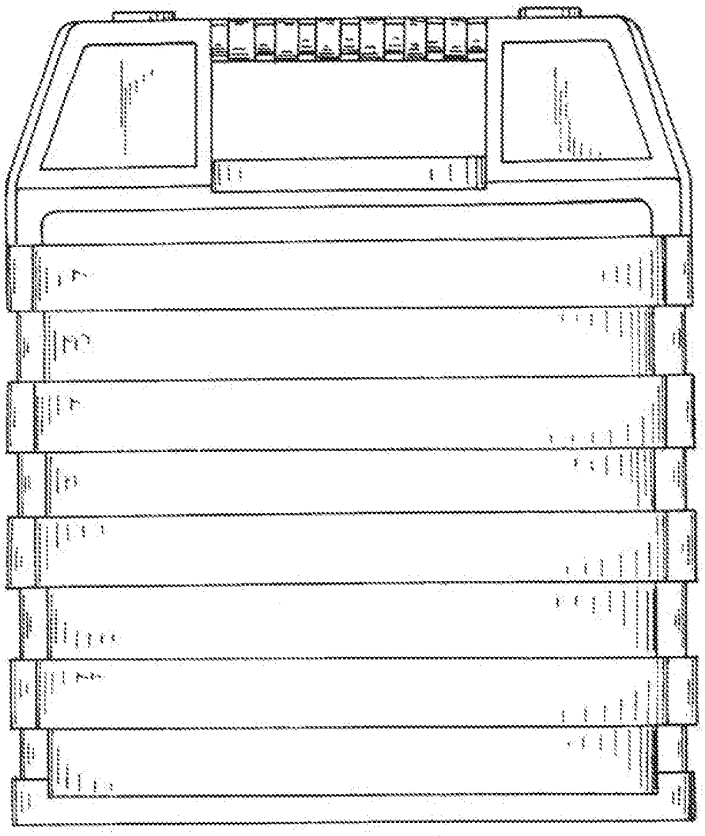


第四圖

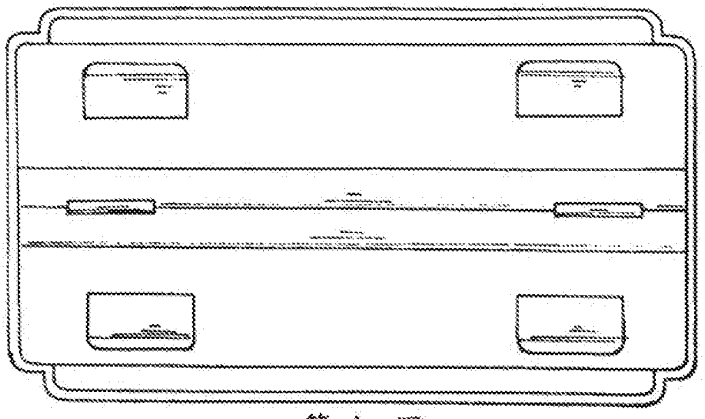


第五圖

206875

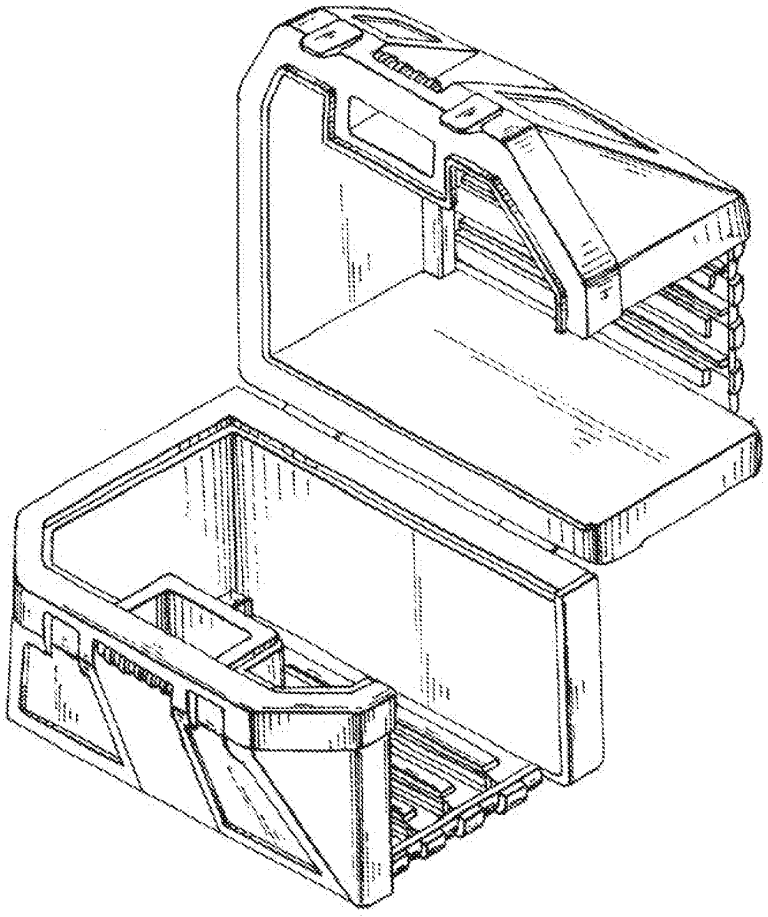


第六圖



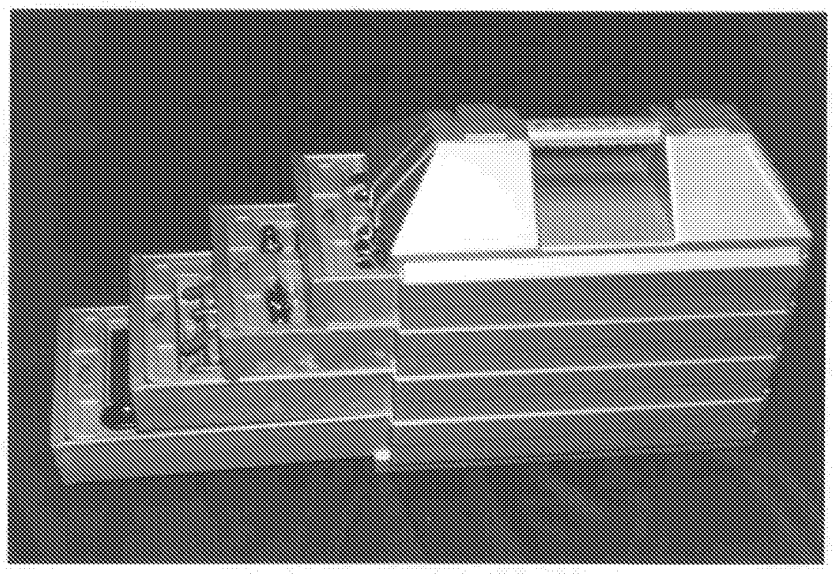
第七圖

206875



第 八 圖

206875



第九圖

D192092

(19)中華民國智慧財產局

(12)設計說明書公告本 (11)證書號數：TW D192092 S

(45)公告日： 中華民國 107 (2018) 年 08 月 11 日

(21)申請案號：106307029 (22)申請日： 中華民國 106 (2017) 年 11 月 30 日

(51)LOC.(11)Cl.：03-01

(71)申請人：孜展企業有限公司 (中華民國) (TW)

臺南市安南區永安路 89 巷 9 號

(72)設計人：鄭龔秀治 (TW)

(74)代理人：陳豐裕

(56)參考文獻：

TW	D156671	JP	D1051973/1
JP	D1248672	US	D160943
US	D803560		

審查人員：蔡俊溢

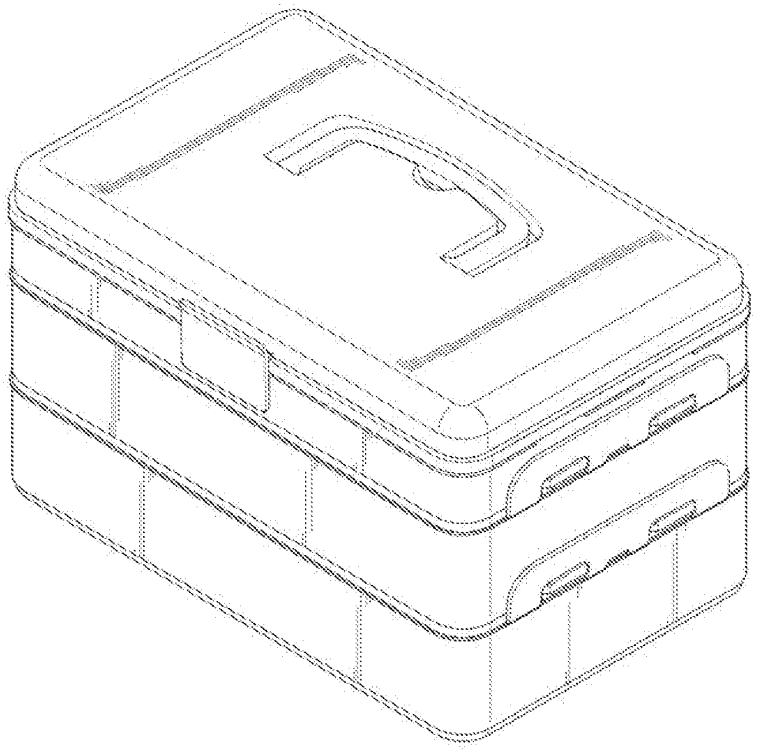
圖式數：8 共 9 頁

(54)名稱

置放盒

代表圖：

TW D192092 S



立體圖(代表圖)

專利案號：106307029

公告本　　申請日：　　：

D192092　　LOC分類：

【設計說明書】

【中文設計名稱】

置放盒

【物品用途】

【0001】　本創作係有關於一種「置放盒」設計，尤其是指一種供收納、置放物品的多層盒體外觀造型創作者。

【設計說明】

【0002】　本創作之「置放盒」設計係如附圖所示；係包含有上、中、下盒體，其可藉由兩相對應之短邊外側所設的卡掣機構作為相互結合的機制，其中分離時狀態圖為表示上、中、下盒體折開展現內部空間及拆卸分離的卡掣機構者。

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【設計圖式】

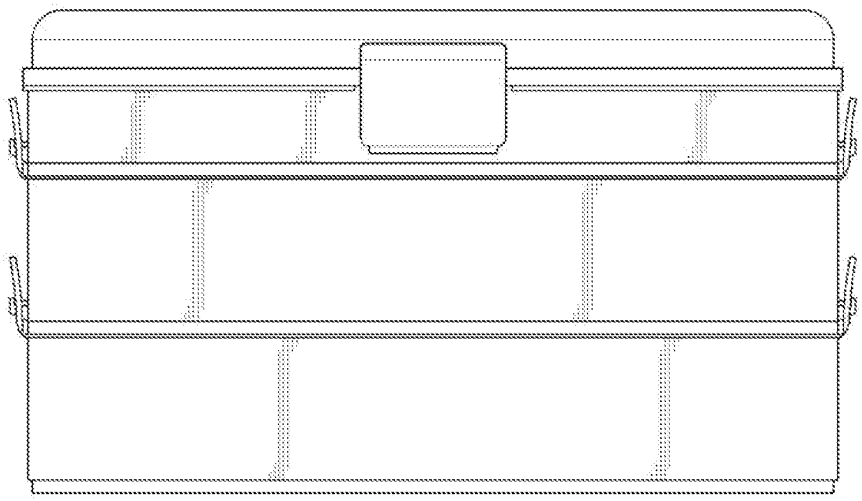
（指定代表圖）



立體圖(代表圖)

106307029　　表單編號 A0101　　1062067568-0

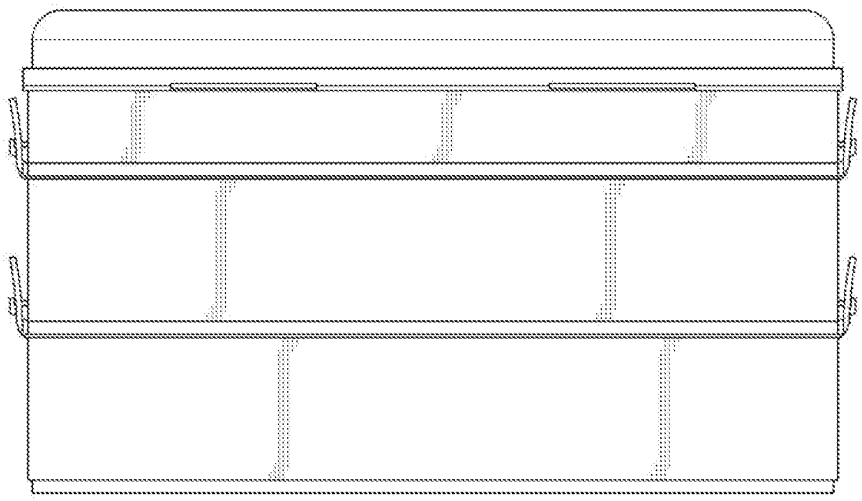
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Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401



前視圖

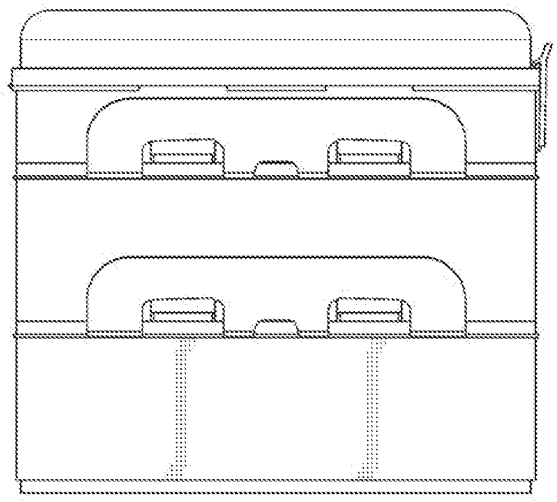
106307029 美專編號 A0101 1062067568-0

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IPR2024-01401



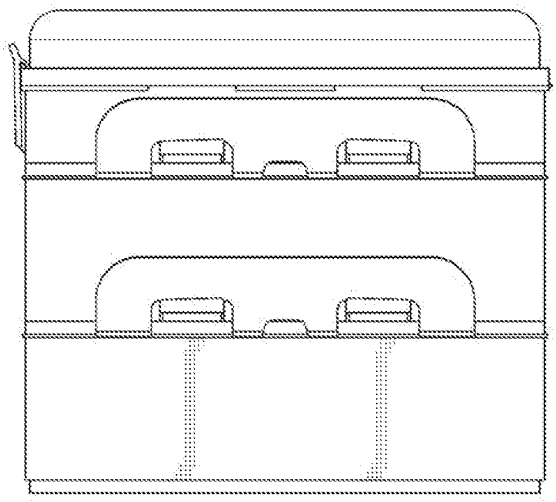
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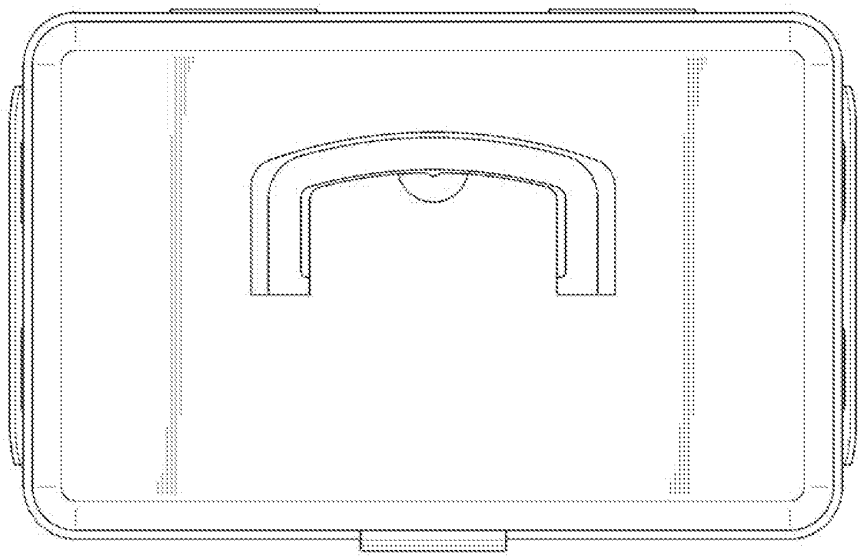
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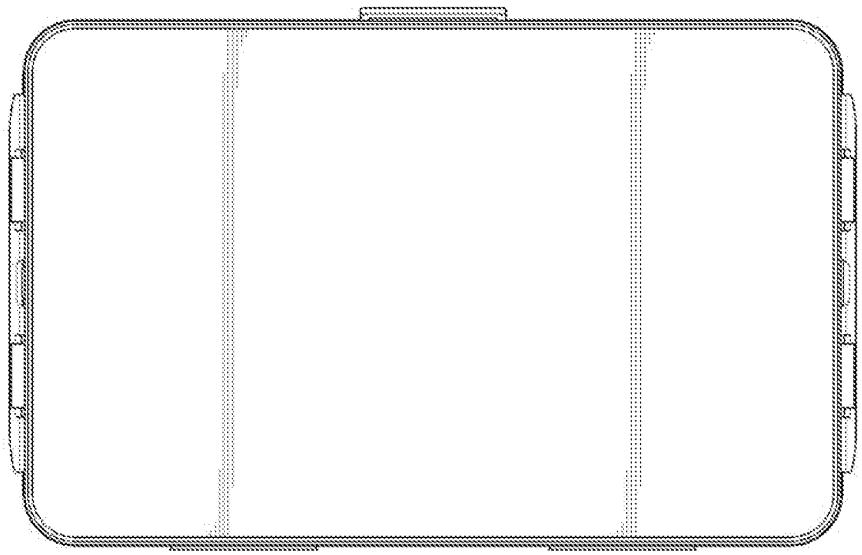
右側視圖

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IPR2024-01401



俯視圖

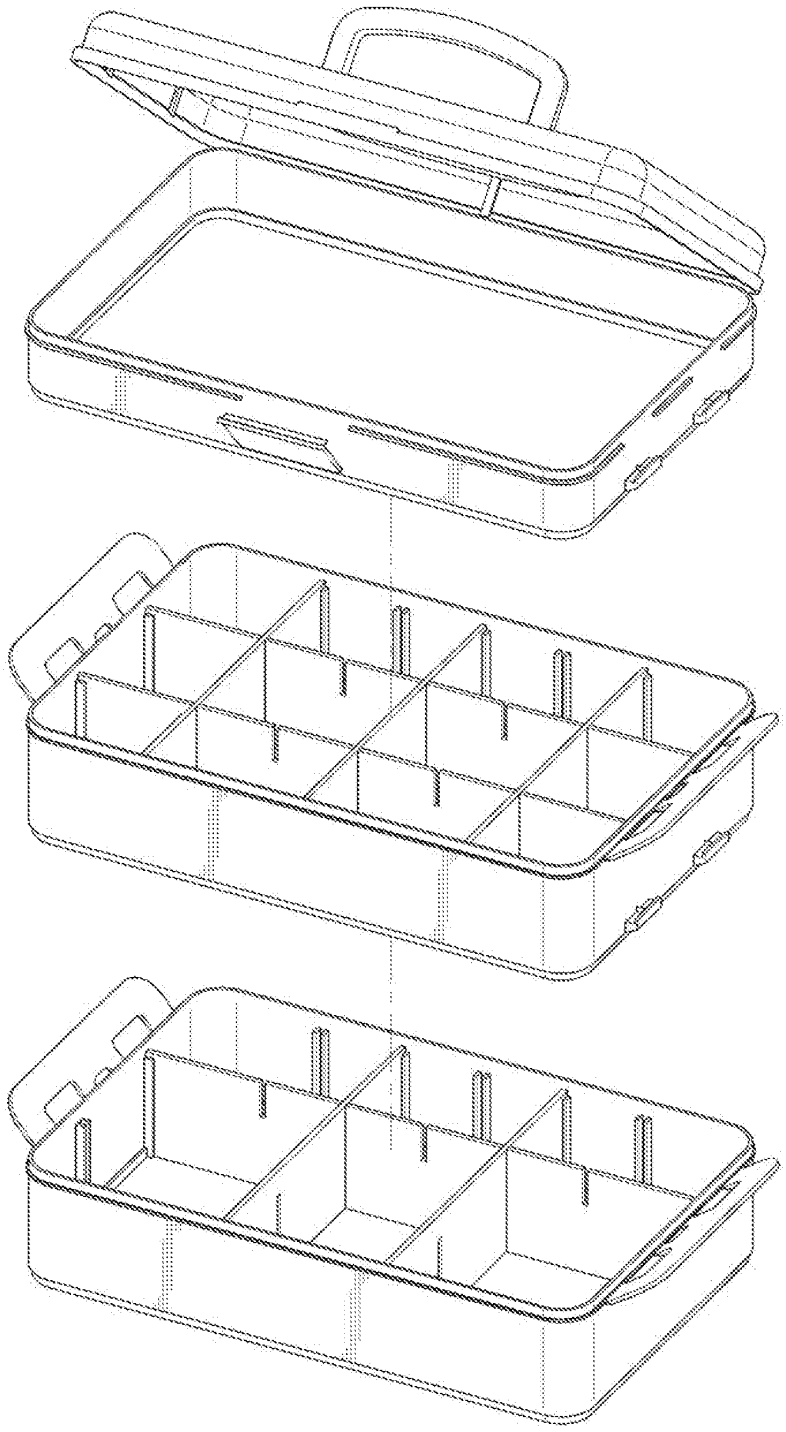
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仰視圖

106307029 美專編號 A0101 1062067568-0

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Electronic Acknowledgement Receipt

EFS ID:	39564284
Application Number:	16752441
International Application Number:	
Confirmation Number:	9540
Title of Invention:	Utility Assembly and Coupling Mechanism
First Named Inventor/Applicant Name:	Yaron Brunner
Customer Number:	142078
Filer:	Derek Howard Campbell/Andrea Dietzel
Filer Authorized By:	Derek Howard Campbell
Attorney Docket Number:	066749-2584
Receipt Date:	28-MAY-2020
Filing Date:	24-JAN-2020
Time Stamp:	16:48:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	066749-2584_Transmittal.pdf	80449 35d619b64ac6bdbbcd6663d5f46401500ba2ed43	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	066749-2584_SB08.pdf	96439 92e87bf1dece977f79f1f07e149800de7be91408	no	1
Warnings:					
Information:					
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3	Foreign Reference	KR300806604.pdf	546537 94c8a9a704815614ae0f6869b53b5aca872c199a	no	8
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Information:					
4	Foreign Reference	KR300849600.pdf	1070085 2f60ce274f1895056d3ea3b29e6c21c2a6cca580	no	10
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8	Foreign Reference	JPD1625407.pdf	283918 79ba6b7978f8dd2dcdfef69b2d4e639ae6b481cc	no	5
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9	Foreign Reference	TW206875.pdf	939338 adf6d83016e213dd3e12d5d4dac7920822fb9df3	no	8
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Warnings:					
Information:					
		Total Files Size (in bytes):	5393036		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Milwaukee Electric Tool Corporation
Title:	Utility Assembly and Coupling Mechanism
Appl. No.:	16/752,441
Filing Date:	January 24, 2020
Examiner:	John G. Pickett
Art Unit:	3736
Confirmation Number:	9540

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Submitted herewith on Form PTO/SB/08 is a listing of the documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR § 1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR § 1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

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TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b)(3), before the mailing date of the first Office action on the merits.

RELEVANCE OF EACH DOCUMENT

The relevance of the foreign-language document is shown in the figures of foreign-language documents and/or are described in the English-language abstract submitted herewith, where available. An English translation of the foreign-language document is not readily available. However, the absence of such translation does not relieve the PTO from its duty to consider the submitted foreign language document (37 CFR §1.98 and MPEP §609).

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

Although Applicant believes that no fee is required for this Request, the Commissioner is hereby authorized to charge any additional fees which may be required for this Request to Deposit Account No. 18-0882.

Respectfully submitted,

Date May 28, 2020

By /Derek H. Campbell/

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PTO/SB/08 (09-06)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: May 7, 2020

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	16/752,441
Filing Date	January 24, 2020
First Named Inventor	Yaron Brunner
Art Unit	3736
Examiner Name	PICKETT, JOHN G
Attorney Docket Number	066749-2584

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*)	Filing Date of Cited Document MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	A1	CN102137795	07-27-2011	TTS ToolTechnic Systems AG		
	A2	CN103659777	03-26-2014	Bosch GMBH Robert		
	A3	CN204161752	02-18-2015	Meridian International Co Ltd		
	A4	KR3009995990000	03-27-2019	Korea Container Pool Co, Ltd		
	A5	KR3008812960000	11-15-2016	NPC Co., Ltd.		
	A6	KR3008599650000	06-22-2016	NPC Co., Ltd.		
	A7	KR3008422360000	03-02-2016	NPC Co., Ltd. HYUNDAI GLOVIS Co., Ltd.		
	A8	DE202014103695	10-30-2014	Metabowerke Gmbh		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Espacenet

Bibliographic data: CN102137795 (A) — 2011-07-27

Stackable container assembly with reciprocal locking of the stacked containers

Inventor(s): ANDREAS KOENIG; TIMO KUHLS; RAIMUND SCHAEFFER; LUTZ WOLLE ± (KOENIG ANDREAS, ; KUHLS TIMO, ; SCHAEFFER RAIMUND, ; WOLLE LUTZ)

Applicant(s): TTS TOOLTECHNIC SYSTEMS AG ± (TTS TOOLTECHNIC SYSTEMS AG, ; TTS TOOLTECHNIC SYSTEMS AG & CO.KG)

Classification: - international: ***A45C13/12; A45C7/00; B65D21/02; B65D21/036***
- cooperative: **B25H3/02 (EP); B65D21/0223 (EP, US);** B65D2525/288 (EP, US)

Application number: CN200980133692 20090629

Priority number(s): WO2009EP04668 20090629

Also published as: CN102137795 (B) AT546373 (T) CA2735679 (A1) CA2735679 (C) EP2315701 (A1) more

Abstract of CN102137795 (A)

The present invention relates to a container assembly comprising at least two stackable containers (1), each of which has a base part (7) and a lid (8) arranged thereon. Several containers (1) can be stacked such that the lid (8) of the lower container is arranged between two base parts (7). The container is provided with at least one coupling device (3) which has a coupling means (26) movably mounted on the lid (8) of the container (1). The coupling means (26) can be moved in relation to the lid (8) into a coupling position in order to couple two containers (1) which are arranged one above the other. In the coupling position, the coupling means is simultaneously in coupling engagement with the base parts (7) of both containers (1) which are stacked one on top of the other.

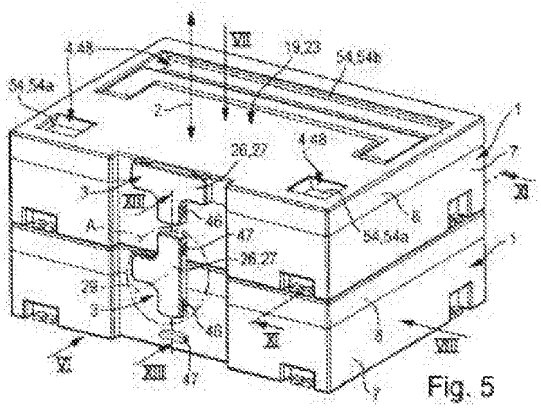


Fig. 5

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IPR2024-01401

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(51)Int.Cl.
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B65D 21/036(2006.01)
A45C 7/00(2006.01)
A45C 13/12(2006.01)

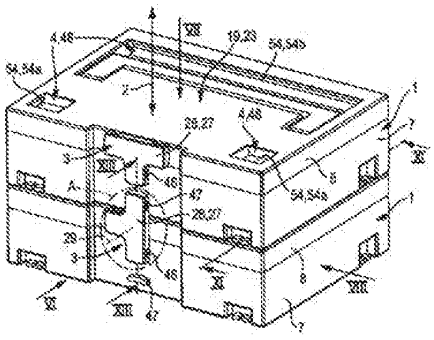
权利要求书 3 页 说明书 11 页 附图 13 页

(54)发明名称

堆叠的容器相互锁止的堆叠式容器装置

(57)摘要

一种容器装置，其具有至少两个可堆叠的容器(1)，所述容器均具有下部(7)和设置在该下部上方的顶盖(8)。可以堆叠多个容器(1)，使得下面的容器(1)的顶盖(8)布置在两个下部(7)之间。容器(1)配备有至少一个耦联设备(3)，所述耦联设备具有可移动地安置在容器(1)的顶盖(8)上的耦联机构(26)。耦联机构(26)为了使得两个上下布置的容器(1)耦联而相对于顶盖(8)可移动至耦联位置，在该耦联位置，所述耦联机构同时与两个上下放置的容器(1)的下部(7)耦联锁接。



CN 102137795 A

1. 一种容器装置，具有至少一个可堆叠的容器(1)，所述容器具有带开口(12)的箱盒形或外壳形的下部(7)和指配于下部(7)的开口(12)的、为了有选择地打开或封闭开口(12)而相对于下部(7)可移动的顶盖(8)，且被构造用于竖直地堆叠多个容器(1)，使得下面的容器(1)的顶盖(8)位于下面的容器(1)的下部(7)与直接布置在该下面容器上方的上面的容器(1)的下部之间，其中在容器(1)上设置有至少一个耦联设备(3)，耦联设备具有可移动的耦联机构(26)，利用该耦联机构可以使得直接上下放置的容器(1)的下部(7)可松开地相互耦联，以得到由多个容器(1)构成的容器组，其特征在于，可移动的耦联机构(26)安置在容器(1)的顶盖(8)上，且为了使得容器(1)与位于其上方的容器(1)耦联而相对于顶盖(8)可移动至耦联位置，在该耦联位置，该耦联机构同时与两个上下放置的容器(1)的下部(8)耦联嵌接。

2. 如权利要求 1 所述的容器装置，其特征在于，至少一个耦联设备(3)的可移动的耦联机构(26)可移动至不同于耦联位置的封闭位置，在该封闭位置，该耦联机构与设置在配设的顶盖(8)的上方的上面的容器(1)解耦，同时与设置在顶盖(8)下方的下部(7)耦联嵌接，使得顶盖(8)在封闭下部(7)的开口(12)的遮盖位置相对于该下部(7)栓锁。

3. 如权利要求 1 或 2 所述的容器装置，其特征在于，至少一个耦联设备(3)的可移动的耦联机构(26)可移动至不同于耦联位置的半耦联位置，在该半耦联位置，该耦联机构与设置在配设的顶盖(8)的上方的上面的容器(1)的下部(7)耦联嵌接，同时与设置在顶盖(8)下方的下部(7)解耦，使得顶盖(8)能与设置在顶盖(8)上方的容器(1)一起从设置在顶盖(8)下方的下部(7)取下。

4. 如权利要求 1 至 3 中任一项所述的容器装置，其特征在于，设有多个沿着容器(1)的周围分布布置的、可相互独立操纵的耦联设备(3)。

5. 如权利要求 1 至 4 中任一项所述的容器装置，其特征在于，至少一个耦联设备(3)的耦联机构(26)被构造成可转动地安置在顶盖(8)上的转动式锁止件(27)，且在下部(7)上设有用于与转动式锁止件(27)配合作用的锚定机构(46、47)，使得下面的两个上下放置的容器(1)之一的转动式锁止件(27)在处于耦联位置时与两个容器(1)的下部(7)的锚定机构(46、47)同时耦联嵌接。

6. 如权利要求 5 所述的容器装置，其特征在于，至少一个耦联设备(3)具有设置在下部(7)上的沿容器(1)的堆叠方向(2)相互间隔开的第一和第二锚定机构(46、47)，其中的第一锚定机构(46)比第二锚定机构(47)更靠近顶盖(8)，使得下面的两个上下放置的容器(1)的转动式锁止件(27)在处于耦联位置时一方面与设置在下面的容器(1)的下部(7)上的第一锚定机构(46)耦联嵌接，另一方面与设置在上面的容器(1)的下部(7)上的第二锚定机构(47)耦联嵌接。

7. 如权利要求 5 或 6 所述的容器装置，其特征在于，转动式锁止件(27)具有在处于耦联位置时与两个上下放置的容器的锚定机构(46、47)耦联嵌接的栓锁结构(37)，其中最好使得无论锚定机构(46、47)还是栓锁结构(37)都为弓形，特别是弓形的中心位于转动式锁止件(27)的旋转轴线(29)上。

8. 如权利要求 7 所述的容器装置，其特征在于，锚定机构(46、47)被构造成凸起，栓锁结构(37)被构造成特别是槽状的凹槽(44)的组成部分，或者相反。

9. 如权利要求 5 至 8 中任一项所述的容器装置，其特征在于，至少一个耦联设备(3)设

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置在容器(1)的垂直于容器(1)的堆叠方向(2)的端面(16a)上,其中转动式锁止件(27)相对于垂直于该端面(16a)的旋转轴线(29)可转动。

10. 如权利要求 5 至 9 中任一项结合权利要求 2 所述的容器装置,其特征在于,转动式锁止件(27)在封闭位置相对于顶盖(8)处于不同于耦联位置的转动位置。

11. 如权利要求 10 所述的容器装置,其特征在于,转动式锁止件(27)具有沿着其转动方向错开的栓锁结构(37、37a、37b、37c),所述栓锁结构在耦联位置和封闭位置交替地与设置在下部(7)上的同一个锚定机构(46)耦联嵌接。

12. 如权利要求 11 所述的容器装置,其特征在于,栓锁结构(37、37a、37b、37c)在转动式锁止件(27)的转动方向上相互错开地布置,使得转动式锁止件(27)可转动至打开位置,在该打开位置,设置在下部(7)上的、在耦联位置和在封闭位置与转动式锁止件(27)协同工作的锚定机构(46)位于栓锁结构(37、37a、37b、37c)之间,由此解除耦联嵌接,以便能从下部(7)取下顶盖(8),用于打开下部(7)的开口(12)。

13. 如权利要求 5 至 12 中任一项结合权利要求 3 所述的容器装置,其特征在于,转动式锁止件(27)在半耦联位置全部相对于顶盖(8)处于不同于耦联位置的转动位置,其中在耦联位置和在半耦联位置,所述转动位置最好彼此相对转动 90° 。

14. 如权利要求 1 至 13 中任一项所述的容器装置,其特征在于,耦联机构(26)被构造成可转动地安置在顶盖上的转动式锁止件(27),该转动式锁止件可转动至多个不同的转动位置,其中所述转动位置是使得顶盖(8)仅与设置在其下方的下部(7)耦联的封闭位置,是使得顶盖(8)与设置在其下方的下部(7)解耦的打开位置,最好还是使得顶盖(8)与设置在其下方的下部(7)解耦而同时与设置在其上方的下部(7)耦联的半耦联位置。

15. 如权利要求 1 至 14 中任一项所述的容器装置,其特征在于,顶盖(8)与容器(1)的前端面(16a)间隔开地可摆动地安置在下部(7)上,使得在至少一个耦联设备(3)的耦联机构(26)移动至打开位置时,该顶盖在前部区域中相对于下部(7)可掀起。

16. 如权利要求 15 所述的容器装置,其特征在于,它只有一个唯一的耦联设备(3),该耦联设备设置在容器(1)的前端面(16a)的宽度中心处。

17. 如权利要求 1 至 16 中任一项所述的容器装置,其特征在于,在顶盖(8)的顶面(19)上设有第一嵌接结构(48),在下部(7)的底面(18)上设有第二嵌接结构(49),其中两个嵌接结构(48、49)彼此协调,使得在两个容器(1)上下堆叠的状态下,下面的容器(1)的位于上方的第一嵌接结构(48)和上面的容器(1)的位于下方的第二嵌接结构(49)相互嵌接,从而一方面防止两个容器(1)横向于堆叠方向(2)彼此相对移动,另一方面,通过嵌接结构(48、49)的横向于堆叠方向(2)咬合的咬合组成部分(57、58),在容器(1)之间产生栓锁,这种栓锁仅在某些区域防止上面的容器(1)从下面的容器掉下,从而可围绕由咬合的咬合组成部分(57、58)限定而成的栓锁区域(64)将上面的容器(1)掀起,其中至少一个耦联设备(3)相距栓锁区域(64)一定间隔地布置,且在该耦联设备的耦联机构(26)的耦联位置防止上面的容器(1)从下面的容器(1)的顶盖(8)掀起。

18. 如权利要求 17 所述的容器装置,其特征在于,嵌接结构(48、49)经过构造,使得可实现将上面的容器(1)放置在相对于下面的容器(1)倾斜的位置,直至嵌接结构(48、49)相互嵌接,接下来在下面的容器(1)上围绕由咬合的嵌接结构(48、49)限定而成的摆动轴线(66)将上面的容器(1)掀起,由此将上面的容器(1)放置到下面的容器(1)上,以得到通过

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嵌接结构(48,49)在堆叠方向(2)上引起的栓锁。

19. 如权利要求 17 或 18 所述的容器装置,其特征在于,第一嵌接结构(48)由布置在容器(1)的顶面上的嵌接凹槽(54)构成,而第二嵌接结构(49)由布置在容器(1)的底面(18)上的嵌接凸起(55)构成,其中容器(1)在其底面(18)上具有多个分布布置的向下突伸的支脚(57),所述支脚属于第二嵌接轮廓(49),且至少部分地形成该第二嵌接轮廓的组成部分。

20. 如权利要求 19 所述的容器装置,其特征在于,至少一个支脚(57)是形成第二嵌接结构(49)的咬合组成部分的栓锁支脚(57b),且至少一个其它的支脚(57)与栓锁支脚(57b)间隔开地布置在容器(1)的可掀起的区域(53)中,并形成并非用于竖直栓锁的纯粹的支撑支脚(57a)。

21. 如权利要求 20 所述的容器装置,其特征在于,第二嵌接结构(49)具有两个栓锁支脚(57b),这两个栓锁支脚分别形成咬合组成部分,且相互间隔开地布置。

22. 如权利要求 21 所述的容器装置,其特征在于,第一嵌接轮廓(48)的栓锁板条(68)在两个栓锁支脚(57b)之间延伸,且在两个容器(1)的堆叠状态下同样与第一嵌接结构(48)的咬合组成部分栓锁嵌接,该栓锁板条与两个栓锁支脚(57b)最好一体地构造,且该栓锁板条最好向下突出于栓锁支脚(57b)。

23. 如权利要求 20 至 22 中任一项所述的容器装置,其特征在于,至少一个栓锁支脚(57b)为了咬合第一嵌接结构(48)而具有楔形结构的咬合区段(62),该咬合区段最好朝向背离于至少一个支撑支脚(57a)的方向。

24. 如权利要求 20 至 23 中任一项所述的容器装置,其特征在于,第一嵌接结构(48)为了与栓锁支脚(57b)配合作用而具有至少一个栓锁嵌接凹槽(54b),所述栓锁嵌接凹槽具有咬合的横截面,在所述栓锁嵌接凹槽的边缘侧设置有咬合凸起(58),咬合凸起可以被栓锁支脚(57b)咬合,所述栓锁支脚插入到栓锁嵌接凹槽(54b)中。

25. 如权利要求 20 至 24 中任一项所述的容器装置,其特征在于,至少一个用于容纳支撑支脚(57a)的嵌接凹槽(54、54a)的侧壁至少部分地被构造成倾斜的滑动面(67),用于辅助支撑支脚(57a)的插入过程。

26. 如权利要求 17 至 25 中任一项所述的容器装置,其特征在于,第一嵌接结构(48)的至少一个嵌接凹槽(54)被构造用于同时容纳两个用作咬合组成部分的相互间隔开的栓锁支脚(57b)。

27. 如权利要求 17 至 26 中任一项所述的容器装置,其特征在于,在容器(1)的顶面(19)上设置有相对于容器(1)的主体(6)可摆动的把持部分(72),该把持部分可摆动至非使用位置,即摆入到设置在容器(1)的顶面(19)上的容纳凹槽(73)中,其中该容纳凹槽(73)直接由第一嵌接结构(48)的嵌接凹槽(54、54b)构成,最好由形成第一嵌接结构(48)的咬合组成部分(58)的栓锁嵌接凹槽(54b)构成。

28. 如权利要求 17 至 27 中任一项所述的容器装置,其特征在于,至少一个嵌接凹槽(54),最好是形成第一嵌接结构(48)的咬合组成部分(58)的栓锁嵌接凹槽(54b),同时形成可用于搬运容器(1)的把持坑槽(74)。

29. 如权利要求 1 至 28 中任一项所述的容器装置,其特征在于,它具有至少两个可上下堆叠的容器(1),所述容器可松开地能相互耦联成容器组。

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堆叠的容器相互锁止的堆叠式容器装置

[0001] 本发明涉及一种容器装置，其具有至少一个可堆叠的容器，该容器具有带开口的箱盒形或外壳形的下部和指配于下部的开口的、为了有选择地打开或封闭开口而相对于下部可移动的顶盖，且被构造用于竖直地堆叠多个容器，使得下面的容器的顶盖位于下面的容器的下部与直接布置在该下面容器上方的上面的容器的下部之间，其中在容器上设置有至少一个耦联设备，耦联设备具有可移动的耦联机构，利用该耦联机构可以使得直接上下放置的容器的下部可松开地相互耦联，以得到由多个容器构成的容器组。

[0002] 由 EP 1 059 240 B1 已知的这种容器装置具有容器，容器具有下部和可摆动地设置在该下部上的顶盖，该容器可与多个同样类型的容器在竖直的堆叠方向上堆叠，使得其顶盖位于放置在其上方的顶盖的下部的下面。在容器的相互对置的侧端面上各有一个耦联设备，这些耦联设备均由两个转动式锁止件形式的耦联机构构成，其中一个耦联机构设置在可摆动的把持部分(Tragegriff)上。视把持部分的摆动位置而定，利用把持部分的耦联机构使得顶盖相对于下部栓锁或松开。为了使得两个堆叠的容器可松开地相互耦联，以得到可统一运输的容器组，也可以转动第二耦联机构，使得它与上面的容器的下部耦联嵌接。因而通过两个下部的连接来实现使得两个耦联的容器保持在一起。如果通过夹持上面的容器来运输这种容器组，则耦联机构的转动支撑部分会受到较大的载荷，这会引起过早的磨损，但至少要求非常稳定、耐用同时成本低廉的设计方案。

[0003] EP 0 555 533 B1 中所述的容器装置也有类似的情况，该文献公开了一种可堆叠的容器，这种容器配备有沿着其圆周分布的耦联设备，这些耦联设备各有一个构造成可摆动的栓锁片形式的耦联机构。不同于 EP 1 059 240 B1，这里只有一个唯一的耦联机构，其要么仅使得顶盖与下部栓锁，要么通过与上面的容器的栓锁嵌接使得多个容器组合成一个容器组。在这种容器组的情况下，耦联机构的可移动的支撑部分也受到较大的载荷，故在下部上设置有附加的锚定机构，所述锚定机构通过与耦联机构的配合作用来使得其转动式支撑机构减载。这牵涉到较高的构造成本。

[0004] 由 DE 44 09 411 A1 已知一种包装容器，其可与同种包装容器堆叠起来而组合成容器组，其方式为，它在其顶面和其底面上具有彼此互补的嵌接结构，当上面的容器在组合地进行插塞－摆动移动的情况下而放置到下面的容器上时，这些嵌接结构相互嵌接。嵌接结构在某些区域，在容器背面附近，防止上面的容器掉下。利用附加的耦联设备对容器的前部区域进行固定，该耦联设备具有多个构造成转动式锁止件的耦联机构，这些耦联机构可以适当地转动，使得它们在上下堆叠的容器的前部区域之间产生耦联嵌接。在这种包装容器的旁侧设置有容器开口，可用两个上下布置的顶盖壁将所述容器开口封闭，这些顶盖壁可摆动地布置在容器的主体上。可转动的耦联机构能同时使得这些顶盖壁相互栓锁，以及与布置于其上方的容器的顶盖壁栓锁。

[0005] 本发明的目的是，提出一种容器装置，其中可堆叠的容器配备有实现成本低廉的机构，这些机构经过简单的操纵就能使得上下堆叠的容器牢固地耦联。

[0006] 为实现所述目的，规定将至少一个耦联设备的可移动的耦联机构安置在容器的顶盖上，且为了使得容器与位于其上方的容器耦联而相对于顶盖可移动至耦联位置，在该耦

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联位置，它同时与两个上下放置的容器的下部耦联嵌接。

[0007] 可移动地安置在顶盖上的耦联机构在耦联位置同时与两个置于顶盖两侧的下部耦联嵌接，以此方式可使得在运输容器组时产生的承载力通过耦联机构至少大部分直接在这些下部之间传递，从而省去了被设置用于使得耦联机构可移动地安置在顶盖上的支撑机构。因此这种支撑机构不会受到严重的磨损，且对稳定性没有特殊的要求，这有利于成本低廉的制造。而且对耦联设备的操作很简单，因为或多或少地仅通过手把持就能实现两个上下放置的容器的耦联与解耦。优选借助耦联机构仅进行一次搬运过程就足以使得该耦联机构既与配置的顶盖的下部又与位于其上方的上面的顶盖的下部在堆叠方向上耦联嵌接，并保证牢固地保持在一起。

[0008] 本发明的有利改进可由从属权利要求得到。

[0009] 耦联设备的可移动的耦联机构最好是可转动地安置在顶盖上的特别是一体的转动式锁止件。因而可以通过对转动式锁止件的简单转动来产生或者解除所希望的耦联嵌接。在耦联位置，转动式锁止件同时作用在两个上下布置的容器的锚定机构上，进而负责实现牢固地保持在一起。

[0010] 布置在容器下部上的锚定机构最好划分成在堆叠方向上间隔开的第一和第二锚定机构。第一锚定机构比第二锚定机构能近顶盖。以此方式可以使得下面的容器的转动式锁止件在耦联位置一方面与下面的容器的下部的第一锚定机构协同工作，同时与上面的容器的下部的第二锚定机构协同工作。这种构造方式的优点在于，使得转动式锁止件能具有紧凑的尺寸，而与容器的构造高度无关。

[0011] 为了与布置在下部上的锚定机构配合作用，转动式锁止件最好具有合适的栓锁结构。如同锚定机构一样，这些栓锁结构最好为弓形设计，其中弓形中点特别是位于转动式锁止件的旋转轴线上。以此方式能非常容易地实现栓锁过程和解锁过程，同时在耦联位置可以保证实现栓锁结构与锚定机构之间的大面积的弓形接触，从而即使要传递的承载力较大也能使得单位面积压力较小。

[0012] 锚定机构优选被构造成凸起，特别是被构造成下部的一体的组成部分。栓锁结构最好是在转动式锁止件上构造的槽状凹槽的组成部分。

[0013] 耦联设备可以有利地具有多重功能。因而，可移动的耦联机构特别是按如下方式来构造：它在耦联位置至少还可移动至封闭位置，在该封闭位置，与可能布置在容器上方的上面的容器的耦联嵌接被解除，而与布置在顶盖下方的下部的耦联嵌接仍然保持。因而封闭位置尤其是在上面的容器放置于下面的容器上或者从下面的容器取下时转动式锁止件所能移动到的位置。封闭位置还是在单独运输容器时能保证顶盖与下部保持在一起的位置。

[0014] 就转动式锁止件这种设计方案而言，封闭位置是相对于顶盖的不同于耦联位置的转动位置。最好在转动式锁止件上设有沿其转动方向错开的栓锁结构，这些栓锁结构在耦联位置和封闭位置交替地与设置在下部上的同一个锚定机构耦联嵌接。只要锚定机构具有第一和第二上述类型的锚定机构，转动式锁止件就在耦联位置和封闭位置最好分别与第一锚定机构协同工作。

[0015] 在耦联位置和封闭位置交替地与下部的锚定机构协同工作的栓锁结构最好在转动方向上错开地设置在转动式锁止件上，使得转动式锁止件可转动至打开位置，在该打开

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位置，所述锚定机构位于栓锁结构之间，且这些栓锁结构在一定程度上可以移动经过锚定机构，以便能有选择地将顶盖从下部取下或者将顶盖放置到下部上，如果要有选择地打开或者遮盖下部的开口。

[0016] 可整合到至少一个耦联设备中的另一功能是，仅产生与布置在顶盖上方的上面的容器的下部的耦联嵌接，同时解除与布置在顶盖下方的下部的耦联嵌接。在称为半耦联位置的该位置，可以将容器的顶盖掀起，即使在该顶盖上布置有另一容器，其中该另一容器保持固定在可掀起的顶盖上，因而不必拆开容器组。

[0017] 若将耦联机构构造成转动式锁止件，则半耦联位置最好相应于相对于耦联位置转动 90° 之后的位置。

[0018] 尽管原则上可以将顶盖设计成能整体地从下部取下，但推荐采用相对于下部摆动地安置的构造方式，从而可摆动顶盖，以便打开和封闭容器。

[0019] 可以给容器配备多个所述类型的耦联设备，于是这些耦联设备最好布置在沿着容器周围分布的多个位置。特别是当为了产生容器组而仅使用这种耦联设备时，最好在容器的至少两个彼此对置的端面上各设置有至少一个耦联设备。

[0020] 可以采用有利的方式使得至少一个所述类型的耦联设备与其它措施相组合，这些措施用于由堆叠的容器产生组合在一起的容器组。

[0021] 这些附加措施尤其可以是，在顶盖的顶面上设置有第一嵌接结构，而在下部的底面上设置有第二嵌接结构，其中这两个嵌接结构按照如下方式彼此协调：使得在两个容器上下放置的状态下，下面的容器的位于上方的第一嵌接结构和上面的容器的位于下方的第二嵌接结构相互嵌接，从而一方面防止两个容器横向于堆叠方向彼此相对移动，另一方面通过局部栓锁来防止上面的容器在某些区域从下面的容器掉下。后者通过嵌接结构的特殊的咬合组成部分的栓锁嵌接来实现，其中这种栓锁嵌接在上面的容器放置到下面的容器上时通过两个容器的相对移动来产生。至少一个本发明的耦联设备相距由相互协同工作的咬合组成部分限定而成的栓锁区域一定间隔地布置，并使得两个容器在耦联位置保持在一起，从而上面的容器也在如下区域中在竖直方向不可移动地与下面的容器耦联，即该区域不会由于咬合结构而妨碍取下。由此在咬合结构与至少一个耦联设备之间实现组合作用。

[0022] 优选使得布置在顶盖上的第一嵌接结构由嵌接凹槽构成，而布置在下部上的第二嵌接结构由嵌接凸起构成。按照有利的方式，嵌接凸起同时是支脚，通过支脚可将容器稳定地放置在底座(Unterlage)上，如果它不是堆叠在另一容器上。这些支脚最好至少部分地还形成第二嵌接结构的咬合组合部分，其在堆叠容器时通过与第一嵌接结构的嵌接来防止从下面的容器局部地掉下。带有这种咬合功能的支脚可以称为栓锁支脚。与第一嵌接结构配合作用仅引起横向于堆叠方向的移动锁止的其它支脚则称为支撑支脚。

[0023] 优选在下部的底面上，特别是靠近背面，设置有两个彼此间隔的栓锁支脚。为了即使在这些栓锁支脚可能损耗的情况下也能确保可靠的栓锁嵌接，可以附加地设置有在两个栓锁支脚之间延伸的栓锁板条，在两个容器上下堆叠的状态下，该栓锁板条仍与顶盖的第一嵌接结构的咬合组成部分栓锁。

[0024] 为了与栓锁支脚配合作用，第一嵌接结构最好具有至少一个带有咬合横截面的栓锁嵌接凹槽，栓锁嵌接凹槽在边缘侧具有咬合凸起，咬合凸起可以与配设的栓锁支脚进行栓锁嵌接，只要存在的话，还可与栓锁板条进行栓锁嵌接。可以对一个唯一的栓锁嵌接凹槽

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进行构造，使得它能实现全部存在的栓锁支脚的同时嵌接。如此构造的栓锁嵌接凹槽特别是还可以具有把持坑槽的附加功能，可以用手伸入到该把持坑槽中，以便搬运容器。特别是对于相对扁平的容器来说，即其大小规模与公文包相仿，可以采用该方式同样类似于公文包非常轻便地竖直地（hochkant）运输容器。

[0025] 此外，容器最好配备有布置在顶面区域中的把持部分，该把持部分最好可摆动至非使用位置，在非使用位置，把持部分摆入到在顶盖顶面上构造的容纳凹槽中。该容纳凹槽最好由第一嵌接结构的相当大规模构造的嵌接凹槽构，这便于进行制造，特别是还有利于根据需要用作把持坑槽。

[0026] 容器装置可以具有多个所述类型的容器，这些容器特别是在其高度尺寸方面各不相同，但在耦联设备方面构造相同，最好还在嵌接结构方面构造相同，从而它们可以任意组合地按任意顺序堆叠，并组合成一个容器组。

[0027] 下面对照附图详细介绍本发明。图中示出：

图 1 为本发明的容器在封闭状态下的立体图；

图 2 示出图 1 的容器，其顶盖已摆至打开位置；

图 3 为按照图 1 的箭头III的方向观察的容器仰视图；

图 4 为容器底侧的斜视图；

图 5 示出由两个堆叠的容器构成的容器装置，其耦联成一个容器组；

图 6 为图 5 的装置的以根据箭头VI的方向观察的正视图；

图 7 为图 5 的容器装置的以根据箭头VII的方向观察的俯视图；

图 8 为图 5 的装置的以根据箭头VIII的方向观察的侧视图；

图 9 从另一视角示出图 5 的容器装置，其处于耦联设备的耦联机构被去除的状态；

图 10 为图 5 的容器装置的立体侧视图，其处于上面的容器安放在下面的容器上的状态；

图 11 为容器装置的处于相互嵌接的嵌接结构的区域的按照剖切线XI－XI剖切的横剖视图；

图 12 为耦联机构的以根据图 9 的箭头XII的方向观察的详细后视图；

图 13 为容器组的在图 5 和 6 中框出的部分 A 的在耦联机构的耦联位置按照图 5 和 14 的剖切线 XIII-XIII 剖切的剖视图；

图 14 为图 13 的装置的按照剖切线 XIV-XIV 剖切的剖视图；

图 15 为在耦联机构已移动至关闭位置情况下图 5 和 6 的部分 A 的与图 13 相同的剖视图和按照图 16 的剖切线 XV-XV 剖切的剖视图；

图 16 为图 15 的装置的按照剖切线 XVI-XVI 剖切的剖视图；

图 17 为图 5 和 6 的部分 A 的与图 13 和 15 相仿的视图，其中示出耦联机构处于打开位置；

图 18 为图 5 和 6 的部分 A 的与图 13 和 15 相应的视图，其中示出耦联机构处于半耦联位置；和

图 19 示出图 5 的容器装置，其中下面的容器处于打开位置，同时上面的容器与下面的容器的顶盖耦联。

[0028] 图 1 至 4 中所示的容器装置由容器 1 构成，该容器经过构造，以使通过沿着特别是

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竖直的堆叠方向 2 对多个容器 1 进行的上下堆叠，得到例如由图 5 至 10 可见的由多个上下安放的容器 1 构成的容器装置。

[0029] 容器 1 优选还配备有至少一个耦联设备 3 以及嵌接设备 4，这些设备能实现使得上下安放的箱盒可松开地相互耦联，从而容器装置形成由多个挂接在一起的容器 1 构成的容器组，该容器组可作为一个整体搬运特别是运输。

[0030] 容器 1 最好基本为方形。它在内部具有用于容纳任意物体的容纳腔 5。其主体 6 最好划分成箱盒形或外壳形的下部 7 和指配于下部 7 的开口 12 的顶盖 8，顶盖本身也可以为箱盒形结构或外壳形结构。

[0031] 在容器 1 的正常使用位置，下部 7 设置在下面，顶盖 8 设置在上面。本说明书系针对正常的使用位置。

[0032] 顶盖 8 可以相对于下部 7 处于例如由图 1 和 5 可见的遮盖位置。在这里，该顶盖完全安放在下部 7 的边缘上，并封闭开口 12，使得容纳腔 5 被盖住而无法进入。

[0033] 另一方面，顶盖 8 也可以移动离开下部 7 而处于例如由图 2 和 19 可见的打开位置，以便打开开口 12 和能够到容纳腔 5。

[0034] 原则上，在下部 7 和顶盖 8 之间不需要固定的挂接的连接，这使得能将顶盖 8 完全地从下部 7 取下，以保持打开位置。但最好将这两个组件固定在一起，使得它们即使在顶盖 8 处于打开位置时也能形成一个挂接的组合件。此点的实现方式例如为，利用铰链机构 13 将顶盖 8 可摆动地安置在下部 7 上，该铰链机构限定成顶盖摆动轴线 14，顶盖 8 可围绕该摆动轴线按照双箭头 15 在容器 1 的高度方向上摆动，以便打开和关闭容器 1。

[0035] 以正常使用位置为基准，容器 1 在外面具有前端面 16a、对置的后端面 16b 以及两个同样对置的在前端面和后端面 16a、16b 之间伸展的侧端面 16c、16d。这些端面 16a 一 16d 是框状外围壁 17 的组成部分，在本实施例中，该外围壁划分成属于下部 7 的外围壁部分 17a 和属于顶盖 8 的上面的外围壁部分 17b。在容器 1 封闭的情况下，两个外围壁部分 17a、17b 有利地上下齐平。

[0036] 容器 1 在外面还具有称为底面 18 的底侧外表面和称为顶面 19 的顶侧外表面。底面 18 是属于下部 7 的底壁 22 的组成部分，顶侧 19 是属于顶盖 8 的顶壁 23 的组成部分。在正常使用位置，底壁 22 和顶壁 23 均在水平面上延伸，其中与容器 1 的高度方向一致的堆叠方向垂直于所述水平面。

[0037] 如由图 5 至 19 可见，在两个容器 1 上下堆叠时，当前的下面的容器 1 的顶盖 8 在堆叠方向 2 上处于下面的容器 1 的下部 7 和布置在该下面的容器上方的上面的容器 1 的下部 7 之间。采取这种设置方式特别是使得上面的容器 1 的底壁 22 直接靠置在布置于其下方的顶盖 8 的顶壁 23 上。

[0038] 铰链机构 13 的最佳设置方式为，使得顶盖摆动轴线 14 指配于后端面 16b。因此在打开容器 1 时，可在顶盖 8 的前侧面区域将其向上掀起。

[0039] 下面所使用的术语“前侧面”和“后侧面”系指容器 1 的前端面 16a 和后端面 16b 所在的侧面。“横向 24”在下面指的是垂直于堆叠方向 2 同时平行于前端面和后端面 16a，16b 的方向。垂直于横向 24 的方向称为深度方向 25。

[0040] 耦联设备 3 能使得下面的容器 1 与当前位于其上方的上面的容器 1 可松开地耦联。如图 7 中虚线所示，原则上可以在容器 1 的多个端面 16a 一 16d 上，或者也可以在全部

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端面上，各设有至少一个耦联设备 3。由于还有嵌接设备 4，故在本实施例中仅将耦联设备 3 设置在前端面 16a 上，其中优选只有一个唯一的耦联设备 3，该耦联设备以横向 24 为基准位于中间，即位于前端面 16a 的宽度中间。这样就非常便于进行搬运。

[0041] 特别是当有待通过耦联过程传递的承载力很大且逐点地分布在多个位置时，推荐对特别是可相互独立地操纵的耦联设备 3 进行多重设置。

[0042] 耦联设备 3 具有安置在顶盖 8 上且相对于顶盖 8 可移动的耦联机构 26，该耦联机构可摆动至在图 5 和 6 的下半部以及在图 13 和 14 中可看到的耦联位置，在该耦联位置，所述耦联机构与两个上下安放的容器 1 的下部 7 同时嵌接，致使两个下部 7 在堆叠方向 2 上无法再相对移动。耦联机构 26 防止上面的容器掉下，在反向上通过容器 1 的直接竖直地对顶抵靠进行固定。

[0043] 原则上，可以设想耦联机构 26 是具有任何适当的运动自由度的部件。但作为转动式锁止件（Drehriegel）27 的实施方式被视为是最有益的，本实施例即为此种情况。图 12 为转动式锁止件 27 的一种优选设计的详细后视图。

[0044] 转动式锁止件 27 最好可转动地安置在顶盖 8 的前端面 16a 上，其中由配属的转动支撑机构 28 限定的旋转轴线 29 特别是垂直于前端面 16a 伸展。在该实施例中，转动支撑机构 28 由向前从顶盖 8 的前端面 16a 伸出的例如接管状的支撑颈 32 和在优选一体的特别是作为塑料材料的已有的转动式锁止件 27 上构造的支撑内凹 33 构成，转动式锁止件 27 以该支撑内凹可转动地插到支撑颈 32 上。轴向固定可以通过任意固定机构来进行，例如为此使用锁止机构 34（图 14 和 16）。

[0045] 如图 13、15、17 和 18 中所示，转动支撑机构 28 设有变址机构 35，这些变址机构使得转动式锁止件 27 相对于顶盖 8 不可转动地固定在各个不同的优选位置，从而在略微增大的力作用下即可使得该转动式锁止件继续转动。所述变址机构在这里例如可以是卡锁机构。也可以设想变址机构 35 的形式为，其基于栓锁原理且需要用手指主动解锁。

[0046] 转动式锁止件 27 在其面向本体 6 的背面 36 上具有多个由图 12 可见的栓锁结构 37，这些栓锁结构在径向上相距旋转轴线 29 间隔开地布置，其中所述径向间隔对于全部栓锁结构 37 来说最好相等。这些栓锁结构 37 沿着旋转轴线 29 的圆周方向分布，且彼此间隔开地布置，但优选位于共同的圆弧 38 上，该圆弧的中心位于旋转轴线 29 上。

[0047] 栓锁结构 37 优选包括至少三个栓锁结构，在下面称为第一、第二和第三栓锁结构 37a、37b、37c，其中的第一和第二栓锁结构 37a、37b 优选关于旋转轴线 29 正相对，即布置在旋转轴线 29 的相对侧。第一和第二栓锁结构 37a、37b 关于旋转轴线 29 的周向间隔因而至少基本为 180°。第三栓锁结构 37c 相对于前述两个栓锁结构 37a、37b 错开 90°。

[0048] 转动式锁止件 27 特别易于抓取，如果它如图所示大致为 T 形结构，特别是带有三个基本上相等长度的锁止臂 42，这些锁止臂从具有支撑内凹 33 的锁止中心径向向外延伸。最好每个锁止臂 42 都设置有栓锁结构 37a、37b、37c 之一。在具有第三栓锁结构 37c 的锁止臂 42 和两个其它的锁止臂 42 中的每个锁止臂之间，最好张开一个空隙 43，还将对该空隙的确定方式予以介绍。

[0049] 栓锁结构 37 优选由每个槽状凹槽 44 的在径向上位于外面的面向旋转轴线 29 的外面的凹槽边沿构成，所述凹槽在转动式锁止件 27 的主体的后侧构造。每个凹槽 44 都最好弧形地沿着圆弧 38 延伸。用作栓锁结构 37 的外面的栓锁边沿相应地呈弧形，弧形的中

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心位于旋转轴线 29 上。

[0050] 在转动式锁止件 27 按照双箭头 45 围绕旋转轴线 29 旋转时，锁止臂 42 围绕旋转轴线 29 摆动，其中当前沿堆叠方向 2 向上或向下突伸的锁止臂 42 在相应的方向上突出于顶盖 8。因此，栓锁结构 37 与旋转轴线 29 的间距大于旋转轴线 29 与顶盖 8 的顶面和底面之间的间距。

[0051] 作为其它组件，耦联设备 3 具有第一和第二锚定机构 46、47，这些锚定机构设置在带有转动式锁止件 27 的顶盖 8 所属的下部 7 的前端面 16a 上。两个锚定机构 46、47 沿堆叠方向 2 优选以一定间隔设置在顶盖 8 的下方，其中它们在堆叠方向 2 上最好对齐，特别是相互间隔开，使得第一锚定机构 26 比第二锚定机构 47 更靠近顶盖 8。

[0052] 作为槽状凹槽 44 的互补部件，在该实施例中，锚定机构 46、47 均由特别是圆弧形的凸起构成。因而呈弧形的第一锚定机构 46 设置在下部 7 上，使得其曲率等于圆弧 38 的曲率，且其精确地设置在该圆弧 38 上。

[0053] 第二锚定机构 47 的曲面与第一锚定机构 46 的曲面彼此相对。因此，两个锚定机构 46、47 的凸面彼此相向。第二锚定机构 47 的曲率与第一锚定机构 46 的曲率相同，其中第二锚定机构 47 与旋转轴线 29 间隔开，使得上面的容器 1 的第二锚定机构 47 和其下面的容器 1 的旋转轴线的间距与旋转轴线 29 和第一锚定机构 46 之间的间距相等。

[0054] 因此，若两个容器 1 上下安放，则下面的容器 1 的第一锚定机构 46 和上面的容器 1 的第二锚定机构 47 共同地位于圆弧 38 上(见图 13)。

[0055] 相反，也可以采用相反的设置方式，即，将锚定机构 46、47 构造成槽状凹槽，转动式锁止件 27 的由凸起构成的锚定结构 37 可以插入到该凹槽中。

[0056] 原则上也可以将第一和第二锚定机构 46、47 构造成一个结构单元。

[0057] 若两个容器 1 上下安放，则下面的容器 1 的转动式锁止件 27 可以转动至由图 5、6、13 和 14 可见的耦联位置，在该耦联位置，第一栓锁结构 37a 与下面的下部 7 的第一栓锁机构 46 耦联嵌接，同时，在设置于向上突伸的锁止臂 42 上的第二栓锁结构 37b 与上面的下部 7 的第二锚定机构 47 之间产生耦联嵌接。转动式锁止件 27 转动 180° 之后的转动位置将得到相同的结果，于是在这里只是第一和第二栓锁结构 37a、37b 在其与两个锚定机构 46、47 的配合作用方面互换。

[0058] 在耦联位置，锚定机构 46、47 在以堆叠方向 2 为基准的相反朝向侧被第一和第二栓锁结构 37a、37b 包夹，从而无法再沿堆叠方向 2 将下部 7 彼此分开。在这种情况下，下面的容器 1 的顶盖 8 可以在位于其上侧和下侧的下部 7 之间夹紧。

[0059] 另外在耦联位置，转动式锁止件 27 还可以定位于分别具有一定功能的其它转动位置。这种定位最好由变址机构 35 来辅助。另一这种转动位置是例如由图 1、15 和 16 可见的关闭位置，在图 5 至 10 中位于上面的容器 1 转动锁止时仍存在该关闭位置。关闭位置与耦联位置相差转动 90° 之后的位置，从而第一和第二栓锁结构 37a、37b 在不起作用的情况下处于顶盖 8 的前端面 16a 的区域中，而仅仅第三栓锁结构 37c 才起作用，该第三栓锁结构位于在关闭位置向下突伸的锁止臂 42 上。第三栓锁结构 37c 与第一锚定机构 46 耦联嵌接，从而顶盖 8 相对于下部 7 不可取下地被锁止。在顶盖 8 和下部 7 之间起作用的锁止力从顶盖 8 通过转动支撑机构 28 传递，而这不会出现其它问题，因为这种锁止力只是关闭力，该关闭力比较小，只会使转动支撑机构 28 受到较小的载荷。

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[0060] 转动式锁止件 27 经过选择设计，使得它在关闭位置不会突伸到可能位于该容器上方的另一上面的容器 1 的第二锚定机构 47 所在的区域中。使得转动式锁止件 27 在关闭位置根本不突出于或者仅仅略微突出于顶盖 8 的顶面 19，这种构造方式是特别有利的。

[0061] 在转动式锁止件 27 处于关闭位置时，在相关容器 1 的上面，随时都可以将另一容器 1 放上以及不受妨碍地再取下。

[0062] 转动式锁止件 27 的关闭位置因而可以用于使得容器组解耦。它还用于使得各个有待使用的容器 1 的顶盖 8 相对于下部 7 可松开地锁止，从而将顶盖 8 固定在遮盖位置。这种状态由图 1 可见。

[0063] 可见，转动式锁止件 27 的栓锁结构 37 无论在耦联位置，还是在关闭位置，都始终与下部 7 的相同的第一锚定机构 46 协同工作。构造成本因此相当地小。

[0064] 在图 2 和 17 中示出了转动式锁止件 27 的另一功能位置。该另一功能位置是打开位置，在该位置，顶盖 8 与下部 7 之间的栓锁被解除，从而为了打开容器 1，可以按照箭头 15 向上掀起顶盖 8。该打开位置，以及上述关闭位置，最好同时形成放在容器 1 上方的上面的容器的开启位置，无论在打开位置还是在关闭位置，转动式锁止件 27 的栓锁嵌接均被解除。

[0065] 设置在相邻栓锁结构 37 之间的上述空隙 43 在打开位置发挥出其作用。该空隙 43 的宽度至少与第一锚定机构 46 的宽度一样大，其中转动式锁止件 27 定位在打开位置，使得空隙 43 位于第一锚定机构 46 的区域中。换句话说，第一锚定机构 46 因而设置在空隙 43 中，该空隙的大小足以允许顶盖 8 向上摆动，而不会受到第一锚定机构 46 的妨碍。第一锚定机构 46 在打开位置因而与每个栓锁结构 37 完全脱离耦联嵌接。

[0066] 由于转动式锁止件 27 的结构优选对称，该转动式锁止件可以替代地定位在两个打开位置，使得转动式锁止件 27 朝向一个方向或另一方向转动，就可以从关闭位置到达打开位置，其中转动角度优选均为 45°。若仅设有一个打开位置，则可以省去空隙 43 之一。

[0067] 最后，还可以使得转动式锁止件 27 处于由图 18 可见的功能位置，该功能位置称为半耦联位置，因为尽管与属于顶盖 8 的下部 7 的耦联嵌接被解除，但与放在下面的容器 1 上方的上面的容器 1 的下部 7 的耦联嵌接并未被解除。就属于下面的容器 1 的转动式锁止件 27 而言，半耦联位置还可在图 19 中看到。

[0068] 半耦联位置是本实施例中相对于耦联位置转动 90° 之后的转动位置。在这里，配备有第三栓锁结构 37c 的锁止臂 42 向上突伸到上面的容器 1 的下部 7 的前端面 16a 之前。在那里，第三栓锁结构 37c 与第二锚定机构 47 栓锁嵌接。第一锚定机构 46 的栓锁嵌接被解除，第一和第二栓锁结构 37a、37b 位于与根据图 15 的关闭位置相同的位置，只是它们的方向互换了。

[0069] 在半耦联位置，不再与下面的容器 1 的下部栓锁的顶盖 8 按照图 17 被向上掀起，更确切地说，与放置在该顶盖 8 上的至少一个其它的容器 1 一起被向上掀起，所述其它的容器仍以与在耦联位置情况下相同的方式栓锁在可向上掀起的顶盖 8 上。因此，容器组并未拆开，且尽管如此仍能打开下面的容器 1，以便打开容纳腔 5。

[0070] 不言而喻，转动式锁止件 27 的造型可与上述不同，特别是可以设有附加的壁结构，这些壁结构向前遮盖空隙 41，使得转动式锁止件 27 具有确切地说是均匀的外轮廓，例如与圆弓形状相仿。

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[0071] 附加存在的嵌接设备 4 含有设置在容器 1 的顶面 19 上的第一嵌接结构 48 和设置在容器 1 的底面 18 上的第二嵌接结构 49。在该实施例中，第一嵌接结构 48 位于顶盖 8 的顶壁 23 之外，第二嵌接结构 49 位于下部 7 的底壁 22 之外。两个嵌接结构 48、49 相互协调，使得在两个容器 1 的上下堆叠的状态下，下面的容器 1 的向上朝向的第一嵌接结构 48 和上面的容器 1 的向下朝向的第二嵌接结构 49 相互嵌接。这种嵌接的作用方式为，一方面，上下放置的容器 1 横向于堆叠方向 2 相互顶靠，且相互间不会发生相对移动。另一方面，使得嵌接结构 48、49 至少部分地横向于堆叠方向咬合，从而产生在堆叠方向上起作用的栓锁，这种栓锁防止上面的容器 1 的至少某个区域至少一次直接竖直向上地脱离于下面的容器 1。

[0072] 具体而言，嵌接结构 48、49 的优选构造方式为，它们防止取下上面的容器 1 的后部区域 52，而允许取下上面的容器 1 的前部区域 53。这种状况可由图 10 清楚地看到。为了还使得前部区域 53 不可取下地与下面的容器 1 栓锁，进而使得整个上面的容器 1 都与下面的容器 1 稳定地连接，设有已经详细介绍的至少一个耦联设备 3。该耦联设备 3 最好位于前端面 16a 的区域中，且按照已述方式在处于耦联位置时在中间连接下面的顶盖 8 的情况下将上面的下部 7 和下面的下部 7 牢牢地保持在一起。

[0073] 如果没有耦联设备 3，则相应地设计第一和第二嵌接结构 48、49 也能确保在两个容器上下堆叠的状态下使得上面的容器 1 就其整体而言不会直接沿堆叠方向 2 向上被取下。但嵌接设备 4 与耦联设备 3 组合有利于搬运。

[0074] 第一嵌接结构 48 由多个在顶盖 8 的顶面 19 上构造的沿着顶盖面分布布置的嵌接凹槽 54 构成。第二嵌接结构 49 由多个最好以与嵌接凹槽 54 相同的方式分布布置的嵌接凸起 55 构成，这些嵌接凸起向下突出于底壁 22 的最好至少平整的外基面 56。

[0075] 多个这种嵌接凸起 55 形成支脚 57，这些支脚最好逐点地沿着底面 18 分布，其中该实施例具有总共四个这种支脚 57，这四个支脚位于底壁 22 的外基面 56 的角落区域中，但相距端面 16a-16d 均保持一定距离。

[0076] 每个容器 1 都可以在单独使用的情况下通过支脚 57 稳定地支撑在地面 (Untergrund) 上。在将容器 1 用作堆叠的容器装置的下面的容器时有同样的情况。支脚 57 与主体 6 最好一体地构造，但在需要时也可以至少局部可拆下地固定，以便在磨损的情况下能够进行更换。

[0077] 在嵌接凹槽 54 下面有两个部件 54a，这两个部件设置在优选矩形的顶面 19 的两个前角落区域中。也可以针对配属于后面支脚 57 的嵌接凹槽采取相仿的设置方式，但在该实施例中选用了一种有利的方案，即，只有一个唯一的后面的嵌接凹槽 54b，该嵌接凹槽的尺寸使得能将两个后面的支脚 57 同时插入到该嵌接凹槽中。

[0078] 特别是如由图 1、7 和 9 可见，后面的嵌接凹槽 54b 可以具有细长形状，且在横向 24 上延伸一段距离，并平行于后端面 16b 延伸。而前面的嵌接凹槽 54a 则与配设的逐点设计的前面的支脚 57 相同，例如大致呈方形。

[0079] 在该实施例中，前面的两个支脚形成支撑支脚 57a，其具有相对于前面的嵌接凹槽 54a 互补的基本形状，从而其在插入到前面的嵌接凹槽中的状态下支撑在前面的嵌接凹槽 54a 的内侧壁上，由此使得放在上面的容器 1 垂直于堆叠方向 2 不再能够在下面的容器 1 上移动。而对支撑支脚 57a 和前面的嵌接凹槽 54a 的构造则使得在堆叠方向 2 上不存在栓锁，从而上面的容器 1 的前部区域 53 在耦联机构 26 处于松开位置的情况下随时都能取下。

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[0080] 相比之下，与优选唯一的后面的嵌接凹槽 54b 对应的后面的支脚 57 则构造成栓锁支脚 57b。其特殊性在于，它们用作第二嵌接结构 49 的咬合组件，这些咬合组件能够将被构造用于栓锁嵌接的后面的嵌接凹槽 54b 在内部横向于堆叠方向 2 咬合，从而产生能防止在堆叠方向 2 上发生相对移动的栓锁嵌接。因此在下面将后面的嵌接凹槽 54b 也称为栓锁嵌接凹槽。

[0081] 如果给每个栓锁支脚 57b 都配设一个自己的嵌接凹槽 54，则该嵌接凹槽也分别构造成栓锁嵌接凹槽。

[0082] 后面的嵌接凹槽特别是通过咬合的横截面来实现获得其作为栓锁嵌接凹槽 54b 的功能，图 11 示出了一个相关实施例。在其它情况下向上敞开的栓锁嵌接凹槽 54b 至少在其与后端面 16b 相邻的边缘区域具有在深度方向 25 上向前突伸的优选肋形结构的咬合凸起 58，该咬合凸起导致栓锁嵌接凹槽 54b 具有的敞开横截面小于栓锁底的基面。

[0083] 每个栓锁支脚 57b 都在面向后端面 16b 的背面具有最好为楔形结构的咬合区段 62，从而在伸至底壁 22 的外基面 56 的过渡区域中形成中间腔，该中间腔具有与咬合凸起 58 互补的横截面(图 11)。

[0084] 栓锁嵌接凹槽 54b 的开口的大小沿深度方向 25 大于每个栓锁支脚 57b 的大小。后者因而可以毫无问题地从上方插入到栓锁嵌接凹槽 54b 中。

[0085] 为了将上面的容器 1 放置到下面的容器 1 上，使得上面的容器 1 按照图 10 处于倾斜位置，并以向下倾斜的后部区域 52 预先放置到下面的容器 1 的顶面 19 上，其中栓锁支脚 57b 插入到栓锁嵌接凹槽 54b 中。同时或者接下来，按照箭头 63 向后压或推上面的容器 1，使得咬合区段 62 与至少一个咬合凸起 58 栓锁嵌接。这种栓锁嵌接的发生区域可以称为栓锁区域 64。

[0086] 在另一步骤中，按照箭头 65 向下摆动上面的容器 1 的前部区域 53，其中在栓锁区域 64 中咬合的结构在其延展段中限定了图 7 中所示的用于所述摆动过程的摆动轴线 66。

[0087] 在前部区域 53 摆动至下面的容器 1 的顶面 19 时，支撑支脚 57a 插入到配置的前面的嵌接凹槽 54a 中，最终完善了嵌接结构 48、49 的相互嵌接。

[0088] 上面的容器 1 的后部区域 52 通过栓锁支脚 57b 和栓锁嵌接凹槽 54b 之间的栓锁嵌接而被防止竖直地掉下。将耦联机构 26 转动至耦联位置，由此相应地使得前部区域 53 在竖直方向固定。

[0089] 将前面的嵌接凹槽 54a 的侧壁至少部分地构造成倾斜的滑动面 67，这样有利于将支撑支脚 57a 插入到前面的嵌接凹槽 54a 中。前面的嵌接凹槽 54a 因而在其开口区域中具有大于底面的横截面，其中这种横截面差部分被倾斜的滑动面 67 跨接。因而在放置上面的容器时自动地进行对中。

[0090] 由图 4 可见，可以有一个附加的栓锁板条 68 在沿着横向 24 相互间隔开地布置的栓锁支脚 57b 之间延伸，与栓锁支脚 57b 相仿，该栓锁板条也具有咬合区段 62，且最好跨接两个栓锁支脚 57b 之间的整个中间腔。该栓锁板条 68 也形成第二嵌接结构 49 的咬合组成部分，其附加于栓锁支脚 57b 起作用，且增加了栓锁接触的长度，从而获得较大的支撑能力。

[0091] 栓锁板条 68 的沿堆叠方向 2 测得的高度最好小于栓锁支脚 57b 的高度，从而后者向下突出于栓锁板条 68。但最好使得栓锁板条 68 与栓锁支脚 57b 一体地构造。该栓锁板

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条特别是采用与支脚 57 相同的方式与下部 7 的主体一体地连接。

[0092] 支脚 57 的数量当然也可以不同于本实施例。例如，在背侧可以只有一个唯一的板条状的栓锁支脚 57b，因而相仿的设置方式为，栓锁板条 68 具有与栓锁支脚 57b 相同的高度。

[0093] 为了能便于运输容器 1 或容器组，容器 1 在其顶面上最好具有把持部分 72。该把持部分 72 最好设置在顶盖上。此外，该把持部分的有利的构造方式为，它可以有选择地处于由附图可见的摆动至顶面 19 的非使用位置，或者处于在图 6 中示出的向上摆动过的凹面向上突出于顶面 19 的使用位置。该把持部分优选是 U 形弓状的把持部分 72。

[0094] 为了使得把持部分 72 不影响容器 1 的堆叠过程，在顶盖 8 的顶面 19 上构造有向上开口的容纳凹槽 73，把持部分 72 在非使用位置沉降在该容纳凹槽中。这里有利的是，该容纳凹槽 73 直接由相应大小的栓锁嵌接凹槽 54b 构成。

[0095] 所述栓锁嵌接凹槽 54b 在本实施例中同时形成在顶面 19 开口的把持坑槽 74。该把持坑槽可以使得一个独立的容器在相对于正常使用位置转动 90° 之后的竖立方向上类似于公文包一样运输，且能用手从上方抓取该把持坑槽 74，其中可以用手指夹持咬合凸起 58，从而可以可靠地运输。

[0096] 不同于该实施例，栓锁嵌接凹槽 54b 的构造方式也可以为，使得其咬合区段 62 向前朝向。在这种情况下，咬合凸起 58 也处于至少一个栓锁嵌接凹槽 54b 的靠近前端面 16 的边缘区域上，并向后朝向。

[0097] 在该实施例中，两个在竖直方向相互耦联的容器 1 之间的全部支撑力通过三点耦联机构来传递。三个耦联点由在两个栓锁支角 75b 和间隔于栓锁区域 64 布置的转动式锁止件 27 的区域中采取的栓锁措施构成。附加地，通过栓锁板条 68 还可以传递一定的平面力。

[0098] 当然可以实现不同构造高度的容器 1，在这些容器之间具有与所述容器 1 相同的耦联设备 3 和嵌接设备 4。通过这种方式也可以将相互间差别很大的容器 1 毫无问题地按任意顺序堆叠起来并组成容器组。

[0099] 至少一个耦联设备 3 与嵌接设备 4 组合地存在，这是特别有利的，但容器 1 原则上也可以未配备嵌接设备 4，和 / 或配备有与前述构造方式不同的嵌接设备。

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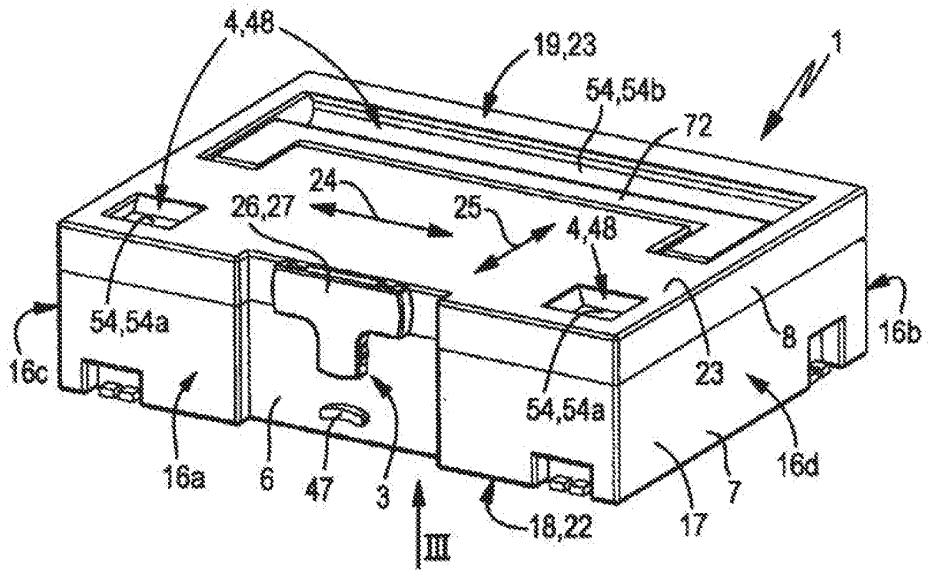


图 1

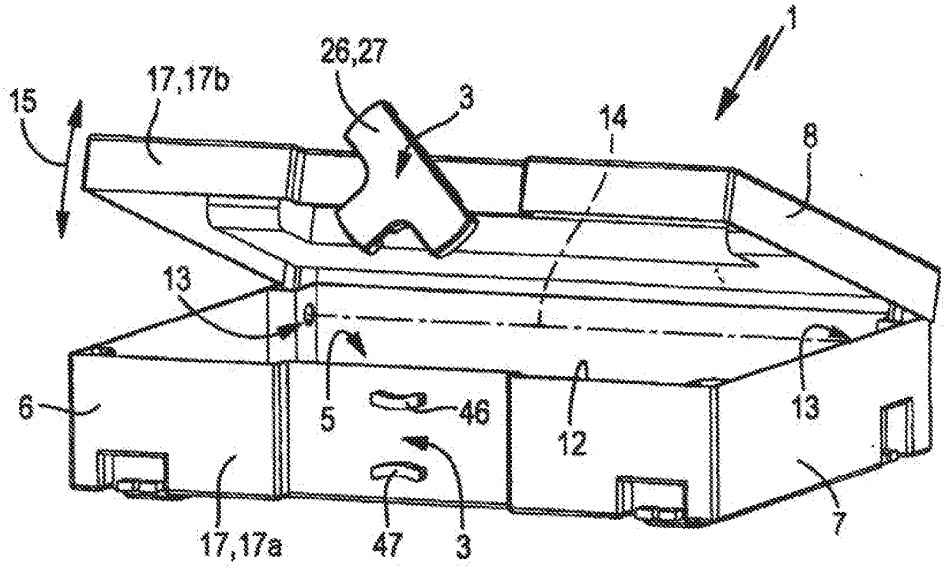


图 2

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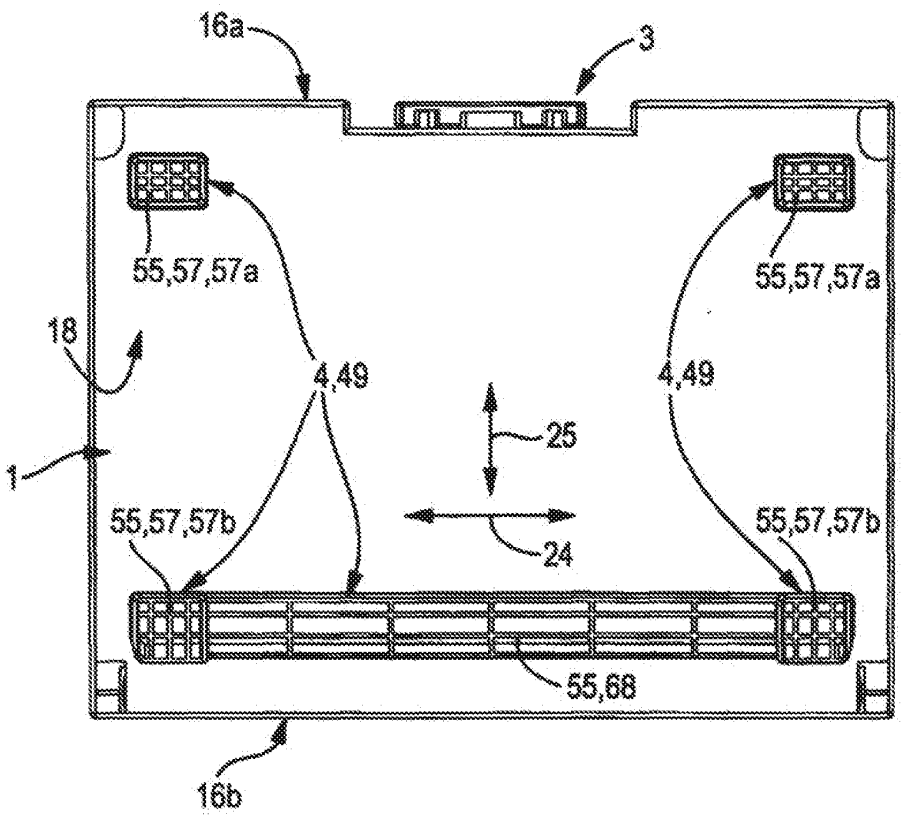


图 3

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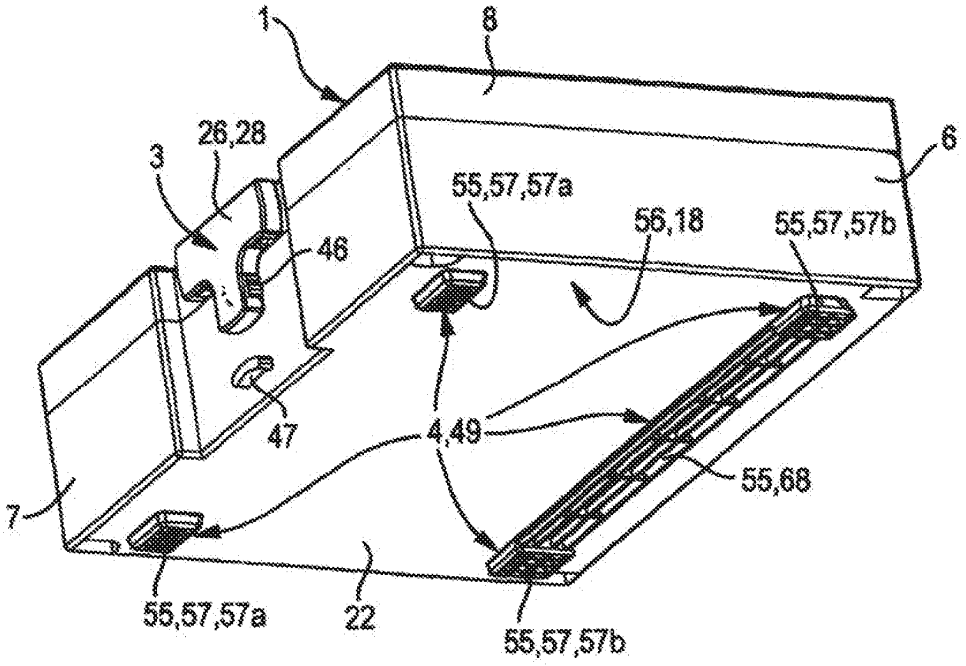


图 4

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2003 - Page 919
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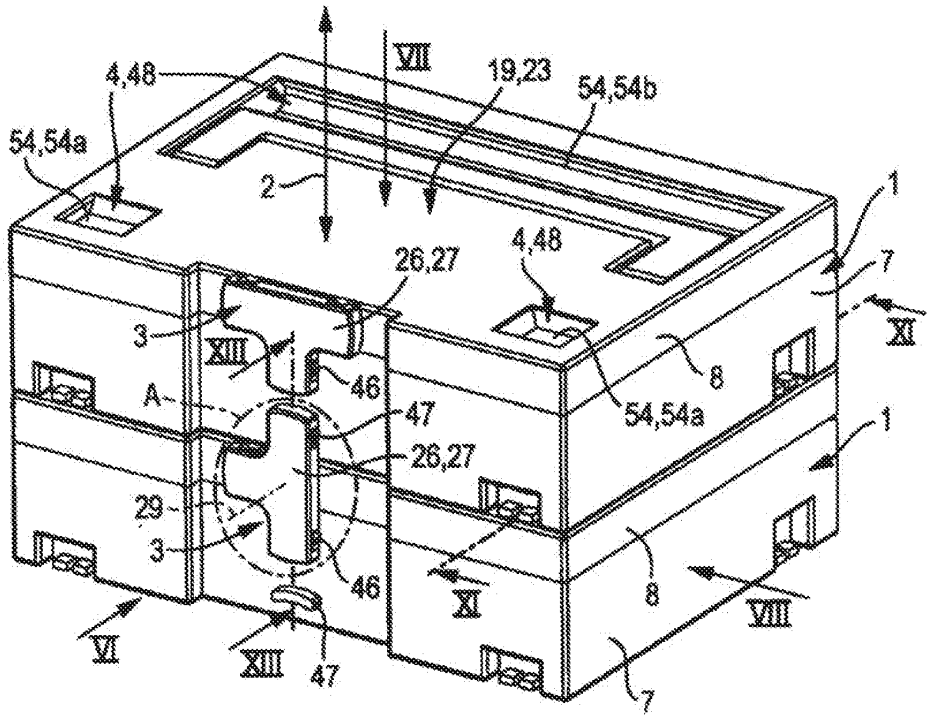


图 5

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2003 - Page 920
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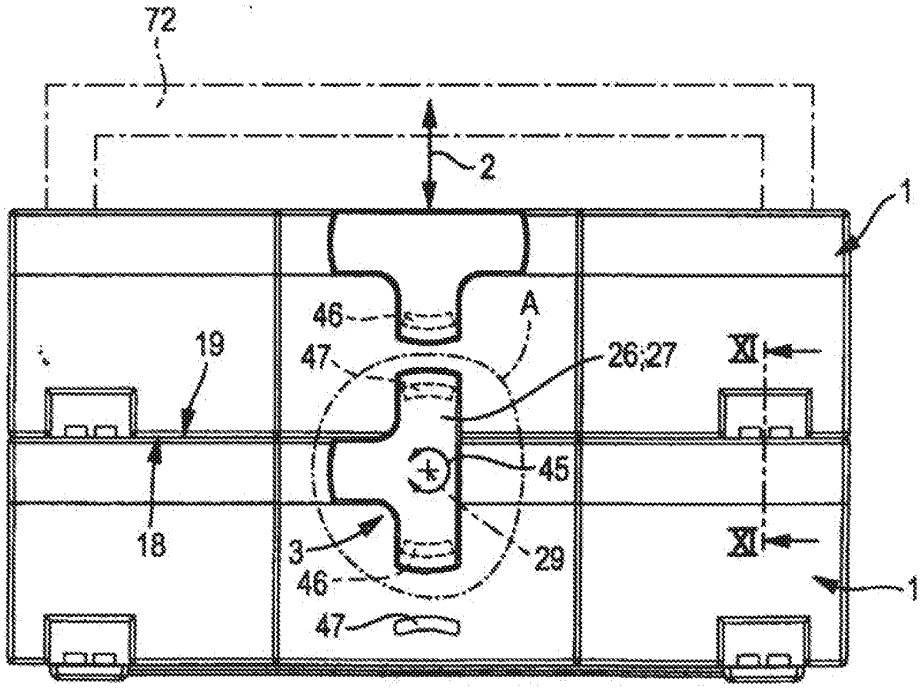


图 6

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Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
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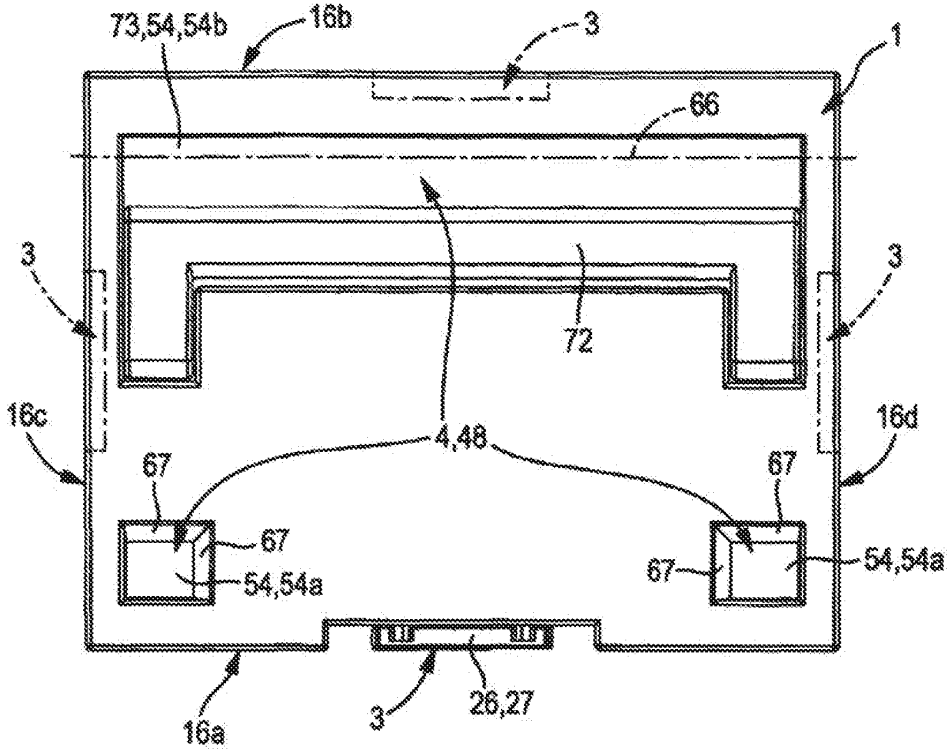


图 7

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2003 - Page 922
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
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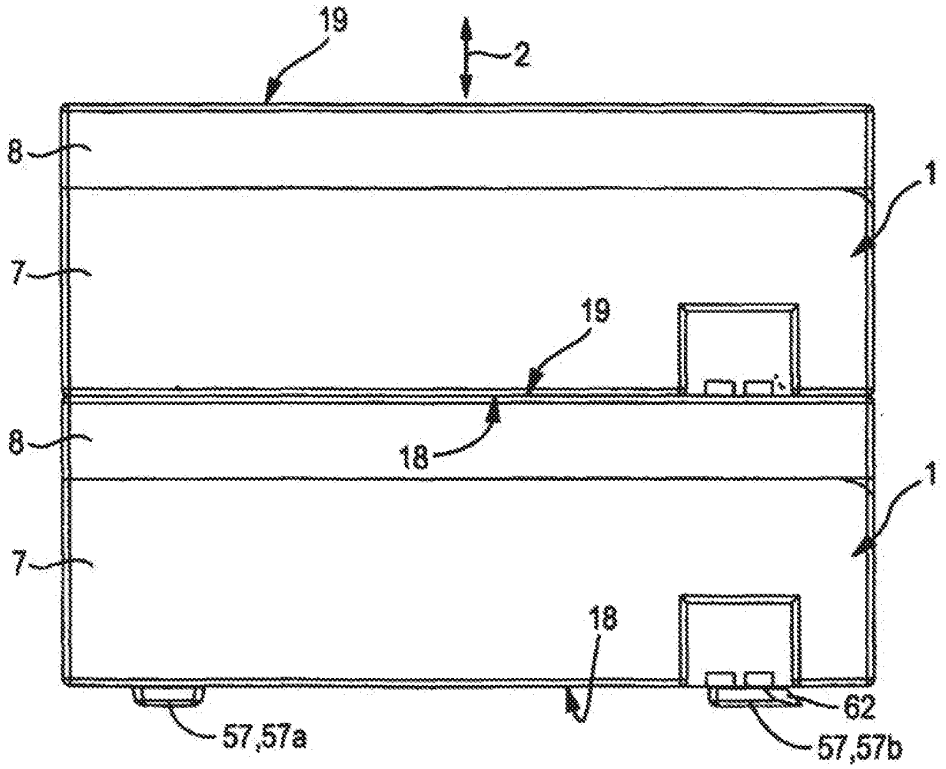


图 8

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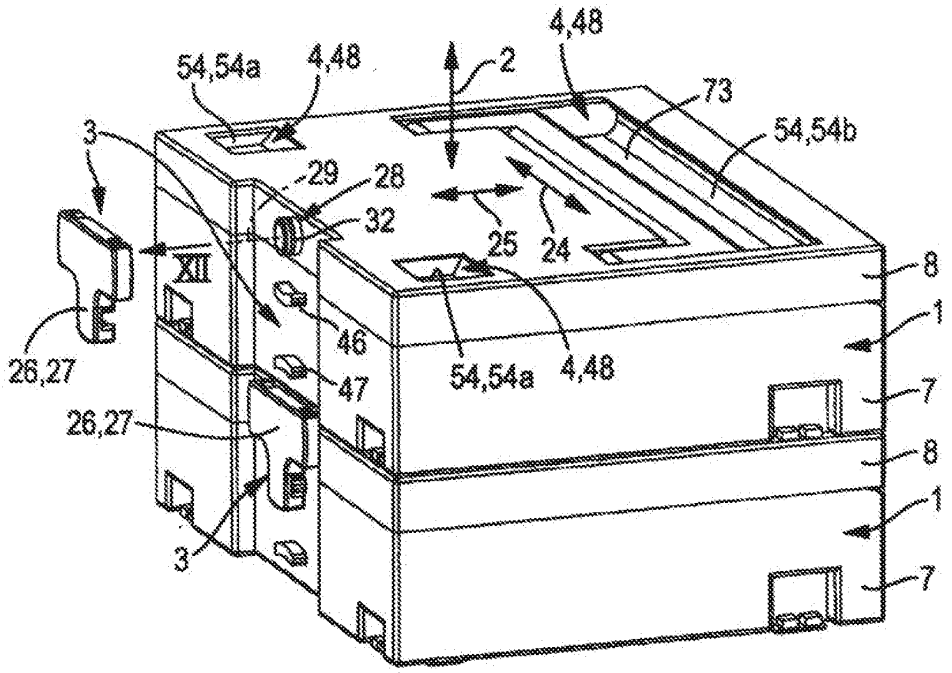


图 9

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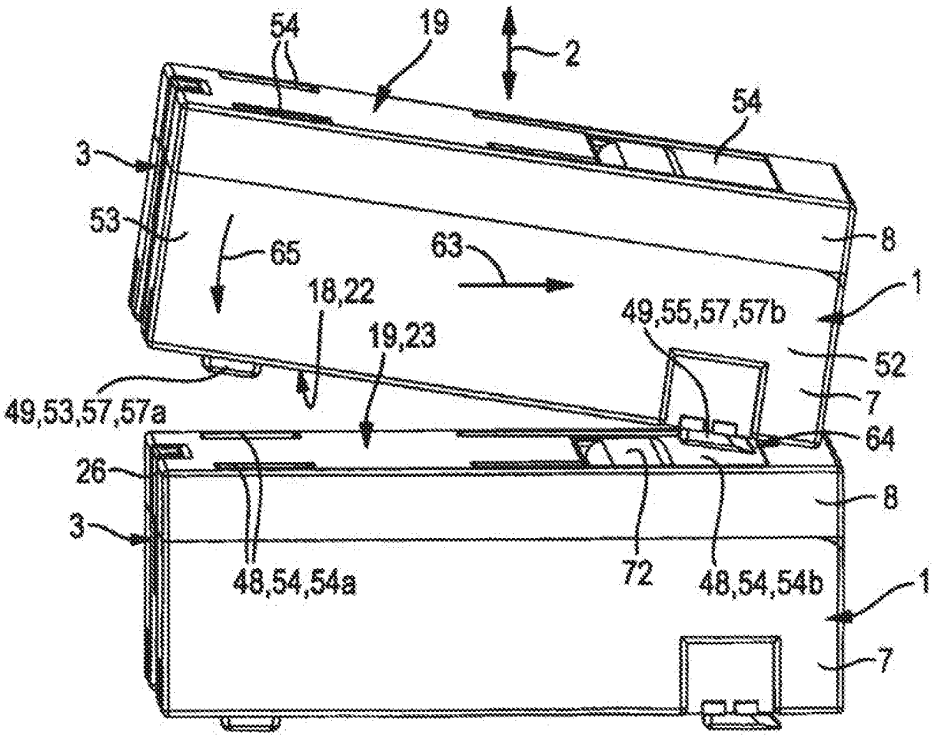


图 10

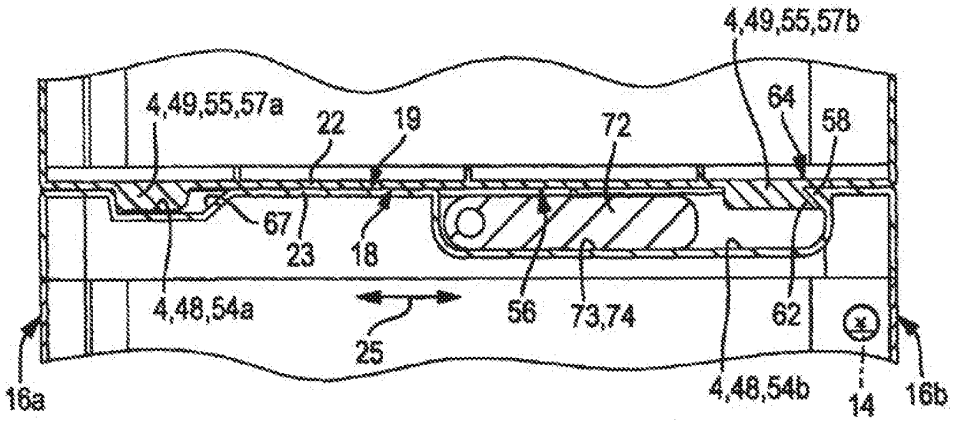


图 11

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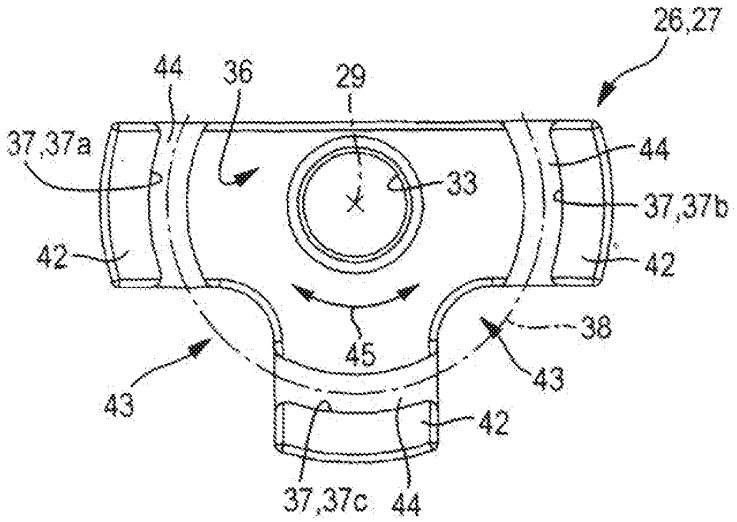


图 12

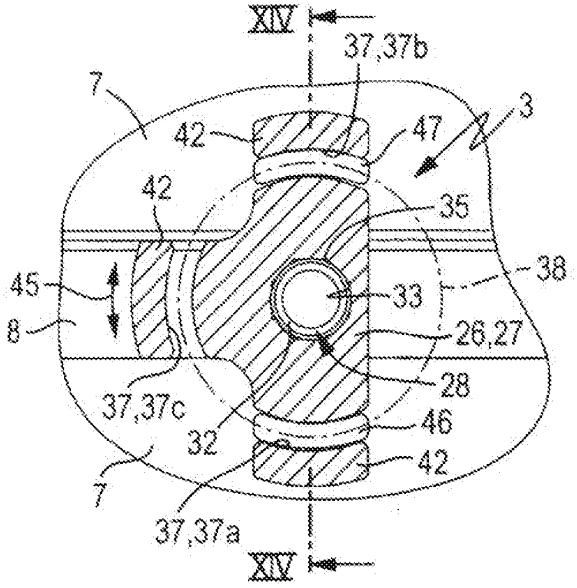


图 13

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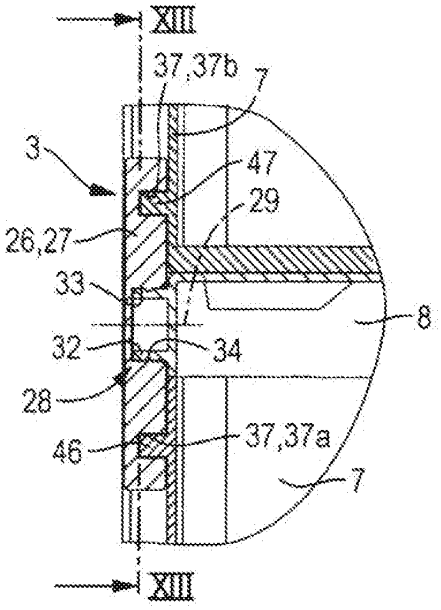


图 14

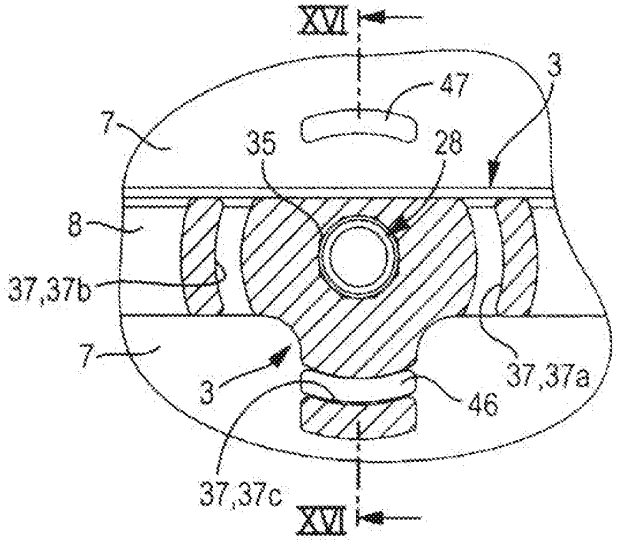


图 15

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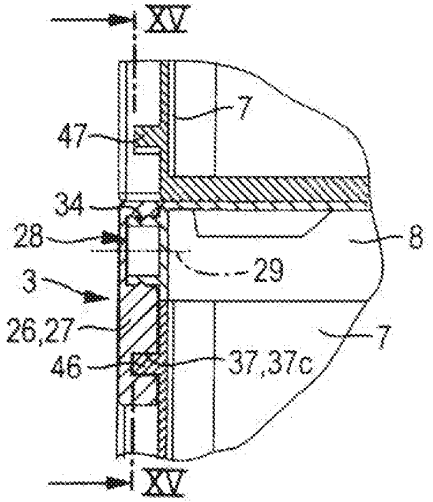


图 16

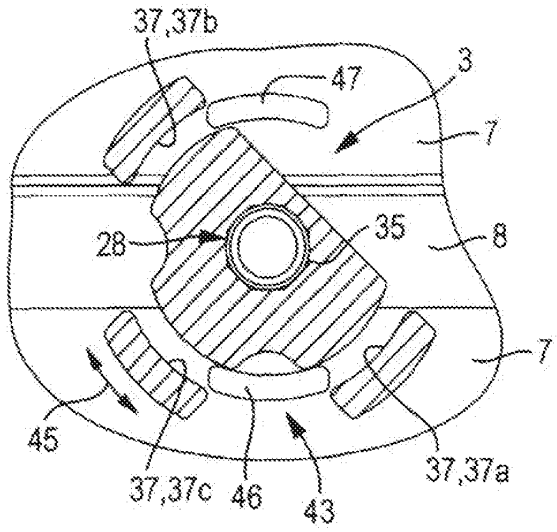


图 17

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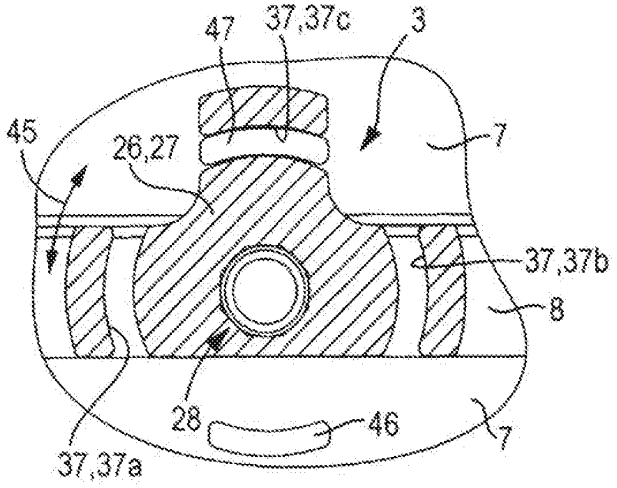


图 18

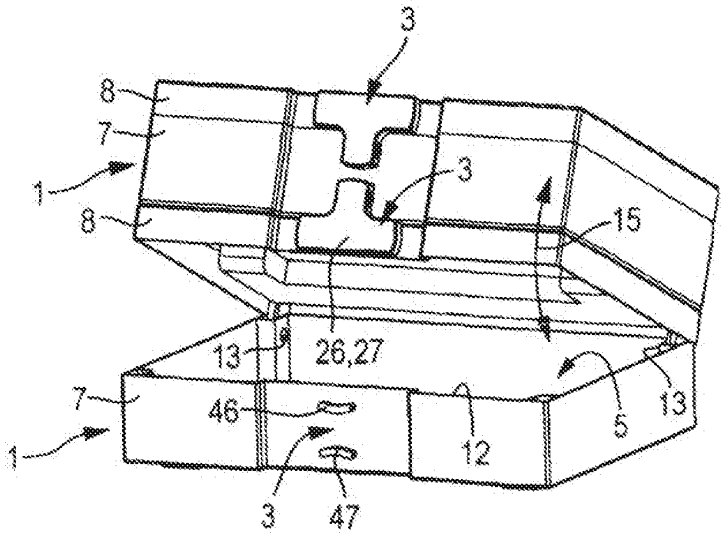


图 19

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Espacenet

Bibliographic data: CN103659777 (A) — 2014-03-26

System module of a storage system

Inventor(s): ROEHM HEIKO; SAUR DIETMAR ± (ROEHM HEIKO, ; SAUR DIETMAR, ; H.雷姆, ; D.绍尔)

Applicant(s): BOSCH GMBH ROBERT ± (ROBERT BOSCH GMBH, ; 罗伯特·博世有限公司)

Classification: - international: ***B25H3/02***
- cooperative: **B25H3/026 (EP, US)**

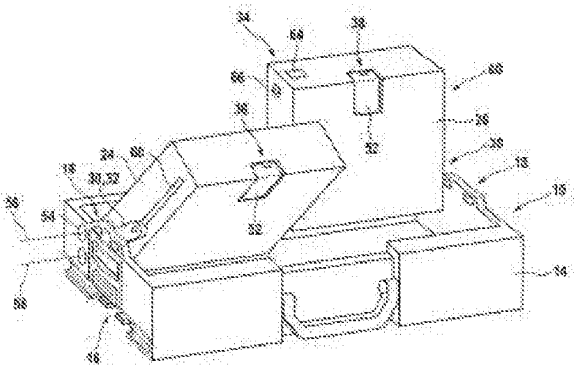
Application number: CN201310420611 20130916 Global Dossier

Priority number(s): DE201210216485 20120917

Also published as: CN103659777 (B) DE102012216485 (A1) FR2995547 (A1) US2014076759 (A1) US8839956 (B2)

Abstract of CN103659777 (A)

Provided is a system module of a storage system (12) especially a hand-held tool storage system. The system module includes at least one frame unit (14), at least one first function unit (24), at least one second function unit (26), and at least one positioning unit (30). The at least one frame unit (14) has at least one coupling unit (16, 18) configured to be coupled, so as to be disconnectable by an operator, to at least one part (20) of at least one further system module (22). The function units are configured to be disposed, at least in one operating state, at least substantially inside a space (28) spanned by the frame unit (14). The at least one positioning unit is configured to position the function units (24, 26), independently of each other, relative to the frame unit (14), in at least two at least substantially differing positions.



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B25H 3/02(2006.01)

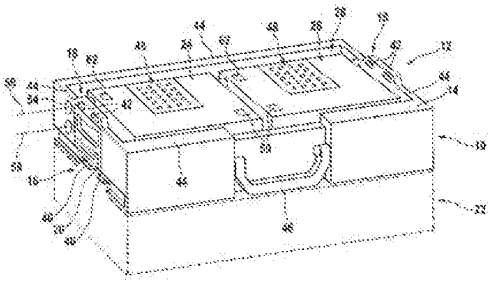
权利要求书1页 说明书9页 附图2页

(54)发明名称

保存系统的系统模块

(57)摘要

提出了保存系统(12)的、特别是手持式工具保存系统的系统模块，其具有：至少一个框架单元(14)，该框架单元具有至少一个耦合单元(16，18)，所述耦合单元设置用于以能由操作者松开的方式与至少另一个系统模块(22)的至少一个部件(20)相耦合；至少一个第一功能单元和一个第二功能单元(24，26)，所述功能单元在至少一种运行状态中至少基本上布置在由所述框架单元(14)围成的空间(28)的内部；和至少一个定位单元(30)，该定位单元设置用于使所述功能单元(24，26)相对于所述框架单元(14)彼此独立地定位在至少两个至少基本上不同的位置中。



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1. 保存系统(12)的、特别是手持式工具保存系统的系统模块，其具有：至少一个框架单元(14)，所述框架单元具有至少一个耦合单元(16、18)，所述耦合单元设置用于以能由操作者松开的方式与至少另一个系统模块(22)的至少一个部件(20)相耦合；至少一个第一功能单元和一个第二功能单元(24、26)，所述功能单元在至少一种运行状态中至少基本上布置在由所述框架单元(14)围成的空间(28)的内部；和至少一个定位单元(30)，所述定位单元设置用于使所述功能单元(24、26)相对于所述框架单元(14)彼此独立地定位在至少两个至少基本上不同的位置中。

2. 按权利要求 1 所述的系统模块，其特征在于，所述功能单元(24、26)设置用于彼此独立地履行其功能。

3. 按权利要求 1 或 2 所述的系统模块，其特征在于，所述定位单元(30)设置用于以能由操作者松开的方式来固定所述功能单元(24、26)中的至少一个功能单元。

4. 按前述权利要求中任一项所述的系统模块，其特征在于，所述定位单元(30)设置用于借助摩擦配合连接和/或借助形状配合连接将所述功能单元(24、26)保持在相应的位置中。

5. 按前述权利要求中任一项所述的系统模块，其特征在于，所述定位单元(30)具有至少两个保持连接杆(32)，所述保持连接杆设置用于将所述功能单元(24、26)保持在所述位置中。

6. 按前述权利要求中任一项所述的系统模块，其特征在于一种连接单元(34)，所述连接单元设置用于在至少一种运行状态中以能够共同定位的方式将所述功能单元(24、26)连接起来。

7. 按前述权利要求中任一项所述的系统模块，其特征在于，所述功能单元(24、26)中的至少一个功能单元具有功能器件和/或操作器件(36、38)，所述功能器件和/或操作器件只有当所述功能单元(24、26)至少部分地定位在由所述框架单元(14)围成的空间(28)的外部时才能进行操纵。

8. 按权利要求 7 所述的系统模块，其特征在于，至少所述功能器件和/或操作器件(36、38)构造为蓄电池接口。

9. 按前述权利要求中任一项所述的系统模块，其特征在于，所述功能单元(24、26)至少基本上完全填满由所述框架单元(14)围成的空间(28)。

10. 保存系统，具有至少按权利要求 1 到 9 中任一项所述的系统模块(10)和至少另一个系统模块(22)。

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保存系统的系统模块

技术领域

[0001] 本发明涉及保存系统的一种系统模块。

背景技术

[0002] 在 DE 10 2008 058 007 B3 中已经提出手持式工具保存系统的一种系统模块，该系统模块具有至少一个耦合单元，该耦合单元设置用于以能由操作者松开的方式与至少另一个系统模块的至少一个部件相耦合。

发明内容

[0003] 提出了保存系统的、特别是手持式工具保存系统的系统模块，该系统模块具有：至少一个框架单元，该框架单元具有至少一个耦合单元，所述耦合单元设置用于以能由操作者松开的方式与至少另一个系统模块的至少一个部件、尤其耦合单元相耦合；至少一个第一功能单元和一个第二功能单元，所述功能单元在至少一种运行状态中至少基本上布置在由所述框架单元围成的空间的内部；和至少一个定位单元，该定位单元设置用于使功能单元相对于所述框架单元彼此独立地定位在至少两个至少基本上不同的位置中。“保存系统”特别是应理解成一种系统，该系统包括不同的保存器件和特别是系统模块，所述保存器件和系统模块设置用于在彼此相连接的情况下来运输。优选地，所述保存系统具有至少一个工具箱，该工具箱根据文献 DE 10 2008 058 007 B3 来构成。也可以考虑所述保存系统的其它的对本领域技术人员来说有意义的功能。在一种特别优选的实施例中，所述保存系统构造为能够借助于其它系统模块任意地扩展的结构。所述系统模块可以优选由一框架、一箱子、一台架、另一框架单元构成或者由对本领域技术人员来说有意义的、以能与保存系统相兼容的方式构成的类似元件所构成。“手持式工具保存系统”特别是应理解成一种保存系统，该保存系统设置用于保存至少一个手持式工具、一个手持式工具蓄电池和 / 或手持式工具的附件。“框架单元”在这方面特别是应理解成一种单元，该单元具有至少三个侧面元件，所述三个侧面元件形成一个封闭的轮廓并且围成一个所定义的空间。在一种特别优选的实施例中，设置了四个连续的彼此垂直设置的侧壁。优选地，另外两个垂直于所述至少三个、特别是四个侧壁来布置的侧面中的至少一个侧面敞开地构成，其中“敞开地构成”在这方面特别是应理解成，在设计框架单元时有意地放弃底壁和 / 或盖壁。特别优选地，框架单元至少基本上一体构成。优选地，框架单元具有一由金属和 / 或特别优选由塑料、例如特别是 PA6、ABS、PC、PP 和 / 或其它对本领域技术人员来说有意义的塑料制成的框架单元。在一种特别优选的实施例中，所述框架单元至少部分地包围用于接纳功能单元的功能单元接纳区域。优选地，所述框架单元在按照规定使用时、特别是在运送处于接纳区域中的物品时，在仓储时并且在堆放时至少基本上形状稳定。特别是也就是说，所述框架单元在按照规定使用时特别是弹性变形了小于该框架单元的主长度的 20%，有利地 5%。优选地，所述框架单元具有至少一个支承面，该支承面设置用于更可靠地立于至少在倾斜的、至少 10 度陡斜的平面上。优选地，至少所述支承面构造为防滑和 / 或优选防撞的结构。通过所述框架单元，

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可以在装配状态中以结构上简单的方式有利地防止功能单元受到机械影响。“耦合单元”特别是应理解成一种单元，该单元设置用于特别是为了运送而以机械的方式将另一个系统模块有利地固定在系统模块的箱盖上和 / 或特别有利地固定在系统模块的箱体上。优选地，所述系统模块具有两个耦合单元，这两个耦合单元设置用于相应地将另一个系统模块固定在对置的侧面上。优选地，耦合单元如在文献 DE 10 2008 058 007 B3 中所说明的一样构成。框架单元有利地具有其它的特别是用于与台架系统相耦合的耦合单元。“能由操作者松开的耦合”特别是应理解成一种机械连接，该机械连接能够由操作者无破坏地并且有利地在无工具的情况下分开。优选地，所述耦合单元与另一个系统模块的部件锁定在一起。优选地，耦合单元和 / 或另一个系统模块的部件具有操作元件，对操作元件的操纵松开所述耦合。“设置”特别是应理解成专门地编程、设计和 / 或装备。“功能单元”特别是应理解成一种单元，该单元设置用于在一种运行状态中履行主要功能，特别是在下述状态中履行主要功能，其中所述功能单元至少基本上被固定在框架单元中或者说与框架单元相连接。功能单元优选至少基本上与手持式工具和 / 或与手持式工具机不同地构成。优选地，所述功能单元具有至少一种对本领域技术人员来说有意义的功能。所述功能单元可以有利地包括至少一个充电器、一测量仪、一水平装置、一能量输出端、特别是一插座、一吸尘器、一媒体播放器、特别是一收音机、和 / 或有利地一照明器件。在本发明的另一种设计方案中，所述系统模块具有两个以上的、能不同地相对于框架单元定位的功能单元。术语“被围成的空间”在这方面特别是应理解成一种空间，该空间通过框架单元的轮廓来界定。特别优选地，所述空间在至少一侧上、优选在至少两侧上是敞开的并且对于操作者来说至少基本上能够自由地接近。功能单元特别是在无工具的情况下能装入到所述空间中。特别优选地，所述功能单元在装入的、可以投入使用的状态中至少部分地、有利地至少基本上完全布置在由框架单元围成的空间的内部。“基本上在内部”特别是应理解成，所述功能单元在至少一种运行状态中至少 50%、有利地至少 75%、特别优选 100% 布置在由框架单元围成的空间的内部。“定位单元”在这方面特别是应理解成一种单元，该单元至少主要设置用于使功能单元相对于框架单元定位在至少两个不同的位置中。优选地，定位单元具有至少一个铰链，以便围绕该铰链使功能单元中的至少一个功能单元围绕至少一个轴线或者特别是围绕着至少两个轴线来摆动和 / 或旋转。铰链例如构造为球节，特别有利地构造为转动关节。所述定位单元特别是以能由操作者松开的方式优选与功能单元和 / 或框架单元相连接。特别是，所述定位单元至少部分地优选旋转运动地与功能单元和 / 或框架单元相连接。所述定位单元有利地设置用于将功能单元相对于框架单元保持在至少两个锁止位置中。在一种特别优选的实施例中，所述定位单元设置用于相对于框架单元实现功能单元的至少三个、优选至少四个、特别优选至少五个彼此不同的锁止位置。特别优选地，在所定义的区域内借助于定位单元相对于框架单元可以实现功能单元的任意多的锁止位置。“至少基本上不同的位置”在这方面特别是应理解成至少两个位置沿着至少一个空间方向、优选沿着至少两个空间方向并且特别优选沿着三个空间方向偏差了至少 1mm、优选偏差了至少 5mm 并且特别优选偏差了至少 10mm。在一种特别优选的实施例中，第一位置与至少一个第二位置偏差了至少 25mm。如果定位单元设置用于使功能单元围绕至少一个轴线摆动，则“至少基本上不同的位置”应理解成至少 2 度、优选 5 度、特别优选 10 度的差别。“彼此独立地”在这方面特别是应理解成，定位单元设置用于使功能单元相对于框架单元沿着不同的取向定位。术语“定位”特别

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是应理解成相对于框架单元固定在一位置中。通过系统模块的按本发明的设计方案，可以在有利地定向的情况下通过有利地得到保护的功能单元履行多种功能。

[0004] 在另一种设计方案中提出了，所述功能单元设置用于彼此独立地履行其功能，由此可以实现一种在结构上简单的设计方案。特别是可以放弃功能单元之间的复杂的电缆敷设。短语“彼此独立地履行其功能”特别是应理解成，第一功能单元和第二功能单元在功能上彼此分开地工作。特别是，功能单元具有分开的操作元件和/或分开的能量供给装置。功能单元有利地履行不同的功能。替代地或者补充地，功能单元可以特别是在对准不同的区域的情况下履行相同的功能。例如两个功能单元可以构造为灯，用所述灯可以直接和/或间接地将工作区域照亮。替代地，所述功能单元可以相互作用。

[0005] 此外提出了，所述定位单元设置用于以能由操作者松开的方式来固定所述功能单元中的至少一个功能单元，由此功能单元可以在与框架单元分开的情况下使用。短语“以能由操作者松开的方式来固定”特别是应理解成，所述定位单元和所述功能单元如此连接，使得操作者可以无破坏地并且有利地在无工具的情况下松开所述连接。优选地，所述定位单元以能由操作者松开的方式固定两个功能单元。

[0006] 此外提出了，所述定位单元设置用于借助摩擦配合连接和/或借助形状配合连接将所述功能单元保持在相应的位置中，由此能以结构简单的方式固定在工作位置中。“摩擦配合连接”特别是应理解成借助于静摩擦进行固定。例如定位单元可以具有螺纹或者偏心轮，其使两个摩擦面彼此挤压。“形状配合连接”特别是应理解成借助于几何结构进行固定。例如所述定位单元可以具有定位机构、齿部和/或有利地斜齿部。

[0007] 此外提出了，所述定位单元具有至少两个保持连接杆，所述保持连接杆设置用于将功能单元保持在相应的位置中，由此能实现特别稳定的固定。“保持连接杆”特别是应理解成一种器件，该器件在至少一种运行状态中在与功能单元的旋转轴线间隔开地在框架单元与功能单元之一之间引起特别是线性的保持力，该保持力将所述功能单元保持在相应的位置中。

[0008] 此外提出了，所述系统模块包括连接单元，该连接单元设置用于在至少一种运行状态中以能够共同定位的方式将所述功能单元连接起来，由此可以特别简单地实现功能单元的相同的取向。“能够共同地定位”特别是应理解成，在连接单元闭合时所述一个功能单元的运动使所述另一个功能单元特别是运动了相同的角度。

[0009] 在本发明的一种有利的设计方案中提出了，所述功能单元中的至少一个功能单元具有功能器件和/或操作器件，该功能器件和/或操作器件只有当所述功能单元至少部分地定位在由框架单元围成的空间的外部时才能进行操纵，由此有利地保护了所述功能器件和/或操作器件。“功能器件和/或操作器件”在这方面特别是应理解成一种器件，该器件在与操作者的相互作用中履行一种功能和/或通过该器件操作者可以控制一种功能。“能操纵”特别是应理解成，操作者只有在功能单元从所述空间中运动出来时才能如所规定的那样进行相互作用。

[0010] 在另一种设计方案中提出了，至少所述功能器件和/或操作器件构造为蓄电池接口，由此可以提供很好地得到保护的并且独立于电网的能量供应。“蓄电池接口”特别是应理解成一种接口，该接口设置用于从手持式工具蓄电池处接收电能并且将其发送给所述功能单元的功能器件。优选地，在所述手持式工具蓄电池与所述蓄电池接口之间的连接能够

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由操作者无破坏地并且特别是在无工具的情况下松开。手持式工具蓄电池有利地只有在下述情况下才能从蓄电池接口中取出；这个功能单元至少部分地定位在由框架单元围成的空间的外部。优选地，所述功能单元中的每个功能单元都具有一构造为蓄电池接口的功能器件，由此可以在结构上简单地向两个功能单元供给不同的电压。优选地，所述功能单元设置用于用不同的电压来供给运行能量。

[0011] 此外提出了，所述功能单元至少基本上完全填满由框架单元围成的空间。"至少基本上完全填满"在这方面特别是应理解成，所述功能单元将由框架单元围成的空间填充了至少 50%、优选至少 70% 并且特别优选至少 80%。在一种特别优选的实施例中，所述功能单元将由框架单元围成的空间填充了至少 95%。由此可以实现按本发明的系统模块的有利地紧凑的并且节省位置空间的设计方案。

[0012] 按本发明的保存系统在此应该不局限于上面所描述的应用情况及实施方式。特别是，按本发明的保存系统为了履行在其中所描述的功能方式而可以具有与其中所提到的数目不同数目的单个的元件、构件和单元。

附图说明

[0013] 其它的优点从以下附图说明中获得。在附图中示出了本发明的一种实施例。附图、说明书和权利要求包含了大量的特征组合。本领域技术人员还可以有利地单独考虑所述特征并且将其组成其它有意义的组合。附图示出如下：

图 1 示出了保存系统的按本发明的系统模块，其具有两个摆入的功能单元；并且

图 2 示出了图 1 的系统模块，其具有摆出的功能单元。

具体实施方式

[0014] 图 1 和图 2 示出了保存系统 12，该保存系统具有一按本发明的第一系统模块 10 和一第二系统模块 22。第二系统模块 22 仅示意性地示出并且构造为手持式工具箱。第一系统模块 10 具有框架单元 14，该框架单元具有第一耦合单元 16 和第二耦合单元 18。第一耦合单元 16 设置用于能由操作者松开地将第二系统模块 22 耦合在第一系统模块 10 的下侧面上。第二耦合单元 18 设置用于能由操作者松开地将另一个这里未详细示出的系统模块耦合在第一系统模块 10 的上侧面上。第一耦合单元 16 具有止动钩 40，所述止动钩在连接的运行状态中接合在第二系统模块 22 的部件 20 的止动凹部中。第二耦合单元 18 具有止动凹部 42，所述另一个系统模块的止动钩在连接的运行状态中可以接合到所述止动凹部中。

[0015] 框架单元 14 包括四个侧壁 44，这四个侧壁在四侧限定了由框架单元 14 围成的空间 28。所围成的空间 28 的上侧面和下侧面没有限定框架单元 14。此外，框架单元 14 具有把手 46。框架单元 14 的、背离把手 46 的一侧构造为支承面。系统模块 10 包括第一和第二功能单元 24、26，所述功能单元在图 1 所示出的摆入的运行状态中完全布置在由框架单元 14 围成的空间 28 中。功能单元 24、26 基本上完全填满由框架单元 14 围成的空间 28。在框架单元 14 与功能单元 24、26 之间布置了气隙。此外，在功能单元 24、26 之间也布置了气隙。

[0016] 功能单元 24、26 分别包括第一功能器件 36、38、第二功能器件 48 和操作器件 50。第一功能器件 36、38 构造为蓄电池接口。它们设置用于分别与手持式工具蓄电池 52 相耦

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合。第一功能器件 36、38 只有在相应的功能单元 24、26 至少部分地定位在由框架单元 14 围成的空间 28 的外部时才能被操纵。第一功能器件 36、38 分别向第二功能器件 48 之一供给电能。第二功能器件 48 构造为 LED 照明器件。两个功能单元 24、26 的第二功能器件 48 设置用于以不同的辐射角进行照明。第二功能器件 48 之一针对直接照明进行优化，第二功能器件 48 之一针对间接照明进行优化。功能单元 24、26 彼此独立地履行其功能。如果系统模块 10 利用下侧面或者上侧面立于平坦的表面上，则功能单元 24、26 在摆入的运行状态中以与所述表面间隔开的方式布置。

[0017] 系统模块 10 具有定位单元 30，该定位单元设置用于使功能单元 24、26 相对于框架单元 14 彼此独立地定位在许多不同的位置中。为此，定位单元 30 包括两个保持连接杆 32 和一铰链器件 54。铰链器件 54 以能够围绕旋转轴线 56 摆动的方式来支承功能单元 24、26。功能单元 24、26 能够经由框架单元 14 的敞开的上侧面从框架单元 14 中摆动出来。铰链器件 54 平行于框架单元 14 的侧壁 44 延伸。与框架单元 14 的下侧面相比，铰链器件 54 布置得更加靠近框架单元 14 的上侧面。铰链器件 54 以能够围绕相同的旋转轴线 56 摆动的方式来支承功能单元 24、26。替代地，定位单元可以设置用于以能够围绕彼此不同的轴线或者点摆动的方式来固定功能单元 24、26。

[0018] 保持连接杆 32 设置用于将功能单元 24、26 保持在不同的能够调节的位置中。保持连接杆 32 在一侧以能够围绕旋转轴线 58 旋转的方式与框架单元 14 相连接，并且更确切地说在铰链器件 54 的下方与框架单元相连接。在另一侧，保持连接杆 32 分别与功能单元 24、26 之一的槽 60 相连接。所述槽 60 在内侧面上具有未详细示出的波形，通过该波形借助于形状配合连接和摩擦配合连接以能由操作者无工具地松开的方式将功能单元 24、26 固定在不同的能调节的位置中。此外，定位单元 30 可以具有操作元件，为了松开定位单元 30 的固定应该操纵所述操作元件。

[0019] 定位单元 30 设置用于以能由操作者松开的方式固定功能单元 24、26。为此，功能单元 24、26 分别具有取出操作器件 62。借助于取出操作器件 62，可以由操作者在无工具的情况下分开功能单元 24、26 与框架单元 14 之间的连接。

[0020] 功能单元 24、26 分别具有连接单元 34 的一部件，所述连接单元设置用于在至少一种运行状态中以能够共同定位的方式将功能单元 24、26 连接起来。所述连接单元 34 包括一操作器件 64、在此在被遮盖的情况下布置的第一形状配合连接元件以及第二形状配合连接元件 66。第一形状配合连接元件布置在第一功能单元 24 上。操作器件 64 和第二形状配合连接元件 66 在该实施例中布置在第二功能单元 26 上。在连接的运行状态中，第二形状配合连接元件 66 借助于操作器件 64 如此移动，使得其与第一形状配合连接元件进行机械连接。

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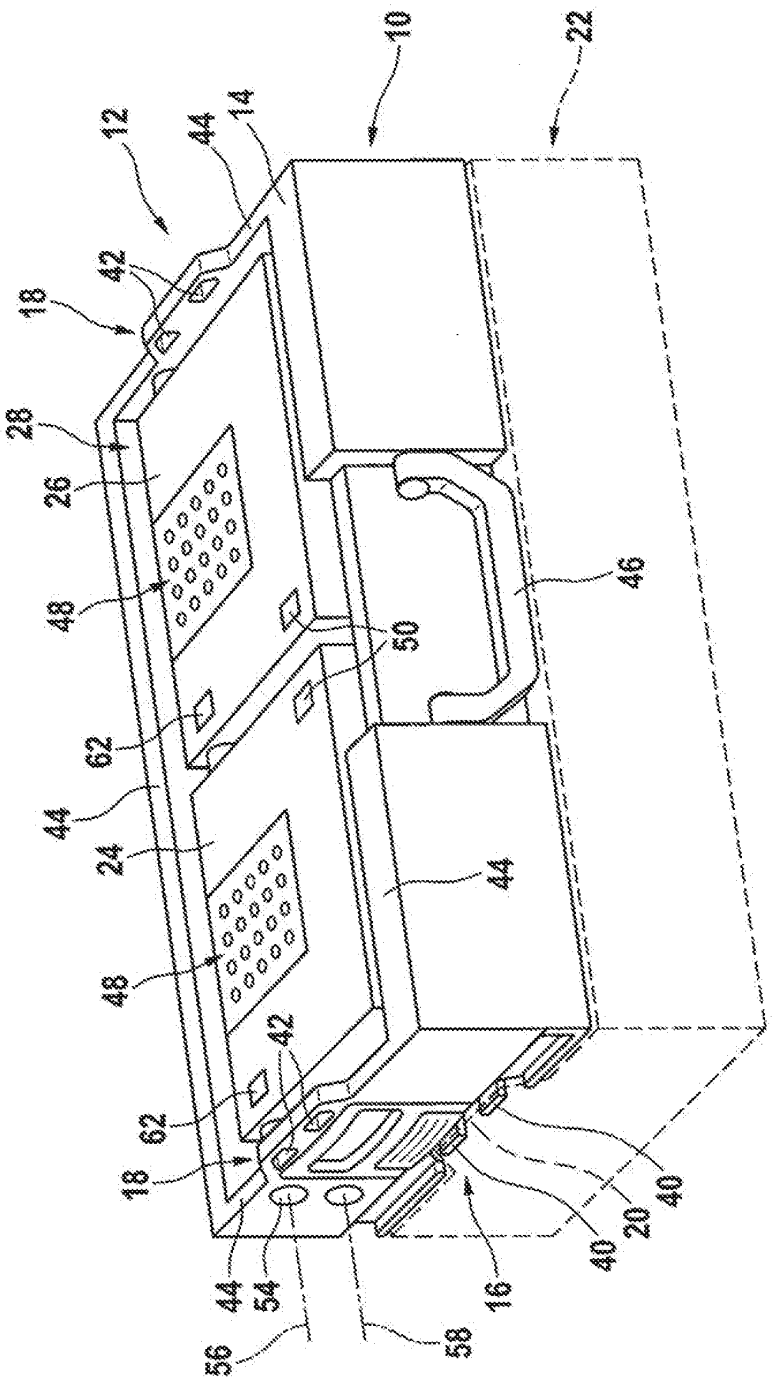


图 1

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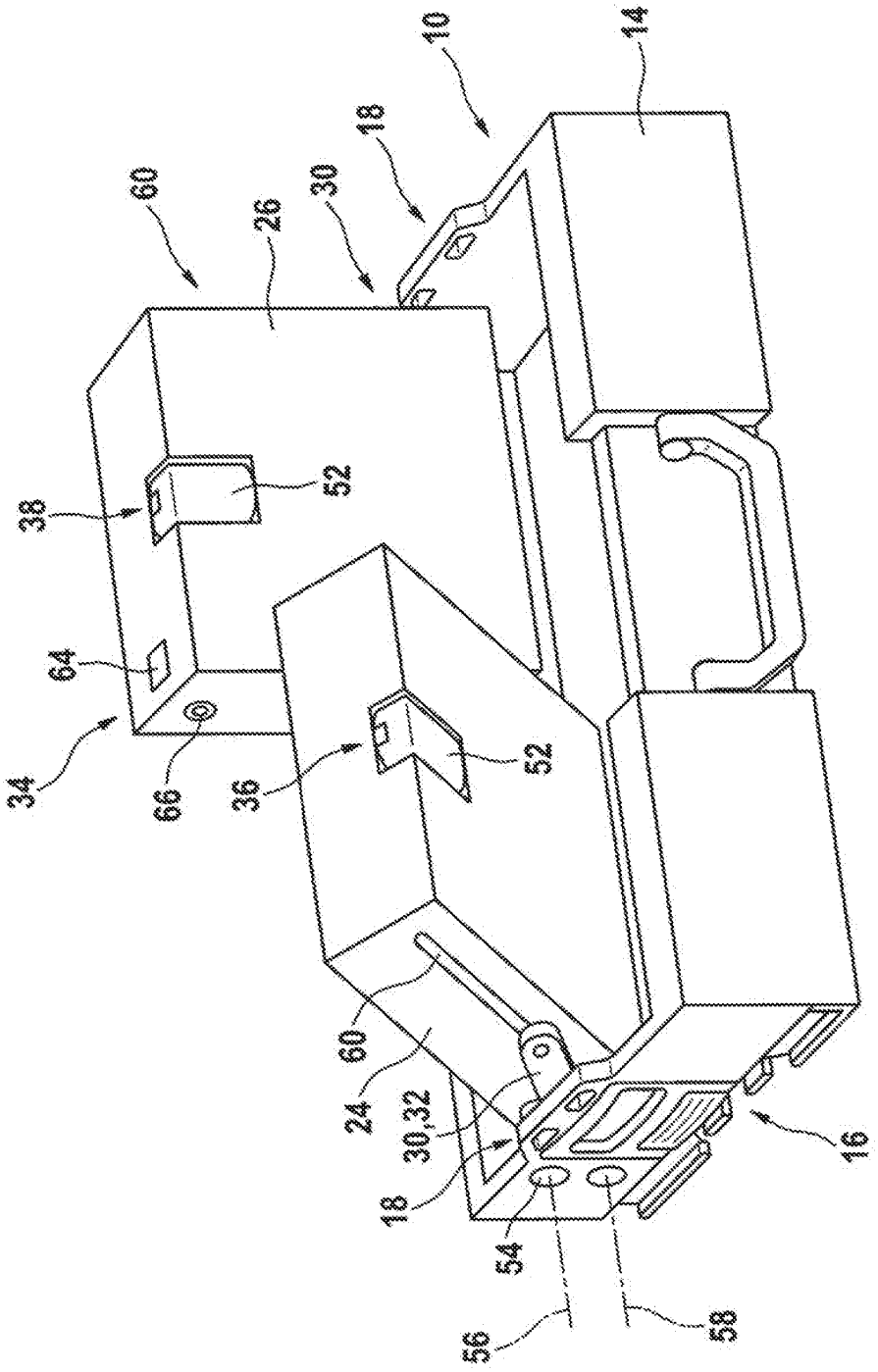


图 2

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Storage box component system

Inventor(s): BRENT CHRISTOPHER ± (BRENT CHRISTOPHER)

Applicant(s): MERIDIAN INT CO LTD ± (MERIDIAN INTERNATIONAL CO., LTD)

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- cooperative: **B25H3/02 (EP, US); B65D21/0219 (EP, US);** B65D21/022 (US); B65D21/0222 (US); B65D21/0223 (US); B65D25/282 (EP, US)

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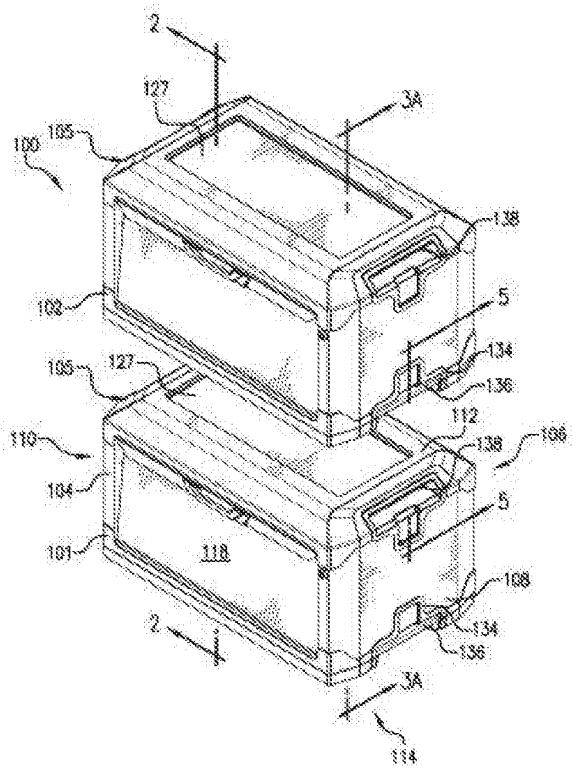
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Abstract of CN204161752 (U)

A storage box component system comprises a first storage box and a second storage box, the second storage box comprises a second bottom face which is provided with an annular edge, and the first storage box comprises a first top face; when the second storage box is stacked on the upper portion of the first storage box, the first top face is embedded in the annular edge of the second bottom face, and connection devices which are arranged on one side of the first storage box and one side of the second storage box respectively and can move between a buckling position and an opening position connect the second storage box and the first storage box; the connection devices are flush with one side of the second storage box, a system is high in modularization degree, and reliability of the stacking state of the boxes is improved.

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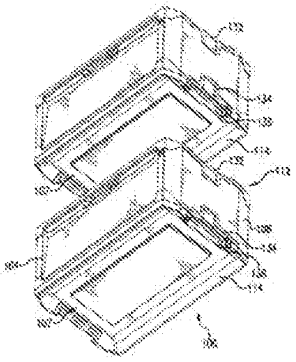
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(54)实用新型名称

储物箱组件系统

(57)摘要

一种储物箱组件系统，包括：第一储物箱以及形成有环状边缘的第二底面的第二储物箱，所述第一储物箱具有第一顶面，当所述第二储物箱堆叠置于所述第一储物箱上部位置时，所述第一顶面嵌套在所述第二底面的所述环状边缘以内，分别设置在所述第一和第二储物箱的一侧并可在一锁扣位置和一开启位置之间运动的连接装置将所述第二储物箱与所述第一储物箱相连接，该连接装置与所述第二储物箱的所述一侧平齐，系统模块化程度较高，同时也提高了箱体堆叠状态的可靠性。



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1. 一种储物箱组件系统，包括：

具有通向可储存物品的第一空间的第一开口、以及封闭所述第一开口的第一箱盖的第一储物箱；

具有通向可储存物品的第二空间的第二开口、封闭所述第二开口的第二箱盖、以及形成有环状边缘的第二底面的第二储物箱，其特征在于：

所述第一储物箱具有第一顶面，当所述第二储物箱堆叠置于所述第一储物箱上部位置时，所述第一顶面嵌套在所述第二底面的所述环状边缘以内，以及；

包括一分别设置在所述第一和第二储物箱的一侧，并可在一锁扣位置和一开启位置之间运动，用来将所述第二储物箱与所述第一储物箱连接的连接装置，所述连接装置与所述第二储物箱的所述一侧平齐。

2. 如权利要求 1 所述的储物箱组件系统，其特征在于：所述第一储物箱进一步包括与所述第一顶面处于相对位置的第一底面，所述第二储物箱进一步包括一与所述第二底面处于相对位置的第二顶面，所述第一顶面设有呈 45° 角向上凸起的第一部位，所述第二底面的所述边缘与所述第一部位相配合并向所述第二空间方向延伸。

3. 如权利要求 1 所述的储物箱组件系统，其特征在于：所述第一箱盖位于所述第一储物箱的正面，所述第一箱盖沿正面方向向外移开以露出所述第一空间。

4. 如权利要求 1 所述的储物箱组件系统，其特征在于：所述第二箱盖位于所述第二储物箱的正面，所述第二箱盖沿正面方向向外移开以露出所述第二空间。

5. 如权利要求 1 所述的储物箱组件系统，其特征在于：所述第一箱盖、第二箱盖分别包括一个起锁闭作用以防止其移动的闩锁装置。

6. 如权利要求 1 所述的储物箱组件系统，其特征在于：所述连接装置包括一第一本体、一第二本体、一个枢接在所述第二本体的偏置闩锁，以及夹设在所述偏置闩锁一侧的板簧，所述第一本体置于所述第一顶面的左侧或右侧，所述第二本体对应置于所述第二底面的左侧或右侧，所述偏置闩锁在所述板簧力作用下与所述第一本体相连。

7. 如权利要求 6 所述的储物箱组件系统，其特征在于：所述第一本体界定出一纵长把手以供用户搬运所述储物箱。

8. 一种储物箱组件系统，包括：

一第一储物箱，所述第一储物箱包括正面、背面、右面、左面、顶面、及底面，并由所述的面包围限定了第一空间，其特征在于：于所述顶面的左、右两侧设有一对同时充当把手和钩挂部的第一本体，于所述底面的左、右两侧设有一安装偏置闩锁的第二本体，所述偏置闩锁可在一锁紧位置及一开启位置运动以将所述第一储物箱与一第二储物箱连接。

9. 如权利要求 8 所述的储物箱组件系统，其特征在于：所述偏置闩锁延伸超出所述底面。

10. 如权利要求 9 所述的储物箱组件系统，其特征在于：所述偏置闩锁还包括一个延伸至所述第二储物箱的顶面位置的钩部。

11. 如权利要求 10 所述的储物箱组件系统，其特征在于：所述第二储物箱包括一个由其顶面、底面、右面、左面、正面和背面包围限定的第二空间，所述顶面的左、右两侧各设有一用以与所述偏置闩锁相连的第一本体，所述底面的左、右两侧各设有一第二本体以及设置在所述第二本体的用以将所述第二储物箱与所述第一储物箱相连接的可移动的第二偏

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置闩锁。

12. 如权利要求 11 所述的储物箱组件系统，其特征在于：所述第一储物箱的所述顶面设有一第一定位装置，所述第一定位装置包括一由所述第一储物箱的所述顶面为基准向上隆起的作为公端的第一部位，所述第一部位逐渐过渡形成与所述顶面平行的定位凹槽，所述第二储物箱的所述底面设有一第二定位装置，所述第二定位装置包括由所述底面的边缘横向过渡，并向内凹陷的作为母端的第二部位，所述第二部位逐渐过渡形成与所述的定位凹槽相配对的定位凸起，所述第一部位与所述第二部位相配合、所述定位凹槽与所述定位凸起相互嵌套啮合，以限制第一储物箱和第二储物箱彼此在轴向和径向方向上的相对移动。

13. 如权利要求 11 所述的储物箱组件系统，其特征在于：所述第一储物箱的所述底面设有一第二定位装置，所述第二定位装置包括由所述底面的边缘横向过渡，并向内凹陷的作为母端的第二部位，所述第二部位逐渐过渡形成与所述底面相平行的定位凸起，所述第二储物箱的所述顶面设有一第一定位装置，所述第一定位装置包括一由所述第二储物箱的所述顶面为基准向上隆起的作为公端的第一部位，所述第一部位逐渐过渡形成与所述定位凸起相配对的定位凹槽，所述第一部位与所述第二部位相配合，所述定位凹槽与所述定位凸起相互嵌套啮合，以限制第一储物箱和第二储物箱彼此在轴向和径向方向上的相对移动。

14. 一种储物箱组件系统，其特征在于：包括：

一具有通向可储存物品的第一空间的第一开口、至少可部分封闭所述第一开口的第一箱盖、一个用于搬运的把手，用以起连接限位作用的第一定位凸起及第一定位凹槽的第一储物箱，

一具有通向可存储物品的第二空间的第二开口、至少可部分封闭所述第二开口的第二箱盖、一可在连接位置和开启位置之间移动以连接所述第一储物箱的所述把手的偏置闩锁、用以起连接限位作用的第二定位凸起及第二定位凹槽的第二储物箱；

所述第二储物箱放置在所述第一储物箱上方，所述第一储物箱的第一定位凹槽与所述第二储物箱的第二定位凸起相嵌套配合。

15. 如权利要求 14 所述的储物箱组件系统，其特征在于：所述偏置闩锁与所述第二储物箱的侧部平齐。

16. 如权利要求 15 所述的储物箱组件系统，其特征在于：所述第一储物箱的第一定位凹槽包围所述第二储物箱的第二定位凸起，并且嵌套的位置处于所述第一储物箱的顶面。

17. 如权利要求 16 所述的储物箱组件系统，其特征在于：所述偏置闩锁位于所述第二储物箱的右侧或左侧、所述把手对应所述偏置闩锁位于所述第一储物箱的右侧或左侧，所述偏置闩锁进一步包括用以与所述把手相连接钩部，所述把手位置具有供用户手搬运所述第二储物箱的空间。

18. 如权利要求 17 所述的储物箱组件系统，其特征在于：所述偏置闩锁的位置与所述第二储物箱的底面持平，所述偏置闩锁与所述第一储物箱上的所述把手弹性连接，从而将第一储物箱和第二储物箱连接起来。

19. 如权利要求 18 所述的储物箱组件系统，其特征在于：所述第二储物箱的顶面的左、右两侧也设有同时起搬运及连接作用的把手。

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储物箱组件系统

技术领域

[0001] 本实用新型涉及到一种储物箱组件系统，属五金工具领域，特别是指一种每个单独的储物箱可以彼此连接在一起的储物箱组件系统。

背景技术

[0002] 工具储存系统通常被企业或者用户用来存放和整理工具、备用零件、紧固件或者其他类似物品。工具储存系统的范围涵盖从包括只有一个储物空间的单个储物箱产品到配置了多个具有多个储物空间的储物箱组件系统产品，以适应不同的需求。现有的储存产品存在许多不足，因此，在目前的制造业中，存在对现有的储存系统不断进行完善的需求，使其更高效，更方便使用，具有模块化，和／或其它的更多功能。

实用新型内容

[0003] 本实用新型的目的是为克服现有的存储产品的缺陷，给用户提供一种更人性化的、具有更好灵活性及模块化、高效的存储系统，本实用新型采用如下的技术方案实现该目的，一种储物箱组件系统，包括：

[0004] 具有通向可储存物品的第一空间的第一开口、以及至少可部分封闭所述第一开口的第一箱盖的第一储物箱；

[0005] 具有通向可存储物品的第二空间的第二开口、至少可部分封闭所述第二开口的第二箱盖、以及形成有环状边缘的第二底面的第二储物箱；

[0006] 所述第一储物箱具有第一顶面，当所述第二储物箱堆叠置于所述第一储物箱上部位置时，所述第一顶面嵌套在所述第二底面的所述环状边缘以内，以及；

[0007] 包括一分别设置在所述第一和第二储物箱的一侧并可在一锁扣位置和一开启位置之间运动用来将所述第二储物箱与所述第一储物箱连接的连接装置，所述连接装置与所述第二储物箱的所述一侧平齐。

[0008] 进一步的，所述第一储物箱进一步包括与所述第一顶面处于相对位置的第一底面，所述第二储物箱进一步包括一与所述第二底面处于相对位置的第二顶面，所述第一顶面设有呈45°角向上凸起的第一部位，所述第二底面的所述环状边缘与所述第一部位相配合并向所述空间方向延伸。

[0009] 进一步的，所述第一箱盖位于所述第一储物箱的正面，所述第一箱盖可沿正面方向向外移开以露出第一空间。

[0010] 进一步的，所述第二箱盖位于所述第二储物箱的正面，所述第二箱盖可沿正面方向向外移开以露出第二空间。

[0011] 进一步的，所述第一箱盖、第二箱盖分别包括一个起锁闭作用以防止其移动的门锁装置。

[0012] 进一步的，所述连接装置包括一第一本体，一第二本体、一个枢接在所述第一本体的偏置门锁，以及夹设在所述偏置门锁一侧的板簧，所述第一本体置于所述第一顶面的左

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侧或右侧，所述第二本体对应置于所述第二底面的左侧或右侧，所述偏置闩锁在所述板簧力作用下与所述第一本体相连。

[0013] 进一步的，所述第一本体界定出一纵长把手以供用户搬运所述储物箱。

[0014] 在另一实施例中，本实用新型还采用了如下的技术方案实现该目的，一种储物箱组件系统，包括：

[0015] 一第一储物箱，所述第一储物箱包括正面、背面、右面、左面、顶面、及底面，并由所述的面包围限定了第一空间，于所述顶面的左、右两侧设有一对同时充当把手和钩挂部的第一本体，于所述底面的左、右两侧设有一安装偏置闩锁的第二本体，所述偏置闩锁可在一锁紧位置及一开启位置运动以将所述第一储物箱与一第二储物箱连接。

[0016] 进一步的，所述偏置闩锁延伸超出所述底面。

[0017] 进一步的，所述偏置闩锁还包括一个延伸至所述第二储物箱的顶面位置的钩部。

[0018] 进一步的，所述第二储物箱包括一个由其顶面、底面、右面、左面、正面和背面包围限定的第二空间，所述顶面的左、右两侧各设有一用以与所述偏置闩锁相连的第一本体，所述底面的左、右两侧各设有一第二本体以及设置在所述第二本体的用以将所述第二储物箱与所述第一储物箱相连接的可移动的第二偏置闩锁。

[0019] 进一步的，所述第一储物箱的所述顶面设有一第一定位装置，所述第一定位装置包括一由所述第一储物箱的所述顶面为基准向上隆起的作为公端的第一部位，所述第一部位逐渐过渡形成与所述顶面平行的定位凹槽，所述第二储物箱的所述底面设有一第二定位装置，所述第二定位装置包括由所述底面的边缘横向过渡，并向内凹陷的作为母端的第二部位，所述第二部位逐渐过渡形成与所述的定位凹槽相配对的定位凸起，所述第一部位与所述第二部位相配合、所述定位凹槽与所述定位凸起相互嵌套啮合，以限制第一储物箱和第二储物箱彼此在轴向和径向方向上的相对移动。

[0020] 进一步的，所述第一储物箱的所述底面设有一第二定位装置，所述第二定位装置包括由所述底面的边缘横向过渡，并向内凹陷的作为母端的第二部位，所述第二部位逐渐过渡形成与所述底面相平行的定位凸起，所述第二储物箱的所述顶面设有一第一定位装置，所述第一定位装置包括一由所述第二储物箱的所述顶面为基准向上隆起的作为公端的第一部位，所述第一部位逐渐过渡形成与所述定位凸起相配对的定位凹槽，所述第一部位与所述第二部位相配合、所述定位凹槽与所述定位凸起相互嵌套啮合，以限制第一储物箱和第二储物箱彼此在轴向和径向方向上的相对移动。

[0021] 在另一实施例中，本实用新型还采用了如下的技术方案实现该目的，一种储物箱组件系统，包括：

[0022] 一具有通向可储存物品的第一空间的第一开口、至少可部分封闭所述第一开口的第一箱盖、一个用于搬运的把手，用以起连接限位作用的第一定位凸起及第一定位凹槽的第一储物箱，

[0023] 一具有通向可存储物品的第二空间的第二开口、至少可部分封闭所述第二开口的第二箱盖、一可在连接位置和开启位置之间移动以连接所述第一储物箱的所述把手的偏置闩锁，用以起连接限位作用的第二定位凸起及第二定位凹槽的第二储物箱，

[0024] 所述第二储物箱放置在所述第一储物箱上方，所述第一储物箱的第一定位凹槽与所述第二储物箱的第二定位凸起相嵌套配合。

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[0025] 进一步的，所述偏置闩锁与所述第二储物箱的侧部平齐。

[0026] 进一步的，所述第一储物箱的第一定位凹槽包围所述第二储物箱的第二定位凸起，并且嵌套的位置处于所述第一储物箱的顶面。

[0027] 进一步的，所述偏置闩锁位于所述第二储物箱的右侧或左侧，所述把手对应所述偏置闩锁位于所述第一储物箱的右侧或左侧，所述偏置闩锁进一步包括用以与所述把手相连接钩部，所述把手位置具有供用户手搬运所述第二储物箱的空间。

[0028] 进一步的，所述偏置闩锁的位置与所述第二储物箱的底面持平，所述偏置闩锁与所述第一储物箱上的所述把手弹性连接，从而将第一储物箱和第二储物箱连接起来。

[0029] 进一步的，所述第二储物箱的顶面的左、右两侧也设有同时起搬运及连接作用的把手。

[0030] 应用本实用新型的技术方案，箱体之间的组合更为人性化、具有更好灵活性，给用户提供了采用相同结构的箱体相结合、亦可采用不同结构的箱体相结合的多种选择，系统模块化程度较高，同时也提高了箱体堆叠状态的可靠性。

附图说明

[0031] 图 1A 是本实用新型储物箱组件系统的第一实施例，单个储物箱在分离状态时的三维立体视图；

[0032] 图 1B 是如图 1A 中本实用新型储物箱组件系统的第一实施例，单个储物箱在分离状态时的从另一角度显示的三维立体视图；

[0033] 图 2A 是如图 1A 中的本实用新型储物箱组件系统的第一实施例，在单个储物箱按如图 1A 所示方式连接后，沿剖面 2-2 横向剖切，并沿箭头方向观察的剖视图；

[0034] 图 2B 是如图 2A 中的区域 2B 部位的局部放大图；

[0035] 图 3A 是如图 1A 中的本实用新型储物箱组件系统的第一实施例，沿图 1A 中剖面 3A-3A 纵向剖切，并沿箭头方向观察的剖视图；

[0036] 图 3B 是图 3A 中的区域 3B 部位的局部放大图；

[0037] 图 4 显示是由前、后两个方向观察的如图 1A 中本实用新型储物箱组件系统的第一实施例中连接装置的分解图；

[0038] 图 5 是如图 2A 中区域 5 部位的局部放大图；

[0039] 图 6 是如图 1A 中的本实用新型储物箱组件系统的第一实施例，沿剖面 5-5 纵向剖切，并沿箭头方向观察的剖视图；

[0040] 图 7 是本实用新型储物箱组件系统的第二实施例的单个储物箱的三维视图；

[0041] 图 8 是本实用新型储物箱组件系统的第三实施例的单个储物箱的三维视图；

[0042] 图 9 是本实用新型储物箱组件系统的第四实施例的单个储物箱的三维视图；

[0043] 图 10 是如图 1A 中本实用新型储物箱组件系统的第一实施例的单个储物箱的部件分解视图。

具体实施方式

[0044] 图 1A 至图 1B 显示了本实用新型储物箱组件系统 100 的第一实施例。包括按本实用新型方案连接并结合的第一储物箱 101 和第二储物箱 102。通常而言，第一储物箱 101 和

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第二储物箱 102 具有相同结构，以保证第一储物箱 101 和第二储物箱 102 彼此都能够通过顶部和底部连接在一起。为满足提供用户多种不同需求的要求，提升产品的人性化及多样性特点，第一储物箱 101 或第二储物箱 102 也可以换用如在图 7-9 中所展示的储物箱 700、800、及 900 中的一个，或者与该等储物箱 700、800、900 中的一个分别连接在一起。图 10 中予以体现第一储物箱 101 和第二储物箱 102 的部件分解视图。

[0045] 为了更加直接和简洁的描述，本说明书中只对第一储物箱 101 进行描述。第一储物箱 101 具有由塑料盖板所形成的正面 104，背面 106，右面 108，左面 110，顶面 112，及底面 114 并包围限定了一个空间 116，可用于存放工具等物件。该空间 116 也可以通过将以任意方式的作为抽屉的前挡板 118 伸出以扩大该空间 116 的方式得到延伸利用。在不同的实施例中，该空间 116 还可通过移除或更换组合装配在正面 104 至底面 114 中的任意面上的盖子的方式加以延伸该空间 116。比如设置安装在顶面 112 的旋转顶盖或设置安装在正面 104 上的旋转前盖等。采用锁紧装置（未图示），比如门闩，可将所述前挡板 118 与第一储物箱 101 锁合在一起。

[0046] 请一并参照图 2A、图 2B、图 3A、及图 3B 所示，第一储物箱 101 在顶面 112 和底面 114 分别设有一对第一定位装置 105 和第二定位装置 107，处于第一储物箱 101 的顶面 112 上的第一定位装置 105 有个作为公端的，并由第一储物箱 101 的顶面 112 的底部平面 122 为基准向上隆起形成的第一部位 120。一般而言，该第一部位 120 与形成在顶面 112 上的底部平面 122 呈 45° 角，但此角度可以是在 1° 到 89° 之间的任意角度。该第一部位 120 逐渐过渡到与形成在顶面 112 上的底部平面 122 大致平行的第二部位 124。该第二部位 124 逐渐过渡到第三部位 126。该第三部位 126 为一个配对的定位凹槽，它与形成在顶面 112 上的底部平面 122 也大致平行但在朝向顶面 112 上的底部平面 122 的方向上比该第二部位 124 低。然后在第一储物箱 101 的左面 110 上的第二部位 124 与右面 108 上的第二部位 124 之间形成了一个凹形的区域。

[0047] 请一并参照图 3B 中的第二储物箱 102 的连接方式，第二储物箱 102 放置在第一储物箱 101 的上方，并与前述第一储物箱 101 的结构基本相同。一个第二定位装置 107 设置在第二储物箱 102 的底面 114 上。第二储物箱 102 的底面 114 的周边围设该第二储物箱 102 的底面 114 于该周边范围内部，使第二定位装置 107 在朝向空间 116 的方向上高出底面 114 的周边。第二定位装置 107 具有朝向空间 116 方向延伸并具有横向过渡的第二部位 131 的第一部位 128。所述第二部位 131 为一个配对的定位凹槽，它与由底面 114 定义的平面大致平行（并且与顶面 112 的第二部位 124 平行）。该第二部位 131 慢慢过渡到形成配对的定位凸起的第三部位 135。该第三部位 135 与第二部位 131 大致平行且在朝远离空间 116 的方向上低于该第二部位 131。然后在第二储物箱 102 的左面 110 上的第二部位 131 和右面 108 上的第二部位 131 之间形成了一个凸起区域。

[0048] 如图 2A 至图 5 所示，随着第二储物箱 102 堆叠放置在第一储物箱 101 上方，第一储物箱 101 的顶面 112 上的第一部位 120 和第二部位 124 在轴向和径向两个方向上的移动被第二储物箱 102 的底面 114 的第一部位 128 和第二部位 131 堆叠住，反过来也是一样。同样，第一储物箱 101 上顶面 112 上的第三部位 126 也与底面 114 上的第三部位 135 堆叠在一起以防止其在轴向或径向上的移动。这种在第一储物箱 101 的顶面 112 和第二储物箱 102 的底面 114 之间的堆叠方案为本实用新型储物箱组件系统 100 提供了一个很坚固的结

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构，第一储物箱 101 和第一储物箱 102 之间的平滑过渡也为本实用新型储物箱组件系统 100 提供了一个整体式的外观。

[0049] 第一储物箱 101 和第二储物箱 102 之间可通过连接装置 130 机械式地锁合在一起。图 4 为由前、后两个方向观察的本实用新型储物箱组件系统 100 的第一实施例中连接装置 130 的分解图。图 5 显示当第二储物箱 102 与第一储物箱 101 堆叠在一起时，连接装置 130 的工作状态图。图 6 显示当第二储物箱 102 脱离第一储物箱 101 时，连接装置 130 开启状态图。连接装置 130 为一对，分左右设置，包括一个放置在靠近右面 108 顶部或左面 110 顶部的第一本体 132、一个放置在靠近右面 108 或左面 110 底部的第二本体 134、一个枢设于第二本体 134 的偏置闩锁 136，以及夹设在偏置闩锁 136 一侧的板簧 148。

[0050] 如图 5 为第二储物箱 102 与第一储物箱 101 堆叠时连接装置 130 工作状态图。第一本体 132 包括了一个把手 138，它是由第一本体 132 的顶壁 140 界定出来的有着足够长度的开放区域，用以提供抓取或者供用户搬运第一储物箱 101。顶壁 140 也充当偏置闩锁 136 连接第一储物箱 101 和第二储物箱 102 的钩挂部。偏置闩锁 136 包括一个主要为用户以旋转点 146 为中心旋转偏置闩锁 136 的抓取区域 142，以及与顶壁 140 相挂的钩部 144。板簧 148 提供维持钩部 144 与顶壁 140 相钩合的力。

[0051] 如图 6 所示，在操作中，用户可抓住抓取区域 142，并向上旋转偏置闩锁 136。此时偏置闩锁 136 克服板簧 148 的弹性力旋转面令钩部 144 与顶壁 140 相脱离，用户可藉此将处于上部的第二储物箱 102 搬离处于下部的第一储物箱 101。当将第二储物箱 102 重新放置在第一储物箱 101 上时，用户手释放偏置闩锁 136 的抓取区域 142，受板簧 148 恢复力作用，偏置闩锁 136 重新偏转回到工作位置，钩部 144 再次与顶壁 140 相钩合，将第一储物箱 101 和第二储物箱 102 连接在一起。偏置闩锁 136 大致上与第二储物箱 102 以及第一储物箱 101 的对应一面齐平。

[0052] 请一并参照图 10 所示，第一储物箱 101（其他如第二储物箱 102、其他实施例的储物箱 700、800、900 等也一样）可由金属和塑料两种材质组合制成。在本实施例中，第一储物箱 101 的金属框架 200 由一个或多个片材冲压的金属片装配而成。金属框架 200 由前部 204、后部 206、右部 208、左部 210、顶部 212 和底部 214 所组成，分别与第一储物箱 101 的各面 104 至 114 对应。框架 200 的顶部 212 和底部 214 可以有很大一部分的开放区域用于减少重量和成本。后部 206 有一个圆形开口 216 用于使延长的电源线或这一类的物品安装在第一储物箱 101 内部。若干安装孔 218 可以沿着框架 200 的各对应部 204 至 214 设置，以实现配合安装形成各对应面 104 至 114 的塑料盖。

[0053] 第一储物箱 101 的顶面 112 和底面 114 分别和框架顶部 212 和底部 214 的模压塑料盖 220 和 222 大致相同。连接装置 130 也可由模压塑料制成，并分别与框架 200 的右部 208 和左部 210 相连。额外的金属支撑 224 可用于设置在连接装置 130 的第一本体 132 和框架 200 的左、右两部 210、208 之间的框架 200 的各个面，以增强把手 138 所在区域的强度，也就是连接装置 130 的第一本体 132 的把手 138 所在的开放区域。

[0054] 我们还考虑了用多种储物箱如本实施例第一储物箱 101、第二储物箱 102、以及其他实施例的储物箱 700、800、900 所组成的本实用新型储物箱组件系统 100 的其他备用方案。其中一个方案包括一个带有四个轮子和轮脚，以及连接装置 130 的可移动的平台。在这个平台的左侧和右侧有着带有第一本体 132 的连接装置 130。储物箱每个面上的与第二

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本体 134 相连接的偏置闩锁 136 与平台上的第一本体 132 以上述第二储物箱 102 与第一储物箱 101 连接的方法进行连接，只需将该第一储物箱 101 替换成备选平台即可。这种方案形成了一个可移动的系统。

[0055] 在符合所主张权利要求的范围之内，任何一个实施例都可以通过不同的储物箱之间的组合方式组合起来以形成一个新的案例，而不仅仅是本实施例所揭示的方式。相同结构的储物箱可以以组合的形式相互堆叠，并且两个不同结构的储物箱也可以以组合的形式相互堆叠。储物箱的顶面与底面具有公端和母端相配合的结构使两个储物箱在轴向和径向两个方向上的相对移动被限定，并提供了一个整体式的外观，成对设置的连接装置会使储物箱彼此紧紧连接在一起。储物箱连接装置还可以使储物箱之间并排连接，形成一个水平的工具储存系统。

[0056] 虽然本实用新型已经具体展示出并参照其实施例进行描述，但在不脱离本文所定义以及所附权利要求及其具有相当效用的文件所界定的范围内，本领域的普通技术人员应当熟知该系统的各种变化、相应替代品以及变动。通过参照下述权利要求应该能更好地理解本实用新型。对权利要求解释的目的，过渡词语“包括”、“具有”可理解为同义词“包含”。

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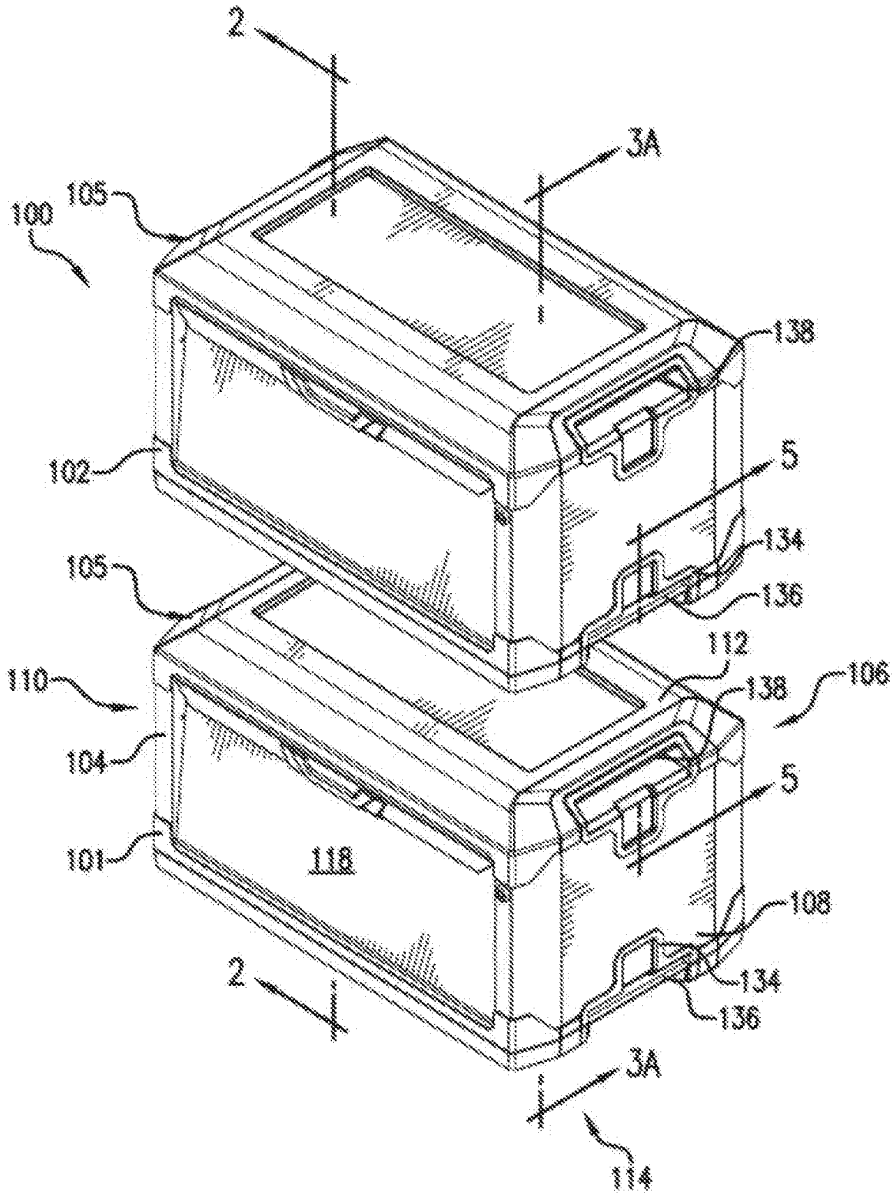


图 1A

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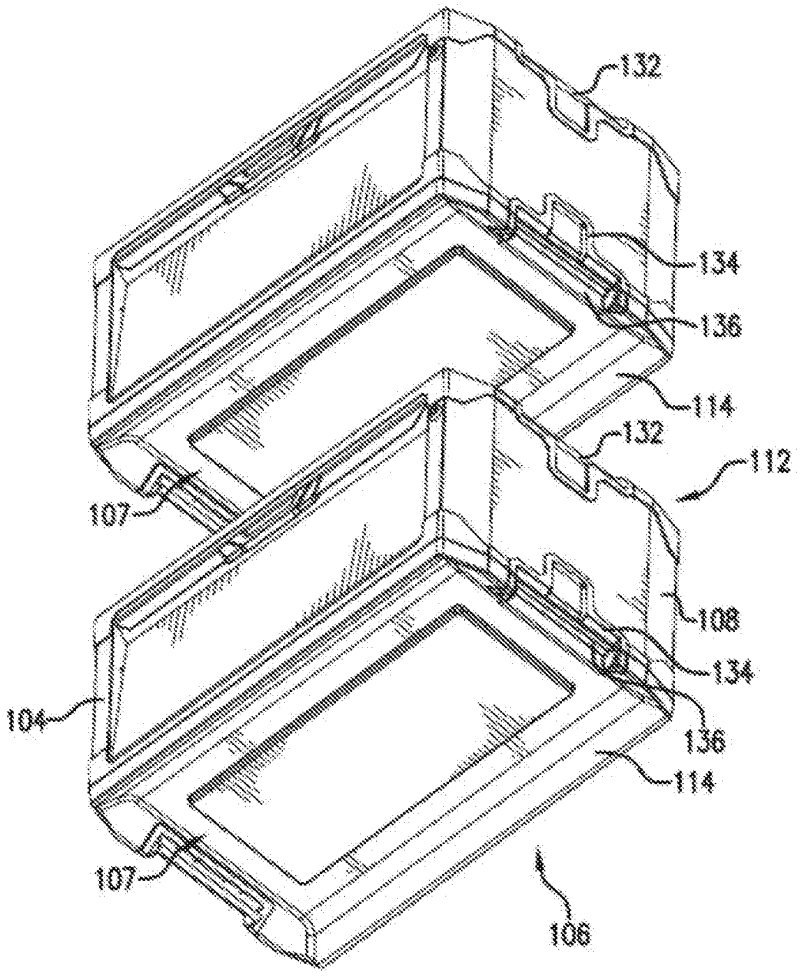


图 1B

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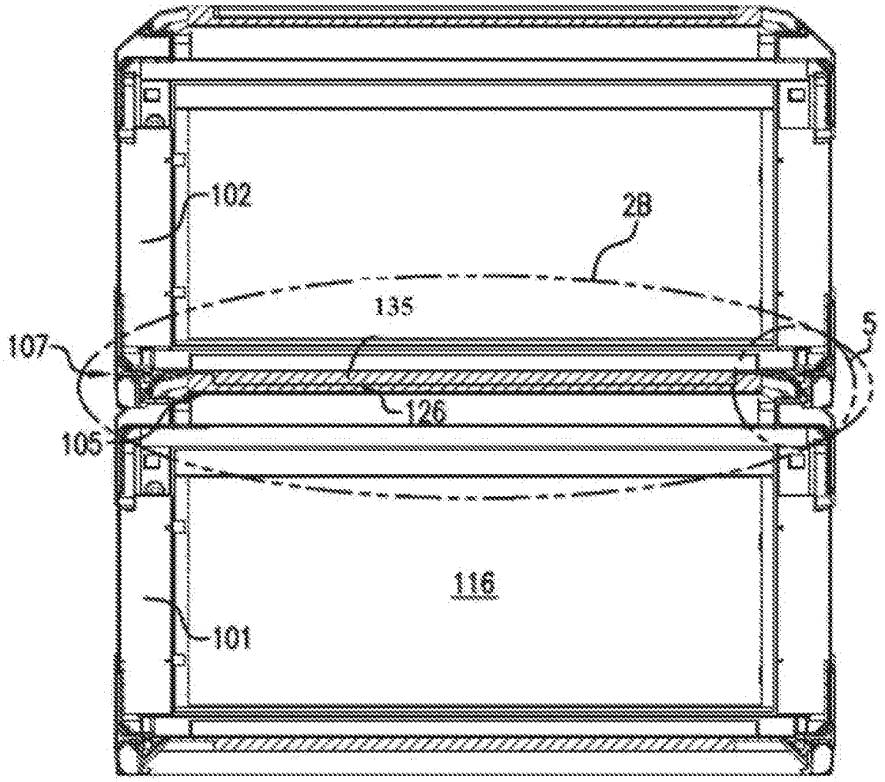


图 2A

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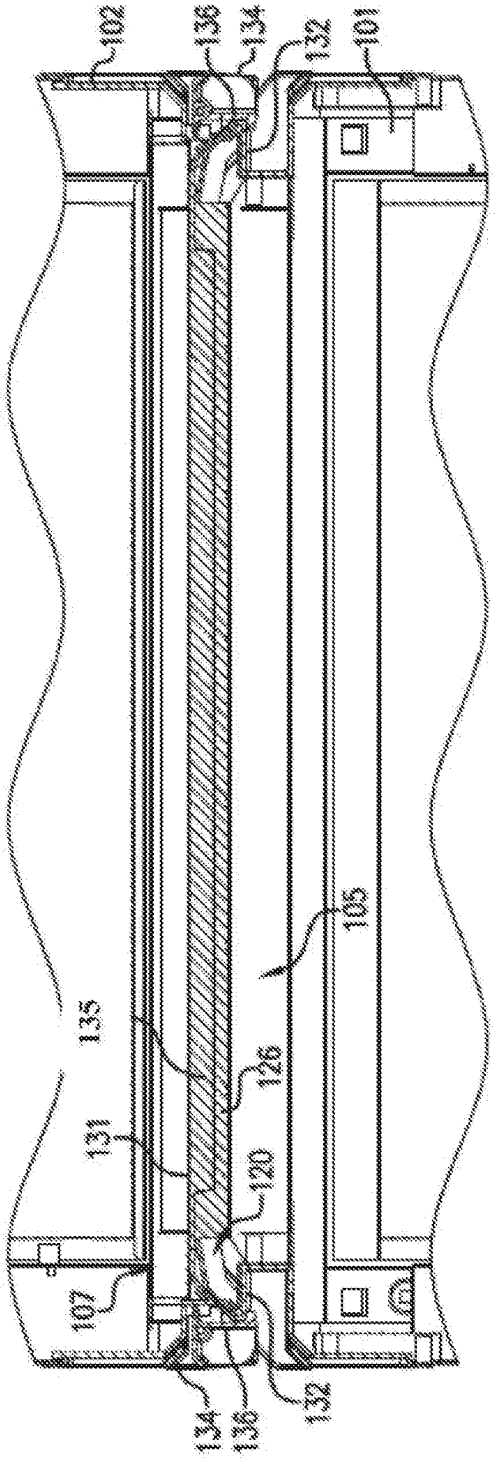


图 2B

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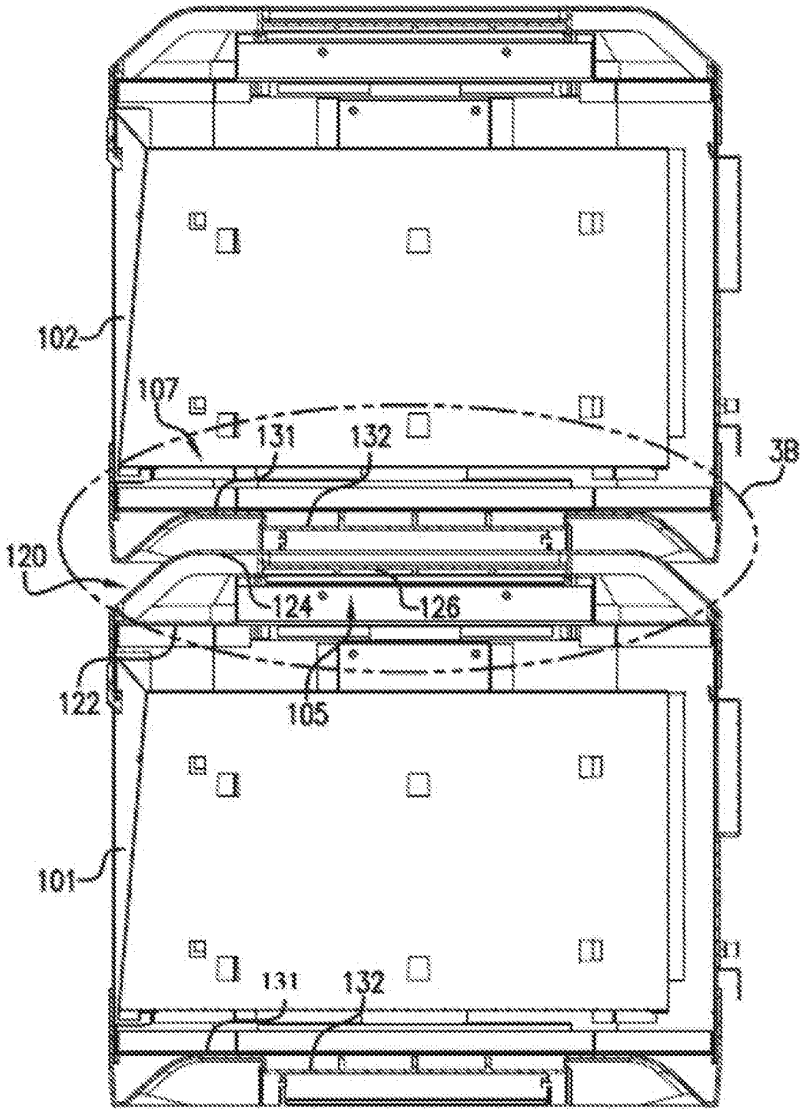


图 3A

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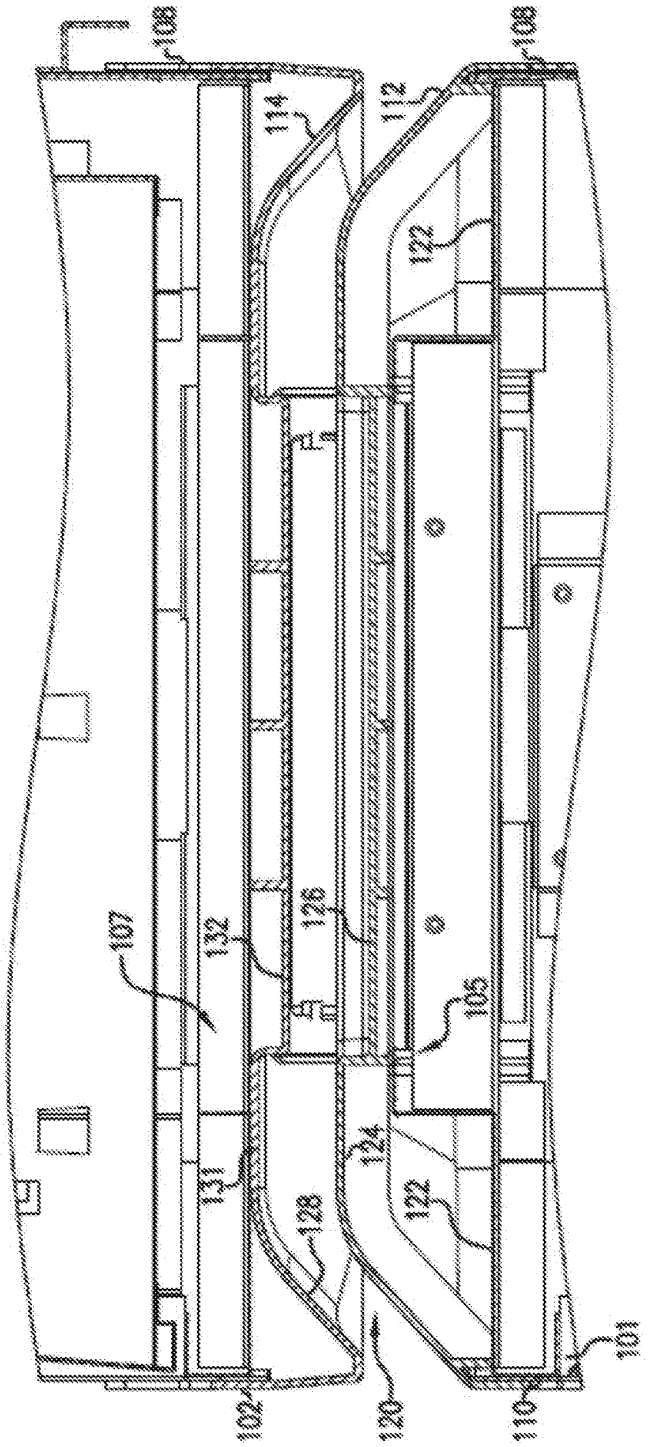


图 3B

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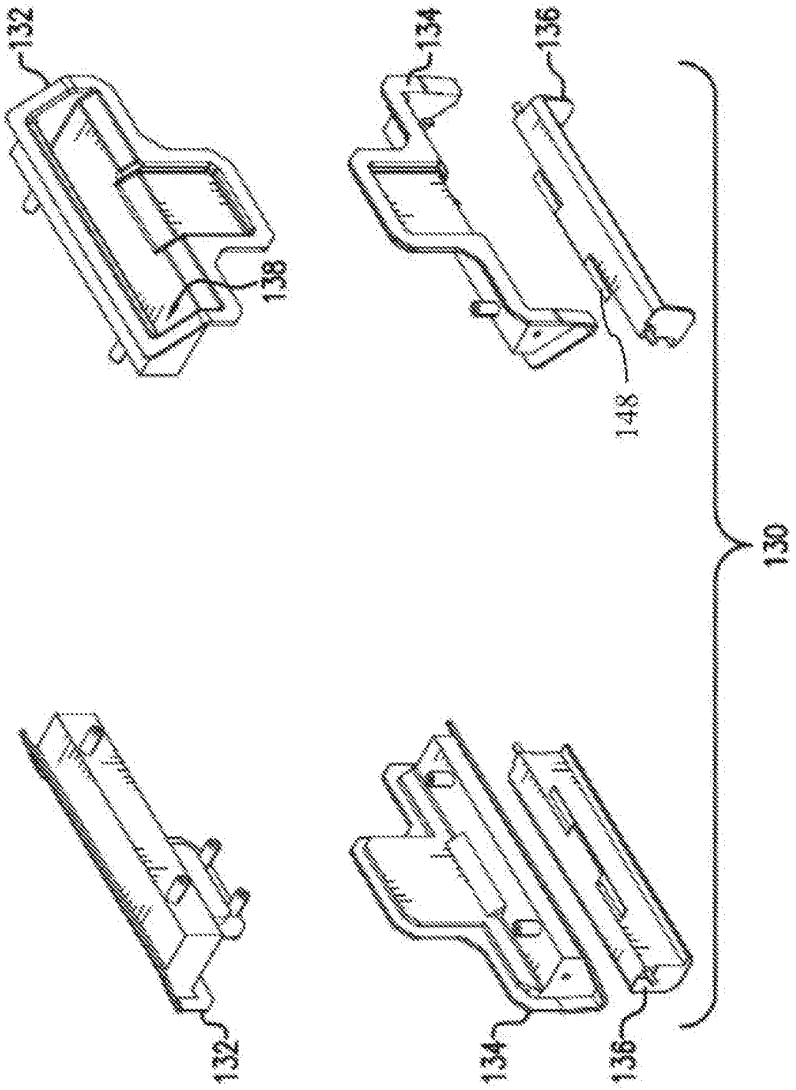


图 4

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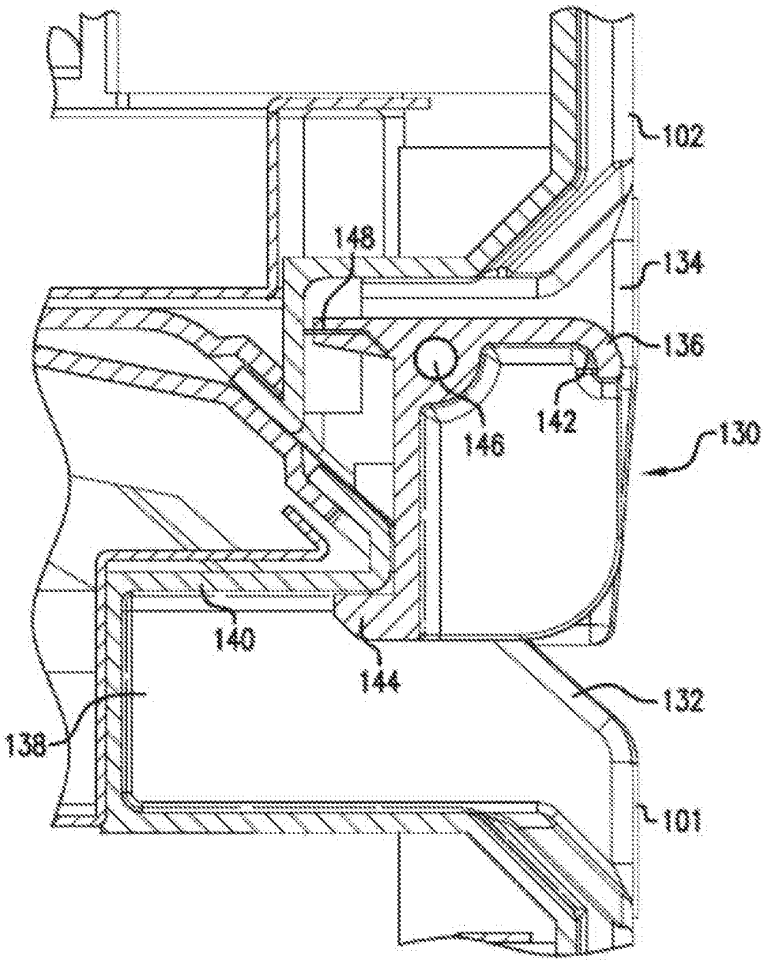


图 5

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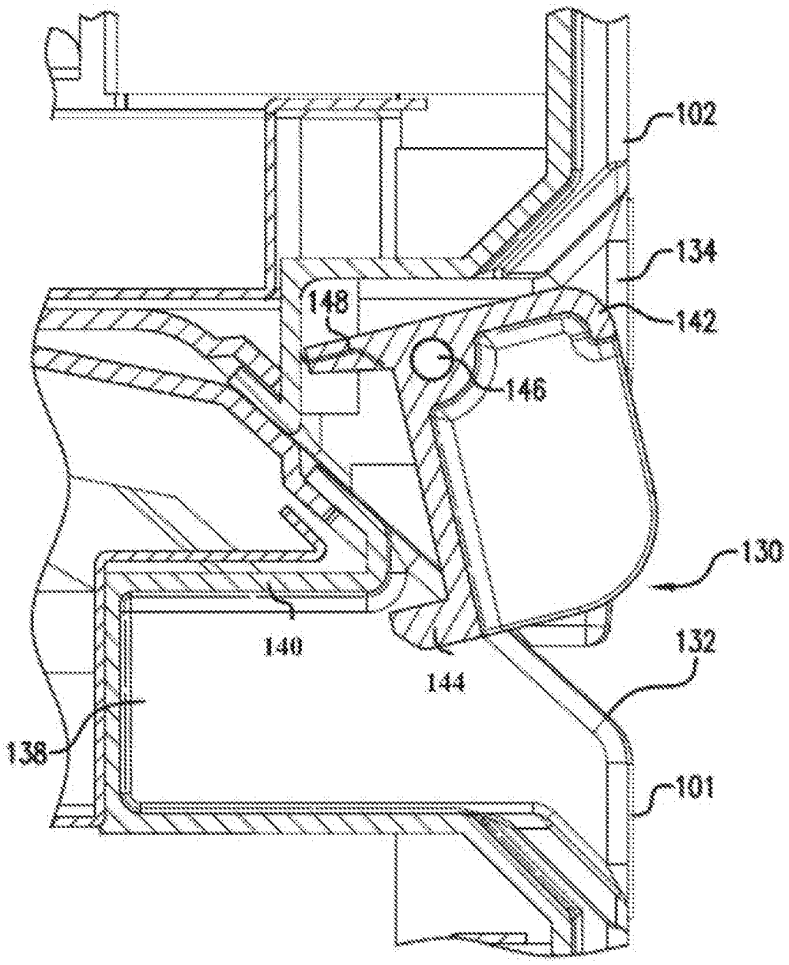


图 6

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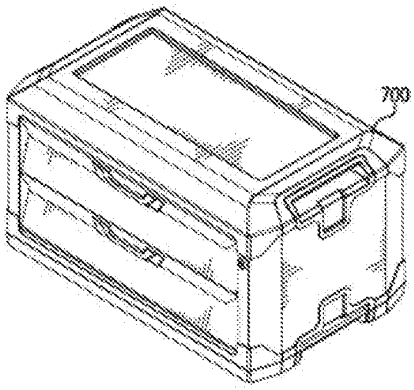


图 7

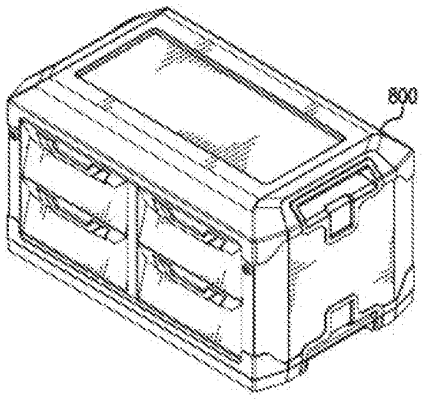


图 8

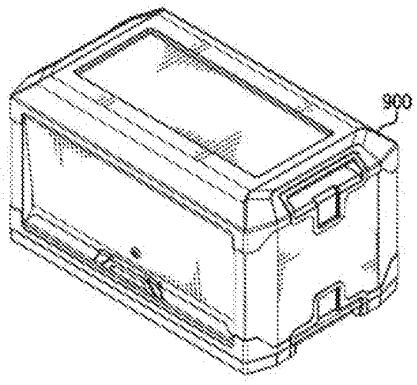


图 9

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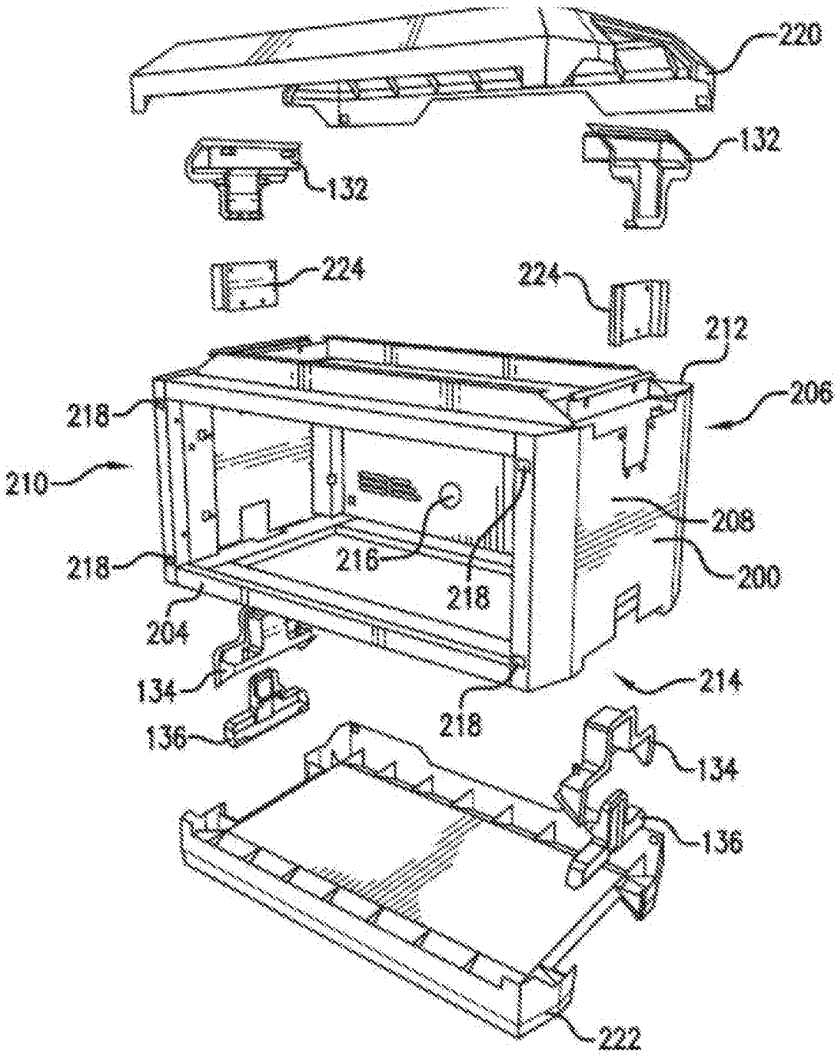


图 10

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(54) 명칭 **운반용 상자**

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대표도면

물품류

9

디자인의 대상이 되는 물품

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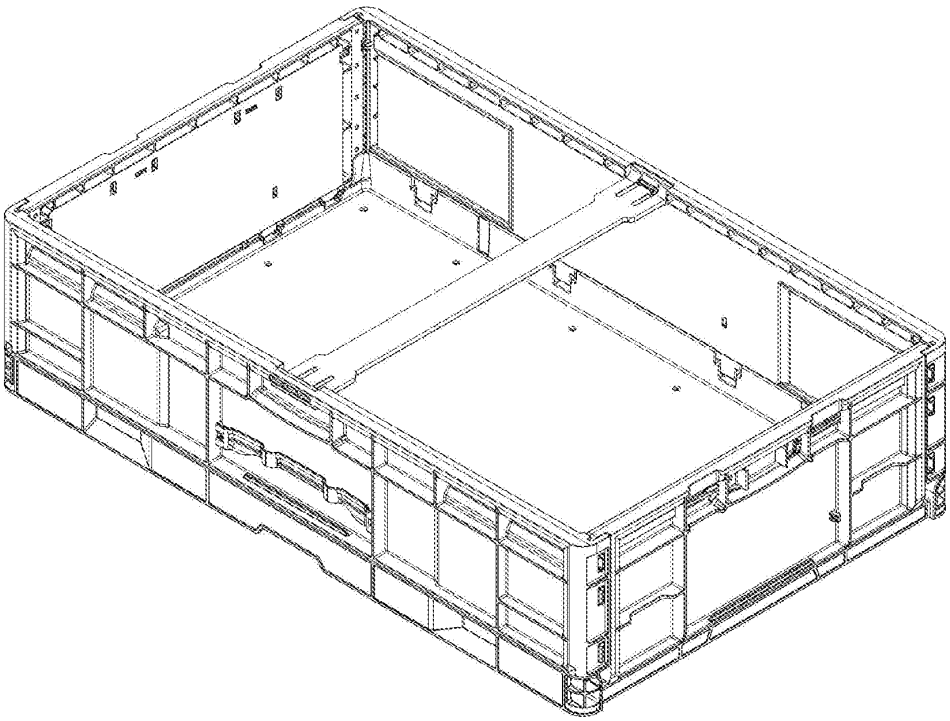
2. 본 디자인은 물품을 담아 보관 및 운반하는데 사용하는 것임.

3. [도면 1.1]은 본 디자인의 사시도, [도면 1.2]는 본 디자인의 정면도, [도면 1.3]은 본 디자인의 배면도, [도면 1.4]는 본 디자인의 좌측면도, [도면 1.5]는 본 디자인의 우측면도, [도면 1.6]은 본 디자인의 평면도, [도면 1.7]은 본 디자인의 저면도임.

디자인 창작 내용의 요점

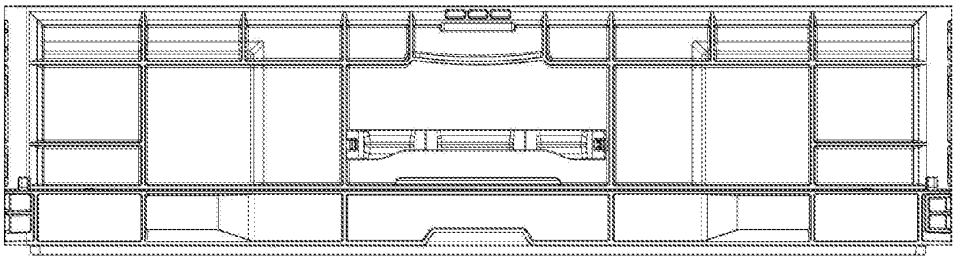
'운반용 상자'의 모양과 형상의 결합을 디자인 창작내용의 요점으로 함.

도면 1.1

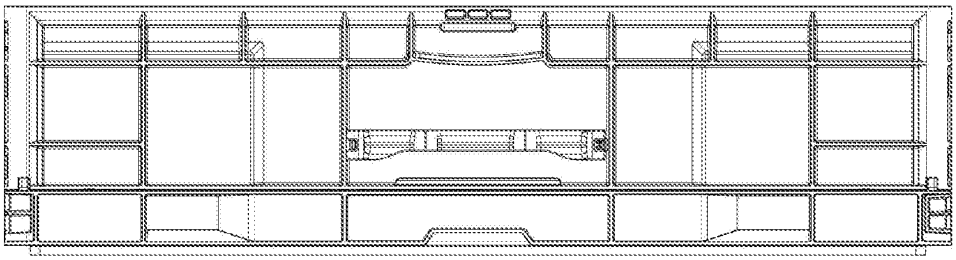


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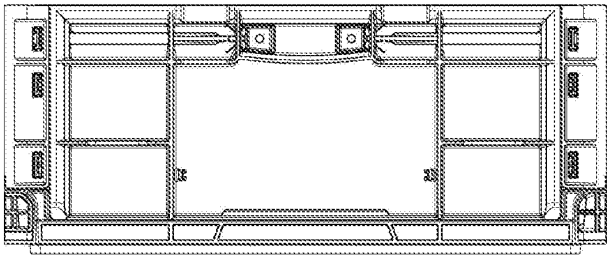
도면 1.2



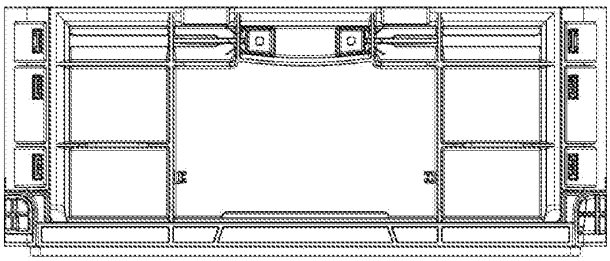
도면 1.3



도면 1.4

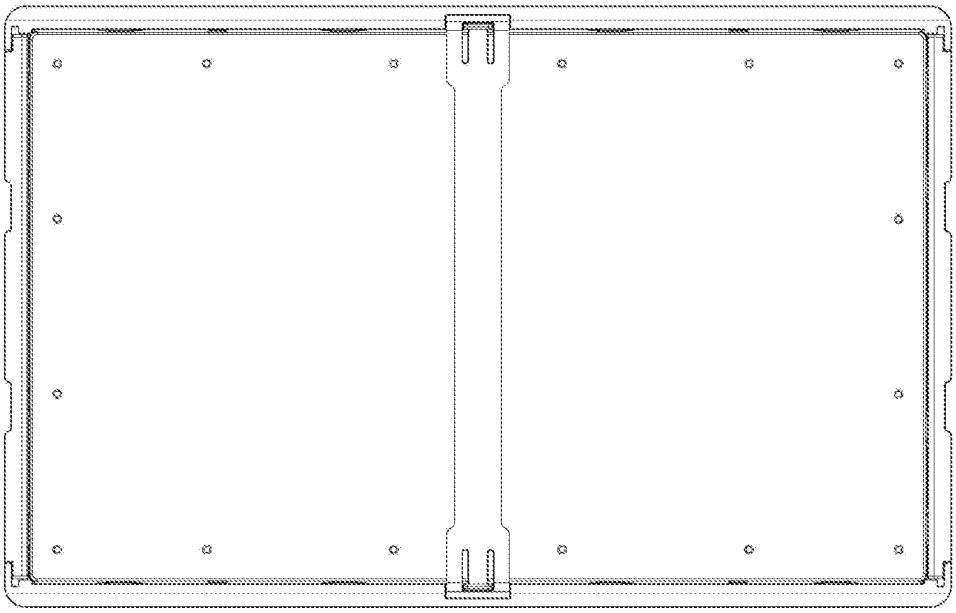


도면 1.5

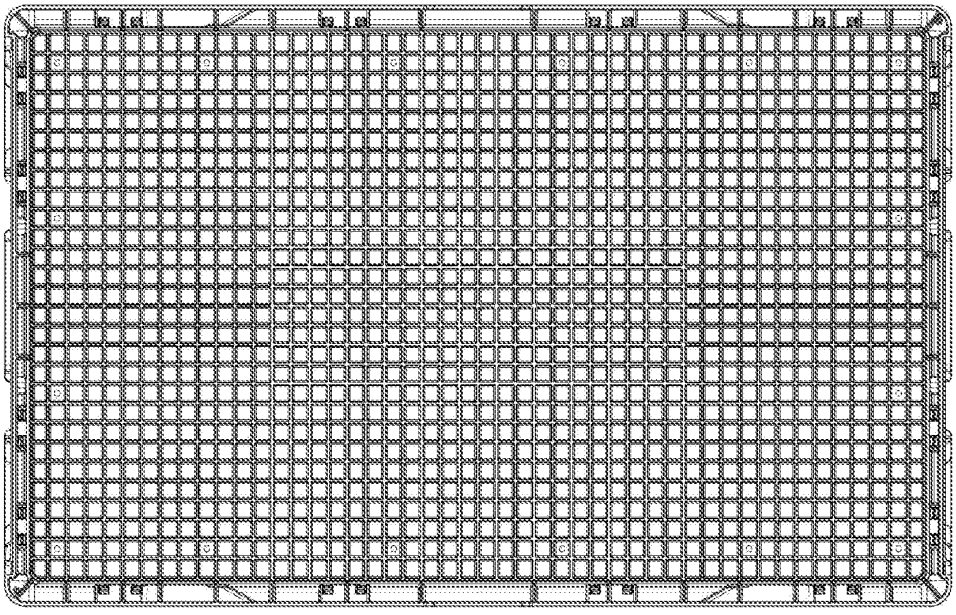


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도면 1.6



도면 1.7



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담당심사관 : 장성국

(54) 명칭 **운반용 상자**

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디자인도면

물품류

제9류

디자인의 대상이 되는 물품

운반용 상자

디자인의 설명

1. 재질은 금속 및 합성수지재 등임.

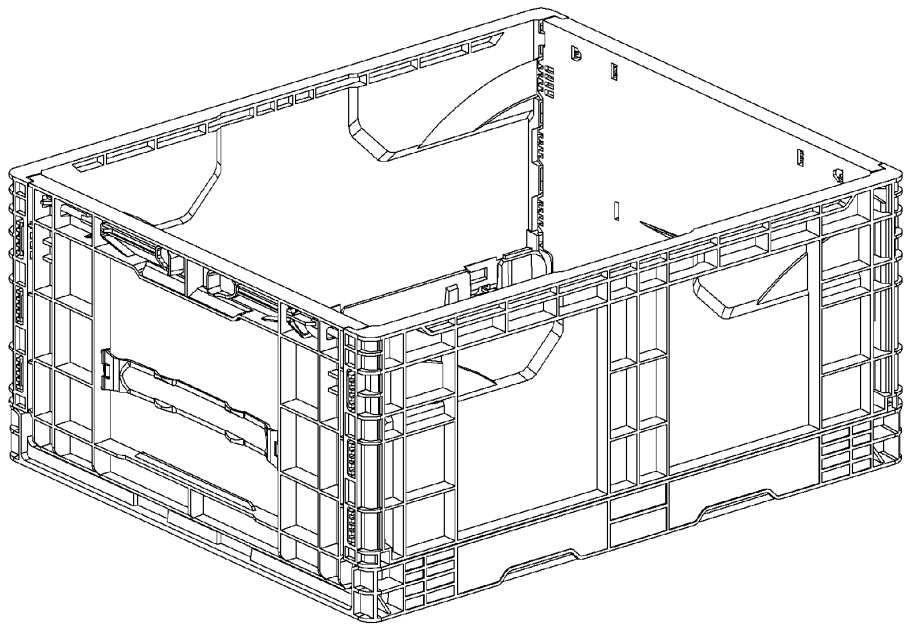
2. [도면 1.1]은 본원디자인의 전체적인 형태를 표현한 도면이고, [도면 1.2]는 본원디자인의 정면을, [도면 1.3]은 본원디자인의 배면을, [도면 1.4]는 본원디자인의 좌측면을, [도면 1.5]는 본원디자인의 우측면을, [도면 1.6]은 본원디자인의 평면을, [도면 1.7]은 본원디자인의 저면을, [도면 1.8]은 저면에서 전체적인 형태를 표현한 것임.

3. [참고도면 1.1]은 본원디자인 물품을 접은 상태의 사용상태도이고, [참고도면 1.2]는 본원디자인 물품을 접지 않은 상태에서 적층시킬 때의 사용상태도이며, [참고도면 1.3]은 본원디자인 물품을 접은 상태에서 적층시킬 때의 사용상태도임.

디자인 창작 내용의 요점

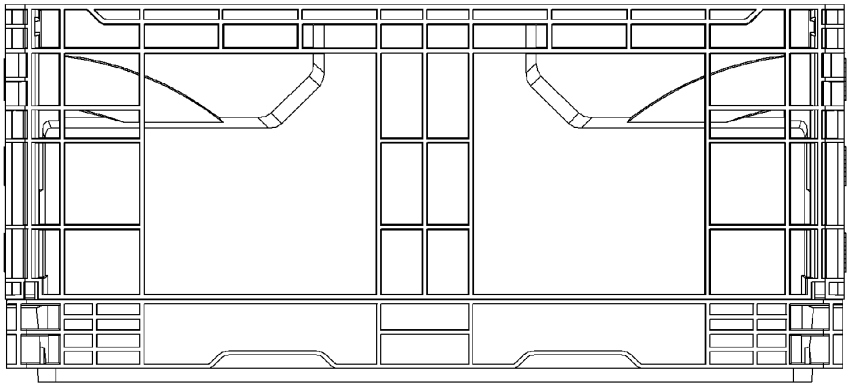
본원디자인은 "운반용 상자"의 형상과 모양의 결합을 디자인창작 내용의 요점으로 함.

도면 1.1

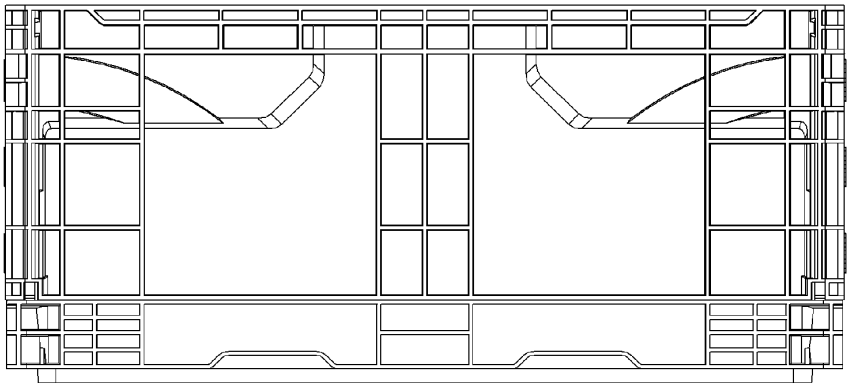


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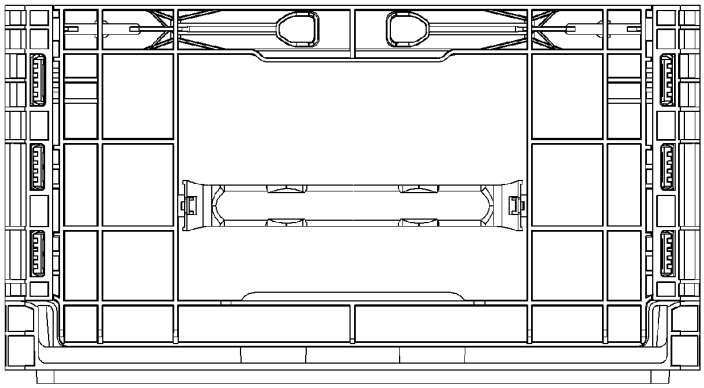
도면 1.2



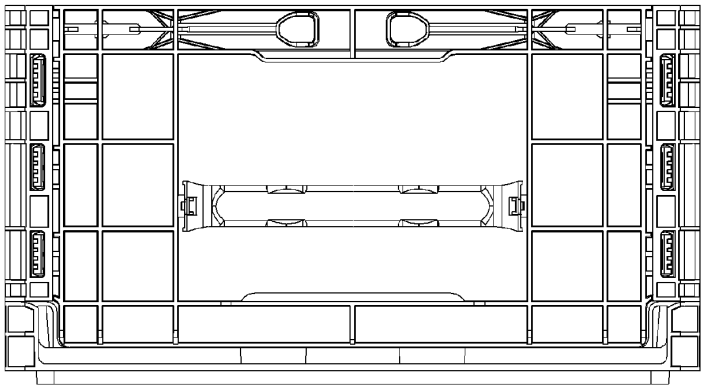
도면 1.3



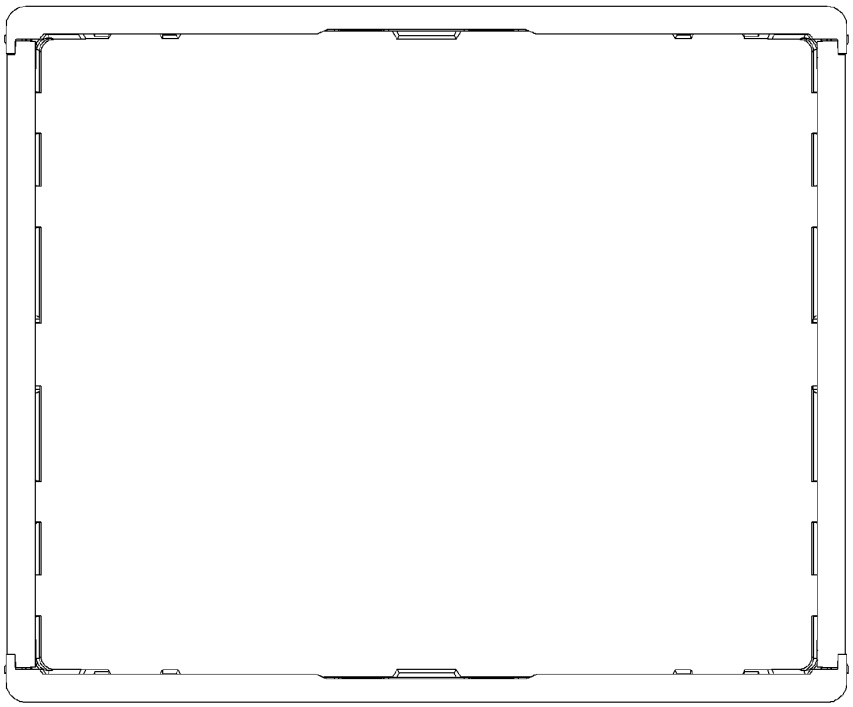
도면 1.4



도면 1.5

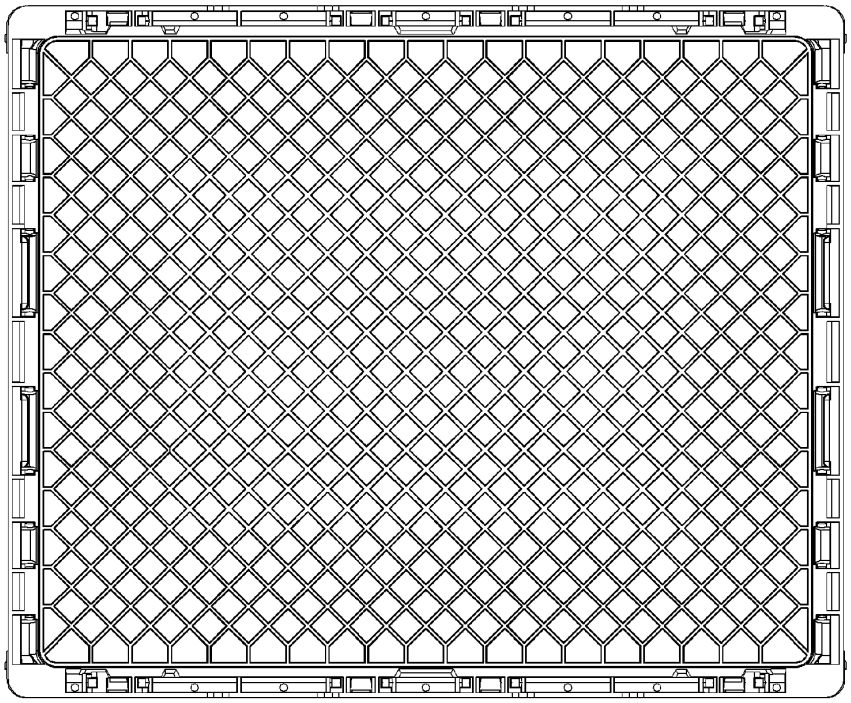


도면 1.6

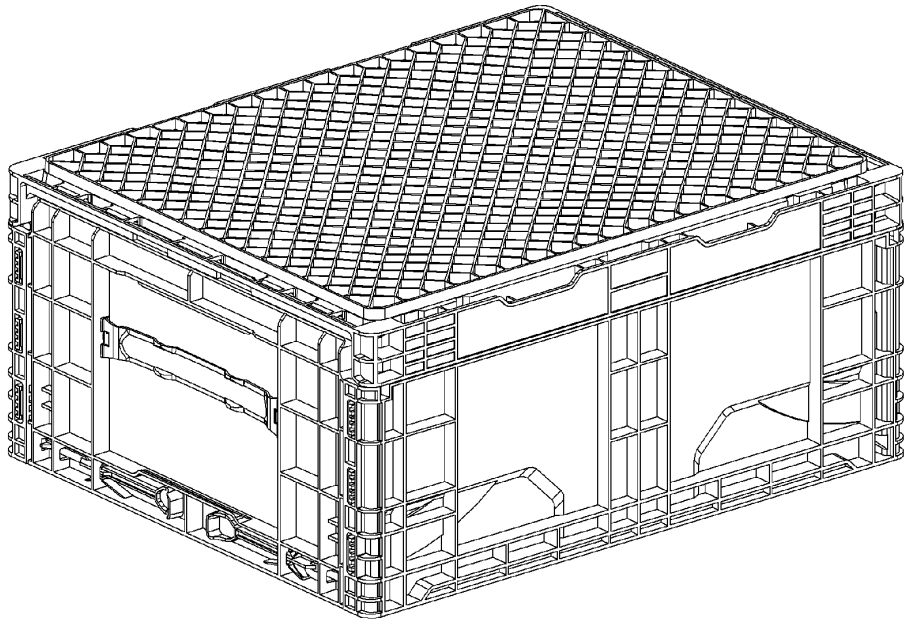


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도면 1.7

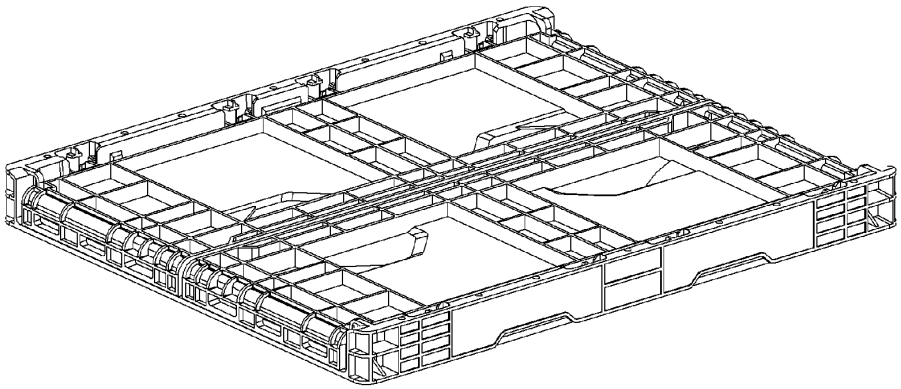


도면 1.8

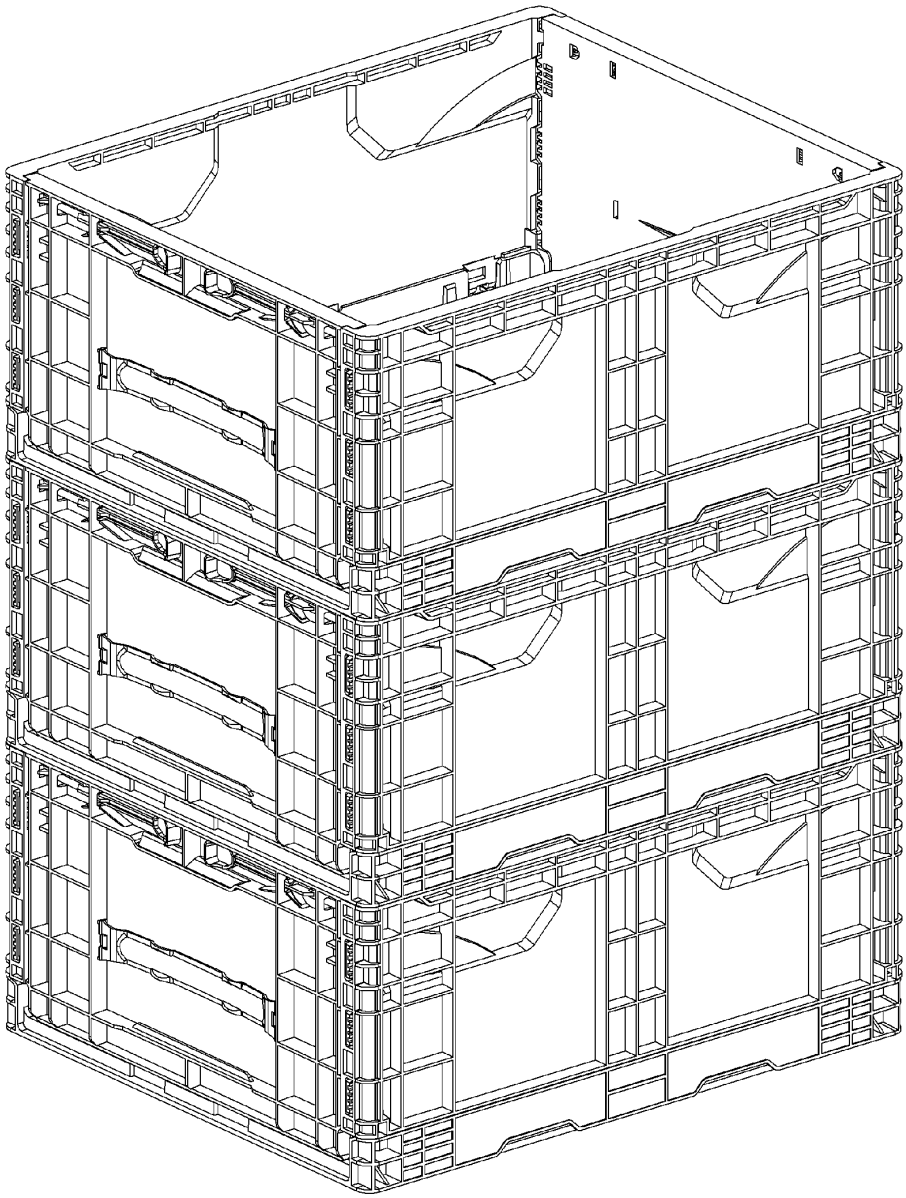


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참고도면1.1



참고도면1.3



참고도면1.3

