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Application Number	TBD
Filing Date	November 29, 2017
First Named Inventor	Yaron Brunner
Title	UTILITY ASSEMBLY AND COUPLING MECHANISM
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	269949US01_446373-417

SIGNATURE of Applicant or Patent Practitioner

Signature	/Marcus S. Simon, Reg. #50258/	Date (Optional)	November 29, 2017
Name	Marcus S. Simon	Registration Number	50,258
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)	KETER PLASTIC LTD.		

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I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

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111739

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I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

KETER PLASTIC LTD.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

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SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Nir Pallzraut Adv		
Title	Keter Group General Counsel		

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VIA *e*FILE

PATENT APPLICATION
Docket No. 269949US01_446373-417

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	Yaron Brunner	)
Serial No.:	unassigned	) Art Unit) unassigned
Filed:	November 29, 2017	)
For:	UTILITY ASSEMBLY AND COUPLING MECHANISM	)
Confirmation No.:	unassigned	)
Customer No.:	111739	)
Examiner:	unassigned	)

GENERAL AUTHORIZATION TO CHARGE FEES

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

Dear Sir:

With respect to the above-identified application, the Commissioner is authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required and to treat any concurrent or future reply requiring a petition for an extension of time under 37 C.F.R. § 1.136(a)(3) for its timely submission as incorporating a petition therefor for the appropriate length of time and to charge any fees which may be required during the course of prosecution, or credit any overpayment, to Deposit Account No. 50-6181.

Dated this 29th day of November, 2017.

Respectfully submitted,

/Marcus S. Simon, Reg. #50258/
MARCUS S. SIMON
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ABSTRACT

The present disclosure concerns a coupling mechanism for detachably attaching two or more utility modules to one another, utility assembles, mobile carriers and other attachable modules and articles.

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CLAIMS:

1. A coupling mechanism configured for readily detachably attaching a first utility module to a second utility module, the coupling mechanism comprising:

a male coupler at a face of one of the first utility module or the second utility module;

a female coupler at a face of the other one of the first utility module or the second utility module;

wherein said female coupler has a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense;

wherein said male coupler includes a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface; and

at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

2. The coupling mechanism of claim 1, wherein said female coupler is configured at the top face of the first utility module, and wherein the male coupler is configured at the bottom face of the second utility module.

3. The coupling mechanism of claim 1, wherein the at least one locking rib (i) extends substantially parallel to the sliding path or (ii) extends substantially perpendicular and intersects the sliding path.

4. The coupling mechanism of claim 1, wherein the female coupler includes a single locking rib that extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

5. The coupling mechanism of claim 1, wherein the female coupler includes two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

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6. The coupling mechanism of claim 1, wherein the female coupler includes two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

7. A coupling mechanism for a utility assembly that includes at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module; one of a top face of the first utility module or a bottom face of the second utility module includes at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module or a bottom face of the second utility module includes at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location, such that engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib or said at least one locking tongue.

8. The coupling mechanism of claim 7, wherein (i) the at least one locking rib extends substantially parallel to the sliding path, (ii) the at least one locking rib extends substantially perpendicular and intersects the sliding path, (iii) a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path, (iv) wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path, or (v) two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

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9. The coupling mechanism of claim 7, further comprising a release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module.

10. The coupling mechanism of claim 7, wherein the at least one locking latch and the at least one locking latch arresting location are disposed at a front portion of the respective utility modules.

11. The coupling mechanism of claim 7, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

12. The coupling mechanism of claim 7, wherein locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

13. The coupling mechanism of claim 7, wherein the locking latch is manipulable to be opened through an opening configured at a front wall of the respective utility module.

14. The coupling mechanism of claim 7, wherein one or both of the locking tongue and locking rib are configured with a slanting surface at corresponding orientation along the sliding path.

15. The coupling mechanism of claim 7, wherein one or both of the locking tongue and locking rib are configured with a slanting surface at corresponding orientation along the sliding path

16. The coupling mechanism of claim 7, wherein one or both of a front edge of the projecting portion (or the projecting locking location) and a corresponding front edge of the depressed locking location are slanted for gliding positioning of the second utility module into locking position over the first utility module.

17. The coupling mechanism of claim 7, wherein one or both of a front edge of the projecting portion or the projecting locking location and a corresponding front edge of the depressed locking location are slanted for gliding positioning of the second utility module into locking position over the first utility module

18. The coupling mechanism of claim 7, wherein the first utility module is configured for detachably attaching one or more second utility modules thereto.

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19. The coupling mechanism of any one of claim 7, wherein the first utility module is configured for detachably attaching one or more second utility modules thereto.

20. A coupling mechanism for a utility assembly including at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and includes at one of a top face of the first utility module or a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module or a bottom face of the second utility module includes at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

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ELECTRONICALLY FILED
Docket No. 269949US01_446373-417

UTILITY ASSEMBLY AND COUPLING MECHANISM

TECHNOLOGICAL FIELD

The present disclosure is directed to a container assembly and more specifically to a utility assembly comprising two or more detachably attachable utility modules. The disclosure is further concerned with a coupling mechanism facilitating detachably attaching the utility modules to one another.

The term 'utility *module'* is used hereinafter in its broad meaning and is meant to denote a variety of articles such as, storage containers, travel luggage, tool boxes, organizers, compacted work benches, cable storage, tools (*e.g.,* hand tools, power generators and power sources), communication modules, carrying platforms, locomotion platforms, etc., of any shape and size, and wherein any utility module can be detachably attached to any other utility module.

The term *'utility assembly*' as used herein denotes any set of utility modules configured for articulation to one another, either as a stationary unit or locomotive.

GENERAL DESCRIPTION

A first aspect of the disclosure concerns a coupling mechanism configured for readily detachably attaching any first article to any second article, wherein any first article and any second article can be any utility module.

The coupling mechanism comprises a male coupler at a face of one of the first utility module and the second utility module, and a female coupler at a face of the other one of the first utility module and the second utility module, said female coupler has a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense; said male coupler has a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending

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along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface, the coupling mechanism further comprises at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

The arrangement is such that at a locked position of a utility assembly the at least one locking tongue of the male coupler engages below said at least one locking rib of the female coupler and the at least one locking member is engaged, thus preventing any respective displacement between the first utility module and the second utility module, and retaining the coupling mechanism at an engaged and locked position.

The term *'first utility module'* as used herein denotes any utility module bearing at least one second utility module over a first surface thereof. The second utility module of a utility assembly may comprise three or more stages of utility modules, and functions as first utility module with respect to a third stage utility module mounted thereover and serving in turn as a second utility module.

According to certain embodiments, one or more female couplers are configured at the top face of the first utility module, and one or more male couplers are configured at the bottom face of the second utility module

The disclosed subject-matter is directed to a utility module configured with at least one of a male coupling mechanism and a female coupling mechanism of the disclosure, a module assembly comprising one or more utility modules of the aforementioned type and a set of utility modules of the aforementioned type.

According to a configuration of the first aspect, there is provide a utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism configured between the first utility module and the second utility module; said coupling mechanism comprising at one of a top face of the first utility module and a bottom face of the second utility module one or more depressed locking locations each configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises one or more projecting portions

each configured with a locking tongue disposed in register with said one or more depressed locking locations, and at least one locking latch disposed in register with said at least one locking latch arresting location.

The arrangement is such that, at a locked position, the bottom face of the second utility module at least partially rests over the top face of the first utility module, and the one or more projecting tongues are arrested by the corresponding one or more locking ribs, and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, thereby preventing sliding displacement between the first utility module and the second utility module, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

Locking engagement between the second utility module and the first utility module is obtained when the one or more depressed locking locations and the one or more projecting portions are disposed behind one another (though not necessarily aligned).

According to a particular configuration of the coupling mechanism, the one or more depressed locking locations and the one or more locking latch arresting locations are configured at the top face of the first utility module, and the one or more projecting portions and the at least one locking latch are configured at the bottom face of the second utility module. According to this configuration, locking between the first utility module and the second utility module is obtained by positioning the second utility module over the second utility module such that one or more locking tongues of the projecting portions engages with one or more respective locking ribs of the depressed locking locations, and wherein the locking latch interlocks with the respective locking latch arresting location.

The arrangement being such that the attaching engagement between the second utility module and the first utility module takes place when the one or more locking tongues and the corresponding one or more respective locking ribs are engaged, thereby preventing vertical separation between the utility modules (i.e. preventing lifting of the second utility module of the first utility module), and further when the locking latch is

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arrested by the respective locking latch arresting location, thereby preventing sliding displacement of the utility modules one with respect to the other (i.e. sliding displacement of the second module over the first module).

Disengaging the second utility module from the first utility module can be facilitated only after disengaging the locking latch from said locking latch arresting location.

According to a second aspect of the disclosure there is disclosed a coupling mechanism for a utility assembly comprising at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and comprises at one of a top face of the first utility module and a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

Engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

According to one particular configuration the at least one locking rib extends substantially parallel to the sliding path and according to another configuration the at least one locking rib extends substantially perpendicular and intersects the sliding path.

A third aspect of the present disclosure is directed to a utility module being a mobile carrier unit and comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module.

The term *carrier unit* as used herein denotes any kind of propelled cart configured for detachably attaching and carrying load. The carrier unit may be a hand cart, a mobile tool cart, a mobile workshop, traveling luggage cart, a trolley, etc.

With particular reference to the third aspect, the carrier engagement surface can be larger than the utility module's first engagement surface corresponding with it. In this case, several utility modules may be interlocked simultaneously upon one carrier unit.

According to one configuration there is disclosed a carrier unit comprising a manipulating arrangement, a locomotion system, and an engagement surface comprising one or more engaging elements. The carrier unit is designated for detachable interlocking engagement with one or more utility modules, each comprising a first engagement surface configured with one or more first engaging elements compatible for detachable interlocking engagement with the carrier engaging elements.

According to yet configuration there is disclosed an assembly comprising a carrier unit comprising an engagement surface comprising one or more engaging elements, and at least one utility module configured with at least one first engagement surface comprising one or more first engaging elements compatible for detachable interlocking engagement with the carrier unit's engaging elements.

According to a modification of this aspect, there is also provided a container unit comprising a top member configured with a second engagement surface of the utility module, said top member, according to one example constitutes a cover of the utility module.

The arrangement is such that a container unit can be readily and easily applied over and interlockingly articulated to a carrier unit, or over a utility module configured with a second engagement surface mimicking the first engagement surface second engagement surface mimicking the first engagement surface of the carrier unit.

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Engagement between the carrier unit and the container, and further between two containers, is facilitated by any locking mechanism of the disclosure hereinabove and hereinafter.

According to a specific example, there is a latching mechanism, wherein the first engaging elements of the carrier unit are configured for interlocking engagement with engaging elements of the mating surface of the respective utility module. The latching mechanism may assume various configurations, *e.g.,* male-female couplings, dovetail couplings, and the like. The arrangement being such that only a minor displacement is required in order to lockingly mount, and respectively detach, a utility module over the carrier unit.

According to one specific configuration, the detachable interlocking engagement mechanism between the carrier engaging elements and the utility module`s first engaging elements is a dovetail engagement mechanism, comprising laterally projecting shoulders configured on one of the carrier engagement surfaces and the first engagement surface of a utility module, and a shoulder receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said laterally projecting shoulders are configured for sliding engagement with said shoulder receiving recess.

According to a particular configuration, one or both of the carrier engagement surfaces and the first engagement surface of a respective utility module are configured with depressions, each accommodating respective laterally projecting locking shoulders.

Said dovetail engagement mechanism members constitute said engaging elements, wherein said carrier engaging elements comprise one of said dovetail engagement members, while the utility module`s first engaging element comprises the respective said dovetail engagement member.

According to another configuration, the detachable interlocking engagement mechanism between the carrier engaging elements and the utility module`s first engaging elements is an undercut engagement mechanism, comprising lateral projections configured on one of the carrier engagement surfaces and the first engagement surface of a container unit, and a receiving recess configured on the other

one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said lateral projections are configured for engagement with said receiving recess.

Interlocking engagement of the utility module and the carrier unit takes place by placing the first engagement surface of a utility module over the carrier engagement surface, such that the utility module`s first engaging elements are disposed shifted over the respective carrier engaging elements of the carrier unit, and are then slidingly shifted to obtain sliding interlocking engagement therebetween.

The detachable interlocking engagement mechanism may further comprise a locking mechanism configured for preventing unintentional detaching of the slidingly engaging elements once they are fully interlocked, i.e. to prevent detaching of the utility module from the carrier unit or from another utility module.

According to one configuration, the locking mechanism, comprises a locking pin that is configured for snapingly protruding from one of the engagement surfaces into a designated nook on the other engagement surface. This prevents the engaging surfaces from sliding relatively to each other, and by that it prevents said engaging elements from being slidingly separated once interlocked.

According to one configuration, the carrier engagement surface of the carrier unit constitutes a top wall of the carrier unit, when the carrier unit is balanced horizontally to the ground, and wherein the utility module`s first engagement surface constitutes a bottom wall of the container unit, when the utility module is balanced horizontally to the ground. The utility module can further comprise a second engagement surface constituting its top wall, or a cover, when the utility module is balanced horizontally to the ground. The second engagement surface of the utility module simulates the carrier engagement surface as it is compatible for engaging with another utility module's first engagement surface.

Any one or more of the following features, designs and configurations, can be implemented in a utility module, a utility assembly, locking mechanism, and the carrier unit and assembly according to the present disclosure, individually or in various combinations thereof:

- A single locking rib can extend at rear end of a depressed locking location (i.e. the female coupler may comprise a single locking rib) and substantially perpendicular to the sliding path;
- Two locking ribs can extend at side edges of a depressed locking location (i.e. the female coupler may comprise two locking ribs) and disposed substantially parallel to the sliding path;
- Two locking ribs can each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path;
- The utility assembly can be modular wherein a top face of a first utility module can interlock with a bottom face of a second utility module disposed thereover in a substantially fully overlapping relation, or with a bottom face of at least one second utility module only partially overlapping therewith;
- A second utility module overlapping a significant portion of a first utility module can be configured with a single release latch for displacing several locking latches articulated therewith;
- Two or more second utility modules can be mounted over a first utility module, each being independently detachable attachable over the first utility module;
- The at least one second utility module is configured for snap-type locking over the first utility module;
- A release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module;
- The at least one locking latch and the at least one locking latch arresting location can be disposed at a front portion of the respective utility modules;
- At least one of the first utility module and the second utility module are configured with a gliding surface facilitating displacement and positioning the respective second utility module at the locking position with respect to the first utility module;

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- The gliding surface reduces tolerances between the projecting portion and the depressed locking location receiving same;
- One or both of the locking tongue and locking rib can be configured with a slanting surface at corresponding orientation, along the sliding path, for reducing or substantially elimination tolerance therebetween;
- One or both of a front edge of the projecting portion and a corresponding front edge of the depressed locking location can be slanted for gliding positioning of the second utility module into true locking position over the first utility module;
- The locking latch can be configured for displacement in a direction substantially normal to a respective face of a utility module;
- The locking latch can be spring biased and configured for normally projecting from a face of the respective first or second utility module;
- The locking latch can be manipulable to be opened through an opening configured at a front wall of the respective utility module;
- Corners of the utility modules can be reinforced;
- One or more of the utility modules can be a container module, and the utility assembly can be a container assembly/tool caddy;
- The container module can be compartmented and can be configured with sub-containers and sub-compartments;
- The top face of the container module can be configured as a lid or as a functional component of the container module;
- A lid of a second container can be opened also when articulated and locked in position over a first container;
- A lid of a first container can be opened also when a second container is articulated and locked in position thereabove;
- At least one of the container modules can be a locomoting container and can be configured with an arrangement for locomoting said container module. Where the locomoting container is attached to other container modules it can facilitate for locomoting the utility assembly;

- The container modules can be configured with carrying arrangement disposed at any one or more of its faces. According to a particular configuration, a front face of the container modules is configured with a carrying handle and according to another configuration side faces of the container modules can be configured with a carrying handle;
- Examples of utility modules can be any one or more of a cooler box, a workpiece grip, a power supply (*e.g.,* power bank, generator), hand tools, power tools, a locomotive platform (*e.g.,* a work dolly), powered or not, a tactical unit (*e.g.,* military gear, scientific equipment, communications equipment, personal gear, outdoor gear, etc.);
- A tool caddy can be configured with a carrying handle (*e.g.,* telescopic);
- A utility module can be a soft-shell container with at least a rigid face portion configured with a male/female coupler;
- The utility module can be an interface coupling module, i.e. functions only as a coupling interface;
- The interface coupling module can be attached to a surface of any element or object and by different arrangements, fixedly or detachably;
- The interface coupling module can be a cargo interface module for a utility vehicle, so as to attach one or more utility modules to the vehicle;
- The cargo interface module can be a bed cargo module, a roof rack module, etc.;
- The interface coupling module can be a surface mount for attaching utility modules, *e.g.,* a floor mount, wall mount, wall rack, etc.;
- The interface coupling module can be a tool mount/rack;
- The interface coupling module can be belt mount for mounting of utility modules (*e.g.,* a hand tool) to a workers belt;
- The interface coupling module can be an interface mount module for coupling two utility modules to one another, *e.g.,* for articulating two utility modules, both configured with a similar male coupler or a female coupler, and wherein the

interface mount module is configured at both faces with another of male coupler or a female coupler;

- The interface coupling module can be a back pack carrying module, for facilitating attachment and carrying of utility modules;
- A top face of a utility module can be configured with a carrying handle, said carrying handle displaceable between a stowed position and a carrying position, wherein at the stowed position said carrying handle at least partially extends within a niche and does not to interfere with the coupling mechanism;
- The carrier unit may include one or more auxiliary engagement surfaces positioned on an exterior face of the carrier unit. For example, an auxiliary engagement surface can be configured at a bottom face of the carrier unit;
- The carrier unit may include a second engagement surface simulating/mimicking the first engagement surface of the utility module;
- A utility module may be configured with one or more auxiliary first and second engagement surfaces;
- The carrier engagement surface may be a connectivity platform detachably attached to the exterior surface of the carrier unit, facilitating a cart unit or a carrier unit according to the present disclosure;
- One or both of the utility module's first and second engagement surfaces may be detachably attached to an exterior surface of the utility module;
- The carrier engagement surface and the utility module's first engagement surface may be like elements;
- The utility module's first and second engagement surfaces may be like elements;
- The carrier unit's engaging elements and the utility module's first engaging elements may be similar elements;
- One engagement surface may include several engaging elements and one locking mechanism;
- The coupling mechanism is configured for spontaneous displacement into locking engagement within a locking receptacle, wherein manual interference is

required only for unlocking the locking mechanism and detaching a utility module from a respective utility module or carrier unit;

- The coupling mechanism can be a spring biased locking pin, normally projecting from a respective engagement surface;
- One or both of the carrier unit and the utility module may further include a locking mechanism designated to prevent unintentional separation of the engagement surfaces while they are interlocked;
- The locking mechanism is manipulable between an unlocked position in which said engagement surfaces may slide upon each other, and a locked state in which the engagement surfaces may not slide upon each other;
- The locking mechanism may be configured with a biasing mechanism for snap arresting at least at its locked state;
- The locking mechanism may be configured with a manually operated activating portion for switching between said unlocked and locked positions.
- The carrier unit may be assembled together with other carrier units the same way it's assembled with the utility modules;
- The locomotion system of the carrier unit may comprise a wheel system (*e.g.,* axially fixed roller wheels, swivel wheels, etc.), a sliding platform, caterpillar tracks, etc.;
- The locomotion system of the carrier unit comprises, according to a particular example, several fixed axis wheels, wherein the perimeter of said wheels is tangent with a base edge of the carrier unit;
- At an assembled configuration, where one or more utility modules are attached to the carrier unit, the assembly can be positioned vertically wherein a side face of the one or more containers rest over a supporting surface. According to a particular example, at this position the carrier unit and container assembly are configured with stability members for retaining their stability while positioned vertically to the ground;
- The carrier unit may be stable while positioned horizontally to the ground, by a support system projecting from a bottom face thereof. The support system

may comprise friction enhancing surfaces to restrict displacement of the assembly while placed over a bearing surface;

- The carrier unit may be foldable to a more compact configuration;
- The carrier unit may comprise an external storage box detachably interconnectable to its exterior walls;
- The carrier unit may comprise a power supply detachably interconnectable to its exterior walls;
- The carrier unit's transporting system may be motorized while powered via said power supply;
- The carrier unit may further include a locking mechanism to insure interlocking connection of the engagement surfaces;
- The container unit may comprise non-rigid portions;
- The carrier unit may comprise at least one manipulating arrangement, configurable between a stowed position in which the manipulating arrangement is retracted, and a manipulating position in which the manipulating arrangement is extracted. The manipulating arrangement may be a telescopic or foldable handle;
- The manipulating arrangement may be a gripping handle, a D-grip handle, a T-grip handle, a flexible strap, etc.

EMBODIMENTS

The present disclosure also encompasses embodiment as defined in the following numbered phrases. It should be noted that these numbered embodiments intended to add to this disclosure and is not intended in any way to be limiting.

1. A coupling mechanism configured for readily detachably attaching a first utility module to a second utility module, the coupling mechanism comprising a male coupler at a face of one of the first utility module and the second utility module, and a female coupler at a face of the other one of the first utility module and the second utility module, said female coupler having a depressed locking location configured with at

least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense; said male coupler having a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface, the coupling mechanism further comprises at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

2. The coupling mechanism of embodiment 1, wherein said female coupler is configured at the top face of the first utility module, and the male coupler is configured at the bottom face of the second utility module.

3. The coupling arrangement of embodiment 1 or 2, wherein the at least one locking rib extends substantially parallel to the sliding path.

4. The coupling arrangement of embodiment 1 or 2, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

5. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

6. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

7. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

8. A coupling mechanism for a utility assembly that comprises at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module; one of a top face of the first utility module and a bottom face of the second utility module comprises at least one

depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location, such that engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

9. The coupling arrangement of embodiment 8, wherein the at least one locking rib extends substantially parallel to the sliding path.

10. The coupling arrangement of embodiment 8, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

11. The coupling arrangement of embodiment 8, wherein a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

12. The coupling arrangement of embodiment 8, wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

13. The coupling arrangement of embodiment 8, wherein two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

14. The coupling arrangement of any one of embodiments 8 to 13, further comprising a release latch for displacing the locking latch into disengagement from the

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locking latch arresting location can be disposed at a front face of the respective second utility module.

15. The coupling arrangement of any one of embodiments 8 to 14, wherein the at least one locking latch and the at least one locking latch arresting location are disposed at a front portion of the respective utility modules.

16. The coupling arrangement of any one of embodiments 8 to 15, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

17. The coupling arrangement of any one of embodiments 8 to 16, wherein locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

18. The coupling arrangement of any one of embodiments 8 to 17, wherein the locking latch is manipulable to be opened through an opening configured at a front wall of the respective utility module.

19. The coupling arrangement of any one of embodiments 1 to 18, wherein one or both of the locking tongue and locking rib are configured with a slanting surface at corresponding orientation along the sliding path.

20. The coupling arrangement of any one of embodiments 1 to 19, wherein one or both of a front edge of the projecting portion (or the projecting locking location) and a corresponding front edge of the depressed locking location are slanted for gliding positioning of the second utility module into locking position over the first utility module.

21. The coupling mechanism of any one of embodiments 1 to 20, wherein the first utility module is configured for detachably attaching one or more second utility modules thereto.

22. A coupling mechanism for a utility assembly comprising at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and comprises at one of a top face of the first utility module and a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one

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locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

23. A utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism according to any one of embodiments 1 to 21, the coupling mechanism being configured between the first utility module and the second utility module.

24. A utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism for readily detachably attaching the first and second utility modules, the coupling mechanism being configured between the first utility module and the second utility module; said coupling mechanism comprising at one of a top face of the first utility module and a bottom face of the second utility module one or more depressed locking locations each configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises one or more projecting portions each configured with a locking tongue disposed in register with said one or more depressed locking locations, and at least one locking latch disposed in register with said at least one locking latch arresting location; such that at a locked position, the bottom face of the second utility module at least partially rests over the top face of the first utility module, and the one or more projecting tongues are arrested by the corresponding one or more locking ribs, and the at least one locking latch is arrested by corresponding at least one locking latch

arresting location, thereby preventing sliding displacement between the first utility module and the second utility module, and disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

25. The utility assembly of embodiment 24, wherein the first and second utility modules are in a locking engagement when said one or more depressed locking locations and the one or more projecting portions are disposed behind one another.

26. The utility assembly of embodiment 24 or 25, wherein said one or more depressed locking locations and said one or more locking latch arresting locations are configured at the top face of the first utility module, and the one or more projecting portions and the at least one locking latch are configured at the bottom face of the second utility module.

27. The utility assembly of any one of embodiments 24 to 26, wherein at least one second utility module is configured for snap-type locking over the first utility module.

28. The utility assembly of any one of embodiments 24 to 27 wherein engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

29. The utility assembly of any one of embodiments 24 to 28, wherein the at least one locking rib extends substantially parallel to the sliding path.

30. The utility assembly of embodiment 29, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

31. The utility assembly of embodiment 29, wherein a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

32. The utility assembly of embodiment 29 wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

33. The utility assembly of embodiment 29, wherein two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

34. The utility assembly of any one of embodiments 24 to 33, wherein a top face of a first utility module interlocks with a bottom face of a second utility module disposed thereover in a substantially fully overlapping relation, or with a bottom face of at least one second utility module only partially overlapping therewith.

35. The utility assembly of any one of embodiments 24 to 33, wherein the second utility module overlaps a significant portion of a first utility module and is configured with a single release latch for displacing several locking latches articulated therewith.

36. The utility assembly of any one of embodiments 24 to 35, further comprising a release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module.

37. The utility assembly of any one of embodiments 24 to 36, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

38. The utility assembly of any one of embodiments 24 to 37, wherein the locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

39. The utility assembly of any one of embodiments 24 to 38, wherein two or more second utility modules can be mounted over a first utility module, each being independently detachable attachable over the first utility module.

40. The utility assembly of any one of embodiments 24 to 39, wherein at least one of the first utility module and the second utility module are configured with a gliding surface facilitating displacement and positioning the respective second utility module at the locking position with respect to the first utility module.

41. The utility assembly of any one of embodiments 24 to 40, wherein one or more of the utility modules is a container module, and the utility assembly is a container assembly or a tool caddy.

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42. The utility assembly of embodiment 41, wherein the container module is compartmented and optionally configured with sub-containers and sub-compartments.

43. The utility assembly of embodiment 41 or 42, wherein a top face of the container module is configured as a lid or as a functional component of the container module.

44. The utility assembly of any one of embodiments 41 to 43, wherein the container modules is a locomoting container, configured with an arrangement for locomoting said utility assembly.

45. The utility assembly of any one of embodiments 41 to 44, wherein the container modules is configured with a carrying arrangement disposed at any one or more of its faces, optionally being a carrying handle.

46. The utility assembly of any one of embodiments 24 to 40, wherein one or more of the utility modules is a soft-shell container with at least a rigid face portion.

47. The utility assembly of any one of embodiments 24 to 40, wherein said first utility module is a mobile carrier unit.

48. The utility assembly of any one of embodiments 24 to 47, further comprising a locking mechanism for preventing unintentional separation of the modules while they are interlocked.

49. The utility assembly of any one of embodiments 24 to 48, wherein the first utility module is configured for detachably attaching at least two second utility modules thereto.

50. A mobile carrier unit comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module, said carrier engagement surface having (i) one or more depressed locking locations each configured with a locking rib and at least one locking latch arresting location, configured for engagement with said first engagement surface of a utility module that comprises at least one locking latch and one or more projecting portions, each projecting portion being configured with a locking tongue, or (ii) at least one locking latch and one or more projecting portions each configured with a locking tongue for engagement with said first engagement surface of a utility module that

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comprises one or more depressed locking locations, each depressed locking locations configured with a locking rib and at least one locking latch arresting location.

51. The mobile carrier unit of embodiment 50, wherein once associated with the utility module, said locking tongue becomes disposed in register with said one or more depressed locking locations, and at least one locking latch become disposed in register with said at least one locking latch arresting location.

52. The mobile carrier unit of embodiment 50 or 51, configured for detachable interlocking engagement with one or more utility modules, each utility module comprising a first engagement surface.

53. The mobile carrier unit of any one of embodiments 50 to 52, further comprising at least one of a manipulating arrangement and a locomotion system.

54. An assembly comprising a mobile carrier unit of any one of embodiments 50 to 53 having at least one carrier engagement surface, and at a least one utility module having a first engagement surface, the utility module being detachably interlocked with the mobile carrier unit by engaging said first engagement surface with said carrier engagement surface.

55. The assembly of embodiment 54, wherein the mobile carrier unit and the at least one utility module are detachably interlocked with one another by a dovetail engagement mechanism, that comprises laterally projecting shoulders configured on one of the carrier engagement surfaces and the first engagement surface of a utility module, and a shoulder receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said laterally projecting shoulders are configured for sliding engagement with said shoulder receiving recess.

56. The assembly of embodiment 55, wherein one or both of the carrier engagement surfaces and the first engagement surface of a respective utility module are configured with depressions, each accommodating respective laterally projecting locking shoulders.

57. The assembly of embodiment 54, wherein the mobile carrier unit and the at least one utility module are detachably interlocked with one another by an undercut engagement mechanism, comprising lateral projections configured on one of the carrier

engagement surfaces and the first engagement surface of a container unit, and a receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said lateral projections are configured for engagement with said receiving recess, such that interlocking engagement of the utility module and the carrier unit takes place by placing the first engagement surface of a utility module over the carrier engagement surface, such that the utility module`s first engaging elements are disposed shifted over the respective carrier engaging elements of the carrier unit, and are then slidingly shifted to obtain sliding interlocking engagement therebetween.

58. The assembly of any one of embodiments 54 to 57, further comprising a locking mechanism configured for preventing unintentional detaching of the utility module from the carrier unit.

59. The assembly of embodiment 58, wherein the locking mechanism comprises a locking pin that is configured for snapingly protruding from one of the engagement surfaces into a designated nook on the other engagement surface.

60. An interface coupling module comprising at least one engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module, said interface coupling module comprising an engagement surface having (i) one or more depressed locking locations each configured with a locking rib and at least one locking latch arresting location, configured for engagement with said first engagement surface of a utility module that comprises at least one locking latch and one or more projecting portions, each projecting portion being configured with a locking tongue, or (ii) at least one locking latch and one or more projecting portions each configured with a locking tongue for engagement with said first engagement surface of a utility module that comprises one or more depressed locking locations, each depressed locking locations configured with a locking rib and at least one locking latch arresting location

61. The interface coupling module of embodiment 60, being configured for detachable or fixed attachment to a surface of an object.

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62. The interface coupling module of embodiment 60 or 61, being a cargo interface module for a utility vehicle configured for attaching one or more utility modules to the vehicle.

63. The interface module of embodiment 60 or 61, being a surface mount for attaching utility modules

64. The interface module of embodiment 60 or 61, being a tool mount or a tool rack.

65. The interface module of embodiment 60 or 61, being a belt mount for mounting of utility modules to a workers belt;

66. The interface module of embodiment 60 or 61, being an interface mount module for coupling two utility modules to one another.

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 examples only, with reference to the accompanying drawings, in which:

Figs. 1 to **6** are directed to a first example of a locking mechanism, wherein:

Fig. 1A is a top perspective view of a container assembly according to an example of the present disclosure;

Fig. 1B is an exploded perspective view of the container assembly of Fig. 1A;

Fig. 1C is a bottom, front perspective view of Fig. 1B;

Fig. 1D is a bottom, rear perspective view of Fig. 1B;

Fig. 2A is a sectioned portion along line A-A in Fig. 1A;

Fig. 2B is a sectioned portion along line B-B in Fig. 1A;

Fig. 2C is a sectioned portion along line C-C in Fig. 1A;

Figs. 3A to **3D** are consecutive steps illustrating locking engagement of the locking tongue of the second container with the respective locking rib of the first container;

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Figs. 4A to **4D** are consecutive steps illustrating locking engagement of the locking latch of the second container with the respective locking latch arresting location of the first container;

Figs. 5A to **5E** schematically demonstrate modularity of a container assembly according to the disclosure;

Figs. 6A to **6G** are various combinations of a modular container assembly according to examples of the present disclosure.

Figs 7 to **12** are directed to a carrier unit and another example of a locking mechanism, wherein:

Fig. 7A is container carrier assembly according to an example of the disclosure, illustrating a top, left perspective view of a container unit, mounted on top of a carrier unit;

Fig. 7B is a top, left perspective view of a second container unit, mounted on top of a first container unit, which in turn is mounted on top of a carrier unit according to an example of the present disclosure;

Fig. 8A is a top, left perspective view of a carrier unit, illustrating the carrier engagement surface in further detail;

Figs. 8B and **8C** are a top and a bottom perspective view of a carrier unit, illustrating the container unit's first engagement surface in further detail;

Fig. 9A is a side section along line F-F in Fig. 7A, illustrating the container unit and the carrier unit unattached;

Fig. 9B is a side section along line F-F in Fig. 7A illustrating the container unit and the carrier unit attached;

Fig. 9C is a close-up view of Fig. 9B;

Fig. 9D is a sectioned view along line F-F in Fig. 7A illustrating the interlocking engagement of the carrier engaging elements together with the container unit's first engaging elements;

Fig. 10A is a sectioned view along line D-D in Fig. 7A, illustrating the locking mechanism;

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Fig. 10B is an enlarged image of the portion marked M in Fig. 10A;

Fig. 11A illustrates different sizes of container units forming an assembly, at a tilted orientation;

Fig. 11B illustrates an assembled configuration balanced vertically relatively to the ground;

Fig. 12A shows a container assembly wherein the female coupler comprises two locking ribs extending at respective side edges of two neighboring depressed locking locations;

Fig. 12B is a section along line H-H in Fig. 12A;

Fig. 12C illustrates the utility module apart from the container and flipped, so as to expose the mating coupling mechanism.

Figs. 13 to **24** are different embodiments and configurations of utility modules and utility assemblies according examples of this disclosure.

DETAILED DESCRIPTION OF EMBODIMENTS

Reference is first being made to Figs. 1 to 6, directed to a first configuration of a coupling mechanism. For sake of convenience the utility modules are exemplified as containers and respectively the utility assembly is illustrates as a tool caddy. It is however appreciated that the utility modules can be of any type, shape or size, as discussed hereinabove and as will be exemplified below.

Attention is first directed to Figs. 1 to 4, illustrating a container assembly generally designated **20**, comprising four containers **22**, **24**, **26** and **28** disposed in a triple stage configuration, the stages designated **A**, **B** and **C**. In the illustrated example containers **24** and **26** of the second stage are half-size and overlap the footprint of the first stage container **22** and the third stage container **28**, wherein the first container **22** is for example a hand tool container and containers **24** to **28** are organizers or the like.

The term *'first container'* as used herein denotes a container bearing over a top face thereof at least one other container, said at least one other container denoted herein as a *'second container'*. It is thus appreciated that a second container of a container

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assembly comprising three or more stages of containers' serves as second container when referred to the first stage container, and as a first container when referred to a third stage container mounted thereover. Accordingly, in the illustrated example of Figs. 1 and 2, container **22** is a first container and containers **24** and **26** are second containers, whilst they function as first containers when discussing locking arrangement with respect to third stage container **28**.

Each of the containers is configured with a lid **L** constituting a top face of the respective container, said lids being pivotally attached and securely articulated to the respective container through a toggle locking latch **29**. Each top face (see Fig.1B) is configured with several depressed locking locations **32** and it is seen that the at least two depressed locking locations are disposed behind one another along imaginary lines **I**, **II** and **III** (though not necessarily aligned).

Each such depressed locking location is in turn configured with a laterally projecting locking rib **36** extending from a rear portion of the depressed locking location **32** towards a front face of the container. The locking rib **36** has a flat top surface **38** substantially flush with a top surface of the respective lid **L**, and a slanting bottom surface **40**. A front portion **46** of the depressed locking location **32** is slanted too, in the same orientation as bottom surface **40** (i.e. substantially parallel thereto).

Furthermore, the top face, namely lid **L** of the containers, is configured with at least one locking latch arresting location in the form of a recess **50** disposed at a front portion of the respective top face and configured with a slanted rear wall portion **52** and a right angled front wall portion **53**.

A bottom face **54** of each container **22**, **24**, **26** and **28** is configured with several projecting portions **56**, extending in register with the depressed locking locations **32**, and it is seen that the at least two projecting portions **56** are disposed behind one another along the imaginary lines **I**, **II** and **III** (though not necessarily aligned).

Each projecting portions **56** is configured with a locking tongue **60** laterally projecting rearwards and having a slanted surface **62** corresponding with slanting surface **40** of locking rib **36**. Also, a front portion **66** of the projecting portions **56** slants substantially parallel to the slanted surface **62** of the locking tongue **60**.

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It is essential that the at least two depressed locking locations **32** and the at least two projecting portions **56** be disposed behind one another (though not necessarily aligned), as exemplified by imaginary lines **I**, **II** and **III** (though not necessarily aligned).

A plunger-like locking latch **70** is disposed at a front portion of each container, said locking latch **70** disposed in register with the recesses **50** and configured with a slanting rear wall portion **72** and a right angled front wall portion **74**, corresponding with the sloping wall portions of the recesses **50**. The locking latch **70** has an elongate finger engaging aperture **73** (Fig. 2A) accessible through an aperture **75** formed in register at a front wall face of the respective second container, said locking latch **70** being normally biased to project under force of coiled spring **71**, such that the locking latch **70** is axially displaceable between a projecting, locked position and a temporary retracted position during transition into the locked position.

The locking latch **70** is typically single-handedly manipulable between its locking position and its releasing position, such that manipulation of the locking latch to disengage it from the locking latch arresting location **50** can be easily facilitated using one hand simultaneously with gripping the carrying handle **80**. As seen in Figs. 1A-2C, manipulating the finger engaging aperture **73**, being part of locking latch **70**, is disposed opposite to and at finger-reach distance from the carrying handle **80** when the handle is at its carrying position tilted upwards. This enables a grab, release and go detachment of the second utility module from the first utility module in a simple single-handed operation.

When it is required to detachably attach a second container over a first container, the former is placed over the later (Fig. 3A), placing the projecting portions **56** within the depressed locking location **32** (Fig. 3B) with the locking tongues **60** engaging below and being gradually arrested by the respective locking ribs **36** arresting is obtained (Fig. 3C) until complete arresting is obtained (Fig. 3D). Simultaneously, as the locking tongues **60** arrest by the locking ribs **36**, the locking latch **70** of the second container slides into the locking latch arresting location (recess **50**) and finally snaps into locking engagement therewith. It is noted (Figs 4A to 4D) that first (Figs. 4B and

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4C) the locking latch **70** displaces upwards against the biasing effect of spring **71**, and when the second container reaches the final locking position over the first container, the locking latch **70** plunges into arresting position within the recess **50**.

At the locked position the second container is attached over the top face of the first container, such that they can be moved as an integrated unit. Detaching of a second container from a first container is easily facilitated by unlocking, obtained by displacing the locking latch **70** upwards against the biasing effect of spring **71**, whereby the second container can be displaced with respect to the first container and detached therefrom.

As further seen in Figs. 1-4, each of the containers **22**, **24**, **26** and **28**, is configured at a front face thereof with a tiltable carrying handle **80**, for carrying a respective container or the entire container assembly **20**. Also seen, some of the containers can be configured with fender-like protectors **90** at their corners.

Further attention is now directed to Figs. 5A to 5E demonstrating examples of modularity of a container assembly according to the disclosure. Fig. 5A is a planner top view of a first container **94** and Figs. 5B to 5E illustrate second containers superimposed over the first container **94**. In Fig. 5B a second container **96** is substantially as big as the first container **94**, i.e. having the same footprint. In Fig. 5C a second container **98** is as wide as the first container **94**, however narrower in depth, and disposed at a front portion of the first container. In Fig. 5D two second containers **99A** and **99B** are mounted over the first container **94** and occupy substantially the entire footprint thereof, whereby each of containers **99A** and **99B** is independently attachable and detachable from the first container **94**, as exemplified hereinabove. In Fig. 5E two second containers **100A** and **100B** are positioned over the first container **94**, occupying the entire width though narrower in depth and extending from a front portion of the first container **94**.

Turning now to Figs. 6A to 6K, there are illustrated several examples of container assemblies, subassemblies and their components. Fig. 6A illustrates a disassembled container assembly collectively designated **104** and comprising a base container **106**, a chest of drawers module **108** comprising three drawers, a tool caddy module **110**, a compartmented storage module **112** and a half-sized compartmented

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storage module **114** (typically two of which). It is noted that the base container is configured for locomoting and comprises at a rear thereof wheels **116** and a telescopic handle **118**.

As can be appreciated from Figs. 6B through 6D, various container assemblies are illustrated, the arrangement is such that in practice any module can constitute either a first container or a second container, as defined hereinabove (though it is more likely that base container **106** serves as a first container).

Figs. 6E and 6F illustrate a chest of drawers module **108**, illustrated separately in Fig. 6E and mounted over a similar drawer module **108** in Fig. 6F. It is appreciated that the drawers of each module can be locked at their closed position to prevent spontaneous opening thereof whilst carrying a module. Furthermore, each module **108** is configured with a pair of carrying handles **115** disposed at top side wall portions thereof, to facilitate carrying of the module.

In Fig. 6G there is illustrated a subassembly comprising a first container in the form of a tool caddy module **110** and second container in the form of a compartmented storage module **112** attached thereto, whilst the lid **119** of the first container is open facilitating access to the contents thereof.

Further attention is now directed to Figs. 7 to 16, showing a third aspect of the disclosure, namely a utility module being a mobile carrier unit and comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a second utility module. For sake of example only, the second utility module exemplified in the annexed drawings is in the form of a utility container. It is however appreciated that the utility modules can be of any type, shape or size, as discussed hereinabove and as will be exemplified below. Accordingly, the term *container unit* as used in the following description denotes any type of a utility module, as discussed herein the specification.

Attention is first directed to Fig. 7A, illustrating a container carrier assembly generally designated **200** comprising a container unit **202** (utility module) mounted on top of a carrier unit **206**. The carrier unit **206** is equipped with a telescopic manipulating handle **210**, a pair of rear wheels **208** and a set of horizontally stabilizing support legs

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212 at a front portion of the carrier unit **206**. The carrier unit **206** and the container unit **202** are engaged in an interlocking engagement via their engagement surfaces, i.e. a carrier engagement surface **216** at a top face of the a carrier unit **206** (best seen in Fig. 8A), and the container unit's first engagement surface **220** (namely its bottom face; best seen in Figs. 8B and 8C). The container unit **202** is configured with yet a second engagement surface **226** (namely the container's top face), simulating the carrier engagement surface **216**. The container unit **202** further comprises a locking mechanism **230** configured for arresting within a respective notch **231** at the carrier engagement surface **216**, to thereby to prevent displacement and separation of the engagement surfaces **216** and **220** once they are interlocked, as later will be explained.

The carrier engagement surface **216** seen in greater detail in Fig. 8A, illustrates a top perspective view of a carrier unit **206** with the telescopic handle **210** in a retracted position. The carrier engagement surface **216** comprises multiple carrier engaging elements **236**, depressed from the surface, and designated for interlockingly receiving respective container unit's first engaging elements **240**, projecting from the first engagement surface (bottom face) **220** of the container unit **202**.

Each carrier engaging element **236**, is a so-called female coupler and has a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path and having an open edge facing in a first sense. As seen in the drawings, it is generally constituted by a receiving recessed depression **244** in the carrier engagement surface **216**, configured with a pair of facing locking ribs **248**, forming the aforementioned recess. The locking ribs **248** extend substantially parallel to sliding path of the container unit **202** with respect to the carrier unit **206**, said path (designated **P** in Figs. 7A and 10B). Further noted, side walls **250** of depressions **244** are sloped in order to allow directing of a container unit's first engaging element **240**, mounted upon it, to its interlocking position.

A corresponding coupler configured at the container unit is a so-called male coupler comprising a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and

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configured for arresting engagement at a space between said locking rib and depressed surface. As seen, a single container unit's engaging element **240** is generally constituted a downwardly projecting outwards protrusion **258**, projecting from the bottom face **220** of the container **202**.

In order to lock the container **202** over the carrier unit **206**, upon placing the container **202** over the carrier engagement surface **216** of carrier unit **206** one must mount the container unit's first engaging elements **240** into the depressions **244** and then slide the container **202** along the sliding path **P** (i.e. towards the locking ribs **248**) so that the engaging elements **240** engage below said projecting ribs/shoulders **248** and the engaging elements **240** are thus arrested at a space between said locking ribs and the depressed surface, as seen in Fig. 9C. interlocking engagement of the container (or any other utility module) can be facilitated by a single male-female locking mechanism of the aforementioned type, or by a plurality of such locking mechanism, at any location over the carrier unit **206**.

The shape and size of the locking members is modular as far as the depression **244** in the carrier engagement surface **216**, can be single or double in size (*e.g.,* **236** and **236A** in Fig. 8A, respectively), so it is large enough to accommodate two container unit's first engaging elements **240**, or two neighboring container unit's first engaging elements. Locking/engaging and detaching of this configuration is similar to a single locking module.

The engagement and locking mechanism is modular in the sense that any first article can be easily and readily articulated to a surface of any second article, wherein the articulation is strong and firm (i.e. substantially motionless).

With further reference to Fig. 7B, there are illustrated two containers **202A** and **202B** articulated over one another, the arrangement being such that the bottom face of the intermediate container **202A** serves for engaging with the top face of the carrier unit **206** and likewise, the top face of the intermediate container **202A** serves for engaging with the bottom face of the top container **202B**, as discussed herein above. The arrangement is such that each stage is lockingly secured by the locking mechanism **230**,

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wherein each stage can be detached from the stage below upon releasing locking engagement of the respective locking mechanism **230**.

The locking mechanism **230** is shown in further detail in Figs. 10A and 10B. The locking mechanism comprises a locking pin **231** normally biased by spring **233** such that a tip **235** projects from a bottom surface of the container **202** (see also Fig. 8B) and is configured for snap arresting within a respective notch **231** configured at the engagement surface **216** of the carrier unit **206** (seen also in Fig. 8A). The locking pin **231** is slidable within a race at the side wall of the container, and comprises a finger manipulating portion at **237** (accessible through an opening at the side wall of the container), for displacing the locking pin, against the biasing effect of spring **233**, into its disengaged position, thus facilitating sliding the container along the path **P** into disengagement from the carrier unit (or respective other container or utility module).

The carrier unit **206** is further configured at a bottom end, with a pair of stability supports **264** (Figs. 8A, 11B), configured for supporting the carrier unit, with or without a container attached thereto, at an upright, i.e. vertical position, thus preventing it from tipping over, in particular with containers or any other utility module articulated thereto. Stability supports **264** can be, according to a particular configuration, an extension of the telescopic handle **210**, whereby the stability supports are functional as such only when the handle is fully contracted. However, in the illustration of Fig. 16 the utility assembly **253** is maintained at its upright position owing to said stability supports **264** and further bearing over a side face **266** of the intermediate container **202A**, being substantially flush with a bottom face of the stability supports **264**.

With further reference to Figs. 12A to 12C there is illustrated a modification of articulation between a first utility module (container **300** in the particular example) and a second utility module (two work-piece supports **304** in the particular example). The container **300** is substantially similar to that illustrated in the previous examples, wherein the cover/lid **308** is configured with a plurality of female coupler members **310**, each configured with a depressed locking location and a pair of locking ribs extending above the depressed surface and along a sliding path. The opposing locking ribs **312A** and **312B** have an open edge facing in a first sense (the introducing direction).

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In the examples hereinbefore, engagement with a corresponding male coupler took place within the vicinity of a single coupling element, i.e. over two engaging ribs **312A** and **321B** of a single depressed locking location facing each other. However, in the example of Figs. 12A-12C engagement of the work-piece supports **304** takes place over two engaging ribs **312A** and **312B** of two neighboring depressed locking locations **308A** and **308B**. Accordingly, the male coupler of the two work-piece supports **304** is configured for arresting with the two engaging ribs **312A** and **312B** by two individual (separate) male couplers **316A** and **316B**, each configured for arresting one of the respective engaging ribs **312A** and **312B**. Arresting of the male projections **316** takes place as discussed before, by arresting below the respective engaging ribs, within the space at the depressed locking location. In spite of the relative narrow body structure of the work-piece supports **304**, they are each configured with a locking mechanism **330**, similar to locking mechanism **230** discussed hereinbefore.

Turning now to Figs. 13 to 24, there are illustrated various examples of utility modules, utility assemblies and various configurations according to the disclosure.

Fig. 13A illustrates a utility module assembly generally designated **400**, comprising a wheeled base container **402** supporting an intermediate container **404**, bearing in turn a cooler box **406** and a power unit **408** disposed side by side over the intermediate container. At least the intermediate container **404** is configured at a bottom face thereof with a male-type coupling arrangement, for attachment over the cover of the base container, said cover configured with a respective female coupling arrangement. The cover of the intermediate container **404** is configured with a similar female coupling arrangement, and can thus engage with one the utility modules **406** and **408**, each configured at its bottom face with a respective male-type coupling arrangement.

It is seen in Figs. 13B through 13D that the intermediate container **404** is fitted with a pivotal carrying handle **418** articulated at the top side walls thereof. The carrying handle has a thickness **t** and the arrangement is such that at the stowed/folded position (Figs. 13B, 13D) the handle **418** is received within a peripheral groove **422** extending over a top edge of the intermediate container **404** and a peripheral groove **424** extending

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at a bottom edge of the utility modules **408** and **406** (cooler box **406** and a power unit **408**), such that the handle **418** does not constitute an obstacle in mounting and interlocking a utility module over another utility module. It is also seen that at least some of the utility modules are configured with side handles **428** serving both as carrying handles and as bumpers.

Figs. 14A to 14C illustrate a first utility module in the form of a container **430** supporting two detachable workpiece-piece supports **432** (attached as discussed herein before with reference to Figs. 12). Fig. 14C illustrates a utility module in the form of a work surface **436** configured with a vice race **438**, so that a vice **440**, or other workshop tools can be used. The workpiece-piece supports **432** are configured with a male type coupling having projecting locking locations **444** for engaging with respective female couplers.

In Figs. 15A and 15B there is illustrated a back-rack **450** being a substantially rigid platform having a carrying handle **451** and configured at one side thereof with a pair of adjustable shoulder harnesses **452**, and an adjustable waist harness **454**. The other side of the back-rack is configured as a universal utility mounting platform **458**, configured with a plurality of attachment locations **460**. In the illustrated example all attachment locations **460** are so-called female attachments (as discussed hereinabove in detail), however it is appreciated that the attachment locations can just as well be male-type attachments, or a combination of male and female attachments. According to yet an example (not shown), one side of the carrying platform can be configured with male-type attachments, and an opposite side of the platform be configured with female-type attachments, wherein a used has the choice of attaching the platform to the harness system at an orientation of choice.

In Fig. 16A there is illustrated a utility module in the form of a wheeled carrying unit **464** (shown from a bottom side), similar to that disclosed in connection with Figs. 7 to 11. The carrying unit **464** comprises a rigid platform **466** fitted at a top face thereof with a female/male attaching arrangement in accordance with the disclosure, such that any utility module according to the disclosure can be detachably attached thereto. Also provided is a telescopic manipulating handle **468** and a pair of wheels **466**. The carrying

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unit can be fitted with a collapsible support plate configuring it into a pushcart (not shown).

Fig. 16B shows a utility assembly **276** comprising a wheeled base container **278** interlocked with a first intermediate container **280** mounted thereover (constituting a second stage of the assembly), and a second intermediate container **282** mounted thereover (constituting a third stage of the assembly **276**), there being yet a fourth stage utility module container **284** mounted over the second intermediate container **282**. Whilst the second intermediate container **282** has a wider footprint than the first intermediate container **280**, this does not constitute any difficulty as far as attaching it over the second intermediate container **282**, and further, the top face of the second intermediate container **282** has a great surface suited for articulation thereof of several fourth stage utility modules (only one shown).

Fig. 17 shows a carrying bag **280** having soft side walls **282** (in the example illustrated made of fabric), however fitted with (integrally or detachable) an articulation platform base **284,** said articulation platform made of a firm rigid material and is configured with four male-type coupling locations **288** of the type disclosed hereinabove. The carrying bag **280** has a carrying strap **290** useful for hand held or shoulder carrying of the bag.

Figure 18A shows a rigid coupling platform **300**, configured with a plurality of female coupling locations (of the type disclosed herein) and further configured with bolt eyes **298** for securing to any desired surface, and carrying bars **313**.

The coupling platform **300** can be attached for example to a truck bed **306** (Fig. 20), directly over the truck bed or over a cargo container attached to the truck. The coupling platform **300** can be attached to a wall, as in Fig. 18B, wherein a plurality of various utility modules can be articulated thereto. For example, utility modules can be an electric charger **315** of a power tool, a wall mounted sorting container **314**, a hand tool rack **318** (Fig. 18C), a tool coupling adaptor **320** (Fig. 18C), etc.

In Fig. 19 there is illustrated a belt-mount **319** configured as a female coupler according to the disclosure, wherein a tool **321** or a bag/pouch configured with a male coupler can be detachably attached thereto.

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In Fig. 21 there is illustrated a wall rack **326** comprising four utility modules in the form of articulation platforms **328** (mountable at different elevations about the wall supports **327**) each configured for bearing and attaching thereto any utility module in accordance with the disclosure.

In Fig. 22 there is illustrated a mobile work stand **340** comprising a wheeled base **342** supporting two racks **344** with four utility modules in the form of articulation platforms **346** (mountable at different elevations about the wall supports **327**) each configured for bearing and attaching thereto any utility module (*e.g.,* containers **348**) in accordance with the disclosure.

In Fig. 23 the utility module is in the form of a dolly **352** configured with wheels **354** and having a top surface configured with an array of female type couplings, as discussed.

In Fig. 24 there is illustrated a utility coupling platform **358** suited for articulation to any desired article (*e.g.,* a bag, a tool, etc.). the utility coupling platform is configured at least at one face thereof with a male coupling locations **360** mimicking the coupling arrangement of the disclosure, rendering it suitable for articulation with a coupling system according to the disclosure.

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Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (04-14)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Yaron Brunner	Nonprovisional Application Number (if known):	
Title of Invention:	UTILITY ASSEMBLY AND COUPLING MECHANISM		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently $0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.

2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, **or** the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Marcus S. Simon, Reg. #50258/	Date November 29, 2017
Name (Print/Typed) Marcus S. Simon	Practitioner Registration Number 50258

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.**

☑ *Total of 1 forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

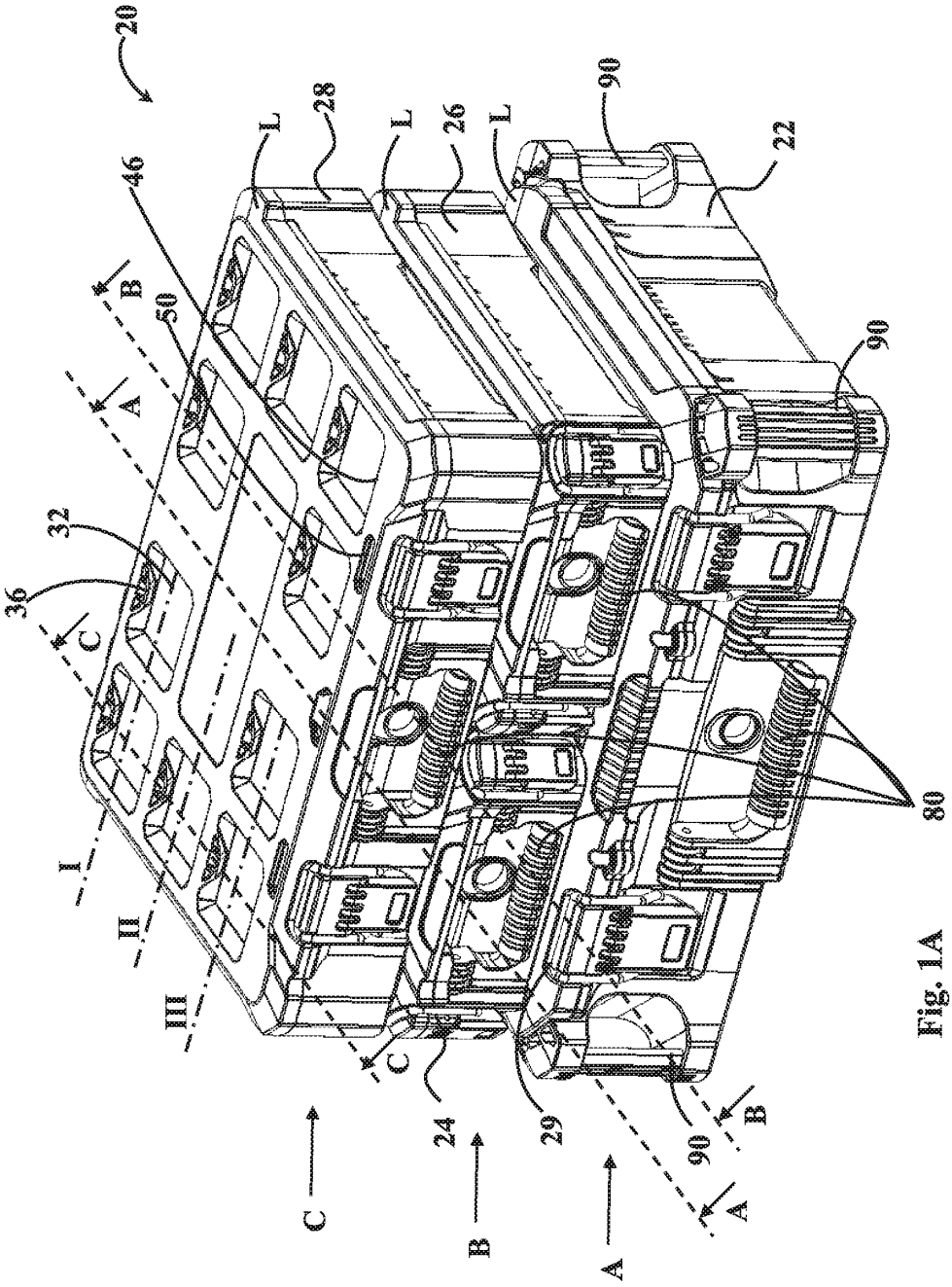


Fig. 1A

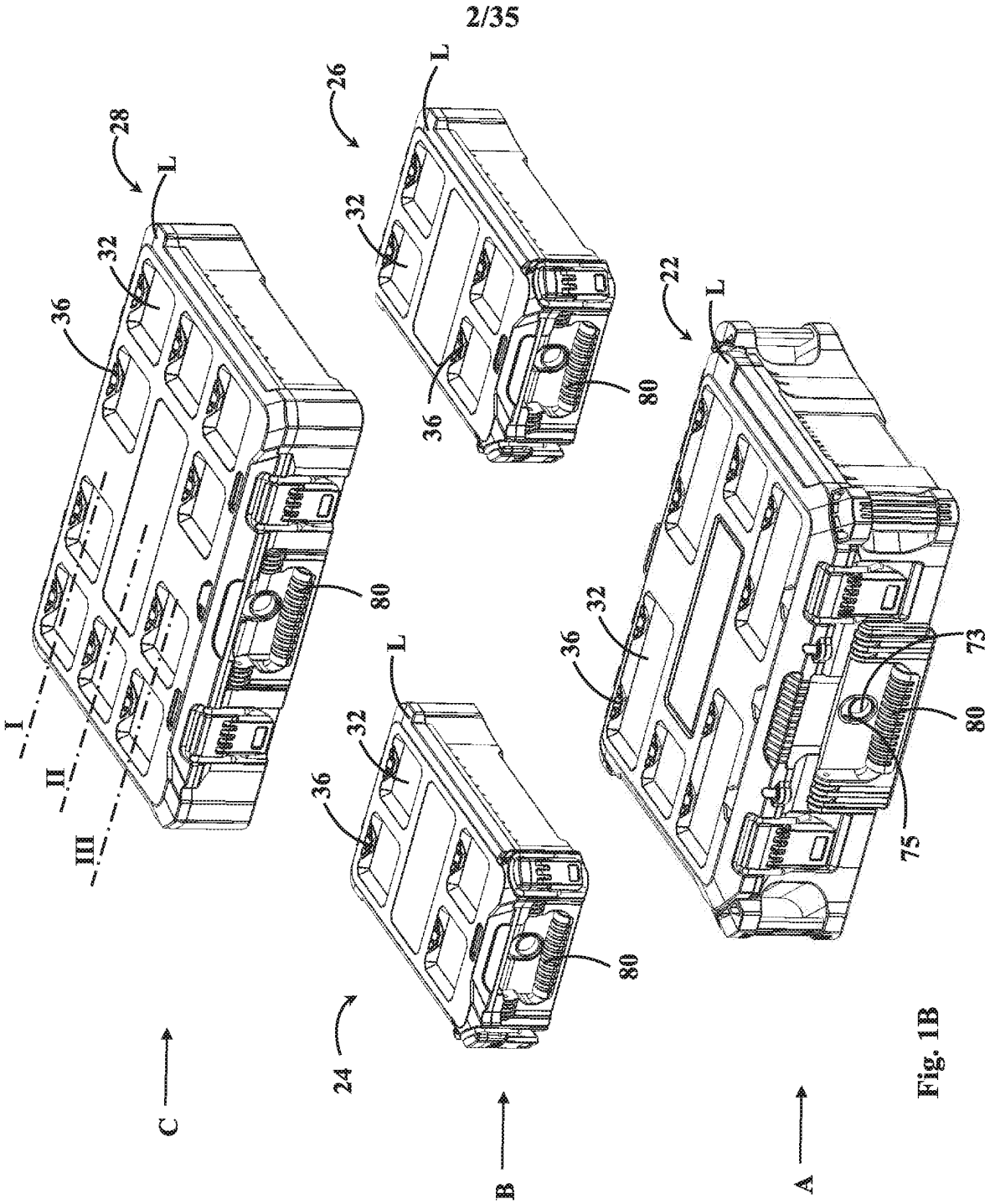


Fig. 1B

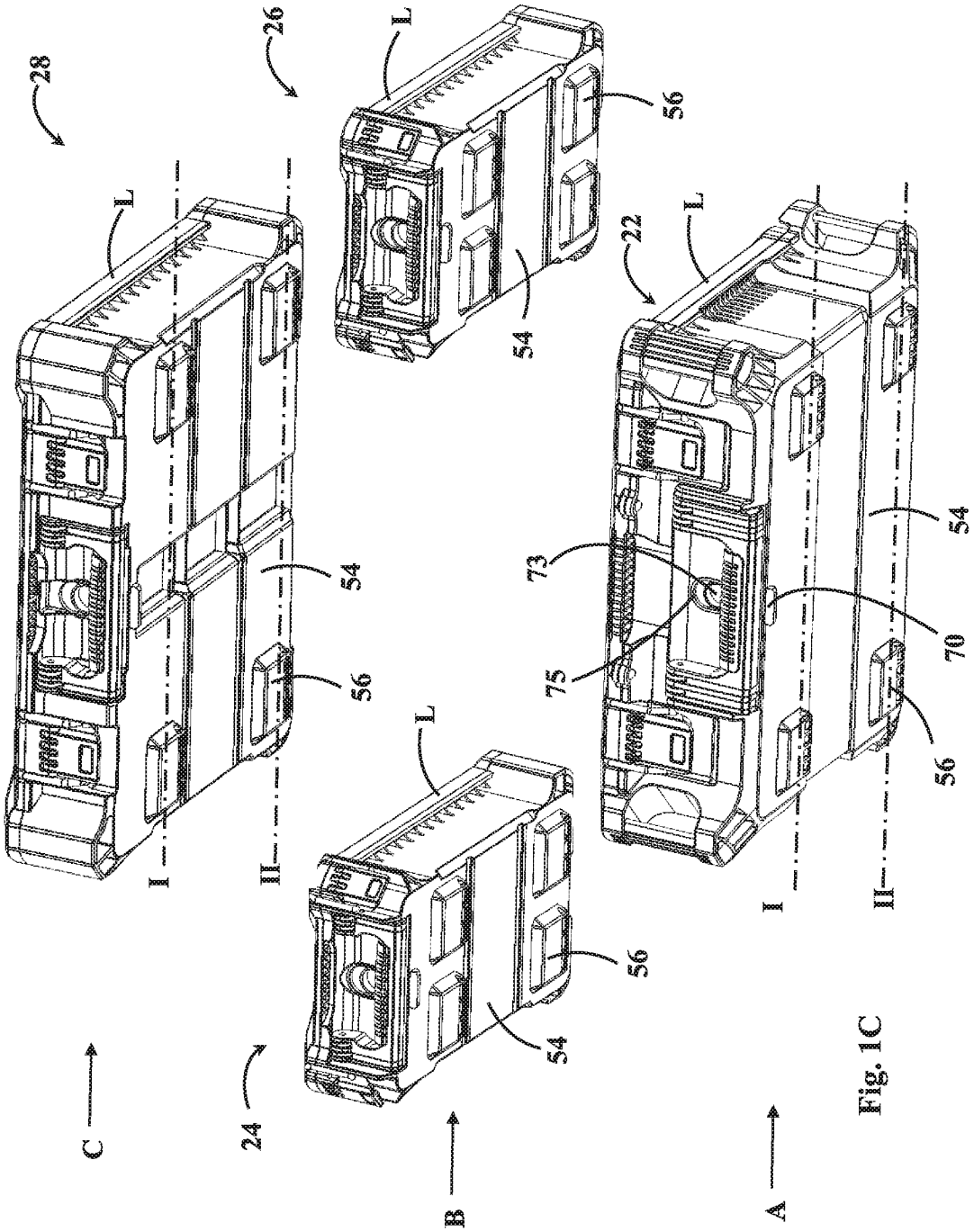


Fig. 1C

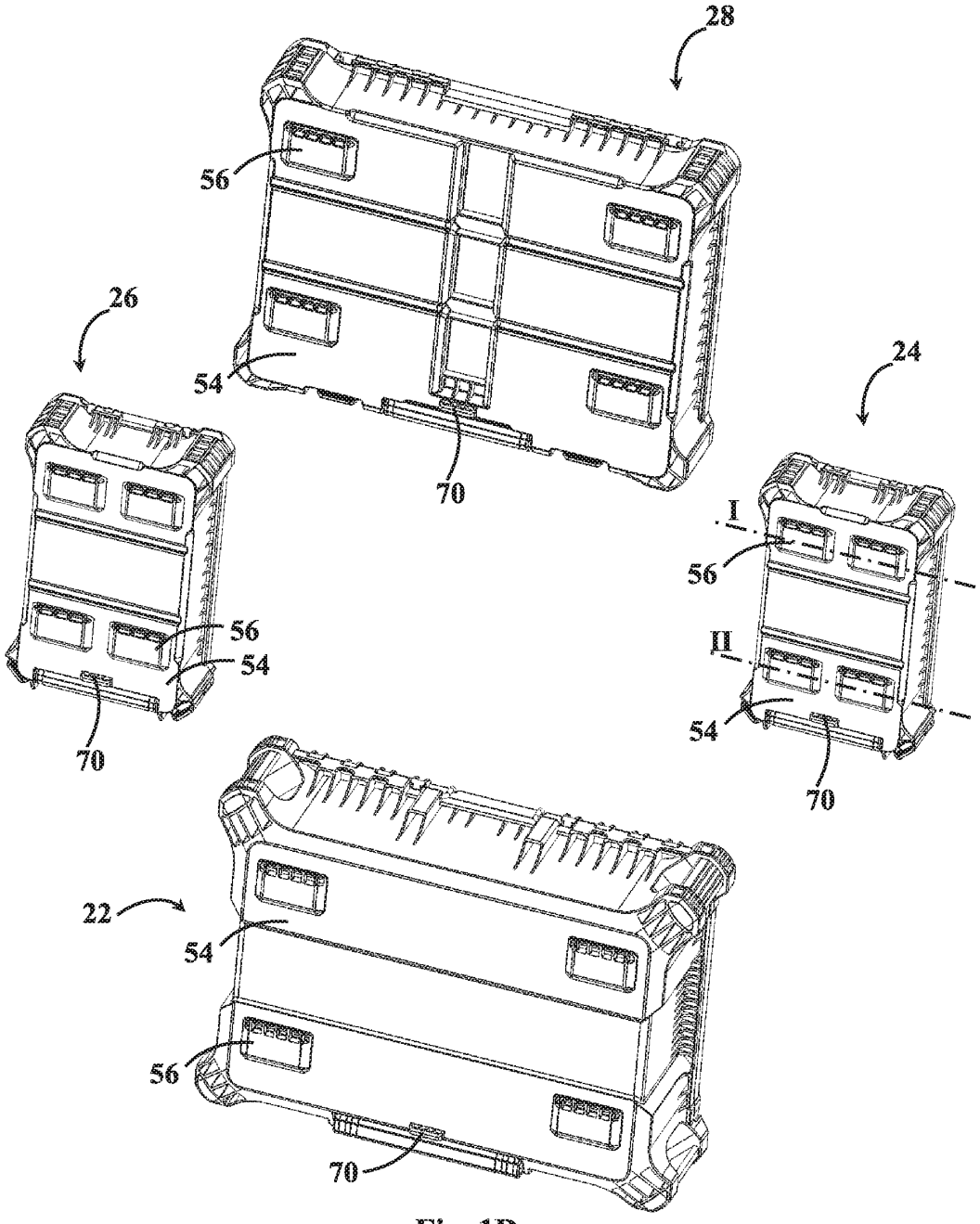


Fig. 1D

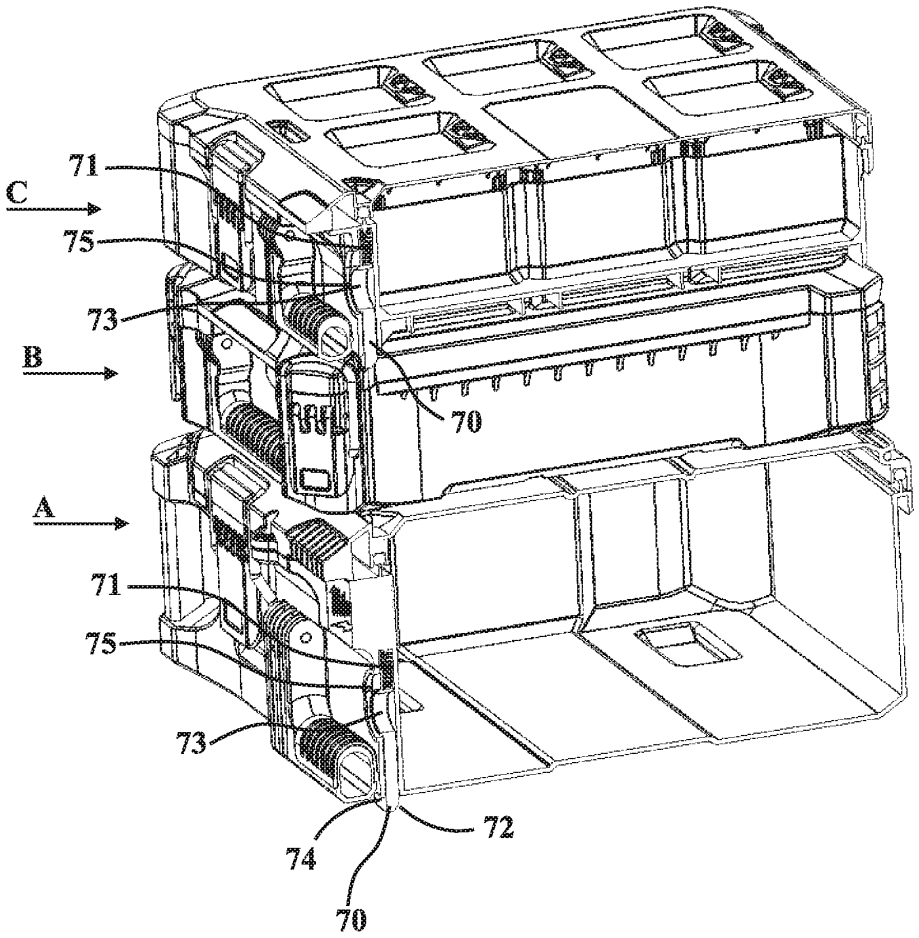


Fig. 2A

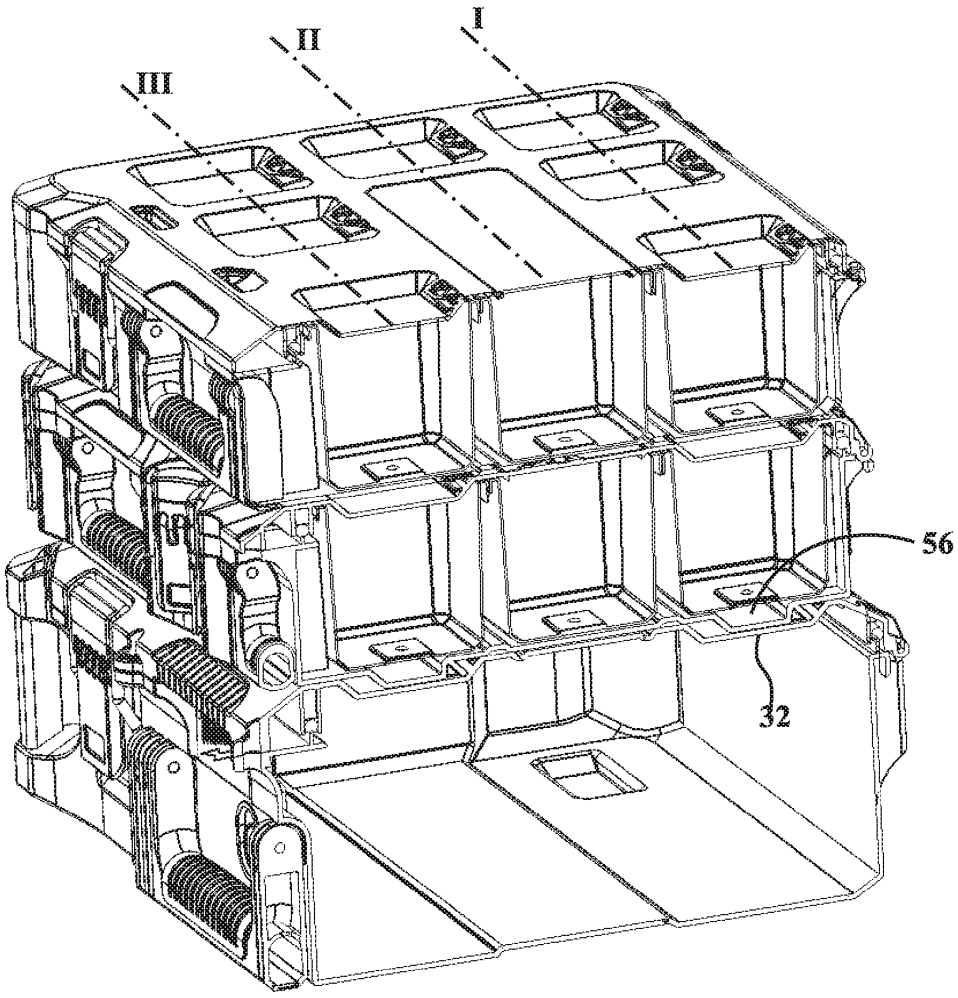


Fig. 2B

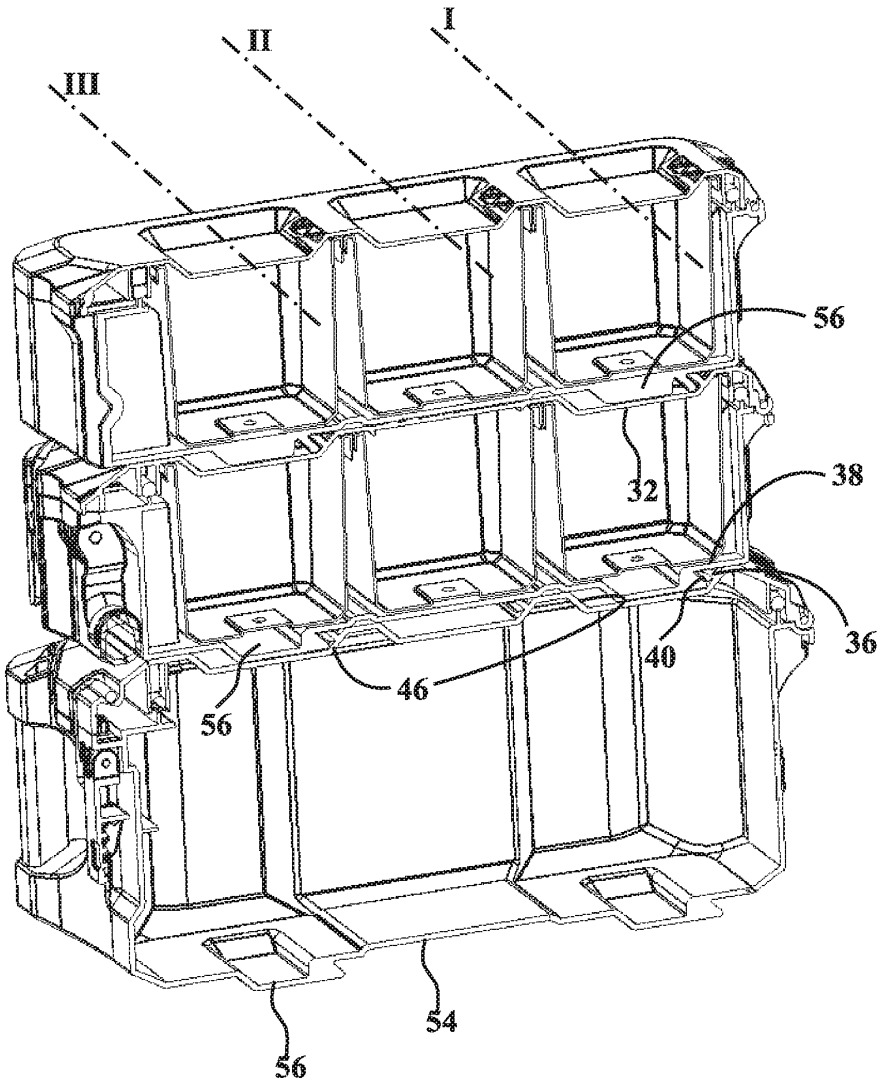


Fig. 2C

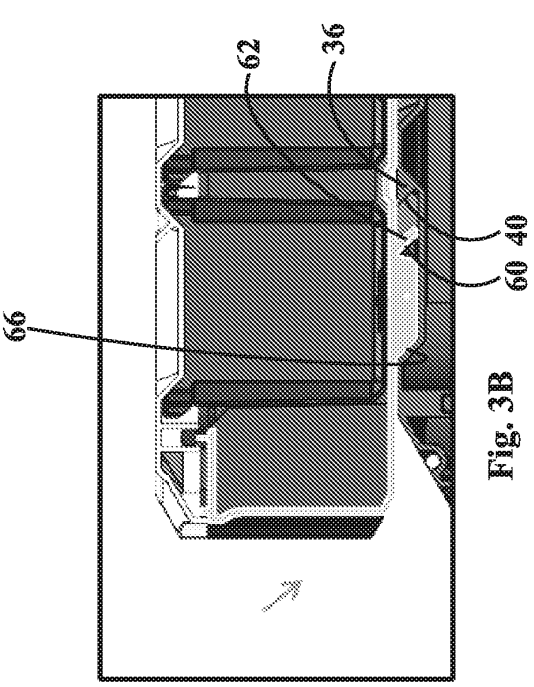


Fig. 3B

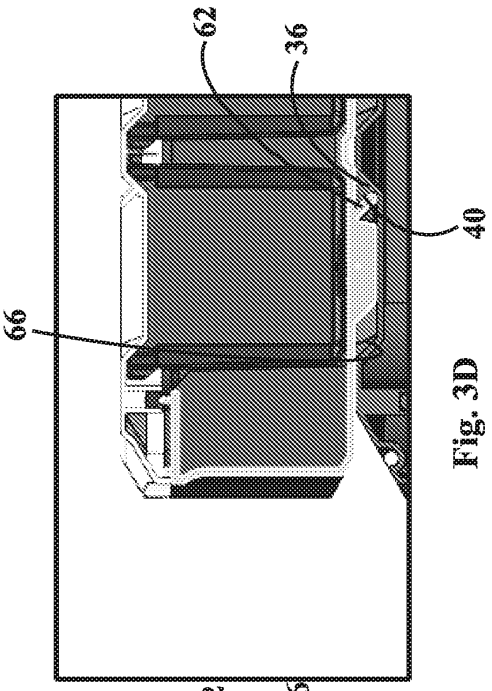


Fig. 3D

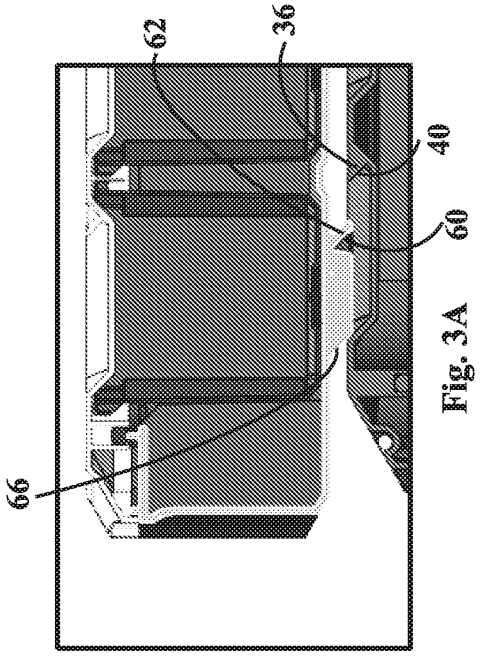


Fig. 3A

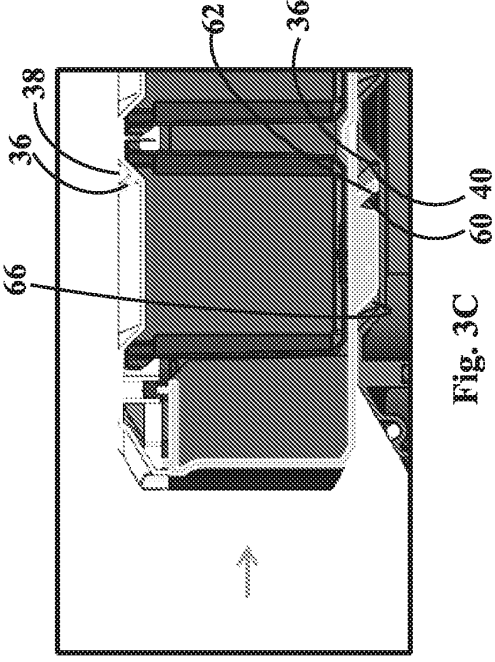
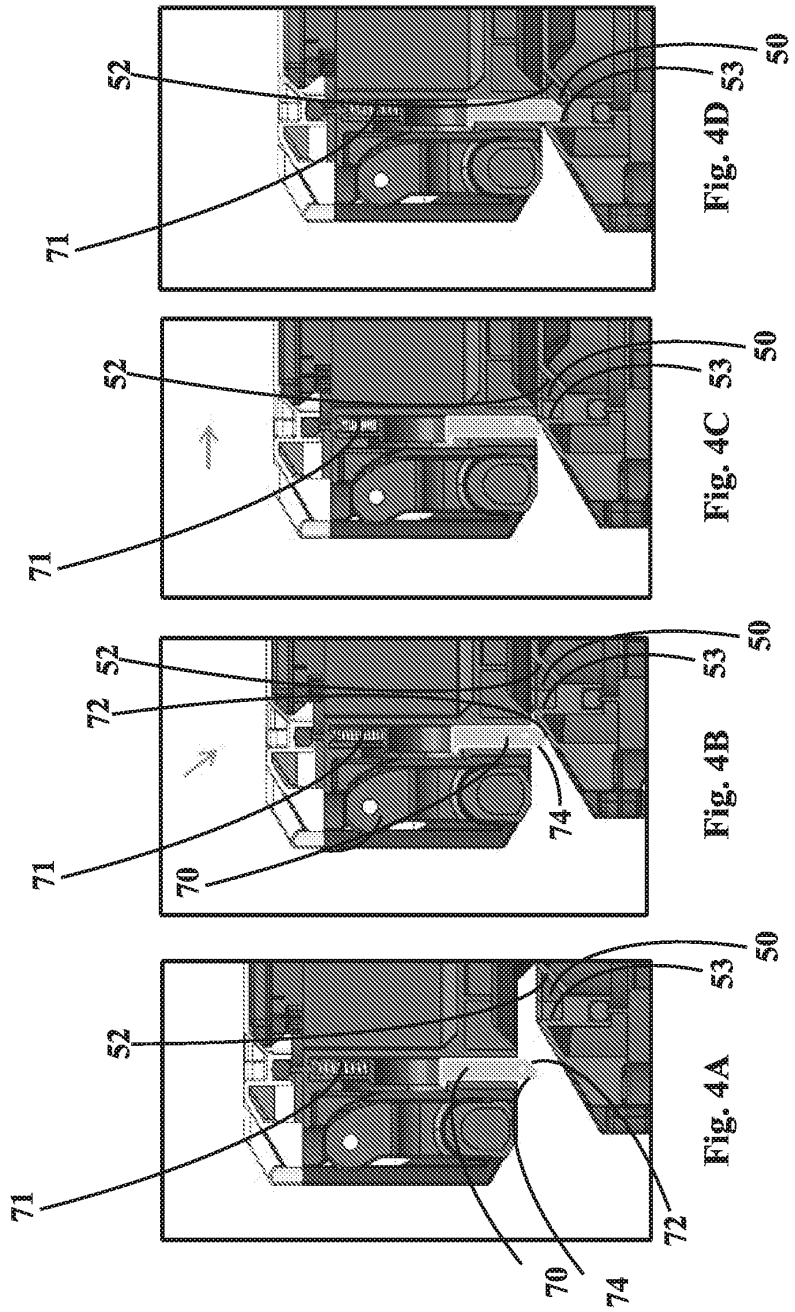


Fig. 3C


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Fig. 4D
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Fig. 4C
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Fig. 4B
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Fig. 4A

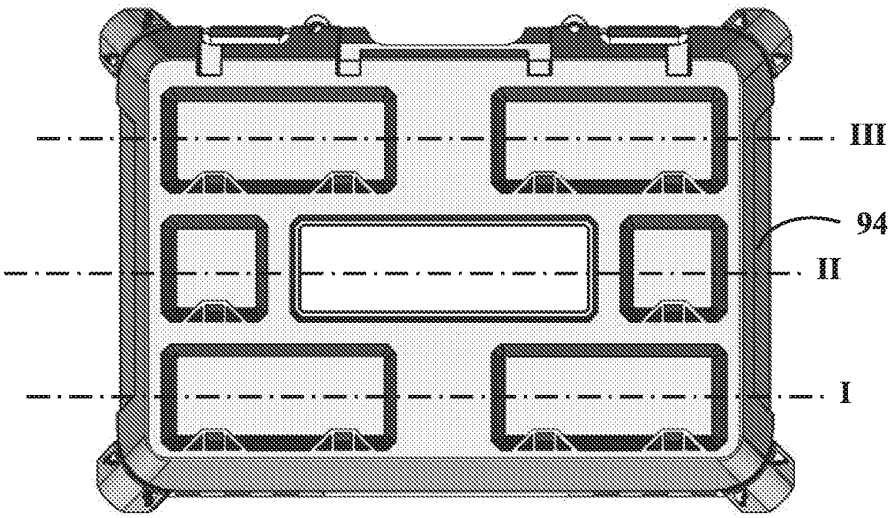


Fig. 5A



Fig. 5B

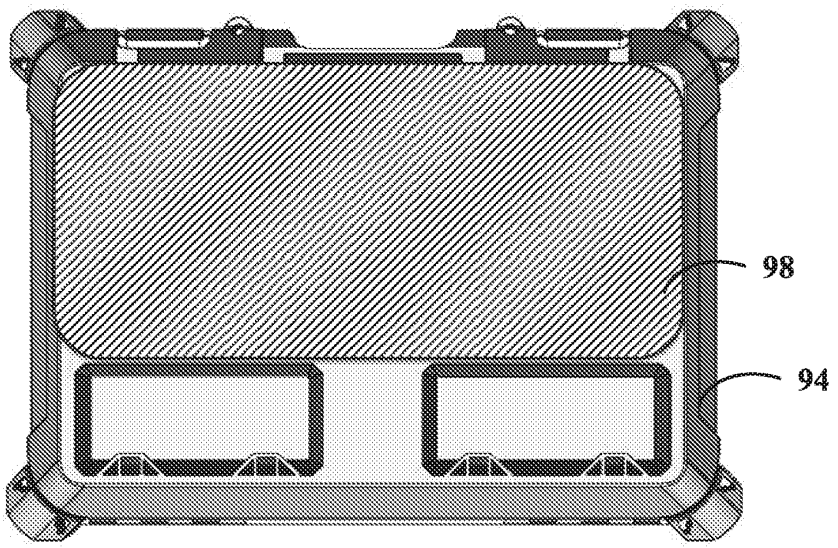


Fig. 5C

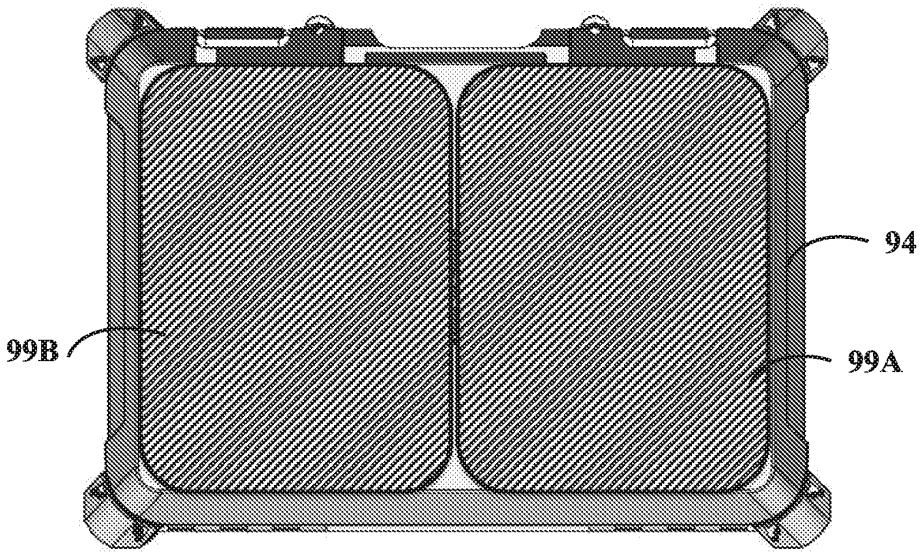


Fig. 5D

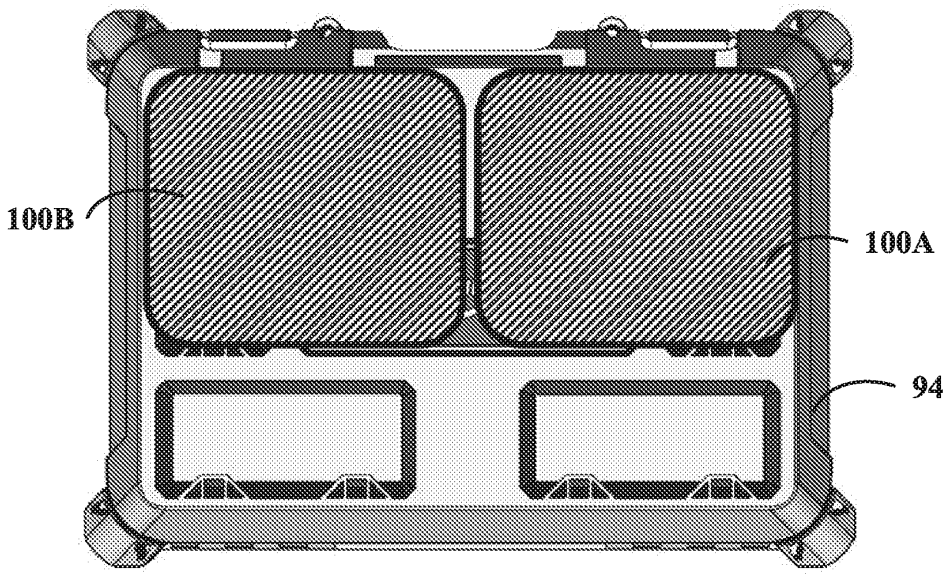


Fig. 5E

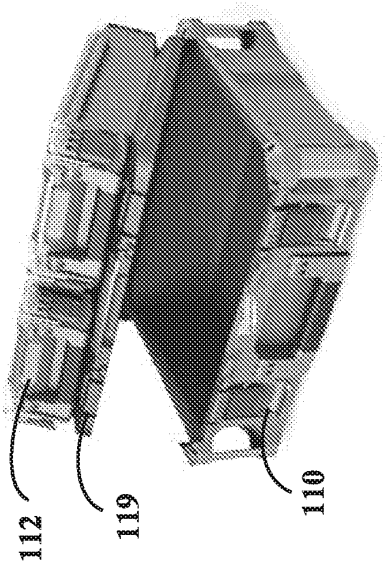


Fig. 6G

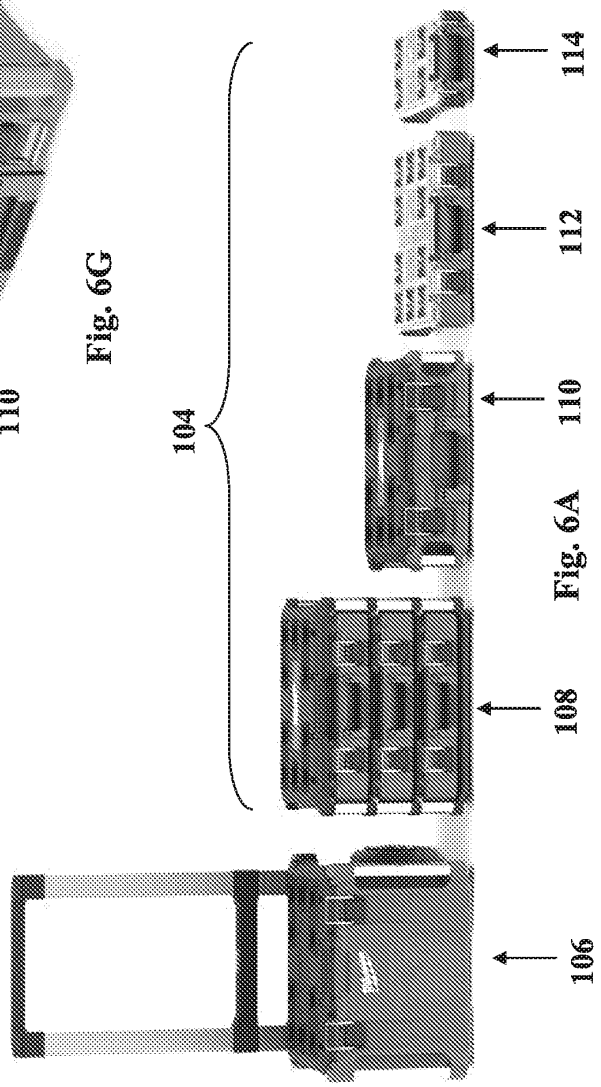
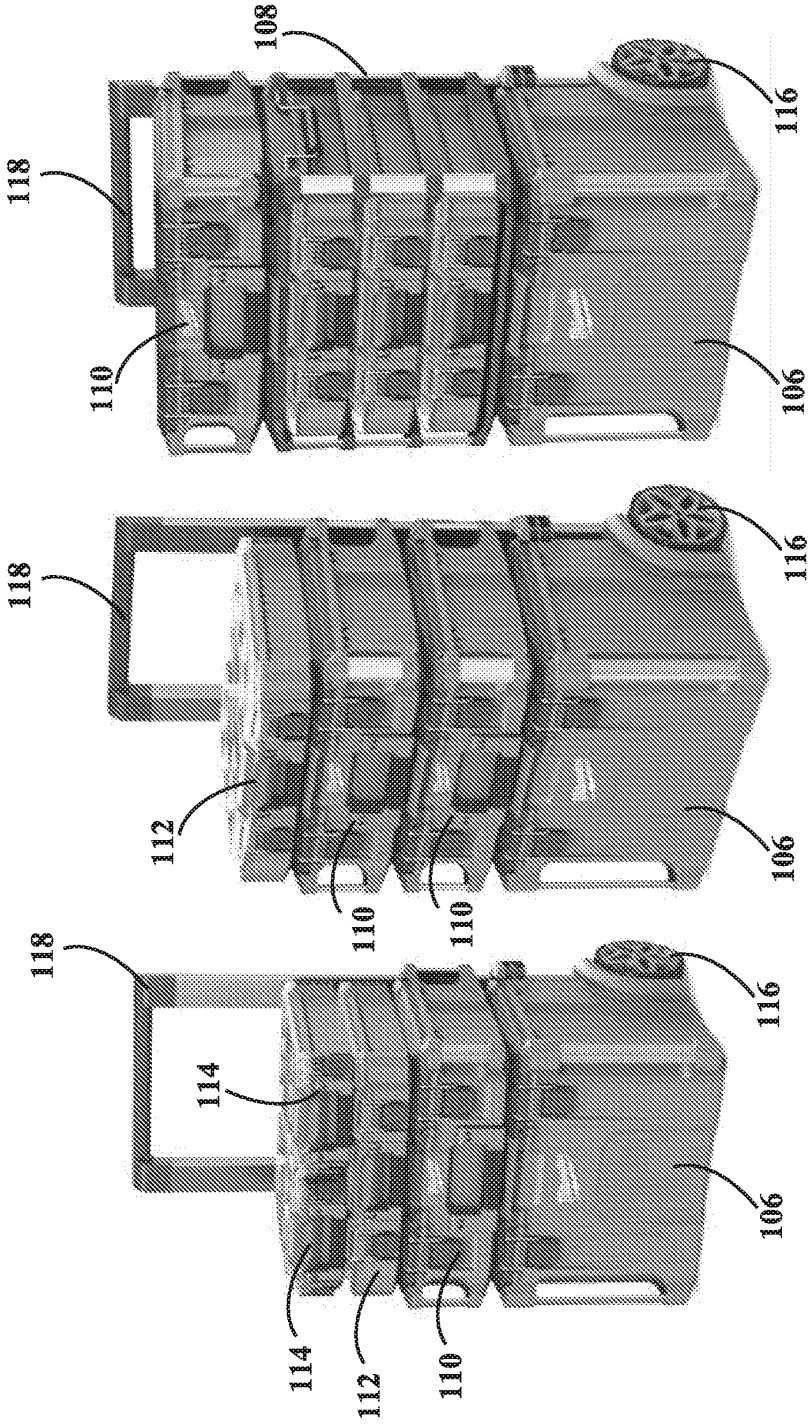


Fig. 6A


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Fig. 6D
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Fig. 6C
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Fig. 6B

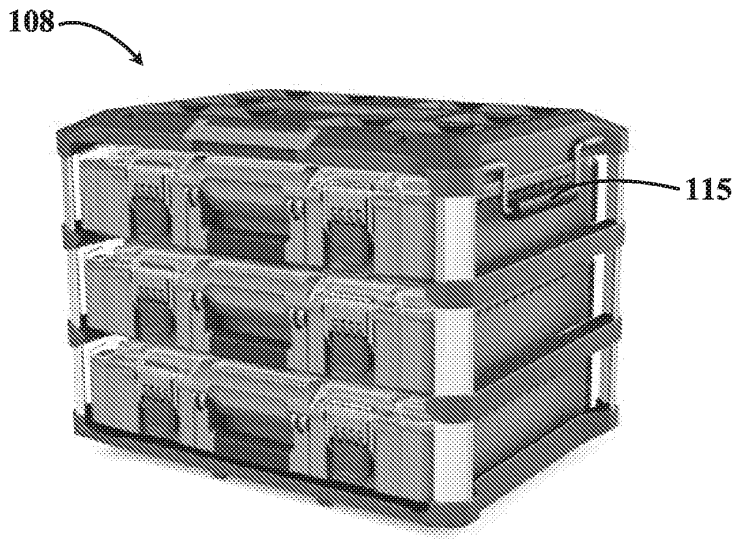


Fig. 6E

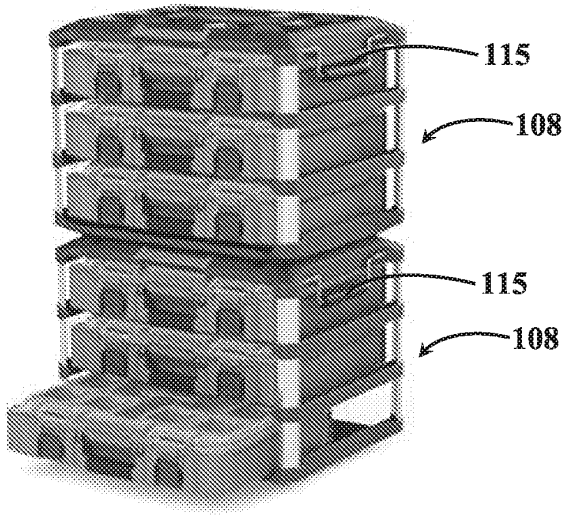


Fig. 6F

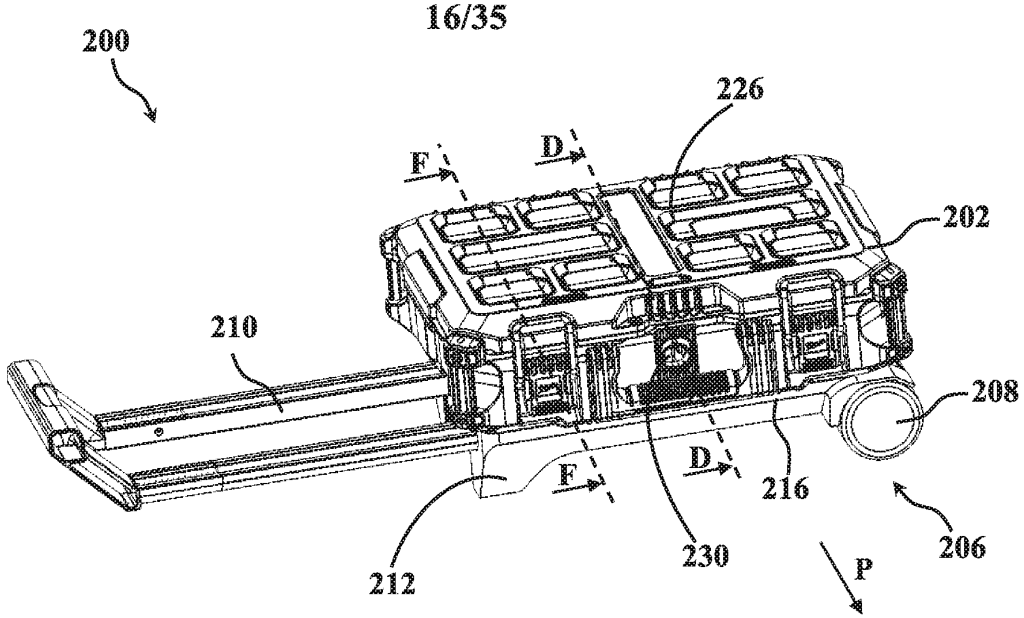

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Fig. 7A

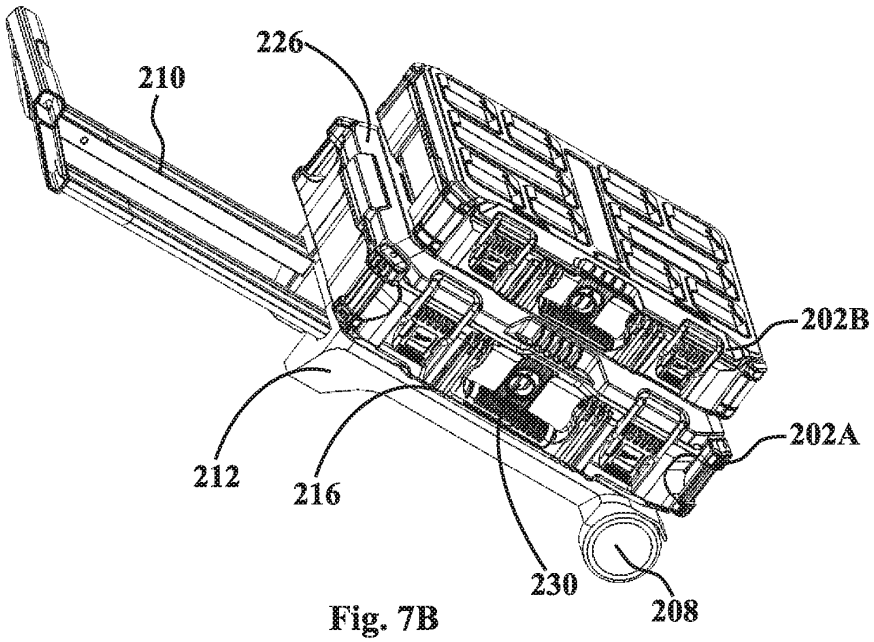

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Fig. 7B

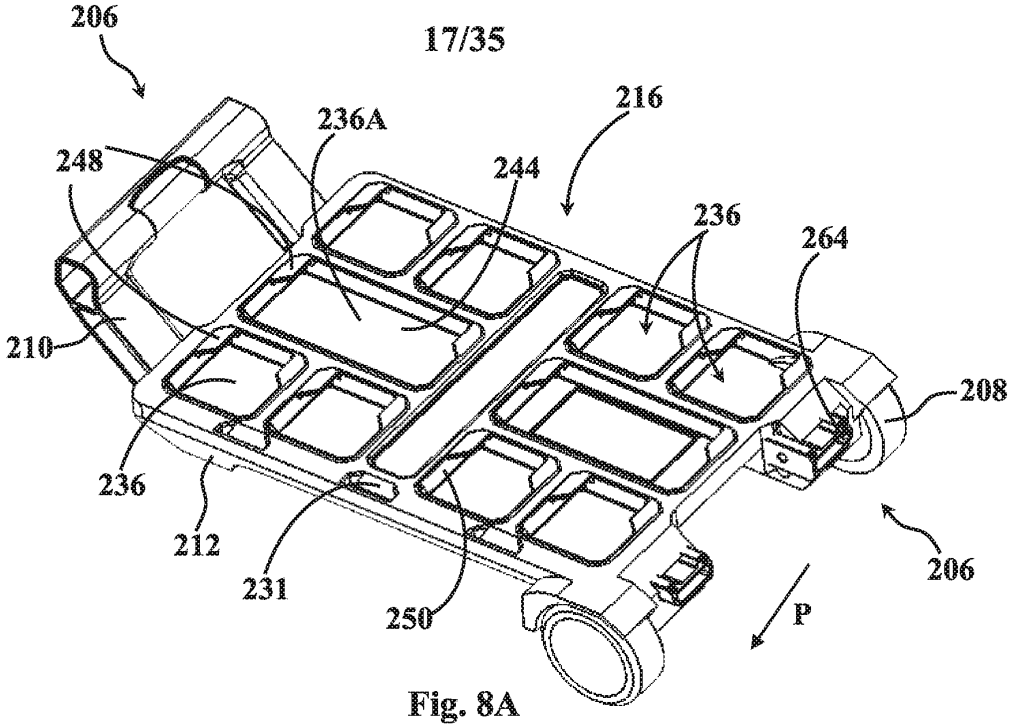

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Fig. 8A

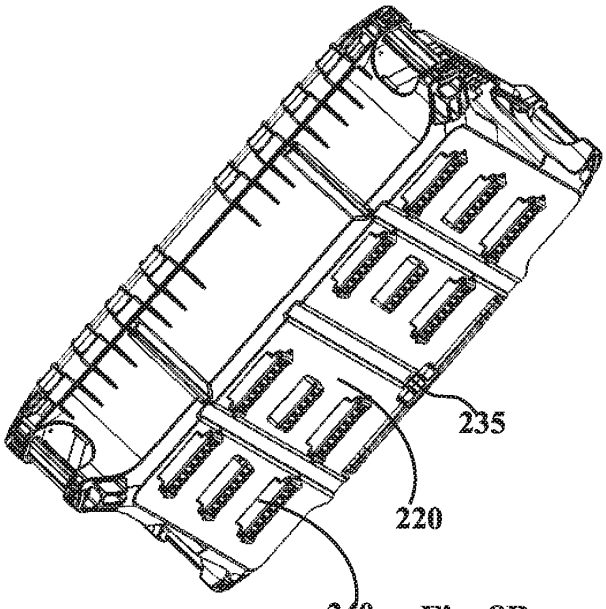

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Fig. 8B

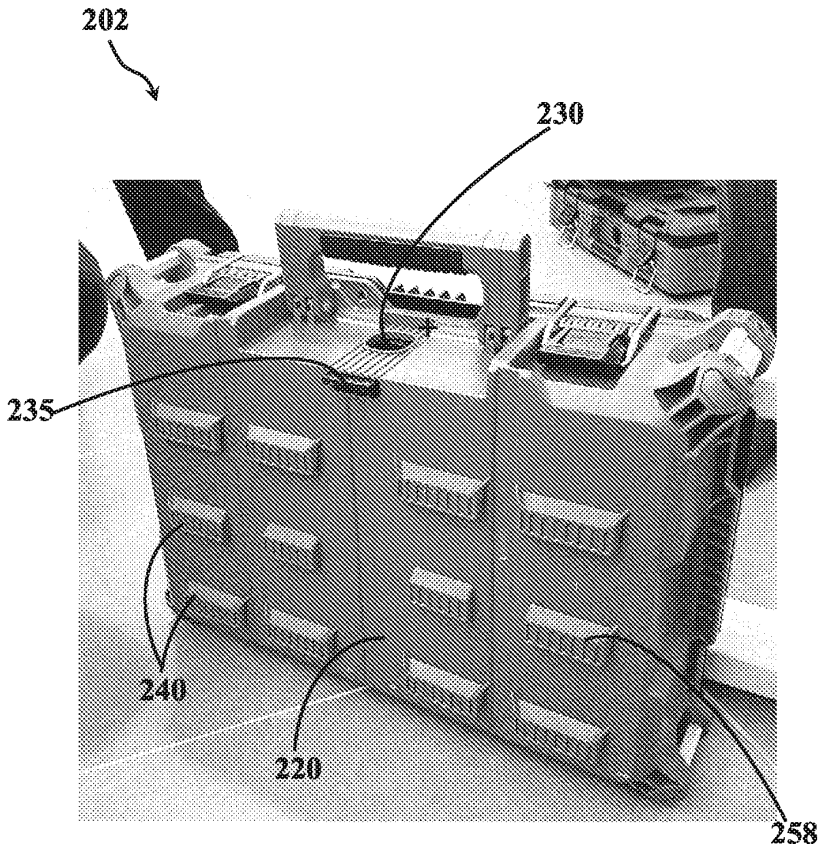


Fig. 8C

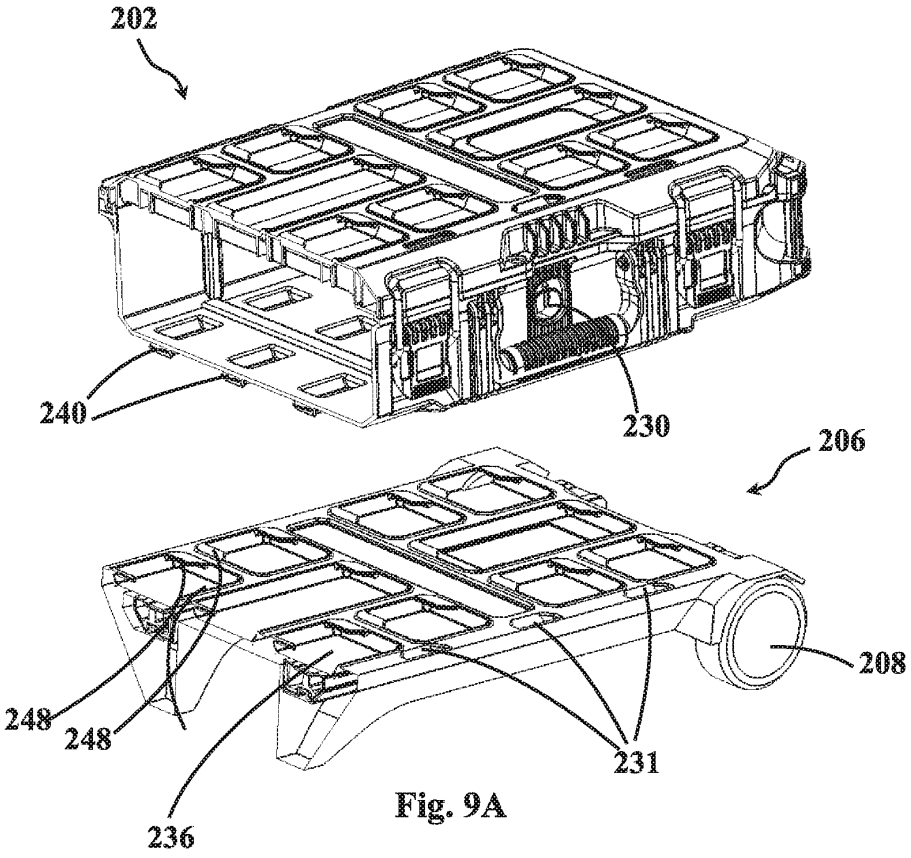


Fig. 9A

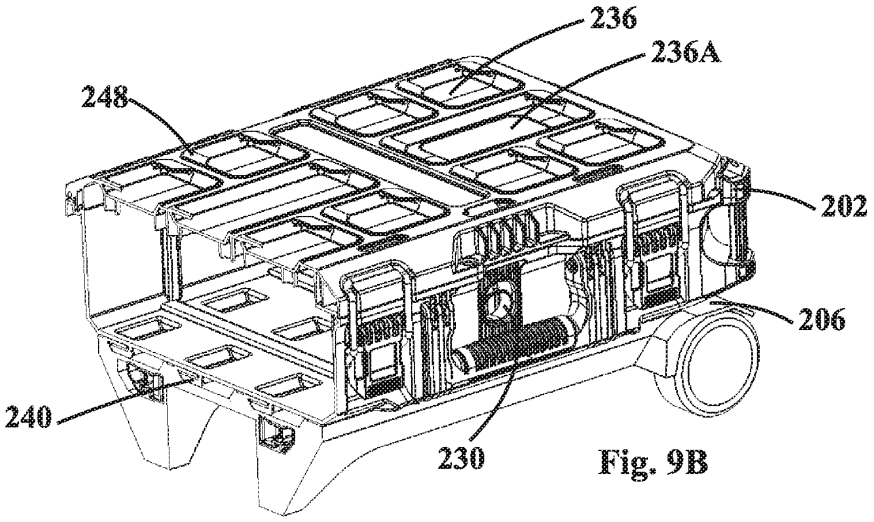


Fig. 9B

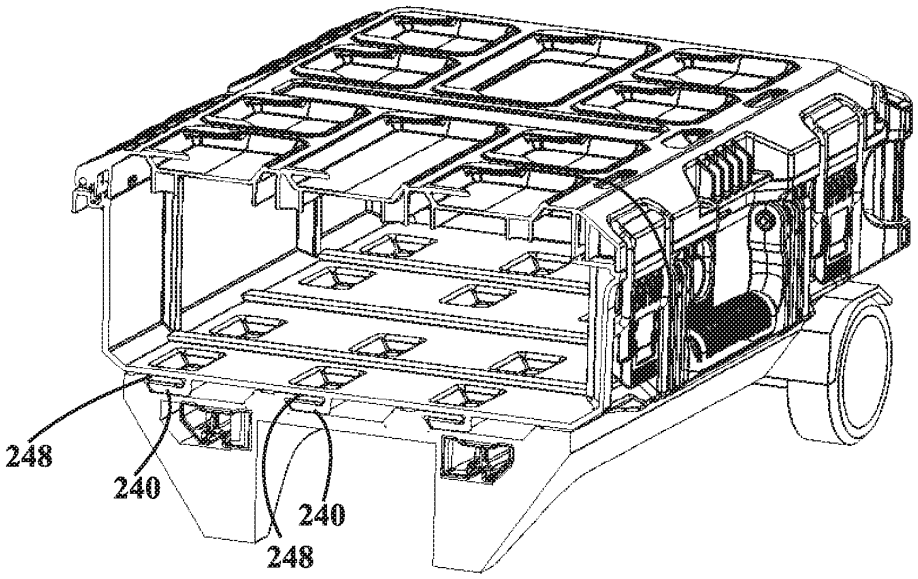


Fig. 9C

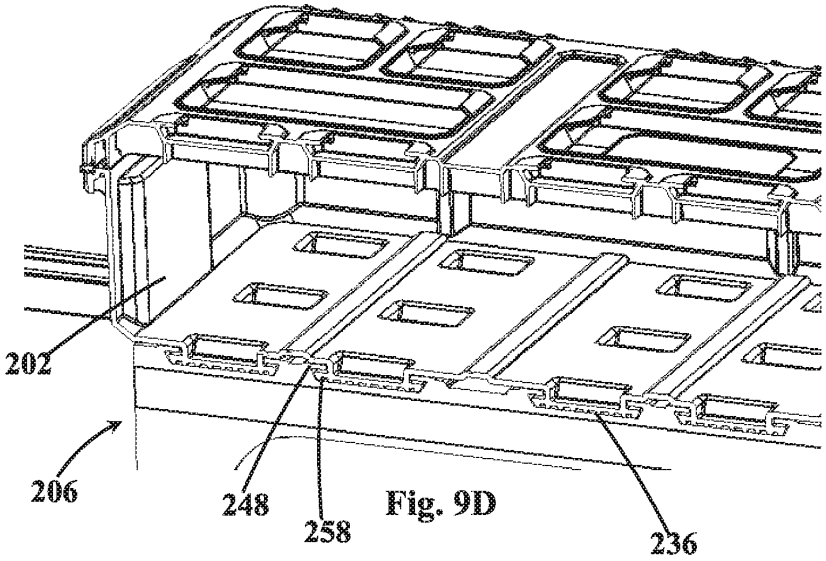


Fig. 9D

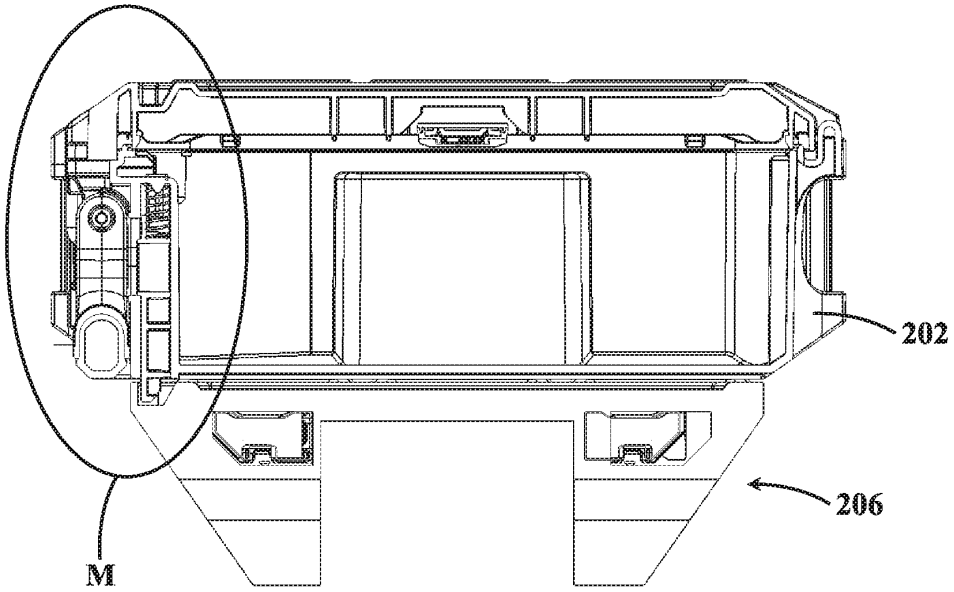


Fig. 10A

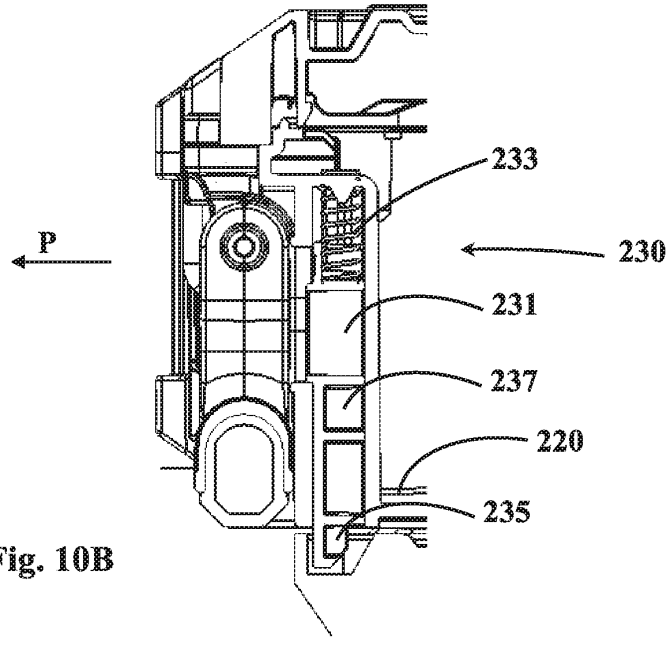


Fig. 10B

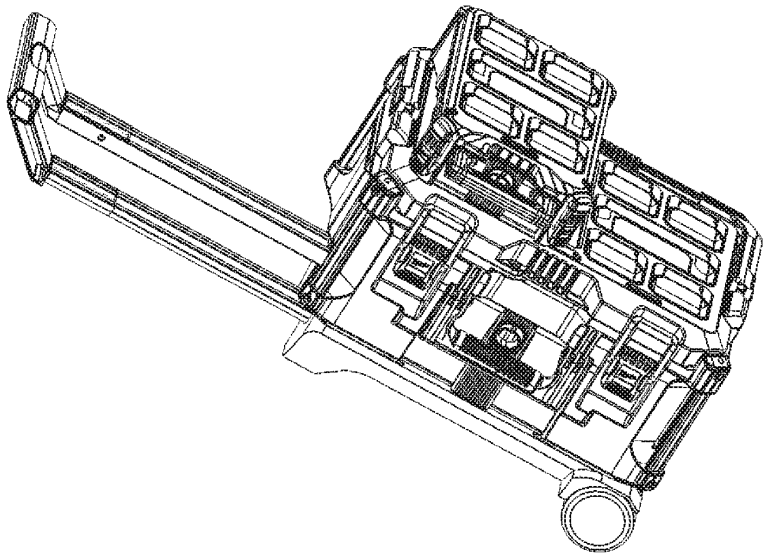


Fig. 11A

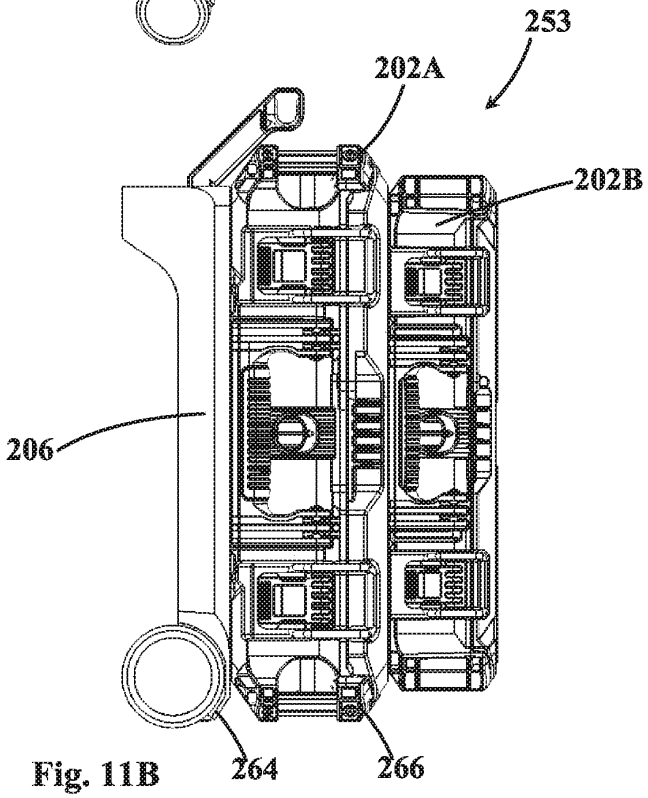


Fig. 11B

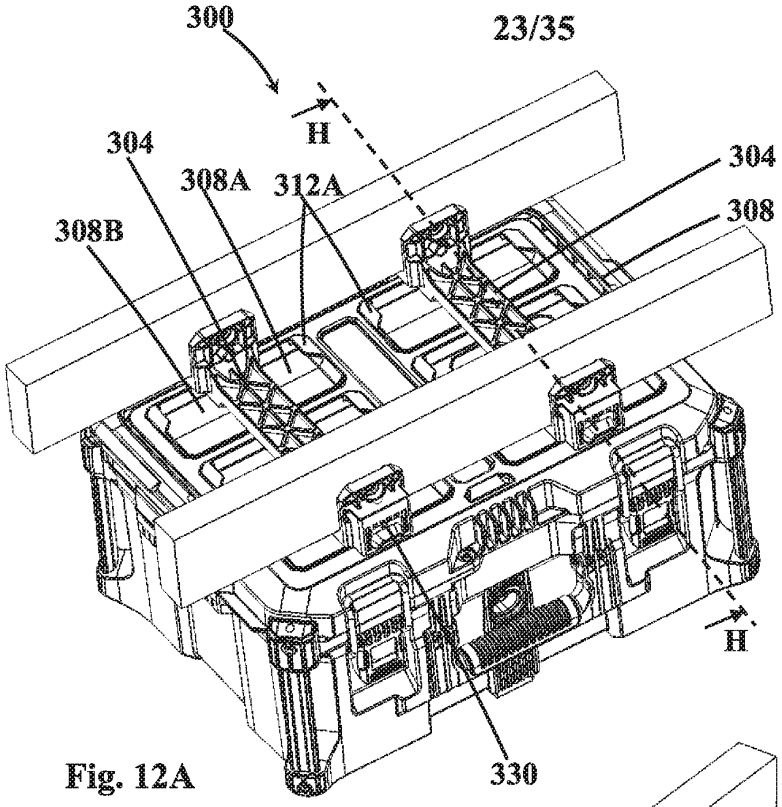


Fig. 12A

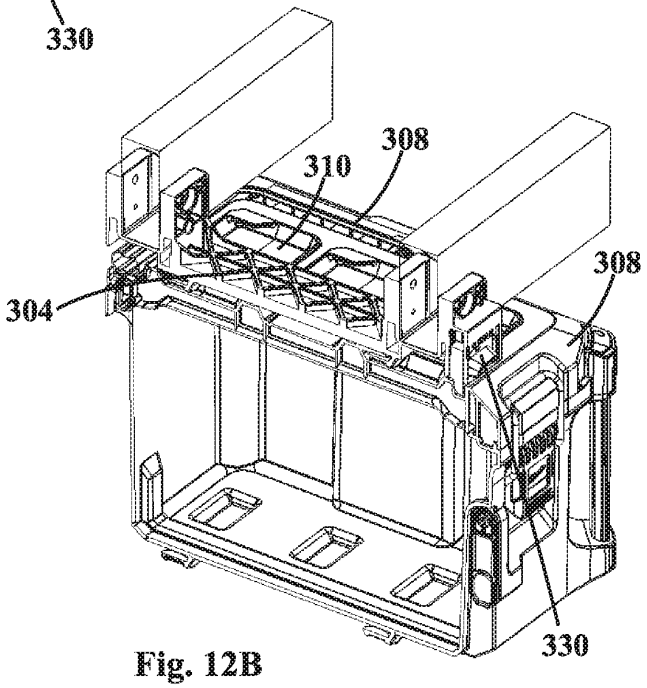


Fig. 12B

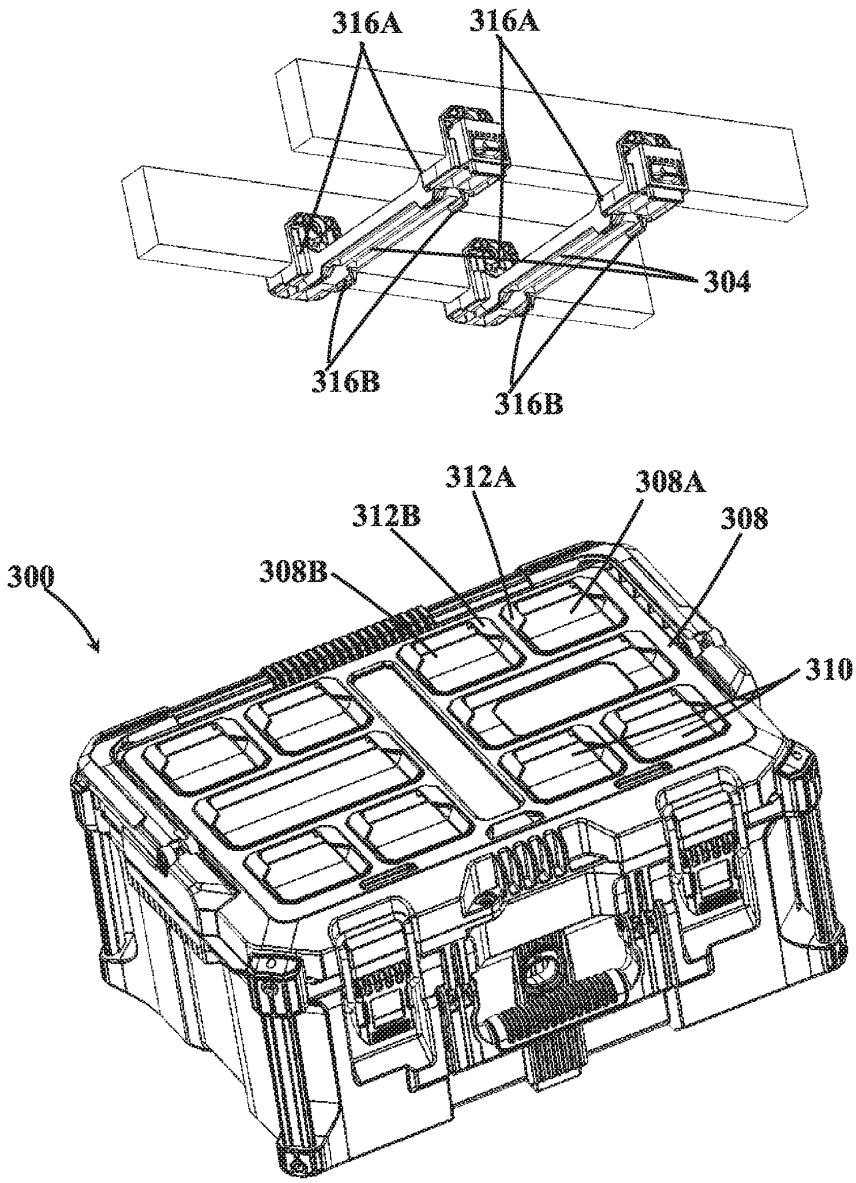


Fig. 12C

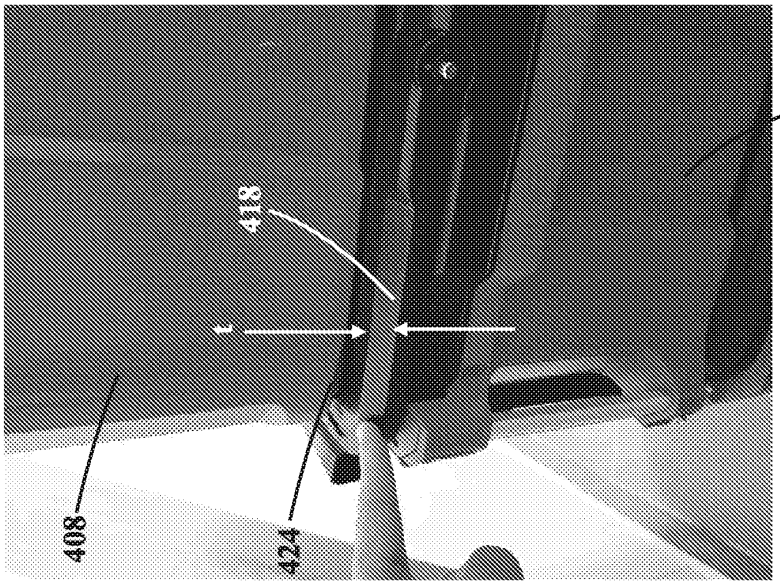


Fig. 13B

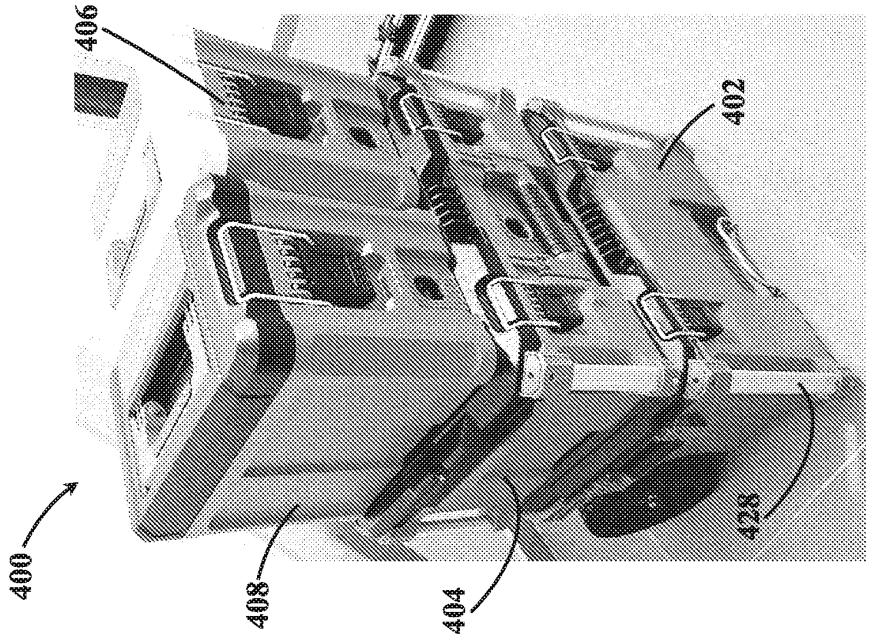


Fig. 13A

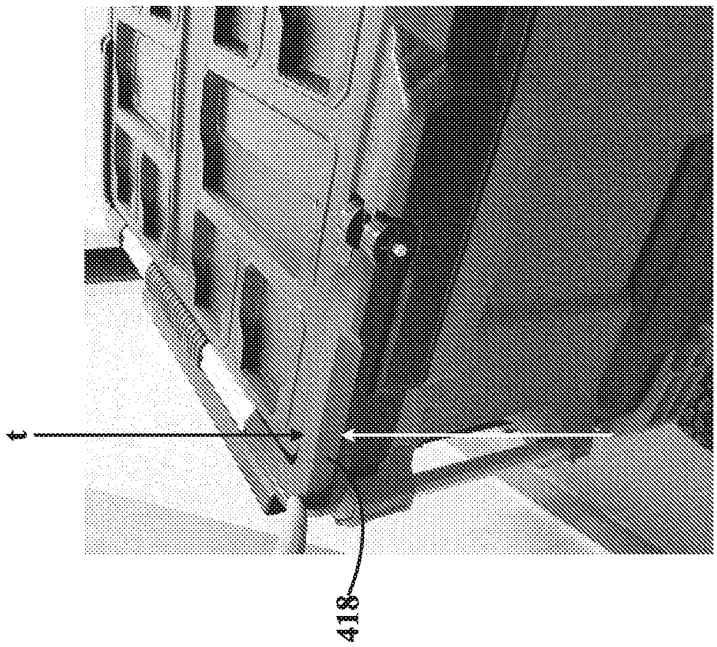


Fig. 13D

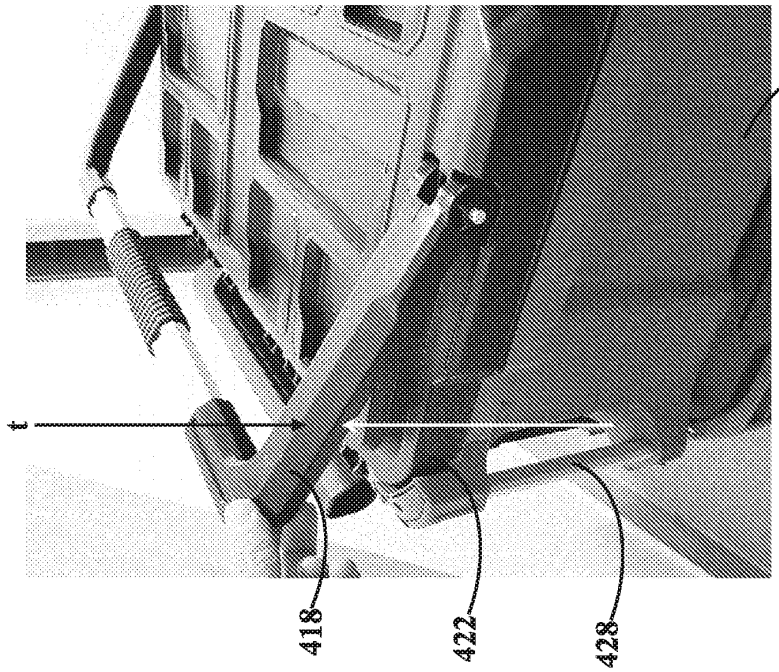


Fig. 13C

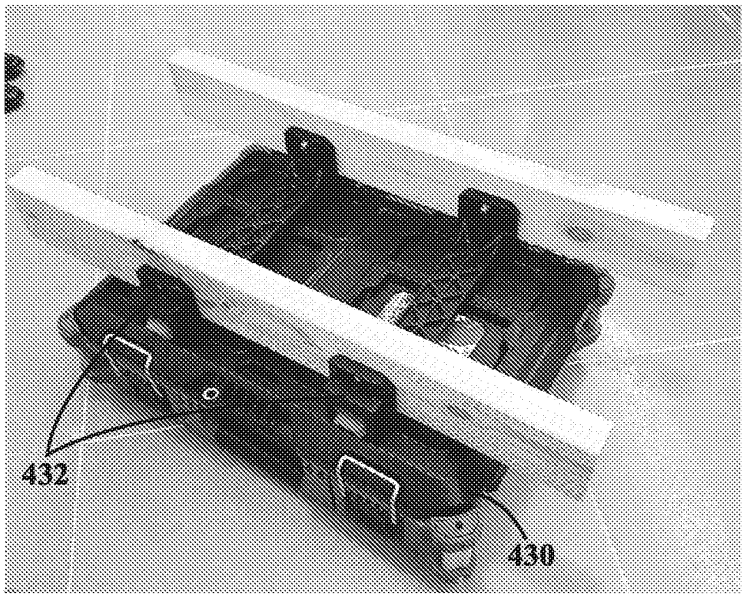


Fig. 14A

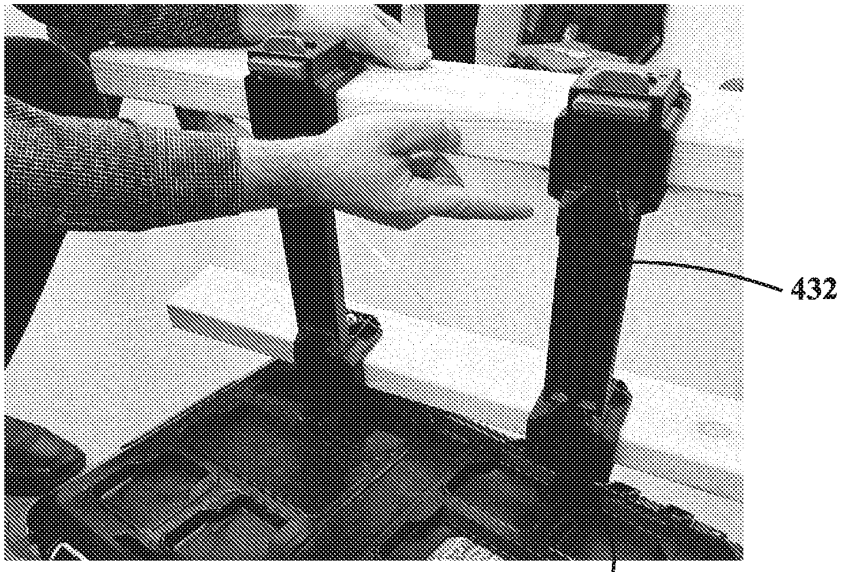


Fig. 14B

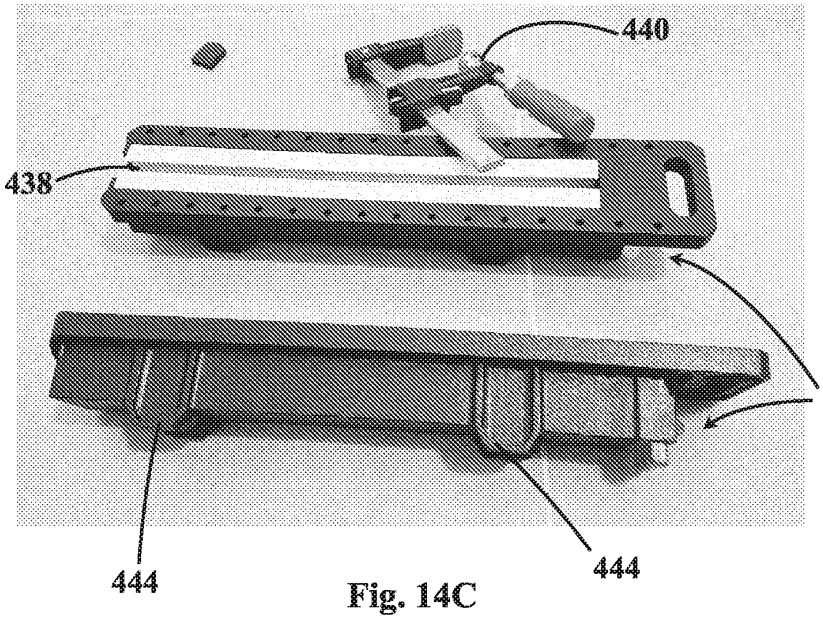


Fig. 14C

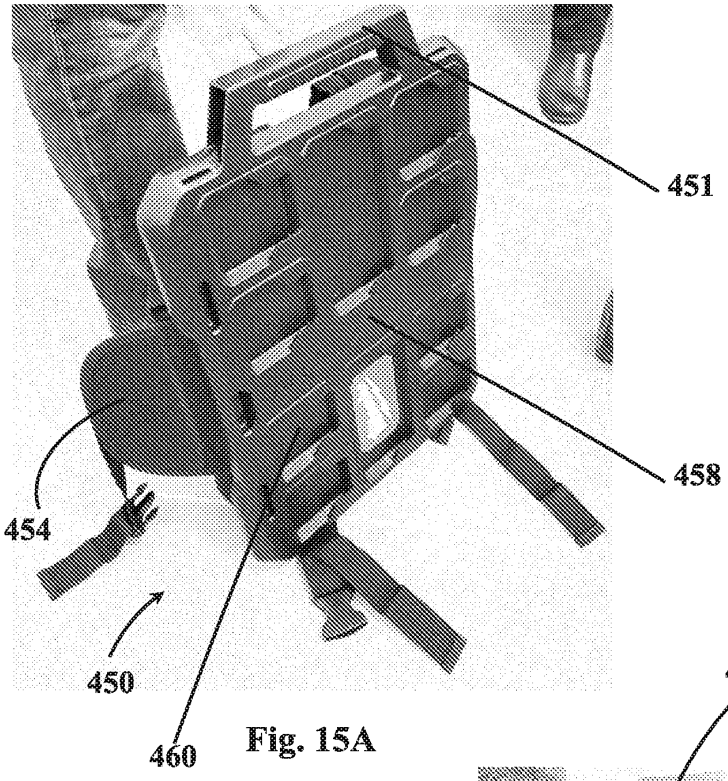


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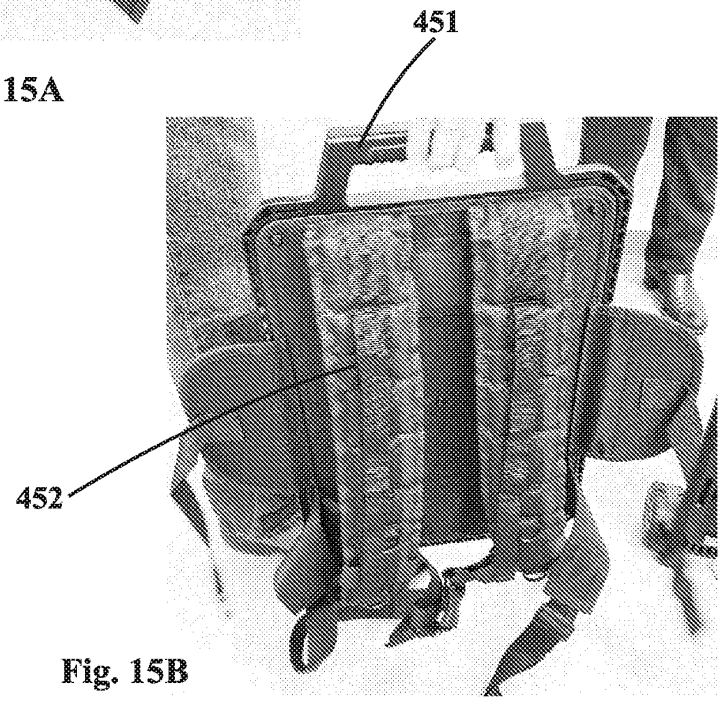


Fig. 15B

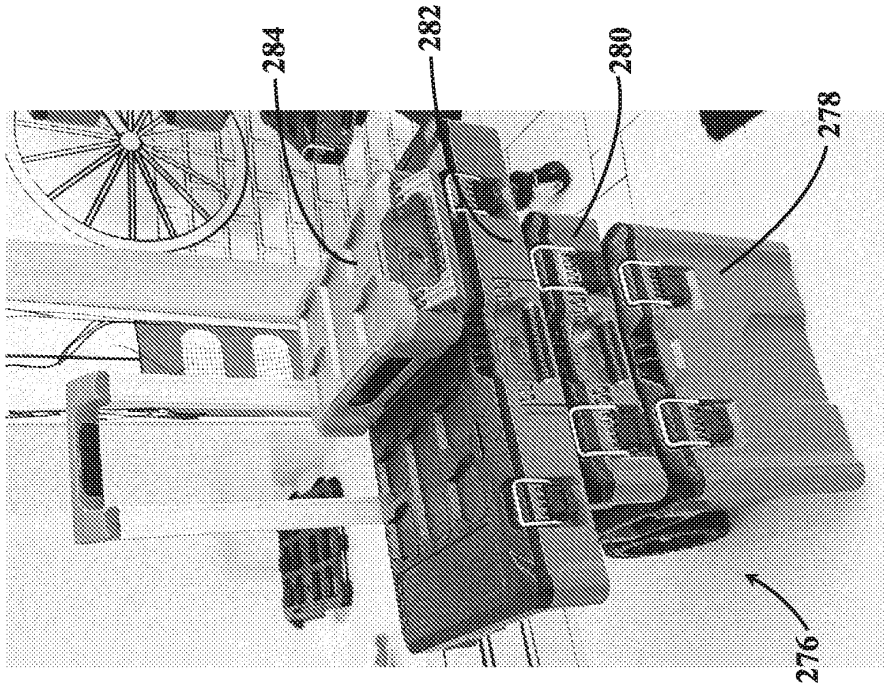


Fig. 16B

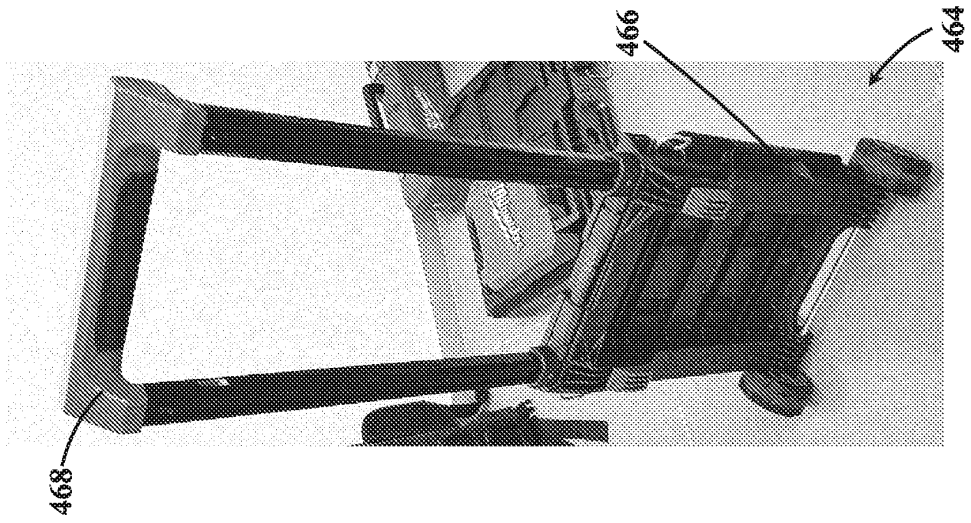


Fig. 16A

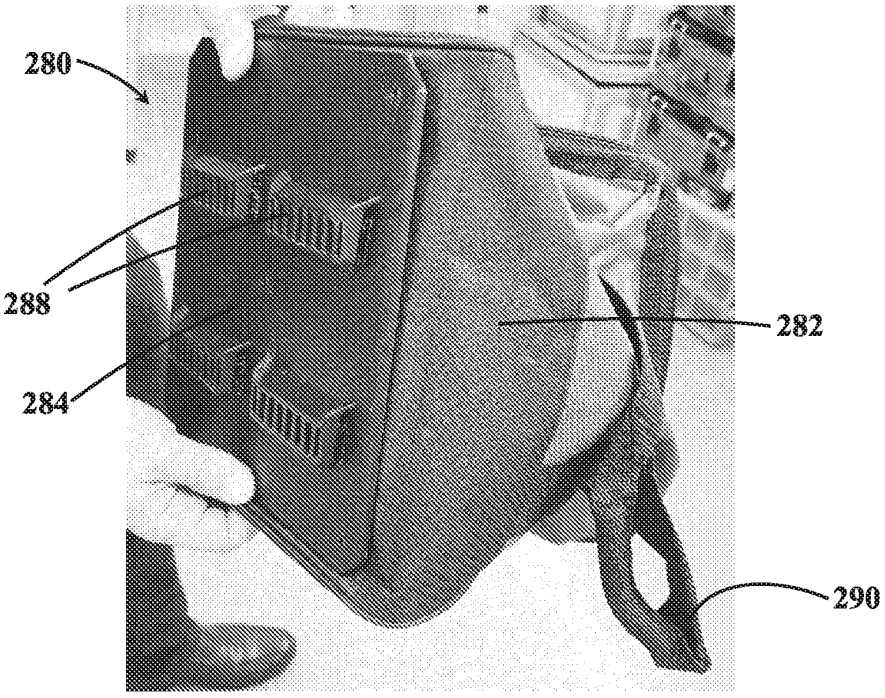


Fig. 17

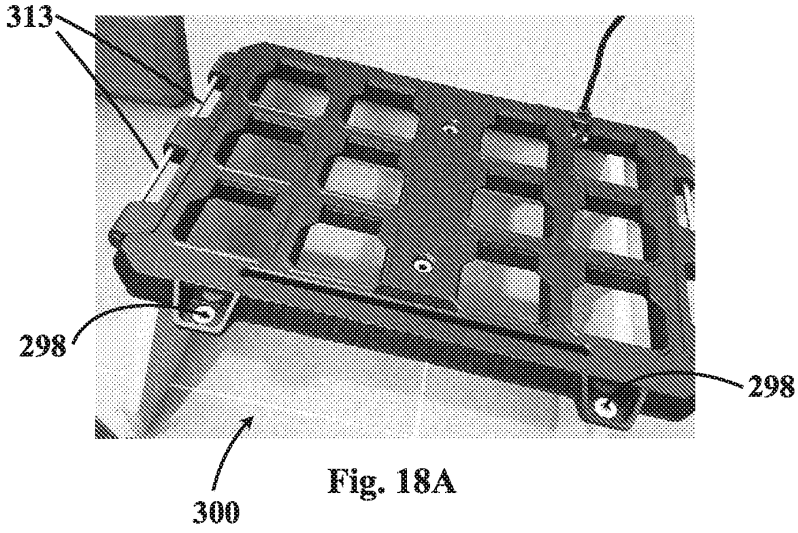


Fig. 18A

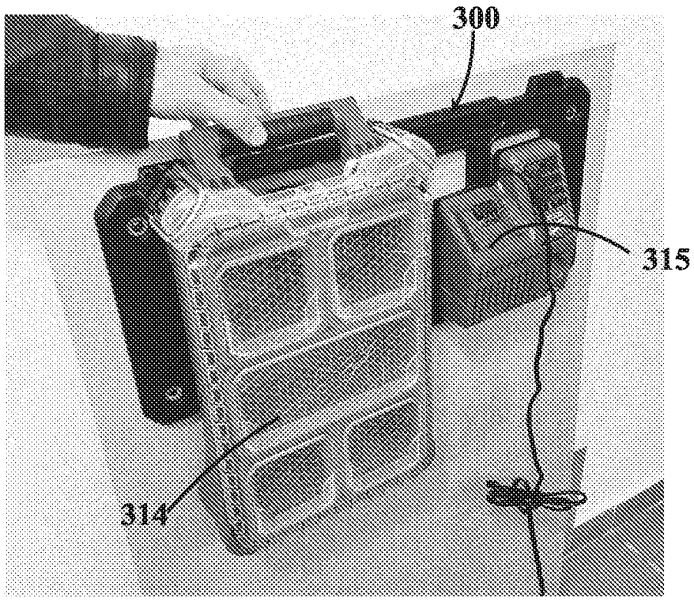


Fig. 18B

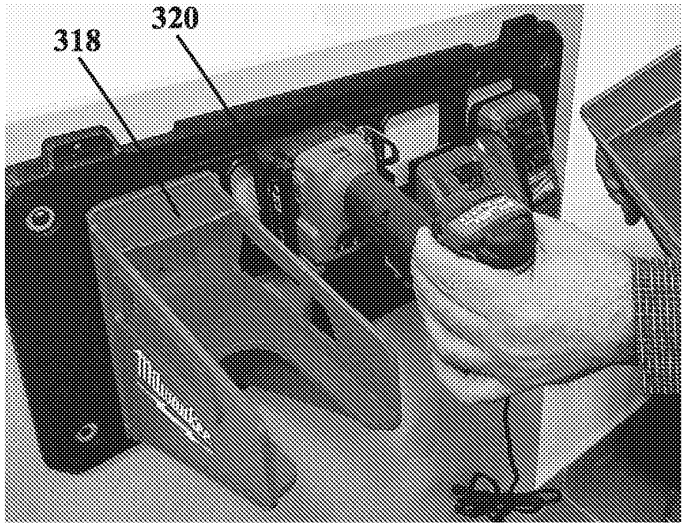


Fig. 18C

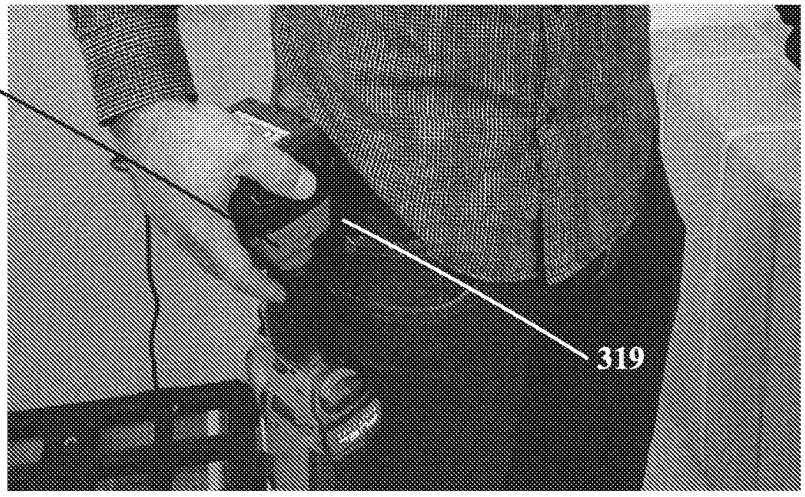


Fig. 19

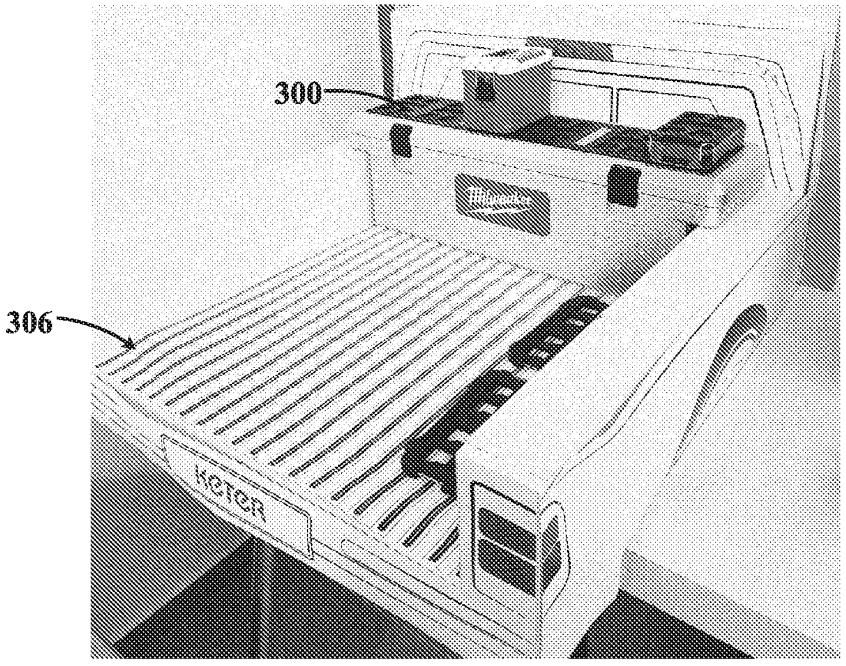


Fig. 20

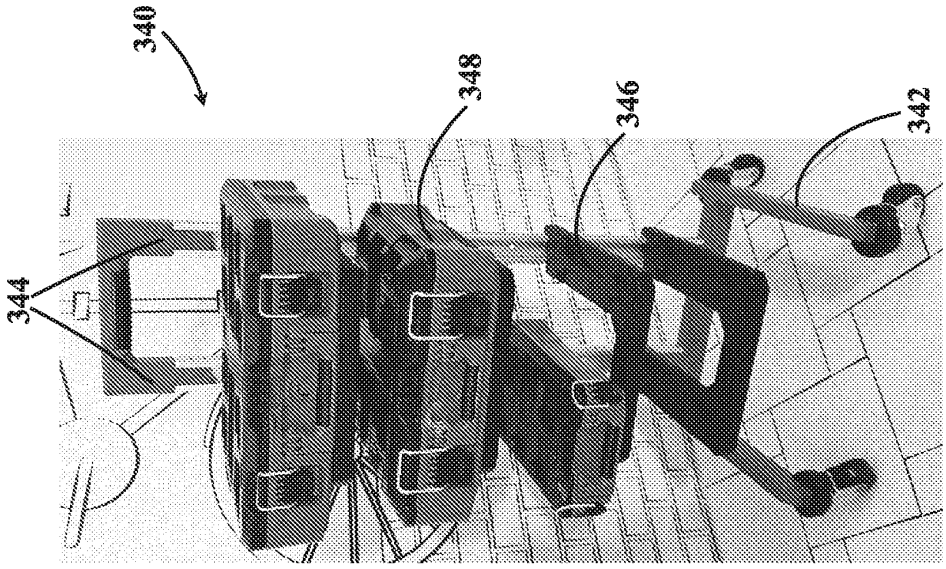


Fig. 22

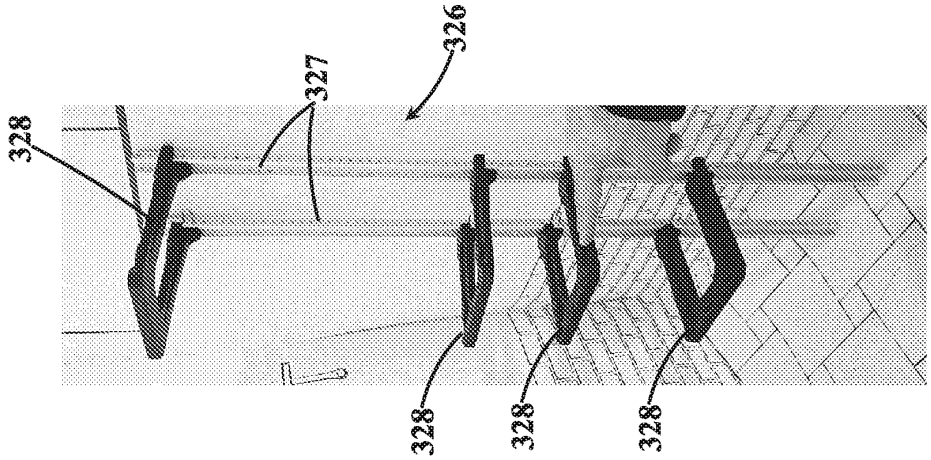


Fig. 21

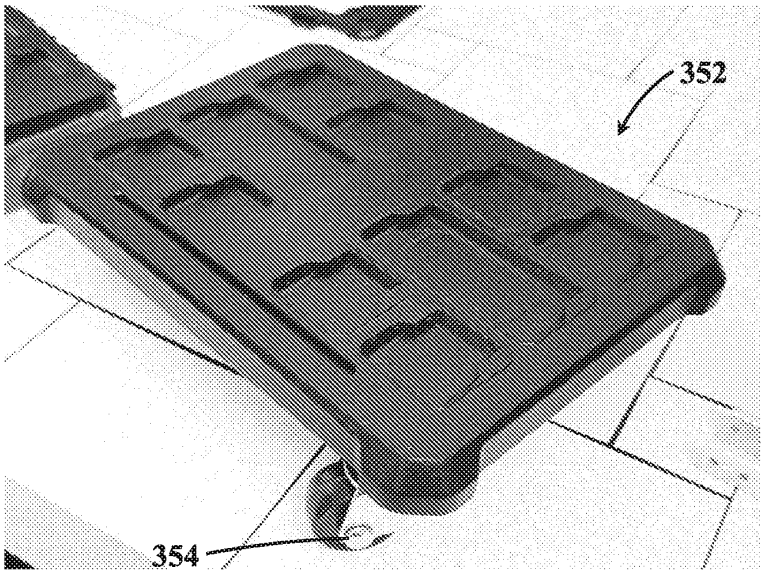


Fig. 23

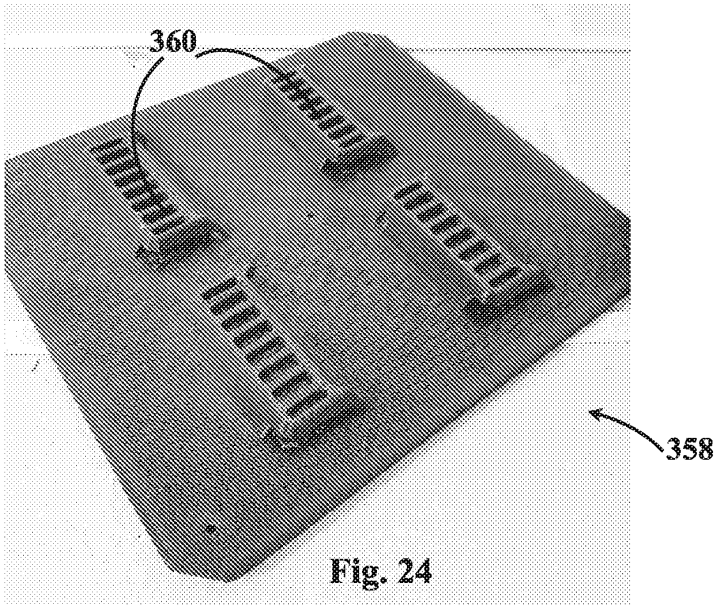


Fig. 24

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yaron		Brunner	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

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Address 2			
City	Kibbutz Gvat	**State/Province**	
Postal Code	3657900	**Country** [i]	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

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For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	111739		
Email Address	ip.docket.slc@dorsey.com	Add Email	Remove Email

Application Information:

Title of the Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM		
Attorney Docket Number	269949US01_446373-417	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	35	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number			

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When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	PCT/IL2017/050481	2017-04-30

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/IL2017/050481	Claims benefit of provisional	62/459076	2017-02-15
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/IL2017/050481	Claims benefit of provisional	62/330334	2016-05-02
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.			Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (11-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	KETER PLASTIC LTD.		
Mailing Address Information For Applicant:			
Address 1	2 Sapir St. Industrial Zone		
Address 2			
City	Herzeliya	**State/Province**	
Country	IL	Postal Code	4685206
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Marcus S. Simon, Reg. #50258/			Date (YYYY-MM-DD)	2017-11-29
First Name	Marcus S.	Last Name	Simon	Registration Number	50258

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	269949US01_446373-417
	Application Number	
Title of Invention	UTILITY ASSEMBLY AND COUPLING MECHANISM	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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, U.S. Department of Commerce, 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.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	UTILITY ASSEMBLY AND COUPLING MECHANISM
First Named Inventor/Applicant Name:	Yaron Brunner
Filer:	Marcus S. Simon/Holly Morton
Attorney Docket Number:	269949US01_446373-417
Filed as Large Entity	
Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)	

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	280	280
UTILITY SEARCH FEE	1111	1	600	600
UTILITY EXAMINATION FEE	1311	1	720	720
REQUEST FOR PRIORITIZED EXAMINATION	1817	1	4000	4000
Pages:				
Claims:				
Miscellaneous-Filing:				
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**5740**

Electronic Acknowledgement Receipt	
EFS ID:	31077343
Application Number:	15826232
International Application Number:	
Confirmation Number:	1070
Title of Invention:	UTILITY ASSEMBLY AND COUPLING MECHANISM
First Named Inventor/Applicant Name:	Yaron Brunner
Customer Number:	111739
Filer:	Marcus S. Simon/Holly Morton
Filer Authorized By:	Marcus S. Simon
Attorney Docket Number:	269949US01_446373-417
Receipt Date:	29-NOV-2017
Filing Date:	
Time Stamp:	17:14:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$5740
RAM confirmation Number	113017INTEFSW17152800
Deposit Account	506181
Authorized User	Holly Morton
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	20171129_269949US01_446373-417_PoA.pdf	411239 64258637e030e8f991f7f844e23d2966f8fec481	no	2
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	20171129_269949US01_446373-417_GeneralAuthorization.pdf	15891 8b045a70a5c51ea31c65f9b59c43f44b2afb1d68	no	1
Warnings:					
Information:					
3		20171129_269949US01_446373-417_ContinuationApp.pdf	218830 2baf86c75d5d37f9ac64949f0745767ee3e60a60	yes	41

Multipart Description/PDF files in .zip description

Document Description	Start	End
Abstract	41	41
Claims	37	40
Specification	1	36

Warnings:					
Information:					
4	TrackOne Request	20171129_269949US01_446373-417_Track-1-Request.pdf	113952 8e2f491662bd5e1537a5838a071acbe096d65d52	no	2
Warnings:					
Information:					
5	Drawings-only black and white line drawings	20171129_269949US01_446373-417_FormalDrawings.pdf	8900231 b218afb5c1137715b263db3a72ff65ad133fd1cd	no	35

Warnings:					
Information:					
6	Application Data Sheet	20171129_269949US01_44637 3-417_ADS.pdf	1823078 b16e80b75fc12e35e5911c2732d089f188b07274	no	8
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	38349 1440dec92ba04adf38d241a55e104ff9f2630740	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	11521570		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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.

DocCode – SCORE

SCORE Placeholder Sheet for IFW Content

Application Number: 15826232 Document Date: 11/29/2017

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

At the time of document entry (noted above):

- USPTO employees may access SCORE content via eDAN using the Supplemental Content tab, or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.

Form Revision Date: August 26, 2013

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/826,232	11/29/2017	Yaron Brunner	269949US01_446373-417

CONFIRMATION NO. 1070

111739
Dorsey & Whitney / RCPs
Intellectual Property Department - SLC
111 South Main Street
21st Floor
Salt Lake City, UT 84111-2176

FORMALITIES LETTER

OC000000096166214

Date Mailed: 12/20/2017

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The application contains drawings, but the specification does not contain a brief description of the several views of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(9).

The following item(s) appear to have been **omitted** from the application:

- Figure(s) **13** described in the specification.

Applicant must reply to this notice within the time period set forth in this notice to avoid abandonment of this application. Applicant must select one of the three following options and the reply must comply with the requirements set forth in the selected option and any other requirements set forth in this notice. The reply should also indicate which option applicant has selected.

I. Petition for date of deposit: Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and the petition fee set forth in 37 CFR 1.17(f) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant should review their application file and determine whether their file differs from USPTO's records. In some situations there may be a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures as labeled.

The brief description of the drawings in the specification must correspond with the figures and the figures must be labeled in accordance with 37 CFR 1.84(u)(1). For example, if the brief description describes Figure 1 and Figure 2 only, but the drawings show Fig. 1 and Fig. 2A and Fig. 2B, then the specification must be amended to refer to Figure 2A and Figure 2B and delete the reference to Figure 2 and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. As another example, if a drawing is labeled Figure 2, but there are actually multiple figures within the labeled Figure 2 having labels A, B, and C, then the drawings must be relabeled in accordance with 37 CFR 1.84(u)(1) (e.g., Fig. 2A, Fig. 2B, and Fig. 2C). If the specification does not refer to the figures as relabeled, then the specification must be amended to refer to the relabeled figures (e.g., Fig. 2A, Fig. 2B, and Fig. 2C) and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. A petition for date of deposit under option I should **NOT** be filed in either situation or in similar situations where there is simply a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures. Instead, applicant should file a reply under option III.A below (including replacement drawing sheets and/or a substitute specification as required in III.A.2).

II. Petition for later filing date: Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s), and a petition under 37 CFR 1.182 with the petition fee set forth in 37 CFR 1.17(f) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**
Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(f)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. Acceptance of application as deposited: Applicant may accept the application as deposited in the USPTO by filing an appropriate amendment as set forth in either (A) or (B) below within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b)** . The application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit. A petition is not required for this option.
(A) If applicant wants to accept the application as deposited without adding the subject matter that was in the omitted item (e.g., a missing page or figure), applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. For a missing page of the specification,
   a) a substitute specification including claims that amends the specification to renumber the pages consecutively and cancels any incomplete sentences, and
   b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. For a missing figure of the drawings (including a mislabeled figure),
   a) replacement drawing sheets in compliance with 37 CFR 1.121(d) to renumber the drawing figures consecutively (if necessary),
   b) a substitute specification excluding claims that amends the specification to cancel any references to any omitted drawing(s) and corrects the references in the specification to the drawing figures to correspond with any relabeled drawing figures, and
   c) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
3. For a missing page of the claim listing only, a replacement claim listing with the claims renumbered consecutively or, if amendment to the claims is also necessary, then a complete claim listing in compliance with 37 CFR 1.121(c);
4. For a missing or unreadable compact disc,

a) a substitute specification (excluding the claims) deleting the reference to the compact disc and the files contained on the compact disc, and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and

5. For a missing or unreadable file submitted on a compact disc,
a) a substitute specification (excluding the claims) deleting the reference to the missing or unreadable file, and a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
b) a replacement transmittal letter listing all of the files except the missing or unreadable file in compliance with 37 CFR 1.52(e)(3)(ii).

(B) Alternatively, if applicant wants to accept the application as deposited but wishes to add the subject matter in the omitted item (e.g., a missing page or figure) by relying on an incorporation by reference under 37 CFR 1.57 or other portions of the original disclosure, applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. To add the subject matter in a missing page of specification,
a) a substitute specification excluding claims and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. To add a missing figure of the drawings, new and replacement drawing sheets in compliance with 37 CFR 1.121(d);
3. To add the subject matter in a missing page of the claim listing, a complete claim listing in compliance with 37 CFR 1.121(c) (e.g., a claim in the missing page should be submitted as a new claim);
4. To add the subject matter in a missing or unreadable compact disc,
a) a replacement compact disc and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4); and,
5. To add the subject matter in a missing or unreadable file submitted on a compact disc,
a) a replacement compact disc that contains all of the files listed in the specification including the missing or unreadable file and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4).

If applicant is relying on an incorporation by reference under 37 CFR 1.57 to add the omitted subject matter, then applicant must also comply with the requirements of 37 CFR 1.57.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified

for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **140** surcharge.
- $(**0**) previous unapplied payment amount.
- $ **140** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Yaron Brunner

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/mbeyene/

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IPR2024-01401

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/826,232	11/29/2017	3633	1600	269949US01_446373-417	20	3

CONFIRMATION NO. 1070

FILING RECEIPT

111739
Dorsey & Whitney / RCPs
Intellectual Property Department - SLC
111 South Main Street
21st Floor
Salt Lake City, UT 84111-2176



Date Mailed: 12/20/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Yaron Brunner, Kibbutz Gvat, ISRAEL;

Applicant(s)

KETER PLASTIC LTD., Herzeliya, ISRAEL;

Power of Attorney: The patent practitioners associated with Customer Number 111739

Domestic Priority data as claimed by applicant

This application is a CON of PCT/IL2017/050481 04/30/2017
which claims benefit of 62/459,076 02/15/2017
and claims benefit of 62/330,334 05/02/2016

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 12/18/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/826,232**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

Title

UTILITY ASSEMBLY AND COUPLING MECHANISM

Preliminary Class

052

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/826,232

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15/826,232
	Filing Date	Nov 29, 2017
	First Named Inventor	Yaron Brunner
	Art Unit	3633
	Examiner Name	TBD
	Attorney Docket Number	269949US01_446373-417

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		5240264	A	1993-08-31	Williams	
		7503569	B2	2009-03-17	Duvigneau	

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		20020000440	A1	2002-01-03	Sagol et al.	
		20040195793	A1	2004-10-07	Sullivan, Hugh C., et al.	
		20110139665	A1	2011-06-16	MADSEN et al.	
		20110155613	A1	2011-06-30	Koenig, Andreas et al.	
		20130127129	A1	2013- 05-23	Bensman, Mark et al.	

4846-8219-4266\1

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15/826,232
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	First Named Inventor	Yaron Brunner
	Art Unit	3633
	Examiner Name	TBD
	Attorney Docket Number	269949US01_446373-417

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
		2608238	CN	Y	2004-03-31	包剑刚 et al.		
		2016142935	WO	A1	2016-09-15	BRUNNER, Yaron et al.		
		2017028845	WO	A1	2017-02-23			

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	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[5]
		International Search Report for International Application No. PCT/IL2017/050481 mailed August 20, 2017	

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

4846-8219-4266\1

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15/826,232
	Filing Date	Nov 29, 2017
	First Named Inventor	Yaron Brunner
	Art Unit	3633
	Examiner Name	TBD
	Attorney Docket Number	269949US01_446373-417

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Marcus S. Simon, Reg. #50258	Date (YYYY-MM-DD)	2018-01-12
Name/Print	Marcus S Simon	Registration Number	50258

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 1 hour 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, U.S. Department of Commerce, 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.**

4846-8219-4266\1

DESCRIPTION CN2608238

The utility model relates to a plastic multi-layer toolbox. The existing toolbox, only a box and a single layer, placed the tool capacity is small, cannot meet the use of a variety of tools to carry the requirements; the same time, tools within the toolbox more difficult to classify, to the user inconvenience The utility model comprises a box cover and a box with a tool storage slot, wherein the bottom of the box is connected with at least one lower cabinet. The utility model can place a variety of tools, increase the capacity of the toolbox, the tool can be placed in the box and the next box, easy access and different types of tools custody, inventory.

New toolbox

【Technology】

The utility model relates to a toolbox, especially a plastic multi-layer toolbox.

【Background technique】

The existing toolbox, including the lid and the box, which is usually between the hinge, hinge and other connecting parts connected, plastic toolbox connector can also be made of plastic connecting bars. In order to facilitate and prevent accidental opening, between the lid and the box with a buckle or buckle. This kind of toolbox has only one box and single layer, the capacity of the placement tool is small, can only be used to place more commonly used tools, it is more difficult to accommodate some less commonly used tools, cannot meet the use, carry a variety of tools ; At the same time, toolbox tool is more difficult to classify, more chaotic, to the user inconvenience.

【invention】

The technical problem to be solved by the utility model is to overcome the shortcomings of the prior art, to provide a multi-layer toolbox with large capacity, which can accommodate a variety of tools, and the tool can be layered according to class, convenient access and different types The custody of the tool.

The technical scheme of the utility model is such that the new toolbox comprises a lid and a box with a tool storage slot, wherein the bottom of the box is connected with at least one lower cabinet. Under the box can be placed within a variety of tools to increase the capacity of the toolbox, tools can be placed in the box by the box and the next box, easy access and different types of tools custody, inventory.

The bottom of the lower box is provided with longitudinal and horizontal blocks, and the bottom of the box is provided with a card slot which can be engaged with the card block, the card slot is "convex" And the connection with the box firmly.

The new toolbox is composed of three side walls and a bottom plate connected by connecting bars, the cross section is "[image]" shape, and the two side wall joints are connected by grooves and ribs. Expand, easy to mold release, a molding.

The new toolbox, the next box built-in drawer, drawer with a tool storage slot.

The new toolbox and the drawer are assembled on both sides of the drawer through the I-shaped guide rail, and the U-shaped groove is formed on the vertical part of the guide rail to form a shrapnel (which is formed by the vertical part of the guide rail) The free end of the shrapnel has a finite bit block, and the left and right side walls of the lower cabinet are provided with a positioning groove and a limit groove for sliding the stopper block. The length of the limit groove is shorter than the length of the side wall of the lower case Such that the edge of the stop groove does not pass to the outer end face of the side wall of the lower cabinet; the left and right side walls of the lower cabinet are provided with two open chutes with the guide rails, the length of the opening chute And the length of the inner side wall of the lower cabinet is equal to each other, both sides of the drawer are provided with the positioning groove with the positioning block and the track with the tail of the two chutes, the length of the chute lower than the length of the box side wall, The edge of the chute does not pass to the end of the drawer. When the

drawer is located in the lower case, the back of the shrapnel is on the side of the drawer. The limit block on the front of the shrapnel is located in the limit slot, preventing the drawer from slipping out of the lower case and pulling the drawer. Will make the drawer out of the box. When the drawer is pulled out, the edge of the chute is out of the side of the drawer, and the stopper on the shrapnel is pressed by hand. As the edge of the chute is spaced from the end of the drawer, , The limit block out of the limit slot and pull the drawer at the same time, you can draw the drawer from the lower box out; loaded drawer, the rail horizontal head into the opening chute, push down the box, with the help The elasticity of the shrapnel material, so that the limit block into the limit slot can be. In this way the assembly, the drawer can be used alone to facilitate the close operation, drawer disassembly easy and convenient.

The new toolbox is attached to the drawer or connected by a connecting bar to a drawer cover which is used to cover the drawer to prevent the toolbox from falling out of the drawer when the toolbox is moved laterally. Drawers for 2 or more, each drawer is separated by a tool storage slot.

The new toolbox is provided with a handle at the outer end of the left and right sides of the lower case, for handling when the toolbox is heavier and for easy handling.

The new toolbox, the lower side of the box and the bottom of the box for the sandwich plastic plate, reduce costs and weight, increase strength.

The utility model has reasonable structure, and is connected with the box at the bottom of the box to form the toolbox of two or more layers. In the toolbox to add a drawer, and further increase the capacity of the toolbox, tools can be placed in the box and the drawer, easy access and different types of tools custody, inventory. In addition, the box and the lower box of the connection firmly, under the box in the drawer can be used alone to facilitate the close operation, drawer disassembly easy and convenient.

【Description】

Fig. 1 is a schematic structural view of the utility model.

Fig. 2 is an enlarged view of the utility model guide rail.

Fig. 3 is a development view of the lower cabinet of the utility model.

Fig. 4 is a block diagram of the utility model drawer.

Fig. 5 is a structural view of the bottom of the present invention.

Fig. 6 is an open state diagram of the utility model.

【detailed description】

As shown in the figure, the new tool case includes a lid 1, a housing 2 which is engaged with the case 1 by a catch 21, a lower case 3 connected to the bottom of the casing 2, Two drawers 9 and a drawer cover 17 which is axially connected to the drawer 9. As shown in Fig. Both the box and the drawer are provided with a tool storage slot, the structure of the two drawers and the connection structure with the lower case, and the sides of each drawer are fitted on the side wall of the lower cabinet 3 through the I-The guide rail 10 is provided with a U-shaped groove 11 in the vertical portion of the guide rail 10 to form a spring 12 which is a part of the guide rail itself and whose ends are disconnected from the guide rails to form a free end and the free end of the shrapnel 12 13. The tail portion of the guide rail 10 has a retainer 19 on both sides of which is provided with a hemispherical positioning block 22 and two chutes 16 cooperating with the bar 19, the outer edge of the chute 16 being free from the outer end face of the drawer 9, The inner edge of the chute 16 does not pass to the inner end face of the drawer 9. As shown in Fig. The left and right side walls of the lower case 3 are provided with a positioning groove 6 which cooperates with the hemispherical positioning block 22 and a stopper groove 14 for sliding the stopper block 13, and the leading edge of the stopper groove 14 does not pass to the lower cabinet 3 Outside end of the side wall. The left and right side walls of the lower case are provided with two open chutes 15 which cooperate with the rails. The bottom of the lower cabinet 3 is provided with two transverse blocks 4-2 and four longitudinal blocks 4-1, which are provided with four recesses 5 at the bottom of which are in a "convex" shape and the first two grooves Horizontal and vertical card at the same time card, after the two grooves only the vertical card access. The outer end of the left and right side walls of the lower

cabinet 3 is provided with a handle 18. The lid 1 is provided with a carrier 20. The lower case 3 is composed of three side walls and a bottom plate connected by connecting bars, the cross section is "[image]" shape, the side wall and the bottom plate are sandwich plastic plates, and the two side walls are joined by the card slot 7 and the ribs 8 Connection, under the box can be expanded.

When the drawer is removed, the inner edge of the chute does not pass to the inner end of the drawer. When the drawer is pulled outward, the back of the shrapnel is removed from the side of the drawer. When the drawer is pressed by hand, And the drawer is pulled out of the limit slot and the drawer is pulled out at the same time to remove the drawer from the lower case. When the drawer is loaded, the head of the rail is loaded into the opening chute and the box Push, with the elasticity of the shrapnel material, so that the limit block into the limit slot can be.

CLAIMS CN2608238

1. The new toolbox comprises a box cover (1) and a box (2) provided with a tool storage slot, characterized in that at least one lower cabinet (3) is connected to the bottom of the box (2).

2. The new toolbox according to claim 1 is characterized in that the top end of the lower cabinet (3) is provided with a longitudinal block (4-1) and a transverse chuck (4-2), the bottom of the box (2) (5) which is capable of engaging with the card block, the card slot (5) being in a "convex" shape.

3. A new type of toolbox according to claim 1 or 2, characterized in that said lower case (3) is connected by three side walls and a bottom plate through a connecting bar having a cross section of "[image]" The side wall junction is connected by a groove (7) and a rib (8).

4. A new toolbox according to claim 1 or 2, characterized in that said lower case (3) has a built-in drawer (9), and a drawer (9) is provided with a tool storage slot.

5. The new toolbox according to claim 4, wherein both sides of said drawer (9) are fitted in the lower cabinet (3) through an I-shaped guide rail (10), and a U-shaped (11), a stopper (6) is formed on the free ends of the shrapnel (12), and the positioning grooves (6) are arranged on the left and right side walls of the lower case (3) (14) for sliding the stopper block (13) and two open chutes (15) on the left and right side walls of the lower case (3) are provided with a cross section of the guide rail (10) (9) are provided on both sides of the drawer (9) with a positioning block (22) cooperating with the positioning groove (6) and two chutes (16) cooperating with the tail of the guide rail (10).

6. A new toolbox according to claim 4, wherein said drawer (9) is axially connected or connected with a connecting bar to a drawer cover (17).

7. A novel tool case according to claim 6, wherein said drawer (9) is two or more, and a drawer (9) is provided with a tool storage slot.

8. The new toolbox according to claim 1, wherein the outer end of the left and right side walls of the lower case (3) is provided with a handle (18).

9. A novel tool case according to claim 3, wherein the side walls and the bottom plate of said lower cabinet are sandwich plastic plates.

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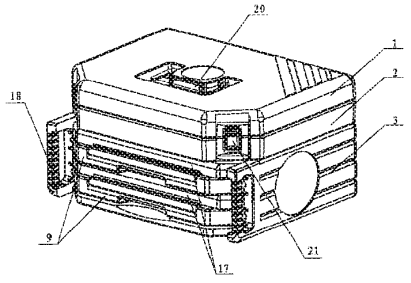
代理人 戴晓翔

权利要求书 1 页 说明书 3 页 附图 2 页

[54] 实用新型名称 新型工具箱

[57] 摘要

本实用新型涉及一种塑料多层工具箱。现有的工具箱，只有一个箱体且单层，放置工具的容量小，不能满足使用、携带多种工具的要求；同时，工具箱内的工具较难进行分类安放，给使用者带来不便。本实用新型包括箱盖和设有工具存放槽的箱体，其特征是所述的箱体底部连接至少一个下置箱。本实用新型能安置多种工具，增大了工具箱的容量，工具可按类分别安放于箱体和下置箱内，方便取用及不同种类工具的保管、清点。



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1、新型工具箱，包括箱盖(1)和设有工具存放槽的箱体(2)，其特征是所述的箱体(2)底部连接至少一个下置箱(3)。

2、根据权利要求 1 所述的新型工具箱，其特征是下置箱(3)的顶端设有纵向卡块(4-1)和横向卡块(4-2)，箱体(2)的底部设有能与卡块卡接的卡槽(5)，该卡槽(5)呈“凸”形。

3、根据权利要求 1 或 2 所述的新型工具箱，其特征是所述的下置箱(3)由三个侧壁和一块底板通过连接筋连接而成，截面呈“ ⌐¬ ”形，两侧壁结合处通过凹槽(7)和凸筋(8)连接。

4、根据权利要求 1 或 2 所述的新型工具箱，其特征是所述的下置箱(3)内置抽屉(9)，抽屉(9)内隔有工具存放槽。

5、根据权利要求 4 所述的新型工具箱，其特征是所述抽屉(9)的两侧通过工字形导轨(10)装配在下置箱(3)内，导轨(10)竖部上开有 U 形槽(11)而形成一弹片(12)，弹片(12)的自由端上有限位块(13)，下置箱(3)的左、右两侧壁上都设有定位槽(6)和使限位块(13)滑动的限位槽(14)，下置箱(3)的左、右两侧壁上都设有与导轨(10)横部配合的两条开口滑槽(15)，抽屉(9)的两侧都设有与定位槽(6)配合的定位块(22)和与导轨(10)尾部配合的两条滑槽(16)。

6、根据权利要求 4 所述的新型工具箱，其特征是所述抽屉(9)轴接或用连接筋连接一抽屉盖(17)。

7、根据权利要求 6 所述的新型工具箱，其特征是所述的抽屉(9)为 2 个或 2 个以上，抽屉(9)内隔有工具存放槽。

8、根据权利要求 1 所述的新型工具箱，其特征是下置箱(3)左、右两侧壁的外端设有提手(18)。

9、根据权利要求 3 所述的新型工具箱，其特征是所述下置箱的侧壁和底板为夹层塑料板。

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新 型 工 具 箱

【技术领域】

本实用新型涉及一种工具箱，尤其是塑料多层工具箱。

【背景技术】

现有的工具箱，包括箱盖和箱体，二者之间通常通过铰链、合页等连接件连接，塑料工具箱的连接件还可由塑料连接筋构成。为便于携带及防止意外打开，箱盖与箱体之间设有搭扣或锁扣。此类工具箱只有一个箱体且单层，放置工具的容量小，只能用于放置较常用的工具，较难再容纳某些不太常用的工具，不能满足使用、携带多种工具的要求；同时，工具箱内的工具较难进行分类安放，比较混乱，给使用者带来不便。

【发明内容】

本实用新型所要解决的技术问题是克服现有技术的缺陷，提供一种多层工具箱，容量大，能将多种工具容纳其中，且工具可按类分层安放，方便取用及不同种类工具的保管、清点。

本实用新型的技术方案是这样的：新型工具箱，包括箱盖和设有工具存放槽的箱体，其特征是所述的箱体底部连接至少一个下置箱。下置箱内能安置多种工具，增大了工具箱的容量，工具可按类分别安放于箱体和下置箱内，方便取用及不同种类工具的保管、清点。

所述的新型工具箱，下置箱的顶端设有纵向和横向卡块，箱体的底部设有能与卡块卡接的卡槽，所述的卡槽呈“凸”形，使箱体与下置箱的连接牢固。

所述的新型工具箱，下置箱由三侧壁和一底板通过连接筋连接而成，截面呈“ ⌐ ”形，两侧壁结合处通过凹槽和凸筋连接，下置箱可以展开，便于注塑脱模，一次成型。

所述的新型工具箱，下置箱内置抽屉，抽屉内隔有工具存放槽。

所述的新型工具箱，抽屉的两侧通过工字形导轨装配在下置箱内，导轨

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竖部上开有U形槽而形成一弹片（靠近导轨头部处，由导轨竖部的本身形成），弹片的自由端上有限位块，下置箱的左、右两侧壁上都设有定位槽和使限位块滑动的限位槽，限位槽的长度较下置箱侧壁的长度短，即限位槽的边缘没有通至下置箱侧壁的外端面；下置箱的左、右两侧壁内都设有与导轨横部配合的两条开口滑槽，开口滑槽的长度与下置箱内侧壁的长度相等，抽屉的两侧都设有与定位槽配合的定位块和与导轨尾部配合的两条滑槽，滑槽的长度较下置箱侧壁的长度短，即滑槽的边缘没有通至抽屉的端面。 抽屉位于下置箱内时，弹片的背面触抵在抽屉的侧边上，位于弹片正面上的限位块位于限位槽内，防止了抽屉从下置箱中自行滑出，拉抽屉时不会使抽屉脱离下置箱。拆抽屉时，由于滑槽的边缘与抽屉的端面有距离，将抽屉向外拉时，弹片的背面会脱离抽屉的侧边，这时用手按压弹片上的限位块，由于弹片材料的弹性，限位块脱离限位槽并同时向外拉抽屉，即可将抽屉从下置箱内取出；装抽屉时，将导轨横部的头部进入开口滑槽，向下置箱内推，借助弹片材料的弹性，使限位块进入限位槽内即可。采用这种方式的装配，抽屉可单独拿出使用，方便近距离的作业，抽屉的拆装容易、方便。

所述的新型工具箱，抽屉上轴接或用连接筋连接一抽屉盖，抽屉盖用于盖合抽屉，防止工具箱侧向搬运时工具从抽屉中掉出。抽屉为 2 个或 2 个以上，每个抽屉内都隔有工具存放槽。

所述的新型工具箱，下置箱左、右两侧的外端设有提手，用于工具箱较重时的搬运和便于两人搬运。

所述的新型工具箱，下置箱的侧壁和底板为夹层塑料板，降低成本和重量，增加强度。

本实用新型结构合理，在箱体底部连接下置箱，形成二层以上的工具箱。在工具箱中增设抽屉，进一步增大了工具箱的容量，工具可按类分别安放于箱体和抽屉内，方便取用及不同种类工具的保管、清点。此外，箱体与下置箱的连接牢固，下置箱中的抽屉可单独拿出使用，方便近距离的作业，抽屉的拆装容易、方便。

【附图说明】

图 1 为本实用新型的结构示意图。

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图 2 为本实用新型导轨的放大图。

图 3 为本实用新型下置箱的展开图。

图 4 为本实用新型抽屉的结构图。

图 5 为本实用新型箱体底部的结构图。

图 6 为本实用新型的打开状态图。

【具体实施方式】

如图所示，新型工具箱，包括箱盖 1、通过锁扣 21 与箱盖 1 扣接的箱体 2、连接在箱体 2 底部的一个下置箱 3、置于下置箱 3 内的 2 个抽屉 9 和与抽屉 9 轴接的抽屉盖 17。箱体和抽屉内都隔有工具存放槽，2 个抽屉的结构及其与下置箱的连接结构都一样，每个抽屉的两侧通过工字形导轨 10 装配在下置箱 3 侧壁上。导轨 10 竖部上开有 U 形槽 11，形成一弹片 12，弹片 12 为导轨竖部本身的一部分，其三边与导轨竖部断开形成一自由端，弹片 12 的自由端设限位块 13。导轨 10 的尾部有卡条 19，抽屉 9 的两侧都设有半球形定位块 22 和与卡条 19 配合的两条滑槽 16，滑槽 16 的外边缘没有通至抽屉 9 的外端面，滑槽 16 的内边缘没有通至抽屉 9 的内端面。下置箱 3 左、右侧壁上都设有与半球形定位块 22 配合的定位槽 6 和使限位块 13 滑动的限位槽 14，限位槽 14 的前缘没有通至下置箱 3 侧壁的外端面。下置箱左、右两侧壁上都设有与导轨横部配合的两条开口滑槽 15。下置箱 3 的顶端设有 2 个横向卡块 4-2 和 4 个纵向卡块 4-1，箱体的底部设有 4 个凹槽 5，呈“凸”形，前 2 个凹槽将横向和纵向卡块同时卡接，后 2 个凹槽只将纵向卡块卡接。下置箱 3 左、右两侧壁的外端设有提手 18。箱盖 1 上设有拎手 20。下置箱 3 由三个侧壁和一块底板通过连接筋连接而成，截面呈“ ⌐ ”形，侧壁和底板为夹层塑料板，两侧壁结合处通过卡槽 7 和凸筋 8 连接，下置箱可以展开。

拆抽屉时，由于滑槽的内边缘没有通至抽屉的内端面，将抽屉向外拉时，弹片的背面会脱离抽屉的侧边，这时用手按压弹片上的限位块，由于弹片材料的弹性，限位块脱离限位槽并同时向外拉抽屉，即可将抽屉从下置箱内取出；装抽屉时，将导轨横部的头部装入开口滑槽，向下置箱内推，借助弹片材料的弹性，使限位块进入限位槽内即可。

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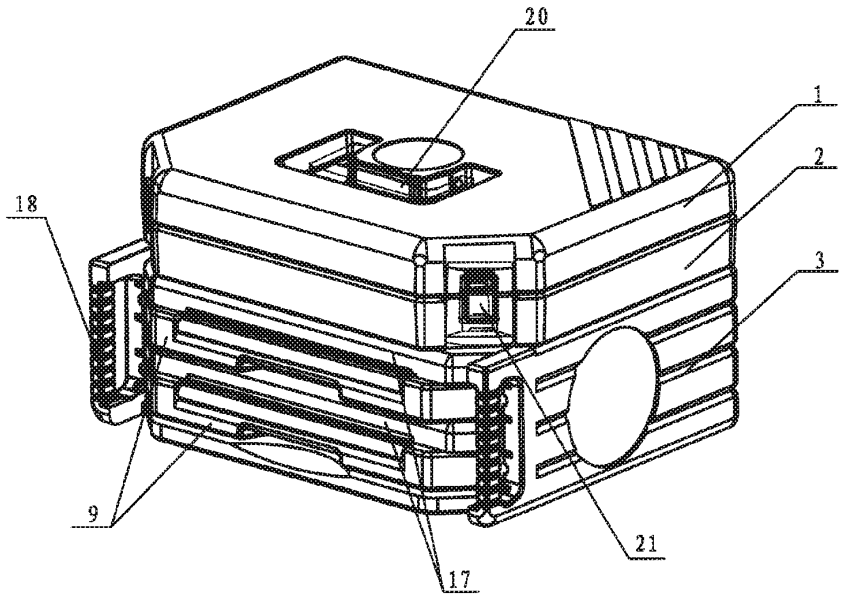


图 1

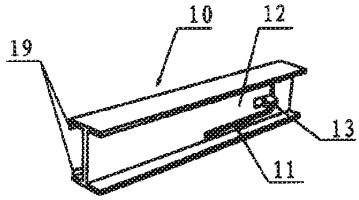


图 2

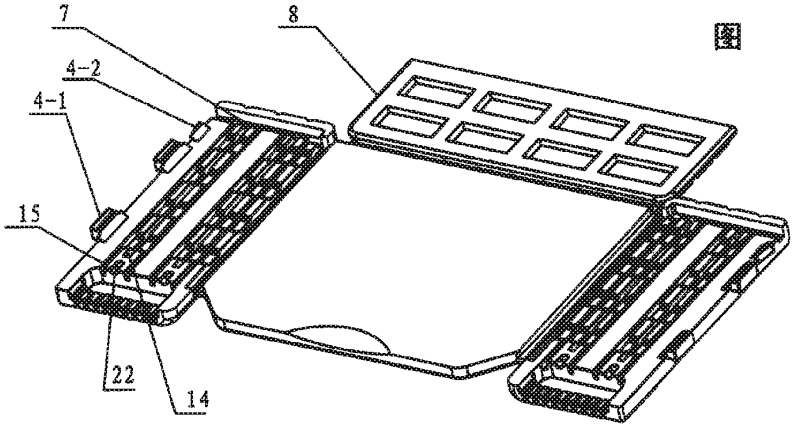


图 3

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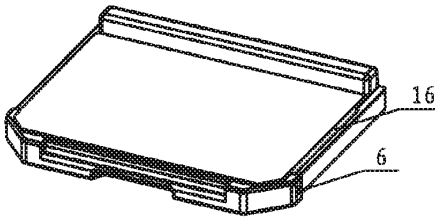


图 4

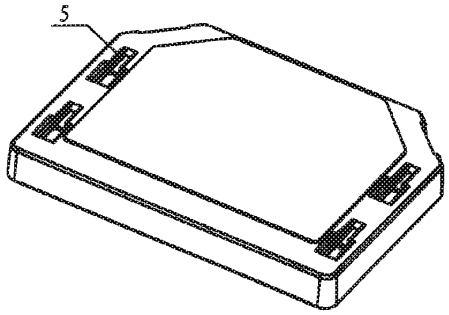


图 5

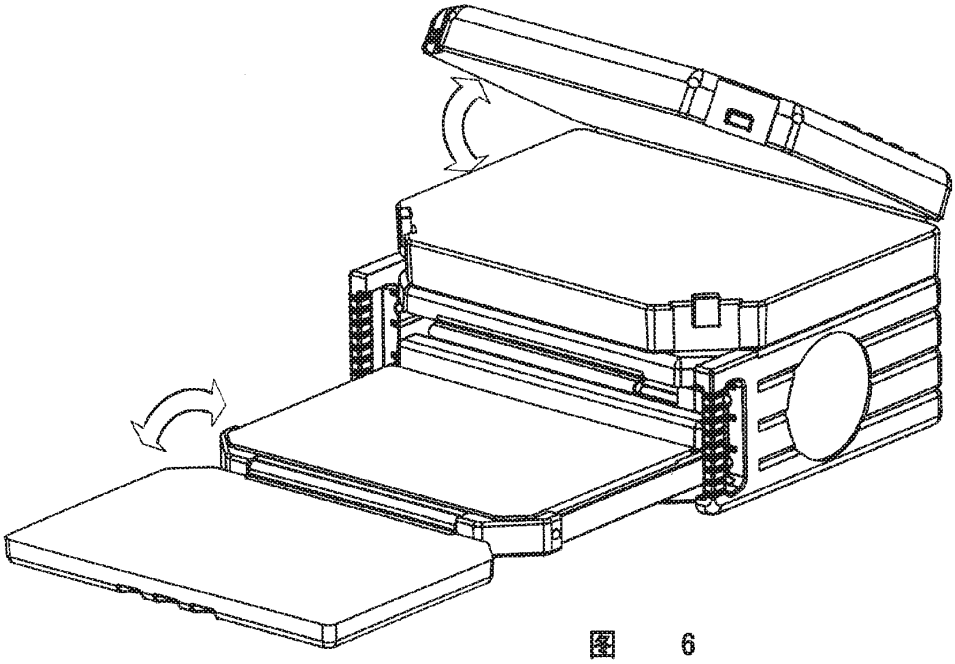


图 6

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Declarations under Rule 4.17:

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

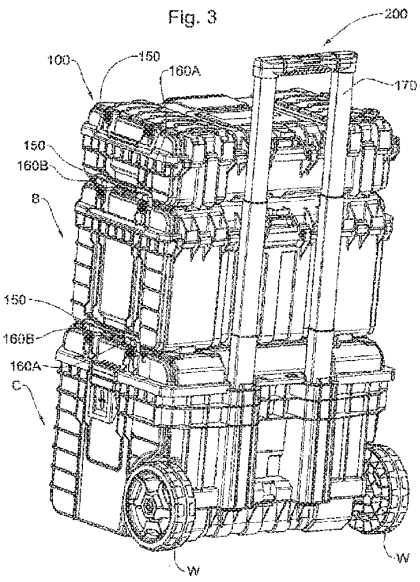
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

— *of inventorship (Rule 4.17(iv))*

[Continued on next page]

(54) Title: CONTAINER ASSEMBLIES

Fig. 3



(57) Abstract: The presently disclosed subject matter is directed to a container assembly comprising a container for storage and transport of goods comprising at least one side wall and a bottom wall defining together an interior space and a cover for closing the opening, having a top surface, wherein the cover comprises at least one latch member movable between at least a first position and a second position and wherein the container comprises a retaining member on the at least one side wall and positioned parallel to the latch member such that the latch member is configured for engaging with a retaining member of another container to connect the container to the at least one other container.

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Published:

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

Container Assemblies

TECHNOLOGICAL FIELD

The disclosed subject matter is directed towards stackable and interlockable container assemblies.

BACKGROUND ART

References considered to be relevant as background to the presently disclosed subject matter are listed below:

- US8505729
- US6371320
- US6874634

Acknowledgement of the above references herein is not to be inferred as meaning that these are in any way relevant to the patentability of the presently disclosed subject matter.

BACKGROUND

Container assemblies configured for stacking are known in the art. Furthermore, container assemblies that are stackable and interlockable are known.

For example, US8505729 discloses a container constructed and arranged to be connected to at least one other container. The container has a container portion, a cover, and a latch member movable between a first position and a second position. A retaining member on the container portion is engageable with the latch member. In the first position, the latch member engages the retaining member to inhibit movement of the latch member away from the first position. In the second position, the latch member is engageable with a container portion of the other container to connect the containers.

US6371320 discloses a portable workshop container assembly adapted to store tools and other articles a worker requires to perform various tasks at a workplace. The assembly includes three major components in stacked relation. Also provided is a latching mechanism having a latch which is pivoted by a toggle member to the upper

end of the bucket and cooperates with a first catch element mounted at the bottom of the tool box and a second catch element mounted on the rim of the tray. When the tool box rests on the rim, the first and second catch elements are then adjacent each other. In one mode of operation, the latch simultaneously engages the first and second latch elements to interlock all three components to form a unitary assembly that can be wheeled to the work place.

US6371320 discloses a tray system composed of a vertical stack of trays especially adapted to contain, and protect surgical instruments being carried from a sterilizer to an operating site. The trays may have various heights and be arranged in any order in the stack. Each tray includes a plurality of latches, each latch having an arm swingably mounted to the tray and terminated by a projection spaced a selected distance above the tray rim or top when the latch is swung to its latching position. Each tray also includes a corresponding plurality of latching surfaces located under the latches on that tray. The distance between the seating surfaces and latching surfaces of each tray corresponds substantially to the distance of that tray. This enables the latch arms of each tray to be latched to the latching surfaces of an overlying tray in the stack or to a cover so as to form a closed compact transportable package. Different latch embodiments for securing the trays together are also disclosed.

GENERAL DESCRIPTION

The presently disclosed subject matter is directed to a container constructed and arranged to be connected to at least one other container.

The term *multi-container assembly* as used herein denotes any set of containers configured for articulation to one another, either as a stationary unit or locomotive. Said assembly can be used as a tool cart, workshop, traveling luggage, etc.

The term *container* as used herein denotes any type of container, or work unit, which can be used as a tool caddy, organizer, traveler bag, cosmetics bag, storage containers, locomoting containers, etc. the term *container* includes also units used in conjunction with a tool caddy, such as a work bench, etc.

The present disclosure is generally in the field of multi-container assemblies. More specifically the disclosure is directed to a locking system for detachably attaching containers and container assemblies to one another.

In accordance with one aspect of the disclosed subject matter there is provided a container assembly comprising at least one container. The container comprises at least one side wall and a bottom wall defining together an interior space and a cover for closing the opening, having a top surface. The cover comprises at least one latch member movable between at least a first position and a second position and the container comprises a retaining member on the at least one side wall and positioned parallel to the latch member. The latch member is configured for engaging with a retaining member of another container to connect the container to the at least one other container. The latch member can be configured to pivot in a clockwise and a counterclockwise manner.

The at least one latch member can be pivoted upwards to engage the container of the other container assembly and the at least one latch member can be pivoted downwards to a resting position, where it is flush with the surface of the cover, e.g., its side wall. In accordance with an embodiment the at least one latch member can constitute a handle for the container assembly. The latch\handle can be a U shaped handle pivotably attached to the cover.

In accordance with another aspect of the disclosed subject matter there is provided a container for storage and transport of goods. The container comprises at least one side wall and a bottom wall defining together an interior space. The container further comprises at least one latch member movable between at least a first position and a second position and a retaining member positioned parallel to the latch member. The latch member is configured for engaging with a retaining member of another container to connect the container to the at least one other container. The at least one latch member can be positioned between a position in which the latch member engages the retaining member of the other container assembly and a resting position. In accordance with an embodiment the at least one latch member can constitute a handle for the container assembly.

In accordance with the disclosed subject matter the retaining member is an outwardly protruding hook like member, e.g. a saddle configured and shaped to hold and\or catch and prevent movement of the latch when locked thereon.

In accordance with another aspect of the disclosed subject matter there is provided a container assembly comprising a container and a hinged lid member configured to cover the container. Wherein the hinge area further comprises at least one

arresting member such that the lid has a closed and an open configurations wherein the arresting member is disengaged and intermediate positions configured between the open and closed configurations wherein the arresting member is engaged.

When an element is referred to as being "on", "engaged to", "connected to" or "coupled to" another element, it may be directly on, engaged, connected or coupled to the other element, or intervening elements may be present.

As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

Spatially relative terms, such as "inner," "outer," "beneath", "below", "lower", "above", "upper", "top", "bottom" and the like, may be used herein for ease of description to describe one element or feature's relationship to another element(s) or feature(s) as illustrated in the figures. Spatially relative terms may be intended to encompass different orientations of the device in use or operation in addition to the orientation depicted in the figures. For example, if the container in the figures is turned over, elements described as "below" or "beneath" other elements or features would then be oriented "above" the other elements or features. Thus, the example term "below" can encompass both an orientation of above and below. The container can be otherwise oriented (e.g. rotated 90 degrees or at other orientations) and the spatially relative descriptors used herein interpreted accordingly.

The disclosed subject matter is further directed to a container assembly system comprising at least one first container and at least one second container, detachably attachable to one another by a locking mechanism, the locking mechanism interacts between the at least one first container and at least one second container wherein the at least one first container is configured at a top portion thereof with a pivotable latch member, and the at least one second container is configured at a corresponding bottom portion thereof with an retaining portion, wherein said latch member is pivotable between a locked position at which it engages said retaining portion, and an unlocked position at which it is pivotally displaced into disengagement from said retaining portion.

In accordance with another aspect it is directed to a container assembly comprising a container for storage and transport of goods comprising at least one side wall and a bottom wall defining together an interior space and a cover for closing the opening, having a top surface, wherein the cover comprises at least one latch member

movable between at least a first position and a second position and wherein the container comprises a retaining member on the at least one side wall and positioned parallel to the latch member such that the latch member is configured for engaging with a retaining member of another container to connect the container to the at least one other container.

In accordance with yet an aspect it is directed to a container comprising at least one side wall comprising thereon at least one latch member movable between at least a first position and a second position and a retaining member positioned parallel to the latch member, wherein the latch member is configured between a resting position and a position for engaging with a retaining member of another container to connect the container to the at least one other container and wherein the at least one latch member constitutes a handle for the container assembly.

In accordance with yet another aspect there is disclosed a container assembly comprising a container and a hinged lid member configured to cover the container, wherein the hinge area further comprises at least one arresting member and a friction member such that the lid has a closed and an open configurations wherein the arresting member and the friction element are disengaged and intermediate positions configured between the open and closed configurations wherein the friction element engages the arresting member.

Any one or more of the following features, designs and configurations, can be implemented in a container assembly and/or system, according to the present disclosure, individually or in various combinations thereof:

- The at least one latch member can constitute a handle for the container assembly.
- The cover is pivotally connected to a rear side of the container portion.
- Further comprising a carrying handle located on the container portion or the cover portion.
- The latch member is pivotably connected through at least one hinge.
- The interior space of the container is divided into a plurality of compartments.
- The latch member and the engaging member are constructed and arranged to be spaced apart such that they are positioned to be vertically aligned with respect to one another.

- The latch is a pivotable locking member;
- The pivotable locking member can be a carrying handle of a respective first container;
- Each of the at least one first container and the at least one second container can be configured with at least a pair of locking mechanisms, according to a particular example the locking mechanisms can be disposed at least at opposite sides of the respective containers;
- The pivotable locking member, at its locked position, extends in near proximity to a side wall of the first container, and at its unlocked position it can be spaces from said side wall or extend in the near proximity to the side wall;
- A the pivotable locking member can be configured with an agronomic handle portion;
- The locking member can be configured for snap arresting at least at its locked position;
- A container of the assembly can be a foldable work bench;
- A first, bottom most container of the container assembly can be configured with a locomoting arrangement. The locomoting arrangement can be fixed to the bottom most container, or detachably attachable thereto.
- According to one example the locomoting arrangement can be at least a pair of wheels disposed at a rear, bottom portion of the bottom most container;
- The bottom most container can be configured with one or more caster wheels;
- The container assembly can be configured with a one or more handles associated with any one or more of the containers;
- At least some of the containers of a container assembly can be configured as a modular container fitted with a pivotable locking member an arresting portion, rendering each such modular container suitable for serving as either a first container or a second container, i.e. suitable for articulation wither above or below a respective other container.

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 examples only, with reference to the accompanying drawings, in which:

Figs. 1A and **1B** are a perspective top view and a front view, respectively, of the container assembly in accordance with one example of the disclosed subject matter;

Figs. 2A to **2B** are a perspective top view and a perspective side view, respectively, of two container assemblies of Fig. 1A, stacked one over the other, in accordance with one example of the disclosed subject matter;

Fig. 3 is a perspective back view of a container system of three different container assemblies stacked in accordance with an example of the disclosed subject matter;

Fig. 4 is a side view of a container assembly in accordance with another example of the disclosed subject matter;

Fig. 5A and **Fig. 5B** are a perspective view of two like container assemblies of Fig. 4, stacked one atop the other;

Figs. 6A to **6C** illustrate a container assembly in a perspective view where the container is illustrated with the handles in a resting position (6A), a working position (6B) and a front view of the same container (6C) in accordance with yet an example of the disclosed subject matter;

Fig. 7A to **7C** illustrate in a perspective view the container assemblies in accordance with the examples of the disclosed subject matter, in a stacked configuration in various combinations;

Fig. 8A to **8C** illustrate a container assembly of Fig. 4, with a cover in varying positions respective the container interior;

Figs. 9A to **9D** illustrate portion marked C in Fig. 8A, showing the cover in different positions respective the container, in accordance with an example of the disclosed subject matter, and

Figs. 10A to **10C** illustrate a container assembly comprising a work bench, the work bench illustrated at its various working positions in Fig. 10C, in accordance with the disclosed subject matter.

DETAILED DESCRIPTION OF EMBODIMENTS

The presently disclosed subject matter is directed to container assemblies adapted for stacking and interlocking with like container assemblies. Referring first to the example of Figs. 1A to 2B, there is provided a container assembly generally referenced 100. The container assembly 100 comprises a container designated 140 for storage and transport of goods. The container comprises two side walls 102A and 102B, a front wall 104, a rear wall 106 and a bottom wall 108, together defining an interior space (not shown). The container assembly 100 further comprises a cover 120 for closing container 140 at its opening. In the illustrated example, the cover is hingedly attached at the rear wall of the container. It will be appreciated that while in the illustrated example a hinge element is provided, the cover in accordance with the disclosed subject matter can be connected, e.g. through an integral hinge system (e.g. living hinge) or the cover can be a detachably attachable element, etc. The container assembly also comprises a carrying handle 124 at its front wall 104 and two locking latching assemblies 126A and 126B, configured for locking the cover to the container body 140.

The cover 120 further comprises two latch members 150, each extending at its sides and movable between at least a first position I and a second position II. The container comprises two respective retaining members 160A, 160B, 160C, 160D at the lower portion 142 of each of the side walls 102A and 102B. The retaining members are a hook like element integrally formed on and outwardly protruding from respective side wall. It will be appreciated that while in the illustrated example there are provided two retaining members on each side wall, there can be provided one such member which can be of the width sufficient to engage the latch member as will be discussed herein after. An example of a single retaining member is provided with reference to Fig. 4 and will be discussed with reference thereto. Each latch member is positioned parallel to the respective two retaining members (as best seen e.g. in Fig. 1A). The latch member 150 in accordance with this example is pivotable at least between a first resting position seen in Fig. 1A and a fully extending second position seen e.g. on the top container in Figs. 2A and 2B. In this second position or in fact in any of the intermediate positions, the latch member(s) 150 can constitute side handles for the container assembly. The

latch members are a generally U shaped member pivotably connected at its free ends to the cover 120. Thus while the carrying handle 124 facilitates carrying the container assembly vertically such that its rear wall can be for example substantially parallel to the ground, the latch members 150 facilitate carrying the assembly horizontally, using the latch member 150 as two side handles.

Attention is now directed to Figs. 2A to 3 which illustrate two like container assemblies 100 in accordance with the presently disclosed subject matter stacked one over the other. Fig. 2A illustrates the two container assemblies stacked with the latch members 150 in a disengaged configuration such that the two latch members 150 fully shown in this example are in a first, resting position I in which the latch member 150 is substantially parallel to the sides of the container assembly 100. Fig. 2B illustrates the same two container assemblies stacked showing the other side of the assembly in which the latch members are in a second position II. The latch member of the top container 100 is pivoted/lifted upwards, freely extending above the top surface 122 of the cover 120. In this configuration II the latch member can constitute a side or a lifting handle for the container. The latch member 150 of the bottom container assembly 100 is also in a second position, however it is locked over the retaining member 160 such that the two container assemblies are locked and connected to each other. Thus, by lifting the top container assembly the bottom container will be moved therewith as one interlocked system of two container assemblies. It will be appreciated that the latch members 150 on both sides should be engaged with the respective retaining members 160 to prevent unintentional disengagement or relative movement of the two containers.

Fig. 3 illustrates a system 200 of three container assemblies, C, B and 100 all interlocked using a latch member 150 provided on the covers locked over the respective retaining members 160 provided at the lower portion 142 of the side wall of the respective container assembly 100 stacked thereover. This facilitates transportation of the system in unison. In this example the system is further provided with two side wheels W and a central upwardly extending carrying handle 170 extending upwards from rear wall of the bottom container and protruding above the top container assembly to allow e.g. tilting and wheeling the system.

The example illustrated with reference to Figs. 4 to 5B provides for a container assembly 300 which in this example is an organizer system. Elements having similar function to those of the assembly 100 described with reference to Figs. 1A to 2B, are

marked using similar reference numerals upped by 200. One difference between the container assembly 100 and container assembly 300 resides in the structure of the latch member 350 and the retaining member 360. In this example, there is provided a single retaining member 360 provided at the bottom portion of the side wall of the container 340. The latch member 350 is provided parallel thereto on the side flap of cover 320, covering the container 340. As seen in Fig. 5B, when two like container assemblies 300 are stacked one on top of the other, to lock the two assemblies, the latch member 350 of the container assembly at the bottom is pivoted to the second position and snapped to engage the retaining member 360 of the container provided on the top. As in the previous example, this locking engagement allows securing the two assemblies together and facilitates secure storage and transport of the resultant system of two assemblies.

It will be appreciated that any number of container assemblies 100, 300, can be stacked one over the other and locked in accordance with the disclosed subject matter.

Figs. 6A to 6C are another example of the container 400 in accordance with the disclosed subject matter. The difference between the container 400 and the previous example is lack of cover. In this example the container is a crate having a latch member 450 provided at the top portion of the respective side wall and a retaining member 460 (in this example two retaining members for each latch, as discussed also with reference to the example of fig. 1A) provided at the bottom portion of each side wall, in parallel and coextending with the respective latch member. As seen in Figs. 7A to 7B, the crate 400 can be stacked with like crates and interlocked therewith in accordance with the present invention (e.g. Fig. 7B) or provided as part of a system of different container systems, which are also provided with a respective latch members and retaining members as illustrated in Figs. 7A and 7B.

Figs. 8A to 9D illustrate the container assembly 300 discussed above. The container assembly comprises a container 340 and cover lid 320 hingedly articulated thereto. The lid 320 is configured to extend between a closed position as seen e.g. in Fig. 4, a fully open position seen in Fig 8C where the lid 320 is open at about 180° with respect to the container 340. As seen in figs. 8A and 8B the lid is configured to extend at intermediate positions between the closed and fully open positions and in the illustrated examples extends normal to the container (Fig. 8A) and at about 140° (Fig. 8B). These intermediate positions are facilitated by a friction system constituted by an arresting member 380 provided at the top end of the container 340 at the location of the

hinge H and a respective friction element 375, in this example a protrusion of the respective edge of the cover 320. As seen in the enlarged portion C (fig. 8A) illustrated in Figs. 9A to 9C, in the fully closed (Fig. 9A) and a fully open (Fig. 9D) positions the friction system is at rest, namely the friction element 375 and the arresting member 380 are not engaged and at the intermediate positions, the friction element 375 engages the arresting member at various levels of friction force. The arresting element 380 is an outward protrusion, having a shoulder like structure with an undercut 390, such that at the engaged configuration, the friction element 375 glides over and exerts force over the undercut portion 390.

It is appreciated that any one of the containers can be of different type as far as its design, size, purpose and configuration, however each configured for detachably attachable to one another by a locking mechanism as will be discussed herein with greater detail. For example, the containers can be storage units, organizers, a folding chair, a folding work bench, a utility item, e.g. a power generator, etc.

Fig. 10A illustrates an assembly 300 similar to the assembly 200 of Fig. 3, differing in that one of the containers in the assembly is a work bench 400. This work bench, as best seen in Figs. 10B and 10C, is configured with a work unit 420 having a width providing for a side wall and four extendable legs 480, which can be maintained in their folded configuration (as seen in Fig. 10B), within the space defined by the sidewalls of the workbench 400. The two opposite side walls (only 402A clearly seen in the illustrations), each comprise an arresting member 460A and 460B and a latch member 450. To lock the work bench to the other assemblies C and B, the latch member 450 of the workbench 400 at the bottom is pivoted to the second position and snapped to engage the retaining member 360 of the container provided on the top. As in the previous example, this locking engagement allows securing the two assemblies together and facilitates secure storage and transport of the resultant system of two assemblies.

It will be appreciated that any other container can be stacked in the assembly provided the locking arrangement thereof is aligned with the locking arrangement of at least one other container/assembly in the system. The term *container* as used herein denotes any type of container, or work unit, which can be used as a tool caddy, organizer, traveler bag, cosmetics bag, storage containers, locomoting containers, etc. the term *container* includes also units used in conjunction with a tool caddy, such as a work bench, etc.

CLAIMS:

1. A container assembly comprising a container for storage and transport of goods comprising at least one side wall and a bottom wall defining together an interior space and a cover for closing the opening, having a top surface, wherein the cover comprises at least one latch member movable between at least a first position and a second position and wherein the container comprises a retaining member on the at least one side wall and positioned parallel to the latch member such that the latch member is configured for engaging with a retaining member of another container to connect the container to the at least one other container.

2. A container assembly system comprising at least one first container and at least one second container, detachably attachable to one another by a locking mechanism, the locking mechanism interacts between the at least one first container and at least one second container wherein the at least one first container is configured at a top portion thereof with a pivotable latch member, and the at least one second container is configured at a corresponding bottom portion thereof with an retaining portion, wherein said latch member is pivotable between a locked position at which it engages said retaining portion, and an unlocked position at which it is pivotally displaced into disengagement from said retaining portion.

3. A container assembly in accordance with claim 1 or 2, wherein the at least one latch member can constitute a handle for the container assembly.

4. The container in accordance with any one of the preceding claims, wherein the cover is pivotally connected to a rear side of the container portion.

5. The container in accordance with any one of the preceding claims, further comprising a carrying handle located on the container portion or the cover portion.

6. The container in accordance with any one of the preceding claims, wherein the latch member is pivotably connected through at least one hinge.

7. The container in accordance with any one of the preceding claims, wherein the interior space of the container is divided into a plurality of compartments.

8. The container in accordance with any one of the preceding claims, wherein the latch member and the engaging member are constructed and arranged to be spaced apart such that they are positioned to be vertically aligned with respect to one another.

9. The container in accordance with any one of the preceding claims, wherein the retaining member is an outwardly protruding hook like member configured and shaped to hold and\or catch and prevent movement of the latch member when locked thereon.

10. The container in accordance with any one of the preceding claims, wherein the latch member is configured to pivot in a clockwise and a counterclockwise manner.

11. A container comprising at least one side wall comprising thereon at least one latch member movable between at least a first position and a second position and a retaining member positioned parallel to the latch member, wherein the latch member is configured between a resting position and a position for engaging with a retaining member of another container to connect the container to the at least one other container and wherein the at least one latch member constitutes a handle for the container assembly.

12. A container assembly comprising a container and a hinged lid member configured to cover the container, wherein the hinge area further comprises at least one arresting member and a friction member such that the lid has a closed and an open configurations wherein the arresting member and the friction element are disengaged and intermediate positions configured between the open and closed configurations wherein the friction element engages the arresting member.

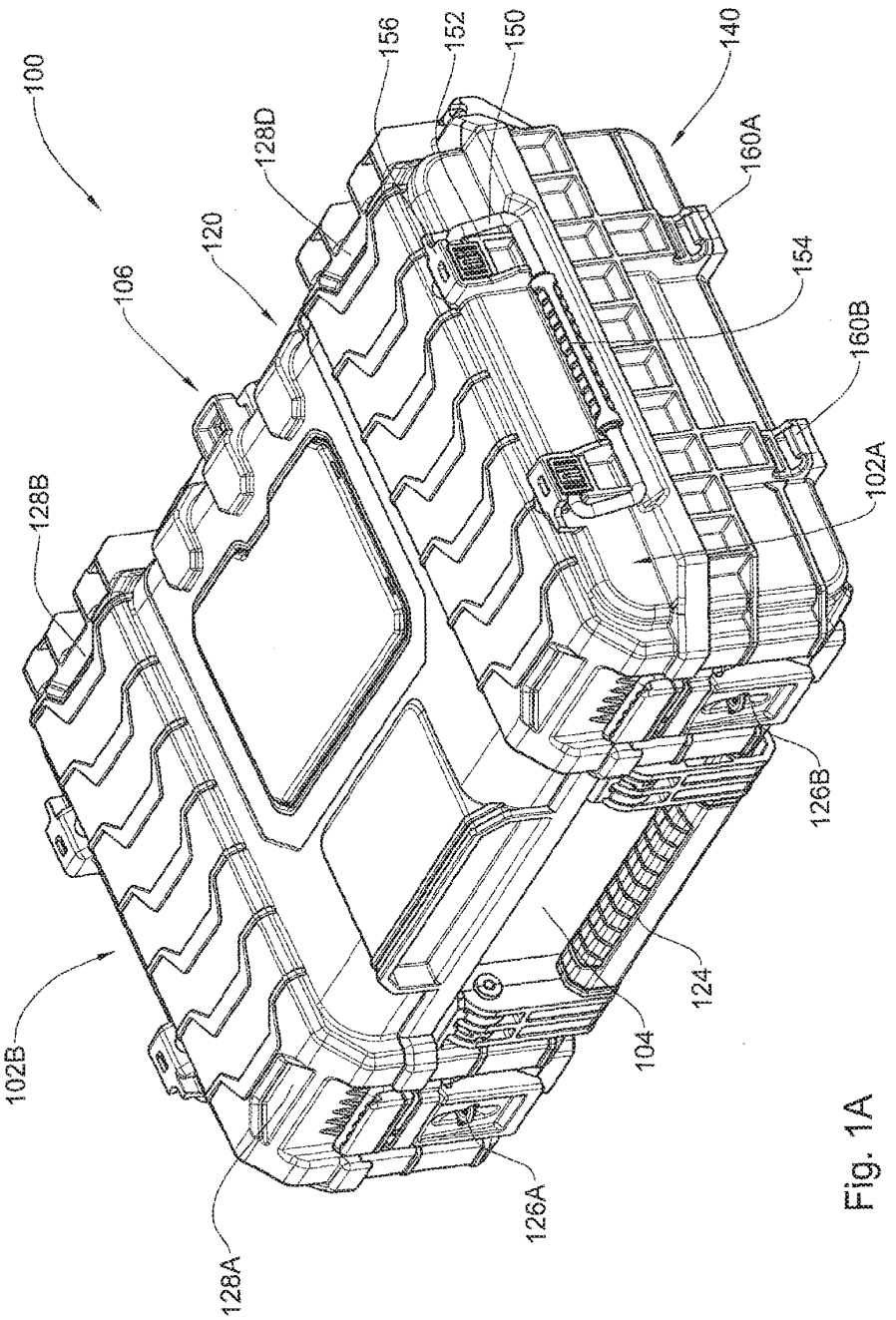


Fig. 1A

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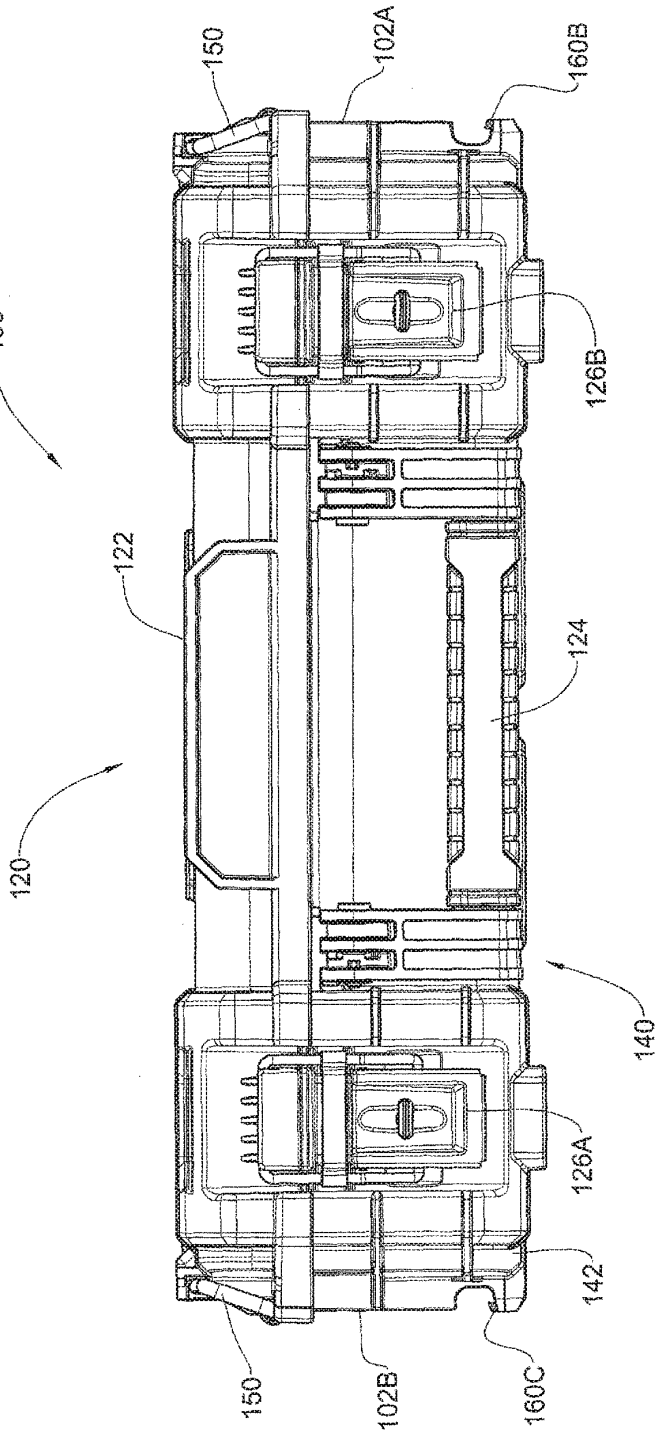


Fig. 1B

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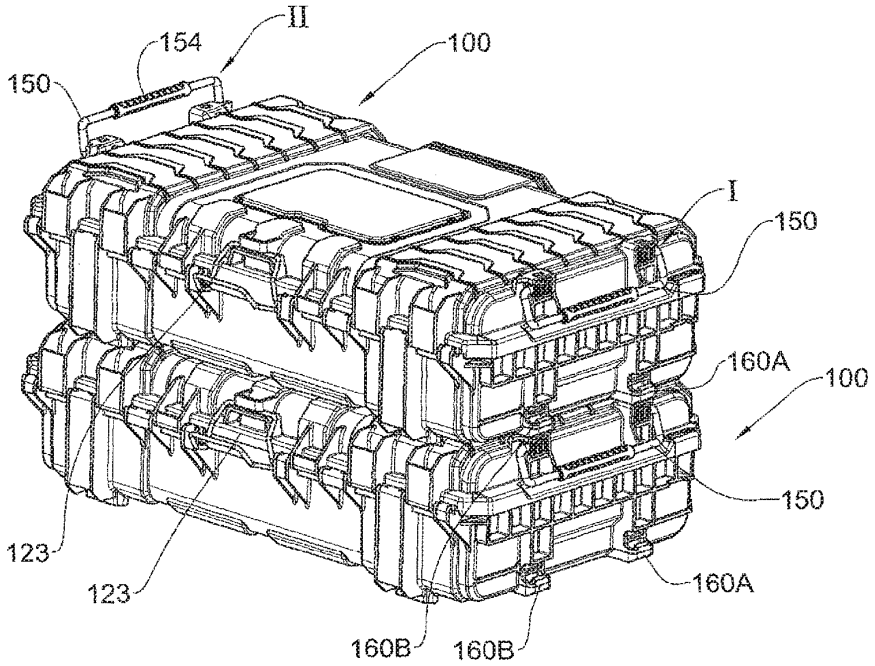


Fig. 2A

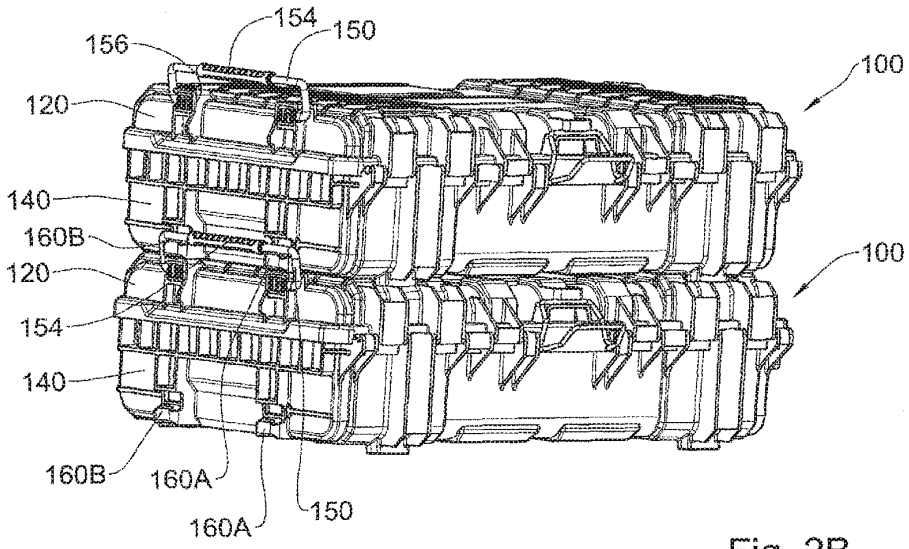


Fig. 2B

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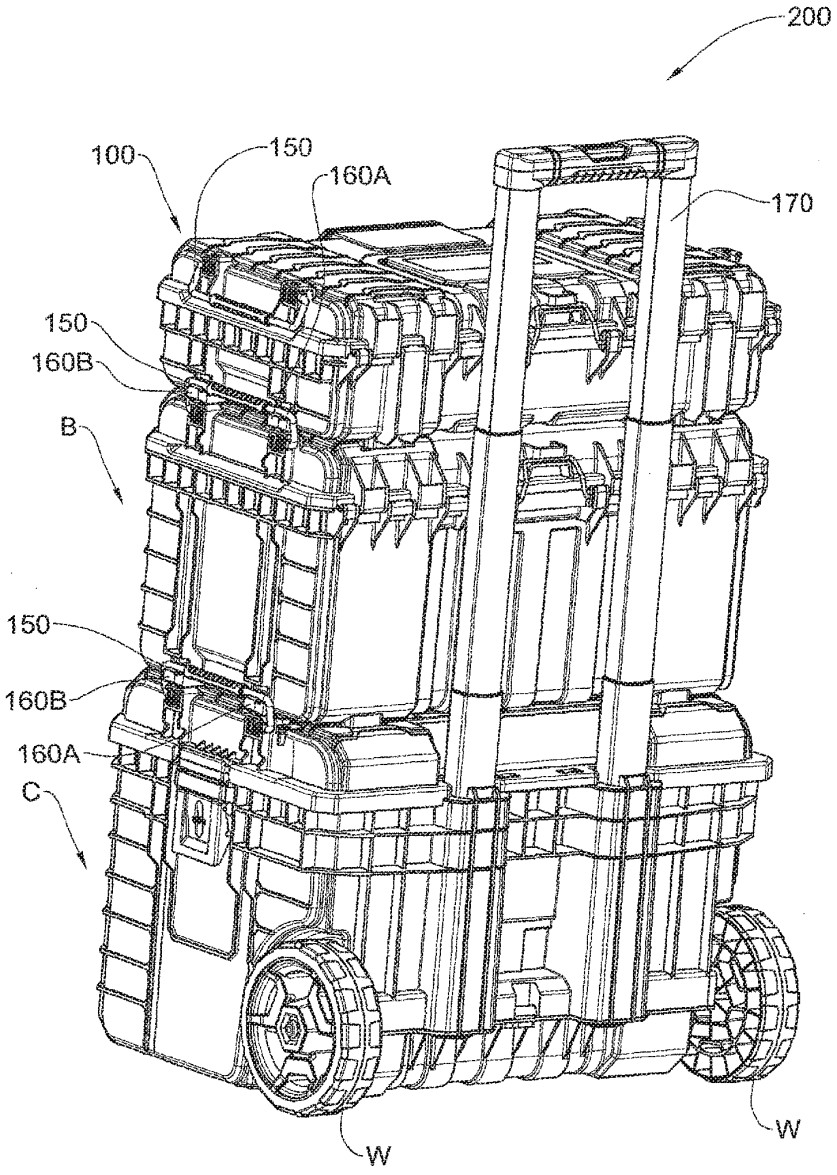


Fig. 3

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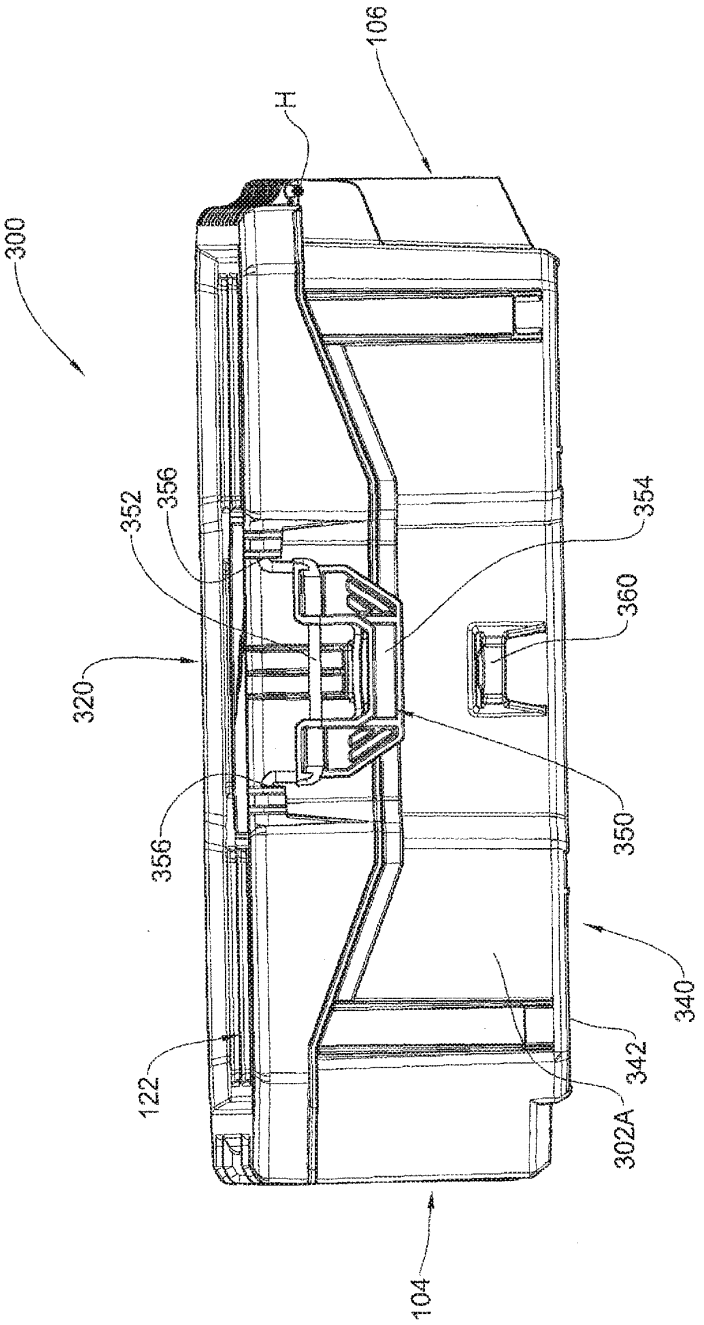


Fig. 4

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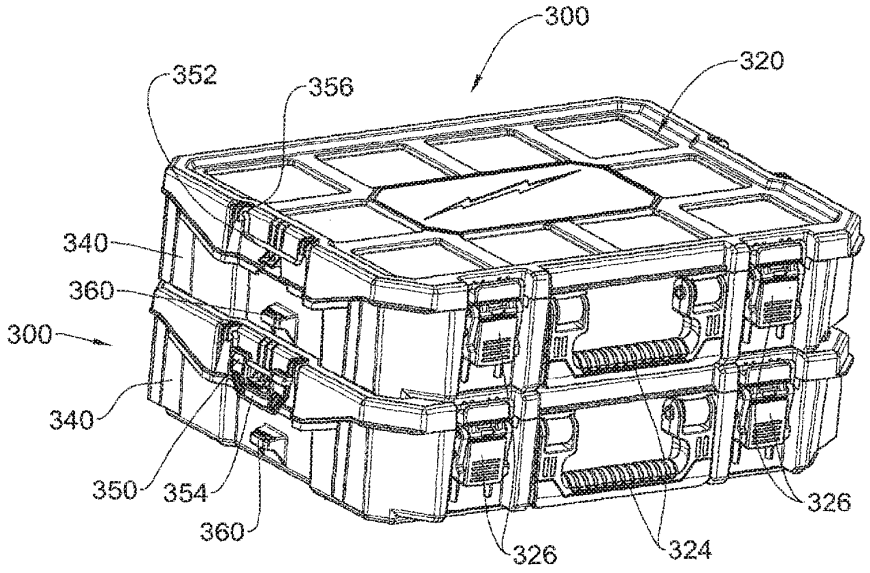


Fig. 5A

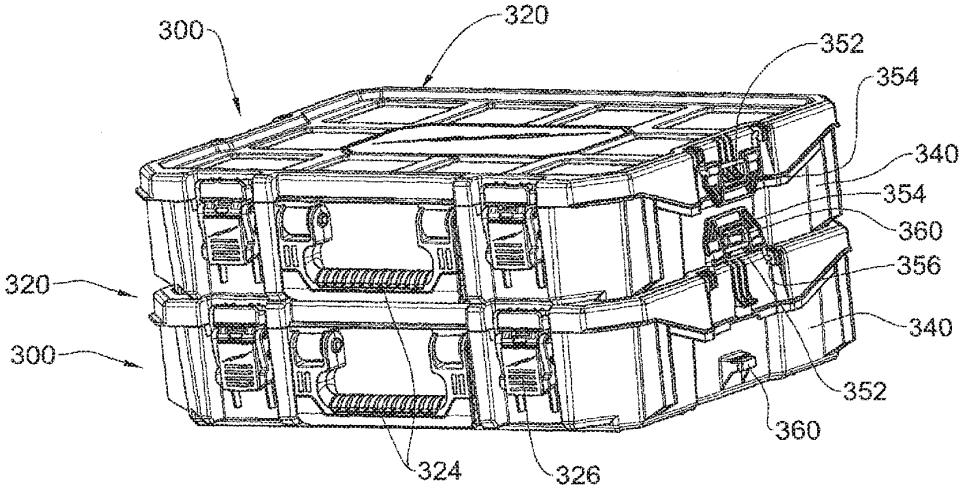


Fig. 5B

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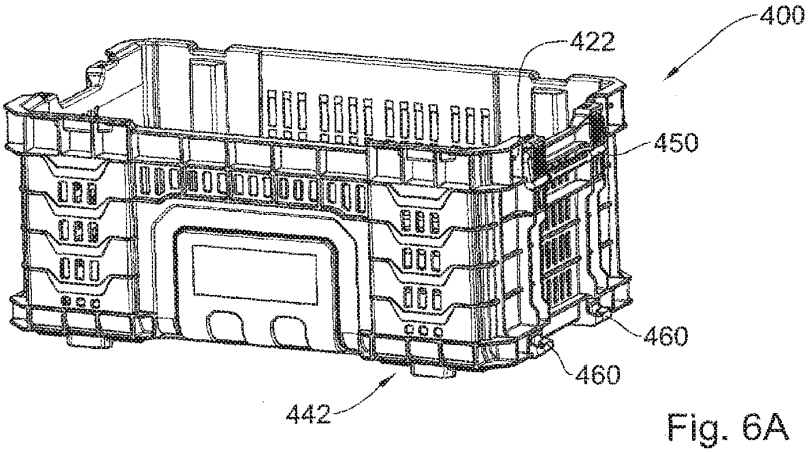


Fig. 6A

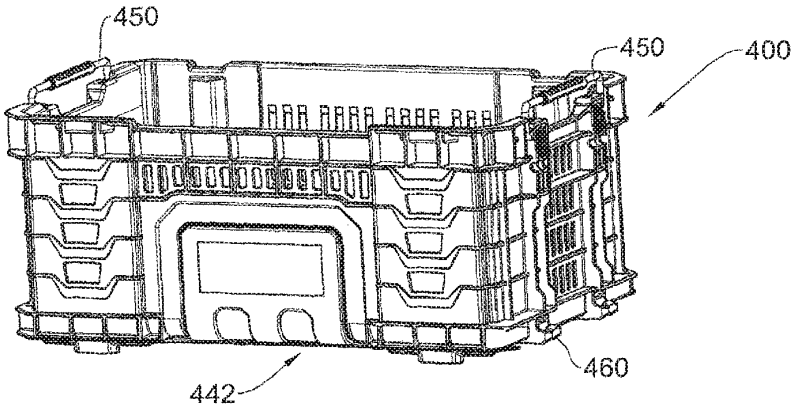


Fig. 6B

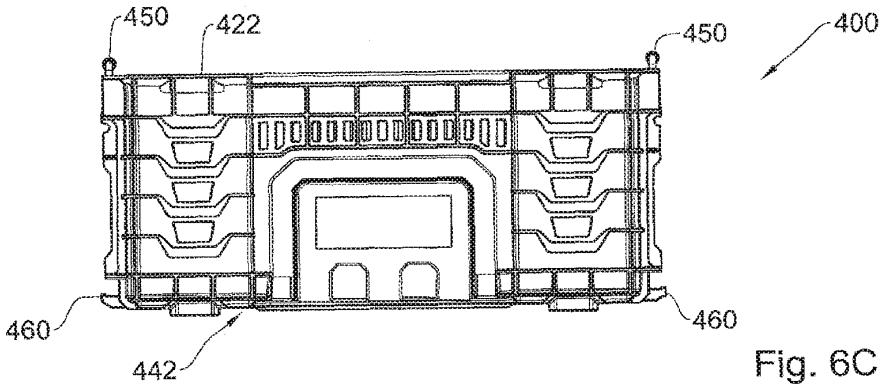


Fig. 6C

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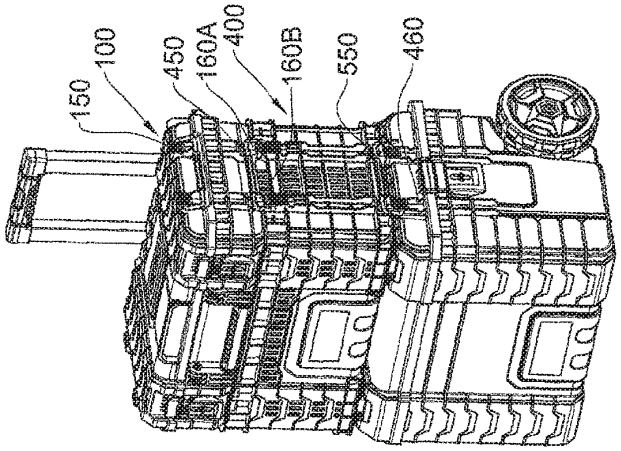


Fig. 7C

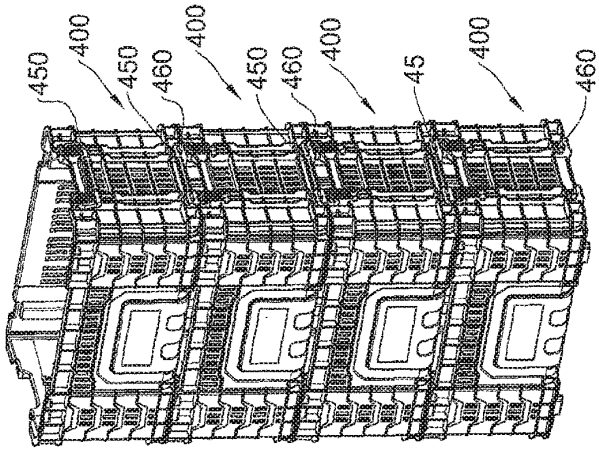


Fig. 7B

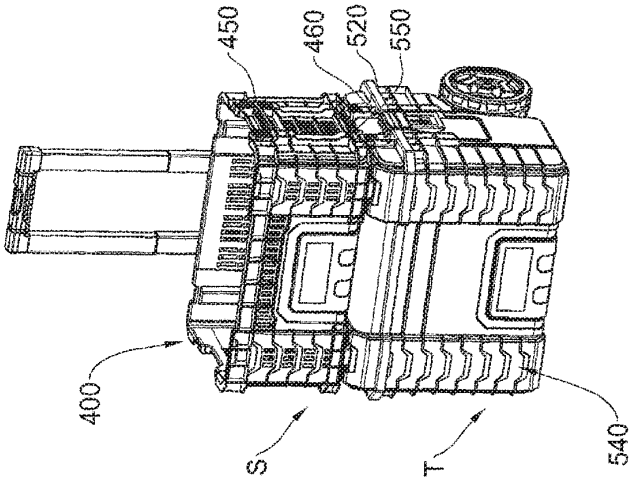


Fig. 7A

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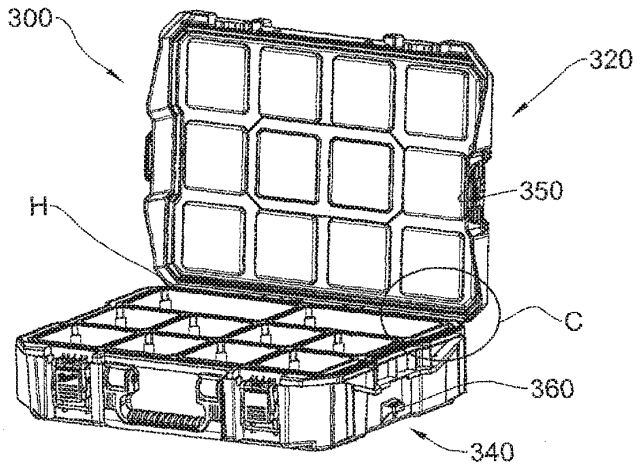


Fig. 8A

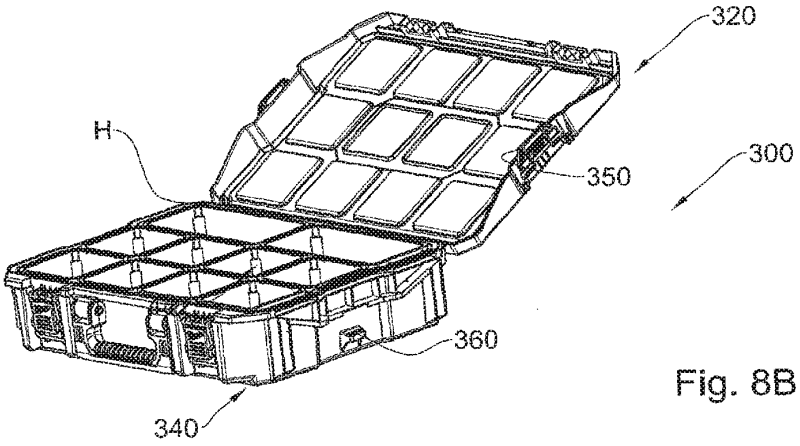


Fig. 8B

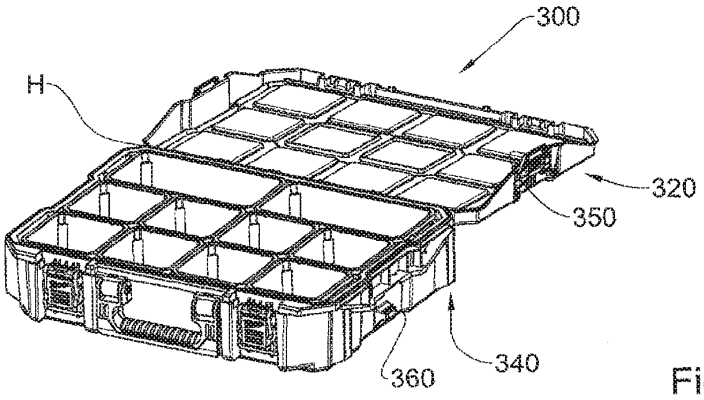


Fig. 8C

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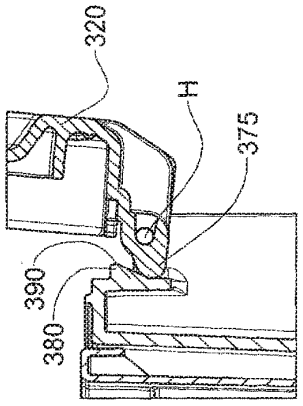


Fig. 9B

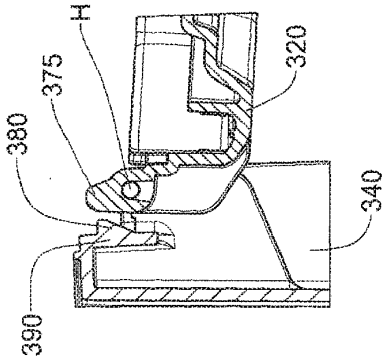


Fig. 9D

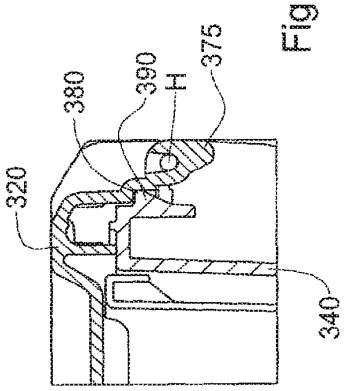


Fig. 9A

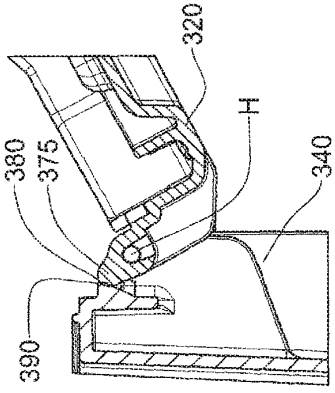


Fig. 9C

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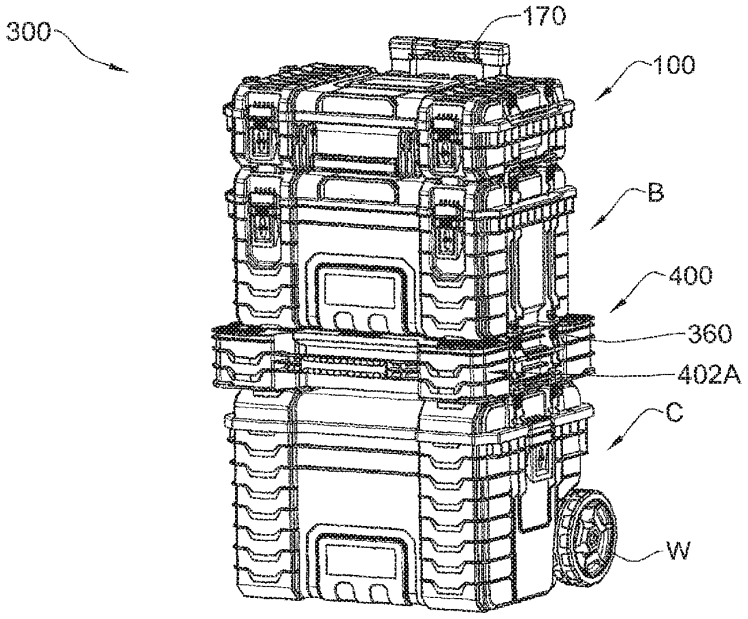


Fig. 10A

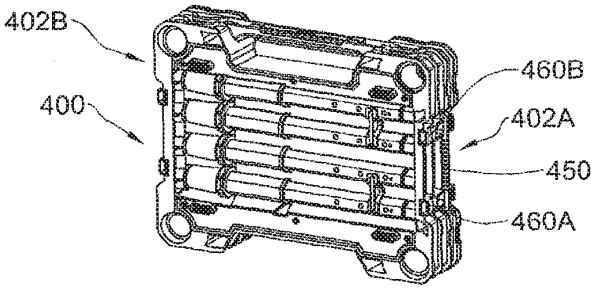


Fig. 10B

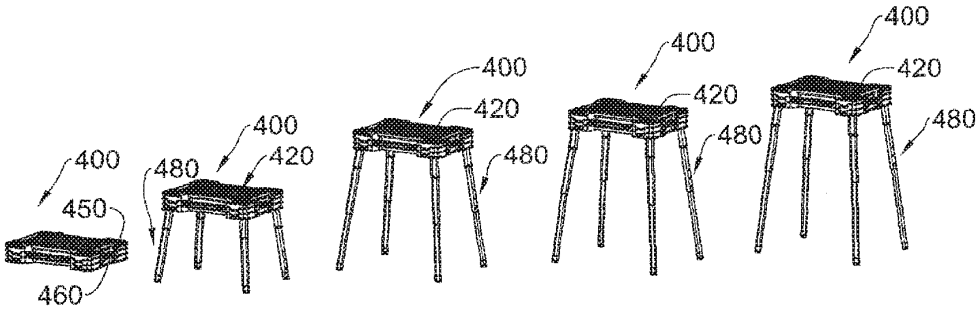


Fig. 10C

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2016/050250

A. CLASSIFICATION OF SUBJECT MATTER
IPC (2016.01) B65D 21/036

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 (2016.01) B65D 21/036

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: THOMSON INNOVATION

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 102007032382 A1 PIACENZA MARCO ALESSANDRO 17 Jan 2008 (2008/01/17) abstract and figures	1-4,6-11
X	US 8875888 B2 KOENIG ANDREAS 04 Nov 2014 (2014/11/04) the entire document	1,2,4-10
X	US 7905353 B2 BAKER TERRY L 15 Mar 2011 (2011/03/15) the entire document	2,3,6-11
X	US 6082539 A LEE PEI-LING 04 Jul 2000 (2000/07/04) the entire document	2,4-10

☐ 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
15 Jun 2016	15 Jun 2016
Name and mailing address of the ISA: Israel Patent Office Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel Facsimile No. 972-2-5651616	Authorized officer NARGASI Ayelet Telephone No. 972-2-5651620

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

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2016/050250

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.:
1-11

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
Information on patent family members

International application No.
PCT/IL2016/050250

Patent document cited search report	Publication date	Patent family member(s)	Publication Date
DE 102007032382 A1	17 Jan 2008	DE 102007032382 A1	17 Jan 2008
		IT MI20061347 A1	13 Jan 2008
US 8875888 B2	04 Nov 2014	US 2011155613 A1	30 Jun 2011
		US 8875888 B2	04 Nov 2014
		AT 546373 T	15 Mar 2012
		CA 2735679 A1	06 Jan 2011
		CN 102137795 A	27 Jul 2011
		CN 102137795 B	06 Mar 2013
		EP 2315701 A1	04 May 2011
		EP 2315701 B1	22 Feb 2012
		WO 2011000385 A1	06 Jan 2011
US 7905353 B2	15 Mar 2011	US 2008000899 A1	03 Jan 2008
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		CN 101558213 A	14 Oct 2009
		EP 2035639 A2	18 Mar 2009
		JP 2009542537 A	03 Dec 2009
		WO 2008005665 A2	10 Jan 2008
		WO 2008005665 A8	20 Mar 2008
		WO 2008005665 A3	20 Nov 2008
US 6082539 A	04 Jul 2000	US 6082539 A	04 Jul 2000
		DE 29900082 U1	08 Apr 1999

Form PCT/ISA/210 (patent family annex) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2016/050250

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 stackable container assembly with a locking mechanism	Claim/s 1-11
Invention/s 2	A container comprising a lid configured between closed, intermediate and open positions	Claim/s 12

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

Stackable suitcase, arrangement comprising two suitcases stacked one above the other and method for stacking two suitcases

The invention relates to a suitcase for stacking with a further suitcase. The invention also relates to an arrangement with at least two suitcases stacked one above the other. In addition, the invention relates to a method for stacking at least two suitcases.

Suitcases are usually used for transporting and/or storing objects, such as tools. Frequently, the suitcases are configured to be stackable so that several suitcases can be stacked one above the other, for example. Such suitcases usually have fastening means for holding a stacked suitcase.

It is the object of an embodiment of the invention to propose at least one option to enable stacking a suitcase above a further suitcase and mutual fastening of the suitcases in the stacked state in a user-friendly and easy to handle manner.

This object is achieved by a suitcase which has the features of claim 1. Furthermore, to achieve the object, an arrangement with at least two stacked cases is proposed, which has the features of claim 17. In addition, to achieve the object, a method for stacking at least two suitcases is proposed, which has the features of claim 18.

Advantageous embodiments of the invention will be apparent from the dependent claims, the following description and the figures.

According to an embodiment of the invention, a suitcase is provided for stacking with another suitcase. The suitcase has a contact surface for stacking the further suitcase, and at least one coupling part, which can be brought together with a matching coupling part of the further suitcase to form a plug-in connection. The coupling part is aligned such that the plug-in connection with the matching coupling part is formed by displacing the further suitcase along the contact surface.

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Furthermore, the suitcase has at least one locking element to secure the plug-in connection against being released, in particular against being arbitrarily released. In particular, the locking element is movably supported on the suitcase, in particular fastened at or formed on the suitcase, for example molded. It is provided that the locking element can be moved from an initial position to an intermediate or end position, in particular can be moved guided by force, and, in the initial position, it is located in a receiving region for the further suitcase, the receiving region being used when or for placing the further suitcase on the contact surface.

In the case of such a suitcase, the further suitcase can be stacked in a user-friendly and easy to handle manner, and fastening the stacked further suitcase can be implemented in a user-friendly and easy to handle manner. By the coupling part provided for forming a plug-in connection a coupling connection of the suitcase with the further suitcase can be effected by means of simply inserting in or attaching the coupling part to the matching coupling part of the further suitcase. The formation of the plug-in connection is facilitated by the particular design of the coupling part, which supports user-friendliness and ease of handling. For it is permitted, in particular exclusively permitted, that the plug-in connection of the coupling part with the matching coupling part is effected by a directed movement, in particular a guided movement, namely by displacing the further suitcase along the contact surface. The coupling part can be an insertion receptacle. In this respect, the matching coupling part can be an insertion element, preferably corresponding to the insertion receptacle, which can be inserted into the insertion receptacle. Conversely, the coupling part can form an insertion element and the matching coupling part can form the insertion receptacle for the insertion element.

By means of the locking element provided, it is possible to effectively secure the plug-in connection of the coupling part to the matching coupling part of the further suitcase against separating, in particular pulling apart opposite to the assembly direction. By the locking element, in the initial position, being in the receiving region for the further suitcase it is effected that the further suitcase comes into contact with the locking element and actuates the locking element and thus causes a movement of the locking element when the further suitcase carries out a placement movement towards the contact surface, and in doing so reaches the receiving region. As a result, the placement movement carried out by the further suitcase is also used for actuating the locking

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element. This saves a separate manual actuation by a user. Therefore, this measure also aims at supporting user-friendliness and ease of handling.

In a technically simple manner, a contact of the locking element with the further suitcase can be effected in the course of its placement movement, when, in the initial position, the locking element projects beyond a bottom surface of the receiving region and/or, in the initial position, the locking element extends across the bottom surface and/or, in the initial position, the locking element is raised above the bottom surface of the receiving region.

For example, it is provided that, in the initial position, an end of the locking element is projecting beyond a bottom surface of the receiving region and, in the intermediate or end position, the one end of the locking element is lowered relative to the initial position. Then, in the intermediate or end position, the locking element has been brought, for example, outside the receiving region thus enabling placing the further suitcase on the contact surface and/or displacing the placed further suitcase to form the plug-in connection.

It may be provided that the bottom surface of the receiving region forms at least a part of the contact surface. As a result, the receiving region serves as a region in which the further suitcase is placed.

According to an embodiment of the invention, it is provided that the locking element can be moved in a spring-loaded manner. In this way, the energy from a movement of the locking element can be stored in a technically simple manner.

For example, it is provided that the locking element can be moved against a spring force from the initial position to the intermediate or end position. As a result, the locking element is moved back automatically by the spring force from the intermediate or end position to the initial position and/or in the initial position. This measure also supports user-friendliness and ease of handling.

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It may also be provided that the locking element is held in the initial position in a spring-loaded manner. The locking element is thereby held under spring preload in the initial position. This counteracts any possible unwanted wobbling of the locking element in the initial position.

In order to be able to displace the locking element in a spring-loaded manner, a spring element or other energy store is provided, for example. A compression spring can be used. Elastomeric springs, leaf springs, helical springs or springs of a general type can also be used. Torsion or disc springs can also be used.

According to an embodiment of the invention, it is provided that the locking element is configured as a locking slide, which can be displaced from the initial position to the intermediate or end position, in particular can be displaced translationally. Such a locking element can be implemented in a technically relatively simple manner.

The locking element, configured as a locking slide, can have or consist of a holding part or a bottom part that is fixedly arranged in a housing in relation to the suitcase, and a sliding part, in particular a sliding latch, which is movably supported thereon. The holding part is arranged on the suitcase, in particular attached thereto or formed thereon, such as, for example, molded or shaped.

The locking slide can be implemented in a technically simple manner when the holding part and the sliding part are formed with a U-shaped cross-section and are inserted oppositely into one another, wherein a compression spring is arranged between the legs of the parts, which on the one hand bears against a bottom surface of the one holding part and, on the other hand, bears against a bottom surface of the sliding part. In this embodiment of the locking slide, the legs of the holding part and of the sliding part ensure in a simple manner a guided movement of the sliding part relative to the holding part.

It should be understood that the displacement of the sliding part relative to the holding part is limited by a stop. This ensures that the displacement movement of the locking slide takes place and remains within predetermined limits.

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In another embodiment of the invention it is provided that the locking element is configured as a pivot lever which can be pivoted about a pivot axis from the initial position to the intermediate or end position, in particular a pivot axis fixed on a housing. The locking element can also be configured as a rotary lever which can be rotated about an axis of rotation from the initial position to the intermediate or end position, in particular an axis of rotation fixed in a housing. In principle it is also possible that the locking element has a rotary closure or is formed by a rotary closure which can be rotated relative to a base part, in particular a base part fixed on a housing, from the initial position to the intermediate or end position.

According to one possible embodiment, the suitcase has an upper side, a lower side, a front side and a rear side, wherein the extension of the suitcase from the front side to the rear side forms a longitudinal extension. In particular, the upper side and the lower side are located opposite one another and form, for example, flat sides or surface sides. In particular, the front side and the rear side are located opposite one another and form narrow sides, for example. In particular, the upper side and the lower side are arranged transversely with respect the front side and the rear side, in particular, arranged at a right angle to one another.

According to an embodiment of the invention, it is provided that the contact surface is associated with the upper side and a carrying handle is arranged on the front side of the suitcase so that the rear side is facing downwards on carrying the suitcase by the carrying handle. Thereby, the suitcase is in the upright position when the suitcase is held by the carrying handle. The coupling part of the suitcase and the matching coupling part of the further suitcase are then to be hooked to one another in order to form the plug-in connection, since the contact surface is a laterally disposed side surface. In this respect, the plug-in connection forms a hook-in connection.

For example, it is provided that the hook-in connection is formed by means of a hook-in projection with a hook-in orifice and a, for example, lobe-shaped hook-in flap which can be brought into engagement with the hook-in orifice. The coupling part can form the hook-in projection and the matching coupling part can form the hook-in flap. Also, the coupling part can form the hook-in flap and the matching coupling part can form the hook-in projection.

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The hook-in flap can be chamfered. In addition, the hook-in orifice or the hook-in projection can have at least one insertion chamfer in order to enable a displacement-secured and relatively clearance-free hook-in connection between the associated suitcases or suitcase surfaces.

A possible embodiment of the invention is that a suitcase has a lower part and a lid part pivotably arranged thereon, wherein the upper side of the suitcase being formed by the lower side of the lid part and the lower side of the suitcase being formed by the lower side of the lower part, and the carrying handle being arranged on the lower part. The locking element is then associated with the lid part, for example.

A further embodiment of the invention is that the coupling part is directed towards the carrying handle, so that the plug-in connection with the matching coupling part of the further suitcase is formed by displacing the further suitcase away from the front side towards the rear side of the suitcase. In this way, the plug-in connection supports the coupling of the suitcase with the further suitcase when the suitcase is carried by the carrying handle, since the weight force of the further suitcase acts on the coupling part of the suitcase in the plug direction. For the weight force acts in the insertion direction which is directed away from the carrying handle towards the rear side of the suitcase.

According to a further embodiment of the invention, it is provided that the receiving region for the further suitcase is associated with the upper side and the locking element is arranged in the region of the front side and, in the initial position, projects from the upper side.

It should be understood that the upper side of the suitcase has at least one transverse rib which runs transversely to the longitudinal extension of the suitcase and has a side surface projecting outwardly and facing the front side. The side surface can be used as a stop for the further suitcase, for example when the suitcase is held by its carrying handle and therefore, the upper side of the suitcase is oriented sideways because of its upright position. In this case, the matching surface of the further suitcase may bear against the side surface of the transverse rib, so as to relieve force from the plug-in connection between the coupling part and the matching coupling part.

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It may be provided that the coupling part is attached to or molded onto the transverse rib. As a result, the stability of the coupling part itself is improved since forces acting on the coupling part are absorbed by the transverse rib.

It may also be provided that the upper side of the suitcase has two transverse ribs each of which is running transversely to the longitudinal extension of the suitcase and having a side surface projecting outwardly and facing the front side, wherein the transverse ribs delimit a transverse groove running therebetween. This measure also aims to accommodate a weight force of the additional suitcase acting on the suitcase and to relieve the plug connection when the suitcase is carried by the carrying handle. For the two transverse ribs provide two side surfaces, on which the further suitcase can bear against a corresponding matching surface.

There is also a high degree of stability if, for example, the suitcase is carried in the opposite direction, in which the carrying handle is then facing downwards. It is for the transverse groove provided that a projection of the further suitcase can engage, so that the further suitcase bears against the suitcase both with downward facing carrying handle and with upward facing carrying handle.

It should be understood that the lower side of the suitcase can be formed corresponding to its upper side, so that the suitcase can be stacked with its bottom side above another suitcase which has an upper side formed corresponding to the suitcase. In particular, the lower side of the suitcase is formed corresponding to the lower side of the further suitcase. It is thereby possible to implement a stacking of any number of suitcases in a simple manner, since the suitcases are formed as identical parts, and thus stacking suitcases downwards and upwards, starting from, for example, a reference suitcase, can take place.

For reasons of stability, according to another embodiment of the invention, two coupling parts are provided each of which can be brought together with an associated matching coupling part of the further suitcase to form a plug-in connection and are aligned such that the plug-in connection with the matching coupling part is formed by displacing the further suitcase along the

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contact surface, wherein the coupling parts being arranged next to one another in relation to the insertion direction or plug-in direction for producing the plug-in connection.

A measure aiming in the same direction, according to a further embodiment of the invention, is to provide at least one further coupling part which can be brought together with an associated matching coupling part of the further suitcase to form a plug-in connection and is oriented such that the plug-in connection to the matching coupling part is formed by displacing the further suitcase along the contact surface, the further coupling part and the coupling part being arranged one behind the other in relation to the insertion direction for producing the plug-in connection.

For example, the coupling part is arranged in the region of the edge of the upper side facing the front side. For example, the further coupling part is arranged in the region of the edge of the upper side facing the rear side. Also, the coupling part and/or the further coupling part can be arranged in a central region of the upper side of the suitcase.

Only the one locking element can be provided. The locking element can also be provided multiple times. In this case, the locking elements may be arranged one behind the other transversely to the longitudinal direction of the suitcase.

The at least one locking element can be integrated in the suitcase itself, for example, can terminate or be flush with the outer surfaces of the suitcase, or lie or terminate behind the same. It can also be provided that the at least one locking element is present in the form of a separate part or unit and, in particular, can be formed integrally or connected in several pieces to the associated suitcase surfaces. In addition, the locking element can be joined to an outer wall of the suitcase as a separate part or a structural unit. This facilitates retrofitting a suitcase with the locking element.

According to a further embodiment of the invention, there is provided an arrangement with at least two suitcases stacked one above the other, wherein at least one suitcase has a contact surface and at least one coupling part, wherein the other suitcase is placed on the contact surface and the coupling part forms a plug-in connection with a matching coupling part of the other

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suitcase, the plug-in connection being formed by displacing the other suitcase along and/or on the contact surface. Furthermore, at least one locking element is provided, which is present in a locking position securing the plug-in connection against being released, in particular against being arbitrarily released. In the locking position, the locking element is located in a receiving region for the other suitcase, which is used when the other suitcase is placed on the contact surface. For example, by the placement of the other suitcase on the contact surface, the locking element is or has been moved from the locking position to an unlocking position in relation to the securing of the plug-in connection and/or in a release position, in which pushing the suitcases together to form the plug-in connection between the suitcases is permitted. The locking position can be an initial position, for example, the initial position described above.

The at least one suitcase with the contact surface and the at least one coupling part can be the suitcase described above. The suitcase of the arrangement stacked above can be the further suitcase described above. In this case, the locking position corresponds to the initial position of the suitcase described above and the unlocking position and/or the release position to the intermediate or end position described above.

For example, in the placed suitcase, a surface or a surface section is or can be used as a stop surface, which, in the locked position of the locking element, abuts or can abut the locking element. The stop surface can be provided, in particular formed, on an end side, for example, on the front side of the stacked suitcase. The stop surface can also be formed by a recessed surface or a surface which is provided with an insertion chamfer so as to achieve additional preloading of the locking element on the plug-in connection or hook-in connection between the stacked suitcases.

The locking element can have a substantially rectangular profile, so as to secure the plug-in connection between the coupling part and the matching coupling part with some clearance so that the coupling part and the matching coupling have some movement relative to one another when the plug-in connection is formed, for example, a clearance in the plug-in direction of, for example, about 1 to 2 mm, without the plug-in connection opening up, for example, manually decoupling.

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It may also be provided that the locking element itself, or the stop surface the locking element abuts in the locking position, or which can be used as a stop, is wedge-shaped, so that the locking element is additionally preloading the plug-in connection in the plug-in direction or insertion direction and secures against the movement of the two stacked cases relative to one another in the plug-in direction.

The invention also comprises a method for stacking at least two suitcases. At least one of the suitcases may be the suitcase described above. Both suitcases, in particular all suitcases, can also be formed by the suitcase described above.

The method provides that one of the suitcases is placed on a contact surface of the other suitcase, and the suitcase is subsequently displaced to a plug-in connection with the other suitcase on a displacement path and along the contact surface, wherein by the placement of the suitcase above the other suitcase a moveable locking element is actuated by the suitcase moving the locking element from an initial position in an intermediate or end position. In the initial position, the locking element is in a locked state or locked position, wherein the locking element engages the displacement path for the further suitcase. In the intermediate or end position, the locking element is in a release position in which the locking element releases the displacement path.

This makes it possible for the suitcase to come into contact with the locking element and to actuate the locking element and thus to cause a movement of the locking element when the suitcase carries out a placement movement towards the contact surface and thereby reaches the receiving region. Thus, the placement movement carried out by the suitcase is also used to actuate the locking element. This saves a separate manual actuation by a user. This yields advantages in terms of operation and handling.

Furthermore, the invention relates to a use of a suitcase described above for the transport and/or storage of tools and/or craftsman's materials.

In the course of the invention, the term "suitcase" is used broadly. In particular, the suitcase is a container. The suitcase can be a container, for example closed on all sides, provided with a lid.

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The lid may be pivotally arranged on the container. The containers and the lid can also be present without such a connection. The suitcase that can be placed on the suitcase can be formed in the same way. It is also possible for the placeable suitcase to be formed as a semi-open shell or as a plate, in particular an adapter plate.

The suitcase is particularly suitable to transport and/or store objects. For example, the suitcase is a toolbox which serves or can be used for storing and/or transporting tools, material and/or devices.

By means of the invention it is possible that two cases stacked one above the other are brought into a coupling connection, for example a plug-in connection or a hook-in connection, wherein the bottom surface of the upper suitcase is placed on the ceiling surface of the lower suitcase and a displacement of the two suitcases hook-in connection or coupling is produced between the two suitcases.

By means of the invention, securing of the plug-in connection or coupling connection can take place by at least one locking element, such as, for example, a spring-loaded locking slide, which is arranged, for example, on the lower suitcase and which can be actuated by the bottom surface of the upper suitcase. By means of the invention it can also be realized that, after actuation, the locking element abuts a stop surface of the upper suitcase thus securing the hook-in connection or plug-in connection between the two suitcases against unintentional unhooking.

By means of the invention, the locking element can be arranged in the front region of the respective lower suitcase and, for example, can be formed by a locking element that can be displaced out of upper side or the ceiling surface such that the locking element, in a locking position or in a securing state, abuts an associated stop surface on the suitcase lying above, securing against decoupling of one suitcase from the other suitcase. To release this secured hook-in connection or plug-in connection, the locking element can be actuated manually to bring the locking element from the initial position or locking position or securing position in an intermediate or end position and/or unlocking position and/or opening position and thus disengaging the associated stop surface on the opposite suitcase part.

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Further objectives, advantages, features and possible uses of the present invention become apparent from the following description of several exemplary embodiments with reference to the drawing. All the described and/or pictorially illustrated features, individually or in any suitable combination, form the subject matter of the present invention, independently of how they are combined in the claims or references thereof.

Fig. 1 shows a possible embodiment of a stackable suitcase in perspective view from above,

Fig. 2 shows the suitcase according to Figure 1 in a perspective view from below,

Fig. 3 shows a modification of the suitcase according to Figures 1 and 2, above which a further suitcase is stacked, in a first assembly state in relation to the stacking, illustrated in a sectional view of the two suitcases,

Fig. 4 shows the two suitcases according to Figure 3 in a second assembly state in which the further suitcase is stacked above the suitcase,

Fig. 5 shows the two suitcases according to Figure 3 in a third assembly state, in which the further suitcase is stacked above the suitcase and brought in a fastening position against the suitcase,

Fig. 6 shows a schematic representation of the locking principle as can be seen in Figures 3 to 5,

Fig. 7 shows the locking principle according to Figur 6 in the locked state,

Fig. 8 shows, in a schematic representation, a further possible embodiment of a stackable suitcase with a locking element in the form of a pivot lever,

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Fig. 9 shows a further possible embodiment of a suitcase above which a further suitcase is stacked, in a first assembly state in relation to stacking, illustrated in a sectional view of the two suitcases.

Figures 1 and 2 show – in a schematic representation - a possible embodiment of a stackable suitcase 1 in a perspective view from above (Figure 1) and in perspective view from below (Figure 2). The suitcase 1 is usable for transporting and/or storing objects. For example, the suitcase 1 is a toolbox, which is used, for example, for transporting and/or storing tools and/or material and/or devices of a craftsman or technician.

The suitcase 1 has an upper side 41, a lower side 42, a front side 43 and a rear side 44. Preferably, the extension of the suitcase 1 from the front side 43 to the rear side 44 forms a longitudinal extension, which is also indicated as Y direction in Figure 1. Preferably, the extension of the suitcase 1 from the lower side 42 to the upper side 41 forms a vertical extension, which is indicated as Z direction in Figure 1. The extension of the suitcase 1 transversely to the longitudinal extension is indicated as X direction in Figure 1.

The suitcase 1 preferably has a lid part 2 and a lower part 4 which can be covered by the lid part 2. Preferably, the upper side 41 of the suitcase 1 is formed by the upper side of the lid part 2 and the lower side 42 of the suitcase 1 is formed by the lower side of the lower part 4. The lid part 2 can be pivotally connected to the lower part 4, for example pivotally supported on the lower part 4 by means of an in particular horizontal hinge axis 3 which is associated with the rear side 44, for example. In order to secure the lid part 2 against unintentional opening in relation to the lower part 4, closure elements 16, such as, for example, closure latches may be provided. Preferably, the closure elements 16 are associated with the front side 43.

Preferably, the suitcase 1 has a carrying handle 19. Preferably, the carrying handle 19 is arranged on the front side 19 so that the rear side 44 is facing downwards when the suitcase 1 is carried by the carrying handle 19. Preferably, the carrying handle 19 is pivotally supported on the front side 43. The carrying handle 19 can be associated with the lower part 4 or the lid part 2, in particular arranged thereon. On the front side 43, suitcase 1 can have an abutting surface which

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the carrying handle 19 abuts or can abut. Preferably, the abutting surface is offset to the rear in the Y direction. In principle, also at least one further carrying handle may be provided, which is associated to the upper side 41, for example.

The suitcase 1 is suitable for stacking with at least one further suitcase. For this purpose, the suitcase 1 has a contact surface 13 for the further suitcase and at least one, preferably at least two coupling parts 10, 11, each of which can be brought together with an associated matching coupling part of the further suitcase to form a plug-in connection. Figure 3 shows, for example, a further suitcase 1a, which can be stacked above the suitcase 1. The further suitcase has at least two matching coupling parts 28a, 29a, which can be brought together with the coupling parts 10, 11 of the suitcase 1 to form a plug-in connection. In the course of the further description of the suitcase 1 with regard to the functions which have been provided for stacking a further case, the suitcase 1a of Figure 3 will be used.

In the suitcase 1, it is provided that the plug-in connection with the further suitcase 1a can be carried out only after the placement of the further suitcase 1a on the contact surface 13. For this purpose, the coupling parts 10, 11 are aligned such that the plug-in connection to the respectively associated matching coupling part 28a and 29a is formed by displacing the further suitcase along and/or on the contact surface 13.

The coupling elements 10, 11 are preferably arranged in the longitudinal direction or Y direction such that the insertion connection is formed by displacing the further suitcase 1a away from the front side 43 towards the rear side 44 of the suitcase 1. For example, the coupling parts 10, 11 are each formed as an insertion receptacle and the matching coupling parts 28a, 29a are formed as an insertion element, which can be inserted through an insertion opening 12 into the associated insertion receptacle. For example, the insertion receptacle forms a hook-in projection and the insertion element forms a hook-in flap, which can be hooked against the hook-in projection through the insertion opening 12 which is formed as a hook-in opening. For example, the hook-in flap is formed by a projection or flap projecting outwardly on one side.

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Preferably, the insertion elements or hook-in flaps are wedge-shaped in the insertion direction, so that the insertion elements can be inserted into the associated insertion receptacles without clearance and thus the plug-in connection is secured against displacement in the X direction and in the Y direction. Preferably, the insertion receptacles or hook-in projections have a wedge-shaped profile corresponding to the insertion elements. In addition, the insertion connection secures the respective insertion element and the associated insertion receptacles relative to one another against lifting off in the Z direction.

Preferably, the contact surface 13 is associated with the upper side 41, in particular formed on the upper side 41. Preferably, the coupling parts 10, 11 are associated with the upper side 41, in particular formed on the upper side 41. Preferably, the suitcase 1 has at least one, preferably two transverse ribs 6, 7 on the upper side 41, which run transversely to the longitudinal extension of the suitcase 1, in particular in the X direction, and each having a side surface 45 projecting outwardly and facing the front side 43.

Preferably, the transverse ribs 6, 7 delimit a transverse groove 5 running therebetween. For example, the lid part 2 has a substantially flat part on its upper side, which has the transverse groove 5 in its central region and is delimited laterally by the raised transverse ribs 6, 7. By means of the transverse groove 5, a further suitcase can be stacked, which is shorter in the longitudinal direction relative to the suitcase 1a, wherein then the further suitcase with its rear end facing the rear side 44 of the suitcase 1 can engage or bear against the transverse groove 5 and/or against the side surface 45 of the transverse rib 7.

Preferably, the coupling elements 10, 11 are arranged spaced apart from one another in the transverse direction or X direction. Preferably, the coupling parts 10, 11 are respectively connected to the transverse rib 6 or molded onto the transverse rib 6. Preferably, two further coupling parts 10', 11' are provided, each of which can be brought together with an associated further matching coupling part 24a or 25a of the further suitcase 1a to form a plug-in connection and are aligned such that the plug-in connection with the associated matching coupling part 24a or 25a is formed by displacing the further suitcase 1a along and/or on the contact surface 13. Preferably, the further

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coupling parts 10', 11' and the coupling parts 10, 11 are arranged one behind the other in relation to the insertion direction for producing the plug-in connection, that is to say in the Y direction.

Preferably, the coupling parts 10, 11 are arranged adjacent to a receiving region 8 for the further suitcase 1a, in particular in the Y direction adjacent to the receiving region 8. Preferably, the further coupling parts 10', 11' are arranged adjacent to a further receiving region 9 for the further suitcase 1a, in particular in the Y direction adjacent of the further receiving region 9. Preferably, the receiving region 8 is arranged on the upper side 41 in the front region, which is located, for example, in the peripheral region of the front side 43. Preferably, the further receiving region 9 is arranged on the upper side 41 in the rear region, which is located, for example, in the peripheral region of the rear side 44.

Preferably, the additional suitcase 1a in each case has a corresponding base strip 22a, which extends for example in the transverse direction or X direction and protrudes downwardly, for receiving in the receiving region 8 and the further receiving region 9. The base strip 22a in each case can protrude downwardly so far that the further suitcase 1a is placed on the bottom surface 14 of the receiving regions 8 and 9 via the base strips 22a. The bottom surface 14 then forms the contact surface 13. Alternatively, the foot strip 22a in each case can protrude downwardly so far that the further suitcase 1a is placed on the transverse ribs 6, 7, and the foot strips 22a are spaced from the bottom surface 14 of the receiving regions 8 and 9 or likewise are placed on the bottom surface 14 of the receiving regions 8 and 9. In this case, the upper side of the transverse ribs 6, 7 at least partially forms a contact surface for the further suitcase 1a.

Preferably, the base strips 22a run transversely to the longitudinal extension of the further suitcase 1a and delimit a disengaged position 21a running therebetween, which is formed, for example, as a transversely running groove. The disengaged position 21a is provided, for example, to receive the transverse ribs 6, 7 of the suitcase 1. Preferably, the base strips 22a terminate approximately with the rear wall 23a and the front side 43a of the further suitcase 1a. Preferably, the base strips 22a are continuous. In principle, the base strips 22a can also be present only piecewise or can be omitted entirely.

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Preferably, the lower side 42 of the suitcase 1 is formed corresponding to the lower side of the suitcase 1a, so that the suitcase 1 itself can be used for stacking above a suitcase. For this purpose, preferably, the lower side 42 of the suitcase 1 is configured corresponding to its upper side 41. For this purpose, preferably, at least individual ones of the components described in relation to the further suitcase are provided, namely the matching coupling parts 28a, 29a, the further matching coupling parts 24a, 25a, the disengaged position 21a and the rear wall 23a in the suitcase 1 as matching coupling parts 28, 29, further matching coupling parts 24, 25, disengaged position 21 and rear wall 23.

Further, the suitcase 1 has at least one locking element 18 for securing the plug-in connection that can be formed by the coupling parts 10, 11 and the matching coupling parts 28a, 29a, from being released. The locking element 18 can be moved from an initial position A or rest position which is shown in Figure 1, to an intermediate or end position and, in the initial position A, is located in the receiving region 8 for the further suitcase 1a. As a result, it is possible for the locking element 18 to be actuated by the further suitcase 1a when the further suitcase 1a is placed on the contact surface 13. For this purpose, it is preferably provided that, in the initial position A, one end 15 of the locking element 18 projects beyond the bottom surface 14 of the receiving region 8. Preferably, in the intermediate or end position, the end 15 is lowered in relation to the initial position A.

Preferably, the locking element 18 is associated with the upper side 41 and is arranged in the region of the front side 43 of the suitcase 1, for example, of the lid part 2. For example, the locking element 18 is arranged in a recess 17 on the front side 43.

Preferably, the locking element 18 can be moved in a spring-loaded manner. For example, the locking element 18 can be moved from the initial position A against a spring force to the intermediate or end position, so that, for example, the locking element 18 is moved back automatically by the spring force from the intermediate or end position to the initial position.

Figure 3 shows a modification of the suitcase 1 in a sectional view. As can be seen from this Figure, the locking element 18 can be formed as a locking slide which can be displaced from

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the initial position A to the intermediate or end position. For this purpose, a holding part 32 or bottom part can be provided, which is associated with the lid part 2, in particular is connected thereto or molded thereon. The holding part 32 can can have a U-shaped profile or be cup-shaped, wherein a compression spring 31 can be arranged in the recess of the holding part which is open to the top. The compression spring 31 can bear against the inner side of a sliding part 30, in particular a sliding latch, which is guided displaceably on the holding part 32.

Preferably, stops are present in order to prevent the sliding part 30 from being completely pushed out of the holding part 32 having a U-shaped profile by the force of the compression spring 31. Preferably, the sliding part 30 is u-shaped or cup-shaped and is inserted into the holding part 32 with its opening first, wherein the compression spring 31 bearing against the bottom surface of the sliding part 30.

Figure 3 shows a possible first assembly state in relation to the stacking of the further suitcase 1a above the suitcase 1. Figure 4 shows a possible second assembly state, and Figure 5 shows a possible third assembly state. Components of the further suitcase 1a which are identical or functionally identical with components of the suitcase 1 are provided with the same reference numeral and the suffix "a". The further suitcase 1a can be a suitcase identical in construction to the suitcase 1.

In the first assembly state according to Figure 3, the further suitcase 1a has been brought in a position in relation to the suitcase 1 in order to place the further suitcase 1a on the contact surface 13 of the suitcase 1 and to receive the further suitcase 1a in the receiving regions 8, 9. In order to enable the further suitcase 1 to be placed on the suitcase 1, the further suitcase 1a is positioned so far offset in the direction of the Y axis so that upon placement movement in the direction of the arrow 33, a collision of the matching coupling parts 28a, 29a, 24a, 25a of the further suitcase 1a and the coupling parts 10, 11, 10' 11' of the suitcase 1 is avoided.

The locking element 18 is still present in its initial position A, in which it is located in the receiving region 8 for the further suitcase 1a. In the initial position A, the locking element 18 engages in a displacement path or a displacement distance W, by means of which the further

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suitcase 1a can be displaced in relation to the suitcase 1, in order - in the placed state - to achieve the formation of the plug-in connection. Insofar, in the initial position A, the locking element 18 assumes a locked position S in relation to the displacement path W.

In the course of a placement movement of the further suitcase 1a in the direction of the arrow 33, an actuation of the locking element 18 by the further suitcase 1a takes place wherein the further suitcase 1a presses, for example, with the one foot strip 22a, onto the locking element 18 and is moved from the initial position A against the force of the compression spring 31 to the intermediate or end position. In the intermediate or end position the locking element 18 is in a release position F, in which the locking element 18 releases the displacement path so that a displacement of the further suitcase 1a in relation to the suitcase 1 is permitted to form the plug-in connection. In the second assembly state according to Figure 4, the locking element 18 is brought into the release position F by means of the further suitcase 1a.

Subsequently, the further suitcase 1a is displaced relative to the suitcase 1 in the direction of the arrow 34, that is to say in the Y direction, and the coupling parts 10, 11, 10', 11' of the suitcase 1 are brought together or are assembled with the matching coupling parts 28a, 29a, 24a, 25a to form the plug-in connection in each case. In the course of this displacement movement, the locking element 18 is released from the further suitcase 1a, and, due to the restoring force of the compression spring 31, automatically moves back, preferably to the initial position A. In the retracted position, in particular in the initial position A, the locking element 18 assumes a locking position V in which the locking element 18 secures the plug-in connection against moving apart or unhooking opposite to the direction they were brought together, that is to say opposite to the direction of the arrow 34. In the third assembly state according to Figure 5, the suitcases 1, 1a are present in the stacked state and with the plug-in connection formed, wherein the locking element 18 has assumed the securing locking position V.

In the locking position V, the locking element 18 thus serves as a stop for the further suitcase 1a. In the further suitcase 1a, for example, the region of the front side 43a, which can be offset backwardly in the Y-direction, for example, serves as a stop surface 20a corresponding

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thereto. The carrying handle 19, as described in Figure 1, can abut or be guided on this stop surface 20a.

In the course of the displacement movement of the further suitcase 1a in relation to the suitcase 1 to form the plug-in connection, the locking element 18 abuts the stop surface 20a, for example. In the locking position V according to Figure 5, the sliding part 30 thus abuts the front side 43a of the suitcase 1a and secures the coupling connection between the suitcases 1 and 1a against unintentional unhooking.

In order to disengage this coupling connection or plug-in connection it is necessary, for example, to push the sliding part 30 downwards by hand, in order to bring the locking element 18 to the release position F according to Figure 4. Then, the further suitcase 1a can be moved opposite to the direction of the arrow 34 in relation to the suitcase 1 and thus the existing hook-in connection or plug-in connection can be opened.

Figures 6 and 7 show, in an enlarged view, the locking slide 18 of the suitcase 1 along with a section of the further suitcase 1a. As can be seen from Figure 7, preloading of the plug-in connection or hook-in connection can be effected by either the sliding part 30 and/or the front side 43a in the region where the sliding part 30 abuts, has associated wedge surfaces 36 so as to additionally preload the hook-in connection or plug-in connection in the direction of the arrow 34. The preloading is effected by the compression spring 31 in a spring-loaded manner. A bottom-side stop surface or actuating surface 35 of the further suitcase 1a can always be used as an actuating surface for the locking element 18. The actuating surface 35, however, is not necessarily a bottom surface. The actuating surface 35 can be formed as an offset stop surface or the like, or as a base strip or the like.

Figure 8 shows, in an enlarged view, a further embodiment of the suitcase 1' and a locking element 38. Here, the locking element 38 is formed as a pivot lever, which can be pivoted about a pivot axis 39 from the initial position A to the intermediate or end position. The locking element 38 can be pivoted in the direction of the arrow 40 by means of the pivot axis 39. The compression spring necessary for preloading by spring is not drawn.

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Figure 9 shows an even further embodiment of a suitcase 1'' with a further embodiment of a further suitcase 1a''. Figure 9 is based on the representation in Figure 2. The suitcases 1'' and 1a'' differ from the suitcases 1 and 1a in that a projection 46 is provided on the lower side 42 which engages or is provided to engage the transverse groove 5

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List of reference numerals

1, 1a	suitcase
1’	suitcase
1’’, 1’’a	suitcase
2, 2a	lid part
3, 3a	hinge axis
4, 4a	lower part
5, 5a	transverse groove
6, 6a	transverse rib
7, 7a	transverse rib
8, 8a	receiving region
9, 9a	receiving region
10, 10a	coupling part
11, 11a	coupling part
10’, 10’a	further coupling part
11’, 11’a	further coupling part
12, 12a	insertion orifice
13, 13a	contact surface
14, 14a	bottom surface
15, 15a	end
16	closure element
17	recess
18, 18a	locking element
19	carrying handle
20, 20a	stop surface
21, 21a	disengaged position
22, 22a	base strip
23, 23a	rear wall
24, 24a	matching coupling part

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25, 25a	matching coupling part
28, 28a	matching coupling part
29, 29a	matching coupling part
30, 30a	sliding part
31, 31a	compression spring
32, 32a	holding part
33	direction of the arrow
34	direction of the arrow
35	actuation surface
36	wedge surface
38	locking element
39	pivot axis
40	direction of the arrow
41	upper side
42	lower side
43, 43a	front side
44	rear side
45	side surface
46, 46a	projection
A	initial position
S	locked position
F	release position
V	locking position
W	displacement path

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Claims

1. A suitcase (1) for stacking with a further suitcase (1a), comprising a contact surface (13) for stacking the further suitcase (1a), at least one coupling part (10, 11) which can be brought together with a matching coupling part (28a, 29a) of the further suitcase (1a) to form a plug-in connection, wherein the coupling part (10, 11) is aligned such that the plug-in connection to the matching coupling part (28a, 29a) is formed by displacing the further suitcase (1a) along the contact surface (13) and at least one locking element (18, 38) to secure the plug-in connection against being released, wherein the locking element (18, 30) can be displaced from an initial position (A) to an intermediate or end position, and in the initial position (A) is in a receiving region (8) for the additional suitcase (1a), which is used when placing the further suitcase (1a) on the contact surface (13).

2. The suitcase according to claim 1, characterized in that, in the initial position (A), the locking element (18; 38) is projecting beyond a bottom surface (14) of the receiving region (8).

3. The suitcase according to claim 1 or 2, characterized in that, in the initial position (A), an end (15) of the locking element (18; 38) is projecting beyond a bottom surface (14) of the receiving region (8) and, in the intermediate or end position, the one end (15) of the locking element (18; 38) is lowered relative to the initial position (A).

4. The suitcase according to claim 2 or 3, characterized in that the bottom surface (14) of the receiving region (8) forms at least a part of the contact surface (13).

5. The suitcase according to one of the preceding claims, characterized in that, in the initial position (A), the locking element (18; 38) is kept spring-loaded.

6. The suitcase according to one of claims 1 to 5, characterized in that the locking element (18) is configured as a locking slide, which can be displaced from the initial position (A) to the intermediate or end position.

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7. The suitcase according to one of claims 1 to 5, characterized in that the locking element (38) is configured as a pivot lever which can be pivoted about a pivot axis (39) from the initial position (A) to the intermediate or end position,

8. The suitcase according to one of claims 1 to 5, characterized in that the locking element is configured as a rotary lever which can be rotated about an axis of rotation from the initial position (A) to the intermediate or end position.

9. The suitcase according to one of the preceding claims, characterized in that the suitcase (1) has an upper side (41), a lower side (42), a front side (43) and a rear side (44), wherein the extension of the suitcase (1) from the front side (43) to the rear side (44) forms a longitudinal extension, and wherein the contact surface (13) is associated with the upper side (41) and a carrying handle (19) is arranged on the front side (43) so that the rear side (44) is facing downwards on carrying the suitcase (1) by the carrying handle (19).

10. The suitcase according to claim 9, characterized in that the coupling part (10; 11) is aligned towards the carrying handle (19) such that the plug-in connection with the matching coupling part (28a; 29a) of the further suitcase (1a) is formed by displacing the further suitcase (1a) away from the front side (43) towards the rear side (44) of the suitcase (1).

11. The suitcase according to claim 9 or 10, characterized in that the receiving region (8) for the further suitcase (1a) is associated with the upper side (41) and the locking element (18; 38) is arranged in the region of the front side (43) and, in the initial position (A), projects beyond the upper side (41).

12. The suitcase according to one of claims 9 to 11, characterized in that the upper side (41) of the suitcase (1) has at least one transverse rib (6, 7) which runs transversely to the longitudinal extension of the suitcase (1) and has a side surface (45) projecting outwardly and facing the front side (43).

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13. The suitcase according to one of claims 9 to 12, characterized in that the upper side (41) of the suitcase (1) has two transverse ribs (6, 7) each of which is extending transversely to the longitudinal extension of the suitcase (1) and having a side surface (45) projecting outwardly and facing the front side (43), wherein the transverse ribs (6, 7) delimit a transverse groove (5) running therebetween.

14. The suitcase according to one of claims 9 to 13, characterized in that the lower side (42) is configured to correspond to the upper side (41) of the suitcase (1), so that the suitcase (1) with its lower side (42) can be stacked on another suitcase which has an upper side formed corresponding to the suitcase (1).

15. The suitcase according to one of the preceding claims, characterized in that two coupling parts (10, 11) are provided, each of which can be brought together with an associated matching coupling part (28a, 29a) of the further suitcase (1a) forming a plug-in connection, and aligned such that the plug-in connection to the matching coupling part (28a, 29a) is formed by displacing the further suitcase (1a) along the contact surface (13), wherein the coupling parts (10, 11) being arranged next to one another in relation to the insertion direction for producing the plug-in connection.

16. The suitcase according to one of the preceding claims, characterized in that at least one further coupling part (10'; 11") is provided, which can be brought together with an associated matching coupling part (24a, 25a) of the further suitcase (1a) forming a plug-in connection, and aligned such that the plug-in connection to the associated matching coupling part (24a, 25a) is formed by displacing the further suitcase (1a) along the contact surface (13), wherein the further coupling part (10'; 11") and the coupling part (10, 11) being arranged one behind the other in relation to the insertion direction for producing the plug-in connection.

17. An arrangement comprising at least two suitcases (1, 1a) stacked one above the other, wherein at least one suitcase (1) has a contact surface (13) and at least one coupling part (10; 11), wherein the other suitcase (1a) is placed on the contact surface (13) and the

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coupling part (10; 11) forms a plug-in connection with a matching coupling part (28a; 29a) of the other suitcase (1a), the plug-in connection being formed by displacing the other suitcase (1a) along and/or on the contact surface (13), and at least one locking element (18; 38) is provided, which is in a locking position (V) securing the plug-in connection against being released, wherein, in the locking position (V), the locking element (18; 38) is located in a receiving region (8) for the other suitcase (1a), which is used when the other suitcase (1a) is placed on the contact surface (13).

18. A method for stacking at least two suitcases (1, 1a), in which one of the suitcases (1, la) is placed on a contact surface (13) of the other suitcase (1), and the suitcase (1a) is subsequently displaced to a plug-in connection with the other suitcase (1) on a displacement path (W) and along the contact surface(13), wherein by placing the suitcase (1a) above the other suitcase (1) a locking element (18; 38) is actuated by the suitcase (1a) moving the locking element (18; 38) from an initial position (A) in an intermediate or end position, wherein, in the initial position (A), the locking element (18; 38) is in a locked position (S), wherein the locking element (18; 38) engages the displacement path (W) for the further suitcase (1a), and, in the intermediate or end position, the locking element (18; 38) is in a release position (F) in which the locking element (18; 38) releases the displacement path (W).

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Abtract

The invention relates to a suitcase (I) for stacking with a further suitcase (la), comprising a contact surface (13) for stacking the further suitcase (la), at least one coupling part (10, 11) which can be brought together with a matching coupling part (28a, 29a) of the further suitcase (la) to form a plug-in connection, wherein the coupling part (10, 11) is aligned such that the plug-in connection to the matching coupling part (28a, 29a) is formed by displacing the further suitcase (la) along the contact surface (13). At least one locking element (18, 38) is provided to secure the plug-in connection against being released, wherein the locking element (18, 30) can be displaced from an initial position (A) to an intermediate or end position, and in the initial position (A) is in a receiving region (8) for the additional suitcase (la), which is used when placing the further suitcase (la) on the contact surface (13). The invention further relates to an arrangement comprising at least two suitcases (I, la) stacked one above the other and a method for stacking at least two suitcases (I, la).

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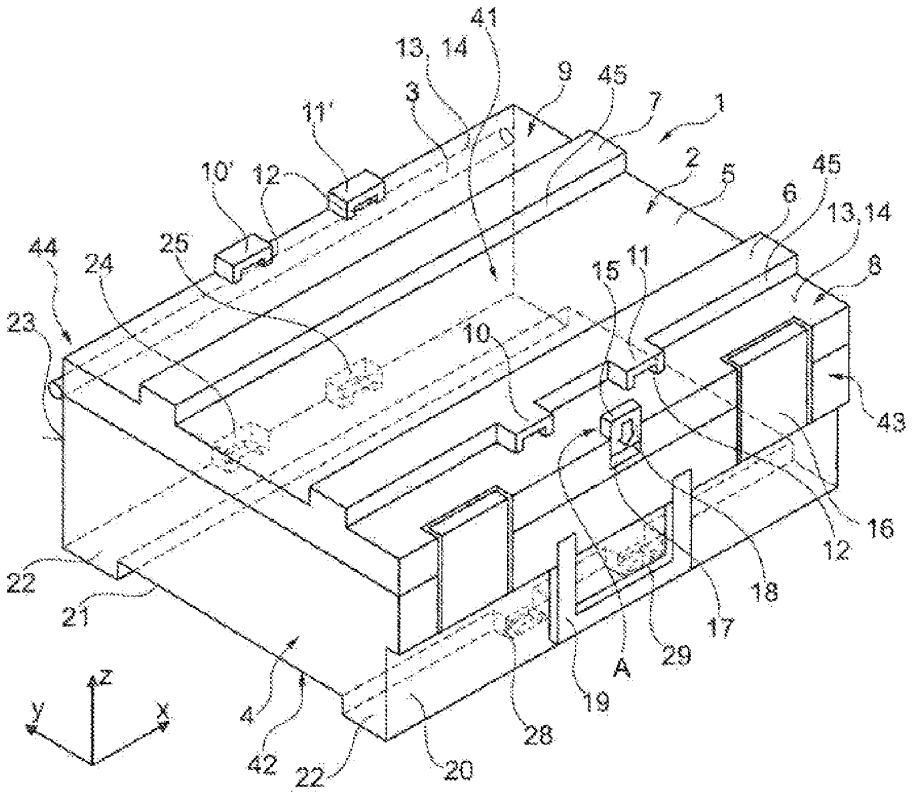


Fig. 1

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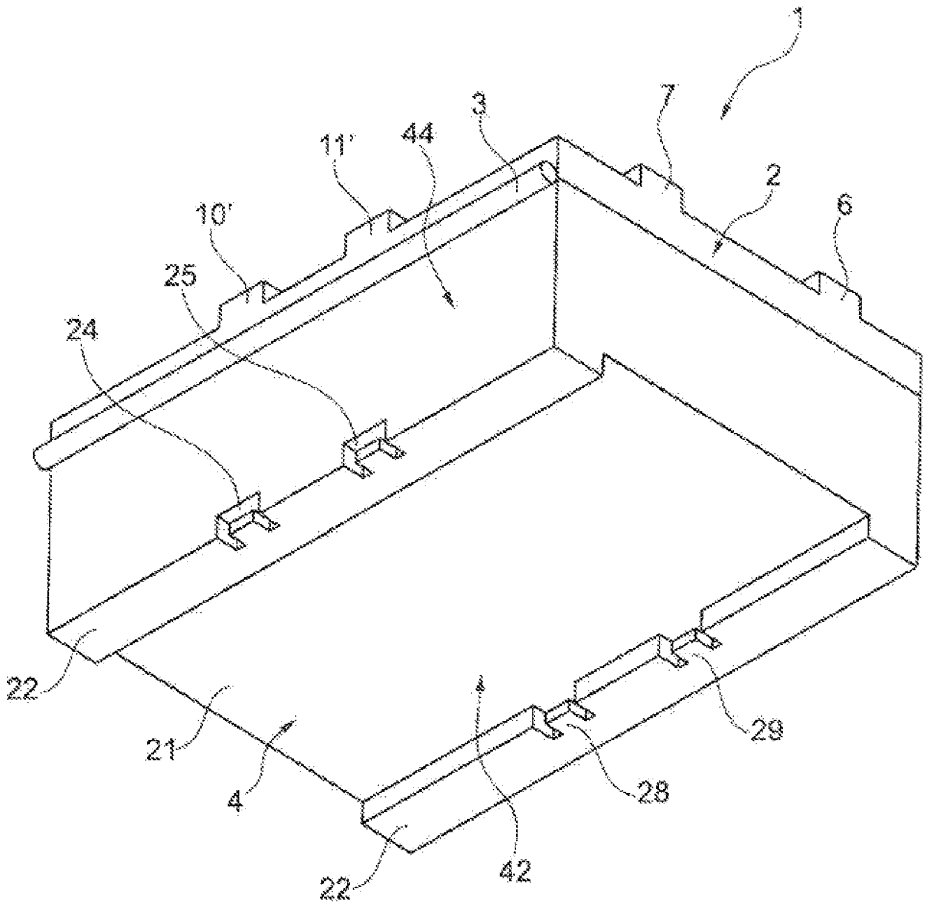


Fig. 2

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 177
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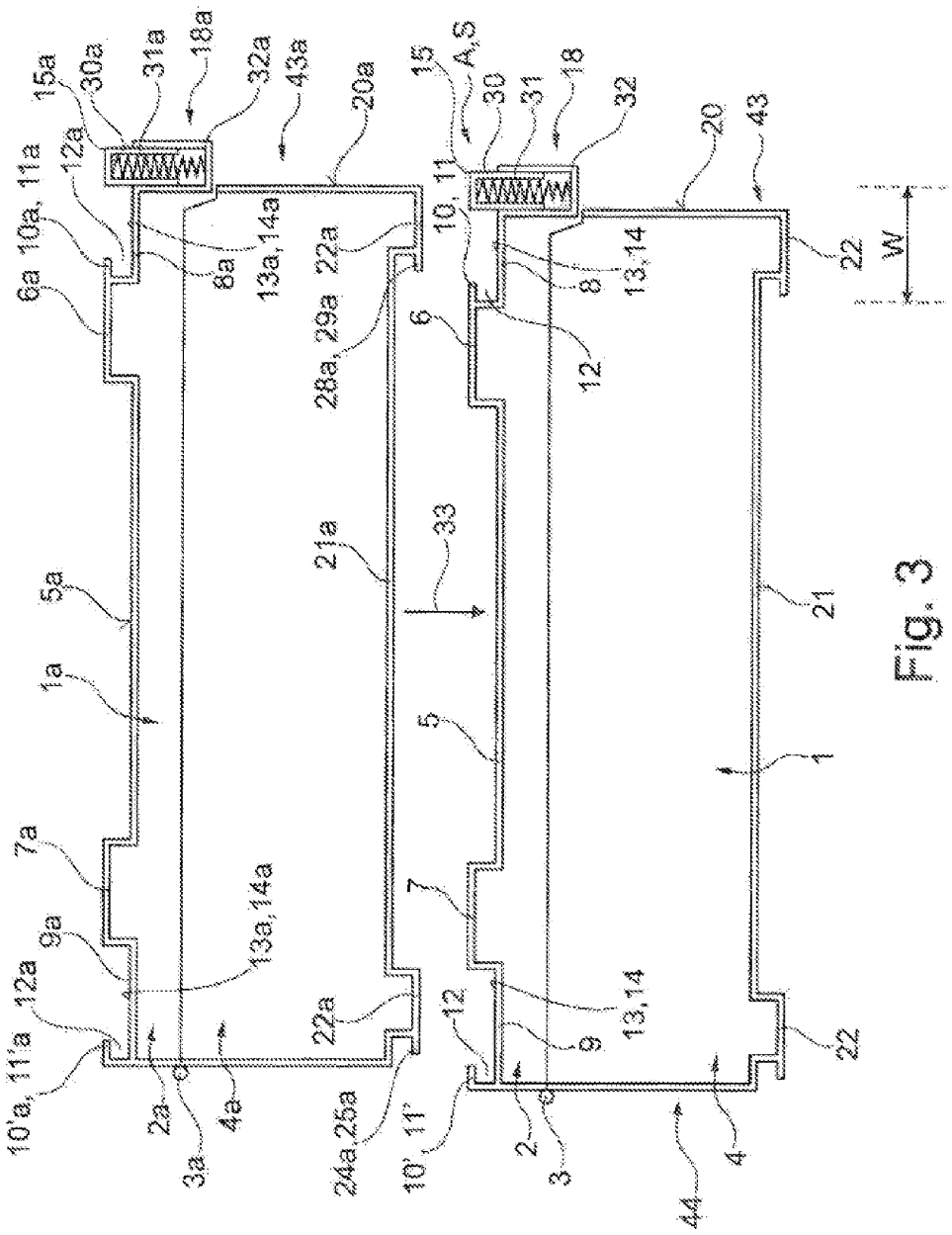


Fig. 3

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 178
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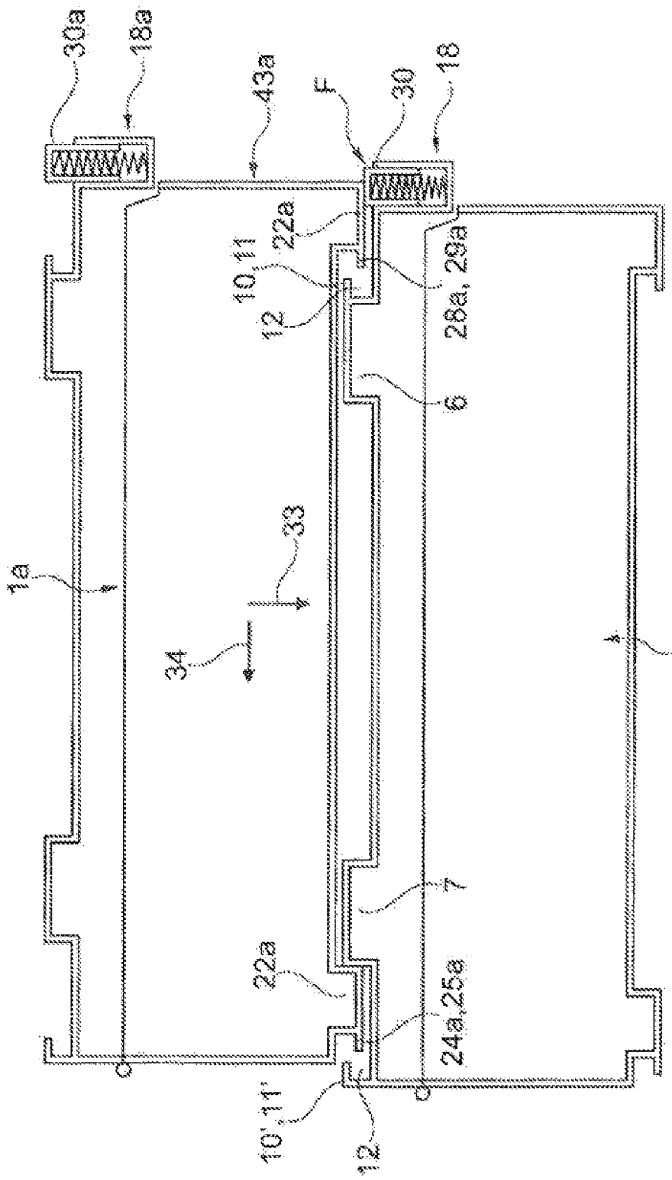


Fig. 4

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 179
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

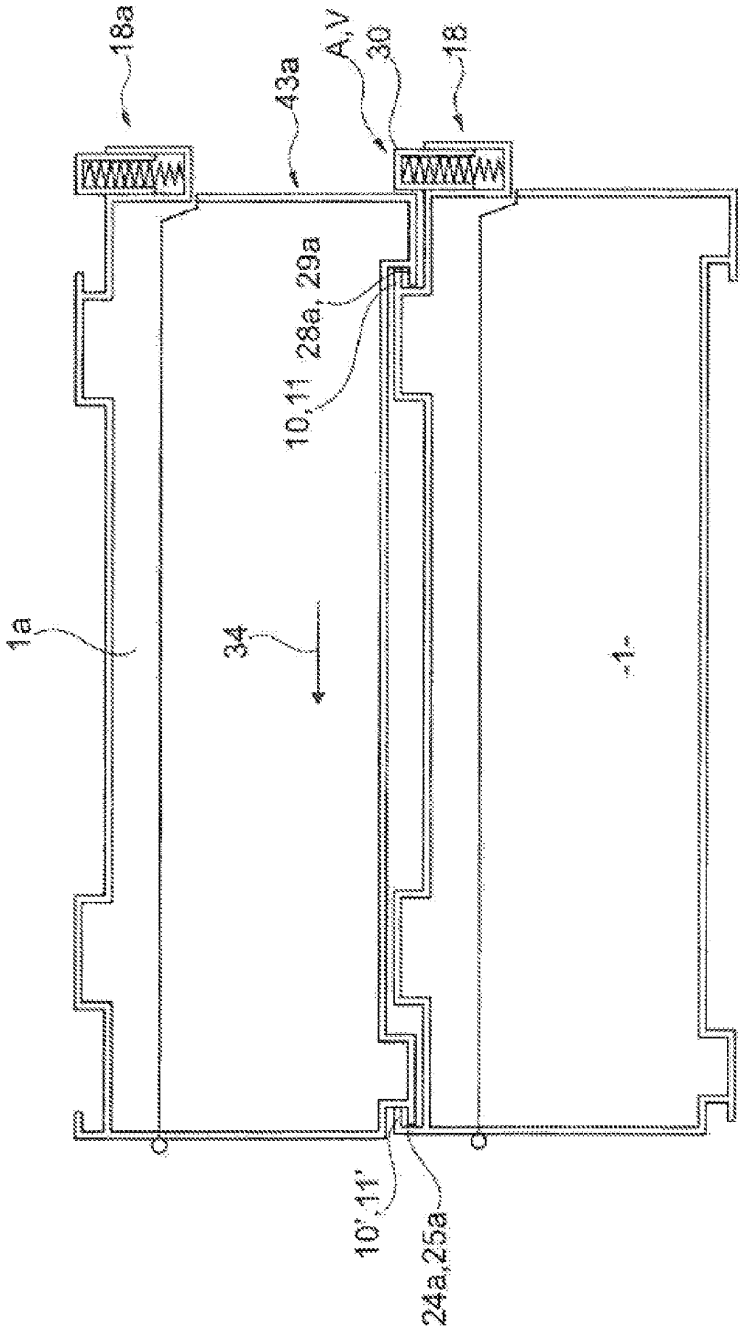


Fig. 5

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 180
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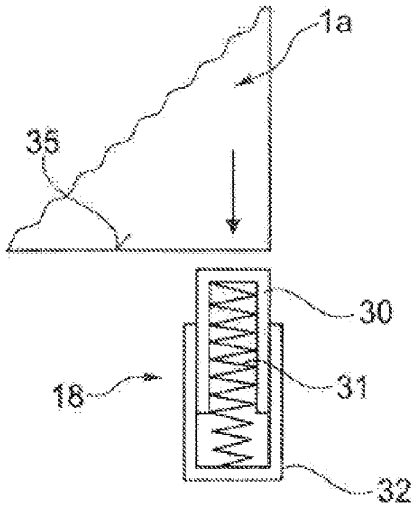


Fig. 6

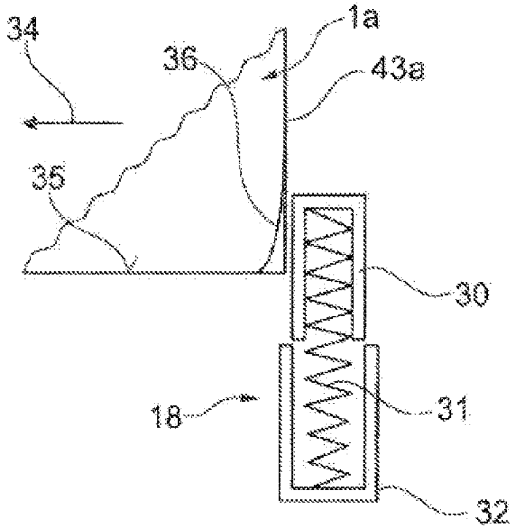


Fig. 7

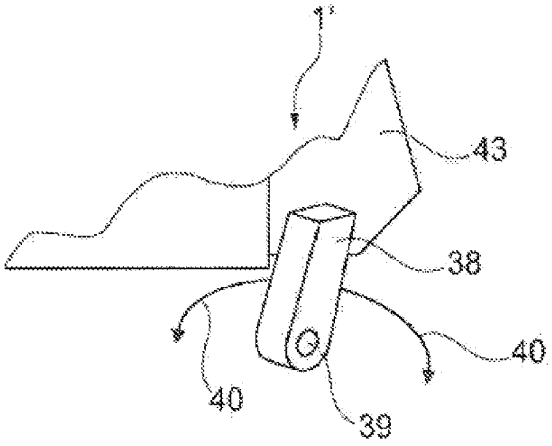


Fig. 8

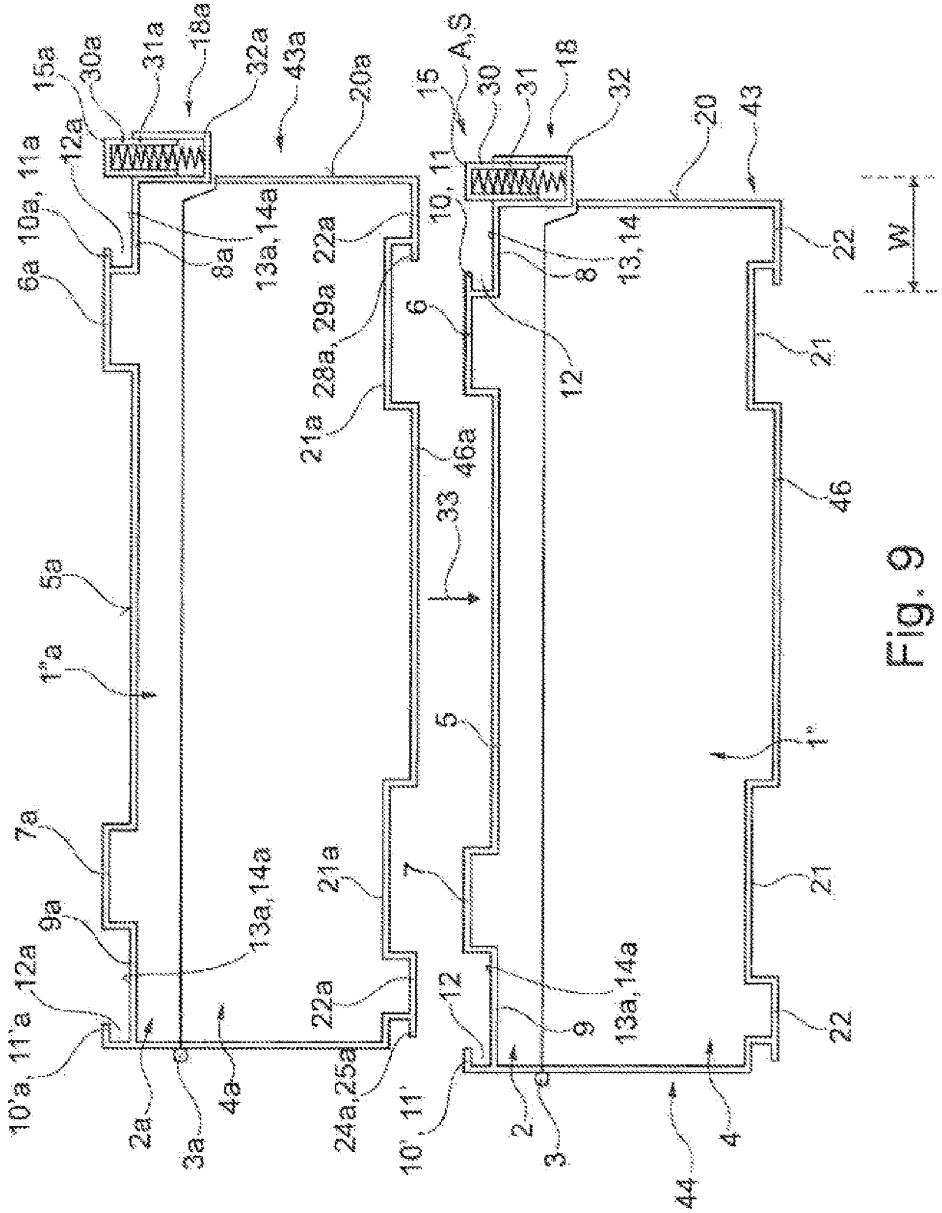


Fig. 9

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(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

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Erklärungen gemäß Regel 4.17:

— *hinsichtlich der Berechtigung des Anmelders, ein Patent zu beantragen und zu erhalten (Regel 4.17 Ziffer ii)*

— *hinsichtlich der Berechtigung des Anmelders, die Priorität einer früheren Anmeldung zu beanspruchen (Regel 4.17 Ziffer iii)*

[Fortsetzung auf der nächsten Seite]

(54) **Title**: STACKABLE SUITCASE, ARRANGEMENT COMPRISING TWO SUITCASES STACKED ONE ABOVE THE OTHER AND METHOD FOR STACKING TWO SUITCASES

(54) **Bezeichnung** : STAPELBARER KOFFER, ANORDNUNG MIT ZWEI ÜBEREINANDER GESTAPELTEN KOFFERN UND VERFAHREN ZUM AUFSTAPELN ZWEIER KOFFER

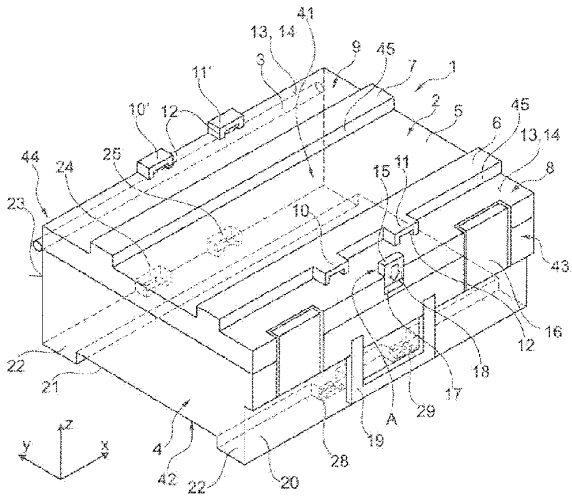


Fig. 1

(57) **Abstract**: The invention relates to a suitcase (1) for stacking with a further suitcase (1a), comprising a contact surface (13) for stacking the further suitcase (1a), at least one coupling part (10, 11) which can be brought together with a matching coupling part (28a, 29a) of the further suitcase (1a) to form a plug-in connection, wherein the coupling part (10, 11) is aligned such that the plug-in connection to the matching coupling part (28a, 29a) is formed by displacing the further suitcase (1a) along the contact surface (13). At least one locking element (18, 38) is provided to secure the plug-in connection against being released, wherein the locking element (18, 30) can be displaced from an initial position (A) to an intermediate or end position, and in the initial position (A) is in a receiving region (8) for the additional suitcase (1a), which is used when placing the further suitcase (1a) on the contact surface (13). The invention further relates to an arrangement comprising at least two suitcases (1, 1a) stacked one above the other and a method for stacking at least two suitcases (1, 1a).

(57) **Zusammenfassung**:

[Fortsetzung auf der nächsten Seite]

WO 2017/028845 A1

Veröffentlicht:

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

Die Erfindung betrifft einen Koffer (1) zum Stapeln mit einem weiteren Koffer (1a), mit einer Aufsetzfläche (13) zum Aufstapeln des weiteren Koffers (1a), wenigstens einem Kopplungsteil (10; 11), welches mit einem Gegenkopplungsteil (28a; 29a) des weiteren Koffers (1a) unter Ausbildung einer Steckverbindung zusammenbringbar ist, wobei das Kopplungsteil (10; 11) derart ausgerichtet ist, dass durch Verschieben des weiteren Koffers (1a) entlang der Aufsetzfläche (13) die Steckverbindung mit dem Gegenkopplungsteil (28a; 29a) gebildet wird. Es ist mindestens ein Verriegelungselement (18; 38) zum Sichern der Steckverbindung gegen ein Lösen vorgesehen, wobei das Verriegelungselement (18; 38) von einer Ausgangsposition (A) in eine Zwischen- oder Endposition bewegbar ist und in der Ausgangsposition (A) sich in einem Aufnahmebereich (8) für den weiteren Koffer (1a) befindet, welcher bei einem Aufsetzen des weiteren Koffers (1a) auf die Aufsetzfläche (13) genutzt ist. Die Erfindung betrifft ferner eine Anordnung mit wenigstens zwei übereinander gestapelten Koffern (1, 1a) sowie ein Verfahren zum Aufstapeln wenigstens zweier Koffer (1, 1a),

Stapelbarer Koffer, Anordnung mit zwei übereinander gestapelten Koffern und Verfahren zum Aufstapeln zweier Koffer

Die Erfindung betrifft einen Koffer zum Stapeln mit einem weiteren Koffer. Die Erfindung betrifft ferner eine Anordnung mit wenigstens zwei übereinander gestapelten Koffern. Darüber hinaus betrifft die Erfindung ein Verfahren zum Aufstapeln wenigstens zweier Koffer.

Koffer dienen üblicherweise dem Transport und/oder der Lagerung von Gegenständen, wie beispielsweise Werkzeugen. Häufig sind die Koffer stapelbar ausgebildet, so dass mehrere Koffer beispielsweise übereinander gestapelt werden können. Derartige Koffer weisen für gewöhnlich Befestigungsmittel auf, um einen aufgestapelten Koffer festzuhalten.

Einer Ausführungsform der Erfindung liegt die Aufgabe zugrunde, wenigstens eine Möglichkeit vorzuschlagen, um ein Aufstapeln eines Koffers auf einen weiteren Koffer und ein gegenseitiges Befestigen der Koffer im aufgestapelten Zustand bedienungs- und handhabungsfreundlich zu ermöglichen.

Diese Aufgabe wird mit einem Koffer gelöst, welcher die Merkmale des Anspruches 1 aufweist. Ferner wird zur Lösung der Aufgabe eine Anordnung mit wenigstens zwei übereinander gestapelten Koffern vorgeschlagen, welche die Merkmale des Anspruches 17 aufweist. Darüber hinaus wird zur Lösung der Aufgabe ein Verfahren zum Aufstapeln wenigstens zweier Koffer mit den Merkmalen des Anspruches 18 vorgeschlagen.

...

Vorteilhafte Ausgestaltungen der Erfindung ergeben sich aus den Unteransprüchen, der nachfolgenden Beschreibung und den Figuren.

Nach einer Ausführungsform der Erfindung ist ein Koffer zum Stapeln mit einem weiteren Koffer vorgesehen. Der Koffer hat eine Aufsetzfläche zum Aufstapeln des weiteren Koffers und wenigstens ein Kopplungsteil, welches mit einem Gegenkopplungsteil des weiteren Koffers unter Ausbildung einer Steckverbindung zusammenbringbar ist. Das Kopplungsteil ist derart ausgerichtet, dass durch Verschieben des weiteren Koffers entlang der Aufsetzfläche die Steckverbindung mit dem Gegenkopplungsteil gebildet wird.

Weiterhin hat der Koffer mindestens ein Verriegelungselement zum Sichern der Steckverbindung gegen ein Lösen, insbesondere willkürliches Lösen. Insbesondere ist das Verriegelungselement an dem Koffer bewegbar gelagert, insbesondere an dem Koffer befestigt oder ausgebildet, beispielsweise angeformt. Es ist vorgesehen, dass das Verriegelungselement von einer Ausgangsposition in eine Zwischen- oder Endposition bewegbar ist, insbesondere zwangsgeführt bewegbar ist, und in der Ausgangsposition sich in einem Aufnahmebereich für den weiteren Koffer befindet, wobei der Aufnahmebereich bei oder zu einem Aufsetzen des weiteren Koffers auf die Aufsetzfläche genutzt ist.

Bei einem derartigen Koffer lässt sich der weitere Koffer bedienungs- und handhabungsfreundlich aufstapeln und eine Befestigung des aufgestapelten weiteren Koffers bedienungs- und handhabungsfreundlich realisieren. Denn durch das vorgesehene Kopplungsteil zum Ausbilden einer Steckverbindung

...

lässt sich eine Kopplungsverbindung des Koffers mit dem weiteren Koffer durch einfaches Einstecken oder Aufstecken des Kopplungsteils in oder auf das Gegenkopplungsteil des weiteren Koffers erreichen. Das Ausbilden der Steckverbindung ist durch die besondere Ausgestaltung des Kopplungsteils erleichtert, was die Bedienungs- und Handhabungsfreundlichkeit unterstützt. Denn es ist zugelassen, insbesondere ausschließlich zugelassen, dass die Steckverbindung des Kopplungsteils mit dem Gegenkopplungsteils durch eine gezielte Bewegung, insbesondere eine geführte Bewegung, nämlich durch Verschieben des weiteren Koffers entlang der Aufsetzfläche, erreicht wird. Das Kopplungsteil kann eine Einsteckaufnahme sein. Insofern kann das Gegenkopplungsteil ein mit der Einsteckaufnahme, vorzugsweise korrespondierendes Einsteckelement, sein, welches in die Einsteckaufnahme einsteckbar ist. Auch kann in umgekehrter Weise das Kopplungsteil ein Einsteckelement und das Gegenkopplungsteil die Einsteckaufnahme für das Einsteckelement bilden.

Durch das vorgesehene Verriegelungselement ist es möglich, die Steckverbindung des Kopplungsteils mit dem Gegenkopplungsteil des weiteren Koffers gegen ein Auseinandergehen, insbesondere Auseinanderziehen entgegen der Zusammensteckrichtung, wirkungsvoll zu sichern. Indem das Verriegelungselement in der Ausgangsposition in dem Aufnahmebereich für den weiteren Koffer vorliegt, ist erreicht, dass der weitere Koffer in Kontakt mit dem Verriegelungselement gelangt und das Verriegelungselement betätigt und somit eine Bewegung des Verriegelungselementes bewirkt, wenn der weitere Koffer eine Aufsetzbewegung in Richtung zu der Aufsetzfläche ausführt und dabei in den Aufnahmebereich gelangt. Dadurch wird die von dem weiteren

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Koffer ausgeführte Aufsetzbewegung ebenso zur Betätigung des Verriegelungselementes genutzt. Eine separate manuelle Betätigung durch einen Bediener ist eingespart. Auch diese Maßnahme zielt daher darauf ab, die Bedienungs- und Handhabungsfreundlichkeit zu unterstützen.

In technisch einfacher Weise kann eine Kontaktierung des Verriegelungselementes mit dem weiteren Koffer im Zuge seiner Aufsetzbewegung erreicht werden, wenn in der Ausgangsposition das Verriegelungselement eine Bodenfläche des Aufnahmebereiches überragt und/oder in der Ausgangsposition das Verriegelungselement sich bis über die Bodenfläche erstreckt und/oder in der Ausgangsposition das Verriegelungselement erhaben zu einer Bodenfläche des Aufnahmebereiches vorliegt.

Beispielsweise ist es vorgesehen, dass in der Ausgangsposition das Verriegelungselement mit einem Ende eine Bodenfläche des Aufnahmebereiches überragt und in der Zwischen- oder Endposition das eine Ende des Verriegelungselementes gegenüber der Ausgangsposition herabgesetzt ist. In der Zwischen- oder Endposition ist dann das Verriegelungselement beispielsweise außerhalb des Aufnahmebereichs gebracht und damit ein Aufsetzen des weiteren Koffers auf die Aufsetzfläche und/oder ein Verschieben des aufgesetzten weiteren Koffers zur Ausbildung der Steckverbindung ermöglicht.

Es kann vorgesehen sein, dass die Bodenfläche des Aufnahmebereiches zumindest einen Teil der Aufsetzfläche bildet. Dadurch dient der Aufnahmebereich als Bereich, in dem der weitere Koffer aufgesetzt wird.

...

Nach einer Ausgestaltung der Erfindung ist es vorgesehen, dass das Verriegelungselement federbelastet bewegbar ist. Dadurch kann die Energie aus einer Bewegung des Verriegelungselementes in technisch einfacher Weise gespeichert werden.

Beispielsweise ist es vorgesehen, dass das Verriegelungselement von der Ausgangsposition gegen eine Federkraft in die Zwischen- oder Endposition bewegbar ist. Dadurch wird das Verriegelungselement von der Zwischen- oder Endposition in Richtung der Ausgangsposition und/oder in die Ausgangsposition durch die Federkraft selbsttätig zurückbewegt. Auch durch diese Maßnahme ist die Bedienungs- und Handhabungsfreundlichkeit unterstützt.

Es kann ferner vorgesehen sein, dass das Verriegelungselement in der Ausgangsposition federbelastet gehalten ist. Das Verriegelungselement ist dadurch unter Federvorspannung in der Ausgangsposition gehalten. Dadurch ist einem möglichen ungewollten Wackeln des Verriegelungselementes in der Ausgangsposition entgegengewirkt.

Um das Verriegelungselement federbelastet verschieben zu können, ist beispielsweise ein Federelement oder ein sonstiger Kraftspeicher vorgesehen. Es kann eine Druckfeder zum Einsatz kommen. Auch können Elastomerfedern, Blattfedern, Spiralfedern oder Federn allgemeiner Art genutzt sein. Ebenso können Dreh- oder Tellerfedern genutzt sein.

Nach einer Ausgestaltung der Erfindung ist es vorgesehen, dass das Verriegelungselement als Verriegelungsschieber

...

ausgebildet ist, welcher von der Ausgangsposition in die Zwischen- oder Endposition verschiebbar ist, insbesondere translatorisch verschiebbar ist. Ein derartiges Verriegelungselement ist in technisch relativ einfacher Art und Weise zu realisieren.

Das als Verriegelungsschieber ausgebildete Verriegelungselement kann ein gehäusefest bezüglich des Koffers angeordnetes Halteteil bzw. Bodenteil und ein daran bewegbar gelagertes Schiebeteil, insbesondere Schieberiegel, aufweisen oder daraus bestehen. Es ist das Halteteil an dem Koffer angeordnet, insbesondere daran befestigt oder ausgebildet, wie beispielsweise angeformt oder ausgeformt.

In technisch einfacher Weise lässt sich der Verriegelungsschieber realisieren, wenn das Halteteil und das Schiebeteil im Querschnitt U-förmig ausgebildet sind und zueinander entgegengerichtet ineinandergestülpt sind, wobei zwischen den Schenkeln der Teile eine Druckfeder angeordnet ist, welche sich einerseits gegen eine Bodenfläche des einen Halteteils und andererseits gegen eine Bodenfläche des Schieberteils abstützt. Durch die Schenkel des Halteteiles und des Schiebeteiles ist bei dieser Ausgestaltung des Verriegelungsschiebers eine geführte Bewegung des Schiebeteiles relativ gegenüber dem Halteteil in einfacher Weise gewährleistet.

Es bietet sich an, dass das Schieberteil relativ gegenüber dem Halteteil anschlagsbegrenzt verschiebbar ist. Dadurch ist gewährleistet, dass die Verschiebebewegung des Verriegelungsschiebers innerhalb vorgegebener Grenzen zurückgelegt wird und darin verbleibt.

Nach einer anderen Ausgestaltung der Erfindung ist es vorgesehen, dass das Verriegelungselement als Schwenkhebel ausgebildet ist, welcher von der Ausgangsposition in die Zwischen- oder Endposition um eine Schwenkachse, insbesondere gehäusefeste Schwenkachse, verschwenkbar ist. Auch kann das Verriegelungselement als Drehhebel ausgebildet sein, welcher von der Ausgangsposition in die Zwischen- oder Endposition um eine Drehachse, insbesondere gehäusefeste Drehachse, drehbar ist. Grundsätzlich ist es auch möglich, dass das Verriegelungselement einen Drehverschluss aufweist oder durch einen Drehverschluss gebildet ist, welcher zum Verdrehen gegenüber einem Basisteil, insbesondere gehäusefestem Basisteil, von der Ausgangsposition in die Zwischen- oder Endposition verdrehbar ist.

Nach einer möglichen Ausführungsform weist der Koffer hat eine Oberseite, eine Unterseite, eine Vorderseite und eine Rückseite auf, wobei die Erstreckung des Koffers von der Vorderseite zu der Rückseite eine Längserstreckung bildet. Insbesondere sind die Oberseite und die Unterseite einander gegenüberliegend und bilden beispielsweise Flachseiten bzw. Flächenseiten aus. Insbesondere sind die Vorderseite und die Rückseite einander gegenüberliegend und bilden beispielsweise Schmalseiten aus. Insbesondere sind die Oberseite und die Unterseite jeweils gegenüber der Vorderseite und der Rückseite querliegend angeordnet, insbesondere in einem rechten Winkel zueinander liegend angeordnet.

Nach einer Ausgestaltung der Erfindung ist es vorgesehen, dass die Aufsetzfläche der Oberseite zugeordnet ist und an der Vorderseite des Koffers ein Tragegriff angeordnet ist, so dass

...

beim Tragen des Koffers an dem Tragegriff die Rückseite nach unten gewandt ist. Der Koffer ist dadurch aufgestellt, wenn der Koffer an dem Tragegriff gehalten ist. Das Kopplungsteil des Koffers und das Gegenkopplungsteil des weiteren Koffers sind dann zur Ausbildung der Steckverbindung gegeneinander einzuhängen, da die Aufsetzfläche als seitlich liegende Seitenfläche vorliegt. Insofern bildet die Steckverbindung eine Einhängeverbindung.

Beispielsweise ist es vorgesehen, dass die Einhängeverbindung durch einen Einhängeansatz mit einer Einhängeöffnung und einem in die Einhängeöffnung in Eingriff bringbare beispielsweise lappenförmige Einhängelasche gebildet ist. Es können das Kopplungsteil den Einhängeansatz und das Gegenkopplungsteil die Einhängelasche bilden. Auch können das Kopplungsteil die Einhängelasche und das Gegenkopplungsteil den Einhängeansatz bilden.

Die Einhängelasche kann angeschrägt sein. Auch kann die Einhängeöffnung bzw. der Einhängeansatz wenigstens eine Einführschräge aufweisen, um eine verschiebungsgesicherte und relativ spielfreie Einhängeverbindung zwischen den einander zugeordneten Koffern bzw. Kofferflächen zu ermöglichen.

Eine mögliche Ausgestaltung der Erfindung besteht darin, dass Koffer ein Unterteil und ein daran schwenkbar angeordnetes Deckelteil hat, wobei die Oberseite des Koffers durch die Unterseite des Deckelteils und die Unterseite des Koffers durch die Unterseite des Unterteils gebildet sind und der Tragegriff an dem Unterteil angeordnet ist. Das Verriegelungselement ist dann beispielsweise dem Deckelteil zugeordnet.

Eine weitere Ausgestaltung der Erfindung besteht darin, dass das Kopplungsteil in Richtung zu dem Tragegriff gerichtet ist, so dass die Steckverbindung mit dem Gegenkopplungsteil des weiteren Koffers durch Verschieben des weiteren Koffers von der Vorderseite weg in Richtung zu der Rückseite des Koffers gebildet wird. Dadurch unterstützt die Steckverbindung die Kopplung des Koffers mit dem weiteren Koffer, wenn der Koffer an dem Tragegriff getragen wird, da die Gewichtskraft des weiteren Koffers in Steckrichtung auf das Kopplungsteil des Koffers wirkt. Denn die Gewichtskraft wirkt in die Einsteckrichtung, welche in Richtung von dem Tragegriff weg in Richtung zu der Rückseite des Koffers gerichtet ist.

Nach einer weiteren Ausgestaltung der Erfindung ist es vorgesehen, dass der Aufnahmebereich für den weiteren Koffer der Oberseite zugeordnet ist und das Verriegelungselement im Bereich der Vorderseite angeordnet ist und in der Ausgangsposition aus der Oberseite herausragt.

Es bietet sich an, dass die Oberseite des Koffers wenigstens eine Querrippe aufweist, welche quer zur Längserstreckung des Koffers verläuft und eine nach außen stehende und der Vorderseite zugewandte Seitenfläche hat. Es ist die Seitenfläche als Anschlag für den weiteren Koffer nutzbar, beispielsweise wenn der Koffer an seinem Tragegriff gehalten wird und damit die Oberseite des Koffers aufgrund seiner aufrechten Lage seitlich aufgestellt liegt. In diesem Fall kann sich dann der weitere Koffer mit einer Gegenfläche gegen die Seitenfläche der Querrippe abstützen, so dass auf diese Art und Weise die Steckverbindung zwischen dem

Kopplungsteil und dem Gegenkopplungsteil kraftmäßig entlastet ist.

Es kann vorgesehen sein, dass an der Querrippe das Kopplungsteil befestigt oder angeformt ist. Dadurch ist die Stabilität des Kopplungsteiles selbst verbessert, da auf das Kopplungsteil wirkende Kräfte von der Querrippe aufgenommen werden.

Es kann ferner vorgesehen sein, dass die Oberseite des Koffers zwei Querrippen aufweist, welche jeweils quer zur Längserstreckung des Koffers verlaufen und eine nach außen stehende und der Vorderseite zugewandte Seitenfläche haben, wobei die Querrippen eine dazwischen verlaufende Quernut begrenzen. Auch diese Maßnahme zielt darauf ab, eine auf den Koffer wirkende Gewichtskraft des weiteren Koffers aufnehmen zu können und die Steckverbindung zu entlasten, wenn der Koffer an dem Tragegriff getragen ist. Denn durch die beiden Querrippen stehen zwei Seitenflächen zur Verfügung, an welchen sich der weitere Koffer mit jeweils einer korrespondierenden Gegenfläche abstützen kann.

Auch ist eine hohe Stabilität gegeben, wenn der Koffer beispielsweise in umgekehrter Richtung getragen werden sollte, in der dann der Tragegriff nach unten gewandt ist. Denn durch die vorgesehene Quernut kann ein Vorsprung des weiteren Koffers ein Eingriff gebracht werden, so dass sich der weitere Koffer gegen den Koffer sowohl mit nach unten gewandtem Tragegriff als auch mit nach oben gewandtem Tragegriff abstützt.

Es bietet sich an, die Unterseite des Koffers korrespondierend zu seiner Oberseite auszubilden, so dass der Koffer mit seiner Unterseite auf einen anderen Koffer aufstapelbar ist, welche eine zu dem Koffer entsprechend ausgebildete Oberseite aufweist. Insbesondere ist die Unterseite des Koffers entsprechend der Unterseite des weiteren Koffers ausgebildet. Es ist dadurch eine Aufstapelung einer beliebigen Anzahl von Koffern in einfacher Weise zu realisieren, da dazu die Koffer als Gleichteil ausgebildet sind und somit ein Aufstapeln nach unten hin und nach oben hin der Koffer, ausgehend von beispielsweise einem Bezugskoffer, stattfinden kann.

Aus Stabilitätsgründen sind nach einer weiteren Ausgestaltung der Erfindung zwei Kopplungsteile vorgesehen, welche jeweils mit einem zugehörigen Gegenkopplungsteil des weiteren Koffers unter Ausbildung einer Steckverbindung zusammenbringbar sind und derart ausgerichtet sind, dass durch Verschieben des weiteren Koffers entlang der Aufsetzfläche die Steckverbindung mit dem Gegenkopplungsteil gebildet wird, wobei die Kopplungsteile bezüglich der Einsteckrichtung bzw. Steckrichtung zum Herstellen der Steckverbindung nebeneinander liegend angeordnet sind.

In die gleiche Richtung zielt die Maßnahme, wonach nach einer weiteren Ausgestaltung der Erfindung wenigstens ein weiteres Kopplungsteil vorgesehen ist, welches mit einem zugehörigen Gegenkopplungsteil des weiteren Koffers unter Ausbildung einer Steckverbindung zusammenbringbar ist und derart ausgerichtet ist, dass durch Verschieben des weiteren Koffers entlang der Aufsetzfläche die Steckverbindung mit dem Gegenkopplungsteil gebildet ist, wobei das weitere

Kopplungsteil und das Kopplungsteil bezüglich der Einsteckrichtung zum Herstellen der Steckverbindung hintereinander liegend angeordnet sind.

Beispielsweise ist das Kopplungsteil im Bereich des der Vorderseite zugewandten Randes der Oberseite angeordnet. Beispielsweise ist das weitere Kopplungsteil im Bereich des der Rückseite zugewandten Randes der Oberseite angeordnet. Auch kann das Kopplungsteil und/oder das weitere Kopplungsteil in einem mittleren Bereich der Oberseite des Koffers angeordnet sein.

Es kann ausschließlich das eine Verriegelungselement vorgesehen sein. Auch kann das Verriegelungselement mehrfach vorgesehen sein. In diesem Fall können die Verriegelungselemente quer zur Längsrichtung des Koffer hintereinander liegend angeordnet sein.

Das wenigstens eine Verriegelungselement kann im Koffer selbst integriert sein, beispielsweise mit den Kofferaußenflächen abschließen bzw. bündig sein oder dahinter liegen bzw. enden. Auch kann es vorgesehen sein, dass das wenigstens eine Verriegelungselement als separates Teil oder Einheit vorliegt und insbesondere werkstoffein- oder mehrstückig mit dem zugehörigen Kofferflächen verbunden ist. Darüber hinaus kann das Verriegelungselement als separates Teil oder Baueinheit auf eine Außenwand des Koffers angebunden sein. Dadurch ist eine nachträgliche Umrüstung eines Koffers mit dem Verriegelungselement erleichtert.

Nach einer weiteren Ausführungsform der Erfindung ist eine Anordnung mit wenigstens zwei übereinander gestapelten Koffern

vorgesehen, von denen wenigstens einer der Koffer eine Aufsetzfläche und wenigstens ein Kopplungsteil hat, wobei auf der Aufsetzfläche der andere Koffer aufgesetzt ist und das Kopplungsteil mit einem Gegenkopplungsteil des anderen Koffers eine Steckverbindung ausbildet, welche durch Verschieben des anderen Koffers entlang und/oder auf der Aufsetzfläche gebildet ist. Es ist ferner mindestens ein Verriegelungselement vorgesehen, welches in einer die Steckverbindung gegen Lösen, insbesondere willkürliches Lösen, sichernden Verriegelungsposition vorliegt. In der Verriegelungsposition befindet sich das Verriegelungselement in einem Aufnahmebereich für den anderen Koffer, welcher bei einem Aufsetzen des anderen Koffers auf die Aufsetzfläche genutzt ist. Beispielsweise ist oder wurde durch das Aufsetzen des anderen Koffers auf die Aufsetzfläche das Verriegelungselement von der Verriegelungsposition in eine Entriegelungsposition bezüglich der Sicherung der Steckverbindung und/oder in eine Freigabeposition bewegt, in welcher ein Zusammenschieben der Koffer zum Ausbilden der Steckverbindung zwischen den Koffern zugelassen ist. Die Verriegelungsposition kann eine Ausgangsposition, beispielsweise die vorstehend beschriebenen Ausgangsposition sein.

Der wenigstens eine Koffer mit der Aufsetzfläche und dem wenigstens einen Kopplungsteil kann der vorstehend beschriebene Koffer sein. Der darauf gestapelte Koffer der Anordnung kann der vorstehend beschriebene weitere Koffer sein. Für diesen Fall entsprechen die Verriegelungsposition der Ausgangsposition des vorstehend beschriebenen Koffers und die Entriegelungsposition und/oder die Freigabeposition der vorstehend beschriebenen Zwischen- oder Endposition.

Beispielsweise ist bei dem aufgesetzten Koffer eine Fläche oder ein Flächenabschnitt als Anschlagfäche genutzt oder nutzbar, welche in der Verriegelungsposition des Verriegelungselementes in Anlage gegen das Verriegelungselement gebracht ist oder bringbar ist. Die Anschlagfläche kann an einer Stirnseite, beispielsweise der der Vorderseite aufgestapelten Koffers vorgesehen sein, insbesondere dort ausgebildet sein. Die Anschlagfläche kann auch durch eine zurückgesetzte Fläche oder eine mit einer Einführschräge versehene Fläche gebildet sein, um dadurch eine zusätzliche Vorspannung des Verriegelungselementes auf die Steckverbindung bzw. Einhängeverbindung zwischen den aufgestapelten Koffern zu erreichen.

Es kann das Verriegelungselement im Wesentlichen rechteckförmig profiliert sein, um die Steckverbindung zwischen dem Kopplungsteil und dem Gegenkopplungsteil mit etwas Spiel zu sichern, so dass das Kopplungsteil und das Gegenkopplungsteil bei ausgebildeter Steckverbindung noch ein Bewegungsspiel zueinander aufweisen, beispielsweise ein Spiel in Steckrichtung von beispielsweise etwa 1 bis 2 mm vorliegt, ohne dass die Steckverbindung auseinander geht, beispielsweise manuell entkoppelt wird.

Es kann ferner vorgesehen sein, dass das Verriegelungselement selbst oder die Anschlagfläche, an welcher das Verriegelungselement in der Verriegelungsposition anliegt oder als Anschlag nutzbar ist, keilförmig ausgebildet ist, so dass das Verriegelungselement die Steckverbindung in Steckrichtung bzw. Einsteckrichtung noch zusätzlich vorspannt

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und gegen die Bewegung der beiden aufgestapelten Koffer relativ zueinander in Steckrichtung sichert.

Die Erfindung umfasst auch ein Verfahren zum Aufstapeln wenigstens zweier Koffer. Mindestens einer der Koffer kann der vorstehend beschriebene Koffer sein. Es können auch die beiden Koffer, insbesondere sämtliche Koffer durch den vorstehend beschriebenen Koffer gebildet sein.

Bei dem Verfahren ist es vorgesehen, dass einer der Koffer auf eine Aufsetzfläche des anderen Koffers aufgesetzt wird und anschließend der Koffer über einen Verschiebeweg und entlang der Aufsetzfläche in eine Steckverbindung mit dem anderen Koffer verschoben wird, wobei durch das Aufsetzen des Koffers auf den anderen Koffer ein bewegbares Verriegelungselement betätigt wird, indem der Koffer das Verriegelungselement von einer Ausgangsposition in eine Zwischen-oder Endposition bewegt. In der Ausgangsposition befindet sich das Verriegelungselement in einer Sperrstellung bzw. Sperrposition, in welcher das Verriegelungselement in den Verschiebeweg für den weiteren Koffer eingreift. In der Zwischen- oder Endposition befindet sich das Verriegelungselement in einer Freigabestellung bzw. Freigabeposition, in welcher das Verriegelungselement den Verschiebeweg freigibt.

Dadurch ist erreicht, dass der Koffer in Kontakt mit dem Verriegelungselement gelangt und das Verriegelungselement betätigt und somit eine Bewegung des Verriegelungselementes bewirkt, wenn der Koffer eine Aufsetzbewegung in Richtung zu der Aufsetzfläche ausführt und dabei in den Aufnahmebereich gelangt. Es wird somit die von dem Koffer ausgeführte

Aufsetzbewegung ebenso zur Betätigung des Verriegelungselementes genutzt. Eine separate manuelle Betätigung durch einen Bediener ist eingespart. Dadurch ergeben sich Vorteile bezüglich der Bedienung und Handhabung.

Weiterhin umfasst die Erfindung eine Verwendung vorstehend beschriebenen Koffers zum Transport und/oder zur Lagerung von Werkzeug und/oder Handwerkermaterial.

Im Zuge der Erfindung ist der Begriff „Koffer" in weiten Grenzen zu verstehen. Insbesondere ist der Koffer ein Behältnis. Der Koffer kann ein beispielsweise allseits geschlossener mit einem Deckel versehener Behälter sein. Der Deckel kann an dem Behälter schwenkbar angeordnet sein. Auch können der Behälter und der Deckel ohne eine solche Verbindung vorliegen. Der auf den Koffer aufsetzbare Koffer kann in gleicher Weise ausgebildet sein. Auch ist es möglich, dass der aufsetzbare Koffer als halb offene Schale oder als Platte, insbesondere Adapterplatte, ausgebildet ist.

Der Koffer ist insbesondere geeignet, Gegenstände zu transportieren und/oder zu lagern. Beispielsweise ist der Koffer ein Werkzeugkoffer, welcher zur Aufbewahrung und/oder zum Transport von Werkzeug, Material und/oder Geräten dient oder nutzbar ist.

Durch die Erfindung ist es möglich, dass zwei übereinander gestapelte Koffer zueinander in eine Kopplungsverbindung, beispielsweise Steckverbindung bzw. Einhängeverbindung gebracht werden, wobei die Bodenfläche des oberen Koffers auf die Deckenfläche des unteren Koffers aufgesetzt wird und eine

Verschiebung der beiden Koffer in Einhängeverbindung bzw. Kopplung zwischen den Koffern hergestellt wird.

Durch die Erfindung kann eine Sicherung der Steckverbindung bzw. Kopplungsverbindung durch mindestens ein Verriegelungselement, wie beispielsweise einen federbelasteten Verriegelungsschieber, erfolgen, welcher beispielsweise am unteren Koffer angeordnet ist und der durch die Bodenfläche des oberen Koffers betätigbar ist. Durch die Erfindung kann ferner realisiert sein, dass nach erfolgter Betätigung sich das Verriegelungselement an einer Anschlagfläche des oberen Koffers anlegt und so die Einhängeverbindung bzw. Steckverbindung zwischen den beiden Koffern gegen unbeabsichtigtes Aushängen sichert.

Durch die Erfindung lässt sich das Verriegelungselement im Frontbereich des jeweils unteren Koffers anordnen und beispielsweise durch ein aus der Oberseite bzw. Deckenfläche heraus verschiebbares Verriegelungselement so ausgebildet sein, dass das Verriegelungselement in einer Verriegelungsstellung bzw. in einem Sicherungszustand an einer zugeordneten Anschlagfläche an dem darüber liegenden Koffer anliegt und gegen eine Entkopplung des einen Koffers gegenüber dem anderen Koffers sichert. Zum Lösen dieser gesicherten Einhängeverbindung bzw. Steckverbindung kann das Verriegelungselement manuell betätigt werden, um das Verriegelungselement von der Ausgangsposition bzw. Verriegelungsstellung bzw. Sicherungsstellung in eine Zwischen- oder Endposition und/oder Entriegelungsstellung und/oder Öffnungsstellung zu bringen und so außer Eingriff mit der zugeordneten Anschlagfläche am gegenüberliegenden Kofferteil zu bringen.

Weitere Ziele, Vorteile, Merkmale und Anwendungsmöglichkeiten der vorliegenden Erfindung ergeben sich aus der nachfolgenden Beschreibung mehrerer Ausführungsbeispiele anhand der Zeichnung. Dabei bilden alle beschriebenen und/oder bildlich dargestellten Merkmale für sich oder in beliebiger sinnvoller Kombination den Gegenstand der vorliegenden Erfindung, auch unabhängig von ihrer Zusammenfassung in den Ansprüchen oder deren Rückbeziehung.

Es zeigen:

Fig. 1 eine mögliche Ausführungsform eines stapelbaren Koffers in perspektivischer Darstellung von oben,

Fig. 2 der Koffer gemäß der Figur 1 in einer perspektivischen Darstellung von unten,

Fig. 3 eine Abwandlung des Koffer gemäß der Figuren 1 und 2, auf welchen ein weiterer Koffer aufgestapelt wird, in einem ersten Montagezustand bezüglich des Aufstapeln, dargestellt in einer Schnittdarstellung der beiden Koffer,

Fig. 4 die beiden Koffer gemäß der Figur 3 in einem zweiten Montagezustand, in dem der weitere Koffer auf dem Koffer aufgestapelt ist,

Fig. 5 die beiden Koffer gemäß der Figur 3 in einem dritten Montagezustand, in dem der weitere Koffer

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auf dem Koffer aufgestapelt und in eine Befestigungsposition gegen den Koffer gebracht ist,

Fig. 6 eine schematische Darstellung des Verriegelungsprinzips, wie es aus den Figuren 3 bis 5 ersichtlich ist,

Fig. 7 das Verriegelungsprinzip nach der Figur 6 im verriegelten Zustand,

Fig. 8 eine weitere mögliche Ausführungsform eines stapelbaren Koffers mit einem als Schwenkhebel ausgebildeter Verriegelungselement in schematisierter Darstellung und

Fig. 9 eine weitere mögliche Ausführungsform eines Koffers, auf welchen ein weiterer Koffer aufgestapelt wird, in einem ersten Montagezustand bezüglich des Aufstapeln, dargestellt in einer Schnittdarstellung der beiden Koffer.

Figuren 1 und 2 zeigen - in schematischer Darstellung - eine mögliche Ausführungsform eines stapelbaren Koffers 1 in perspektivischer Ansicht von oben (Figur 1) und in perspektivischer Ansicht von unten (Figur 2). Der Koffer 1 ist zum Transportieren und/oder Lagern von Gegenständen nutzbar. Beispielsweise ist der Koffer 1 ein Werkzeugkoffer, welcher beispielsweise zum Transportieren und/oder Lagern von Werkzeug und/oder Material und/oder Geräten eines Handwerkers oder Technikers dient.

...

Der Koffer 1 hat eine Oberseite 41, eine Unterseite 42, eine Vorderseite 43 und eine Rückseite 44. Bevorzugt bildet die Erstreckung des Koffers 1 von der Vorderseite 43 zu der Rückseite 44 eine Längserstreckung, welche in der Figur 1 auch als Y-Richtung angegeben ist. Bevorzugt bildet die Erstreckung des Koffers 1 von der Unterseite 42 zu der Oberseite 41 eine Höhenerstreckung, welche in der Figur 1 als Z-Richtung angegeben ist. Die Erstreckung des Koffers 1 quer zur Längserstreckung ist in der Figur 1 als X-Richtung angegeben.

Bevorzugt weist der Koffer 1 ein Deckelteil 2 und ein von dem Deckelteil 2 abdeckbares Unterteil 4 auf. Bevorzugt sind die Oberseite 41 des Koffers 1 durch die Oberseite des Deckelteils 2 und die Unterseite 42 des Koffers 1 durch die Unterseite des Unterteils 4 gebildet. Das Deckelteil 2 kann an dem Unterteil 4 schwenkbar angebunden sein, beispielsweise über eine insbesondere horizontale Scharnierachse 3 an dem Unterteil 4 schwenkbar gelagert sein, welche beispielsweise der Rückseite 44 zugeordnet ist. Um das Deckelteil 2 gegen ungewolltes Öffnen gegenüber dem Unterteil 4 zu sichern, können Verschlusselemente 16, wie beispielsweise Verschlussriegel, vorgesehen sein. Bevorzugt sind die Verschlusselemente 16 der Vorderseite 43 zugeordnet.

Bevorzugt weist der Koffer 1 einen Tragegriff 19. Bevorzugt ist der Tragegriff 19 an der Vorderseite 19 angeordnet, so dass beim Tragen des Koffers 1 an dem Tragegriff 19 die Rückseite 44 nach unten gewandt ist. Bevorzugt ist der Tragegriff 19 an der Vorderseite 43 schwenkbar gelagert. Der Tragegriff 19 kann dem Unterteil 4 oder dem Deckelteil 2 zugeordnet sein, insbesondere daran angeordnet sein. Der Koffer 1 kann an der Vorderseite 43 eine Anlagefläche

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aufweisen, an welche der Tragegriff 19 angelegt ist bzw. anlegbar. Bevorzugt ist die Anlagefläche in Y-Richtung nach hinten versetzt. Grundsätzlich kann auch wenigstes ein weiterer Tragegriff vorgesehen sein, welcher beispielsweise der Oberseite 41 zugeordnet ist.

Der Koffer 1 ist zum Stapeln mit wenigstens einem weiteren Koffer geeignet. Dazu weist der Koffer 1 eine Aufsetzfläche 13 für den weiteren Koffer und wenigstens ein, vorzugsweise wenigstens zwei Kopplungsteile 10, 11 auf, welche jeweils mit einem zughörigen Gegenkopplungsteil des weiteren Koffers unter Ausbildung einer Steckverbindung zusammen bringbar sind. Figur 3 zeigt beispielhaft einen weiteren Koffer 1a, welcher auf den Koffer 1 aufgestapelt werden kann. Der weitere Koffer 1a weist wenigstes zwei Gegenkopplungsteile 28a, 29a auf, welche mit den Kopplungsteilen 10, 11 des Koffers 1 unter Ausbildung einer Steckverbindung zusammen bringbar sind. Im Zuge der weiteren Beschreibung des Koffers 1 bezüglich der vorgesehenen Funktionen zum Aufstapeln eines weiteren Koffers wird nachfolgend bereits der Koffer 1a der Figur 3 herangezogen.

Bei dem Koffer 1 ist es vorgesehen, dass die Steckverbindung mit dem weiteren Koffer 1a erst nach dem Aufsetzen des weiteren Koffers 1a auf die Aufsetzfläche 13 durchgeführt werden kann. Dazu sind die Kopplungsteile 10, 11 derart ausgerichtet, dass durch Verschieben des weiteren Koffers 1a entlang und/oder auf der Aufsetzfläche 13 die Steckverbindung mit dem jeweils zugeordneten Gegenkopplungsteil 28a bzw. 29a gebildet wird.

Bevorzugt sind die Kopplungsteile 10, 11 in Längsrichtung bzw. Y-Richtung in der Weise ausgerichtet, dass die Einsteckverbindung durch Verschieben des weiteren Koffers 1a von der Vorderseite 43 weg in Richtung zu der Rückseite 44 des Koffers 1 gebildet wird. Beispielsweise sind die Kopplungsteile 10, 11 jeweils als Einsteckaufnahme und die Gegenkopplungsteile 28a, 29a als Einsteckelement ausgebildet, welches durch eine Einstecköffnung 12 in die zugehörige Einsteckaufnahme einsteckbar ist. Beispielsweise bilden die Einsteckaufnahme einen Einhängeansatz und das Einsteckelement eine Einhängelasche, welche durch die als Einhängeöffnung ausgebildete Einstecköffnung 12 gegen den Einhängeansatz einhängbar ist. Beispielsweise ist die Einhängelasche durch einen einseitig nach außen stehenden Ansatz bzw. Lasche gebildet.

Bevorzugt sind die Einsteckelemente bzw. Einhängelaschen in Einsteckrichtung keilförmig verlaufend ausgebildet, so dass die Einsteckelemente in die zugehörigen Einsteckaufnahmen spielfrei einsteckbar sind und damit in X-Richtung und Y-Richtung die Steckverbindung gegen Verschieben gesichert ist. Bevorzugt sind die Einsteckaufnahmen bzw. Einhängeansätze korrespondierend zu den Einsteckelementen keilförmig profiliert. Durch die Einsteckverbindung sind zudem das jeweilige Einsteckelement und die zugehörige Einsteckaufnahmen relativ zueinander gegen ein Abheben in Z-Richtung gesichert.

Bevorzugt ist die Aufsetzfläche 13 der Oberseite 41 zugeordnet, insbesondere an der Oberseite 41 ausgebildet. Bevorzugt sind die Kopplungsteile 10, 11 der Oberseite 41 zugeordnet, insbesondere an der Oberseite 41 ausgebildet. Bevorzugt weist der Koffer 1 an der Oberseite 41 wenigstens

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eine, vorzugsweise zwei Querrippen 6, 7 auf, welche jeweils quer zur Längserstreckung des Koffers 1, insbesondere in X-Richtung, verlaufen und jeweils eine nach außen stehende und der Vorderseite 43 zugewandte Seitenfläche 45 haben.

Bevorzugt begrenzen die Querrippen 6, 7 eine dazwischen verlaufende Quernut 5. Beispielsweise weist das Deckelteil 2 an seiner Oberseite einen im Wesentlichen flachen Teil auf, welches in seinem mittleren Bereich die Quernut 5 hat und seitlich von den erhöht ausgebildeten Querrippen 6, 7 begrenzt ist. Durch die Quernut 5 kann ein weiterer Koffer aufgestapelt werden, welcher gegenüber dem Koffer 1a in Längsrichtung kürzer ausgebildet ist, wobei dann in die Quernut 5 und/oder gegen die Seitenfläche 45 der Querrippe 7 der weiteren Koffer sich mit seinem hinteren Ende, welches der Rückseite 44 des Koffers 1 zugewandt ist, eingreifen bzw. abstützen kann.

Bevorzugt sind die Kopplungsteile 10, 11 in Querrichtung bzw. X-Richtung beabstandet zueinander angeordnet. Bevorzugt sind die Kopplungsteile 10, 11 jeweils mit der Querrippe 6 verbunden oder an der Querrippe 6 angeformt. Bevorzugt sind zwei weitere Kopplungsteile 10', 11' vorgesehen, welche jeweils mit einem zugehörigen weiteren Gegenkopplungsteil 24a bzw. 25a des weiteren Koffers 1a unter Ausbildung einer Steckverbindung zusammen bringbar sind und derart ausgerichtet sind, dass durch Verschieben des weiteren Koffers 1a entlang und/oder auf der Aufsetzfläche 13 die Steckverbindung mit dem zugehörigen Gegenkopplungsteil 24a bzw. 25a gebildet ist. Bevorzugt sind die weiteren Kopplungsteile 10', 11' und die Kopplungsteile 10, 11 bezüglich der Einsteckrichtung zum Herstellen der Steckverbindung, also in Y-Richtung, hintereinanderliegend angeordnet.

Bevorzugt sind die Kopplungsteile 10, 11 angrenzend an einen Aufnahmebereich 8 für den weiteren Koffer 1a, insbesondere in Y-Richtung angrenzend an den Aufnahmebereich 8, angeordnet. Bevorzugt sind die weiteren Kopplungsteile 10', 11' angrenzend an einen weiteren Aufnahmebereich 9 für den weiteren Koffer 1a, insbesondere in Y-Richtung angrenzend an den weiteren Aufnahmebereich 9, angeordnet. Bevorzugt ist der Aufnahmebereich 8 an der Oberseite 41 im vorderen Bereich angeordnet, welcher sich beispielsweise im Randbereich zu der Vorderseite 43 befindet. Bevorzugt ist der weitere Aufnahmebereich 9 an der Oberseite 41 im hinteren Bereich angeordnet, welcher sich beispielsweise im Randbereich zu der Rückseite 44 befindet.

Bevorzugt weist zur Aufnahme in den Aufnahmebereich 8 und den weiteren Aufnahmebereich 9 der weitere Koffer 1a jeweils eine entsprechende Fußleiste 22a auf, welche sich beispielsweise in Querrichtung bzw. X-Richtung erstreckt und nach unten heraus steht. Die Fußleiste 22a kann jeweils soweit nach unten heraus stehen, dass der weitere Koffer 1a über die Fußleisten 22a auf die Bodenfläche 14 der Aufnahmebereiche 8 und 9 aufsetzt. Die Bodenfläche 14 bildet dann die Aufsetzfläche 13. Alternativ kann die Fußleiste 22a jeweils soweit nach unten heraus stehen, dass der weitere Koffer 1a auf die Querrippen 6, 7 aufsetzt und die Fußleisten 22a in Abstand zu der Bodenfläche 14 der Aufnahmebereiche 8 und 9 liegen oder ebenfalls auf die Bodenfläche 14 der Aufnahmebereiche 8 und 9 aufsetzen. In diesem Fall bildet die Oberseite der Querrippen 6, 7 zumindest teilweise eine Aufsetzfläche für den weiteren Koffer 1a.

Bevorzugt verlaufen die Fußleisten 22a quer zur Längserstreckung des weiteren Koffers 1a und begrenzen eine dazwischen verlaufende Freistellung 21a, die beispielsweise als quer verlaufende Nut ausgebildet ist. Die Freistellung 21a ist beispielsweise zur Aufnahme der Querrippen 6, 7 des Koffers 1 vorgesehen. Bevorzugt schließen die Fußleisten 22a etwa mit der Rückwand 23a und der Vorderseite 43a des weiteren Koffers 1a ab. Bevorzugt sind die Fußleisten 22a durchgehend ausgebildet. Grundsätzlich können die Fußleisten 22a auch nur stückweise vorhanden sein oder ganz entfallen.

Bevorzugt ist die Unterseite 42 des Koffers 1 entsprechend der Unterseite des Koffers 1a ausgebildet, so dass der Koffer 1 selbst zum Aufstapeln auf einen Koffer genutzt werden kann. Bevorzugt ist dazu die Unterseite 42 des Koffers 1 korrespondierend zu seiner Oberseite 41 ausgeführt. Bevorzugt sind dazu zumindest einzelne der bezüglich des weiteren Koffers 1a beschriebenen Bauteile, nämlich die Gegenkopplungsteile 28a, 29a, die weiteren Gegenkopplungsteile 24a, 25a, die Freistellung 21a und die Rückwand 23a bei dem Koffer 1 als Gegenkopplungsteile 28, 29, weitere Gegenkopplungsteile 24, 25, Freistellung 21 und Rückwand 23 vorgesehen.

Weiterhin hat der Koffer 1 mindestens ein Verriegelungselement 18 zum Sichern der von den Kopplungsteilen 10, 11 und Gegenkopplungsteilen 28a, 29a ausbildbaren Steckverbindung gegen ein Lösen. Das Verriegelungselement 18 ist von einer Ausgangsposition A bzw. Ruhestellung, welche in der Figur 1 dargestellt ist, in eine Zwischen- oder Endposition bewegbar ist und befindet sich in der Ausgangsposition A in dem Aufnahmebereich 8 für den weiteren Koffer 1a. Dadurch ist es

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möglich, dass das Verriegelungselement 18 beim Aufsetzen des weiteren Koffers 1a auf die Aufsetzfläche 13 durch den weiteren Koffer 1a betätigt wird. Dazu ist es bevorzugt vorgesehen, dass das Verriegelungselement 18 in der Ausgangsposition A mit einem Ende 15 die Bodenfläche 14 des Aufnahmebereichs 8 überragt. Bevorzugt ist in der Zwischen- oder Endposition das Ende 15 gegenüber der Ausgangsposition A herabgesetzt.

Bevorzugt ist das Verriegelungselement 18 der Oberseite 41 zugeordnet und im Bereich der Vorderseite 43 des Koffers 1, beispielsweise des Deckelteils 2, angeordnet. Beispielsweise ist das Verriegelungselement 18 in einer Ausnehmung 17 an der Vorderseite 43 angeordnet.

Bevorzugt ist das Verriegelungselement 18 federbelastet bewegbar. Beispielsweise ist das Verriegelungselement 18 von der Ausgangsposition A gegen eine Federkraft in die Zwischen- oder Endposition bewegbar, so dass beispielsweise das Verriegelungselement 18 von der Zwischen- oder Endposition in die Ausgangsposition A durch Federkraft sich selbsttätig zurückbewegt.

Die Figur 3 zeigt eine Abwandlung des Koffers 1 in einer Schnittdarstellung. Wie daraus ersichtlich ist, kann das Verriegelungselement 18 als Verriegelungsschieber ausgebildet sein, welcher von der Ausgangsposition A in die Zwischen- oder Endposition verschiebbar ist. Dazu kann ein Halteteil 32 oder Bodenteil vorgesehen sein, welches dem Deckelteil 2 zugeordnet ist, insbesondere daran angebunden oder ausgeformt ist. Das Halteteil 32 kann u-förmig profiliert oder becherförmig ausgebildet sein, in dessen nach oben geöffneter Ausnehmung eine Druckfeder 31 angeordnet sein kann. Die Druckfeder 31

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kann sich an der Innenseite eines Schiebeteiles 30, insbesondere Schieberiegels, abstützen, welches verschiebbar am Halteteil 32 geführt ist.

Bevorzugt sind Anschläge vorhanden, um zu vermeiden, dass das Schiebeteil 30 aus dem u-förmig profilierten Halteteil 32 durch die Kraft der Druckfeder 31 vollständig heraus geschoben wird. Bevorzugt ist das Schiebeteil 30 u-förmig oder becherförmig ausgebildet und mit seiner Öffnung zuerst kommend in das Halteteil 32 eingestülpt, wobei sich die Druckfeder 31 gegen die Bodenfläche des Schiebeteils 30 abstützt.

Die Figur 3 zeigt einen möglichen ersten Montagezustand bezüglich des Aufstapelns des weiteren Koffers 1a auf den Koffer 1. Figur 4 zeigt einen möglichen zweiten Montagezustand und Figur 5 zeigt einen möglichen dritten Montagezustand. Bauteile des weiteren Koffers 1a, welche mit Bauteilen des Koffers 1 identisch oder funktionsgleich sind, sind mit gleichen Bezugszeichen und dem Zusatz „a" versehen. Bei dem weiteren Koffer 1a kann es sich um einen gegenüber dem Koffer 1 baugleichen Koffer handeln.

In dem ersten Montagezustand gemäß der Figur 3 ist der weitere Koffer 1a gegenüber dem Koffer 1 in eine Position gebracht, um den weiteren Koffer 1a auf die Aufsetzfläche 13 des Koffers 1 aufzusetzen und den weiteren Koffer 1a in den Aufnahmebereichen 8, 9 aufzunehmen. Um das Aufsetzen des weiteren Koffers 1a auf den Koffer 1 zu ermöglichen, ist der weitere Koffer 1a gegenüber dem Koffer 1 soweit in Richtung der Y-Achse versetzt positioniert, dass bei einer Aufsetzbewegung in Pfeilrichtung 33 eine Kollision der Gegenkopplungsteile 28a, 29a, 24a, 25a des weiteren Koffers 1a

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mit den Kopplungsteilen 10, 11, 10', 11' des Koffer 1 vermieden ist.

Das Verriegelungselement 18 liegt noch in seiner Ausgangsposition A vor, in welcher es sich in dem Aufnahmebereich 8 für den weiteren Koffer 1a befindet. In der Ausgangsposition A greift das Verriegelungselement 18 in einen Verschiebeweg bzw. eine Verschiebestrecke W ein, über welchen der weitere Koffer 1a gegenüber dem Koffer 1 zu verschieben ist, um - im aufgesetzten Zustand - zur Ausbildung der Steckverbindung zu gelangen. Insofern nimmt das Verriegelungselement 18 in der Ausgangsposition A eine Sperrposition S bezüglich des Verschiebeweges W ein.

Im Zuge einer Aufsetzbewegung des weiteren Koffers 1a in die Pfeilrichtung 33 findet eine Betätigung des Verriegelungselementes 18 durch den weiteren Koffer 1a statt, in dem der weitere Koffer 1a, beispielsweise mit der einen Fußleiste 22a, auf das Verriegelungselement 18 drückt und von der Ausgangsposition A heraus gegen die Kraft der Druckfeder 31 in die Zwischen- oder Endposition bewegt wird. In der Zwischen- oder Endposition befindet sich das Verriegelungselement 18 in einer Freigabeposition F, in welcher das Verriegelungselement 18 den Verschiebeweg W freigibt, so dass ein Verschieben des weiteren Koffers 1a gegenüber dem Koffer 1 zur Ausbildung der Steckverbindung zugelassen ist. In dem zweiten Montagezustand gemäß der Figur 4 ist durch den weiteren Koffer 1a das Verriegelungselement 18 in die Freigabeposition F gebracht.

Anschließend wird der weitere Koffer 1a relativ gegenüber dem Koffer 1 in Pfeilrichtung 34, also in Y-Richtung,

verschoben und die Kopplungsteile 10, 11, 10', 11' des Koffers 1 mit den Gegenkopplungsteilen 28a, 29a, 24a, 25a jeweils unter Ausbildung der Steckverbindung zusammengebracht bzw. zusammengesteckt. Im Zuge dieser Verschiebebewegung wird das Verriegelungselement 18 von dem weiteren Koffer 1a freigegeben und bewegt sich aufgrund der Rückstellkraft der Druckfeder 31 selbsttätig zurück vorzugsweise in die Ausgangsposition A. In der zurückgestellten Position, insbesondere der Ausgangsposition A, nimmt das Verriegelungselement 18 eine Verriegelungsposition V ein, in welcher das Verriegelungselement 18 die Steckverbindung gegen Auseinanderbewegen bzw Aushängen entgegen der Zusammenführrichtung, also entgegen der Pfeilrichtung 34, sichert. Im dem dritten Montagezustand gemäß der Figur 5 liegen die Koffer 1, 1a im aufeinander gestapelten Zustand und bei ausgebildeter Steckverbindung vor, wobei das Verriegelungselement 18 die sichernde Verriegelungsposition V eingenommen hat.

In der Verriegelungsposition V dient das Verriegelungselement 18 somit als Anschlag für den weiteren Koffer 1a. Als dazu korrespondierende Anschlagfläche 20a dient bei dem weiteren Koffer 1a beispielsweise der Bereich der Vorderseite 43a, welche beispielsweise in Y-Richtung nach hinten versetzt sein kann. An dieser Anschlagfläche 20a kann sich der Tragegriff 19, wie er in der Figur 1 beschrieben ist, anlegen oder daran geführt sein.

Im Zuge der Verschiebebewegung des weiteren Koffers 1a gegenüber dem Koffer 1 zum Ausbilden der Steckverbindung legt sich das Verriegelungselement 18 beispielsweise an die Anschlagfläche 20a an. In der Verriegelungsposition V nach der

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Figur 5 legt sich somit das Schiebeteil 30 an der Vorderseite 43a des Koffers 1a an und sichert die Kopplungsverbindung zwischen den Koffern 1 und 1a gegen unbeabsichtigtes Aushängen.

Um diese Kopplungsverbindung bzw. Steckverbindung wieder außer Eingriff zu bringen, ist es beispielsweise notwendig, das Schiebeteil 30 per Hand nach unten zu drücken, um das Verriegelungselement 18 in die Freigabeposition F nach der Figur 4 zu bringen. Es können dann der weitere Koffer 1a gegenüber dem Koffer 1 entgegen der Pfeilrichtung 34 verschoben werden und somit die vorhandene Einhängeverbindung bzw. Steckverbindung geöffnet werden.

Figuren 6 und 7 zeigen in vergrößerter Darstellung den Verriegelungsschieber 18 des Koffers 1 zusammen mit einem Ausschnitt des weiteren Koffers 1a. Wie aus der Figur 7 ersichtlich ist, kann eine Vorspannung der Steckverbindung bzw. Einhängeverbindung dadurch erfolgen, dass entweder das Schiebeteil 30 und/oder die Vorderseite 43a in dem Bereich, wo das Schiebeteil 30 anliegt, zugeordnete Keilflächen 36 aufweisen, um so die Einhängeverbindung bzw. Steckverbindung in Pfeilrichtung 34 noch zusätzlich vorzuspannen. Die Vorspannung erfolgt federbelastet durch die Druckfeder 31. Es kann als Betätigungsfläche für das Verriegelungselement 18 stets eine bodenseitige Anschlagfläche oder Betätigungsfläche 35 des weiteren Koffers 1a verwendet werden. Die Betätigungsfläche 35 ist jedoch nicht zwangsläufig eine Bodenfläche. Die Betätigungsfläche 35 kann als versetzte Anschlagfläche oder dergleichen oder als Fußleiste oder dergleichen ausgebildet sein.

Figur 8 zeigt in vergrößerter Darstellung eine weitere Ausführungsform des Koffers 1' und eines Verriegelungselementes 38. Das Verriegelungselement 38 ist dort als Schwenkhebel ausgebildet, welcher von der Ausgangsposition A in die Zwischen- oder Endposition um eine Schwenkachse 39 verschwenkbar ist. Das Verriegelungselement 38 ist mittels der Schwenkachse 39 in den Pfeilrichtungen 40 verschwenkbar. Die zur Federvorbelastung notwendige Druckfeder ist nicht gezeichnet.

Figur 9 zeigt eine nochmals weitere Ausführungsform eines Koffers 1'' mit einer weiteren Ausführungsform eines weiteren Koffers 1a''. Die Figur 9 lehnt sich an die Darstellung in der Figur 2 an. Die Koffer 1'' und 1a'' unterscheiden sich von den Koffern 1 und 1a dadurch, dass an der Unterseite 42 ein Vorsprung 46 vorgesehen ist, welcher in die Quernut 5 eingreift bzw. zum Eingreifen vorgesehen ist.

B e z u g s z e i c h e n l i s t e

1, 1a	Koffer
1‘	Koffer
1‘‘, 1‘‘a	Koffer
2, 2a	Deckelteil
3, 3a	Scharnierachse
4, 4a	Unterteil
5, 5a	Quernut
6, 6a	Querrippe
7, 7a	Querrippe
8, 8a	Aufnahmebereich
9, 9a	Aufnahmebereich
10, 10a	Kopplungsteil
11, 11a	Kopplungsteil
10‘, 10‘a	weiteres Kopplungsteil
11‘, 11‘a	weiteres Kopplungsteil
12, 12a	Einstecköffnung
13, 13a	Aufsetzfläche
14, 14a	Bodenfläche
15, 15a	Ende
16	Verschlusselement
17	Ausnehmung
18, 18a	Verriegelungselement
19	Tragegriff
20, 20a	Anschlagfläche
21, 21a	Freistellung
22, 22a	Fußleiste
23, 23a	Rückwand
24, 24a	Gegenkopplungsteil

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25, 25a	Gegenkopplungsteil
28, 28a	Gegenkopplungteil
29, 29a	Gegenkopplungsteil
30, 30a	Schiebeteil
31, 31a	Druckfeder
32, 32a	Halteteil
33	Pfeilrichtung
34	Pfeilrichtung
35	Betätigungsfläche
36	Keilfläche
38	Verriegelungselement
39	Schwenkachse
40	Pfeilrichtung
41	Oberseite
42	Unterseite
43, 43a	Vorderseite
44	Rückseite
45	Seitenfläche
46, 46a	Vorsprung

A	Ausgangsposition
S	Sperrposition
F	Freigabeposition
V	Verriegelungsposition
W	Verschiebeweg

P a t e n t a n s p r ü c h e

1. Koffer (1) zum Stapeln mit einem weiteren Koffer (1a), mit einer Aufsetzfläche (13) zum Aufstapeln des weiteren Koffers (1a), wenigstens einem Kopplungsteil (10; 11), welches mit einem Gegenkopplungsteil (28a; 29a) des weiteren Koffers (1a) unter Ausbildung einer Steckverbindung zusammenbringbar ist, wobei das Kopplungsteil (10; 11) derart ausgerichtet ist, dass durch Verschieben des weiteren Koffers (1a) entlang der Aufsetzfläche (13) die Steckverbindung mit dem Gegenkopplungsteil (28a; 29a) gebildet wird, und mit mindestens einem Verriegelungselement (18; 38) zum Sichern der Steckverbindung gegen ein Lösen, wobei das Verriegelungselement (18; 38) von einer Ausgangsposition (A) in eine Zwischen- oder Endposition bewegbar ist und in der Ausgangsposition (A) sich in einem Aufnahmebereich (8) für den weiteren Koffer (1a) befindet, welcher bei einem Aufsetzen des weiteren Koffers (1a) auf die Aufsetzfläche (13) genutzt ist.

2. Koffer nach Anspruch 1, dadurch gekennzeichnet, dass in der Ausgangsposition (A) das Verriegelungselement (18; 38) eine Bodenfläche (14) des Aufnahmebereiches (8) überragt.

3. Koffer nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass in der Ausgangsposition (A) das Verriegelungselement (18; 38) mit einem Ende (15) eine Bodenfläche (14) des Aufnahmebereiches (8) überragt und in der Zwischen- oder Endposition das eine Ende (15) des Verriegelungselementes (18; 38) gegenüber der Ausgangsposition (A) herabgesetzt

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ist.

4. Koffer nach Anspruch 2 oder 3, dadurch gekennzeichnet, dass die Bodenfläche (14) des Aufnahmebereiches (8) zumindest einen Teil der Aufsetzfläche (13) bildet.

5. Koffer nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass das Verriegelungselement (18; 38) in der Ausgangsposition (A) federbelastet gehalten ist.

6. Koffer nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, dass das Verriegelungselement (18) als Verriegelungsschieber ausgebildet ist, welcher von der Ausgangsposition (A) in die Zwischen- oder Endposition verschiebbar ist.

7. Koffer nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, dass das Verriegelungselement (38) als Schwenkhebel ausgebildet ist, welcher von der Ausgangsposition (A) in die Zwischen- oder Endposition um eine Schwenkachse (39) verschwenkbar ist.

8. Koffer nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, dass das Verriegelungselement als Drehhebel ausgebildet ist, welcher von der Ausgangsposition (A) in die Zwischen- oder Endposition um eine Drehachse drehbar ist.

9. Koffer nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass der Koffer (1) eine Oberseite (41), eine Unterseite (42), eine Vorderseite (43) und eine Rückseite (44) hat, wobei die Erstreckung des Koffers (1)

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von der Vorderseite (43) zu der Rückseite (44) eine Längserstreckung bildet und wobei die Aufsetzfläche (13) der Oberseite (41) zugeordnet ist und an der Vorderseite (43) ein Tragegriff (19) angeordnet ist, so dass beim Tragen des Koffers (1) an dem Tragegriff (19) die Rückseite (44) nach unten gewandt ist.

10. Koffer nach Anspruch 9, dadurch gekennzeichnet, dass das Kopplungsteil (10; 11) in Richtung zu dem Tragegriff (19) gerichtet ist, so dass die Steckverbindung mit dem Gegenkopplungsteil (28a; 29a) des weiteren Koffers (1a) durch Verschieben des weiteren Koffers (1a) von der Vorderseite (43) weg in Richtung zu der Rückseite (44) des Koffers (1) gebildet wird.

11. Koffer nach Anspruch 9 oder 10, dadurch gekennzeichnet, dass der Aufnahmebereich (8) für den weiteren Koffer (1a) der Oberseite (41) zugeordnet ist und das Verriegelungselement (18; 38) im Bereich der Vorderseite (43) angeordnet ist und in der Ausgangsposition (A) die Oberseite (41) überragt.

12. Koffer nach einem der Ansprüche 9 bis 11, dadurch gekennzeichnet, dass die Oberseite (41) des Koffers (1) wenigstens eine Querrippe (6, 7) aufweist, welche quer zur Längserstreckung des Koffers (1) verläuft und eine nach außen hervorstehende und der Vorderseite (43) zugewandte Seitenfläche (45) hat.

13. Koffer nach einem der Ansprüche 9 bis 12, dadurch gekennzeichnet, dass die Oberseite (41) des Koffers (1) zwei Querrippen (6, 7) aufweist, welche jeweils quer zur

Längserstreckung des Koffers (1) verlaufen und eine nach außen hervorstehende und der Vorderseite (43) zugewandte Seitenfläche (45) haben, wobei die Querrippen (6, 7) eine dazwischen verlaufende Quernut (5) begrenzen.

14. Koffer nach einem der Ansprüche 9 bis 13, dadurch gekennzeichnet, dass die Unterseite (42) korrespondierend zu der Oberseite (41) des Koffers (1) ausgebildet ist, so dass der Koffer (1) mit seiner Unterseite (42) auf einen anderen Koffer aufstapelbar ist, welcher eine zu dem Koffer (1) entsprechend ausgebildete Oberseite aufweist.

15. Koffer nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass zwei Kopplungsteile (10, 11) vorgesehen sind, welche jeweils mit einem zugehörigen Gegenkopplungsteil (28a, 29a) des weiteren Koffers (1a) unter Ausbildung einer Steckverbindung zusammenbringbar sind und derart ausgerichtet sind, dass durch Verschieben des weiteren Koffers (1a) entlang der Aufsetzfläche (13) die Steckverbindung mit dem Gegenkopplungsteil (28a; 29a) gebildet wird, wobei die Kopplungsteile (10, 11) bezüglich der Einsteckrichtung zum Herstellen der Steckverbindung nebeneinander liegend angeordnet sind.

16. Koffer nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass wenigstens ein weiteres Kopplungsteil (10'; 11') vorgesehen ist, welches mit einem zugehörigen Gegenkopplungsteil (24a; 25a) des weiteren Koffers (1a) unter Ausbildung einer Steckverbindung zusammenbringbar ist und derart ausgerichtet ist, dass durch Verschieben des weiteren Koffers (1a) entlang der Aufsetzfläche (13) die Steckverbindung mit dem zugehörigen Gegenkopplungsteil

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(24a; 25a) gebildet ist, wobei das weitere Kopplungsteil (10'; 11') und das Kopplungsteil (10; 11) bezüglich der Einsteckrichtung zum Herstellen der Steckverbindung hintereinander liegend angeordnet sind.

17. Anordnung mit wenigstens zwei übereinander gestapelten Koffern (1, 1a), von denen wenigstens ein Koffer (1) eine Aufsetzfläche (13) und wenigstens ein Kopplungsteil (10; 11) hat, wobei auf der Aufsetzfläche (13) der andere Koffer (1a) aufgesetzt ist und das Kopplungsteil (10; 11) mit einem Gegenkopplungsteil (28a; 29a) des anderen Koffers (1a) eine Steckverbindung ausbildet, welche durch Verschieben des anderen Koffers (1a) entlang und/oder auf der Aufsetzfläche (13) gebildet ist, und mindestens ein Verriegelungselement (18; 38) vorgesehen ist, welches in einer die Steckverbindung gegen Lösen sichernden Verriegelungsposition (V) vorliegt, wobei in der Verriegelungsposition (V) das Verriegelungselement (18; 38) sich in einem Aufnahmebereich (8) für den anderen Koffer (1a) befindet, welcher bei einem Aufsetzen des weiteren Koffers (1a) auf die Aufsetzfläche (13) genutzt ist.

18. Verfahren zum Aufstapeln wenigstens zweier Koffer (1, 1a), bei dem einer der Koffer (1, 1a) auf eine Aufsetzfläche (13) des anderen Koffers (1) aufgesetzt wird und anschließend der Koffer (1a) über einen Verschiebeweg (W) und entlang der Aufsetzfläche (13) in eine Steckverbindung mit dem anderen Koffer (1) verschoben wird, wobei durch das Aufsetzen des Koffers (1a) auf den anderen Koffer (1) ein Verriegelungselement (18; 38) betätigt wird, indem der Koffer (1a) das Verriegelungselement (18; 38) von einer

...

Ausgangsposition (A) in eine Zwischen- oder Endposition bewegt, wobei in der Ausgangsposition (A) das Verriegelungselement (18; 38) sich in einer Sperrposition (S) befindet, in welcher das Verriegelungselement (18; 38) in den Verschiebeweg (W) für den weiteren Koffer (1a) eingreift, und in der Zwischen- oder Endposition das Verriegelungselement (18; 38) sich in einer Freigabeposition (F) befindet, in welcher das Verriegelungselement (18; 38) den Verschiebeweg (W) freigibt.

...

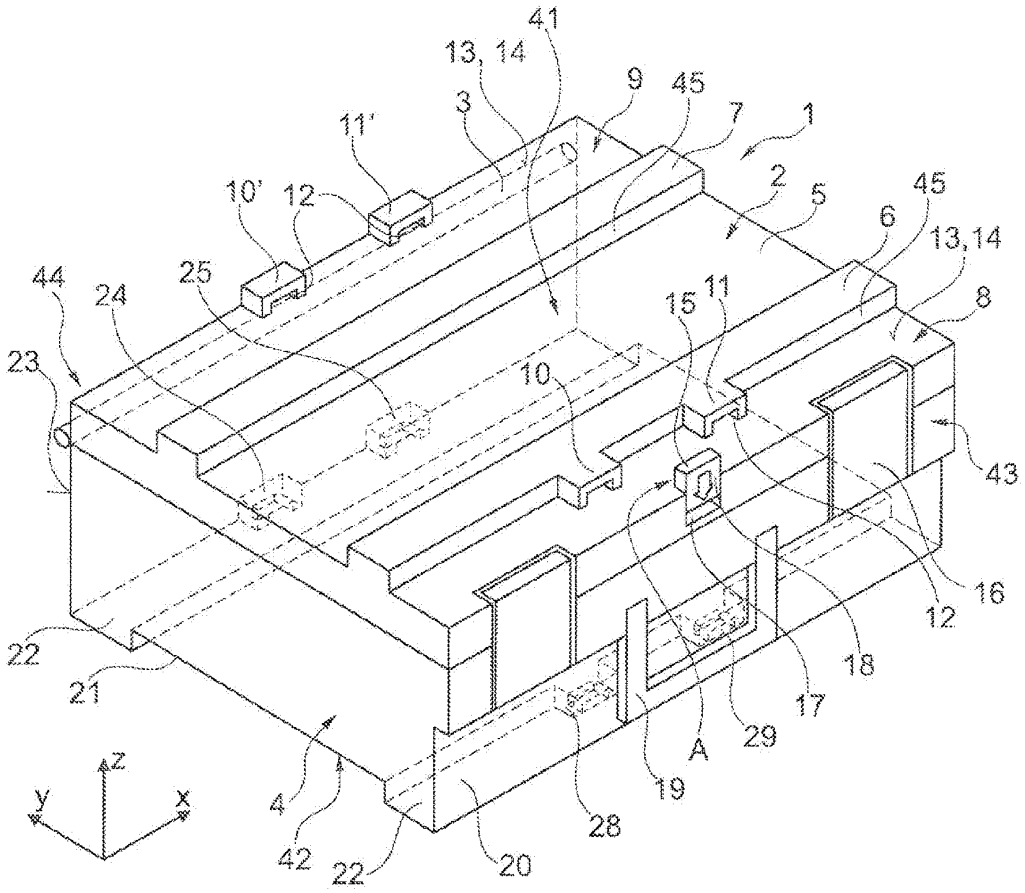

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9
45
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11'
10'
12
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13, 14
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25
15
11
23
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12
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A
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28
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z
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x

Fig. 1

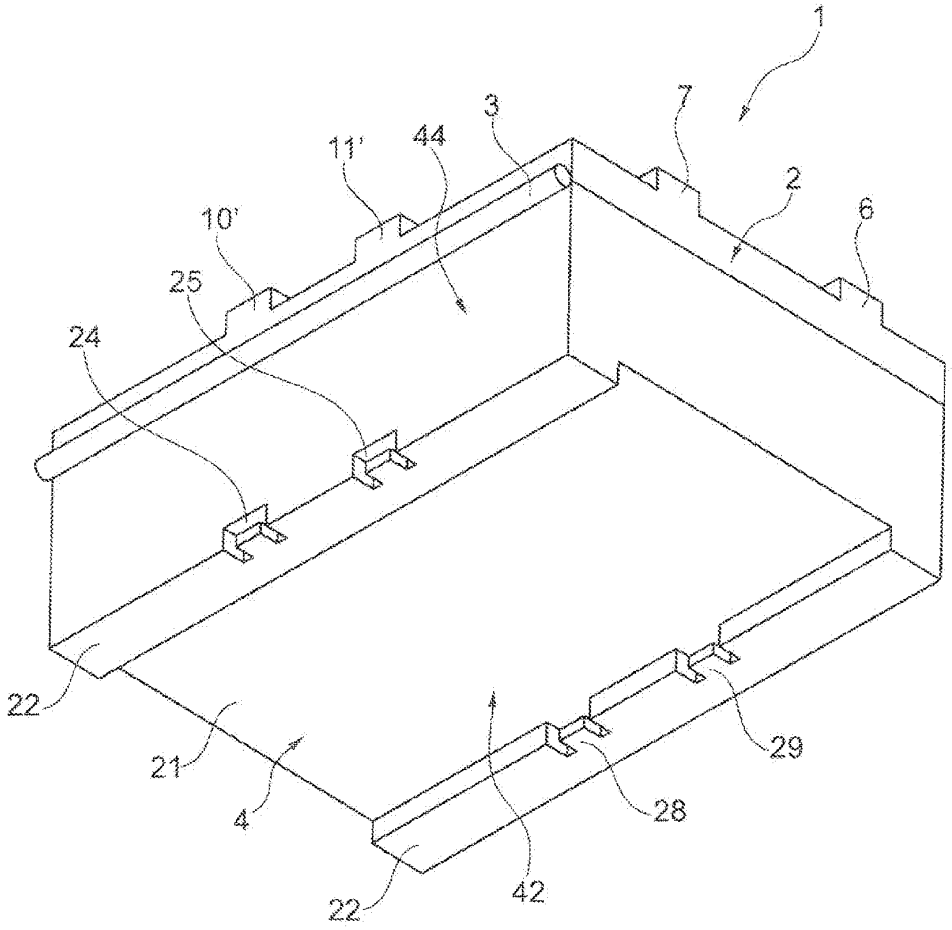


Fig. 2

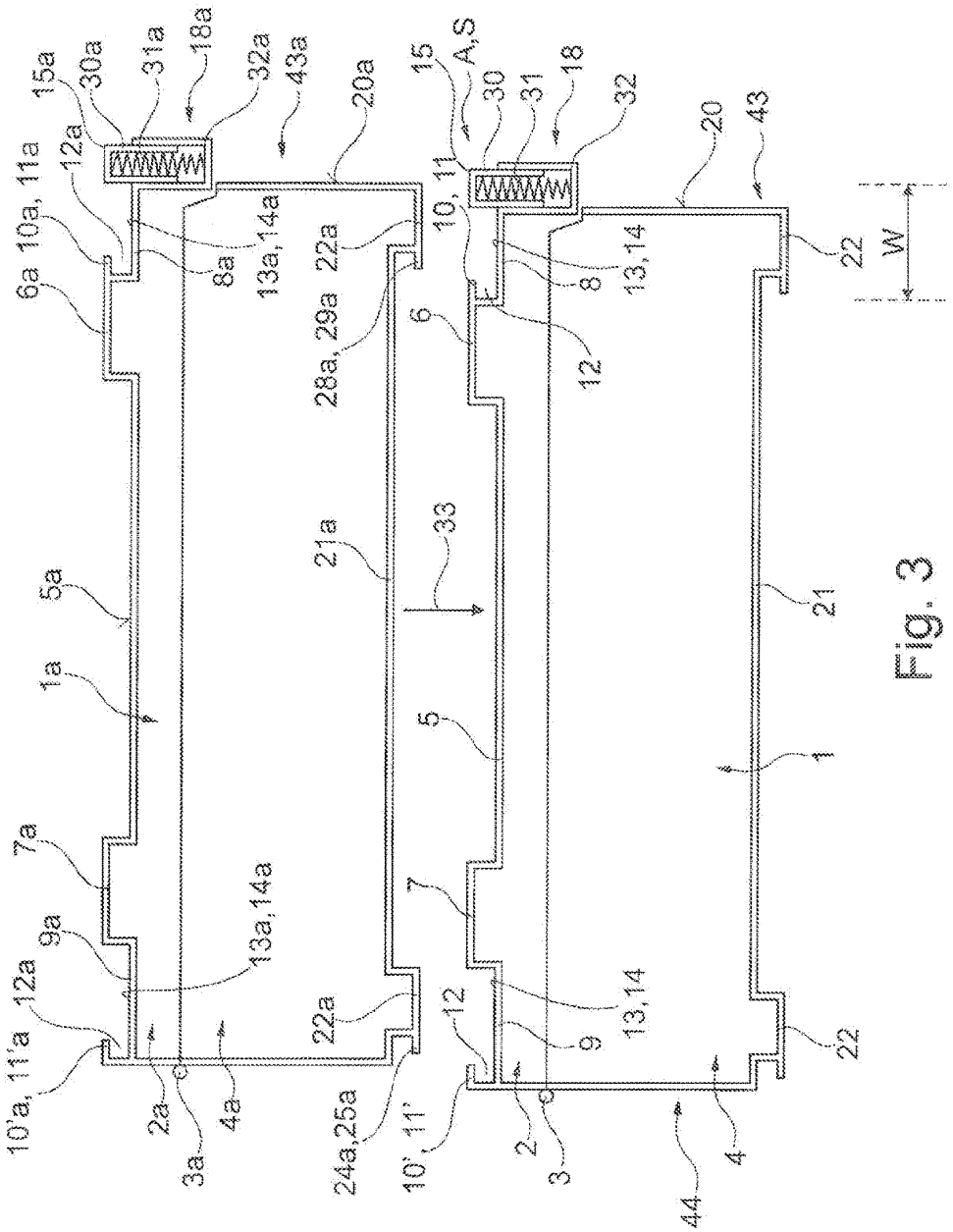

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5a
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3a

Fig. 3

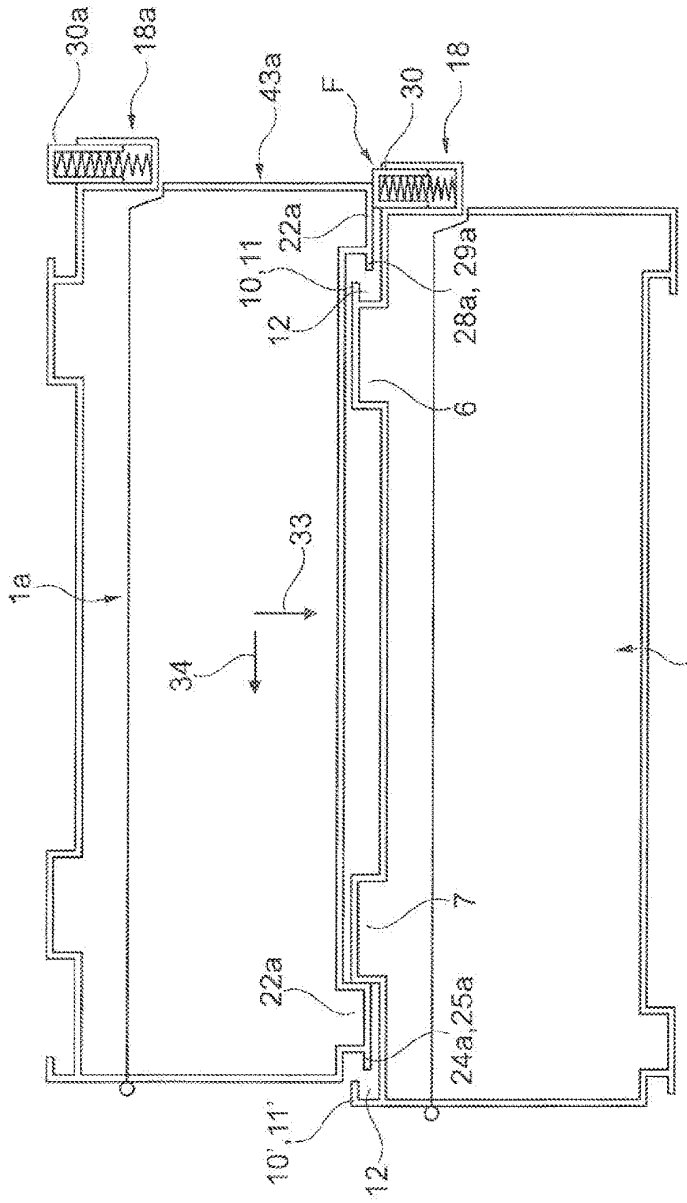

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F
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1a
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22a
24a,25a
10',11'
12

Fig. 4

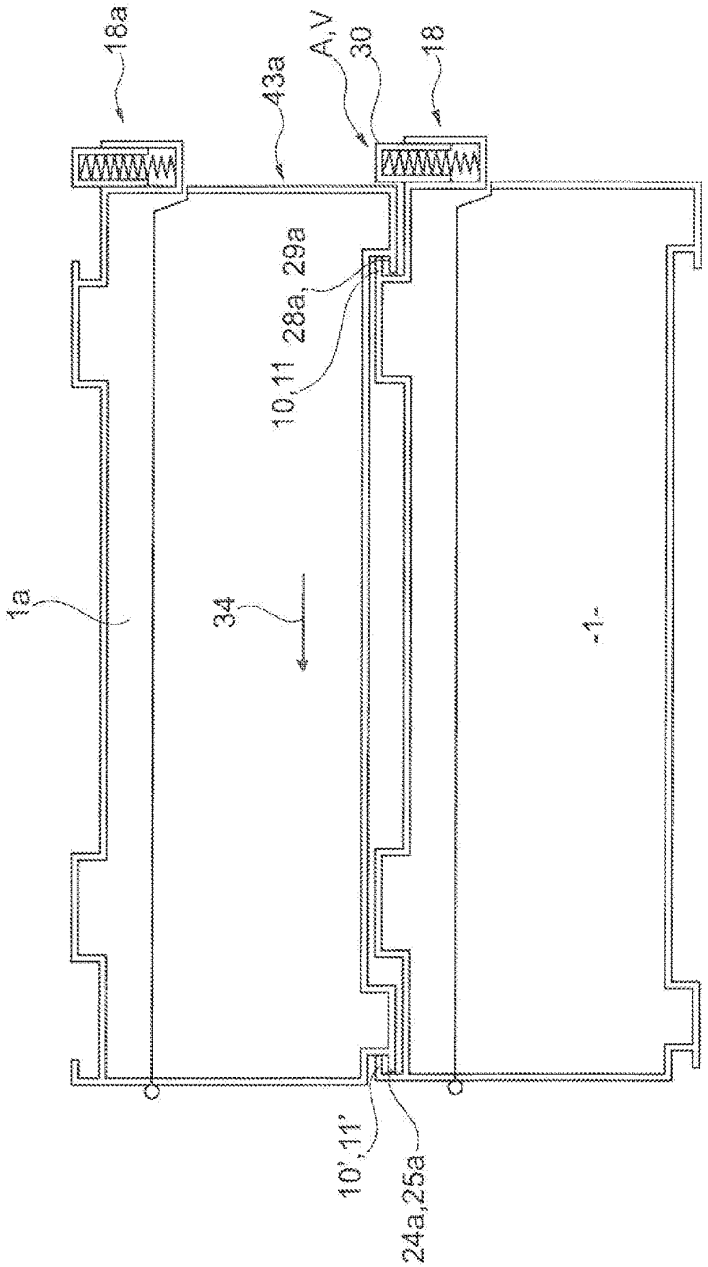


Fig. 5

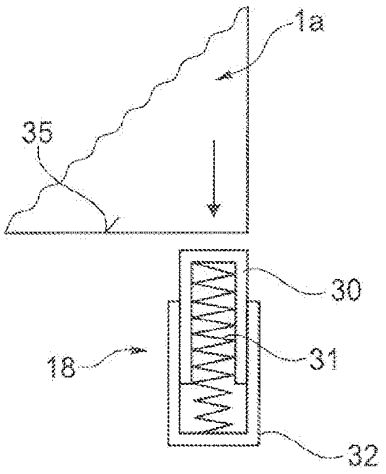


Fig. 6

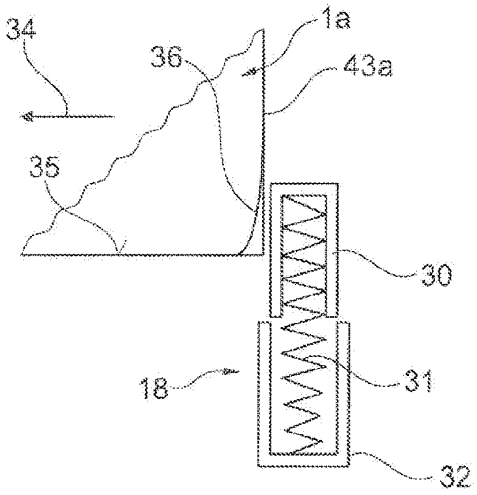


Fig. 7

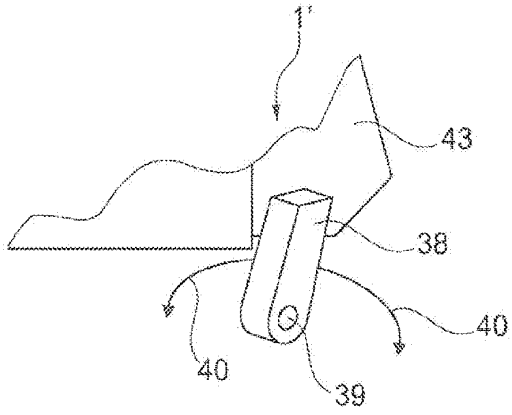


Fig. 8

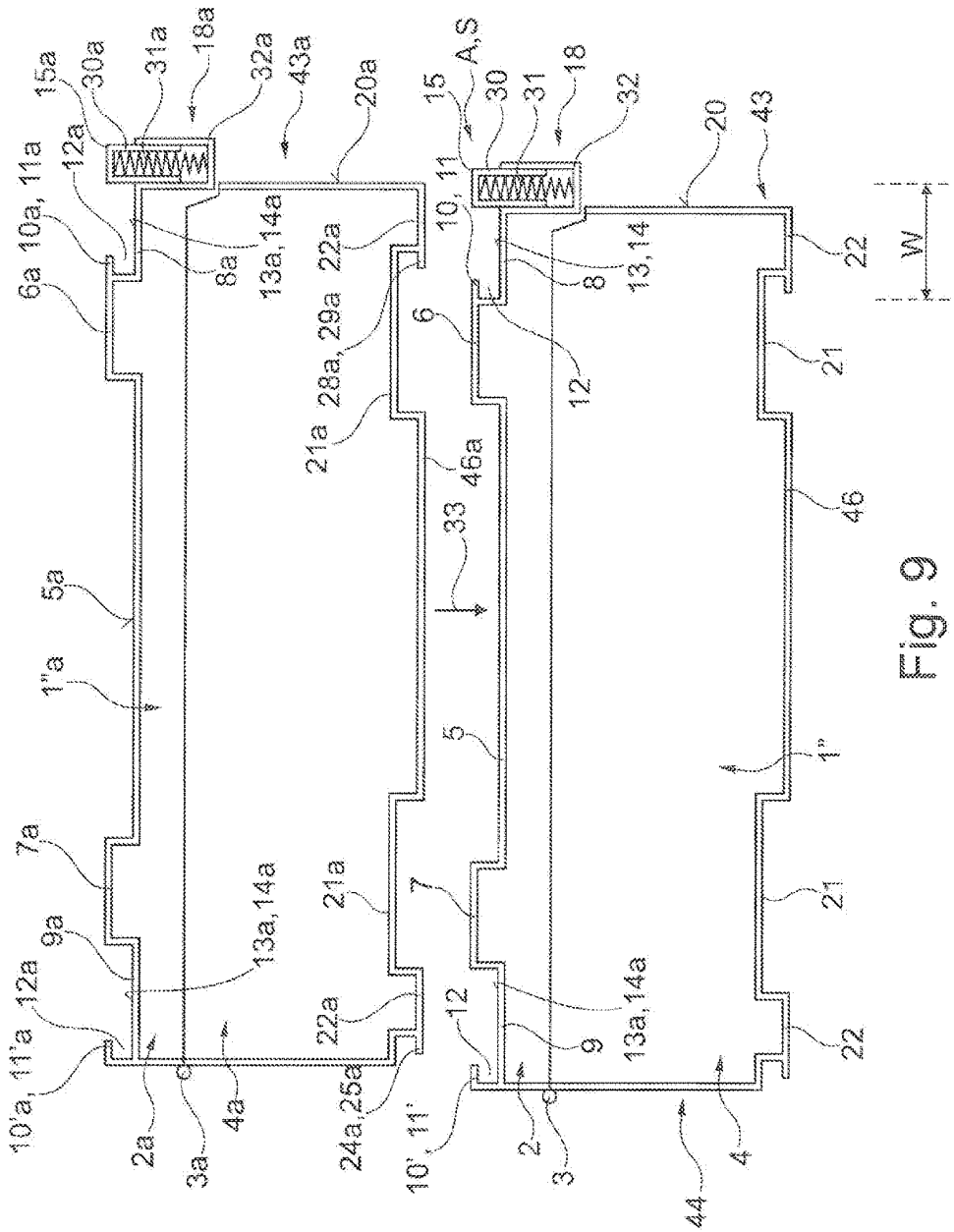

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12
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3
44
4
15
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30
31
18
32
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21
46
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1"
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22
W

Fig. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/DE2016/100374

A. CLASSIFICATION OF SUBJECT MATTER
INV. B25H3/02
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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 practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 2013 202869 A1 (MOB OUTIL [FR]) 5 September 2013 (2013-09-05)	1-17
A	paragraph [0001] paragraph [0008] - paragraph [0017] paragraph [0023] - paragraph [0054] figures	18

X	DE 20 2012 002819 U1 (LIN CHIN CHI [TW]) 8 May 2012 (2012-05-08)	1-4,6, 9-11, 14-17
A	paragraph [0001] paragraph [0018] - paragraph [0027] figures	18

	-/--	

[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

"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
22 November 2016	29/11/2016

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	van Woerden, N

1

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

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 231
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

INTERNATIONAL SEARCH REPORT

International application No
PCT/DE2016/100374

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/155613 A1 (KOENIG ANDREAS [DE] ET AL) 30 June 2011 (2011-06-30)	1-4,7,8, 15-17
A	paragraph [0001] paragraph [0011] - paragraph [0016] paragraph [0046] - paragraph [0064] paragraph [0094] - paragraph [0120] figures	18

X	EP 2 346 741 A1 (J O MADSEN APS [DK]) 27 July 2011 (2011-07-27)	1-6, 15-17
A	paragraph [0001] paragraph [0008] - paragraph [0012] paragraph [0014] - paragraph [0029] paragraph [0039] - paragraph [0048] figures	18

X	EP 1 018 473 A1 (FESTO TOOLTECHNIC GMBH & CO [DE]) 12 July 2000 (2000-07-12)	1-9,11, 14,15,17
A	paragraph [0001] - paragraph [0005] paragraph [0020] - paragraph [0054] figures	18

A	DE 201 12 393 U1 (SINCI AHMET [DE]) 11 October 2001 (2001-10-11) page 1 page 10 - page 21 figures	1-18

A	DE 10 2011 086800 A1 (BOSCH GMBH ROBERT [DE]) 23 May 2013 (2013-05-23) paragraph [0001] paragraph [0024] - paragraph [0038] figures	1-18

A	US 4 643 494 A (MARLEAU GILLES [CA]) 17 February 1987 (1987-02-17) column 2, line 45 - column 6, line 68 figures	1-18

1

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

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

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/DE2016/100374

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102013202869 A1	05-09-2013	DE 102013202869 A1	05-09-2013
		FR 2987573 A1	06-09-2013
		FR 2987574 A1	06-09-2013
DE 202012002819 U1	08-05-2012	NONE	
US 2011155613 A1	30-06-2011	AT 546373 T	15-03-2012
		CA 2735679 A1	06-01-2011
		CN 102137795 A	27-07-2011
		EP 2315701 A1	04-05-2011
		US 2011155613 A1	30-06-2011
		WO 2011000385 A1	06-01-2011
EP 2346741 A1	27-07-2011	EP 2346741 A1	27-07-2011
		US 2011139665 A1	16-06-2011
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EP 1018473 A1	12-07-2000	AT 230371 T	15-01-2003
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		EP 1018473 A1	12-07-2000
DE 20112393 U1	11-10-2001	NONE	
DE 102011086800 A1	23-05-2013	CN 103945990 A	23-07-2014
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		DE 102011086800 A1	23-05-2013
		EP 2782717 A2	01-10-2014
		US 2015069962 A1	12-03-2015
		WO 2013075945 A2	30-05-2013
US 4643494 A	17-02-1987	CA 1242171 A	20-09-1988
		US 4643494 A	17-02-1987

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

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/DE2016/100374

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
INV. B25H3/02
ADD.

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

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
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, WPI Data

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	DE 10 2013 202869 A1 (MOB OUTIL [FR]) 5. September 2013 (2013-09-05)	1-17
A	Absatz [0001] Absatz [0008] - Absatz [0017] Absatz [0023] - Absatz [0054] Abbildungen	18

X	DE 20 2012 002819 U1 (LIN CHIN CHI [TW]) 8. Mai 2012 (2012-05-08)	1-4,6, 9-11, 14-17
A	Absatz [0001] Absatz [0018] - Absatz [0027] Abbildungen	18

	-/--	

[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen [X] Siehe Anhang Patentfamilie

* Besondere Kategorien von angegebenen Veröffentlichungen :
"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist
"E" frühere Anmeldung oder Patent, die bzw. das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist
"L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)
"O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht
"P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist
"T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist
"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann allein aufgrund dieser Veröffentlichung nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden
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"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
22. November 2016	29/11/2016

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	van Woerden, N

1

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

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 234
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

C. (Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	US 2011/155613 A1 (KOENIG ANDREAS [DE] ET AL) 30. Juni 2011 (2011-06-30)	1-4,7,8, 15-17
A	Absatz [0001] Absatz [0011] - Absatz [0016] Absatz [0046] - Absatz [0064] Absatz [0094] - Absatz [0120] Abbildungen	18

X	EP 2 346 741 A1 (J O MADSEN APS [DK]) 27. Juli 2011 (2011-07-27)	1-6, 15-17
A	Absatz [0001] Absatz [0008] - Absatz [0012] Absatz [0014] - Absatz [0029] Absatz [0039] - Absatz [0048] Abbildungen	18

X	EP 1 018 473 A1 (FESTO TOOLTECHNIC GMBH & CO [DE]) 12. Juli 2000 (2000-07-12)	1-9,11, 14,15,17
A	Absatz [0001] - Absatz [0005] Absatz [0020] - Absatz [0054] Abbildungen	18

A	DE 201 12 393 U1 (SINCI AHMET [DE]) 11. Oktober 2001 (2001-10-11) Seite 1 Seite 10 - Seite 21 Abbildungen	1-18

A	DE 10 2011 086800 A1 (BOSCH GMBH ROBERT [DE]) 23. Mai 2013 (2013-05-23) Absatz [0001] Absatz [0024] - Absatz [0038] Abbildungen	1-18

A	US 4 643 494 A (MARLEAU GILLES [CA]) 17. Februar 1987 (1987-02-17) Spalte 2, Zeile 45 - Spalte 6, Zeile 68 Abbildungen	1-18

1

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

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen, die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/DE2016/100374

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
DE 102013202869 A1	05-09-2013	DE 102013202869 A1	05-09-2013
		FR 2987573 A1	06-09-2013
		FR 2987574 A1	06-09-2013
DE 202012002819 U1	08-05-2012	KEINE	
US 2011155613 A1	30-06-2011	AT 546373 T	15-03-2012
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		EP 2315701 A1	04-05-2011
		US 2011155613 A1	30-06-2011
		WO 2011000385 A1	06-01-2011
EP 2346741 A1	27-07-2011	EP 2346741 A1	27-07-2011
		US 2011139665 A1	16-06-2011
		WO 2009140965 A1	26-11-2009
EP 1018473 A1	12-07-2000	AT 230371 T	15-01-2003
		DE 19900361 A1	20-07-2000
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		CN 105751181 A	13-07-2016
		DE 102011086800 A1	23-05-2013
		EP 2782717 A2	01-10-2014
		US 2015069962 A1	12-03-2015
		WO 2013075945 A2	30-05-2013
US 4643494 A	17-02-1987	CA 1242171 A	20-09-1988
		US 4643494 A	17-02-1987

Formblatt PCT/ISA/210 (Anhang Patentfamilie) (April 2005)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2478828HDM	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/IL2017/050481	International filing date *(day/month/year)* 30 Apr 2017	(Earliest) Priority Date *(day/month/year)* 02 May 2016
Applicant KETER PLASTIC LTD.		

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 4 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. 1A

☒ 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.

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 237
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2017/050481

A. CLASSIFICATION OF SUBJECT MATTER
IPC (2017.01) B25H 3/02, B65D 21/02

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 (2017.01) B25H 3/02, B65D 21/02

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, PatBase, Orbit

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011155613 A KOENIG 30 Jun 2011 (2011/06/30) whole	1,2,4,5
Y	whole	3,8-66
X	US 20110139665 A MADSEN 16 Jun 2011 (2011/06/16) whole	1
Y	CN 2608238 A BAO JIANGANG 31 Mar 2004 (2004/03/31) whole	3,8-66
Y	US 2004195793 A SULLIVAN 07 Oct 2004 (2004/10/07) whole	50-66

[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
"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
20 Aug 2017	20 Aug 2017
Name and mailing address of the ISA: Israel Patent Office Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel Facsimile No. 972-2-5651616	Authorized officer GUTKIN Solomon Telephone No. 972-2-5651763

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

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2017/050481

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 20130127129 A BENSMAN 23 May 2013 (2013/05/23) whole	1-66
A	US 2002000440 A SAGOL 01 Jan 2002 (2002/01/01) whole	1-66
A	US 5240264 B WILLIAMS 31 Aug 1993 (1993/08/31) whole	50-66

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IL2017/050481

Patent document cited search report	Publication date	Patent family member(s)	Publication Date
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3	Foreign Reference	WO2016142935.pdf	7548601 d231d5f44e5ae456268d03f7b0729010fad8cd4f	no	30
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15/826,232
	Filing Date	Nov 29, 2017
	First Named Inventor	Yaron Brunner
	Art Unit	3633
	Examiner Name	TBD
	Attorney Docket Number	269949US01_446373-417

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
		202015005752	DE	U1	2016-11-21	PLASTON AG		

EXAMINER SIGNATURE

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	Examiner Name	TBD
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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Marcus S. Simon, Reg. #50258/	Date (YYYY-MM-DD)	2018-01-17
Name/Print	Marcus S Simon	Registration Number	50258

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ABSTRACT DE202015005752

Stackable case (1) with coupling connection (10-12; 24-26) to a further suitcase (1a) or the like which can be placed thereon and with a securing of the coupling connection (10-12; 24-26) by means of at least one spring-loaded displaceable locking slide (18), which is slidably mounted on a suitcase (1) and in the closed or securing position on the other case (1a) or the like. Creates and secures the coupling connection (10-12; 24-26) against arbitrary opening, thereby in that the locking slide (18) can be actuated by placing the upper case (1a) to be stacked on the lower case (1).

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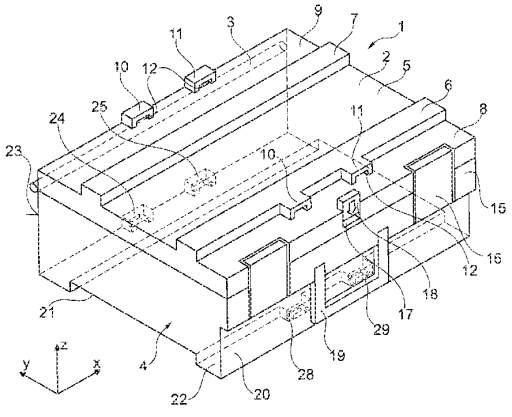
(56) Ermittelter Stand der Technik:

DE	100 15 125	C2
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DE	40 03 567	A1
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Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: **Stapelbarer Koffer mit Kopplungsverbindung und Sicherung**

(57) Hauptanspruch: Stapelbarer Koffer (1) mit Kopplungsverbindung (10–12; 24–26) zu einem auf diesen aufsetzbaren weiteren Koffer (1a) oder dgl. und mit einer Sicherung der Kopplungsverbindung (10–12; 24–26) durch mindestens einen federbelastet verschiebbaren Verriegelungsschieber (18), der am einen Koffer (1) verschiebbar gelagert ist und sich in der Schließ- oder Sicherungsstellung am anderen Koffer (1a) oder dgl. anlegt und die Kopplungsverbindung (10–12; 24–26) gegen willkürliches Öffnen sichert, dadurch gekennzeichnet, dass Verriegelungsschieber (18) durch Aufsetzen des auf dem unteren Koffer (1) aufzustapelnden, oberen Koffers (1a) betätigbar ist.



Beschreibung

[0001] Die Neuerung betrifft einen stapelbaren Koffer mit Kopplungsverbindung und Sicherung der Kopplungsverbindung nach dem Oberbegriff des Schutzanspruchs 1.

[0002] Ein stapelbarer Werkzeugkoffer ist mit dem Gegenstand der EP 1 516 703 A1 bekannt geworden. Zum Stapeln mehrerer übereinander liegender Werkzeugkoffer ist vorgesehen, dass die beiden identisch ausgebildeten Koffer mit ihren Flachseiten bündig übereinander gestapelt werden. An den jeweiligen Seitenflächen des jeweiligen Koffers sind sogenannte Schnappriegel vorhanden, so dass ein Schnappriegel, der am unteren Koffer befestigt ist, zum kraft- und formschlüssigen Verbinden an der Seitenwand des darüber liegenden Koffers vorgesehen ist. Nachteil dieser bekannten Stapelanordnung ist jedoch, dass die einzelnen Schnappriegel einzeln von Hand betätigt werden müssen, was bei der gegenseitigen Verbindung der übereinander gestapelten Werkzeugkoffer mit einem hohen Aufwand verbunden ist.

[0003] Ein ähnlicher Gegenstand ergibt sich aus der DE 42 01 264 A1, bei der ebenfalls schwenkbare Verschlussriegel am einen Kofferteil angeordnet sind, die in zugeordnete Vorsprünge am darüber liegenden Koffer in Eingriff gebracht werden müssen. Auch hier müssen alle Verbindungsglieder einzeln von Hand betätigt werden.

[0004] Mit dem Gegenstand der EP 2 346 741 B1 sind übereinander stapelbare Koffer bekannt geworden, bei denen jeweils an der Seitenwand federbelastete, in senkrechter Richtung zur Bodenfläche des jeweiligen Koffers verschiebbar angeordnete Transportverriegelungen als Verriegelungsschieber vorgesehen sind, die mit Hilfe einer durchgehenden, an der Seitenwand sich erstreckenden Schiebestange gemeinsam betätigbar sind. Nachteil dieser Anordnung ist, dass die Betätigungen der Schiebestange von Hand erfolgen muss, was mit einem erhöhten Handhabungsaufwand verbunden ist.

[0005] Der Neuerung liegt deshalb die Aufgabe zugrunde, eine Anordnung nach der EP 2 346 741 B1 mit mindestens zwei flachseitig übereinander stapelbaren Koffern so weiterzubilden, dass eine manuelle Betätigung der zur Verriegelung der Koffer dienenden Verriegelungsschieber nicht notwendig ist.

[0006] Zur Lösung der gestellten Aufgabe ist die Neuerung durch die technische Lehre des Anspruches 1 gekennzeichnet.

[0007] Merkmal der Neuerung ist, dass mindestens ein an der Vorderseite des einen Koffers angeordneter Verriegelungsschieber federbelastet in seine Offenstellung durch Aufsetzen eines auf dem unteren Koffer aufzustapelnden, oberen Koffers betätigbar ist.

[0008] Bei der nachfolgenden Kopplung der beiden Koffer wird der vom oberen Koffer in seine Offenstellung verschobene Verriegelungsschieber wieder freigegeben und geht in seine Schließstellung über. Er legt sich dann an einer Wand des darüber liegenden Koffers an, und sichert die Kopplungsverbindung zwischen beiden Koffern gegen unbeabsichtigte Betätigung.

[0009] Gegenstand der vorliegenden Neuerung ist demnach eine Kopplungs- oder Einhängeverbindung zwischen zwei übereinander stapelbaren Koffern, wobei die Bodenfläche eines oberen Koffers auf die Deckfläche eines unteren Koffers aufgesetzt wird und bei der Verschiebung der beiden Koffer in Querrichtung (nachfolgend auch Y-Richtung genannt) die Einhängeverbindung (Kopplung) zwischen den einander zugeordneten Koffern hergestellt wird.

[0010] Die Sicherung der Kopplungs- oder Einhängeverbindung erfolgt durch mindestens einen federbelasteten Verriegelungsschieber, der am unteren Koffer angeordnet ist und der durch die Bodenfläche des oberen Koffers betätigbar ist. Nach erfolgter Betätigung legt er sich an einer Anschlagfläche des oberen Koffers an und sichert so die Einhängeverbindung zwischen den beiden Koffern gegen unbeabsichtigtes Aushängen.

[0011] Eine solche technische Lehre war bisher im Stand der Technik nicht bekannt. Nach den vorher genannten Druckschriften war eine Sicherung der Einhängeverbindung nur manuell möglich, indem ein Verriegelungsschieber oder ein Verschlussglied, welches möglicherweise auch drehbar war, von Hand betätigt werden musste.

[0012] Dies vermeidet die Neuerung. Die Neuerung sieht stattdessen mindestens einen federbelasteten Verriegelungsschieber vor, der bevorzugt im Frontbereich des jeweils unteren Koffers angeordnet ist und der mit seinem federbelasteten, in Z-Richtung verschiebbaren Schieberiegel so ausgebildet ist, dass er sich im Sicherungszustand an einer zugeordneten Anschlagfläche am darüber liegenden Koffer anlegt und gegen eine Entkopplung der beiden Koffern sichert.

[0013] Zum Lösen dieser gesicherten Einhängeverbindung ist es vorgesehen, dass der federbelastete Verriegelungsschieber manuell betätigt wird, um ihn in seine Öffnungsstellung zu bringen und so außer Eingriff mit der zugeordneten Anschlagfläche am gegenüberliegenden Kofferteil zu bringen.

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[0014] Die Neuerung sieht mehrere Ausführungsformen für die Ausbildung derartiger Verriegelungsschieber vor.

[0015] In einer ersten Ausgestaltung ist es vorgesehen, dass ein Verriegelungsschieber aus einem etwa nach oben offenen, etwa u-förmig profilierten Bodenteil besteht, auf dem sich das eine Ende einer Druckfeder abstützt, deren anderes Ende sich in einem ebenfalls etwa u-förmig profilierten Schieberiegel abstützt, der anschlagbegrenzt und federbelastet längsverschiebbar im unteren, u-förmig ausgebildeten Bodenteil verschiebbar gelagert ist.

[0016] Statt einer Anordnung einer Druckfeder zur Verschiebung des Schieberiegels können auch andere Kraftspeicher verwendet werden, wie z. B. Elastomerfedern, Blattfedern, Spiralfedern oder Federn allgemeiner Art. Ebenso können Dreh- oder Tellerfedern verwendet werden.

[0017] Anstatt eines linear bewegten Verriegelungsschiebers können auch andere Verschluss- und Sicherungselemente verwendet werden, wie z. B. einseitig schwenkbar gelagerte Schiebehebel, die ebenfalls federbelastet in eine Schwenkstellung oder Sicherungsstellung bringbar sind oder auch Drehverschlüsse, die in der einen Stellung durch Aufsetzen des oberen Koffers federbelastet in die Öffnungsstellung gelangen und unter Aufbringung der Federkraft in ihre Sicherungsstellung bringbar sind, um sich an einer zugeordneten Anschlagfläche am gegenüberliegenden und oben liegenden Koffer anzulegen.

[0018] Es ist nicht lösungsnotwendig, dass die Anschlagfläche an der Stirnseite des darüber liegenden Koffers, insbesondere an der Vorderseite ausgebildet ist. Es können auch andere Anschlagflächen verwendet werden, insbesondere auch zurückversetzte oder auch mit Einführschrägen versehene Anschlagflächen, um noch eine zusätzliche Vorspannung des Verschlussriegels auf die Einhängeverbindung zwischen den Koffern zu erreichen.

[0019] In einer bevorzugten Ausgestaltung ist es vorgesehen, dass der Verriegelungsschieber im Wesentlichen rechteckförmig profiliert ist, um die Einhängeverbindung mit etwas Spiel zu sichern, so dass die Einhängeverbindung in ihrem eingehängten Zustand noch beispielsweise ein Spiel in Y-Richtung von 1 bis 2 mm aufweist, ohne dass sie ausgehängt (manuell entkoppelt) werden könnte.

[0020] In einer anderen Ausgestaltung kann es vorgesehen sein, dass der Verriegelungsschieber selbst oder die Fläche, an der der Verriegelungsschieber im Sicherungszustand anliegt, leicht keilförmig ausgebildet ist, so dass der federbelastete Verriegelungsschieber die Einhängeverbindung in Y-Richtung noch zusätzlich vorspannt und gegen Verschiebung sichert.

[0021] In einer bevorzugten Ausgestaltung der Neuerung ist es vorgesehen, dass die Einhängeverbindung zwischen den einander zugeordneten Koffern aus Einhängeansätzen besteht, die etwa lappenförmig ausgebildet sind und die in zugeordnete Einhängeöffnungen am gegenüberliegenden Teil in Eingriff bringbar sind.

[0022] Es wird bevorzugt, wenn die lappenförmigen Einhängeansätze angeschrägt sind und die Einhängeöffnungen ebenfalls Einführschrägen aufweisen, um so eine verschiebungsgesicherte und relativ spielfreie Einhängeverbindung zwischen den einander zugeordneten Kofferflächen zu ermöglichen.

[0023] Die vorliegende Neuerung unterscheidet sich demnach vom Stand der Technik gemäß der EP 2 346 741 B1, dass die Verriegelungselemente bei der genannten Druckschrift durch einen Verriegelungsknauf aktiviert werden, während bei der vorliegenden Neuerung die Verriegelungselemente vom oberen aufgestapelten Koffer betätigt werden.

[0024] Eine bevorzugte Ausgestaltung der Einhängeverbindung zwischen den beiden einander zugeordneten Flächen der übereinander gestapelten Koffer kann in verschiedener Weise ausgebildet sein. Es muss mindestens ein Einhängeansatz am einen Teil in eine Einhängeöffnung am gegenüberliegenden Teil eingreifen.

[0025] Aus Stabilitätsgründen wird es jedoch bevorzugt, wenn um jeweils an der einen Kofferfläche im Abstand zueinander angeordnete, in X-Richtung versetzt zueinander angeordnete Einhängeöffnungen vorhanden sind, die mit zugeordneten Einhängelaschen am gegenüberliegenden Teil des Koffers zusammenwirken.

[0026] Ebenso wird es bevorzugt, wenn die gekoppelten Kofferflächen vorne und hinten verriegelt werden, d. h. die Einhängeverbindung ist sowohl in der Nähe der Vorderwand des jeweiligen Koffers als auch in der Nähe der Rückwand angeordnet.

[0027] Selbstverständlich ist die Erfindung nicht darauf beschränkt. Die Einhängeverbindung an der Rückwand kann auch in Richtung auf die Mitte des Koffers verlegt werden, und/oder die Einhängeverbindung an der Vorderseite des Koffers kann in Richtung auf die Mitte verlegt werden.

[0028] Statt der Anordnung eines einzigen Verriegelungsschiebers, der bevorzugt an der Frontseite des jeweils einen Koffers angeordnet ist, können auch mehrere im Abstand in X-Richtung zueinander versetzte Verriegelungsschieber vorgesehen werden.

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[0029] Ferner ist es in einer ersten Ausführungsform vorgesehen, dass der eine oder die mehreren Verriegelungsschieber im Koffer selbst integriert sind und nicht über die Kofferaußenflächen hinaus stehen.

[0030] In einer anderen Ausgestaltung kann es jedoch auch vorgesehen sein, dass der eine oder die mehreren Verriegelungsschieber außerhalb der Kofferflächen als separates Teil, jedoch werkstoffein- oder -mehrstückig mit den jeweiligen Kofferflächen verbunden sind.

[0031] Im Übrigen können derartige Verriegelungsschieber auch als separate Teile auf die Außenwand eines Koffers angeordnet werden, um eine nachträgliche Umrüstung von stapelbaren Koffern mit den neuerungsgemäßen Verriegelungsschiebern zu gewährleisten.

[0032] Der Erfindungsgegenstand der vorliegenden Neuerung ergibt sich nicht nur aus dem Gegenstand der einzelnen Schutzansprüche, sondern auch aus der Kombination der einzelnen Schutzansprüche untereinander.

[0033] Alle in den Unterlagen, einschließlich der Zusammenfassung offenbarten Angaben und Merkmale, insbesondere die in den Zeichnungen dargestellte räumliche Ausbildung, werden als erfindungswesentlich beansprucht, soweit sie einzeln oder in Kombination gegenüber dem Stand der Technik neu sind.

[0034] Soweit einzelne Gegenstände als „erfindungswesentlich" oder „wichtig" bezeichnet sind, bedeutet dies nicht, dass diese Gegenstände notwendigerweise den Gegenstand eines unabhängigen Anspruches bilden müssen. Dies wird allein durch die jeweils geltende Fassung des unabhängigen Schutzanspruches bestimmt.

[0035] Im Folgenden wird die Neuerung anhand von lediglich einen Ausführungsweg darstellenden Zeichnungen näher erläutert. Hierbei gehen aus den Zeichnungen und ihrer Beschreibung weitere erfindungswesentliche Merkmale und Vorteile der Erfindung hervor.

[0036] Es zeigen:

[0037] **Fig.** 1: schematisiert eine perspektivische Darstellung eines stapelbaren Koffers nach der Neuerung

[0038] **Fig.** 2: schematisiert in Seitenansicht die Verriegelung zwischen zwei stapelbaren Koffern in einer ersten Stellung

[0039] **Fig.** 3: die Verriegelung nach **Fig.** 2 in einer zweiten Stellung

[0040] **Fig.** 4: die Verriegelung zwischen den beiden stapelbaren Koffern im Endzustand

[0041] **Fig.** 5: eine perspektivische Rückansicht der Rückwand eines stapelbaren Koffers

[0042] **Fig.** 6: schematisiert das Prinzip der Verriegelung nach **Fig.** 2 bis **Fig.** 4 im Arbeitszustand

[0043] **Fig.** 7: das Prinzip nach **Fig.** 6 im verriegelten Zustand mit Darstellung Weiterer Einzelheiten

[0044] **Fig.** 8: eine gegenüber **Fig.** 6 und **Fig.** 7 abgewandelte Ausführungsform eines Verriegelungsschiebers

[0045] In den nachfolgenden Zeichnungen werden zwei stapelbare Koffer **1** dargestellt, deren Formgebung in weiten Grenzen veränderbar sind. Der untere stapelbare Koffer wird mit dem Bezugszeichen **1** versehen, während der darüber liegende, mit dem unteren Koffer **1** verriegelbare, obere Koffer mit dem Bezugszeichen **1a** versehen wird.

[0046] Auch ist der Begriff „Koffer" in weiten Grenzen zu verstehen. Es muss sich nicht zwangsläufig um einen allseits geschlossenen und mit einem schwenkbaren Deckel versehenen Behälter handeln. Anstatt der Anordnung eines schwenkbaren Deckels kann die Schwenkverbindung zwischen dem Deckel und dem Koffer entfallen. Der auf dem unteren Koffer aufsetzbare, obere Koffer kann auch als halb offene Schale oder als Platte (Adapterplatte) ausgebildet sein.

[0047] Im gezeigten Ausführungsbeispiel weist jeder Koffer einen Deckel **2** auf, der in einer horizontalen Scharnierachse **3** schwenkbar am Unterteil **4** angeordnet ist.

[0048] Um die beiden stapelbaren Koffer voneinander zu unterscheiden, wird der aufstapelbare Koffer stets mit den Kleinbuchstaben a bezeichnet, wobei für die gleichen Teile jedoch die gleichen Bezugszeichen verwendet wurden.

[0049] Statt eines Deckels **2**, der in einer horizontalen Scharnierachse **3** schwenkbar am Unterteil **4** gelagert ist, können auch andere Schwenkverbindungen verwendet werden, wie z. B. eine Scharnierachse, ein Klavierband oder auch ein loser Deckel, der in anderer Weise mit dem Unterteil **4** verriegelbar ist.

[0050] Der Deckel des Koffers **1** besteht im Wesentlichen aus einem flachen Teil, welches in seinem mittleren Bereich eine in Querrichtung (X-Richtung) längs verlaufende Quermut **5** aufweist, die als vertiefter Bereich ausgebildet ist und die seitliche jeweils von zwei erhöht ausgebildeten, gleichfalls in X-Richtung verlaufenden Querrippen **6**, **7** begrenzt wird.

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[0051] Grund für die Anordnung einer vertieften Quernut **5** im Deckel **2** ist, dass auch kürzere Varianten von stapelbaren Koffern **1a** auf einen größeren stapelbaren Koffer **1** aufgestapelt werden können, wobei dann in diese Quernut **5** die Fußleisten **22** eines in Y-Richtung kürzeren Koffers **1a** eingreifen.

[0052] Im vorderen Bereich des stapelbaren Koffers **1**, jenseits der Vorderseite **15**, ist im Deckelbereich **8** ein erster vorderer Aufnahmebereich **8** angeordnet, der bezüglich einer höher liegenden Querrippe **6** nach unten versetzt ist. Die gleiche, symmetrische Anordnung ergibt sich für den hinteren Aufnahmebereich **9**, der bezüglich der höher angeordneten Querrippe **7** nach unten abgesetzt ist.

[0053] Sowohl im vorderen Aufnahmebereich **8** als auch im hinteren, vertieft ausgebildeten Aufnahmebereich **9** sind jeweils gleichgerichtete Einhängeeinsätze **10**, **11** als etwa u-förmig profilierte Teile werkstoffeinstückig mit der Oberfläche des Deckels **2** verbunden, wobei jeder Einhängeansatz **10**, **11** eine jeweils nach vorne gerichtete Einhängeöffnung **12** aufweist.

[0054] Das Profil der Einhängeöffnung **12** und die Formgebung der Einhängeansätze **10**, **11** ist an den Eingriff eines am unteren Bereich eines unteren Koffers angeordneten Einhängelasche **24**, **25** und **28**, **29** angepasst.

[0055] Die Einhängelaschen **24**, **25** und **28**, **29** bestehen jeweils aus einseitig nach vorne gerichteten Ansätzen, die in die zugeordneten Einhängeöffnungen **12** der Einhängeansätze **10**, **11** zum Eingriff bringbar sind.

[0056] Es wird bevorzugt, wenn die Einhängelaschen **24**, **25** und **28**, **29** etwa keilförmig ausgebildet sind und dementsprechend auch die Einhängeöffnung **12** keilförmig profiliert ist, um eine Einführschräge zu bilden und die vordere und hintere Einhängeverbindung gemäß **Fig.** 1 auf dem Deckel gegen Verschiebung in Y- und X-Richtung zu sichern.

[0057] Selbstverständlich erfolgt in der profilierten Einhängeöffnung **12** bei Herstellung der Einhängeverbindung auch eine Sicherung in Z-Richtung, weil bei hergestellter Einhängeverbindung (siehe die spätere **Fig.** 4) die beiden übereinander gestapelten Koffer **1**, **1a** gegen Abheben in Z-Richtung gesichert sind.

[0058] An der Vorderseite **15** des Koffers **1** sind noch Verschlussriegel **16** beliebiger Art angeordnet, die dazu dienen, den Deckel mit dem Unterteil **4** zu verbinden und gegen Öffnen zu sichern.

[0059] In einer Ausnehmung **17** an der Vorderseite **15** des Koffers **1** ist ein Verriegelungsschieber **18** in Z-Richtung federbelastet verschiebbar angeordnet, wobei die Stellung des Verriegelungsschiebers **18** in **Fig.** 1 seiner Ruhestellung entspricht.

[0060] An der Vorderseite **15** ist in an sich bekannter Weise ein schwenkbar gelagerter Tragegriff **19** angeordnet, der über eine nach hinten in Y-Richtung versetzte Anschlagfläche **20** geführt ist, welche die Anschlagfläche für den Verriegelungsschieber **18** des unteren Koffers bildet. An dieser Anschlagfläche **20** legt sich der noch später zu beschreibende Verriegelungsschieber **18** an.

[0061] Die Bodenseite des Unterteils **4** weist eine in X-Richtung verlaufende Freistellung **21** auf, die als quer verlaufende Nut ausgebildet ist. Diese Freistellung **21** ist zur Aufnahme der Querrippen **6**, **7** des darunter liegenden Koffers vorgesehen.

[0062] Jenseits der Freistellung **21** sind Fußleisten **22** vorgesehen, die etwa mit der Rückwand **23** und der Vorderseite **15** des jeweiligen Koffers abschließen. Im gezeigten Ausführungsbeispiel sind die Fußleisten **22** durchgehend ausgebildet. Hierauf ist die Neuerung nicht beschränkt. Die Fußleisten können auch nur stückweise vorhanden sein, oder sie können auch entfallen.

[0063] Die **Fig.** 2 zeigt nun eine erste Stellung des Einhänge- oder Kopplungsvorgangs, wo erkennbar ist, dass zum Zweck der Kopplung der obere Koffer **1a** auf den unteren Koffer **1** aufgesetzt wird, und zwar so, dass zunächst der obere Koffer **1a** in Y-Richtung versetzt auf den unteren Koffer **1** aufgesetzt wird, um zu gewährleisten, dass die obere Einhängeverbindung mit den in Y-Richtung nach hinten weisenden Einhängevorsprüngen **26a**, **28a** in Gegenüberstellung zu den am unteren Koffer **1** angeordneten Einhängeöffnungen **12** gelangt.

[0064] Durch diesen Versatz der zueinander stapelbaren Koffer gemäß **Fig.** 2 gelingt es nun, den oberen Koffer **1a** gemäß **Fig.** 3 gegen den unteren Koffer **1** in Pfeilrichtung Z zu bewegen, und zwar in Pfeilrichtung **33**, um so zu erreichen, dass die Fußleiste **22a** des oberen Koffers **1a** auf den Verriegelungsschieber **18** zur Auflage kommt und seinen federbelasteten Schieberiegel **30** in seine Betätigungsstellung verschwenkt, wie dies in **Fig.** 3 dargestellt ist.

[0065] Nach der Stellung in **Fig.** 3 ist es nun möglich, die beiden Koffer relativ zueinander in Pfeilrichtung **34** zu verschieben, um so die Einhängeverbindung zwischen dem oberen Koffer **1a** und dem unteren Koffer **1** in Eingriff zu bringen. Dabei gleitet der federbelastete Verriegelungsschieber **30** nach oben in seine Verriegelungsstellung gemäß **Fig.** 4 und legt sich an der Vorderseite **15a** des Koffers **1a** an.

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[0066] Damit ist die Einhängeverbindung zwischen beiden Koffern gegen gegenseitige Verschiebung und gegen Aushängen gesichert.

[0067] In dem gezeigten Ausführungsbeispiel besteht der Verriegelungsschieber **18** im Wesentlichen aus einem u-förmig profilierten oder becherförmig profilierten Bodenteil **32**, in dessen nach oben geöffneten Ausnehmung eine Druckfeder **31** angeordnet ist, die sich an der Innenseite des Schieberiegels **30** abstützt, der verschiebbar im Bodenteil **32** geführt ist. Es sind Anschläge vorhanden, um zu vermeiden, dass der federbelastete Schieberiegel **30** aus dem u-förmig profilierten Bodenteil **32** durch die Kraft der Feder vollständig heraus geschoben wird.

[0068] In der Verriegelungsstellung nach **Fig.** 4 legt sich der Schieberiegel **30** an der Vorderseite **15a** des Koffers **1a** an und sichert die Kopplungsverbindung zwischen den Koffern gegen unbeabsichtigtes Aushängen.

[0069] Um diese Verbindung wieder außer Eingriff zu bringen, ist es notwendig, den Schieberiegel **30** per Hand nach unten zu drücken, um ihn in die Stellung nach **Fig.** 3 zu bringen und nachfolgend können dann die beiden Koffer **1**, **1a** in Gegenrichtung zur eingezeichneten Pfeilrichtung **34** gegeneinander verschoben werden, um so die Einhängeverbindung wieder zu öffnen.

[0070] Die Neuerung ist nicht auf die hier dargestellte Einhängeverbindung mit ineinander greifenden Ausnehmungen und zugeordneten Einhängelaschen beschränkt. Es kann jede beliebige Einhängeverbindung gewählt werden, die verschiebbar in Y-Richtung in eine Offenstellung und in eine Schließstellung bringbar ist.

[0071] Entscheidend bei der Neuerung ist der federbelastete Verriegelungsschieber, der schließlich die Einhängeverbindung gegen erneutes Aushängen sichert und lediglich manuell betätigbar ist, um ein manuelles Öffnen der Einhängeverbindung zu gewährleisten.

[0072] Die **Fig.** 6 und **Fig.** 7 zeigen in schematisierter Form das Prinzip des neuerungsgemäßen Verriegelungsschiebers **18** und es ist in **Fig.** 7 dargestellt, dass auch eine Vorspannung der Einhängeverbindung dadurch erfolgen kann, dass entweder der Schieberiegel **30** und/oder die Vorderseite **15**, in dem Bereich, wo der Schieberiegel **30** anliegt, zugeordnete Keilflächen **36** aufweisen, um so die Einhängeverbindung in Pfeilrichtung **34** noch zusätzlich vorzuspannen. Die Vorspannung erfolgt federbelastet durch die Druckfeder **31**.

[0073] Damit wird dargestellt, dass als Betätigungsfläche für den Verriegelungsschieber **18** stets eine bodenseitige Anschlagfläche oder Betätigungsfläche **35** des darüber liegenden Koffers **1a** verwendet wird, wobei es nicht notwendiger Weise eine Bodenfläche selbst sein muss. Die Betätigungsfläche **35** kann auch als versetzte Anschlagfläche oder dergleichen oder als Fußleiste oder dergleichen ausgebildet sein.

[0074] Die **Fig.** 8 zeigt als kinematisches Äquivalent, dass ein federbelastet linear in Z-Richtung verschiebbarer Schieberiegel **30** auch durch einen schwenkbaren Verriegelungsschieber **38** ersetzt werden kann.

[0075] Der Verriegelungsschieber **38** ist in einer Schwenkachse **39** in den Pfeilrichtungen **40** verschwenkbar, und aus Vereinfachungsgründen ist die zur Federvorbelastung notwendige Druckfeder nicht eingezeichnet. Auch bei diesem Ausführungsbeispiel gilt, dass statt einer linearen federbelasteten Verschiebebewegung auch eine Schwenkbewegung für den Verriegelungsschieber zur Sicherung der Einhängeverbindung möglich ist.

[0076] Schließlich kann der schwenkbare Verriegelungsschieber auch durch einen federbelastet verdrehbaren Verriegelungsschieber ersetzt sein. In diesem Fall verdreht die Betätigungsfläche des oberen Koffers den um eine Drehachse federbelastet verdrehbaren Verriegelungsschieber in seine Offenstellung und nach Herstellung der Kopplungsverbindung zwischen den beiden Koffern dreht der Verriegelungsschieber federbelastet und selbsttätig in seine Schließstellung und sichert die Kopplungsverbindung.

Bezugszeichenliste

1	stapelbarer Koffer
1a	stapelbarer Koffer
2	Deckel
3	Scharnierachse
4	Unterteil
5	Quernut
6	Querrippe
7	Querrippe
8	Aufnahmebereich (vorne)
9	Aufnahmebereich (hinten)
10	Einhängeansatz (vorne)
11	Einhängeansatz (vorne)
12	Einhängeöffnung
13	
14	
15	Vorderseite
16	Verschlussriegel
17	Ausnehmung
18	Verriegelungsschieber
19	Tragegriff
20	Anschlagfläche
21	Freistellung
22	Fußleiste
23	Rückwand

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24 Einhängelasche (hinten)
25 Einhängelasche (hinten)
26 Einhängevorsprung
27 Einführschräge
28 Einhängelaschen (vorne unten)
29 Einhängelaschen (vorne unten)
30 Schieberiegel (von **18**)
31 Druckfeder
32 Bodenteil
33 Pfeilrichtung
34 Pfeilrichtung
35 Betätigungsfläche
36 Keilfläche
37
38 Verriegelungsschieber
39 Schwenkachse
40 Pfeilrichtung

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ZITATE ENTHALTEN IN DER BESCHREIBUNG

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Schutzansprüche

1. Stapelbarer Koffer (**1**) mit Kopplungsverbindung (**10–12**; **24–26**) zu einem auf diesen aufsetzbaren weiteren Koffer (**1a**) oder dgl. und mit einer Sicherung der Kopplungsverbindung (**10–12**; **24–26**) durch mindestens einen federbelastet verschiebbaren Verriegelungsschieber (**18**), der am einen Koffer (**1**) verschiebbar gelagert ist und sich in der Schließ- oder Sicherungsstellung am anderen Koffer (**1a**) oder dgl. anlegt und die Kopplungsverbindung (**10–12**; **24–26**) gegen willkürliches Öffnen sichert, **dadurch gekennzeichnet,** dass Verriegelungsschieber (**18**) durch Aufsetzen des auf dem unteren Koffer (**1**) aufzustapelnden, oberen Koffers (**1a**) betätigbar ist.

2. Stapelbarer Koffer nach Anspruch 1, **dadurch gekennzeichnet,** dass nach der Kopplung der beiden Koffer (**1**, **1a**) der vom oberen Koffer (**1a**) in seine Offenstellung verschobene Verriegelungsschieber (**18**) von diesem Koffer (**1a**) frei gestellt ist und in seine federbelastete Schließstellung übergeht und sich an einer Anschlagfläche am oberen Koffer (**1a**) anlegt.

3. Stapelbarer Koffer nach Anspruch 1 oder 2, **dadurch gekennzeichnet,** dass der federbelastete Verriegelungsschieber (**18**) im Frontbereich des jeweils unteren Koffers (**1**) angeordnet ist und sich im Sicherungszustand mit seinem federbelasteten, in Z-Richtung verschiebbaren Schieberiegel (**30**) an einer zugeordneten frontseitigen Anschlagfläche am darüber liegenden Koffer (**1a**) anlegt und die Kopplungsverbindung (**10–12**; **24–26**) zwischen den beiden Koffern (**1**, **1a**) gegen Entkopplung sichert.

4. Stapelbarer Koffer nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet,** dass zum Lösen der gesicherten Kopplungsverbindung (**10–12**; **24–26**) der federbelastete Verriegelungsschieber (**18**) manuell betätigbar ist.

5. Stapelbarer Koffer nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet,** dass Verriegelungsschieber (**18**) aus einem etwa nach oben offenen, etwa u-förmig profilierten Bodenteil (**32**) besteht, auf dem sich das eine Ende einer Druckfeder (**31**) abstützt, deren anderes Ende sich in einem ebenfalls etwa u-förmig profilierten Schieberiegel (**30**) abstützt, der anschlagbegrenzt und federbelastet längsverschiebbar im unteren, u-förmig ausgebildeten Bodenteil (**32**) verschiebbar gelagert ist.

6. Stapelbarer Koffer nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet,** dass der Verriegelungsschieber (**18**) als Schwenkhebel ausgebildet ist.

7. Stapelbarer Koffer nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet,** dass der Verriegelungsschieber (**18**) als Drehhebel ausgebildet ist.

8. Stapelbarer Koffer nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet,** dass der Verriegelungsschieber (**18**) die Kopplungsverbindung (**10–12**; **24–26**) zwischen den Koffern (**1**, **1a**) in der Kopplungsstellung vorspannt.

9. Stapelbarer Koffer nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet,** dass der Verriegelungsschieber (**18**) zu der Kopplungsverbindung (**10–12**; **24–26**) zwischen den Koffern (**1**, **1a**) ein Spiel in Y-Richtung ausbildet.

10. Stapelbarer Koffer nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet,** dass die Einhängeverbindung zwischen den einander zugeordneten Koffern (**1**, **1a**) aus Einhängeansätzen (**10**) besteht, die etwa lappenförmig ausgebildet sind und die in zugeordnete Einhängeöffnungen (**12**) am gegenüberliegenden Teil in Eingriff bringbar sind.

Es folgen 6 Seiten Zeichnungen

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Anhängende Zeichnungen

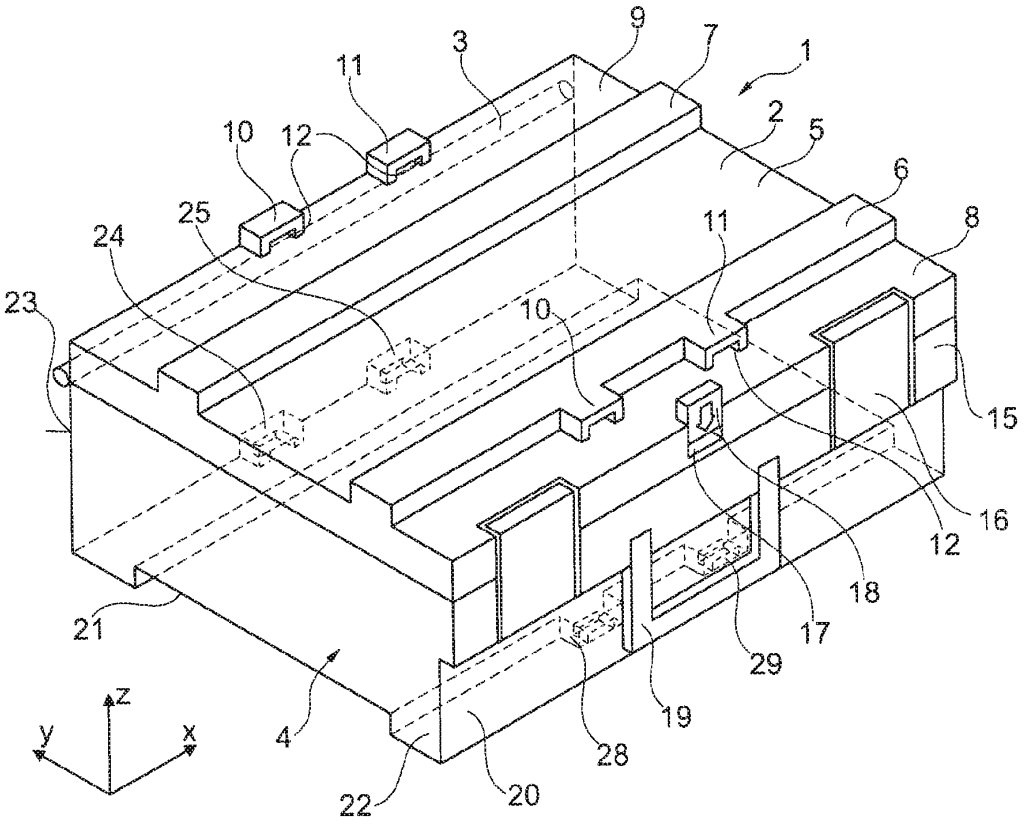


Fig. 1

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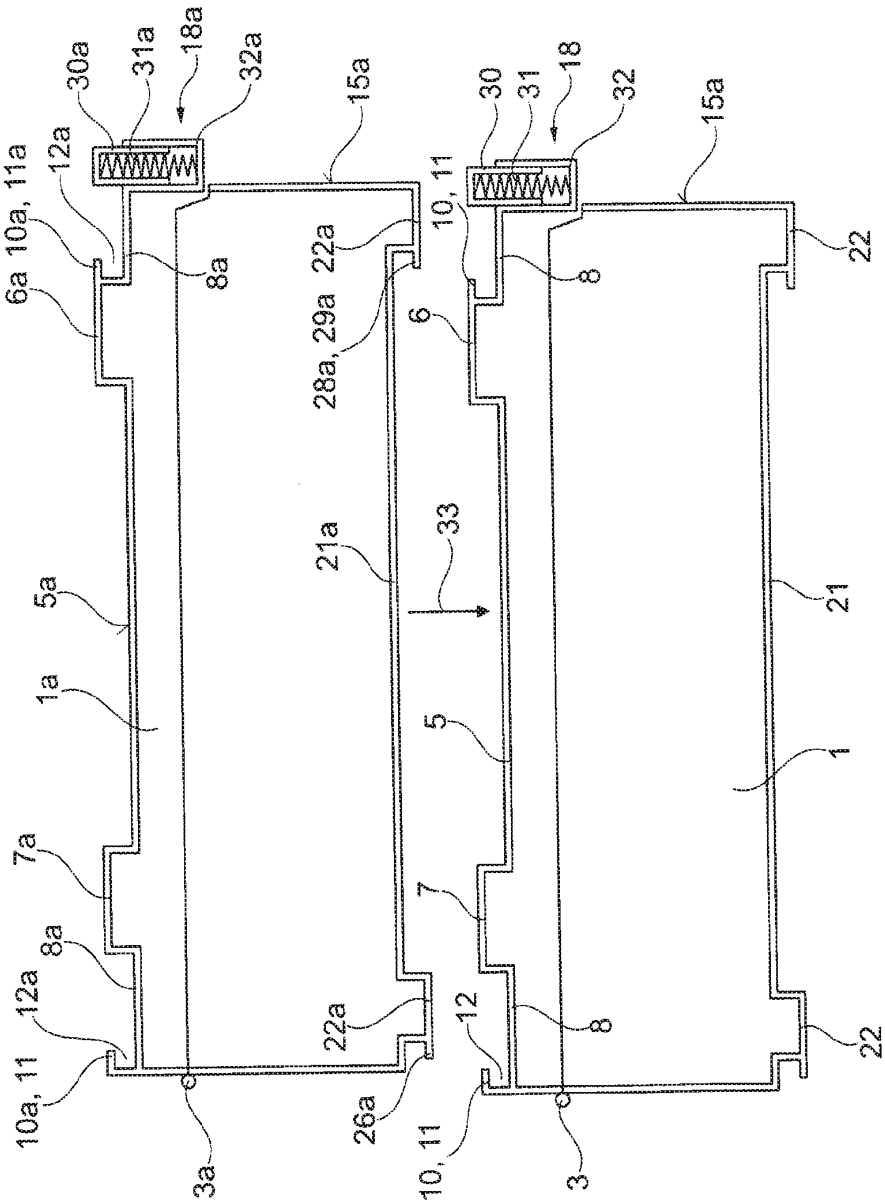


Fig. 2

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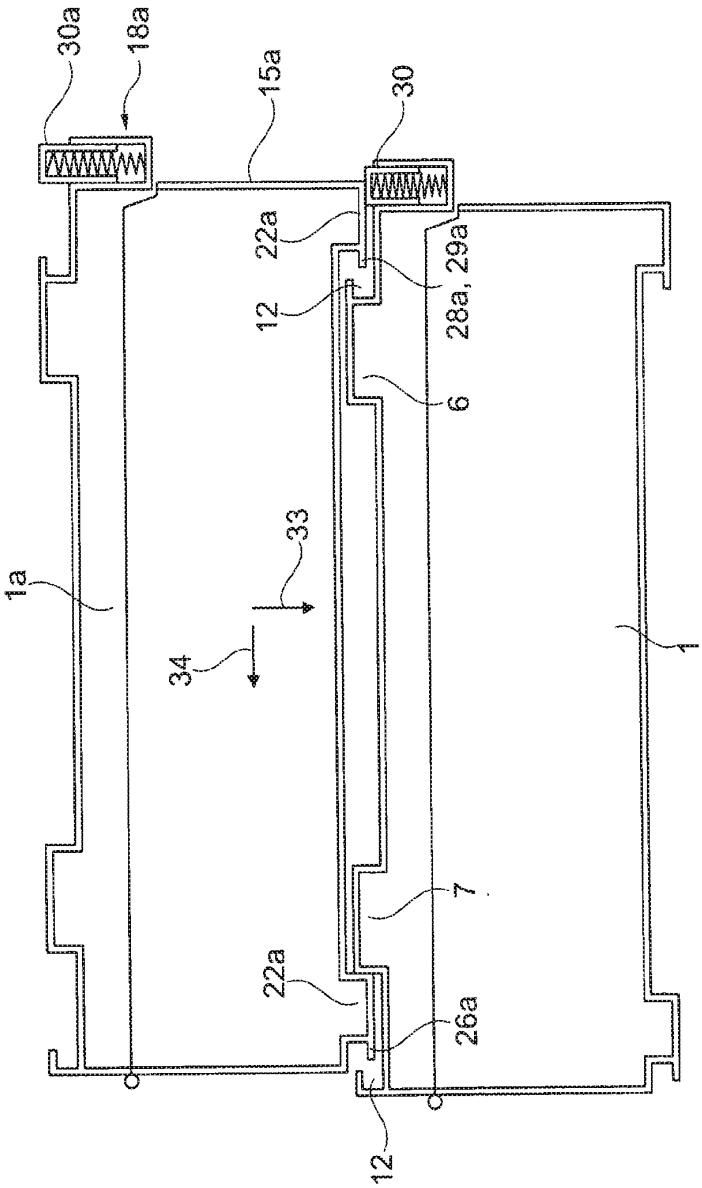


Fig. 3

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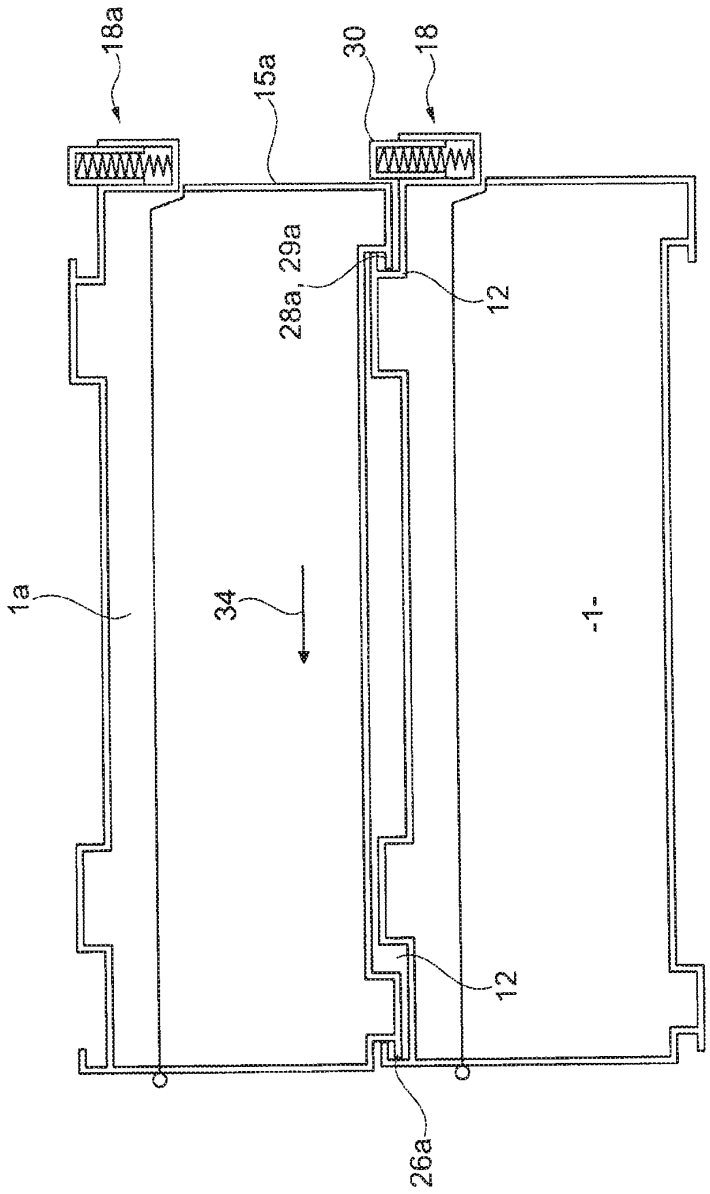


Fig. 4

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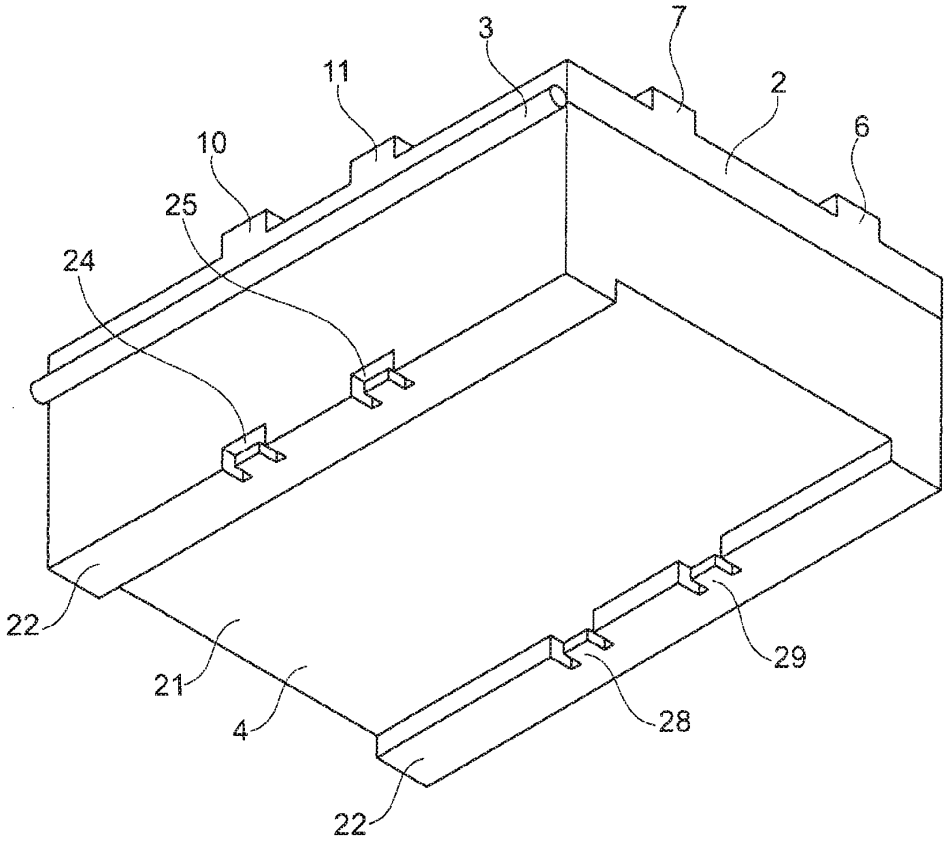


Fig. 5

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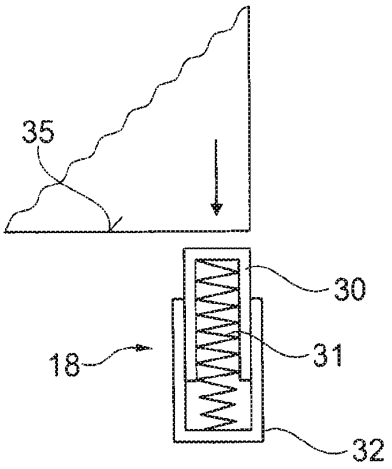


Fig. 6

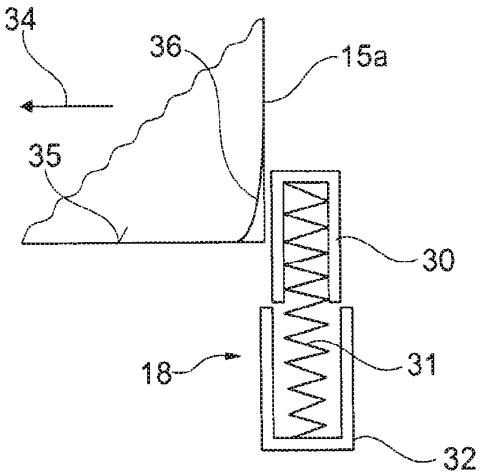


Fig. 7

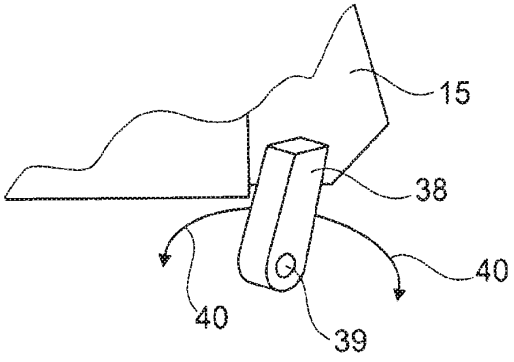


Fig. 8

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Electronic Acknowledgement Receipt

EFS ID:	31524044
Application Number:	15826232
International Application Number:	
Confirmation Number:	1070
Title of Invention:	UTILITY ASSEMBLY AND COUPLING MECHANISM
First Named Inventor/Applicant Name:	Yaron Brunner
Customer Number:	111739
Filer:	Marcus S. Simon/Holly Morton
Filer Authorized By:	Marcus S. Simon
Attorney Docket Number:	269949US01_446373-417
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Application Type:	Utility under 35 USC 111(a)

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Submitted with Payment	no

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	20180117_269949US01_446373-417_S1-IDS.pdf	30729 ba8b44657eb5c93861fbec7fcbce8508277f5fb7	no	2

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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.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention: UTILITY ASSEMBLY AND COUPLING MECHANISM

As a below named inventor, I hereby declare that:

This declaration is directed to the application

☐ attached hereto, or

☒ United States application or PCT International Application No. 15/826,232 filed on November 29, 2017

The above-identified application was made by me or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the above-identified application, including the claims.

I acknowledge the duty to disclose information which is material to the patentability of this application as defined in 37 CFR § 1.56.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Legal Name of Inventor

Inventor: **Yaron BRUNNER** Date: 4/01/18

Signature: _____

Electronic Acknowledgement Receipt

EFS ID:	31664102
Application Number:	15826232
International Application Number:	
Confirmation Number:	1070
Title of Invention:	UTILITY ASSEMBLY AND COUPLING MECHANISM
First Named Inventor/Applicant Name:	Yaron Brunner
Customer Number:	111739
Filer:	Marcus S. Simon/David Purles
Filer Authorized By:	Marcus S. Simon
Attorney Docket Number:	269949US01_446373-417
Receipt Date:	31-JAN-2018
Filing Date:	29-NOV-2017
Time Stamp:	17:43:08
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	Oath or Declaration filed	269949US01_446373-417_ExecutedDeclaration.pdf	118944 e5b1f31a80ebfd9659eca6fd60d8e75acb755c90	no	1

Warnings:

The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing	
Information:	
Total Files Size (in bytes):	118944

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/826,232	11/29/2017	Yaron Brunner	269949US01_446373-417

CONFIRMATION NO. 1070

111739
Dorsey & Whitney / RCPs
Intellectual Property Department - SLC
111 South Main Street
21st Floor
Salt Lake City, UT 84111-2176

FORMALITIES LETTER

OC000000097139252

Date Mailed: 02/05/2018

NOTICE OF INCOMPLETE REPLY (NONPROVISIONAL)

Filing Date Granted

The U.S. Patent and Trademark Office has received your reply on 01/31/2018 to the Notice to File Missing Parts (Notice) mailed 12/20/2017 and it has been entered into the nonprovisional application. The reply, however, does not include the following items required in the Notice. A complete reply must be timely filed to prevent ABANDONMENT of the above-identified application. Replies should be mailed to: Mail Stop Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450.

Applicant is given **TWO MONTHS** from the date of the Notice to File Missing Parts (Notice) mailed 12/20/2017 within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

Items Required to Avoid Abandonment:

The required items noted below SHOULD be filed along with any items required above. The filing date of this nonprovisional application will be the date of receipt of the items required above.

- Surcharge as set forth in 37 CFR 1.16(f) was not received.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The application contains drawings, but the specification does not contain a brief description of the several views of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(9).

The following item(s) appear to have been **omitted** from the application:

- Figure(s) **13** described in the specification.

Applicant must reply to this notice within the time period set forth in this notice to avoid abandonment of this application. Applicant must select one of the three following options and the reply must comply with the requirements set forth in the selected option and any other requirements set forth in this notice. The reply should also indicate which option applicant has selected.

I. Petition for date of deposit: Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and the petition fee set forth in 37 CFR 1.17(f) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant should review their application file and determine whether their file differs from USPTO's records. In some situations there may be a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures as labeled.

The brief description of the drawings in the specification must correspond with the figures and the figures must be labeled in accordance with 37 CFR 1.84(u)(1). For example, if the brief description describes Figure 1 and Figure 2 only, but the drawings show Fig. 1 and Fig. 2A and Fig. 2B, then the specification must be amended to refer to Figure 2A and Figure 2B and delete the reference to Figure 2 and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. As another example, if a drawing is labeled Figure 2, but there are actually multiple figures within the labeled Figure 2 having labels A, B, and C, then the drawings must be relabeled in accordance with 37 CFR 1.84(u)(1) (e.g., Fig. 2A, Fig. 2B, and Fig. 2C). If the specification does not refer to the figures as relabeled, then the specification must be amended to refer to the relabeled figures (e.g., Fig. 2A, Fig. 2B, and Fig. 2C) and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. A petition for date of deposit under option I should **NOT** be filed in either situation or in similar situations where there is simply a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures. Instead, applicant should file a reply under option III.A below (including replacement drawing sheets and/or a substitute specification as required in III.A.2).

II. Petition for later filing date: Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s), and a petition under 37 CFR 1.182 with the petition fee set forth in 37 CFR 1.17(f) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**
Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(f)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. Acceptance of application as deposited: Applicant may accept the application as deposited in the USPTO by filing an appropriate amendment as set forth in either (A) or (B) below within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b)** . The application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit. A petition is not required for this option.
(A) If applicant wants to accept the application as deposited without adding the subject matter that was in the omitted item (e.g., a missing page or figure), applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):
1. For a missing page of the specification,

a) a substitute specification including claims that amends the specification to renumber the pages consecutively and cancels any incomplete sentences, and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;

2. For a missing figure of the drawings (including a mislabeled figure),
   a) replacement drawing sheets in compliance with 37 CFR 1.121(d) to renumber the drawing figures consecutively (if necessary),
   b) a substitute specification excluding claims that amends the specification to cancel any references to any omitted drawing(s) and corrects the references in the specification to the drawing figures to correspond with any relabeled drawing figures, and
   c) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
3. For a missing page of the claim listing only, a replacement claim listing with the claims renumbered consecutively or, if amendment to the claims is also necessary, then a complete claim listing in compliance with 37 CFR 1.121(c);
4. For a missing or unreadable compact disc,
   a) a substitute specification (excluding the claims) deleting the reference to the compact disc and the files contained on the compact disc, and
   b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
5. For a missing or unreadable file submitted on a compact disc,
   a) a substitute specification (excluding the claims) deleting the reference to the missing or unreadable file, and a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
   b) a replacement transmittal letter listing all of the files except the missing or unreadable file in compliance with 37 CFR 1.52(e)(3)(ii).

(B) Alternatively, if applicant wants to accept the application as deposited but wishes to add the subject matter in the omitted item (e.g., a missing page or figure) by relying on an incorporation by reference under 37 CFR 1.57 or other portions of the original disclosure, applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. To add the subject matter in a missing page of specification,
   a) a substitute specification excluding claims and
   b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. To add a missing figure of the drawings, new and replacement drawing sheets in compliance with 37 CFR 1.121(d);
3. To add the subject matter in a missing page of the claim listing, a complete claim listing in compliance with 37 CFR 1.121(c) (e.g., a claim in the missing page should be submitted as a new claim);
4. To add the subject matter in a missing or unreadable compact disc,
   a) a replacement compact disc and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
   b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4); and,
5. To add the subject matter in a missing or unreadable file submitted on a compact disc,
   a) a replacement compact disc that contains all of the files listed in the specification including the missing or unreadable file and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
   b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4).

If applicant is relying on an incorporation by reference under 37 CFR 1.57 to add the omitted subject matter, then applicant must also comply with the requirements of 37 CFR 1.57.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of the Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **160** surcharge.
- $(**0**) previous unapplied payment amount.
- $ **160** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltaba/

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 269
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/826,232

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	300
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	660
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	760
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 460 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1720

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

VIA *e*FILE

PATENT APPLICATION
Docket No. 269949US01_446373-417

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of		)
		)
	Yaron Brunner	)
		)
Serial No.:	15/826,232	)Art Unit
		) 3633
Filed:	November 29, 2017	)
		)
For:	UTILITY ASSEMBLY AND COUPLING MECHANISM	)
		)
Confirmation No.:	1070	)
		)
Customer No.:	111739	)
		)
Examiner:	TBD	)

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS, RESPONSE TO NOTICE OF INCOMPLETE REPLY, AND PRELIMINARY AMENDMENT

VIA *e*FILE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In response to the Notice to File Corrected Application Papers dated December 20, 2017 and the Notice of Incomplete Reply dated February 5, 2018, please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Remarks begin on page 3 of this paper.

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

AMENDMENTS TO THE SPECIFICATION

Amendments to the specification are presented in a substitute specification filed herewith under 37 C.F.R. §1.125 in "marked up" and "clean" forms. Applicant respectfully submits that the amendments to the specification do not constitute new matter.

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 272
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

REMARKS

In response to the Notice to File Corrected Application Papers and the Notice of Incomplete Reply, the specification is amended via a substitute specification filed herewith. The specification is amended so that the figure numbers used throughout the specification correspond to and are consistent with the figure numbers used in the drawings. There were no missing drawings in the as-filed application. No new matter is added by the above amendments.

In the event that the Examiner finds remaining impediments to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney. The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to Deposit Account No. 50-6181: (1) any filing fees required under 37 CFR § 1.16; (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested, please consider this a petition therefor and charge any additional fees that may be required to Deposit Account No. 50-6181.

DATED this 19th day of February, 2018

Respectfully submitted,

/Marcus S. Simon, Reg.# 50258/
MARCUS S. SIMON
Attorney for Applicant
Registration No. 50,258
Customer No. 111739
Telephone No. 801-933-7360

MSS:hm

4824-5388-4510\1

Milwaukee Electric Tool, Keter Home and Garden Products – Ex. 2001 - Page 273
Klein Tools v. Milwaukee Electric Tool, Keter Home and Garden Products
IPR2024-01401

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/826,232	11/29/2017	Yaron Brunner	269949US01_446373-417

CONFIRMATION NO. 1070

111739
Dorsey & Whitney / RCPs
Intellectual Property Department - SLC
111 South Main Street
21st Floor
Salt Lake City, UT 84111-2176

FORMALITIES LETTER

OC000000097139252

Date Mailed: 02/05/2018

NOTICE OF INCOMPLETE REPLY (NONPROVISIONAL)

Filing Date Granted

The U.S. Patent and Trademark Office has received your reply on 01/31/2018 to the Notice to File Missing Parts (Notice) mailed 12/20/2017 and it has been entered into the nonprovisional application. The reply, however, does not include the following items required in the Notice. A complete reply must be timely filed to prevent ABANDONMENT of the above-identified application. Replies should be mailed to: Mail Stop Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450.

Applicant is given **TWO MONTHS** from the date of the Notice to File Missing Parts (Notice) mailed 12/20/2017 within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

Items Required to Avoid Abandonment:

The required items noted below SHOULD be filed along with any items required above. The filing date of this nonprovisional application will be the date of receipt of the items required above.

- Surcharge as set forth in 37 CFR 1.16(f) was not received.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The application contains drawings, but the specification does not contain a brief description of the several views of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(9).

The following item(s) appear to have been **omitted** from the application:

- Figure(s) **13** described in the specification.

Applicant must reply to this notice within the time period set forth in this notice to avoid abandonment of this application. Applicant must select one of the three following options and the reply must comply with the requirements set forth in the selected option and any other requirements set forth in this notice. The reply should also indicate which option applicant has selected.

I. Petition for date of deposit: Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and the petition fee set forth in 37 CFR 1.17(f) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant should review their application file and determine whether their file differs from USPTO's records. In some situations there may be a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures as labeled.

The brief description of the drawings in the specification must correspond with the figures and the figures must be labeled in accordance with 37 CFR 1.84(u)(1). For example, if the brief description describes Figure 1 and Figure 2 only, but the drawings show Fig. 1 and Fig. 2A and Fig. 2B, then the specification must be amended to refer to Figure 2A and Figure 2B and delete the reference to Figure 2 and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. As another example, if a drawing is labeled Figure 2, but there are actually multiple figures within the labeled Figure 2 having labels A, B, and C, then the drawings must be relabeled in accordance with 37 CFR 1.84(u)(1) (e.g., Fig. 2A, Fig. 2B, and Fig. 2C). If the specification does not refer to the figures as relabeled, then the specification must be amended to refer to the relabeled figures (e.g., Fig. 2A, Fig. 2B, and Fig. 2C) and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. A petition for date of deposit under option I should **NOT** be filed in either situation or in similar situations where there is simply a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures. Instead, applicant should file a reply under option III.A below (including replacement drawing sheets and/or a substitute specification as required in III.A.2).

II. Petition for later filing date: Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s), and a petition under 37 CFR 1.182 with the petition fee set forth in 37 CFR 1.17(f) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**
Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(f)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. Acceptance of application as deposited: Applicant may accept the application as deposited in the USPTO by filing an appropriate amendment as set forth in either (A) or (B) below within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b)** . The application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit. A petition is not required for this option.
(A) If applicant wants to accept the application as deposited without adding the subject matter that was in the omitted item (e.g., a missing page or figure), applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):
1. For a missing page of the specification,

a) a substitute specification including claims that amends the specification to renumber the pages consecutively and cancels any incomplete sentences, and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;

2. For a missing figure of the drawings (including a mislabeled figure),
a) replacement drawing sheets in compliance with 37 CFR 1.121(d) to renumber the drawing figures consecutively (if necessary),
b) a substitute specification excluding claims that amends the specification to cancel any references to any omitted drawing(s) and corrects the references in the specification to the drawing figures to correspond with any relabeled drawing figures, and
c) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;

3. For a missing page of the claim listing only, a replacement claim listing with the claims renumbered consecutively or, if amendment to the claims is also necessary, then a complete claim listing in compliance with 37 CFR 1.121(c);

4. For a missing or unreadable compact disc,
a) a substitute specification (excluding the claims) deleting the reference to the compact disc and the files contained on the compact disc, and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and

5. For a missing or unreadable file submitted on a compact disc,
a) a substitute specification (excluding the claims) deleting the reference to the missing or unreadable file, and a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
b) a replacement transmittal letter listing all of the files except the missing or unreadable file in compliance with 37 CFR 1.52(e)(3)(ii).

(B) Alternatively, if applicant wants to accept the application as deposited but wishes to add the subject matter in the omitted item (e.g., a missing page or figure) by relying on an incorporation by reference under 37 CFR 1.57 or other portions of the original disclosure, applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. To add the subject matter in a missing page of specification,
a) a substitute specification excluding claims and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;

2. To add a missing figure of the drawings, new and replacement drawing sheets in compliance with 37 CFR 1.121(d);

3. To add the subject matter in a missing page of the claim listing, a complete claim listing in compliance with 37 CFR 1.121(c) (e.g., a claim in the missing page should be submitted as a new claim);

4. To add the subject matter in a missing or unreadable compact disc,
a) a replacement compact disc and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4); and,

5. To add the subject matter in a missing or unreadable file submitted on a compact disc,
a) a replacement compact disc that contains all of the files listed in the specification including the missing or unreadable file and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4).

If applicant is relying on an incorporation by reference under 37 CFR 1.57 to add the omitted subject matter, then applicant must also comply with the requirements of 37 CFR 1.57.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of the Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **160** surcharge.
- $(**0**) previous unapplied payment amount.
- $ **160** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltaba/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/826,232	11/29/2017	Yaron Brunner	269949US01_446373-417

CONFIRMATION NO. 1070

111739
Dorsey & Whitney / RCPs
Intellectual Property Department - SLC
111 South Main Street
21st Floor
Salt Lake City, UT 84111-2176

FORMALITIES LETTER

OC000000096166214

Date Mailed: 12/20/2017

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The application contains drawings, but the specification does not contain a brief description of the several views of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(9).

The following item(s) appear to have been **omitted** from the application:

- Figure(s) **13** described in the specification.

Applicant must reply to this notice within the time period set forth in this notice to avoid abandonment of this application. Applicant must select one of the three following options and the reply must comply with the requirements set forth in the selected option and any other requirements set forth in this notice. The reply should also indicate which option applicant has selected.

I. Petition for date of deposit: Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and the petition fee set forth in 37 CFR 1.17(f) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant should review their application file and determine whether their file differs from USPTO's records. In some situations there may be a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures as labeled.

The brief description of the drawings in the specification must correspond with the figures and the figures must be labeled in accordance with 37 CFR 1.84(u)(1). For example, if the brief description describes Figure 1 and Figure 2 only, but the drawings show Fig. 1 and Fig. 2A and Fig. 2B, then the specification must be amended to refer to Figure 2A and Figure 2B and delete the reference to Figure 2 and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. As another example, if a drawing is labeled Figure 2, but there are actually multiple figures within the labeled Figure 2 having labels A, B, and C, then the drawings must be relabeled in accordance with 37 CFR 1.84(u)(1) (e.g., Fig. 2A, Fig. 2B, and Fig. 2C). If the specification does not refer to the figures as relabeled, then the specification must be amended to refer to the relabeled figures (e.g., Fig. 2A, Fig. 2B, and Fig. 2C) and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. A petition for date of deposit under option I should **NOT** be filed in either situation or in similar situations where there is simply a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures. Instead, applicant should file a reply under option III.A below (including replacement drawing sheets and/or a substitute specification as required in III.A.2).

II. Petition for later filing date: Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s), and a petition under 37 CFR 1.182 with the petition fee set forth in 37 CFR 1.17(f) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**
Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(f)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. Acceptance of application as deposited: Applicant may accept the application as deposited in the USPTO by filing an appropriate amendment as set forth in either (A) or (B) below within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b)** . The application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit. A petition is not required for this option.
(A) If applicant wants to accept the application as deposited without adding the subject matter that was in the omitted item (e.g., a missing page or figure), applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. For a missing page of the specification,
   a) a substitute specification including claims that amends the specification to renumber the pages consecutively and cancels any incomplete sentences, and
   b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. For a missing figure of the drawings (including a mislabeled figure),
   a) replacement drawing sheets in compliance with 37 CFR 1.121(d) to renumber the drawing figures consecutively (if necessary),
   b) a substitute specification excluding claims that amends the specification to cancel any references to any omitted drawing(s) and corrects the references in the specification to the drawing figures to correspond with any relabeled drawing figures, and
   c) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
3. For a missing page of the claim listing only, a replacement claim listing with the claims renumbered consecutively or, if amendment to the claims is also necessary, then a complete claim listing in compliance with 37 CFR 1.121(c);
4. For a missing or unreadable compact disc,

a) a substitute specification (excluding the claims) deleting the reference to the compact disc and the files contained on the compact disc, and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and

5. For a missing or unreadable file submitted on a compact disc,
a) a substitute specification (excluding the claims) deleting the reference to the missing or unreadable file, and a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
b) a replacement transmittal letter listing all of the files except the missing or unreadable file in compliance with 37 CFR 1.52(e)(3)(ii).

(B) Alternatively, if applicant wants to accept the application as deposited but wishes to add the subject matter in the omitted item (e.g., a missing page or figure) by relying on an incorporation by reference under 37 CFR 1.57 or other portions of the original disclosure, applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. To add the subject matter in a missing page of specification,
a) a substitute specification excluding claims and
b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. To add a missing figure of the drawings, new and replacement drawing sheets in compliance with 37 CFR 1.121(d);
3. To add the subject matter in a missing page of the claim listing, a complete claim listing in compliance with 37 CFR 1.121(c) (e.g., a claim in the missing page should be submitted as a new claim);
4. To add the subject matter in a missing or unreadable compact disc,
a) a replacement compact disc and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4); and,
5. To add the subject matter in a missing or unreadable file submitted on a compact disc,
a) a replacement compact disc that contains all of the files listed in the specification including the missing or unreadable file and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4).

If applicant is relying on an incorporation by reference under 37 CFR 1.57 to add the omitted subject matter, then applicant must also comply with the requirements of 37 CFR 1.57.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified

for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **140** surcharge.
- $(**0**) previous unapplied payment amount.
- $ **140** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Yaron Brunner

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/mbeyene/

VIA *e*FILE

PATENT APPLICATION
Docket No. 269949US01_446373-417

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of		)
		)
	Yaron Brunner	)
		)
Serial No.:	15/826,232	)Art Unit
		) 3633
Filed:	November 29, 2017	)
		)
For:	UTILITY ASSEMBLY AND COUPLING MECHANISM	)
		)
Confirmation No.:	1070	)
		)
Customer No.:	111739	)
		)
Examiner:	TBD	)

SUBSTITUTE SPECIFICATION IN MARKED UP FORM UNDER 37 C.F.R. §1.125

VIA *e*FILE
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313

Dear Sir:

The following substitute specification in marked up form is hereby submitted. A clean version is also filed herewith. This substitute specification includes no new matter.

Dated this 19th day of February, 2018.

Respectfully submitted,

/Marcus S. Simon, Reg. #50258
MARCUS S. SIMON
Registration No. 50,258
Attorney for Applicant
Dorsey & Whitney LLP
Customer No. 111739
Telephone: 801.933.7360

4840-6325-2062\1

UTILITY ASSEMBLY AND COUPLING MECHANISM

TECHNOLOGICAL FIELD

The present disclosure is directed to a container assembly and more specifically to a utility assembly comprising two or more detachably attachable utility modules. The disclosure is further concerned with a coupling mechanism facilitating detachably attaching the utility modules to one another.

The term 'utility *module'* is used hereinafter in its broad meaning and is meant to denote a variety of articles such as, storage containers, travel luggage, tool boxes, organizers, compacted work benches, cable storage, tools (e.g. hand tools, power generators and power sources), communication modules, carrying platforms, locomotion platforms, etc., of any shape and size, and wherein any utility module can be detachably attached to any other utility module.

The term *'utility assembly*' as used herein denotes any set of utility modules configured for articulation to one another, either as a stationary unit or locomotive.

GENERAL DESCRIPTION

A first aspect of the disclosure concerns a coupling mechanism configured for readily detachably attaching any first article to any second article, wherein any first article and any second article can be any utility module.

The coupling mechanism comprises a male coupler at a face of one of the first utility module and the second utility module, and a female coupler at a face of the other one of the first utility module and the second utility module, said female coupler has a

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depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense; said male coupler has a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface, the coupling mechanism further comprises at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

The arrangement is such that at a locked position of a utility assembly the at least one locking tongue of the male coupler engages below said at least one locking rib of the female coupler and the at least one locking member is engaged, thus preventing any respective displacement between the first utility module and the second utility module, and retaining the coupling mechanism at an engaged and locked position.

The term *'first utility module'* as used herein denotes any utility module bearing at least one second utility module over a first surface thereof. The second utility module of a utility assembly may comprise three or more stages of utility modules, and functions as first utility module with respect to a third stage utility module mounted thereover and serving in turn as a second utility module.

According to certain embodiments, one or more female couplers are configured at the top face of the first utility module, and one or more male couplers are configured at the bottom face of the second utility module

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The disclosed subject-matter is directed to a utility module configured with at least one of a male coupling mechanism and a female coupling mechanism of the disclosure, a module assembly comprising one or more utility modules of the aforementioned type and a set of utility modules of the aforementioned type.

According to a configuration of the first aspect, there is provide a utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism configured between the first utility module and the second utility module; said coupling mechanism comprising at one of a top face of the first utility module and a bottom face of the second utility module one or more depressed locking locations each configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises one or more projecting portions each configured with a locking tongue disposed in register with said one or more depressed locking locations, and at least one locking latch disposed in register with said at least one locking latch arresting location.

The arrangement is such that, at a locked position, the bottom face of the second utility module at least partially rests over the top face of the first utility module, and the one or more projecting tongues are arrested by the corresponding one or more locking ribs, and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, thereby preventing sliding displacement between the first utility module and the second utility module, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

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Locking engagement between the second utility module and the first utility module is obtained when the one or more depressed locking locations and the one or more projecting portions are disposed behind one another (though not necessarily aligned). According to a particular configuration of the coupling mechanism, the one or more depressed locking locations and the one or more locking latch arresting locations are configured at the top face of the first utility module, and the one or more projecting portions and the at least one locking latch are configured at the bottom face of the second utility module. According to this configuration, locking between the first utility module and the second utility module is obtained by positioning the second utility module over the second utility module such that one or more locking tongues of the projecting portions engages with one or more respective locking ribs of the depressed locking locations, and wherein the locking latch interlocks with the respective locking latch arresting location.

The arrangement being such that the attaching engagement between the second utility module and the first utility module takes place when the one or more locking tongues and the corresponding one or more respective locking ribs are engaged, thereby preventing vertical separation between the utility modules (i.e. preventing lifting of the second utility module of the first utility module), and further when the locking latch is arrested by the respective locking latch arresting location, thereby preventing sliding displacement of the utility modules one with respect to the other (i.e. sliding displacement of the second module over the first module).

Disengaging the second utility module from the first utility module can be facilitated only after disengaging the locking latch from said locking latch arresting location.

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According to a second aspect of the disclosure there is disclosed a coupling mechanism for a utility assembly comprising at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and comprises at one of a top face of the first utility module and a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

Engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

According to one particular configuration the at least one locking rib extends substantially parallel to the sliding path and according to another configuration the at least one locking rib extends substantially perpendicular and intersects the sliding path.

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A third aspect of the present disclosure is directed to a utility module being a mobile carrier unit and comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module.

The term *carrier unit* as used herein denotes any kind of propelled cart configured for detachably attaching and carrying load. The carrier unit may be a hand cart, a mobile tool cart, a mobile workshop, traveling luggage cart, a trolley, etc.

With particular reference to the third aspect, the carrier engagement surface can be larger than the utility module's first engagement surface corresponding with it. In this case, several utility modules may be interlocked simultaneously upon one carrier unit.

According to one configuration there is disclosed a carrier unit comprising a manipulating arrangement, a locomotion system, and an engagement surface comprising one or more engaging elements. The carrier unit is designated for detachable interlocking engagement with one or more utility modules, each comprising a first engagement surface configured with one or more first engaging elements compatible for detachable interlocking engagement with the carrier engaging elements.

According to yet configuration there is disclosed an assembly comprising a carrier unit comprising an engagement surface comprising one or more engaging elements, and at least one utility module configured with at least one first engagement surface comprising one or more first engaging elements compatible for detachable interlocking engagement with the carrier unit's engaging elements.

According to a modification of this aspect, there is also provided a container unit comprising a top member configured with a second engagement surface of the utility

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module, said top member, according to one example constitutes a cover of the utility module.

The arrangement is such that a container unit can be readily and easily applied over and interlockingly articulated to a carrier unit, or over a utility module configured with a second engagement surface mimicking the first engagement surface second engagement surface mimicking the first engagement surface of the carrier unit.

Engagement between the carrier unit and the container, and further between two containers, is facilitated by any locking mechanism of the disclosure hereinabove and hereinafter.

According to a specific example, there is a latching mechanism, wherein the first engaging elements of the carrier unit are configured for interlocking engagement with engaging elements of the mating surface of the respective utility module. The latching mechanism may assume various configurations, e.g. male-female couplings, dovetail couplings, and the like. The arrangement being such that only a minor displacement is required in order to lockingly mount, and respectively detach, a utility module over the carrier unit.

According to one specific configuration, the detachable interlocking engagement mechanism between the carrier engaging elements and the utility module`s first engaging elements is a dovetail engagement mechanism, comprising laterally projecting shoulders configured on one of the carrier engagement surfaces and the first engagement surface of a utility module, and a shoulder receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface

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of a utility module; where said laterally projecting shoulders are configured for sliding engagement with said shoulder receiving recess.

According to a particular configuration, one or both of the carrier engagement surfaces and the first engagement surface of a respective utility module are configured with depressions, each accommodating respective laterally projecting locking shoulders.

Said dovetail engagement mechanism members constitute said engaging elements, wherein said carrier engaging elements comprise one of said dovetail engagement members, while the utility module`s first engaging element comprises the respective said dovetail engagement member.

According to another configuration, the detachable interlocking engagement mechanism between the carrier engaging elements and the utility module`s first engaging elements is an undercut engagement mechanism, comprising lateral projections configured on one of the carrier engagement surfaces and the first engagement surface of a container unit, and a receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said lateral projections are configured for engagement with said receiving recess.

Interlocking engagement of the utility module and the carrier unit takes place by placing the first engagement surface of a utility module over the carrier engagement surface, such that the utility module`s first engaging elements are disposed shifted over the respective carrier engaging elements of the carrier unit, and are then slidingly shifted to obtain sliding interlocking engagement therebetween.

The detachable interlocking engagement mechanism may further comprise a locking mechanism configured for preventing unintentional detaching of the slidingly engaging

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elements once they are fully interlocked, i.e. to prevent detaching of the utility module from the carrier unit or from another utility module.

According to one configuration, the locking mechanism, comprises a locking pin that is configured for snapingly protruding from one of the engagement surfaces into a designated nook on the other engagement surface. This prevents the engaging surfaces from sliding relatively to each other, and by that it prevents said engaging elements from being slidingly separated once interlocked.

According to one configuration, the carrier engagement surface of the carrier unit constitutes a top wall of the carrier unit, when the carrier unit is balanced horizontally to the ground, and wherein the utility module`s first engagement surface constitutes a bottom wall of the container unit, when the utility module is balanced horizontally to the ground. The utility module can further comprise a second engagement surface constituting its top wall, or a cover, when the utility module is balanced horizontally to the ground. The second engagement surface of the utility module simulates the carrier engagement surface as it is compatible for engaging with another utility module's first engagement surface.

Any one or more of the following features, designs and configurations, can be implemented in a utility module, a utility assembly, locking mechanism, and the carrier unit and assembly according to the present disclosure, individually or in various combinations thereof:

- A single locking rib can extend at rear end of a depressed locking location (i.e. the female coupler may comprise a single locking rib) and substantially perpendicular to the sliding path;

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- Two locking ribs can extend at side edges of a depressed locking location (i.e. the female coupler may comprise two locking ribs) and disposed substantially parallel to the sliding path;
- Two locking ribs can each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path;
- The utility assembly can be modular wherein a top face of a first utility module can interlock with a bottom face of a second utility module disposed thereover in a substantially fully overlapping relation, or with a bottom face of at least one second utility module only partially overlapping therewith;
- A second utility module overlapping a significant portion of a first utility module can be configured with a single release latch for displacing several locking latches articulated therewith;
- Two or more second utility modules can be mounted over a first utility module, each being independently detachable attachable over the first utility module;
- The at least one second utility module is configured for snap-type locking over the first utility module;
- A release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module;
- The at least one locking latch and the at least one locking latch arresting location can be disposed at a front portion of the respective utility modules;
- At least one of the first utility module and the second utility module are configured with a gliding surface facilitating displacement and positioning the respective second utility module at the locking position with respect to the first utility module;
- The gliding surface reduces tolerances between the projecting portion and the depressed locking location receiving same;
- One or both of the locking tongue and locking rib can be configured with a slanting surface at corresponding orientation, along the sliding path, for reducing or substantially elimination tolerance therebetween;

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- One or both of a front edge of the projecting portion and a corresponding front edge of the depressed locking location can be slanted for gliding positioning of the second utility module into true locking position over the first utility module;
- The locking latch can be configured for displacement in a direction substantially normal to a respective face of a utility module;
- The locking latch can be spring biased and configured for normally projecting from a face of the respective first or second utility module;
- The locking latch can be manipulable to be opened through an opening configured at a front wall of the respective utility module;
- Corners of the utility modules can be reinforced;
- One or more of the utility modules can be a container module, and the utility assembly can be a container assembly/tool caddy;
- The container module can be compartmented and can be configured with sub-containers and sub-compartments;
- The top face of the container module can be configured as a lid or as a functional component of the container module;
- A lid of a second container can be opened also when articulated and locked in position over a first container;
- A lid of a first container can be opened also when a second container is articulated and locked in position thereabove;
- At least one of the container modules can be a locomoting container and can be configured with an arrangement for locomoting said container module. Where the locomoting container is attached to other container modules it can facilitate for locomoting the utility assembly;
- The container modules can be configured with carrying arrangement disposed at any one or more of its faces. According to a particular configuration, a front face of the container modules is configured with a carrying handle and according to another configuration side faces of the container modules can be configured with a carrying handle;

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- Examples of utility modules can be any one or more of a cooler box, a workpiece grip, a power supply (e.g. power bank, generator), hand tools, power tools, a locomotive platform (e.g. a work dolly), powered or not, a tactical unit (e.g. military gear, scientific equipment, communications equipment, personal gear, outdoor gear, etc.);
- A tool caddy can be configured with a carrying handle (e.g. telescopic);
- A utility module can be a soft-shell container with at least a rigid face portion configured with a male/female coupler;
- The utility module can be an interface coupling module, i.e. functions only as a coupling interface;
- The interface coupling module can be attached to a surface of any element or object and by different arrangements, fixedly or detachably;
- The interface coupling module can be a cargo interface module for a utility vehicle, so as to attach one or more utility modules to the vehicle;
- The cargo interface module can be a bed cargo module, a roof rack module, etc.;
- The interface coupling module can be a surface mount for attaching utility modules, e.g. a floor mount, wall mount, wall rack, etc.;
- The interface coupling module can be a tool mount/rack;
- The interface coupling module can be belt mount for mounting of utility modules (e.g. a hand tool) to a workers belt;
- The interface coupling module can be an interface mount module for coupling two utility modules to one another, e.g. for articulating two utility modules, both configured with a similar male coupler or a female coupler, and wherein the interface mount module is configured at both faces with another of male coupler or a female coupler;
- The interface coupling module can be a back pack carrying module, for facilitating attachment and carrying of utility modules;
- A top face of a utility module can be configured with a carrying handle, said carrying handle displaceable between a stowed position and a carrying position,

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wherein at the stowed position said carrying handle at least partially extends within a niche and does not to interfere with the coupling mechanism;

- The carrier unit may include one or more auxiliary engagement surfaces positioned on an exterior face of the carrier unit. For example, an auxiliary engagement surface can be configured at a bottom face of the carrier unit;
- The carrier unit may include a second engagement surface simulating/mimicking the first engagement surface of the utility module;
- A utility module may be configured with one or more auxiliary first and second engagement surfaces;
- The carrier engagement surface may be a connectivity platform detachably attached to the exterior surface of the carrier unit, facilitating a cart unit or a carrier unit according to the present disclosure;
- One or both of the utility module's first and second engagement surfaces may be detachably attached to an exterior surface of the utility module;
- The carrier engagement surface and the utility module's first engagement surface may be like elements;
- The utility module's first and second engagement surfaces may be like elements;
- The carrier unit's engaging elements and the utility module's first engaging elements may be similar elements;
- One engagement surface may include several engaging elements and one locking mechanism;
- The coupling mechanism is configured for spontaneous displacement into locking engagement within a locking receptacle, wherein manual interference is required only for unlocking the locking mechanism and detaching a utility module from a respective utility module or carrier unit;
- The coupling mechanism can be a spring biased locking pin, normally projecting from a respective engagement surface;

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- One or both of the carrier unit and the utility module may further include a locking mechanism designated to prevent unintentional separation of the engagement surfaces while they are interlocked;
- The locking mechanism is manipulable between an unlocked position in which said engagement surfaces may slide upon each other, and a locked state in which the engagement surfaces may not slide upon each other;
- The locking mechanism may be configured with a biasing mechanism for snap arresting at least at its locked state;
- The locking mechanism may be configured with a manually operated activating portion for switching between said unlocked and locked positions.
- The carrier unit may be assembled together with other carrier units the same way it's assembled with the utility modules;
- The locomotion system of the carrier unit may comprise a wheel system (e.g. axially fixed roller wheels, swivel wheels, etc.), a sliding platform, caterpillar tracks, etc;
- The locomotion system of the carrier unit comprises, according to a particular example, several fixed axis wheels, wherein the perimeter of said wheels is tangent with a base edge of the carrier unit;
- At an assembled configuration, where one or more utility modules are attached to the carrier unit, the assembly can be positioned vertically wherein a side face of the one or more containers rest over a supporting surface. According to a particular example, at this position the carrier unit and container assembly are configured with stability members for retaining their stability while positioned vertically to the ground;
- The carrier unit may be stable while positioned horizontally to the ground, by a support system projecting from a bottom face thereof. The support system may comprise friction enhancing surfaces to restrict displacement of the assembly while placed over a bearing surface;
- The carrier unit may be foldable to a more compact configuration;
- The carrier unit may comprise an external storage box detachably interconnectable to its exterior walls;

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- The carrier unit may comprise a power supply detachably interconnectable to its exterior walls;
- The carrier unit's transporting system may be motorized while powered via said power supply;
- The carrier unit may further include a locking mechanism to insure interlocking connection of the engagement surfaces;
- The container unit may comprise non-rigid portions;
- The carrier unit may comprise at least one manipulating arrangement, configurable between a stowed position in which the manipulating arrangement is retracted, and a manipulating position in which the manipulating arrangement is extracted. The manipulating arrangement may be a telescopic or foldable handle;
- The manipulating arrangement may be a gripping handle, a D-grip handle, a T-grip handle, a flexible strap, etc.

EMBODIMENTS

The present disclosure also encompasses embodiment as defined in the following numbered phrases. It should be noted that these numbered embodiments intended to add to this disclosure and is not intended in any way to be limiting.

1. A coupling mechanism configured for readily detachably attaching a first utility module to a second utility module, the coupling mechanism comprising a male coupler at a face of one of the first utility module and the second utility module, and a female coupler at a face of the other one of the first utility module and the second utility module, said female coupler having a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense; said male coupler having a projecting

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locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface, the coupling mechanism further comprises at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

2. The coupling mechanism of embodiment 1, wherein said female coupler is configured at the top face of the first utility module, and the male coupler is configured at the bottom face of the second utility module.

3. The coupling arrangement of embodiment 1 or 2, wherein the at least one locking rib extends substantially parallel to the sliding path.

4. The coupling arrangement of embodiment 1 or 2, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

5. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

6. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

7. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises two locking ribs each extend at a respective side edge of two neighboring

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depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

8. A coupling mechanism for a utility assembly that comprises at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module; one of a top face of the first utility module and a bottom face of the second utility module comprises at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location, such that engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

9. The coupling arrangement of embodiment 8, wherein the at least one locking rib extends substantially parallel to the sliding path.

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10. The coupling arrangement of embodiment 8, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

11. The coupling arrangement of embodiment 8, wherein a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

12. The coupling arrangement of embodiment 8, wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

13. The coupling arrangement of embodiment 8, wherein two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

14. The coupling arrangement of any one of embodiments 8 to 13, further comprising a release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module.

15. The coupling arrangement of any one of embodiments 8 to 14, wherein the at least one locking latch and the at least one locking latch arresting location are disposed at a front portion of the respective utility modules.

16. The coupling arrangement of any one of embodiments 8 to 15, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

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17. The coupling arrangement of any one of embodiments 8 to 16, wherein locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

18. The coupling arrangement of any one of embodiments 8 to 17, wherein the locking latch is manipulable to be opened through an opening configured at a front wall of the respective utility module.

19. The coupling arrangement of any one of embodiments 1 to 18, wherein one or both of the locking tongue and locking rib are configured with a slanting surface at corresponding orientation along the sliding path.

20. The coupling arrangement of any one of embodiments 1 to 19, wherein one or both of a front edge of the projecting portion (or the projecting locking location) and a corresponding front edge of the depressed locking location are slanted for gliding positioning of the second utility module into locking position over the first utility module.

21. The coupling mechanism of any one of embodiments 1 to 20, wherein the first utility module is configured for detachably attaching one or more second utility modules thereto.

22. A coupling mechanism for a utility assembly comprising at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and comprises at one of a top face of the first utility module and a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility

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module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

23. A utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism according to any one of embodiments 1 to 21, the coupling mechanism being configured between the first utility module and the second utility module.

24. A utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism for readily detachably attaching the first and second utility modules, the coupling mechanism being configured between the first utility module and the second utility module; said coupling mechanism comprising at one of a top face of the first utility module and a bottom face of the second utility module one or more depressed locking locations each configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises one or more projecting portions each configured with a locking tongue

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disposed in register with said one or more depressed locking locations, and at least one locking latch disposed in register with said at least one locking latch arresting location; such that at a locked position, the bottom face of the second utility module at least partially rests over the top face of the first utility module, and the one or more projecting tongues are arrested by the corresponding one or more locking ribs, and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, thereby preventing sliding displacement between the first utility module and the second utility module, and disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

25. The utility assembly of embodiment 24, wherein the first and second utility modules are in a locking engagement when said one or more depressed locking locations and the one or more projecting portions are disposed behind one another.

26. The utility assembly of embodiment 24 or 25, wherein said one or more depressed locking locations and said one or more locking latch arresting locations are configured at the top face of the first utility module, and the one or more projecting portions and the at least one locking latch are configured at the bottom face of the second utility module.

27. The utility assembly of any one of embodiments 24 to 26, wherein at least one second utility module is configured for snap-type locking over the first utility module.

28. The utility assembly of any one of embodiments 24 to 27 wherein engaging the first and second utility modules into the locked position is provided by sliding the

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second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

29. The utility assembly of any one of embodiments 24 to 28, wherein the at least one locking rib extends substantially parallel to the sliding path.

30. The utility assembly of embodiment 29, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

31. The utility assembly of embodiment 29, wherein a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

32. The utility assembly of embodiment 29 wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

33. The utility assembly of embodiment 29, wherein two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

34. The utility assembly of any one of embodiments 24 to 33, wherein a top face of a first utility module interlocks with a bottom face of a second utility module disposed thereover in a substantially fully overlapping relation, or with a bottom face of at least one second utility module only partially overlapping therewith.

35. The utility assembly of any one of embodiments 24 to 33, wherein the second utility module overlaps a significant portion of a first utility module and is configured with a single release latch for displacing several locking latches articulated therewith.

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36. The utility assembly of any one of embodiments 24 to 35, further comprising a release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module.

37. The utility assembly of any one of embodiments 24 to 36, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

38. The utility assembly of any one of embodiments 24 to 37, wherein the locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

39. The utility assembly of any one of embodiments 24 to 38, wherein two or more second utility modules can be mounted over a first utility module, each being independently detachable attachable over the first utility module.

40. The utility assembly of any one of embodiments 24 to 39, wherein at least one of the first utility module and the second utility module are configured with a gliding surface facilitating displacement and positioning the respective second utility module at the locking position with respect to the first utility module.

41. The utility assembly of any one of embodiments 24 to 40, wherein one or more of the utility modules is a container module, and the utility assembly is a container assembly or a tool caddy.

42. The utility assembly of embodiment 41, wherein the container module is compartmented and optionally configured with sub-containers and sub-compartments.

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43. The utility assembly of embodiment 41 or 42, wherein a top face of the container module is configured as a lid or as a functional component of the container module.

44. The utility assembly of any one of embodiments 41 to 43, wherein the container modules is a locomoting container, configured with an arrangement for locomoting said utility assembly.

45. The utility assembly of any one of embodiments 41 to 44, wherein the container modules is configured with a carrying arrangement disposed at any one or more of its faces, optionally being a carrying handle.

46. The utility assembly of any one of embodiments 24 to 40, wherein one or more of the utility modules is a soft-shell container with at least a rigid face portion.

47. The utility assembly of any one of embodiments 24 to 40, wherein said first utility module is a mobile carrier unit.

48. The utility assembly of any one of embodiments 24 to 47, further comprising a locking mechanism for preventing unintentional separation of the modules while they are interlocked.

49. The utility assembly of any one of embodiments 24 to 48, wherein the first utility module is configured for detachably attaching at least two second utility modules thereto.

50. A mobile carrier unit comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module, said carrier engagement surface having (i) one or more depressed locking locations each configured with a locking rib and at least one locking

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latch arresting location, configured for engagement with said first engagement surface of a utility module that comprises at least one locking latch and one or more projecting portions, each projecting portion being configured with a locking tongue, or (ii) at least one locking latch and one or more projecting portions each configured with a locking tongue for engagement with said first engagement surface of a utility module that comprises one or more depressed locking locations, each depressed locking locations configured with a locking rib and at least one locking latch arresting location.

51. The mobile carrier unit of embodiment 50, wherein once associated with the utility module, said locking tongue becomes disposed in register with said one or more depressed locking locations, and at least one locking latch become disposed in register with said at least one locking latch arresting location.

52. The mobile carrier unit of embodiment 50 or 51, configured for detachable interlocking engagement with one or more utility modules, each utility module comprising a first engagement surface.

53. The mobile carrier unit of any one of embodiments 50 to 52, further comprising at least one of a manipulating arrangement and a locomotion system.

54. An assembly comprising a mobile carrier unit of any one of embodiments 50 to 53 having at least one carrier engagement surface, and at a least one utility module having a first engagement surface, the utility module being detachably interlocked with the mobile carrier unit by engaging said first engagement surface with said carrier engagement surface.

55. The assembly of embodiment 54, wherein the mobile carrier unit and the at least one utility module are detachably interlocked with one another by a dovetail

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engagement mechanism, that comprises laterally projecting shoulders configured on one of the carrier engagement surfaces and the first engagement surface of a utility module, and a shoulder receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said laterally projecting shoulders are configured for sliding engagement with said shoulder receiving recess.

56. The assembly of embodiment 55, wherein one or both of the carrier engagement surfaces and the first engagement surface of a respective utility module are configured with depressions, each accommodating respective laterally projecting locking shoulders.

57. The assembly of embodiment 54, wherein the mobile carrier unit and the at least one utility module are detachably interlocked with one another by an undercut engagement mechanism, comprising lateral projections configured on one of the carrier engagement surfaces and the first engagement surface of a container unit, and a receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said lateral projections are configured for engagement with said receiving recess, such that interlocking engagement of the utility module and the carrier unit takes place by placing the first engagement surface of a utility module over the carrier engagement surface, such that the utility module`s first engaging elements are disposed shifted over the respective carrier engaging elements of the carrier unit, and are then slidingly shifted to obtain sliding interlocking engagement therebetween.

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58. The assembly of any one of embodiments 54 to 57, further comprising a locking mechanism configured for preventing unintentional detaching of the utility module from the carrier unit.

59. The assembly of embodiment 58, wherein the locking mechanism comprises a locking pin that is configured for snapingly protruding from one of the engagement surfaces into a designated nook on the other engagement surface.

60. An interface coupling module comprising at least one engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module, said interface coupling module comprising an engagement surface having (i) one or more depressed locking locations each configured with a locking rib and at least one locking latch arresting location, configured for engagement with said first engagement surface of a utility module that comprises at least one locking latch and one or more projecting portions, each projecting portion being configured with a locking tongue, or (ii) at least one locking latch and one or more projecting portions each configured with a locking tongue for engagement with said first engagement surface of a utility module that comprises one or more depressed locking locations, each depressed locking locations configured with a locking rib and at least one locking latch arresting location

61. The interface coupling module of embodiment 60, being configured for detachable or fixed attachment to a surface of an object.

62. The interface coupling module of embodiment 60 or 61, being a cargo interface module for a utility vehicle configured for attaching one or more utility modules to the vehicle.

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63. The interface module of embodiment 60 or 61, being a surface mount for attaching utility modules

64. The interface module of embodiment 60 or 61, being a tool mount or a tool rack.

65. The interface module of embodiment 60 or 61, being a belt mount for mounting of utility modules to a workers belt;

66. The interface module of embodiment 60 or 61, being an interface mount module for coupling two utility modules to one another.

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 examples only, with reference to the accompanying drawings, in which:

Figs. ~~1 to 6~~1A to **6G** are directed to a first example of a locking mechanism, wherein:

Fig. 1A is a top perspective view of a container assembly according to an example of the present disclosure;

Fig. 1B is an exploded perspective view of the container assembly of Fig. 1A;

Fig. 1C is a bottom, front perspective view of Fig. 1B;

Fig. 1D is a bottom, rear perspective view of Fig. 1B;

Fig. 2A is a sectioned portion along line A-A in Fig. 1A;

Fig. 2B is a sectioned portion along line B-B in Fig. 1A;

Fig. 2C is a sectioned portion along line C-C in Fig. 1A;

Figs. 3A to **3D** are consecutive steps illustrating locking engagement of the locking tongue of the second container with the respective locking rib of the first container;

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Figs. 4A to **4D** are consecutive steps illustrating locking engagement of the locking latch of the second container with the respective locking latch arresting location of the first container;

Figs. 5A to **5E** schematically demonstrate modularity of a container assembly according to the disclosure;

Figs. 6A to **6G** are various combinations of a modular container assembly according to examples of the present disclosure.

Figs **7A** to **12C**~~**7 to 12**~~ are directed to a carrier unit and another example of a locking mechanism, wherein:

Fig. 7A is container carrier assembly according to an example of the disclosure, illustrating a top, left perspective view of a container unit, mounted on top of a carrier unit;

Fig. 7B is a top, left perspective view of a second container unit, mounted on top of a first container unit, which in turn is mounted on top of a carrier unit according to an example of the present disclosure;

Fig. 8A is a top, left perspective view of a carrier unit, illustrating the carrier engagement surface in further detail;

Figs. 8B and **8C** are a top and a bottom perspective view of a carrier unit, illustrating the container unit's first engagement surface in further detail;

Fig. 9A is a side section along line F-F in Fig. 7A, illustrating the container unit and the carrier unit unattached;

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Fig. 9B is a side section along line F-F in Fig. 7A illustrating the container unit and the carrier unit attached;

Fig. 9C is a close-up view of Fig. 9B;

Fig. 9D is a sectioned view along line F-F in Fig. 7A illustrating the interlocking engagement of the carrier engaging elements together with the container unit's first engaging elements;

Fig. 10A is a sectioned view along line D-D in Fig. 7A, illustrating the locking mechanism;

Fig. 10B is an enlarged image of the portion marked M in Fig. 10A;

Fig. 11A illustrates different sizes of container units forming an assembly, at a tilted orientation;

Fig. 11B illustrates an assembled configuration balanced vertically relatively to the ground;

Fig. 12A shows a container assembly wherein the female coupler comprises two locking ribs extending at respective side edges of two neighboring depressed locking locations;

Fig. 12B is a section along line H-H in Fig. 12A;

Fig. 12C illustrates the utility module apart from the container and flipped, so as to expose the mating coupling mechanism.

Figs. 13A to **24**~~**13 to 24**~~ are different embodiments and configurations of utility modules and utility assemblies according examples of this disclosure.

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DETAILED DESCRIPTION OF EMBODIMENTS

Reference is first being made to Figs. 1A to 6G, directed to a first configuration of a coupling mechanism. For sake of convenience the utility modules are exemplified as containers and respectively the utility assembly is illustrates as a tool caddy. It is however appreciated that the utility modules can be of any type, shape or size, as discussed hereinabove and as will be exemplified below.

Attention is first directed to Figs. 1A to 4D, illustrating a container assembly generally designated **20**, comprising four containers **22**, **24**, **26** and **28** disposed in a triple stage configuration, the stages designated **A**, **B** and **C**. In the illustrated example containers **24** and **26** of the second stage are half-size and overlap the footprint of the first stage container **22** and the third stage container **28**, wherein the first container **22** is for example a hand tool container and containers **24** to **28** are organizers or the like.

The term *'first container'* as used herein denotes a container bearing over a top face thereof at least one other container, said at least one other container denoted herein as a *'second container'*. It is thus appreciated that a second container of a container assembly comprising three or more stages of containers' serves as second container when referred to the first stage container, and as a first container when referred to a third stage container mounted thereover. Accordingly, in the illustrated example of Figs. ~~1 and 2~~1A-2C, container **22** is a first container and containers **24** and **26** are second containers, whilst they function as first containers when discussing locking arrangement with respect to third stage container **28**.

Each of the containers is configured with a lid **L** constituting a top face of the respective container, said lids being pivotally attached and securely articulated to the respective

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container through a toggle locking latch **29**. Each top face (see Fig.1B) is configured with several depressed locking locations **32** and it is seen that the at least two depressed locking locations are disposed behind one another along imaginary lines **I**, **II** and **III** (though not necessarily aligned).

Each such depressed locking location is in turn configured with a laterally projecting locking rib **36** extending from a rear portion of the depressed locking location **32** towards a front face of the container. The locking rib **36** has a flat top surface **38** substantially flush with a top surface of the respective lid **L**, and a slanting bottom surface **40**. A front portion **46** of the depressed locking location **32** is slanted too, in the same orientation as bottom surface **40** (i.e. substantially parallel thereto).

Furthermore, the top face, namely lid **L** of the containers, is configured with at least one locking latch arresting location in the form of a recess **50** disposed at a front portion of the respective top face and configured with a slanted rear wall portion **52** and a right angled front wall portion **53**.

A bottom face **54** of each container **22**, **24**, **26** and **28** is configured with several projecting portions **56**, extending in register with the depressed locking locations **32**, and it is seen that the at least two projecting portions **56** are disposed behind one another along the imaginary lines **I**, **II** and **III** (though not necessarily aligned).

Each projecting portions **56** is configured with a locking tongue **60** laterally projecting rearwards and having a slanted surface **62** corresponding with slanting surface **40** of locking rib **36**. Also, a front portion **66** of the projecting portions **56** slants substantially parallel to the slanted surface **62** of the locking tongue **60**.

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It is essential that the at least two depressed locking locations **32** and the at least two projecting portions **56** be disposed behind one another (though not necessarily aligned), as exemplified by imaginary lines **I**, **II** and **III** (though not necessarily aligned).

A plunger-like locking latch **70** is disposed at a front portion of each container, said locking latch **70** disposed in register with the recesses **50** and configured with a slanting rear wall portion **72** and a right angled front wall portion **74**, corresponding with the sloping wall portions of the recesses **50**. The locking latch **70** has an elongate finger engaging aperture **73** (Fig. 2A) accessible through an aperture **75** formed in register at a front wall face of the respective second container, said locking latch **70** being normally biased to project under force of coiled spring **71**, such that the locking latch **70** is axially displaceable between a projecting, locked position and a temporary retracted position during transition into the locked position.

The locking latch **70** is typically single-handedly manipulable between its locking position and its releasing position, such that manipulation of the locking latch to disengage it from the locking latch arresting location **50** can be easily facilitated using one hand simultaneously with gripping the carrying handle **80**. As seen in Figs. 1A-2C, manipulating the finger engaging aperture **73**, being part of locking latch **70**, is disposed opposite to and at finger-reach distance from the carrying handle **80** when the handle is at its carrying position tilted upwards. This enables a grab, release and go detachment of the second utility module from the first utility module in a simple single-handed operation.

When it is required to detachably attach a second container over a first container, the former is placed over the later (Fig. 3A), placing the projecting portions **56** within the

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depressed locking location **32** (Fig. 3B) with the locking tongues **60** engaging below and being gradually arrested by the respective locking ribs **36** arresting is obtained (Fig. 3C) until complete arresting is obtained (Fig. 3D). Simultaneously, as the locking tongues **60** arrest by the locking ribs **36**, the locking latch **70** of the second container slides into the locking latch arresting location (recess **50**) and finally snaps into locking engagement therewith. It is noted (Figs 4A to 4D) that first (Figs. 4B and 4C) the locking latch **70** displaces upwards against the biasing effect of spring **71**, and when the second container reaches the final locking position over the first container, the locking latch **70** plunges into arresting position within the recess **50**.

At the locked position the second container is attached over the top face of the first container, such that they can be moved as an integrated unit. Detaching of a second container from a first container is easily facilitated by unlocking, obtained by displacing the locking latch **70** upwards against the biasing effect of spring **71**, whereby the second container can be displaced with respect to the first container and detached therefrom.

As further seen in Figs. 1A-4D, each of the containers **22**, **24**, **26** and **28**, is configured at a front face thereof with a tiltable carrying handle **80**, for carrying a respective container or the entire container assembly **20**. Also seen, some of the containers can be configured with fender-like protectors **90** at their corners.

Further attention is now directed to Figs. 5A to 5E demonstrating examples of modularity of a container assembly according to the disclosure. Fig. 5A is a planner top view of a first container **94** and Figs. 5B to 5E illustrate second containers superimposed over the first container **94**. In Fig. 5B a second container **96** is substantially as big as the first container **94**, i.e. having the same footprint. In Fig. 5C a

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second container **98** is as wide as the first container **94**, however narrower in depth, and disposed at a front portion of the first container. In Fig. 5D two second containers **99A** and **99B** are mounted over the first container **94** and occupy substantially the entire footprint thereof, whereby each of containers **99A** and **99B** is independently attachable and detachable from the first container **94**, as exemplified hereinabove. In Fig. 5E two second containers **100A** and **100B** are positioned over the first container **94**, occupying the entire width though narrower in depth and extending from a front portion of the first container **94**.

Turning now to Figs. 6A to 6K, there are illustrated several examples of container assemblies, subassemblies and their components. Fig. 6A illustrates a disassembled container assembly collectively designated **104** and comprising a base container **106**, a chest of drawers module **108** comprising three drawers, a tool caddy module **110**, a compartmented storage module **112** and a half-sized compartmented storage module **114** (typically two of which). It is noted that the base container is configured for locomoting and comprises at a rear thereof wheels **116** and a telescopic handle **118**.

As can be appreciated from Figs. 6B through 6D, various container assemblies are illustrated, the arrangement is such that in practice any module can constitute either a first container or a second container, as defined hereinabove (though it is more likely that base container **106** serves as a first container).

Figs. 6E and 6F illustrate a chest of drawers module **108**, illustrated separately in Fig. 6E and mounted over a similar drawer module **108** in Fig. 6F. It is appreciated that the drawers of each module can be locked at their closed position to prevent spontaneous opening thereof whilst carrying a module. Furthermore, each module **108** is configured

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with a pair of carrying handles **115** disposed at top side wall portions thereof, to facilitate carrying of the module.

In Fig. 6G there is illustrated a subassembly comprising a first container in the form of a tool caddy module **110** and second container in the form of a compartmented storage module **112** attached thereto, whilst the lid **119** of the first container is open facilitating access to the contents thereof.

Further attention is now directed to Figs. 7A to 16B, showing a third aspect of the disclosure, namely a utility module being a mobile carrier unit and comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a second utility module. For sake of example only, the second utility module exemplified in the annexed drawings is in the form of a utility container. It is however appreciated that the utility modules can be of any type, shape or size, as discussed hereinabove and as will be exemplified below. Accordingly, the term *container unit* as used in the following description denotes any type of a utility module, as discussed herein the specification.

Attention is first directed to Fig. 7A, illustrating a container carrier assembly generally designated **200** comprising a container unit **202** (utility module) mounted on top of a carrier unit **206**. The carrier unit **206** is equipped with a telescopic manipulating handle **210**, a pair of rear wheels **208** and a set of horizontally stabilizing support legs **212** at a front portion of the carrier unit **206**. The carrier unit **206** and the container unit **202** are engaged in an interlocking engagement via their engagement surfaces, i.e. a carrier engagement surface **216** at a top face of the a carrier unit **206** (best seen in Fig. 8A), and the container unit's first engagement surface **220** (namely its bottom face; best seen in

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Figs. 8B and 8C). The container unit **202** is configured with yet a second engagement surface **226** (namely the container's top face), simulating the carrier engagement surface **216**. The container unit **202** further comprises a locking mechanism **230** configured for arresting within a respective notch **231** at the carrier engagement surface **216**, to thereby to prevent displacement and separation of the engagement surfaces **216** and **220** once they are interlocked, as later will be explained.

The carrier engagement surface **216** seen in greater detail in Fig. 8A, illustrates a top perspective view of a carrier unit **206** with the telescopic handle **210** in a retracted position. The carrier engagement surface **216** comprises multiple carrier engaging elements **236**, depressed from the surface, and designated for interlockingly receiving respective container unit's first engaging elements **240**, projecting from the first engagement surface (bottom face) **220** of the container unit **202**.

Each carrier engaging element **236**, is a so-called female coupler and has a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path and having an open edge facing in a first sense. As seen in the drawings, it is generally constituted by a receiving recessed depression **244** in the carrier engagement surface **216**, configured with a pair of facing locking ribs **248**, forming the aforementioned recess. The locking ribs **248** extend substantially parallel to sliding path of the container unit **202** with respect to the carrier unit **206**, said path (designated **P** in Figs. 7A and 10B). Further noted, side walls **250** of depressions **244** are sloped in order to allow directing of a container unit's first engaging element **240**, mounted upon it, to its interlocking position.

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A corresponding coupler configured at the container unit is a so-called male coupler comprising a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface. As seen, a single container unit's engaging element **240** is generally constituted a downwardly projecting outwards protrusion **258**, projecting from the bottom face **220** of the container **202**.

In order to lock the container **202** over the carrier unit **206**, upon placing the container **202** over the carrier engagement surface **216** of carrier unit **206** one must mount the container unit's first engaging elements **240** into the depressions **244** and then slide the container **202** along the sliding path **P** (i.e. towards the locking ribs **248**) so that the engaging elements **240** engage below said projecting ribs/shoulders **248** and the engaging elements **240** are thus arrested at a space between said locking ribs and the depressed surface, as seen in Fig. 9C. interlocking engagement of the container (or any other utility module) can be facilitated by a single male-female locking mechanism of the aforementioned type, or by a plurality of such locking mechanism, at any location over the carrier unit **206**.

The shape and size of the locking members is modular as far as the depression **244** in the carrier engagement surface **216**, can be single or double in size (e.g. **236** and **236A** in Fig. 8A, respectively), so it is large enough to accommodate two container unit's first engaging elements **240**, or two neighboring container unit's first engaging elements.

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Locking/engaging and detaching of this configuration is similar to a single locking module.

The engagement and locking mechanism is modular in the sense that any first article can be easily and readily articulated to a surface of any second article, wherein the articulation is strong and firm (i.e. substantially motionless).

With further reference to Fig. 7B, there are illustrated two containers **202A** and **202B** articulated over one another, the arrangement being such that the bottom face of the intermediate container **202A** serves for engaging with the top face of the carrier unit **206** and likewise, the top face of the intermediate container **202A** serves for engaging with the bottom face of the top container **202B**, as discussed herein above. The arrangement is such that each stage is lockingly secured by the locking mechanism **230**, wherein each stage can be detached from the stage below upon releasing locking engagement of the respective locking mechanism **230**.

The locking mechanism **230** is shown in further detail in Figs. 10A and 10B. The locking mechanism comprises a locking pin **231** normally biased by spring **233** such that a tip **235** projects from a bottom surface of the container **202** (see also Fig. 8B) and is configured for snap arresting within a respective notch **231** configured at the engagement surface **216** of the carrier unit **206** (seen also in Fig. 8A). The locking pin **231** is slidable within a race at the side wall of the container, and comprises a finger manipulating portion at **237** (accessible through an opening at the side wall of the container), for displacing the locking pin, against the biasing effect of spring **233**, into its disengaged position, thus facilitating sliding the container along the path **P** into disengagement from the carrier unit (or respective other container or utility module).

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The carrier unit **206** is further configured at a bottom end, with a pair of stability supports **264** (Figs. 8A, 11B), configured for supporting the carrier unit, with or without a container attached thereto, at an upright, i.e. vertical position, thus preventing it from tipping over, in particular with containers or any other utility module articulated thereto. Stability supports **264** can be, according to a particular configuration, an extension of the telescopic handle **210**, whereby the stability supports are functional as such only when the handle is fully contracted. However, in the illustration of Figs. 16A-16B the utility assembly **253** is maintained at its upright position owing to said stability supports **264** and further bearing over a side face **266** of the intermediate container **202A**, being substantially flush with a bottom face of the stability supports **264**.

With further reference to Figs. 12A to 12C there is illustrated a modification of articulation between a first utility module (container **300** in the particular example) and a second utility module (two work-piece supports **304** in the particular example). The container **300** is substantially similar to that illustrated in the previous examples, wherein the cover/lid **308** is configured with a plurality of female coupler members **310**, each configured with a depressed locking location and a pair of locking ribs extending above the depressed surface and along a sliding path. The opposing locking ribs **312A** and **312B** have an open edge facing in a first sense (the introducing direction).

In the examples hereinbefore, engagement with a corresponding male coupler took place within the vicinity of a single coupling element, i.e. over two engaging ribs **312A** and **321B** of a single depressed locking location facing each other. However, in the example of Figs. 12A-12C engagement of the work-piece supports **304** takes place over two engaging ribs **312A** and **312B** of two neighboring depressed locking locations

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308A and **308B**. Accordingly, the male coupler of the two work-piece supports **304** is configured for arresting with the two engaging ribs **312A** and **312B** by two individual (separate) male couplers **316A** and **316B**, each configured for arresting one of the respective engaging ribs **312A** and **312B**. Arresting of the male projections **316** takes place as discussed before, by arresting below the respective engaging ribs, within the space at the depressed locking location. In spite of the relative narrow body structure of the work-piece supports **304**, they are each configured with a locking mechanism **330**, similar to locking mechanism **230** discussed hereinbefore.

Turning now to Figs. 13A to 24, there are illustrated various examples of utility modules, utility assemblies and various configurations according to the disclosure.

Fig. 13A illustrates a utility module assembly generally designated **400**, comprising a wheeled base container **402** supporting an intermediate container **404**, bearing in turn a cooler box **406** and a power unit **408** disposed side by side over the intermediate container. At least the intermediate container **404** is configured at a bottom face thereof with a male-type coupling arrangement, for attachment over the cover of the base container, said cover configured with a respective female coupling arrangement. The cover of the intermediate container **404** is configured with a similar female coupling arrangement, and can thus engage with one the utility modules **406** and **408**, each configured at its bottom face with a respective male-type coupling arrangement.

It is seen in Figs. 13B through 13D that the intermediate container **404** is fitted with a pivotal carrying handle **418** articulated at the top side walls thereof. The carrying handle has a thickness **t** and the arrangement is such that at the stowed/folded position (Figs. 13B, 13D) the handle **418** is received within a peripheral groove **422** extending over a

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top edge of the intermediate container **404** and a peripheral groove **424** extending at a bottom edge of the utility modules **408** and **406** (cooler box **406** and a power unit **408**), such that the handle **418** does not constitute an obstacle in mounting and interlocking a utility module over another utility module. It is also seen that at least some of the utility modules are configured with side handles **428** serving both as carrying handles and as bumpers.

Figs. 14A to 14C illustrate a first utility module in the form of a container **430** supporting two detachable workpiece-piece supports **432** (attached as discussed herein before with reference to Figs. 12A-12C). Fig. 14C illustrates a utility module in the form of a work surface **436** configured with a vice race **438**, so that a vice **440**, or other workshop tools can be used. The workpiece-piece supports **432** are configured with a male type coupling having projecting locking locations **444** for engaging with respective female couplers.

In Figs. 15A and 15B there is illustrated a back-rack **450** being a substantially rigid platform having a carrying handle **451** and configured at one side thereof with a pair of adjustable shoulder harnesses **452**, and an adjustable waist harness **454**. The other side of the back-rack is configured as a universal utility mounting platform **458**, configured with a plurality of attachment locations **460**. In the illustrated example all attachment locations **460** are so-called female attachments (as discussed hereinabove in detail), however it is appreciated that the attachment locations can just as well be male-type attachments, or a combination of male and female attachments. According to yet an example (not shown), one side of the carrying platform can be configured with male-type attachments, and an opposite side of the platform be configured with female-type

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attachments, wherein a used has the choice of attaching the platform to the harness system at an orientation of choice.

In Fig. 16A there is illustrated a utility module in the form of a wheeled carrying unit **464** (shown from a bottom side), similar to that disclosed in connection with Figs. 7A to 11B. The carrying unit **464** comprises a rigid platform **466** fitted at a top face thereof with a female/male attaching arrangement in accordance with the disclosure, such that any utility module according to the disclosure can be detachably attached thereto. Also provided is a telescopic manipulating handle **468** and a pair of wheels **466**. The carrying unit can be fitted with a collapsible support plate configuring it into a pushcart (not shown).

Fig. 16B shows a utility assembly **276** comprising a wheeled base container **278** interlocked with a first intermediate container **280** mounted thereover (constituting a second stage of the assembly), and a second intermediate container **282** mounted thereover (constituting a third stage of the assembly **276**), there being yet a fourth stage utility module container **284** mounted over the second intermediate container **282**. Whilst the second intermediate container **282** has a wider footprint than the first intermediate container **280**, this does not constitute any difficulty as far as attaching it over the second intermediate container **282**, and further, the top face of the second intermediate container **282** has a great surface suited for articulation thereof of several fourth stage utility modules (only one shown).

Fig. 17 shows a carrying bag **280** having soft side walls **282** (in the example illustrated made of fabric), however fitted with (integrally or detachable) an articulation platform base **284,** said articulation platform made of a firm rigid material and is configured with

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four male-type coupling locations **288** of the type disclosed hereinabove. The carrying bag **280** has a carrying strap **290** useful for hand held or shoulder carrying of the bag. Figure 18A shows a rigid coupling platform **300**, configured with a plurality of female coupling locations (of the type disclosed herein) and further configured with bolt eyes **298** for securing to any desired surface, and carrying bars **313**.

The coupling platform **300** can be attached for example to a truck bed **306** (Fig. 20), directly over the truck bed or over a cargo container attached to the truck. The coupling platform **300** can be attached to a wall, as in Fig. 18B, wherein a plurality of various utility modules can be articulated thereto. For example, utility modules can be an electric charger **315** of a power tool, a wall mounted sorting container **314**, a hand tool rack **318** (Fig. 18C), a tool coupling adaptor **320** (Fig. 18C), etc.

In Fig. 19 there is illustrated a belt-mount **319** configured as a female coupler according to the disclosure, wherein a tool **321** or a bag/pouch configured with a male coupler can be detachably attached thereto.

In Fig. 21 there is illustrated a wall rack **326** comprising four utility modules in the form of articulation platforms **328** (mountable at different elevations about the wall supports **327**) each configured for bearing and attaching thereto any utility module in accordance with the disclosure.

In Fig. 22 there is illustrated a mobile work stand **340** comprising a wheeled base **342** supporting two racks **344** with four utility modules in the form of articulation platforms **346** (mountable at different elevations about the wall supports **327**) each configured for bearing and attaching thereto any utility module (e.g. containers **348**) in accordance with the disclosure.

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In Fig. 23 the utility module is in the form of a dolly **352** configured with wheels **354** and having a top surface configured with an array of female type couplings, as discussed.

In Fig. 24 there is illustrated a utility coupling platform **358** suited for articulation to any desired article (e.g. a bag, a tool, etc.). the utility coupling platform is configured at least at one face thereof with a male coupling locations **360** mimicking the coupling arrangement of the disclosure, rendering it suitable for articulation with a coupling system according to the disclosure.

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ABSTRACT

The present disclosure concerns a coupling mechanism for detachably attaching two or more utility modules to one another, utility assembles, mobile carriers and other attachable modules and articles.

VIA *e*FILE

PATENT APPLICATION
Docket No. 269949US01_446373-417

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of		)
		)
	Yaron Brunner	)
		)
Serial No.:	15/826,232	)Art Unit
		) 3633
Filed:	November 29, 2017	)
		)
For:	UTILITY ASSEMBLY AND COUPLING MECHANISM	)
		)
Confirmation No.:	1070	)
		)
Customer No.:	111739	)
		)
Examiner:	TBD	)

SUBSTITUTE SPECIFICATION IN CLEAN FORM UNDER 37 C.F.R. §1.125

VIA *e*FILE
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313

Dear Sir:

The following substitute specification in clean form is hereby submitted. A marked up version is also filed herewith. This substitute specification includes no new matter.

Dated this 19th day of February, 2018.

Respectfully submitted,

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4849-0152-3038\1

UTILITY ASSEMBLY AND COUPLING MECHANISM

TECHNOLOGICAL FIELD

The present disclosure is directed to a container assembly and more specifically to a utility assembly comprising two or more detachably attachable utility modules. The disclosure is further concerned with a coupling mechanism facilitating detachably attaching the utility modules to one another.

The term 'utility *module'* is used hereinafter in its broad meaning and is meant to denote a variety of articles such as, storage containers, travel luggage, tool boxes, organizers, compacted work benches, cable storage, tools (e.g. hand tools, power generators and power sources), communication modules, carrying platforms, locomotion platforms, etc., of any shape and size, and wherein any utility module can be detachably attached to any other utility module.

The term *'utility assembly*' as used herein denotes any set of utility modules configured for articulation to one another, either as a stationary unit or locomotive.

GENERAL DESCRIPTION

A first aspect of the disclosure concerns a coupling mechanism configured for readily detachably attaching any first article to any second article, wherein any first article and any second article can be any utility module.

The coupling mechanism comprises a male coupler at a face of one of the first utility module and the second utility module, and a female coupler at a face of the other one of the first utility module and the second utility module, said female coupler has a

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depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense; said male coupler has a projecting locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface, the coupling mechanism further comprises at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

The arrangement is such that at a locked position of a utility assembly the at least one locking tongue of the male coupler engages below said at least one locking rib of the female coupler and the at least one locking member is engaged, thus preventing any respective displacement between the first utility module and the second utility module, and retaining the coupling mechanism at an engaged and locked position.

The term *'first utility module'* as used herein denotes any utility module bearing at least one second utility module over a first surface thereof. The second utility module of a utility assembly may comprise three or more stages of utility modules, and functions as first utility module with respect to a third stage utility module mounted thereover and serving in turn as a second utility module.

According to certain embodiments, one or more female couplers are configured at the top face of the first utility module, and one or more male couplers are configured at the bottom face of the second utility module

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The disclosed subject-matter is directed to a utility module configured with at least one of a male coupling mechanism and a female coupling mechanism of the disclosure, a module assembly comprising one or more utility modules of the aforementioned type and a set of utility modules of the aforementioned type.

According to a configuration of the first aspect, there is provide a utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism configured between the first utility module and the second utility module; said coupling mechanism comprising at one of a top face of the first utility module and a bottom face of the second utility module one or more depressed locking locations each configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises one or more projecting portions each configured with a locking tongue disposed in register with said one or more depressed locking locations, and at least one locking latch disposed in register with said at least one locking latch arresting location.

The arrangement is such that, at a locked position, the bottom face of the second utility module at least partially rests over the top face of the first utility module, and the one or more projecting tongues are arrested by the corresponding one or more locking ribs, and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, thereby preventing sliding displacement between the first utility module and the second utility module, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

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Locking engagement between the second utility module and the first utility module is obtained when the one or more depressed locking locations and the one or more projecting portions are disposed behind one another (though not necessarily aligned). According to a particular configuration of the coupling mechanism, the one or more depressed locking locations and the one or more locking latch arresting locations are configured at the top face of the first utility module, and the one or more projecting portions and the at least one locking latch are configured at the bottom face of the second utility module. According to this configuration, locking between the first utility module and the second utility module is obtained by positioning the second utility module over the second utility module such that one or more locking tongues of the projecting portions engages with one or more respective locking ribs of the depressed locking locations, and wherein the locking latch interlocks with the respective locking latch arresting location.

The arrangement being such that the attaching engagement between the second utility module and the first utility module takes place when the one or more locking tongues and the corresponding one or more respective locking ribs are engaged, thereby preventing vertical separation between the utility modules (i.e. preventing lifting of the second utility module of the first utility module), and further when the locking latch is arrested by the respective locking latch arresting location, thereby preventing sliding displacement of the utility modules one with respect to the other (i.e. sliding displacement of the second module over the first module).

Disengaging the second utility module from the first utility module can be facilitated only after disengaging the locking latch from said locking latch arresting location.

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According to a second aspect of the disclosure there is disclosed a coupling mechanism for a utility assembly comprising at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and comprises at one of a top face of the first utility module and a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

Engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

According to one particular configuration the at least one locking rib extends substantially parallel to the sliding path and according to another configuration the at least one locking rib extends substantially perpendicular and intersects the sliding path.

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A third aspect of the present disclosure is directed to a utility module being a mobile carrier unit and comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module.

The term *carrier unit* as used herein denotes any kind of propelled cart configured for detachably attaching and carrying load. The carrier unit may be a hand cart, a mobile tool cart, a mobile workshop, traveling luggage cart, a trolley, etc.

With particular reference to the third aspect, the carrier engagement surface can be larger than the utility module's first engagement surface corresponding with it. In this case, several utility modules may be interlocked simultaneously upon one carrier unit.

According to one configuration there is disclosed a carrier unit comprising a manipulating arrangement, a locomotion system, and an engagement surface comprising one or more engaging elements. The carrier unit is designated for detachable interlocking engagement with one or more utility modules, each comprising a first engagement surface configured with one or more first engaging elements compatible for detachable interlocking engagement with the carrier engaging elements.

According to yet configuration there is disclosed an assembly comprising a carrier unit comprising an engagement surface comprising one or more engaging elements, and at least one utility module configured with at least one first engagement surface comprising one or more first engaging elements compatible for detachable interlocking engagement with the carrier unit's engaging elements.

According to a modification of this aspect, there is also provided a container unit comprising a top member configured with a second engagement surface of the utility

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module, said top member, according to one example constitutes a cover of the utility module.

The arrangement is such that a container unit can be readily and easily applied over and interlockingly articulated to a carrier unit, or over a utility module configured with a second engagement surface mimicking the first engagement surface second engagement surface mimicking the first engagement surface of the carrier unit.

Engagement between the carrier unit and the container, and further between two containers, is facilitated by any locking mechanism of the disclosure hereinabove and hereinafter.

According to a specific example, there is a latching mechanism, wherein the first engaging elements of the carrier unit are configured for interlocking engagement with engaging elements of the mating surface of the respective utility module. The latching mechanism may assume various configurations, e.g. male-female couplings, dovetail couplings, and the like. The arrangement being such that only a minor displacement is required in order to lockingly mount, and respectively detach, a utility module over the carrier unit.

According to one specific configuration, the detachable interlocking engagement mechanism between the carrier engaging elements and the utility module`s first engaging elements is a dovetail engagement mechanism, comprising laterally projecting shoulders configured on one of the carrier engagement surfaces and the first engagement surface of a utility module, and a shoulder receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface

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of a utility module; where said laterally projecting shoulders are configured for sliding engagement with said shoulder receiving recess.

According to a particular configuration, one or both of the carrier engagement surfaces and the first engagement surface of a respective utility module are configured with depressions, each accommodating respective laterally projecting locking shoulders.

Said dovetail engagement mechanism members constitute said engaging elements, wherein said carrier engaging elements comprise one of said dovetail engagement members, while the utility module`s first engaging element comprises the respective said dovetail engagement member.

According to another configuration, the detachable interlocking engagement mechanism between the carrier engaging elements and the utility module`s first engaging elements is an undercut engagement mechanism, comprising lateral projections configured on one of the carrier engagement surfaces and the first engagement surface of a container unit, and a receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said lateral projections are configured for engagement with said receiving recess.

Interlocking engagement of the utility module and the carrier unit takes place by placing the first engagement surface of a utility module over the carrier engagement surface, such that the utility module`s first engaging elements are disposed shifted over the respective carrier engaging elements of the carrier unit, and are then slidingly shifted to obtain sliding interlocking engagement therebetween.

The detachable interlocking engagement mechanism may further comprise a locking mechanism configured for preventing unintentional detaching of the slidingly engaging

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elements once they are fully interlocked, i.e. to prevent detaching of the utility module from the carrier unit or from another utility module.

According to one configuration, the locking mechanism, comprises a locking pin that is configured for snapingly protruding from one of the engagement surfaces into a designated nook on the other engagement surface. This prevents the engaging surfaces from sliding relatively to each other, and by that it prevents said engaging elements from being slidingly separated once interlocked.

According to one configuration, the carrier engagement surface of the carrier unit constitutes a top wall of the carrier unit, when the carrier unit is balanced horizontally to the ground, and wherein the utility module`s first engagement surface constitutes a bottom wall of the container unit, when the utility module is balanced horizontally to the ground. The utility module can further comprise a second engagement surface constituting its top wall, or a cover, when the utility module is balanced horizontally to the ground. The second engagement surface of the utility module simulates the carrier engagement surface as it is compatible for engaging with another utility module's first engagement surface.

Any one or more of the following features, designs and configurations, can be implemented in a utility module, a utility assembly, locking mechanism, and the carrier unit and assembly according to the present disclosure, individually or in various combinations thereof:

- A single locking rib can extend at rear end of a depressed locking location (i.e. the female coupler may comprise a single locking rib) and substantially perpendicular to the sliding path;

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- Two locking ribs can extend at side edges of a depressed locking location (i.e. the female coupler may comprise two locking ribs) and disposed substantially parallel to the sliding path;
- Two locking ribs can each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path;
- The utility assembly can be modular wherein a top face of a first utility module can interlock with a bottom face of a second utility module disposed thereover in a substantially fully overlapping relation, or with a bottom face of at least one second utility module only partially overlapping therewith;
- A second utility module overlapping a significant portion of a first utility module can be configured with a single release latch for displacing several locking latches articulated therewith;
- Two or more second utility modules can be mounted over a first utility module, each being independently detachable attachable over the first utility module;
- The at least one second utility module is configured for snap-type locking over the first utility module;
- A release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module;
- The at least one locking latch and the at least one locking latch arresting location can be disposed at a front portion of the respective utility modules;
- At least one of the first utility module and the second utility module are configured with a gliding surface facilitating displacement and positioning the respective second utility module at the locking position with respect to the first utility module;
- The gliding surface reduces tolerances between the projecting portion and the depressed locking location receiving same;
- One or both of the locking tongue and locking rib can be configured with a slanting surface at corresponding orientation, along the sliding path, for reducing or substantially elimination tolerance therebetween;

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- One or both of a front edge of the projecting portion and a corresponding front edge of the depressed locking location can be slanted for gliding positioning of the second utility module into true locking position over the first utility module;
- The locking latch can be configured for displacement in a direction substantially normal to a respective face of a utility module;
- The locking latch can be spring biased and configured for normally projecting from a face of the respective first or second utility module;
- The locking latch can be manipulable to be opened through an opening configured at a front wall of the respective utility module;
- Corners of the utility modules can be reinforced;
- One or more of the utility modules can be a container module, and the utility assembly can be a container assembly/tool caddy;
- The container module can be compartmented and can be configured with sub-containers and sub-compartments;
- The top face of the container module can be configured as a lid or as a functional component of the container module;
- A lid of a second container can be opened also when articulated and locked in position over a first container;
- A lid of a first container can be opened also when a second container is articulated and locked in position thereabove;
- At least one of the container modules can be a locomoting container and can be configured with an arrangement for locomoting said container module. Where the locomoting container is attached to other container modules it can facilitate for locomoting the utility assembly;
- The container modules can be configured with carrying arrangement disposed at any one or more of its faces. According to a particular configuration, a front face of the container modules is configured with a carrying handle and according to another configuration side faces of the container modules can be configured with a carrying handle;

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- Examples of utility modules can be any one or more of a cooler box, a workpiece grip, a power supply (e.g. power bank, generator), hand tools, power tools, a locomotive platform (e.g. a work dolly), powered or not, a tactical unit (e.g. military gear, scientific equipment, communications equipment, personal gear, outdoor gear, etc.);
- A tool caddy can be configured with a carrying handle (e.g. telescopic);
- A utility module can be a soft-shell container with at least a rigid face portion configured with a male/female coupler;
- The utility module can be an interface coupling module, i.e. functions only as a coupling interface;
- The interface coupling module can be attached to a surface of any element or object and by different arrangements, fixedly or detachably;
- The interface coupling module can be a cargo interface module for a utility vehicle, so as to attach one or more utility modules to the vehicle;
- The cargo interface module can be a bed cargo module, a roof rack module, etc.;
- The interface coupling module can be a surface mount for attaching utility modules, e.g. a floor mount, wall mount, wall rack, etc.;
- The interface coupling module can be a tool mount/rack;
- The interface coupling module can be belt mount for mounting of utility modules (e.g. a hand tool) to a workers belt;
- The interface coupling module can be an interface mount module for coupling two utility modules to one another, e.g. for articulating two utility modules, both configured with a similar male coupler or a female coupler, and wherein the interface mount module is configured at both faces with another of male coupler or a female coupler;
- The interface coupling module can be a back pack carrying module, for facilitating attachment and carrying of utility modules;
- A top face of a utility module can be configured with a carrying handle, said carrying handle displaceable between a stowed position and a carrying position,

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wherein at the stowed position said carrying handle at least partially extends within a niche and does not to interfere with the coupling mechanism;

- The carrier unit may include one or more auxiliary engagement surfaces positioned on an exterior face of the carrier unit. For example, an auxiliary engagement surface can be configured at a bottom face of the carrier unit;
- The carrier unit may include a second engagement surface simulating/mimicking the first engagement surface of the utility module;
- A utility module may be configured with one or more auxiliary first and second engagement surfaces;
- The carrier engagement surface may be a connectivity platform detachably attached to the exterior surface of the carrier unit, facilitating a cart unit or a carrier unit according to the present disclosure;
- One or both of the utility module's first and second engagement surfaces may be detachably attached to an exterior surface of the utility module;
- The carrier engagement surface and the utility module's first engagement surface may be like elements;
- The utility module's first and second engagement surfaces may be like elements;
- The carrier unit's engaging elements and the utility module's first engaging elements may be similar elements;
- One engagement surface may include several engaging elements and one locking mechanism;
- The coupling mechanism is configured for spontaneous displacement into locking engagement within a locking receptacle, wherein manual interference is required only for unlocking the locking mechanism and detaching a utility module from a respective utility module or carrier unit;
- The coupling mechanism can be a spring biased locking pin, normally projecting from a respective engagement surface;

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- One or both of the carrier unit and the utility module may further include a locking mechanism designated to prevent unintentional separation of the engagement surfaces while they are interlocked;
- The locking mechanism is manipulable between an unlocked position in which said engagement surfaces may slide upon each other, and a locked state in which the engagement surfaces may not slide upon each other;
- The locking mechanism may be configured with a biasing mechanism for snap arresting at least at its locked state;
- The locking mechanism may be configured with a manually operated activating portion for switching between said unlocked and locked positions.
- The carrier unit may be assembled together with other carrier units the same way it's assembled with the utility modules;
- The locomotion system of the carrier unit may comprise a wheel system (e.g. axially fixed roller wheels, swivel wheels, etc.), a sliding platform, caterpillar tracks, etc;
- The locomotion system of the carrier unit comprises, according to a particular example, several fixed axis wheels, wherein the perimeter of said wheels is tangent with a base edge of the carrier unit;
- At an assembled configuration, where one or more utility modules are attached to the carrier unit, the assembly can be positioned vertically wherein a side face of the one or more containers rest over a supporting surface. According to a particular example, at this position the carrier unit and container assembly are configured with stability members for retaining their stability while positioned vertically to the ground;
- The carrier unit may be stable while positioned horizontally to the ground, by a support system projecting from a bottom face thereof. The support system may comprise friction enhancing surfaces to restrict displacement of the assembly while placed over a bearing surface;
- The carrier unit may be foldable to a more compact configuration;
- The carrier unit may comprise an external storage box detachably interconnectable to its exterior walls;

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- The carrier unit may comprise a power supply detachably interconnectable to its exterior walls;
- The carrier unit's transporting system may be motorized while powered via said power supply;
- The carrier unit may further include a locking mechanism to insure interlocking connection of the engagement surfaces;
- The container unit may comprise non-rigid portions;
- The carrier unit may comprise at least one manipulating arrangement, configurable between a stowed position in which the manipulating arrangement is retracted, and a manipulating position in which the manipulating arrangement is extracted. The manipulating arrangement may be a telescopic or foldable handle;
- The manipulating arrangement may be a gripping handle, a D-grip handle, a T-grip handle, a flexible strap, etc.

EMBODIMENTS

The present disclosure also encompasses embodiment as defined in the following numbered phrases. It should be noted that these numbered embodiments intended to add to this disclosure and is not intended in any way to be limiting.

1. A coupling mechanism configured for readily detachably attaching a first utility module to a second utility module, the coupling mechanism comprising a male coupler at a face of one of the first utility module and the second utility module, and a female coupler at a face of the other one of the first utility module and the second utility module, said female coupler having a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path, and having an open edge facing in a first sense; said male coupler having a projecting

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locking location disposed in register with said depressed locking location and configured with at least one locking tongue extending along said engaging sliding path at a second sense, opposite to said first sense, and configured for arresting engagement at a space between said locking rib and depressed surface, the coupling mechanism further comprises at least one locking member for arresting the first utility module with respect to said second utility module and preventing sliding displacement along said sliding path.

2. The coupling mechanism of embodiment 1, wherein said female coupler is configured at the top face of the first utility module, and the male coupler is configured at the bottom face of the second utility module.

3. The coupling arrangement of embodiment 1 or 2, wherein the at least one locking rib extends substantially parallel to the sliding path.

4. The coupling arrangement of embodiment 1 or 2, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

5. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

6. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

7. The coupling arrangement of embodiment 1 or 2, wherein the female coupler comprises two locking ribs each extend at a respective side edge of two neighboring

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depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

8. A coupling mechanism for a utility assembly that comprises at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module; one of a top face of the first utility module and a bottom face of the second utility module comprises at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location, such that engaging the first and second utility modules into the locked position is provided by sliding the second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

9. The coupling arrangement of embodiment 8, wherein the at least one locking rib extends substantially parallel to the sliding path.

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10. The coupling arrangement of embodiment 8, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

11. The coupling arrangement of embodiment 8, wherein a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

12. The coupling arrangement of embodiment 8, wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

13. The coupling arrangement of embodiment 8, wherein two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

14. The coupling arrangement of any one of embodiments 8 to 13, further comprising a release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module.

15. The coupling arrangement of any one of embodiments 8 to 14, wherein the at least one locking latch and the at least one locking latch arresting location are disposed at a front portion of the respective utility modules.

16. The coupling arrangement of any one of embodiments 8 to 15, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

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17. The coupling arrangement of any one of embodiments 8 to 16, wherein locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

18. The coupling arrangement of any one of embodiments 8 to 17, wherein the locking latch is manipulable to be opened through an opening configured at a front wall of the respective utility module.

19. The coupling arrangement of any one of embodiments 1 to 18, wherein one or both of the locking tongue and locking rib are configured with a slanting surface at corresponding orientation along the sliding path.

20. The coupling arrangement of any one of embodiments 1 to 19, wherein one or both of a front edge of the projecting portion (or the projecting locking location) and a corresponding front edge of the depressed locking location are slanted for gliding positioning of the second utility module into locking position over the first utility module.

21. The coupling mechanism of any one of embodiments 1 to 20, wherein the first utility module is configured for detachably attaching one or more second utility modules thereto.

22. A coupling mechanism for a utility assembly comprising at least a first utility module and at least a second utility module, said coupling mechanism is configured between the first utility module and the second utility module and comprises at one of a top face of the first utility module and a bottom face of the second utility module with at least one depressed locking location configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility

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module and a bottom face of the second utility module comprises at least one projecting portion with a locking tongue disposed in register with said at least one depressed locking location, and at least one locking latch disposed in register with said at least one locking latch arresting location; and wherein at a locked position the bottom face at least partially rests over the top face, and the at least one projecting tongue is arrested by the corresponding at least one locking rib and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, and further wherein disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

23. A utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism according to any one of embodiments 1 to 21, the coupling mechanism being configured between the first utility module and the second utility module.

24. A utility assembly comprising at least a first utility module and at least a second utility module, and comprising a coupling mechanism for readily detachably attaching the first and second utility modules, the coupling mechanism being configured between the first utility module and the second utility module; said coupling mechanism comprising at one of a top face of the first utility module and a bottom face of the second utility module one or more depressed locking locations each configured with a locking rib, and at least one locking latch arresting location; and the other one of said top face of the first utility module and a bottom face of the second utility module comprises one or more projecting portions each configured with a locking tongue

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disposed in register with said one or more depressed locking locations, and at least one locking latch disposed in register with said at least one locking latch arresting location; such that at a locked position, the bottom face of the second utility module at least partially rests over the top face of the first utility module, and the one or more projecting tongues are arrested by the corresponding one or more locking ribs, and the at least one locking latch is arrested by corresponding at least one locking latch arresting location, thereby preventing sliding displacement between the first utility module and the second utility module, and disengaging the second utility module from the first utility module is facilitated by disengaging the at least one locking latch from the at least one locking latch arresting location.

25. The utility assembly of embodiment 24, wherein the first and second utility modules are in a locking engagement when said one or more depressed locking locations and the one or more projecting portions are disposed behind one another.

26. The utility assembly of embodiment 24 or 25, wherein said one or more depressed locking locations and said one or more locking latch arresting locations are configured at the top face of the first utility module, and the one or more projecting portions and the at least one locking latch are configured at the bottom face of the second utility module.

27. The utility assembly of any one of embodiments 24 to 26, wherein at least one second utility module is configured for snap-type locking over the first utility module.

28. The utility assembly of any one of embodiments 24 to 27 wherein engaging the first and second utility modules into the locked position is provided by sliding the

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second utility module with respect to the first utility module along a sliding path defined by at least one of said at least one locking rib and said at least one locking tongue.

29. The utility assembly of any one of embodiments 24 to 28, wherein the at least one locking rib extends substantially parallel to the sliding path.

30. The utility assembly of embodiment 29, wherein the at least one locking rib extends substantially perpendicular and intersects the sliding path.

31. The utility assembly of embodiment 29, wherein a single locking rib extends at rear end of a depressed locking location and substantially perpendicular to the sliding path.

32. The utility assembly of embodiment 29 wherein two locking ribs extend at side edges of a depressed locking location and disposed substantially parallel to the sliding path.

33. The utility assembly of embodiment 29, wherein two locking ribs each extend at a respective side edge of two neighboring depressed locking locations, said locking ribs disposed substantially parallel to the sliding path.

34. The utility assembly of any one of embodiments 24 to 33, wherein a top face of a first utility module interlocks with a bottom face of a second utility module disposed thereover in a substantially fully overlapping relation, or with a bottom face of at least one second utility module only partially overlapping therewith.

35. The utility assembly of any one of embodiments 24 to 33, wherein the second utility module overlaps a significant portion of a first utility module and is configured with a single release latch for displacing several locking latches articulated therewith.

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36. The utility assembly of any one of embodiments 24 to 35, further comprising a release latch for displacing the locking latch into disengagement from the locking latch arresting location can be disposed at a front face of the respective second utility module.

37. The utility assembly of any one of embodiments 24 to 36, wherein the locking latch is configured for displacement in a direction substantially normal to a respective face of a utility module.

38. The utility assembly of any one of embodiments 24 to 37, wherein the locking latch is spring biased and configured for normally projecting from a face of the respective first or second utility module.

39. The utility assembly of any one of embodiments 24 to 38, wherein two or more second utility modules can be mounted over a first utility module, each being independently detachable attachable over the first utility module.

40. The utility assembly of any one of embodiments 24 to 39, wherein at least one of the first utility module and the second utility module are configured with a gliding surface facilitating displacement and positioning the respective second utility module at the locking position with respect to the first utility module.

41. The utility assembly of any one of embodiments 24 to 40, wherein one or more of the utility modules is a container module, and the utility assembly is a container assembly or a tool caddy.

42. The utility assembly of embodiment 41, wherein the container module is compartmented and optionally configured with sub-containers and sub-compartments.

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43. The utility assembly of embodiment 41 or 42, wherein a top face of the container module is configured as a lid or as a functional component of the container module.

44. The utility assembly of any one of embodiments 41 to 43, wherein the container modules is a locomoting container, configured with an arrangement for locomoting said utility assembly.

45. The utility assembly of any one of embodiments 41 to 44, wherein the container modules is configured with a carrying arrangement disposed at any one or more of its faces, optionally being a carrying handle.

46. The utility assembly of any one of embodiments 24 to 40, wherein one or more of the utility modules is a soft-shell container with at least a rigid face portion.

47. The utility assembly of any one of embodiments 24 to 40, wherein said first utility module is a mobile carrier unit.

48. The utility assembly of any one of embodiments 24 to 47, further comprising a locking mechanism for preventing unintentional separation of the modules while they are interlocked.

49. The utility assembly of any one of embodiments 24 to 48, wherein the first utility module is configured for detachably attaching at least two second utility modules thereto.

50. A mobile carrier unit comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module, said carrier engagement surface having (i) one or more depressed locking locations each configured with a locking rib and at least one locking

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latch arresting location, configured for engagement with said first engagement surface of a utility module that comprises at least one locking latch and one or more projecting portions, each projecting portion being configured with a locking tongue, or (ii) at least one locking latch and one or more projecting portions each configured with a locking tongue for engagement with said first engagement surface of a utility module that comprises one or more depressed locking locations, each depressed locking locations configured with a locking rib and at least one locking latch arresting location.

51. The mobile carrier unit of embodiment 50, wherein once associated with the utility module, said locking tongue becomes disposed in register with said one or more depressed locking locations, and at least one locking latch become disposed in register with said at least one locking latch arresting location.

52. The mobile carrier unit of embodiment 50 or 51, configured for detachable interlocking engagement with one or more utility modules, each utility module comprising a first engagement surface.

53. The mobile carrier unit of any one of embodiments 50 to 52, further comprising at least one of a manipulating arrangement and a locomotion system.

54. An assembly comprising a mobile carrier unit of any one of embodiments 50 to 53 having at least one carrier engagement surface, and at a least one utility module having a first engagement surface, the utility module being detachably interlocked with the mobile carrier unit by engaging said first engagement surface with said carrier engagement surface.

55. The assembly of embodiment 54, wherein the mobile carrier unit and the at least one utility module are detachably interlocked with one another by a dovetail

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engagement mechanism, that comprises laterally projecting shoulders configured on one of the carrier engagement surfaces and the first engagement surface of a utility module, and a shoulder receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said laterally projecting shoulders are configured for sliding engagement with said shoulder receiving recess.

56. The assembly of embodiment 55, wherein one or both of the carrier engagement surfaces and the first engagement surface of a respective utility module are configured with depressions, each accommodating respective laterally projecting locking shoulders.

57. The assembly of embodiment 54, wherein the mobile carrier unit and the at least one utility module are detachably interlocked with one another by an undercut engagement mechanism, comprising lateral projections configured on one of the carrier engagement surfaces and the first engagement surface of a container unit, and a receiving recess configured on the other one of one of the carrier engagement surfaces and the first engagement surface of a utility module; where said lateral projections are configured for engagement with said receiving recess, such that interlocking engagement of the utility module and the carrier unit takes place by placing the first engagement surface of a utility module over the carrier engagement surface, such that the utility module`s first engaging elements are disposed shifted over the respective carrier engaging elements of the carrier unit, and are then slidingly shifted to obtain sliding interlocking engagement therebetween.

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58. The assembly of any one of embodiments 54 to 57, further comprising a locking mechanism configured for preventing unintentional detaching of the utility module from the carrier unit.

59. The assembly of embodiment 58, wherein the locking mechanism comprises a locking pin that is configured for snapingly protruding from one of the engagement surfaces into a designated nook on the other engagement surface.

60. An interface coupling module comprising at least one engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a utility module, said interface coupling module comprising an engagement surface having (i) one or more depressed locking locations each configured with a locking rib and at least one locking latch arresting location, configured for engagement with said first engagement surface of a utility module that comprises at least one locking latch and one or more projecting portions, each projecting portion being configured with a locking tongue, or (ii) at least one locking latch and one or more projecting portions each configured with a locking tongue for engagement with said first engagement surface of a utility module that comprises one or more depressed locking locations, each depressed locking locations configured with a locking rib and at least one locking latch arresting location

61. The interface coupling module of embodiment 60, being configured for detachable or fixed attachment to a surface of an object.

62. The interface coupling module of embodiment 60 or 61, being a cargo interface module for a utility vehicle configured for attaching one or more utility modules to the vehicle.

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63. The interface module of embodiment 60 or 61, being a surface mount for attaching utility modules

64. The interface module of embodiment 60 or 61, being a tool mount or a tool rack.

65. The interface module of embodiment 60 or 61, being a belt mount for mounting of utility modules to a workers belt;

66. The interface module of embodiment 60 or 61, being an interface mount module for coupling two utility modules to one another.

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 examples only, with reference to the accompanying drawings, in which:

Figs. 1A to **6G** are directed to a first example of a locking mechanism, wherein:

Fig. 1A is a top perspective view of a container assembly according to an example of the present disclosure;

Fig. 1B is an exploded perspective view of the container assembly of Fig. 1A;

Fig. 1C is a bottom, front perspective view of Fig. 1B;

Fig. 1D is a bottom, rear perspective view of Fig. 1B;

Fig. 2A is a sectioned portion along line A-A in Fig. 1A;

Fig. 2B is a sectioned portion along line B-B in Fig. 1A;

Fig. 2C is a sectioned portion along line C-C in Fig. 1A;

Figs. 3A to **3D** are consecutive steps illustrating locking engagement of the locking tongue of the second container with the respective locking rib of the first container;

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Figs. 4A to **4D** are consecutive steps illustrating locking engagement of the locking latch of the second container with the respective locking latch arresting location of the first container;

Figs. 5A to **5E** schematically demonstrate modularity of a container assembly according to the disclosure;

Figs. 6A to **6G** are various combinations of a modular container assembly according to examples of the present disclosure.

Figs 7A to **12C** are directed to a carrier unit and another example of a locking mechanism, wherein:

Fig. 7A is container carrier assembly according to an example of the disclosure, illustrating a top, left perspective view of a container unit, mounted on top of a carrier unit;

Fig. 7B is a top, left perspective view of a second container unit, mounted on top of a first container unit, which in turn is mounted on top of a carrier unit according to an example of the present disclosure;

Fig. 8A is a top, left perspective view of a carrier unit, illustrating the carrier engagement surface in further detail;

Figs. 8B and **8C** are a top and a bottom perspective view of a carrier unit, illustrating the container unit's first engagement surface in further detail;

Fig. 9A is a side section along line F-F in Fig. 7A, illustrating the container unit and the carrier unit unattached;

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Fig. 9B is a side section along line F-F in Fig. 7A illustrating the container unit and the carrier unit attached;

Fig. 9C is a close-up view of Fig. 9B;

Fig. 9D is a sectioned view along line F-F in Fig. 7A illustrating the interlocking engagement of the carrier engaging elements together with the container unit's first engaging elements;

Fig. 10A is a sectioned view along line D-D in Fig. 7A, illustrating the locking mechanism;

Fig. 10B is an enlarged image of the portion marked M in Fig. 10A;

Fig. 11A illustrates different sizes of container units forming an assembly, at a tilted orientation;

Fig. 11B illustrates an assembled configuration balanced vertically relatively to the ground;

Fig. 12A shows a container assembly wherein the female coupler comprises two locking ribs extending at respective side edges of two neighboring depressed locking locations;

Fig. 12B is a section along line H-H in Fig. 12A;

Fig. 12C illustrates the utility module apart from the container and flipped, so as to expose the mating coupling mechanism.

Figs. 13A to **24** are different embodiments and configurations of utility modules and utility assemblies according examples of this disclosure.

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DETAILED DESCRIPTION OF EMBODIMENTS

Reference is first being made to Figs. 1A to 6G, directed to a first configuration of a coupling mechanism. For sake of convenience the utility modules are exemplified as containers and respectively the utility assembly is illustrates as a tool caddy. It is however appreciated that the utility modules can be of any type, shape or size, as discussed hereinabove and as will be exemplified below.

Attention is first directed to Figs. 1A to 4D, illustrating a container assembly generally designated **20**, comprising four containers **22**, **24**, **26** and **28** disposed in a triple stage configuration, the stages designated **A**, **B** and **C**. In the illustrated example containers **24** and **26** of the second stage are half-size and overlap the footprint of the first stage container **22** and the third stage container **28**, wherein the first container **22** is for example a hand tool container and containers **24** to **28** are organizers or the like.

The term *'first container'* as used herein denotes a container bearing over a top face thereof at least one other container, said at least one other container denoted herein as a *'second container'*. It is thus appreciated that a second container of a container assembly comprising three or more stages of containers' serves as second container when referred to the first stage container, and as a first container when referred to a third stage container mounted thereover. Accordingly, in the illustrated example of Figs. 1A-2C, container **22** is a first container and containers **24** and **26** are second containers, whilst they function as first containers when discussing locking arrangement with respect to third stage container **28**.

Each of the containers is configured with a lid **L** constituting a top face of the respective container, said lids being pivotally attached and securely articulated to the respective

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container through a toggle locking latch **29**. Each top face (see Fig.1B) is configured with several depressed locking locations **32** and it is seen that the at least two depressed locking locations are disposed behind one another along imaginary lines **I**, **II** and **III** (though not necessarily aligned).

Each such depressed locking location is in turn configured with a laterally projecting locking rib **36** extending from a rear portion of the depressed locking location **32** towards a front face of the container. The locking rib **36** has a flat top surface **38** substantially flush with a top surface of the respective lid **L**, and a slanting bottom surface **40**. A front portion **46** of the depressed locking location **32** is slanted too, in the same orientation as bottom surface **40** (i.e. substantially parallel thereto).

Furthermore, the top face, namely lid **L** of the containers, is configured with at least one locking latch arresting location in the form of a recess **50** disposed at a front portion of the respective top face and configured with a slanted rear wall portion **52** and a right angled front wall portion **53**.

A bottom face **54** of each container **22**, **24**, **26** and **28** is configured with several projecting portions **56**, extending in register with the depressed locking locations **32**, and it is seen that the at least two projecting portions **56** are disposed behind one another along the imaginary lines **I**, **II** and **III** (though not necessarily aligned).

Each projecting portions **56** is configured with a locking tongue **60** laterally projecting rearwards and having a slanted surface **62** corresponding with slanting surface **40** of locking rib **36**. Also, a front portion **66** of the projecting portions **56** slants substantially parallel to the slanted surface **62** of the locking tongue **60**.

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It is essential that the at least two depressed locking locations **32** and the at least two projecting portions **56** be disposed behind one another (though not necessarily aligned), as exemplified by imaginary lines **I**, **II** and **III** (though not necessarily aligned).

A plunger-like locking latch **70** is disposed at a front portion of each container, said locking latch **70** disposed in register with the recesses **50** and configured with a slanting rear wall portion **72** and a right angled front wall portion **74**, corresponding with the sloping wall portions of the recesses **50**. The locking latch **70** has an elongate finger engaging aperture **73** (Fig. 2A) accessible through an aperture **75** formed in register at a front wall face of the respective second container, said locking latch **70** being normally biased to project under force of coiled spring **71**, such that the locking latch **70** is axially displaceable between a projecting, locked position and a temporary retracted position during transition into the locked position.

The locking latch **70** is typically single-handedly manipulable between its locking position and its releasing position, such that manipulation of the locking latch to disengage it from the locking latch arresting location **50** can be easily facilitated using one hand simultaneously with gripping the carrying handle **80**. As seen in Figs. 1A-2C, manipulating the finger engaging aperture **73**, being part of locking latch **70**, is disposed opposite to and at finger-reach distance from the carrying handle **80** when the handle is at its carrying position tilted upwards. This enables a grab, release and go detachment of the second utility module from the first utility module in a simple single-handed operation.

When it is required to detachably attach a second container over a first container, the former is placed over the later (Fig. 3A), placing the projecting portions **56** within the

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depressed locking location **32** (Fig. 3B) with the locking tongues **60** engaging below and being gradually arrested by the respective locking ribs **36** arresting is obtained (Fig. 3C) until complete arresting is obtained (Fig. 3D). Simultaneously, as the locking tongues **60** arrest by the locking ribs **36**, the locking latch **70** of the second container slides into the locking latch arresting location (recess **50**) and finally snaps into locking engagement therewith. It is noted (Figs 4A to 4D) that first (Figs. 4B and 4C) the locking latch **70** displaces upwards against the biasing effect of spring **71**, and when the second container reaches the final locking position over the first container, the locking latch **70** plunges into arresting position within the recess **50**.

At the locked position the second container is attached over the top face of the first container, such that they can be moved as an integrated unit. Detaching of a second container from a first container is easily facilitated by unlocking, obtained by displacing the locking latch **70** upwards against the biasing effect of spring **71**, whereby the second container can be displaced with respect to the first container and detached therefrom.

As further seen in Figs. 1A-4D, each of the containers **22**, **24**, **26** and **28**, is configured at a front face thereof with a tiltable carrying handle **80**, for carrying a respective container or the entire container assembly **20**. Also seen, some of the containers can be configured with fender-like protectors **90** at their corners.

Further attention is now directed to Figs. 5A to 5E demonstrating examples of modularity of a container assembly according to the disclosure. Fig. 5A is a planner top view of a first container **94** and Figs. 5B to 5E illustrate second containers superimposed over the first container **94**. In Fig. 5B a second container **96** is substantially as big as the first container **94**, i.e. having the same footprint. In Fig. 5C a

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second container **98** is as wide as the first container **94**, however narrower in depth, and disposed at a front portion of the first container. In Fig. 5D two second containers **99A** and **99B** are mounted over the first container **94** and occupy substantially the entire footprint thereof, whereby each of containers **99A** and **99B** is independently attachable and detachable from the first container **94**, as exemplified hereinabove. In Fig. 5E two second containers **100A** and **100B** are positioned over the first container **94**, occupying the entire width though narrower in depth and extending from a front portion of the first container **94**.

Turning now to Figs. 6A to 6K, there are illustrated several examples of container assemblies, subassemblies and their components. Fig. 6A illustrates a disassembled container assembly collectively designated **104** and comprising a base container **106**, a chest of drawers module **108** comprising three drawers, a tool caddy module **110**, a compartmented storage module **112** and a half-sized compartmented storage module **114** (typically two of which). It is noted that the base container is configured for locomoting and comprises at a rear thereof wheels **116** and a telescopic handle **118**.

As can be appreciated from Figs. 6B through 6D, various container assemblies are illustrated, the arrangement is such that in practice any module can constitute either a first container or a second container, as defined hereinabove (though it is more likely that base container **106** serves as a first container).

Figs. 6E and 6F illustrate a chest of drawers module **108**, illustrated separately in Fig. 6E and mounted over a similar drawer module **108** in Fig. 6F. It is appreciated that the drawers of each module can be locked at their closed position to prevent spontaneous opening thereof whilst carrying a module. Furthermore, each module **108** is configured

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with a pair of carrying handles **115** disposed at top side wall portions thereof, to facilitate carrying of the module.

In Fig. 6G there is illustrated a subassembly comprising a first container in the form of a tool caddy module **110** and second container in the form of a compartmented storage module **112** attached thereto, whilst the lid **119** of the first container is open facilitating access to the contents thereof.

Further attention is now directed to Figs. 7A to 16B, showing a third aspect of the disclosure, namely a utility module being a mobile carrier unit and comprising at least one carrier engagement surface, compatible for interlocking engagement in a detachable manner with a first engagement surface of a second utility module. For sake of example only, the second utility module exemplified in the annexed drawings is in the form of a utility container. It is however appreciated that the utility modules can be of any type, shape or size, as discussed hereinabove and as will be exemplified below. Accordingly, the term *container unit* as used in the following description denotes any type of a utility module, as discussed herein the specification.

Attention is first directed to Fig. 7A, illustrating a container carrier assembly generally designated **200** comprising a container unit **202** (utility module) mounted on top of a carrier unit **206**. The carrier unit **206** is equipped with a telescopic manipulating handle **210**, a pair of rear wheels **208** and a set of horizontally stabilizing support legs **212** at a front portion of the carrier unit **206**. The carrier unit **206** and the container unit **202** are engaged in an interlocking engagement via their engagement surfaces, i.e. a carrier engagement surface **216** at a top face of the a carrier unit **206** (best seen in Fig. 8A), and the container unit's first engagement surface **220** (namely its bottom face; best seen in

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Figs. 8B and 8C). The container unit **202** is configured with yet a second engagement surface **226** (namely the container's top face), simulating the carrier engagement surface **216**. The container unit **202** further comprises a locking mechanism **230** configured for arresting within a respective notch **231** at the carrier engagement surface **216**, to thereby to prevent displacement and separation of the engagement surfaces **216** and **220** once they are interlocked, as later will be explained.

The carrier engagement surface **216** seen in greater detail in Fig. 8A, illustrates a top perspective view of a carrier unit **206** with the telescopic handle **210** in a retracted position. The carrier engagement surface **216** comprises multiple carrier engaging elements **236**, depressed from the surface, and designated for interlockingly receiving respective container unit's first engaging elements **240**, projecting from the first engagement surface (bottom face) **220** of the container unit **202**.

Each carrier engaging element **236**, is a so-called female coupler and has a depressed locking location configured with at least one locking rib extending above a depressed surface and along a sliding path and having an open edge facing in a first sense. As seen in the drawings, it is generally constituted by a receiving recessed depression **244** in the carrier engagement surface **216**, configured with a pair of facing locking ribs **248**, forming the aforementioned recess. The locking ribs **248** extend substantially parallel to sliding path of the container unit **202** with respect to the carrier unit **206**, said path (designated **P** in Figs. 7A and 10B). Further noted, side walls **250** of depressions **244** are sloped in order to allow directing of a container unit's first engaging element **240**, mounted upon it, to its interlocking position.

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