am unteren Behälterkörper vorgesehen ersten Verriegelungsmitteln (47) mit am daraufsitzenden Behälterkörper (3) vorgesehenen zweiten Verriegelungsmitteln (48) lösbar zu einer Einheit (2) verknüpfbar sind, wobei zumindest der Oberseite (5) des oberen Behälterkörpers (3) ein Traggriff (17) zugeordnet ist, dadurch gekennzeichnet, daß die ersten und zweiten Verriegelungsmittel (47, 48) an zwei einander entgegengesetzten Seitenflächen (7, 8) im Schwerpunktbereich des jeweiligen Behälterkörpers (3) plaziert sind, wobei die ersten oder zweiten Verriegelungsmittel (47, 48) als über zueinander koaxiale Drehachsen (54, 55) verfügende Drehverriegelungsmittel (47') ausgestaltet sind.

2. Behälteranordnung nach Anspruch 1, dadurch gekennzeichnet, daß zumindest zwei unmittelbar aufeinandersetzbare Behälter (1) an ihren Behälterkörpern (3) sowohl erste als auch zweite Verriegelungsmittel (47, 48) aufweisen.

3. Behälteranordnung nach Anspruch 2, dadurch gekennzeichnet, daß die ersten und zweiten Verriegelungsmittel (47, 48) eines jeweiligen Behälters (1) auf unterschiedlichem Höhenniveau übereinanderliegend angeordnet sind, wobei die ersten Verriegelungsmittel (47) oberhalb den zweiten Verriegelungsmitteln (48) plaziert sind.

4. Behälteranordnung nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß es sich bei den mit den Drehverriegelungsmitteln (47') kooperierenden Verriegelungsmitteln um insbesondere einstückig mit dem Behälterkörper (3) ausgeführte starre Elemente handelt, die im verriegelten Zustand von den Drehverriegelungsmitteln (47') hintergriffen werden.

5. Behälteranordnung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß die ersten Verriegelungsmittel (47) als Drehverriegelungsmittel (47') ausgebildet sind.

6. Behälteranordnung nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß der Oberseite (5) des Behälterkörpers (3) des mit Drehverriegelungsmitteln (47') ausgestatteten Behälters (1) ein im Schwerpunktbereich des Behälterkörpers (3) schwenkbeweglich drehgelagerter Traggriff (17) zugeordnet ist.

7. Behälteranordnung nach Anspruch 6, dadurch gekennzeichnet, daß die Drehachse (18) des Traggriffes (17) und die Drehachsen (54, 55) der Drehverriegelungsmittel (47') eines jeweiligen Behälters (1) zusammenfallen.

8. Behälteranordnung nach Anspruch 7, dadurch gekennzeichnet, daß die Drehlagerung des Traggriffes (17) und die Drehlagerung der Drehverriegelungsmittel (47') im Bereich der beiden einander entgegengesetzten Seitenflächen (7, 8) des Behälterkörpers (3) über ein und dasselbe Lagerteil (56) des Behälterkörpers (3) erfolgt.

9. Behälteranordnung nach Anspruch 8, dadurch gekennzeichnet, daß die beiden Lagerteile (56) jeweils hülsenähnlich ausgebildet sind, wobei der Traggriff (17) an der Außenfläche gelagert ist und die zugeordneten Drehverriegelungsmittel (47') ins Innere des betreffenden Lagerteils (56) eingreifen.

10. Behälteranordnung nach einem der Ansprüche 7 bis 9, dadurch gekennzeichnet, daß der Traggriff (17) durch die Drehverriegelungsmittel (47') am Behälterkörper (3) fixiert ist.

11. Behälteranordnung nach einem der Ansprüche 1 bis 10, dadurch gekennzeichnet, daß die Drehverriegelungsmittel (47') verrastet am Behälterkörper (3) fixiert sind.

12. Behälteranordnung nach einem der Ansprüche 1 bis 11, dadurch gekennzeichnet, daß der Behälterkörper (3) mindestens eines Behälters (1) und vorzugsweise mehrerer Behälter (1) ein kasten- oder schalenförmiges Unterteil (13) und einen der nach oben weisenden Öffnung des Unterteils (13) zugeordneten Deckel (14) aufweist, wobei die Verriegelungsmittel (47, 48) am Unterteil (13) angeordnet sind.

13. Behälteranordnung nach Anspruch 12, dadurch gekennzeichnet, daß der Traggriff (17) verschwenkbar am Unterteil (13) des Behälterkörpers (3) drehgelagert ist.

14. Behälteranordnung nach Anspruch 13, dadurch gekennzeichnet, daß der Traggriff (17) als Verriegelungsglied ausgeführt ist und in Abhängigkeit von seiner Schwenkstellung bei geschlossenem Behälter eine Verriegelung zwischen Unterteil (13) und Deckel (14) bewirkt oder ein Öffnen des Behälters (1) gestattet.

15. Behälteranordnung nach einem der Ansprüche 1 bis 14, dadurch gekennzeichnet, daß ein oder mehrere Behälter (1) in kofferähnlicher Flachbauweise ausgeführt sind, deren größerflächiger Oberseite (5) der Traggriff (17) zugeordnet ist, wobei der Traggriff (17) zwischen einer hochgeschwenkten Tragstellung, in der sein Handhabungsabschnitt (26) nach oben orientiert ist, und einer an den Behälterkörper (3) herangeklappten Stellung, in der sein Handhabungsabschnitt (26) seitwärts orientiert ist, verschwenkbar ist, und wobei der Traggriff (17) und

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der Behälterkörper (3) derart aneinander angepaßt sind, daß der Traggriff (17) in der herangeklappten Stellung eine weitere Tragstellung einnehmen kann, in der sein Handhabungsabschnitt (26) von der Seite des Behälterkörpers (3) her ergreifbar ist, um ein wahlweises Tragen des einzelnen Behälters (1) in Hochkantausrichtung zu ermöglichen.

16. Behälteranordnung nach Anspruch 15, dadurch gekennzeichnet, daß der Traggriff (17) in der herangeklappten Stellung lösbar unverschwenkbar am Behälterkörper (3) arretierbar ist.

17. Behälteranordnung nach einem der Ansprüche 15 oder 16, dadurch gekennzeichnet, daß der Handhabungsabschnitt (26) teleskopierbar an mindestens einem am Behälterkörper (3) verschwenkbar drehgelagerten Basisabschnitt (32) des Traggriffes (17) gelagert ist, derart, daß der Abstand zwischen dem Handhabungsabschnitt (26) und dem Behälterkörper (3) variierbar ist.

18. Behälteranordnung nach Anspruch 17 in Verbindung mit Anspruch 16, dadurch gekennzeichnet, daß die Arretierung des Traggriffes (17) am Behälterkörper (3) über den teleskopierbaren Handhabungsabschnitt (26) erfolgt.

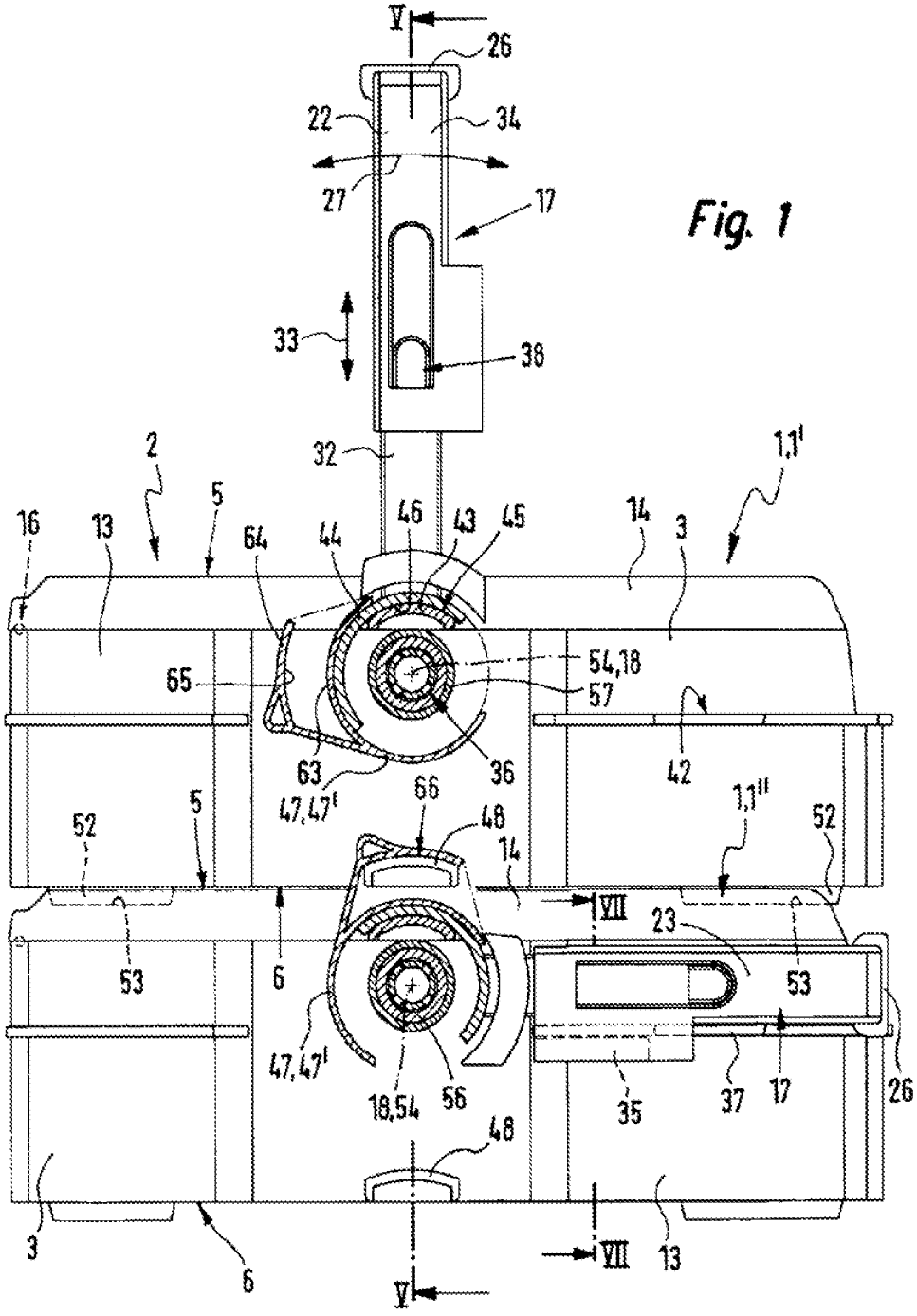
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Fig. 1

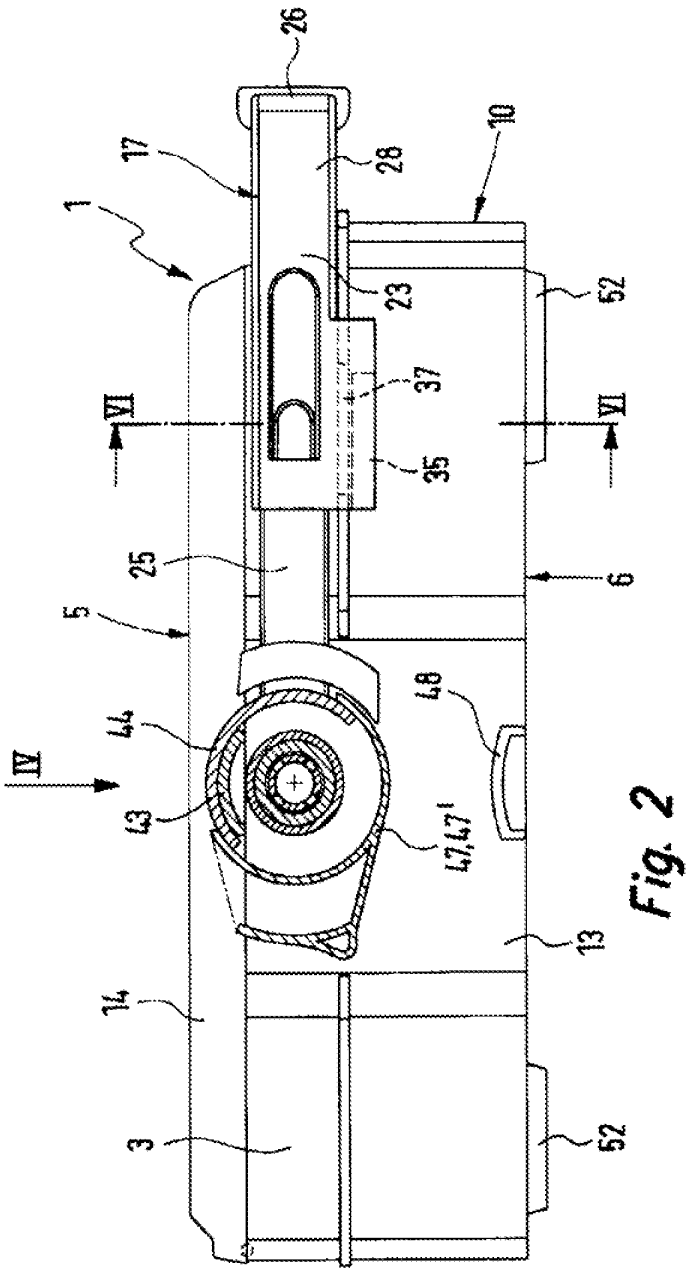

Fig. 2

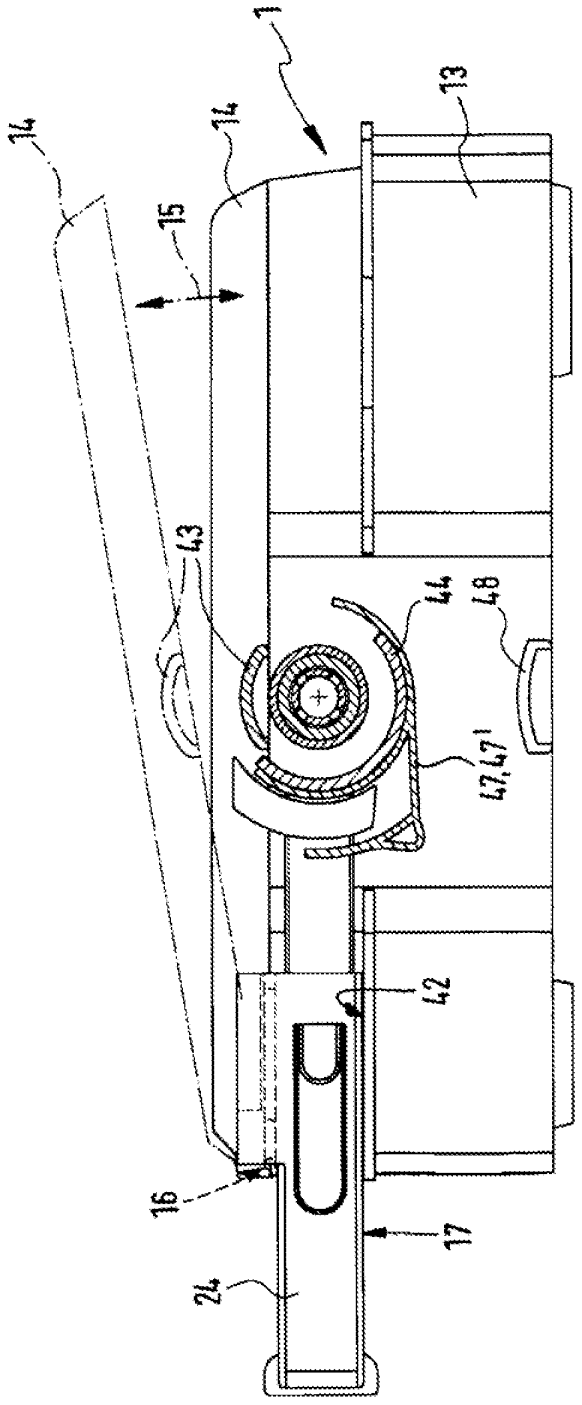

Fig. 3

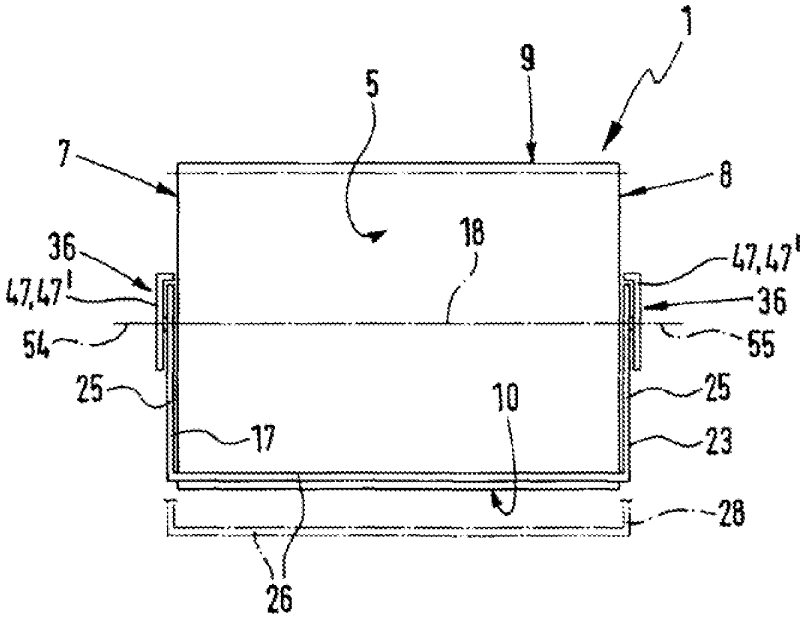

Fig. 4

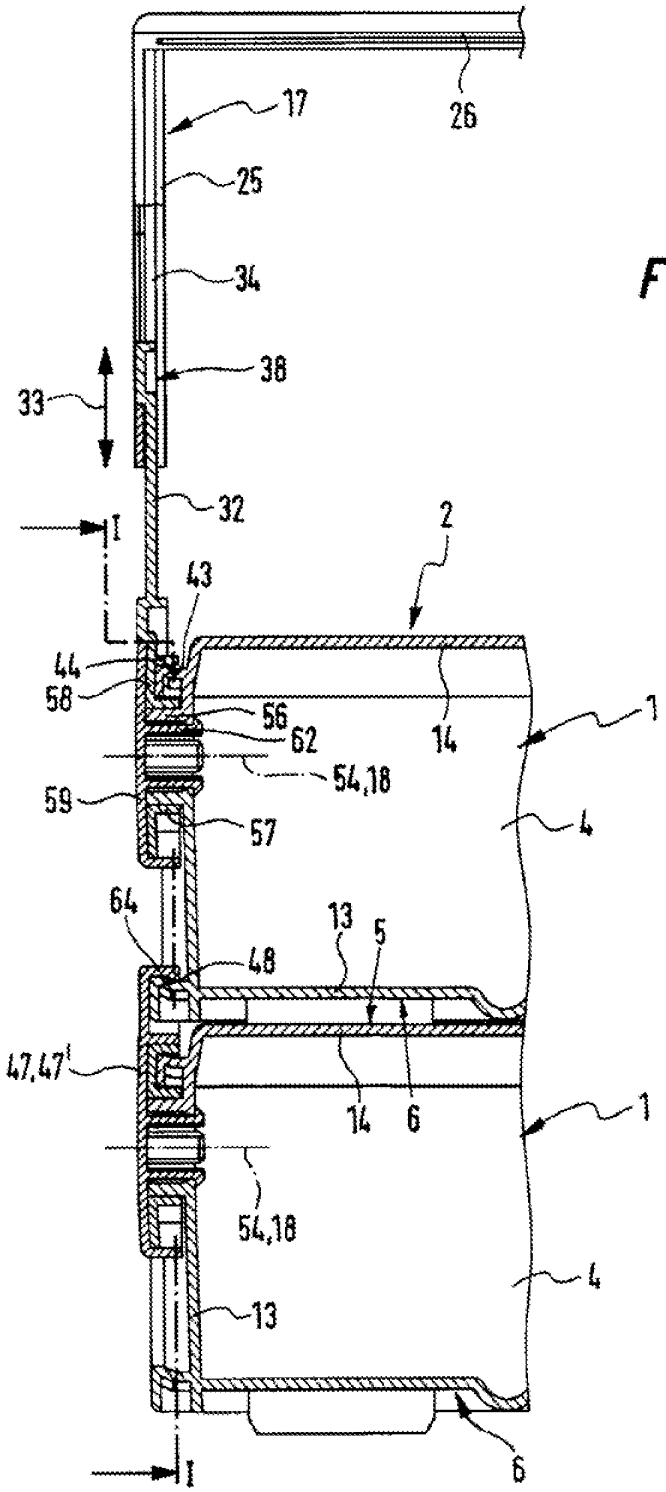
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Fig. 5

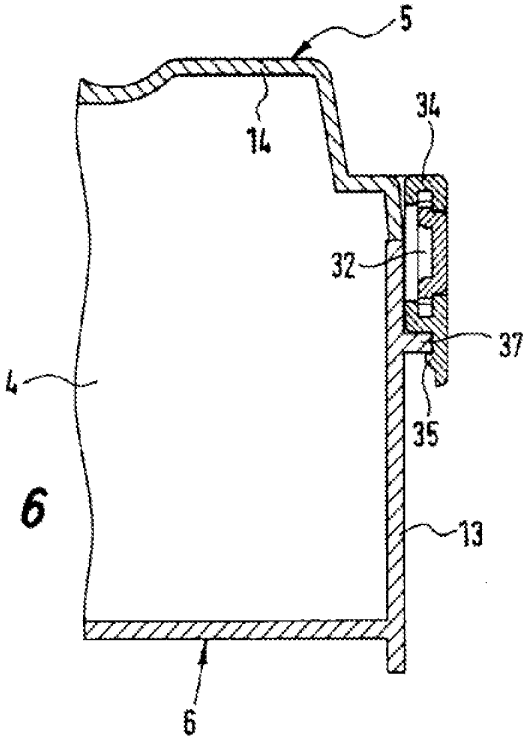

Fig. 6

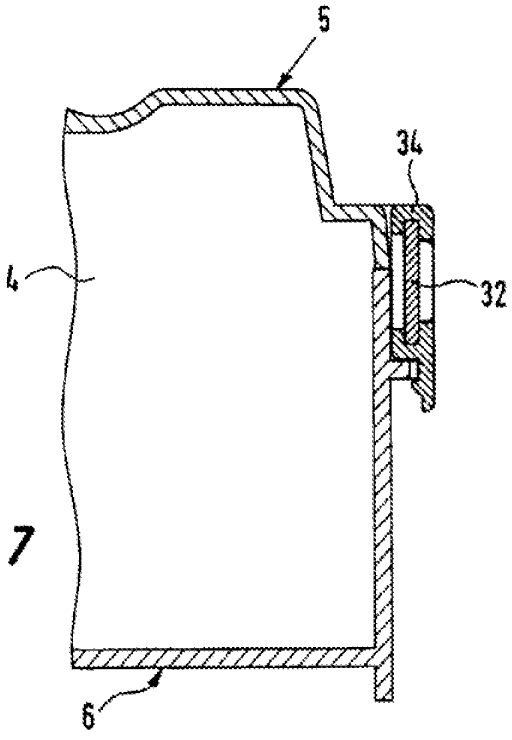

Fig. 7

Europäisches Patentamt

EUROPÄISCHER RECHERCHENBERICHT

Nummer der Anmeldung
EP 99 10 9382

EINSCHLÄGIGE DOKUMENTE

Kategorie	Kennzeichnung des Dokuments mit Angabe, soweit erforderlich, der maßgeblichen Teile	Betrifft Anspruch	KLASSIFIKATION DER ANMELDUNG (Int.Cl.7)
D,A	EP 0 555 533 A (FESTO KG) 18. August 1993 (1993-08-18) * Spalte 3, Zeile 39 - Spalte 6, Zeile 15 * * Abbildungen 1-6 *	1-18	B65D25/32 A47B87/02 A45C7/00
A	US 4 351 448 A (INGERSOLL BRIAN E ET AL) 28. September 1982 (1982-09-28) * Spalte 3, Zeile 62 - Spalte 4, Zeile 50 * * Spalte 6, Zeile 16 - Spalte 7, Zeile 24 * * Abbildungen 1-15 *	1	
A	US 4 109 789 A (FATTORI LAZZARO A ET AL) 29. August 1978 (1978-08-29) * Spalte 5, Zeile 34 - Spalte 7, Zeile 50 * * Abbildungen 1-14 *	1	
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Der vorliegende Recherchenbericht wurde für alle Patentansprüche erstellt

Recherchenort	Abschlußdatum der Recherche	Prüfer
DEN HAAG	11. November 1999	Papatheofrastou, M

KATEGORIE DER GENANNTEN DOKUMENTE

X : von besonderer Bedeutung allein betrachtet
Y : von besonderer Bedeutung in Verbindung mit einer anderen Veröffentlichung derselben Kategorie
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ANHANG ZUM EUROPÄISCHEN RECHERCHENBERICHT ÜBER DIE EUROPÄISCHE PATENTANMELDUNG NR.

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Die Angaben über die Familienmitglieder entsprechen dem Stand der Datei des Europäischen Patentamts am
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11-11-1999

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Für nähere Einzelheiten zu diesem Anhang : siehe Amtsblatt des Europäischen Patentamts, Nr 12/82

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/518,200	**11/22/2023 06:00:07 PM Z ET**	**17157-0101-1**

Title of Invention

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7125	FILED BY	JAYME HUNTER
PATENT CENTER #	63362120	FILING DATE	-
CUSTOMER #	23486	FIRST NAMED INVENTOR	Hongquan ZHANG
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Jason Sytsma

Documents

TOTAL DOCUMENTS: 37

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
AppDataSheet-Continuation.pdf	9	Application Data Sheet	2174 KB
Drawings-Continuation_FINAL.pdf	16	Drawings-only black and white line drawings	6175 KB
Declaration-ZHANG_signed.pdf	1	Oath or Declaration filed	939 KB
Declaration-WANG_signed.pdf	1	Oath or Declaration filed	915 KB
Declaration-CAI_signed.pdf	1	Oath or Declaration filed	895 KB

Meridian POA FINAL.pdf	1	Power of Attorney	1164 KB
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InternetAuthorization.pdf	1	Internet Communications Authorization	57 KB
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Specification Continuation_FINAL.pdf	37	Auxiliary PDF of Application	199 KB

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

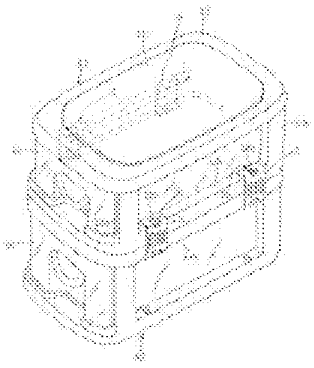
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition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

Machine Translation From Espacenet.com

Abstract of JP2005162223 (A)



PROBLEM TO BE SOLVED: To provide a storage box connecting structure capable of integrally connecting a plurality of storage boxes in a vertical and stable stack. ; SOLUTION: In the storage box connecting structure for connecting upper and lower storage boxes A1 and A2 which are vertically stacked, each of the upper and lower storage boxes A1 and A2 comprises a storage box body 1 in which a top plate part 11 and a bottom plate part 12 are unified each other via a connection member 13 and a storage part 10 which is stored in a freely accessible manner through a front opening part 1a of the storage box body 1. A side edge portion of the bottom plate part 12 of the upper storage box A1 and a side edge portion of the top plate part 11 of the lower storage box A2 are unified detachably from each other by a U-shaped connection tool 2.

DESCRIPTION JP2005162223

[0001]

The present invention relates to a connecting structure of a storage box which can be integrally connected detachably in a vertical direction the plurality of the storage box.

[0002]

In the workplace and home, many, storage box for storing daily necessities, accessories, and documents have been provided in the past.
The storage box such as is described in Patent Document 1, the storage box consisting of the lead and the body, is supported removably on the main body is provided.

[0003]

Then, when you may not be accommodated in the storage box of one object to be accommodated at most, be superimposed in the vertical direction the storage box in order to achieve space saving in many cases.
However, when superimposed vertically storage box, when an external force is applied to a storage box or both either above or below, the balance of the storage box superimposed vertically collapses, superposition of the upper and

lower chest there is a problem and sometimes the upper storage box tends to fall off from the lower chest and or or an unstable state state is shifted.
[0004]

No. 3041002 JP Utility Model Registration
[0005]

The present invention provides a connection structure of a storage box which can be integrally connected to the stacked condition stably vertically storage box plurality.
[0006]

Connection structure of storage box according to a connection structure of a storage box for connecting the upper and lower storage box superimposed in the vertical direction, upper and lower storage box, connecting the bottom plate and the top plate as claimed in claim 1 consists of a storage box main body formed by integrally connected through the member, and a housing unit to be housed in and out freely through the front opening of the housing box body, the lower housing and the side edge portion of the bottom plate portion of the upper storage box and in that it is connected integrated separated by U-shaped connecting member and a side edge portion of the top plate of the box.
[0007]

Further, the connection structure of the storage box according to the storage box main body, the connection structure of the storage box described in the four corners of their opposing the bottom plate and the top plate portion of the plane rectangular to the first aspect it becomes connected integrally via a connecting member in the section, the engaging portion is formed on the side edge lower surface of the top plate, the engaging protrusion is formed on the side edge upper surface of the bottom plate While yi, engageable to removably engaged with the engaging projections of the bottom plate portion in the upper part locking piece engageable is formed to have a locking portion of the top plate to the lower end of connector I is characterized in that the engaging hole is formed.
[0008]

Further, the connection structure of the storage box according to the engaging projections of the bottom plate portion, the connecting structure of the storage box according to, inclined obliquely downward on the outer side at its upper surface to the second aspect 3 and wherein the inclined surface was is formed.
[0009]

Connection structure of storage box according to a connection structure of a storage box for connecting the upper and lower storage box superimposed in the vertical direction, upper and lower storage box, connecting the bottom plate and the top plate as claimed in claim 1 consists of a storage box main body formed by integrally connected through the member, and a housing unit to be housed in and out freely through the front opening of the housing box body, the lower housing and the side edge portion of the bottom plate portion of the upper storage box Since characterized in that it is connected integrated separated by U-shaped connecting member and a side edge portion of the top plate of the box, stably by the U-shaped coupling the upper and lower storage box superimposed in the vertical direction it can be connected tightly integrated with and in, even when an external force is applied to a storage box both or either one of the upper and lower storage box, overlay vertical connection state of the upper and lower storage box between collapses unforeseen circumstances, such as the upper storage box fall off from the lower storage box on state or unstable or does not occur.
[0010]

Further, the connection structure of the storage box according to the storage box main body, the connection structure of the storage box described in the four corners of their opposing the bottom plate and the top plate portion of the plane rectangular to the first aspect it becomes connected integrally via a connecting member in the section, the engaging portion is formed on the side edge lower surface of the top plate, the engaging protrusion is formed on the side edge upper surface of the bottom plate While yi, engageable to removably engaged with the engaging projections of the bottom plate portion in the upper part locking piece engageable is formed to have a locking portion of the top plate to the lower end of connector Since characterized in that the engaging hole is formed, as well as engaged in removably engaged, engagement projection engagement hole of the connecting member to the engaging portion of the top plate locking piece connector By engaging detachably in, it can be integrally connected easily and reliably to the state overlapped in the vertical direction above and below the storage box.
[0011]

Further, the connection structure of the storage box according to the engaging projections of the bottom plate portion, the connecting structure of the storage box according to, inclined obliquely downward on the outer side at its upper surface to the second aspect 3 Since characterized in that the inclined surface was is formed, while elastically deformed in the upward direction along the inclined surface of the engaging projection of the upper end portion of the

connecting member, the storage box and the engaging hole of the connector It is possible to be engaged to removably engaged to the engaging projections, it is integrally connected reliably and more easily the state of being superposed in the vertical direction above and below the storage box.
[0012]

Will be described with reference to the drawings an example of the connection structure of the storage box according to the present invention.
As shown in Figures 1 and 2, a top plate portion 11 of the flat substantially rectangular storage box body 1 of the storage box A includes a bottom plate portion of the flat rectangular shape of a size substantially the same as the top plate portion 11 12, consists of a cylindrical connecting member 13a ~ 13d constant height for connecting the four corners of these opposing a bottom wall 12 and top plate 11, between the facing surfaces of the bottom wall 12 and the top plate portion 11 A storage box is formed by holding, in a retractable housing part 10 through the front opening portion 1a in the space formed.
The consists of a peripheral wall 10b of the rectangular frame that extends in the upward direction from four sides outer peripheral edge of the bottom portion 10a and the bottom surface portion 10a of the flat rectangular shape, the housing part 10 is opened entirely the upper end and is formed in a state of being.
[0013]

Then, the square outer edge 11 lower surface of the top plate, a rectangular frame-like portion 11a having a predetermined height is protruded toward the lower, front and rear connecting members 13a, 13b of the rectangular frame-like portion 11a (as well have both side engaging portion 11b, and 11b respectively portion of 13c, the 13d) between the upper surface of the top plate 11, and which is projected toward slightly above the portion excluding the four sides outer periphery the connecting protrusion 11c of the flat rectangular shape having a size slightly larger than the inner peripheral frame of the bottom plate portion 12 is formed.
[0014]

On the other hand, as shown in FIG 1, the respective side edges the upper surface of the bottom wall 12 of the storage box main body 1, by making bulges upward the side edge portions, constant height, fixed width are projected on both sides of the ridges 12a, 12a is over the entire length (13c, 13d) between before and after the connecting member 13a, 13b, the upper surface of each of the front and rear of the ridges 12a, a plane substantially rectangular engaging projections 12b, 12b are projected.
[0015]

Further, an inclined surface 12c that is inclined toward the obliquely downward at the outer side an outer half portion of the upper end surface of the engagement projection 12b, no continuous step on the upper surface of the protruding portion 12a and the outer end of the inclined surface 12c it is formed in a state of being.
[0016]

Then, as shown in FIG 2, the square outer periphery of the bottom wall 12 of the storage box body 1, an outer rectangular frame portion 12d of the height constant with that protrudes downward, the bottom wall 12 The inner portion of the outer rectangular frame portion 12d of the lower surface, flat U-shaped frame portion 12e of the same height as the outer rectangular frame portion 12d is down along the back side and both sides of the outer rectangular frame portion 12d it is projected toward.
[0017]

Further, the square within the periphery of the bottom wall 12 of the storage box main body 1, the inner rectangular frame portion 12f constant height is protruded downward.
In this inner rectangular frame portion 12f is formed to be lower by the height protrusion of the connecting protrusion 11c of the top plate 11 than the outer rectangular frame portion 12d.
[0018]

The storage box A having the composition described above is integrally connected to separated by U-shaped connecting member 2 in the state of being superposed in the vertical direction as shown in FIG 3.
As shown in FIGS 4, the connector 2, engagement of the lower storage box A2 from the upper surface of the protruding portion 12a of the upper storage box A1 in the A1, A2 vertical storage box that is superimposed in the vertical direction protruding portion 12a and the central portion 21 of the side rectangular shape with a height that matches the vertical height of the lower end of the stopper portion 11b, which extends substantially horizontal direction (approximately perpendicular direction) the upper end of the central portion 21 an upper piece 22 having a predetermined width substantially matches the width, and is formed in the front U-shaped from the lower piece 23, which extends substantially horizontal direction (approximately perpendicular direction) to the lower end of the central portion 21 have.
[0019]

Further, the distal end portion upper surface of the lower piece portion 23 of the connector 2, the engaging piece 23a capable of engaging detachably is protruded upward the engaging portion 11b of the housing box body 1 have. The distance between the inner surface of the central portion 21 opposed to the locking piece 23a is formed so that substantially matches the thickness of the engaging portion 11b of the housing box body 1.
[0020]

Further, the connecting portion corresponding to the central portion 21 and the upper piece 22 of the connector 2, i.e., toward the upper end of the central portion 21 from the proximal end of the upper piece portion 22, of the protruding portion 12a of the housing box body A1 It is formed through the state of penetrating engagement hole 2a engageable detachably is over between the two sides of the central portion 21 and the upper piece 22 to the engaging projection 12b.
[0021]

The following describes the manner and ligated with the U-shaped connector 2 and A1, A2 vertical storage box superimposed in the vertical direction.
First, as shown in FIG 7, the upper surface of the top plate 11 of the housing box A2 serving as the lower side, placing the bottom plate portion 12 of the housing box A1 of the upper side.
At this time, I will be a state in which the U-shaped frame portion 12e of the upper storage box A1 is consistent with the outer peripheral edge of the connecting protrusion 11c of the A2 lower chest.
[0022]

As shown Thereafter, in Figure 8, the locking portion 11b of the storage box main body 1 of the lower storage box A2, the state of being engaged from below the engaging piece 23a of the connecting member 2, connecting this state thereby rotationally displaced in a direction close to the A1, A2 upper and lower storage box in the center of the locking portion of the locking portion 11b of the housing box body 1 the tool 2.
[0023]

Then, it is the tip of the upper piece 22 of the coupling member 2 reaches the inclined surface 12c of the engaging projection 12b of the projecting portions 12a of the upper storage box A1.
Therefore, it is rotated displaced in the direction close further A1, A2 vertical storage box connecting member 2, the upper piece 22 of the connector 2, upward to gradually inclined surface 12c of the engaging projection 12b (See Figure 10 and Figure 9), which is a state over the engaging protrusion 12b while being elastically deformed, the engaging hole 2a of the connecting member 2 is engaged detachably to the engaging projections 12b.
[0024]

In the manner as described above, by mounting the connector 2 to each of the sides front and rear portions of the connecting portion of the A1, A2 vertical storage box, as shown in FIG 3, the side portions of the bottom wall 12 of the upper storage box A2 It is a state in which both side portions of the top plate 11 of the lower storage box A1 opposed thereto is sandwiched strongly integrated by a connecting member 2, A1, A2 upper and lower storage box is integrally connected detachably.
[0025]

Thus, A1, A2 upper and lower storage box because it is connected firmly integrated as described above by coupling 2, even when an external force is applied to both or one of A1, A2 vertical chest not that the state superposition of A1, A2 upper and lower storage box is broken, A1, A2 upper and lower storage box, to reliably maintain the state superposition of up and down them.
[0026]

When it is desired to state again, separated from each other and A1, A2 vertical storage box which is integrally connected to the engagement of the engaging protrusion 12b of the upper storage box A1 and engaging hole 2a of the connector 2 After releasing, by disengaging from the locking portion 11b of the lower storage box A2 engaging pieces 23a of the connecting member 2, it can be used separately by separating from each other the A1, A2 upper and lower chest.
[0027]

In the above description, it is explained that A1, A2 vertical storage box has the same structure but, A1, A2 upper and lower storage box, in the vertical direction with a U-shaped connecting member 2 in the manner described above The long as it has a structure which can be integrally connected to the state superposed, may, for example, be those in which the height of the A1, A2 vertical storage boxes have different structures different from each other, even as large as may be.
[0028]

In the above embodiment, to form an engaging projection 12b in ridge 12a of the storage box A, was configured to engage detachably engaging hole 2a of the connecting member 2 to the engagement projection 12b described the case, but it is not necessary to form the engaging projection 12b on ridges 12a.
In such a case, it may be used a U-shaped connector 2 'as described below.
[0029]

The connector 2 'such as shown in FIG 12 and FIG 11, the lower housing from the upper surface of the protruding portion 12a of the upper storage box A1 in the A1, A2 vertical storage box that is superimposed in the vertical direction 'and the central portion the 21' central portion 21 of the side rectangular shape with a height that matches the vertical height of the lower end of the locking portion 11b of the A2 box extends substantially horizontal direction (approximately perpendicular direction) to the upper end of It is formed in the front U-shaped ', and the central portion 21' the upper piece 22 having a predetermined width substantially matches the width of the ridge portion 12a and is from a lower piece 23 'which extends to the lower end of the have.
[0030]

Further, the distal end portion of the 'lower piece portion 23 of' the connector 2 'are formed, the locking pieces 23a' engaging piece 23a and is bent obliquely upward in the inner container box body and is configured to lock can be detachably to the engaging portion 11b of the 1.
[0031]

The hp portion of the 'upper piece portion 22 of' the connector 2 'are formed, the locking pieces 22a' engaging piece 22a and is bent downward the protruding portion of the housing box body 1 and is configured to lock can be removably engaged to the inner upper corner of 12a.
[0032]

Then, as the manner of connecting integrated A1, A2 vertical storage box with the connector 2 ', thereby overlapping the upper storage box A1 in the lower storage box A2 on the above manner.
Thereafter, the locking portion 11b of the storage box main body 1 of the lower storage box A2, a state in which engaged the 'locking piece 23a of the' coupling 2, storage box body 1 and connector 2 'from the state thereby rotationally displaced in a direction close to the A1, A2 upper and lower storage box in the center of the locking portion of the locking portion 11b of the, protruding portion of the housing box body 1 'of the locking pieces 22a' coupler 2 it may be integrally connected to the state engaged to removably engaged to the inner upper corner of 12a, superimposed in the vertical direction A1, A2 upper and lower chest.
[0033]

Is an exploded perspective view of a storage box.
Is a perspective view from the bottom showing the storage box itself.
Is a perspective view showing a state of being integrally connected to each other using the connecting member and upper and lower chest.
Is a perspective view of a connector.
Is a perspective view showing the connector of FIG.
Is a longitudinal sectional view showing the connector of FIG.
Is a perspective view showing a developing state in which the upper storage box mounted on the lower storage box on.
Is a sectional view showing the manner of attaching the connector to the connecting portion of the upper and lower chest.
Is a longitudinal sectional view showing a state in which a connector attached to the connecting portion of the upper and lower chest.
Is a perspective view showing a state in which a connector attached to the connecting portion of the upper and lower chest.
Is a perspective view showing the coupling of the other.
Is a front view showing the connector of FIG 11.
[0034]

1 storage box body
11 top plate
Engaging portion 11b
12 bottom plate
12a ridge
12b engaging projection
12c inclined surface

13a ~ 13d connecting member
2,2 'U-shaped connector
2a engaging hole
23a, 23a 'engaging pieces
22a 'engaging pieces
A (A1, A2) storage box

CLAIMS JP2005162223

[0001]

A connection structure of a storage box for connecting the upper and lower storage box superimposed in the vertical direction, upper and lower storage box, a storage box main body formed by integrally connected via a connecting member and a top plate portion and the base plate portion , consists of a housing unit to be housed in and out freely through the front opening of the housing box body, a U and a side edge portion of the top plate of the lower storage box and the side edges of the bottom plate portion of the upper storage box connection structure of the storage box, characterized in that it is obtained by integrally connected to separated by shape coupling.
[0002]

It will be integrally connected through the connecting member at four corners their facing the bottom plate and the top plate portion of the flat rectangular storage box body is formed in the locking portion on the side edge lower surface of the top plate While with is, the engagement projection is formed on the side edge upper surface of the bottom plate, locking piece engageable is formed in the locking portion of the top plate to the lower end of connector connection structure of storage box according to claim 1, characterized in that the engagement hole engageable to removably engaged is formed on the engaging projection of the bottom plate to the upper portion together with the file.
[0003]

Engaging projections of the bottom plate portion, the connecting structure of the storage box according to claim 2, wherein the inclined surface which is inclined obliquely downward in the outer side at its upper end surface is formed.

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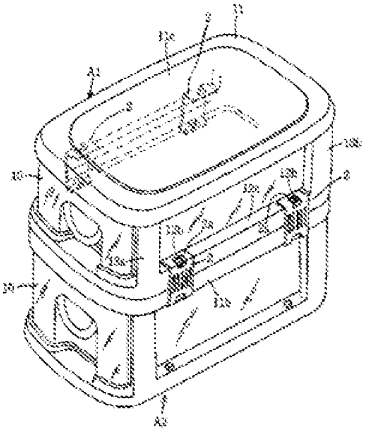
(54)【発明の名称】収納箱の連結構造

(57)【要約】
【課題】　本発明は、複数個の収納箱を上下方向に安定的に重ね合わせた状態に連結一体化することができる収納箱の連結構造を提供する。
【解決手段】　本発明の収納箱の連結構造は、上下方向に重ね合わせた上下収納箱A1、A2を連結するための収納箱の連結構造であって、上下収納箱A1，A2は、天板部11と底板部12とを連結部材13を介して連結一体化してなる収納箱本体１と、この収納箱本体１の前面開口部1aを通じて出し入れ自在に収納してなる収納部10とからなり、上側収納箱A1の底板部12の側縁部と下側収納箱A2の天板部11の側縁部とをコ字状連結具２によって分離可能に連結一体化してなることを特徴とする。
【選択図】　図３



【特許請求の範囲】
【請求項1】
上下方向に重ね合わせた上下収納箱を連結するための収納箱の連結構造であって、上下収納箱は、天板部と底板部とを連結部材を介して連結一体化してなる収納箱本体と、この収納箱本体の前面開口部を通じて出し入れ自在に収納してなる収納部とからなり、上側収納箱の底板部の側縁部と下側収納箱の天板部の側縁部とをコ字状連結具によって分離可能に連結一体化してなることを特徴とする収納箱の連結構造。
【請求項2】
収納箱本体は、平面矩形状の天板部と底板部とをそれらの対向する四隅部において連結部材を介して連結一体化してなり、天板部の側縁部下面には係止部が形成されていると共に、底板部の側縁部上面には係合突部が形成されている一方、連結具の下端には天板部の係止部に係止可能な係止片が形成されていると共に上端部には底板部の係合突部に係脱自在に係合可能な係合孔が形成されていることを特徴とする請求項１に記載の収納箱の連結構造。
【請求項3】
底板部の係合突部は、その上端面に外方における斜め下方に向かって傾斜した傾斜面が形成されていることを特徴とする請求項２に記載の収納箱の連結構造。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は、複数個の収納箱を上下方向に分離可能に連結一体化することができる収納箱の連結構造に関する。
【背景技術】
【0002】
従来から家庭や職場において、日用品、小物、書類などを収納するための収納箱が多数、提供されている。このような収納箱としては、特許文献１に記載されているように、本体と、この本体に出し入れ可能に支持された引出しとからなる収納箱が提供されている。
【0003】
そして、収納したい物が多くて一つの収納箱では収納しきれないような場合には、省スペース化を図るために収納箱を上下方向に重ね合わせることが多い。しかしながら、収納箱を上下方向に重ね合わせると、上下何れか一方或いは双方の収納箱に外力が加わった場合に、上下方向に重ね合わせた収納箱のバランスが崩れてしまい、上下収納箱の重ね合わせ状態がずれて不安定な状態となったり或いは上側収納箱が下側収納箱から脱落してしまうことがあるといった問題点があった。
【0004】
【特許文献1】実用新案登録第３０４１００２号公報
【発明の開示】
【発明が解決しようとする課題】
【0005】
本発明は、複数個の収納箱を上下方向に安定的に重ね合わせた状態に連結一体化することができる収納箱の連結構造を提供する。
【課題を解決するための手段】
【0006】
請求項１に記載の収納箱の連結構造は、上下方向に重ね合わせた上下収納箱を連結するための収納箱の連結構造であって、上下収納箱は、天板部と底板部とを連結部材を介して連結一体化してなる収納箱本体と、この収納箱本体の前面開口部を通じて出し入れ自在に収納してなる収納部とからなり、上側収納箱の底板部の側縁部と下側収納箱の天板部の側縁部とをコ字状連結具によって分離可能に連結一体化してなることを特徴とする。
【0007】
又、請求項２に記載の収納箱の連結構造は、請求項１に記載の収納箱の連結構造におい

て、収納箱本体は、平面矩形状の天板部と底板部とをそれらの対向する四隅部において連結部材を介して連結一体化してなり、天板部の側縁部下面には係止部が形成されていると共に、底板部の側縁部上面には係合突部が形成されている一方、連結具の下端には天板部の係止部に係止可能な係止片が形成されていると共に上端部には底板部の係合突部に係脱自在に係合可能な係合孔が形成されていることを特徴とする。

【0008】

更に、請求項３に記載の収納箱の連結構造は、請求項２に記載の収納箱の連結構造において、底板部の係合突部は、その上端面に外方における斜め下方に向かって傾斜した傾斜面が形成されていることを特徴とする。

【発明の効果】

【0009】

請求項１に記載の収納箱の連結構造は、上下方向に重ね合わせた上下収納箱を連結するための収納箱の連結構造であって、上下収納箱は、天板部と底板部とを連結部材を介して連結一体化してなる収納箱本体と、この収納箱本体の前面開口部を通じて出し入れ自在に収納してなる収納部とからなり、上側収納箱の底板部の側縁部と下側収納箱の天板部の側縁部とをコ字状連結具によって分離可能に連結一体化してなることを特徴とするので、上下方向に重ね合わせた上下収納箱をコ字状連結具によって安定的に且つ強固に連結一体化することができ、上下収納箱のうちの何れか一方或いは双方の収納箱に外力が加わった場合にあっても、上下収納箱同士の連結状態が崩れて上下重ね合わせ状態が不安定となったり或いは上側収納箱が下側収納箱上から脱落してしまうといった不測の事態は発生しない。

【0010】

又、請求項２に記載の収納箱の連結構造は、請求項１に記載の収納箱の連結構造において、収納箱本体は、平面矩形状の天板部と底板部とをそれらの対向する四隅部において連結部材を介して連結一体化してなり、天板部の側縁部下面には係止部が形成されていると共に、底板部の側縁部上面には係合突部が形成されている一方、連結具の下端には天板部の係止部に係止可能な係止片が形成されていると共に上端部には底板部の係合突部に係脱自在に係合可能な係合孔が形成されていることを特徴とするので、連結具の係止片を天板部の係止部に係脱自在に係止させると共に、連結具の係合孔を係合突部に係脱自在に係合させることによって、上下収納箱を上下方向に重ね合わせた状態に簡単に且つ確実に連結一体化させることができる。

【0011】

更に、請求項３に記載の収納箱の連結構造は、請求項２に記載の収納箱の連結構造において、底板部の係合突部は、その上端面に外方における斜め下方に向かって傾斜した傾斜面が形成されていることを特徴とするので、連結具の上端部を係合突部の傾斜面に沿って上方に向かって弾性変形させつつ、連結具の係合孔を収納箱の係合突部に係脱自在に係合させることができ、上下収納箱を上下方向に重ね合わせた状態に更に簡単に且つ確実に連結一体化させることができる。

【発明を実施するための最良の形態】

【0012】

本発明に係る収納箱の連結構造の一例を図面を参照しつつ説明する。収納箱Ａの収納箱本体１は、図１及び図２に示したように、平面略矩形状の天板部11と、この天板部11と略同一大きさの平面矩形枠状の底板部12と、天板部11と底板部12とをこれらの対向する四隅部において連結する一定高さの柱状連結部材13a ～13d とからなり、天板部11と底板部12との対向面間に形成された空間部にその前面開口部1aを通じて収納部10を出し入れ自在に収納することによって収納箱Ａが構成されている。なお、上記収納部10は、平面矩形状の底面部10a とこの底面部10a の四方外周縁から上方に向かって延設された矩形枠状の周壁部10b とからなり、上端が全面的に開放した状態に形成されている。

【0013】

そして、上記天板部11下面の四方外周縁には、一定高さを有する矩形枠状部11a が下方

に向かって突設されており、この矩形枠状部11a における前後連結部材13a 、13b （13c 、13d ）間にある部分をそれぞれ両側係止部11b 、11b としていると共に、上記天板部11の上面には、その四方外周縁部を除いた部分を僅かに上方に向かって突出させることによって、上記底板部12の内周枠よりも一回り大きな大きさを有する平面矩形状の連結用突部11c が形成されている。

【0014】

一方、図１に示したように、上記収納箱本体１の底板部12の両側縁部上面の夫々には、この両側縁部を上方に向かって膨出させることによって、一定高さ、一定幅の両側突条部12a 、12a が前後連結部材13a 、13b （13c 、13d ）間の全長に亘って突設されており、突条部12a の上面前後部の夫々には、平面略矩形状の係合突部12b 、12b が突設されている。

【0015】

更に、上記係合突部12b の上端面の外半部を外方における斜め下方に向かって傾斜させた傾斜面12c とし、この傾斜面12c の外端を突条部12a の上面に段差なく連続させた状態に形成している。

【0016】

そして、図２に示したように、上記収納箱本体１の底板部12の四方外周縁には、一定高さの外側矩形枠部12d が下方に向かって突設されていると共に、底板部12下面における外側矩形枠部12d の内方部には、該外側矩形枠部12d の両側部及び後側部に沿って外側矩形枠部12d と同一高さの平面コ字状枠部12e が下方に向かって突設されている。

【0017】

又、上記収納箱本体１の底板部12の四方内周縁には、一定高さの内側矩形枠部12f が下方に向かって突設されている。なお、この内側矩形枠部12f は、外側矩形枠部12d よりも天板部11の連結用突部11c の突出高さ分だけ低くなるように形成されている。

【0018】

そして、上記の如く構成された収納箱Ａは、図３のように上下方向に重ね合わせられた状態でコ字状連結具２によって分離可能に連結一体化される。この連結具２は、図４乃至図６に示したように、上下方向に重ね合わせられた上下収納箱A1、A2における上側収納箱A1の突条部12a の上面から下側収納箱A2の係止部11b の下端までの上下高さに合致した高さを有する側面矩形状の中央部21と、この中央部21の上端に略水平方向（略直角方向）に延設され且つ突条部12a の幅に略合致した一定幅を有する上側片部22と、上記中央部21の下端に略水平方向（略直角方向）に延設された下側片部23とから正面コ字状に形成されている。

【0019】

更に、上記連結具２の下側片部23の先端部上面には、収納箱本体１の係止部11b に係脱自在に係止可能な係止片23a が上方に向かって突設されている。なお、係止片23a とこれに対向する中央部21の内面の間隔は、収納箱本体１の係止部11b の厚みに略合致した状態に形成されている。

【0020】

又、上記連結具２の上側片部22と中央部21との連設部分、即ち、上側片部22の基端部から中央部21の上端部にかけて、収納箱本体A1の突条部12a の係合突部12b に係脱自在に係合可能な係合孔2aが上側片部22及び中央部21の両面間に亘って貫通した状態に貫設されている。

【0021】

次に、上下方向に重ね合わせた上下収納箱A1、A2 をコ字状連結具２を用いて連結する要領について説明する。先ず、図７に示したように、下側となる収納箱A2の天板部11の上面に、上側となる収納箱A1の底板部12を載置する。この時、下側収納箱A2の連結用突部11c の外周縁に上側収納箱A1のコ字状枠部12e が合致した状態とする。

【0022】

しかる後、図８に示したように、下側収納箱A2の収納箱本体１の係止部11b に、連結具

２の係止片23a を下方から係止させた状態とし、この状態から連結具２を収納箱本体１の係止部11b との係止部分を中心にして上下収納箱A1、A2に近接する方向に回動変位させる。

【0023】

すると、連結具２の上側片部22の先端が上側収納箱A1の突条部12a における係合突部12b の傾斜面12c に到達した状態となる。そこで、連結具２を上下収納箱A1、A2にさらに近接する方向に回動変位させると、連結具２の上側片部22は、係合突部12b の傾斜面12c によって徐々に上方に向かって弾性変形させられながら係合突部12b を乗り越え、連結具２の係合孔2aが係合突部12b に係脱自在に係合した状態となる（図９及び図１０参照）。

【0024】

このような要領で、上下収納箱A1、A2の接続部分における両側前後部の夫々に連結具２を取り付けることによって、図３に示したように、上側収納箱A2の底板部12の両側部とこれに対向する下側収納箱A1の天板部11の両側部とが連結具２によって強固に扶持一体化された状態となり、上下収納箱A1、A2は分離可能に連結一体化される。

【0025】

しかして、上下収納箱A1、A2は連結具２によって上述のように強固に連結一体化されているので、上下収納箱A1、A2の何れか一方或いは双方に外力が加わった場合にあっても上下収納箱A1、A2の重ね合わせ状態が崩れることはなく、上下収納箱A1、A2は、それらの上下重ね合わせ状態を確実に維持する。

【0026】

そして、連結一体化させた上下収納箱A1、A2を再度、互いに分離した状態としたい場合には、連結具２の係合孔2aと上側収納箱A1の係合突部12b との係合を解除した後、連結具２の係止片23a を下側収納箱A2の係止部11b から離脱させることによって、上下収納箱A1、A2を互いに分離して別々に使用することができる。

【0027】

なお、上記説明では、上下収納箱A1、A2が同一構造を有している場合について説明したが、上下収納箱A1、A2は、上述した要領でコ字状連結具２を用いて上下方向に重ね合わせた状態に連結一体化することができる構造を有しておれば、互いに異なった構造、大きさであってもよく、例えば、上下収納箱A1、A2の高さが互いに異なるものであってもよい。

【0028】

上記実施例では、収納箱Ａの突条部12a に係合突部12b を形成し、この係合突部12b に連結具２の係合孔2aを係脱自在に係合させるように構成した場合を説明したが、突条部12a に係合突部12b を形成しなくてもよい。このような場合には、下記のようなコ字状連結具2'を用いればよい。

【0029】

このような連結具2'としては、図１１及び図１２に示したように、上下方向に重ね合わせられた上下収納箱A1、A2における上側収納箱A1の突条部12a の上面から下側収納箱A2の係止部11b の下端までの上下高さに合致した高さを有する側面矩形状の中央部21'と、この中央部21'の上端に略水平方向（略直角方向）に延設され且つ突条部12a の幅に略合致した一定幅を有する上側片部22'と、上記中央部21'の下端に延設された下側片部23'とから正面コ字状に形成されている。

【0030】

更に、上記連結具2'の下側片部23'の先端部は内方における斜め上方に向かって屈曲されて係止片23a'が形成されており、この係止片23a'は収納箱本体１の係止部11b に係脱自在に係止可能に構成されている。

【0031】

又、上記連結具2'の上側片部22'の先端部は下方に向かって屈曲されて係止片22a'が形成されており、この係止片22a'は収納箱本体１の突条部12a における内側上端角部に係脱自在に係止可能に構成されている。

【0032】

そして、上記連結具2'を用いて上下収納箱A1、A2を連結一体化する要領としては、上記要領で下側収納箱A2上に上側収納箱A1を重ね合わせる。しかる後、下側収納箱A2の収納箱本体１の係止部11b に、連結具2'の係止片23a'を係止させた状態とし、この状態から連結具2'を収納箱本体１の係止部11b との係止部分を中心にして上下収納箱A1、A2に近接する方向に回動変位させて、連結具2'の係止片22a'を収納箱本体１の突条部12a における内側上端角部に係脱自在に係止させ、上下収納箱A1、A2を上下方向に重ね合わせた状態に連結一体化することができる。

【図面の簡単な説明】

【0033】

【図1】収納箱を示した分解斜視図である。

【図2】収納箱本体を示した底面側から見た斜視図である。

【図3】上下収納箱を連結具を用いて連結一体化した状態を示した斜視図である。

【図4】連結具を示した斜視図である。

【図5】図４の連結具を示した斜視図である。

【図6】図４の連結具を示した縦断面図である。

【図7】下側収納箱上に上側収納箱を載置させる途上状態を示した斜視図である。

【図8】上下収納箱の接続部分に連結具を取付ける要領を示した断面図である。

【図9】上下収納箱の接続部分に連結具を取付けた状態を示した縦断面図である。

【図10】上下収納箱の接続部分に連結具を取付けた状態を示した斜視図である。

【図11】他の連結具を示した斜視図である。

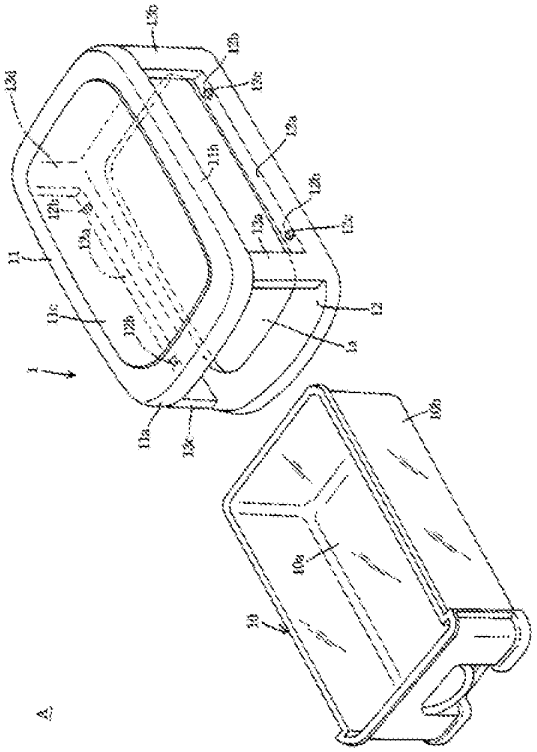
【図12】図１１の連結具を示した正面図である。

【符号の説明】

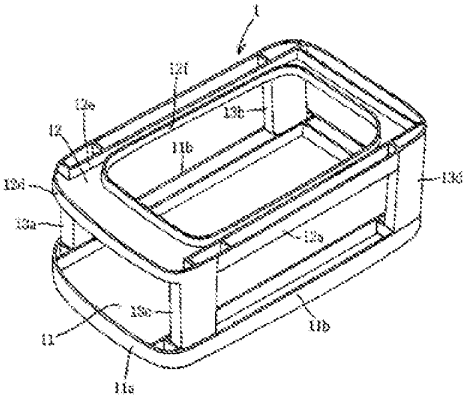
【0034】

１　収納箱本体
11　天板部
11b 係止部
12　底板部
12a 突条部
12b 係合突部
12c 傾斜面
13a ～13d 連結部材
２、2'　コ字状連結具
2a　係合孔
23a 、23a'係止片
22a'係止片
Ａ（A1、A2）収納箱

【図1】



【図2】



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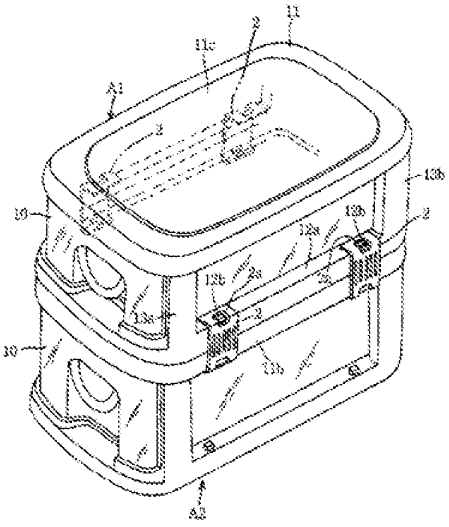

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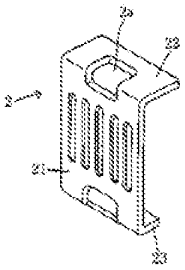

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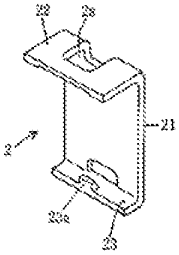

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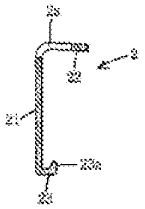
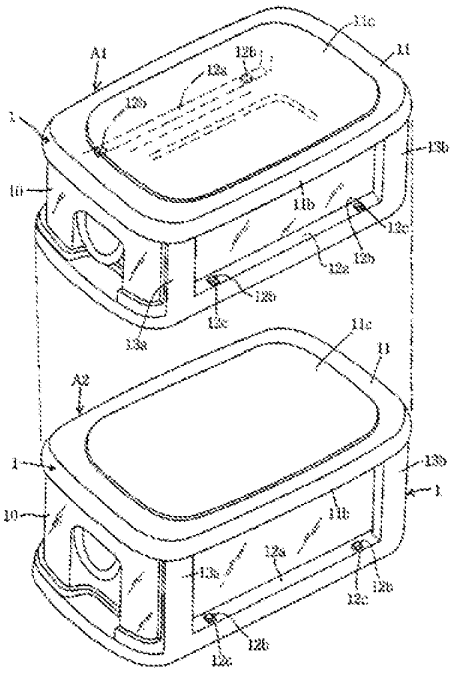

2b
2
2c
21
23a
2d

【図７】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11
12b
12a
12b
1
13b
10
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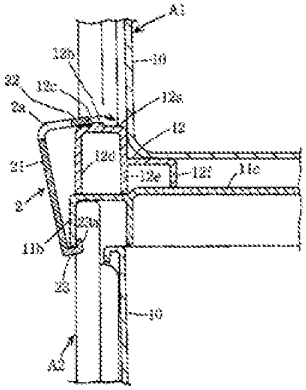
12b

【図８】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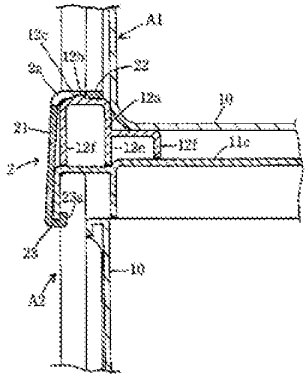
A2

【図９】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12c
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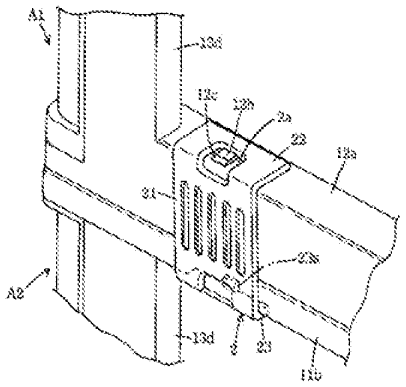
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23a
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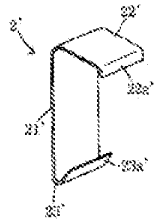
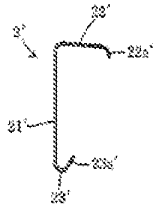
13b

【図11】


2'
22'
22a'
21'
23a'
23'

【図12】


22'
2'
22a'
21'
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23'

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application #	: Not Yet Assigned
Inventors	: Hongquan ZHANG, Qiang WANG and Shujun CAI
Filed	:
TC/AU	:
Invention	: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY
Examiner	:
Confirmation No.	:
Docket No.	: 17157-101-1
Customer #	: 23486
Date	: November 22, 2023

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

PRELIMINARY AMENDMENT

Please preliminarily amend the subject application prior to fee calculation and examination as follows:

A listing of Claims begins on page 2 of this paper, including any amendments.

Remarks/Arguments begin on page 10 of this paper.

CLAIMS

1. (Currently Amended) A storage box comprising:

a first connection part disposed on one ~~surface~~ area of said storage box~~;~~ connectable to

a second connection part ~~disposed on another surface of said~~of another storage box;

~~a stop part,~~

wherein, said first connection part comprises a mounting ~~part~~body, a locking ~~part~~ buckle movable with respect to said mounting ~~part~~body, and a first resilient member located between said mounting ~~part~~ body and said locking ~~part~~buckle, wherein said first resilient member keeping said locking ~~part~~ buckle automatically in a locked state;

wherein, said second connection part of the other storage box comprises a mating part interlockable with the locking ~~part~~buckle,

wherein the locking ~~part~~ buckle is configured to slide inward with respect to the mounting part ~~for being pressed down~~ so that ~~it~~ the locking buckle is automatically ~~locked~~ lockable with the mating part of ~~another~~ the other storage box by action of said first resilient member when the locking buckle is aligned with the mating part of the other storage box;

a locking part cooperating with the locking buckle, wherein manual movement of the locking part causes the locking buckle to move to an unlocked state; and

a~~when said~~ stop part, wherein when the stop part projects outward with respect to ~~is in the~~ a locking path of the locking part, said locking part is not automatically lockable

and said first connection part is in a state of remaining unlocked from said second connection part.

2. (Currently Amended) The storage box of claim 1, wherein the stop part is retractable, said stop part being extended when said first connection part is in a holding unlocked state with said second connection part of the other storage box, and said stop part being compressed when said first connection part is in a locked state with said second connection part.

3. (Currently Amended) The storage box of claim 2, wherein said stop part is provided on said locking part and is movable with said locking part along the locking path of the locking part~~; said stop part holds the second connection part outward when said first connection part and said second connection part are in a holding unlocked state~~.

4. (Currently Amended) The storage box of claim 3, wherein said ~~stop~~ locking part comprises a holding slot opened on the locking part, ~~a card block that can be accommodated in said holding slot~~ and further comprising a second resilient member combined between the holding slot and the stop part to extend the stop part outward in an extended state and said stop part is accommodated in said holding slot in a compressed state~~; said holding slot has a bottom wall and two side walls, two said side walls extending upward along both sides of said bottom wall and set opposite each other~~.

5. (Currently Amended) The storage box of claim ~~3~~4, wherein when the ~~card block~~stop part is ~~rotatably connected to said locking part and the other end is~~ retractably provided in said holding slot, said second resilient member ~~keeping said card block automatically in an ejected state~~is compressed; when said ~~card block~~stop part is ~~ejected~~ biased outward and held against ~~said~~ a mating portion, said locking ~~part~~ buckle ~~cannot be~~is not automatically ~~locked~~ lockable to the mating part of the other storage box~~and said first connection part and said second connection part in a state of remaining unlocked~~.

6. (Currently Amended) The storage box of claim 5, wherein said second resilient member is a ~~telescopic~~ torsion spring with one end against said ~~card block~~stop part and the other end against ~~said~~ a bottom ~~wall~~of said holding slot; when said ~~second resilient member~~torsion spring is ~~popped out~~extended, said ~~card block~~stop part extends out of said holding slot and when said ~~second resilient member~~torsion spring is compressed, said ~~card block~~stop part is retracted into said holding slot.

7. (Currently Amended) The storage box of claim ~~5~~6, ~~wherein said stop section~~and further ~~comprises~~ comprising a ~~rotating~~ shaft ~~rotatably~~ connected to said locking ~~section~~part about which said stop part rotates, ~~said ends of~~ said ~~rotating~~ shaft being fixed to ~~two said side walls~~said locking part; ~~said second resilient member being a~~wherein the torsion spring~~, one end of said card block and said torsion spring~~ being positioned on said shaft ~~being snapped onto said rotating shaft~~.

8. (Cancelled)

9. (Cancelled)

10. (Currently Amended) The storage box of claim 1, wherein said locking part is a sliding latch for horizontal movement~~, a flipping latch for flipping movement or a rotating latch for rotating movement~~.

11. (Currently Amended) The storage box of claim ~~10~~1, wherein said first connection part is provided on one of a lid of said storage box and ~~said second connection part is provided on the~~a bottom of said storage box.

12. (Currently Amended) The storage box of claim ~~11~~1, wherein two adjacent ~~said~~ storage boxes are interlockable with each other by means of ~~a~~ the first connection part and ~~a~~ the second connection part of the other storage box.

13. (Currently Amended) The storage box of claim 1, and further comprising a second resilient member, and wherein the locking part comprises of a slot, and wherein the stop part ~~comprises of a card block~~is ~~positioned~~ biased outward from~~in a~~the slot ~~and biased outward~~ by the second resilient member.

14. (Currently Amended) The storage box of claim 13, wherein the ~~card block~~stop part moves perpendicular with respect to a sliding path of the locking part.

15. (Currently Amended) The storage box of claim ~~14~~13, wherein the ~~card block~~stop part moves ~~perpendicularly upward~~ outward relative to the ~~first connection~~locking part.

16. (Cancelled)

17. (Currently Amended) The storage box of claim 13, wherein the second resilient member is a torsion spring and the ~~card block~~stop part rotates ~~upward~~ relative to the ~~first connection part~~locking part.

18. (Cancelled)

19. (New) The storage box of claim 1, further comprising a bottom comprising a projection, four sidewalls projecting from the bottom, a hinged lid to access an interior, and a positioning slot on the hinged lid, wherein two adjacent said storage boxes are located with respect to each other by the projection of the bottom and the positioning slot on the lid, wherein the lid comprises four projections and the bottom comprises four positioning recesses, wherein two adjacent said storage boxes are located with respect to each other by the projection and the four positioning recesses on the bottom and the positioning slot and the four projections on the lid; wherein the four projections on the lid

project upward from a top face of the lid, and the four positioning recesses of the bottom are located in a bottom face.

20. (New) A storage box comprising:

a first connection part disposed on one area of said storage box, wherein the first connection part comprises a mounting body, a locking buckle movable with respect to the mounting body, and a first resilient member located between the mounting body and the locking buckle to bias the locking buckle automatically outward in a locked state;

a locking part configured to move along a horizontal locking path and to cooperate with the locking buckle, wherein manual movement of the locking part along the horizontal locking path causes the locking buckle to move between an unlocked state retracted with respect to the mounting body and a locked state extended with respect to the mounting body;

a stop part combined to the locking part comprising an unlocked state corresponding to the unlocked state of the locking buckle with the stop part extended from the locking part and the locking buckle held retracted with respect to the mounting body, and a locked state corresponding to the locked state of the locking buckle with the stop part retracted with respect to the locking part and the locking buckle held extended with respect to the mounting body; and

a second connection part disposed on another area of said storage box, wherein the second connection part comprises a mating part that corresponds to the locking buckle.

21. (New) The storage box of claim 20, wherein said locking part further comprises a holding slot opened on the locking part, and further comprising a second resilient member combined between the holding slot and the stop part, wherein the stop part is extended from the slot in the locking part when the stop part is in the unlocked state, and wherein the stop part is retracted in the slot in the locking part when the stop part is in the locked state.

22. (New) The storage box of claim 20, further comprising a bottom comprising a projection, four sidewalls projecting from the bottom, a hinged lid to access an interior, and a positioning slot on the hinged lid, wherein two adjacent said storage boxes are located with respect to each other by the projection of the bottom and the positioning slot on the lid, wherein the lid comprises four projections and the bottom comprises four positioning recesses, wherein two adjacent said storage boxes are located with respect to each other by the projection and the four positioning recesses on the bottom and the positioning slot and the four projections on the lid; wherein the four projections on the lid project upward from a top face of the lid, and the four positioning recesses of the bottom are located in a bottom face.

23. (New) A storage box comprising:

a bottom comprising a first connection part and a first projection;

a plurality of sidewalls projecting from the bottom;

a hinged lid attached to one of the plurality of sidewalls to access an interior and comprising a second connection part, and a first positioning recess corresponding in shape to the first projection of the bottom; and

wherein one of the first connection part and the second connection part comprises a mounting body, a locking buckle movable with respect to the mounting body, and a first resilient member located between the mounting body and the locking buckle to bias the locking buckle automatically outward in a locked state.

24. (New) The storage box of claim 23, and further comprising:

a locking part configured to move along a horizontal locking path and to cooperate with the locking buckle, wherein manual movement of the locking part along the horizontal locking path causes the locking buckle to move between an unlocked state retracted with respect to the mounting body and a locked state extended with respect to the mounting body;

a stop part combined to the locking part comprising an unlocked state corresponding to the unlocked state of the locking buckle with the stop part extended from the locking part and the locking buckle held retracted with respect to the mounting body, and a locked state corresponding to the locked state of the locking buckle with the stop part retracted with respect to the locking part and the locking buckle held extended with respect to the mounting body; and

wherein the second connection part comprises a mating part that corresponds to the locking buckle.

REMARKS

Claims 1-7, 10-15, 17, and 19-24 are pending, with claims 1, 20, and 23 being independent. Claims 8, 9, 16, and 18 have been cancelled. Claims 1-7, 10-15, and 17 have been amended. Claims 19-24 have been added. Support for the amendments and new claims can be found, for example, in the original claims and specification corresponding to figures 1-7, 15-16, and 19. No new subject matter has been added.

CONCLUSION

In view of the above, it is believed that the application is in condition for examination and no excess claim fees are owed. If the Office is of a differing opinion, it is kindly requested that the undersigned be contacted.

Respectfully submitted,

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Reg. No.: 62,262

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Facsimile: (319) 365-8443
E-mail: jrs@shuttleworthlaw.com
Web Site: www.Shuttleworthlaw.com

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being transmitted to the United States Patent and Trademark Office by EFS-Web on November 22, 2023.

/Jayme M. Hunter/
Jayme M. Hunter

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
18/518,200	11/22/2023		1820	17157-0101-1	20	3

CONFIRMATION NO. 7125

23486
SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

FILING RECEIPT

OC000000065500922

Date Mailed: 12/07/2023

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

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Qiang WANG, Shanghai, CHINA;
Shujun CAI, Shanghai, CHINA;

Applicant(s)

Meridian International Co., Ltd, Shanghai, CHINA;

Power of Attorney: The patent practitioners associated with Customer Number 23486

Domestic Priority data as claimed by applicant

This application is a CON of 18/176,907 03/01/2023

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)
CHINA 202210212862.5 03/04/2022 Access Code Provided
CHINA 202320135456.3 01/13/2023 Access Code Provided

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If Required, Foreign Filing License Granted: 12/06/2023

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/518,200**

Projected Publication Date: 03/14/2024

Non-Publication Request: No

Early Publication Request: No

Title

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Preliminary Class

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

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 18/518,200

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	320
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	* 0			OR	x =	0
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x =	0
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
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1820

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".

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证　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：202320135456.3

申　请　类　型：实用新型专利

发明 创造 名称：模块的连接结构、储物箱及储物箱组件

申　　请　　日：2023年01月13日

申　　请　　人：上海美瑞实业有限公司

发明人或设计人：王强、张红泉

局长

申长雨

2023 年 02 月 10 日

权 利 要 求 书

1、一种模块的连接结构，包括位于所述模块一表面上的第一连接部(1)、位于所述模块另一表面上的第二连接部（2)；

所述第一连接部（1）包括安装部（11）、可相对于所述安装部（11）移动的锁定部（12）及位于所述安装部（11）与所述锁定部（12）之间的第一弹性件（13），所述第一弹性件（13）使所述锁定部（12）自动保持在锁定状态；

所述第二连接部（2）包括与所述锁定部（12）相互锁定的配合部（21），下压一所述模块的锁定部（12）可使其与另一模块的配合部（21）在第一弹性件（13）的作用下自动锁定；

其特征在于，还包括止动部(3),所述止动部(3)设置在所述锁定部(12)上，且其一端与所述锁定部（12）转动连接，当所述第一连接部（1）与所述第二连接部（2）处于保持解锁状态时，所述止动部（3）与所述第二连接部（2）在锁定部（12）的锁定路径上卡持。

2、根据权利要求 1 所述的模块的连接结构，其特征在于，所述止动部（3）包括锁舌（36）和第二弹性件（33），所述锁舌（36）的一端转动连接于所述锁定部（12），所述第二弹性件（33）使所述锁舌（36）自动保持在弹出状态；当所述锁舌（36）弹出并抵持在所述配合部（21）上时，所述锁定部（12）无法自动锁定，所述第一连接部（1）与所述第二连接部（2）处于保持解锁状态。

3、根据权利要求 2 所述的模块的连接结构，其特征在于，所述锁定部（12）上设有容纳槽（123），所述容纳槽（123）具有底壁（123a）和两个侧壁（123b），两个所述侧壁（123b）沿所述底壁（123a）的两侧向上延伸且相对设置；所述锁舌（36）可伸缩地设置在所述容纳槽（123）内，所述第二弹性件（33）的一端抵靠在所述锁舌（36）上，另一端抵靠在所述底壁（123a）上；当所述第二弹性件(33)弹出时，所述锁舌(36)伸出所述容纳槽(123)，

当所述第二弹性件（33）压缩时，所述锁舌（36）缩回至所述容纳槽（123）内。

4、根据权利要求 3 所述的模块的连接结构，其特征在于，所述锁舌（36）上设有向上突起的挡块（361）；当第一连接部（1）与第二连接部（2）处于保持解锁状态时，所述挡块（361）伸出所述容纳槽（123）与所述配合部（21）抵持。

5、根据权利要求 4 所述的模块的连接结构，其特征在于，所述锁舌（36）具有相对的第一端部（36a）和第二端部（36b），第二端部（36b）相较第一端部（36a）更靠近模块的中心位置；所述第一端部（36a）设有轴孔，所述止动部（3）还包括旋转轴（37），所述旋转轴（37）的两端固定在两个所述侧壁（123b）上，所述第二弹性件（33）为扭簧，所述第一端部（36a）和所述第二弹性件（33）套设在所述旋转轴（37）上。

6、根据权利要求 4 所述的模块的连接结构，其特征在于，所述锁舌（36）具有相对的第一端部（36a）和第二端部（36b），第二端部（36b）相较第一端部（36a）更靠近模块的中心位置；所述第一端部（36a）与所述锁定部（12）转动连接，所述第二弹性件（33）的两端分别位于所述锁舌（36）与所述底壁（123a）之间，所述第二弹性件（33）为伸缩弹簧。

7、根据权利要求 6 所述的模块的连接结构，其特征在于，所述第二端部（36b）的两侧设有凸轴（362），两个所述凸轴（362）分别插设在两个所述侧壁（123b）的滑轨（123c）内。

8、根据权利要求 1 所述的模块的连接结构，其特征在于，所述锁定部（12）为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

9、一种储物箱，包括箱盖（101）和箱体（102），所述箱盖（101）设置在所述箱体（102）上，其特征在于，所述储物箱上设置有如权利要求 1~8 任一项所述的模块的连接结构，所述第一连接部（1）设置于所述箱盖（101）

上，所述第二连接部（2）设置于所述箱体（102）的底部。

10、一种储物箱组件，其特征在于，包括多个如权利要求 9 所述的储物箱，相邻两个所述储物箱之间可通过所述第一连接件（1）与所述第二连接件（2）相互锁定。

说 明 书

模块的连接结构、储物箱及储物箱组件

技术领域

本实用新型涉及物品存储技术领域，尤其是涉及一种模块的连接结构、储物箱及储物箱组件。

背景技术

常规储物箱的各个箱体之间都是单独放置的，即使能一个一个堆放上去也只能保证放平即可。但对于需要买多个箱子的家庭及专业用户来讲，如果未设置两个箱体之间的互锁功能，那么多个箱体放置几层后很容易会翻倒，从而带来安全隐患。尤其是在需要同时移动多个箱体的时候，由于在拖行过程中整体重心改变及路面不平整产生震动，更加容易导致上方的箱体翻倒。

要避免以上问题，目前常规的解决方法是：额外增加一些如绳索等配件来协助固定多个箱体，以此来解决此问题。但是，采用此解决方法不仅增加了额外的成本，而且储物箱必须先解开绳索才能取出里面的物品，这给实际的使用带来诸多不便。

目前市面上有一种用于堆叠箱体的互锁结构，一般采用带有自动回弹功能的锁扣将上下两个箱体锁止固定，这种带有自动回弹功能的锁扣在上箱体与下箱体连接后能够自动回弹锁止，且在上箱体与下箱体分离后能够自动回弹为下一次锁止做好准备，从而方便用户使用。但是，在将上下两个箱体分开时，由于锁扣能够自动回弹，故用户需要用一只手或两只手将锁扣保持在解锁位，才能将上箱体与下箱体分离，从而不方便用户使用。

有鉴于此，确有必要提供一种模块的连接结构、储物箱及储物箱组件，以此来解决此问题。

实用新型内容

本实用新型的目的是提供一种储物箱的连接结构，旨在解决上述背景技术存在的不足，能够实现自动锁定、保持解锁及自动复位功能，从而方便用户操作使用。

本实用新型提供了一种模块的连接结构，包括位于所述模块一表面上的第一连接部、位于所述模块另一表面上的第二连接部；

所述第一连接部包括安装部、可相对于所述安装部移动的锁定部及位于所述安装部与所述锁定部之间的第一弹性件，所述第一弹性件使所述锁定部自动保持在锁定状态；

所述第二连接部包括与所述锁定部相互锁定的配合部，下压一所述模块的锁定部可使其与另一模块的配合部在第一弹性件的作用下自动锁定；

还包括止动部，所述止动部设置在所述锁定部上，且其一端与所述锁定部转动连接，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述第二连接部在锁定部的锁定路径上卡持。

进一步地，所述止动部包括锁舌和第二弹性件，所述锁舌的一端转动连接于所述锁定部，所述第二弹性件使所述锁舌自动保持在弹出状态；当所述锁舌弹出并抵持在所述配合部上时，所述锁定部无法自动锁定，所述第一连接部与所述第二连接部处于保持解锁状态。

进一步地，所述锁定部设有容纳槽，所述容纳槽具有底壁和两个侧壁，两个所述侧壁沿所述底壁的两侧向上延伸且相对设置；所述锁舌可伸缩地设置在所述容纳槽内，所述第二弹性件的一端抵靠在所述锁舌上，另一端抵靠在所述底壁上；当所述第二弹性件弹出时，所述锁舌伸出所述容纳槽，当所述第二弹性件压缩时，所述锁舌缩回至所述容纳槽内。

进一步地，所述锁舌上设有向上突起的挡块；当第一连接部与第二连接部处于保持解锁状态时，所述挡块伸出所述容纳槽与所述配合部抵持。

进一步地，所述锁舌具有相对的第一端部和第二端部，第二端部相较第一端部更靠近模块的中心位置；所述第一端部设有轴孔，所述止动部还包括

旋转轴，所述旋转轴的两端固定在两个所述侧壁上，所述第二弹性件为扭簧，所述第一端部和所述第二弹性件套设在所述旋转轴上。

进一步地，所述锁舌具有相对的第一端部和第二端部，第二端部相较第一端部更靠近模块的中心位置；所述第一端部与所述锁定部转动连接，所述第二弹性件的两端分别位于所述锁舌与所述底壁之间，所述第二弹性件为伸缩弹簧。

进一步地，所述第二端部的两侧设有凸轴，两个所述凸轴分别插设在两个所述侧壁的滑轨内。

进一步地，所述锁定部为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

本实用新型还提供了一种储物箱，包括箱盖和箱体，所述箱盖设置在所述箱体上，所述储物箱上设置有如上任一项所述的模块的连接结构，所述第一连接部设置于所述箱盖上，所述第二连接部设置于所述箱体的底部。

本实用新型还提供了一种储物箱组件，包括多个如上所述的储物箱，相邻两个所述储物箱之间可通过所述第一连接件与所述第二连接件相互锁定。

本实用新型提供的储物箱的连接结构具有如下有益效果：

1、利用第一连接部与第二连接部配合锁定。当上方储物箱放置到位的同时自动实现两箱互相锁定的功能，不需要用户在放好箱体后因需锁定箱体时再特意去分别操作两侧的锁扣，只需在打开时拉开两侧锁扣即可。

2、利用可转动的锁舌使第一连接部与第二连接部处于保持解锁状态，锁舌的运动确定性强，使用顺畅，极大的改善了用户使用的便利性。

附图说明

图 1 为本实用新型第一实施例中储物箱的立体结构示意图。

图 2 为本实用新型第一实施例中储物箱的另一立体结构示意图。

图 3 为本实用新型第一实施例中储物箱的局部结构示意图。

图 4 为图 3 的另一视角的结构示意图

图 5 为本实用新型第一实施例中储物箱的局部爆炸结构示意图。

图 6 为本实用新型第一实施例中储物箱的另一局部结构示意图。

图 7 为两个储物箱处于锁定状态时的局部结构示意图。

图 8 是图 7 的另一视角的剖面图。

图 9 为两个储物箱处于保持解锁状态时的局部结构示意图。

图 10 是图 9 的另一视角的剖面图。

图 11 为本实用新型第二实施例中储物箱的局部结构示意图。

图 12 为本实用新型第二实施例中储物箱的局部爆炸结构示意图。

具体实施方式

下面结合附图和实施例，对本实用新型的具体实施方式作进一步详细描述。以下实施例用于说明本实用新型，但不用来限制本实用新型的范围。

本实用新型的说明书和权利要求书中的术语“第一”、“第二”、“第三”、“第四”等（如果存在）是用于区别类似的对象，而不必用于描述特定的顺序或先后次序。

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本实用新型提供了一种模块的连接结构、具有该连接结构的储物箱及储物箱组件。该连接结构可设置在储物箱上，相邻两个储物箱之间可通过该连接结构进行配合锁定，从而便于多个储物箱的运输。该储物箱可以是工具箱、工具篮、运输箱、中转箱等储物装置。

第一实施例

如图 1 至图 6 所示，本实施例提供了一种模块的连接结构，该连接结构

可设置在储物箱上。该连接结构包括第一连接部1、第二连接部2及止动部3，第一连接部1与第二连接部2可相互配合自动锁定；止动部3可使第一连接部1与第二连接部2在解锁后无法自动锁定，从而使第一连接部1与第二连接部2保持在解锁状态，便于第一连接部1与第二连接部2相互解锁并分离，解放用户双手、便于用户使用。

本实施例中，储物箱包括箱盖101和箱体102，箱盖101设置在箱体102上。箱盖101可相对箱体102打开或盖合。第一连接部1设置在储物箱的箱盖101上，第一连接部1包括安装部11、可相对于安装部11水平移动的锁定部12及位于安装部11与锁定部12之间的第一弹性件13，锁定部12可在第一弹性件13的作用下自动保持在锁定状态。

进一步地，安装部11与箱盖101可拆卸地连接。箱盖101上设有安装槽111，安装部11卡接在安装槽111内，从而便于安装部11的更换。在其它实施例中，安装部1与箱盖101可一体成型，或通过其它方式固定或可拆卸连接。安装部11远离箱盖101的一侧面上设有滑槽11a，锁定部12设置在滑槽11a内并可在滑槽11a内相对于安装部11移动。本实施例中，锁定部12为相对于安装部11水平移动的滑动锁扣，从而使锁定部12在滑槽11a内水平移动。在其它实施例中，锁定部12也可为相对于安装部11翻转移动的翻转锁扣，或为相对于安装部11旋转移动的旋转锁扣。

具体地，锁定部12上设有锁定扣122，锁定扣122的凸出方向朝向储物箱中心一侧。当锁定扣122卡入第二连接部2时，第一连接部1与第二连接部2可相互锁定，当锁定扣122从第二连接部2脱离时，第一连接部1与第二连接部2可相互解锁。同时，为了便于锁定扣122与第二连接部2之间的锁定，锁定扣122上设有斜面122a。锁定部12远离箱盖101的一侧面上设有容纳槽123，容纳槽123位于锁定扣122靠近箱盖101的一侧。容纳槽123具有底壁123a和两个侧壁123b，两个侧壁123b沿底壁123a的两侧向上延伸且相对设置，止动部3设置在容纳槽123中。

进一步地，第一弹性件13连接在安装部11与锁定部12之间，第一弹性件13的一端与安装部11抵靠，另一端与锁定部12抵靠，从而使锁定部12在第一弹性件13的作用下自动保持在锁定状态。为了提高锁定部12移动的可靠性，第一弹性件13可以设置两个，分别位于滑槽11a的两侧。第一弹性件13为伸缩弹簧，从而使锁定部12作水平移动。

进一步地，如图2和图6所示，第二连接部2设置在储物箱的箱体102的底部，其包括与锁定部12的锁定扣122相互锁定的配合部21，下压一储物箱的锁定部12可使其与另一储物箱的配合部21在第一弹性件13的作用下自动锁定。配合部21为若干卡槽211，卡槽211的数量可与锁定扣122的数量对应设置。

止动部3设置在锁定部12上，且其一端与锁定部12转动连接。止动部3包括锁舌36和第二弹性件33，锁舌36的一端转动连接于锁定部12上，第二弹性件33使锁舌36自动保持在弹出状态，当锁舌36弹出并抵持在配合部21上时，锁定部12无法自动锁定，第一连接部1与第二连接部2处于保持解锁状态。下压止动部3使其缩回至锁定部12内时，锁定部12可自动锁定。当第一连接部1与第二连接部2处于锁定状态时，锁定扣122与配合部21干涉，止动部3缩回至锁定部12内；当第一连接部1与第二连接部2处于保持解锁状态时，锁定扣122不与配合部22干涉，止动部3与配合部21在锁定部12的锁定路径上卡持。

在本实施例中，锁舌36伸缩地设置在锁定部12的容纳槽123内，且还可随锁定部12相对于安装部11水平移动，锁舌36的长度延伸方向与锁定部12的移动方向一致。第二弹性件33的一端抵靠在锁舌36上、另一端抵靠在底壁123a上，当第二弹性件33弹出时，锁舌36伸出容纳槽123，当第二弹性件33压缩时，锁舌36缩回至所述容纳槽123内。具体地，锁舌36上设有向上突起的挡块361，当第一连接部1与第二连接部处于保持解锁状态时，挡块361伸出容纳槽123与配合部21抵持，挡块361用于与配合部21抵持。

锁舌 36 具有相对的第一端部 36a 和第二端部 36b，第二端部 36b 相较第一端部 36a 更靠近储物箱的中心位置，挡块 361 设置在第一端部 36a 和第二端部 36b 的连接处。

进一步地，如图 5 所示，止动部 3 还包括旋转轴 37，旋转轴 37 的两端固定在两个侧壁 123b 上；第二弹性件 33 为扭簧，锁舌 36 的第一端部 36a 设有轴孔（图未标注），锁舌 36 的第一端部 36a 和第二弹性件 33 套设在旋转轴 37 上，第二弹性件 33 的两个扭转臂分别抵靠在锁舌 36 和底壁 123a 上。进一步地，第一端部 36a 具有受力面，挡块 361 具有抵持面，第二端部 36b 具有定位面，定位面与抵持面大致呈直角相交。定位面与抵持面配合抵靠在配合部 21 的侧面和底面上以限制锁舌 36 的位置进而限制锁定部 12 的位置。受力面用于接受配合部 21 的挤压或供使用者手动按压。当第一连接部 1 与第二连接部 2 处于保持解锁状态时，第二弹性件 33 伸展，挡块 361 向上伸出容纳槽 123；当第一连接部 1 与第二连接部 2 处于锁定状态时，第二弹性件 33 压缩，挡块 361 受到配合部 21 的底面的挤压压缩在容纳槽 123 内。

此外，为了便于第一连接部 1 与第二连接部 2 互锁时的定位，可在箱盖 101 上设置定位凹槽 41，在箱体 102 的底部设置凸起部 42，定位凹槽 41 可恰好容纳凸起部 42，第一连接部 1 可设置在箱盖 101 的边缘两侧。

本实施例的工作原理为：

如图 7 和图 8 所示，当需要上下锁定两个储物箱时，下压上方储物箱使其第二连接部 2 的配合部 21 与下方储物箱上的锁定扣 122 相接触并挤压斜面 122a，下方储物箱的锁定扣 122 受到挤压驱使第一连接部 1 的锁定部 12 朝向解锁方向（即远离储物箱中心）移动，此时第一弹性件 13 压缩蓄力，止动部 3 同时接受第二连接部 2 的挤压后向下旋转缩回至容纳槽 123 内。当上方储物箱下移一定距离后，锁定部 12 上的锁定扣 122 与配合部 21 上的卡槽 211 相对应时，锁定扣 122 失去上方储物箱的抵持，锁定扣 122 在第一弹性件 13 的驱动下自动卡入卡槽 211 内，从而使第一连接部 1 与第二连接部 2 处于锁

定状态，即实现上下储物箱的自动锁定功能；此时，止动部 3 完全缩回至容纳槽 123 内。

如图 9 和图 10 所示，当需要上下解锁两个储物箱时，向外拉动下方储物箱的锁定部 12 使其朝向解锁方向移动，当锁定部 12 向解锁方向移动一定距离至解锁位置后，下方储物箱的锁定扣 122 与上方储物箱的配合部 21 上的卡槽 211 脱离卡合，从而使锁定部 12 与配合部 21 解锁。同时，止动部 3 失去上方储物箱的第二连接部 2 的挤压，锁舌 36 在第二弹性件 33 的作用下自动向上伸出容纳槽 123 与配合部 21 的侧面相抵持，从而使第一连接部 1 与第二连接部 2 处于保持解锁状态，即实现保持解锁功能。此时，只需向上拉起上方储物箱，便可方便地将上下两个储物箱解锁并分离，而锁定部 12 在第一弹性件 13 的驱动下自动复位处在锁定状态，为下一次锁定做好准备。

再有，如果拉开锁定部 12 后，又反悔，不想解锁上下储物箱，此时可以按下锁舌 36，让锁定部 12 重新回到锁定位置，使第一连接部 1 与第二连接部 2 返回锁定状态。

本实施例提供的储物箱的连接结构的优点包括：

1、利用第一连接部 1 与第二连接部 2 配合锁定。当上方储物箱放置到位的同时自动实现两箱互相锁定的功能，不需要用户在放好箱体 102 后因需锁定箱体 102 时再特意去分别操作两侧的锁定部 12，只需在打开时拉开两侧锁定部 12 即可。

2、利用可转动的锁舌 36 使第一连接部 1 与第二连接部 2 处于保持解锁状态，锁舌 36 的运动确定性强，使用顺畅，极大的改善了用户使用的便利性。

第二实施例

如图 11 至图 12 所示，本实施例与第一实施例的不同点在于：转动轴 37 直接做到了锁舌 36 上，其与锁舌 36 一体成型，第二弹性件 33 为伸缩弹簧。

具体地，锁舌 36 具有相对的第一端部 36a 和第二端部 36b，第二端部 36b

相较第一端部 36a 更靠近储物箱的中心位置。锁舌 36 的第二端部 36b 的两侧设有凸轴 362，两个凸轴 362 分别插设在两个侧壁 123b 的滑轨 123c 内，从而使凸轴 362 在滑轨 123c 内来回移动，为锁舌 36 提供导向作用。进一步地，锁舌 36 上还设有第一凸柱 363，底壁 123a 上设有第二凸柱 1231，第二弹性件 33 的两端分别套设的第一凸柱 363 和第二凸柱 1231 上。

本实施例的其它结构、工作原理及所能达到的有益效果第一实施例相同，在此不再赘述。

以上所述，仅为本实用新型的具体实施方式，但本实用新型的保护范围并不局限于此，任何熟悉本技术领域的技术人员在本实用新型揭露的技术范围内，可轻易想到变化或替换，都应涵盖在本实用新型的保护范围之内。因此，本实用新型的保护范围应以所述权利要求的保护范围为准。

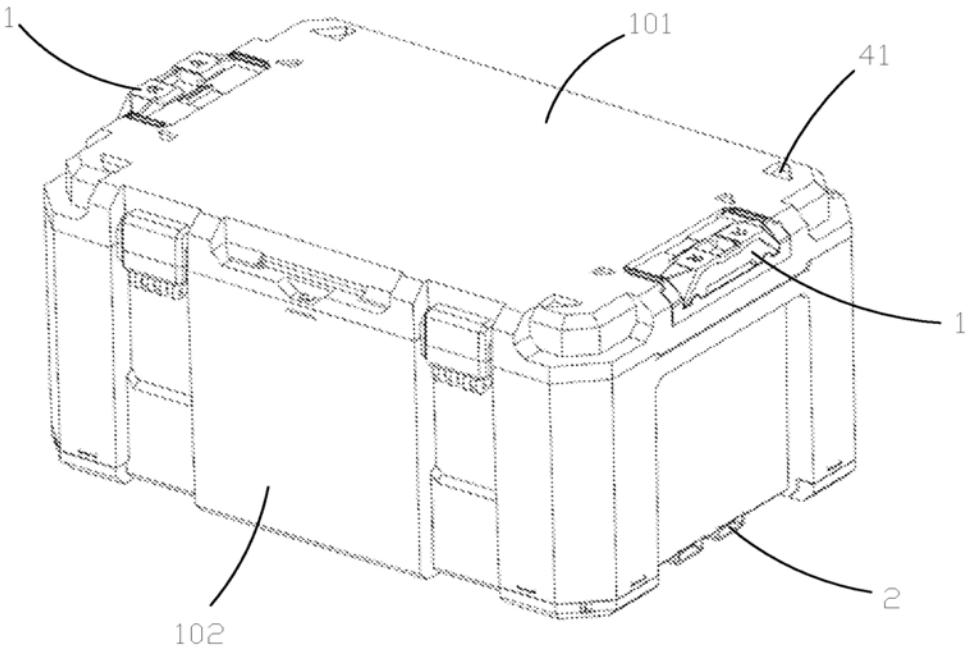

图 1

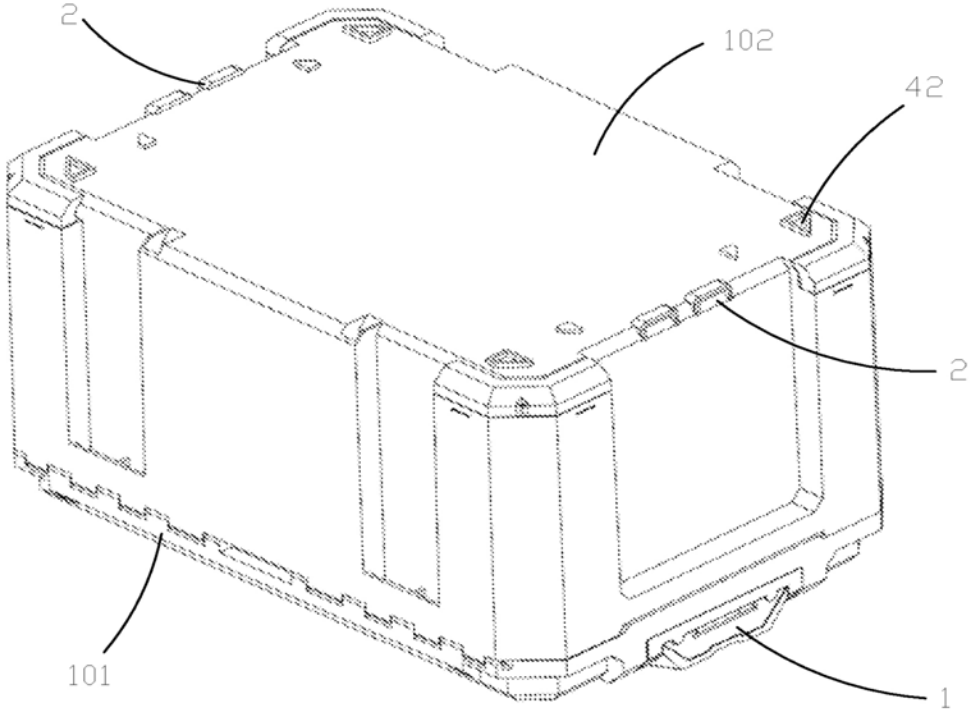

图 2

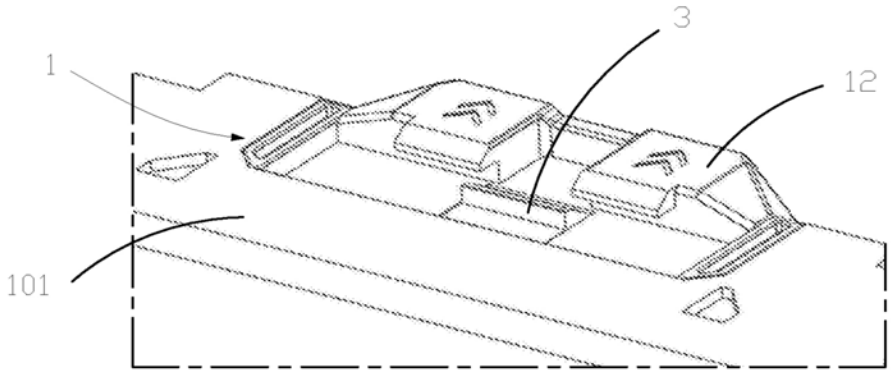

图 3

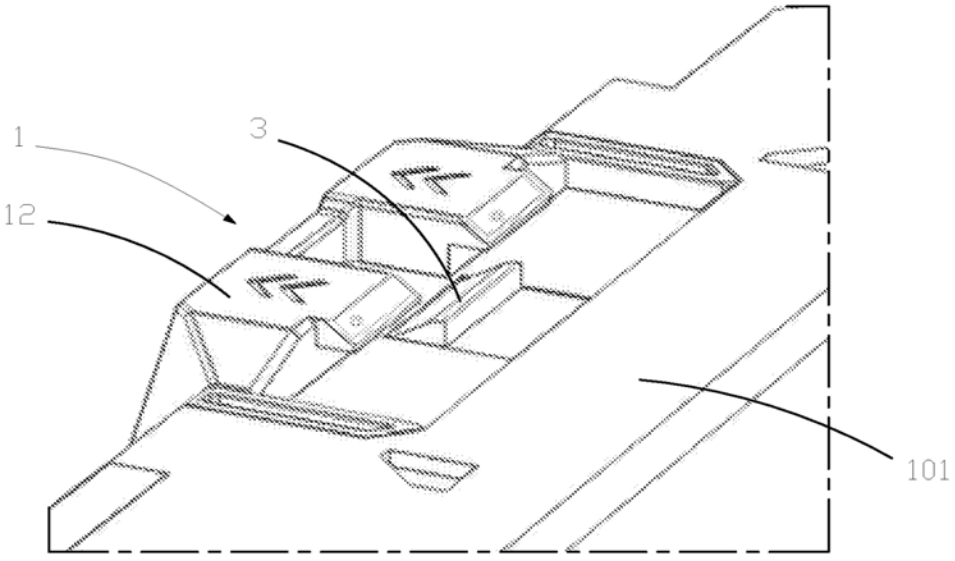

图 4

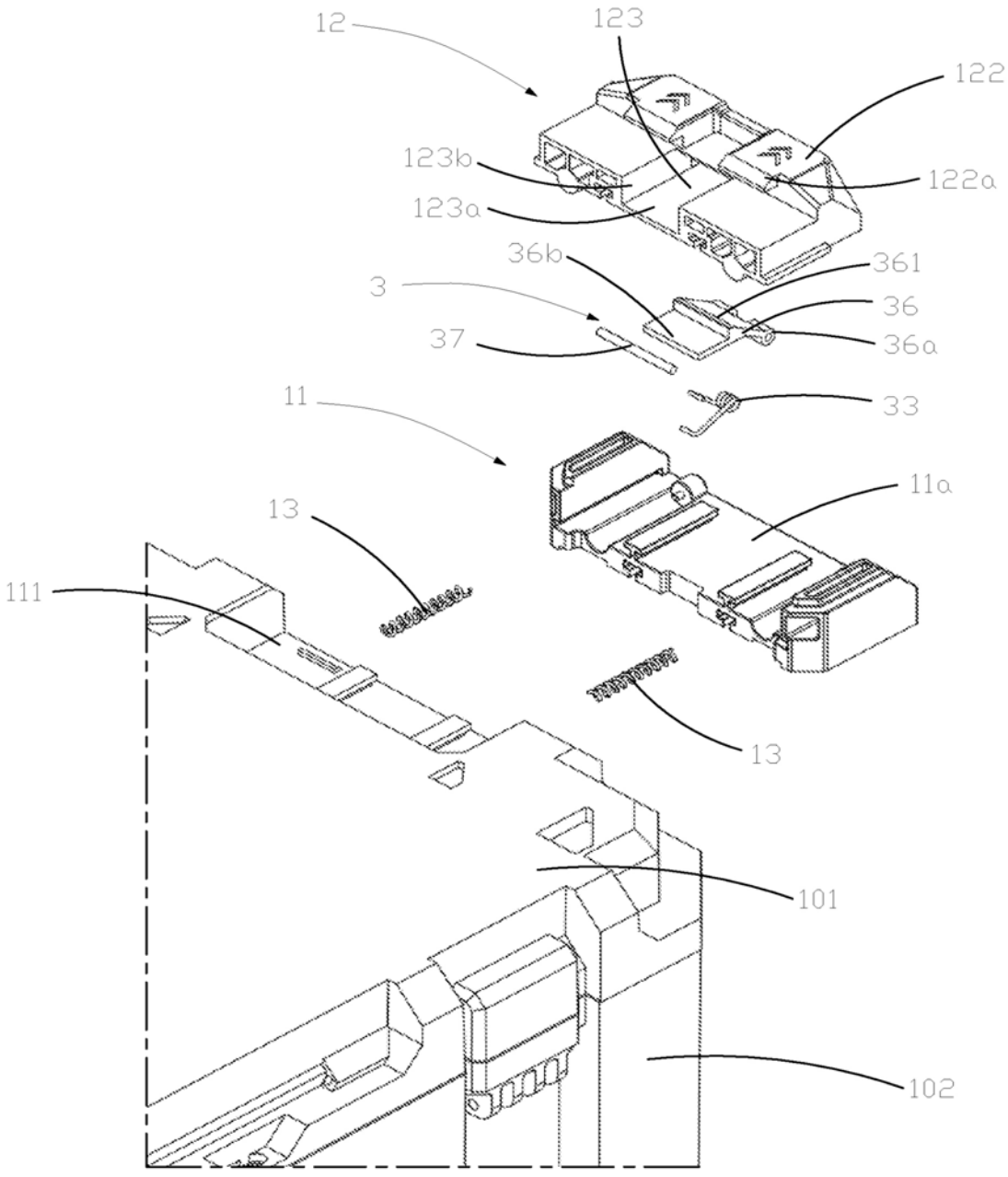
12
123
122
123b
122a
123a
36b
361
3
36
37
36a
11
33
11a
13
111
13
101
102

图 5

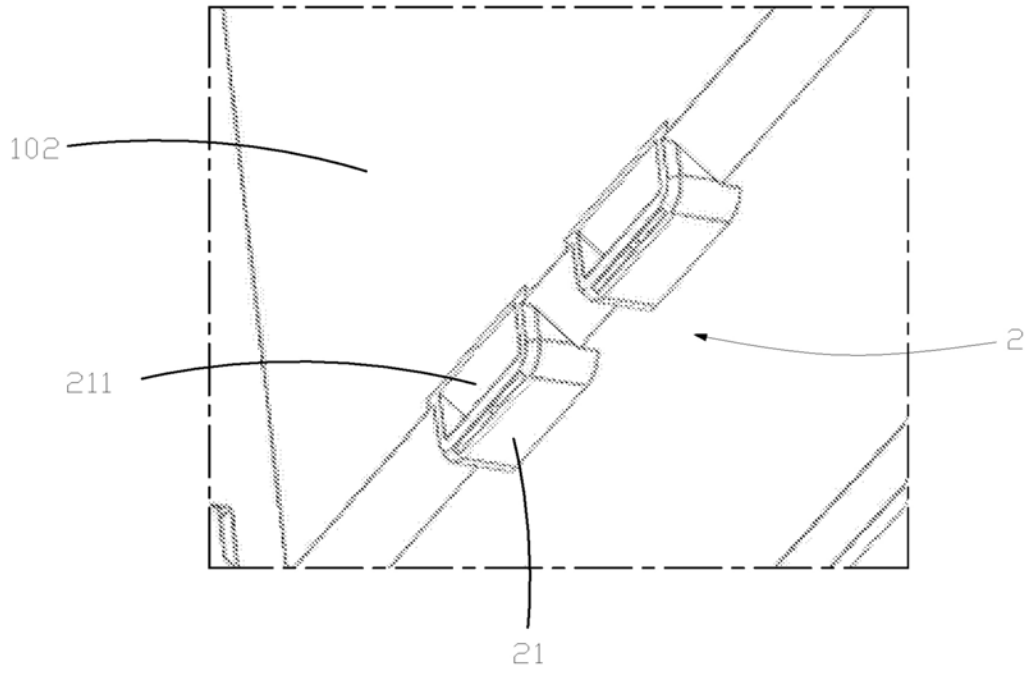

图 6

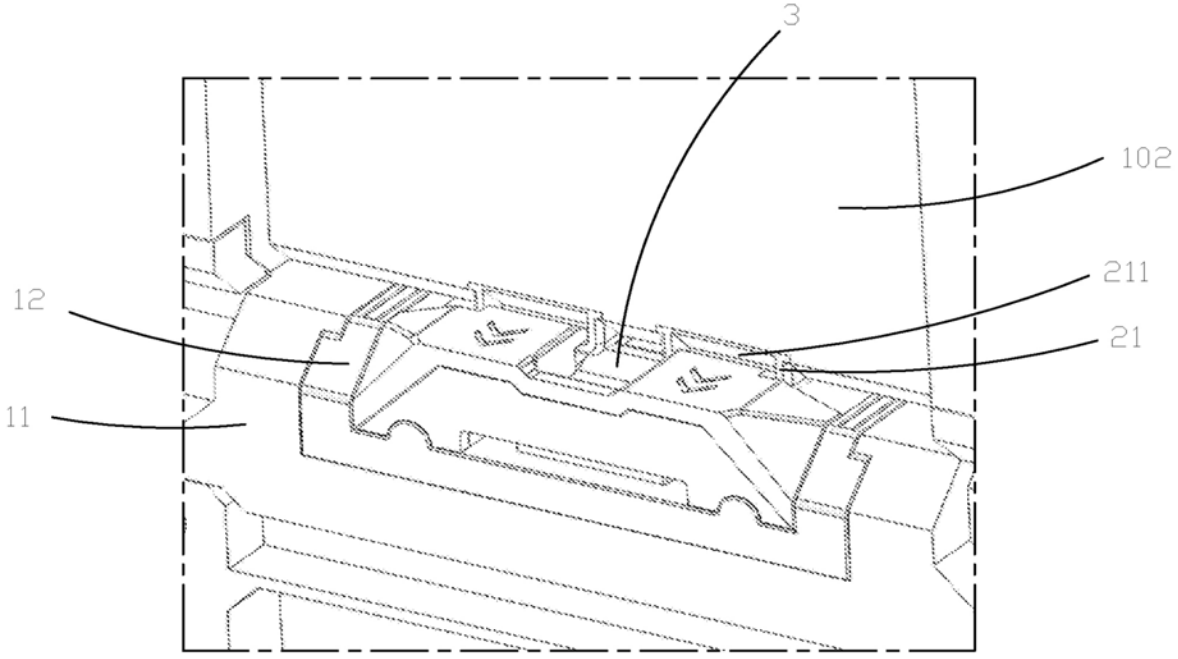

图 7

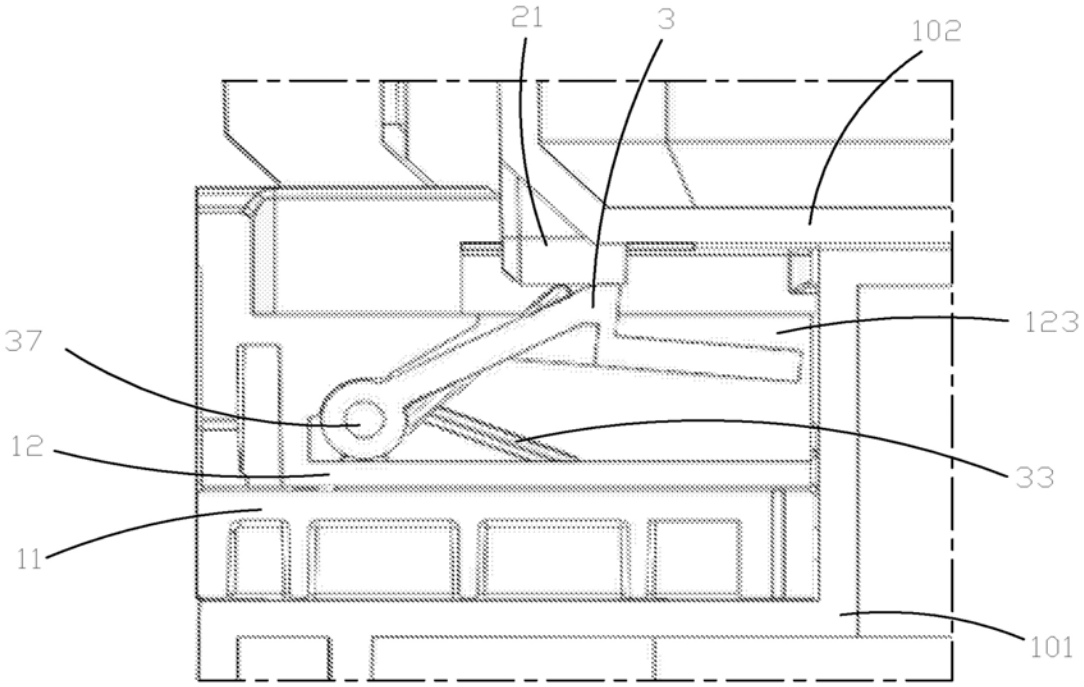

图 8

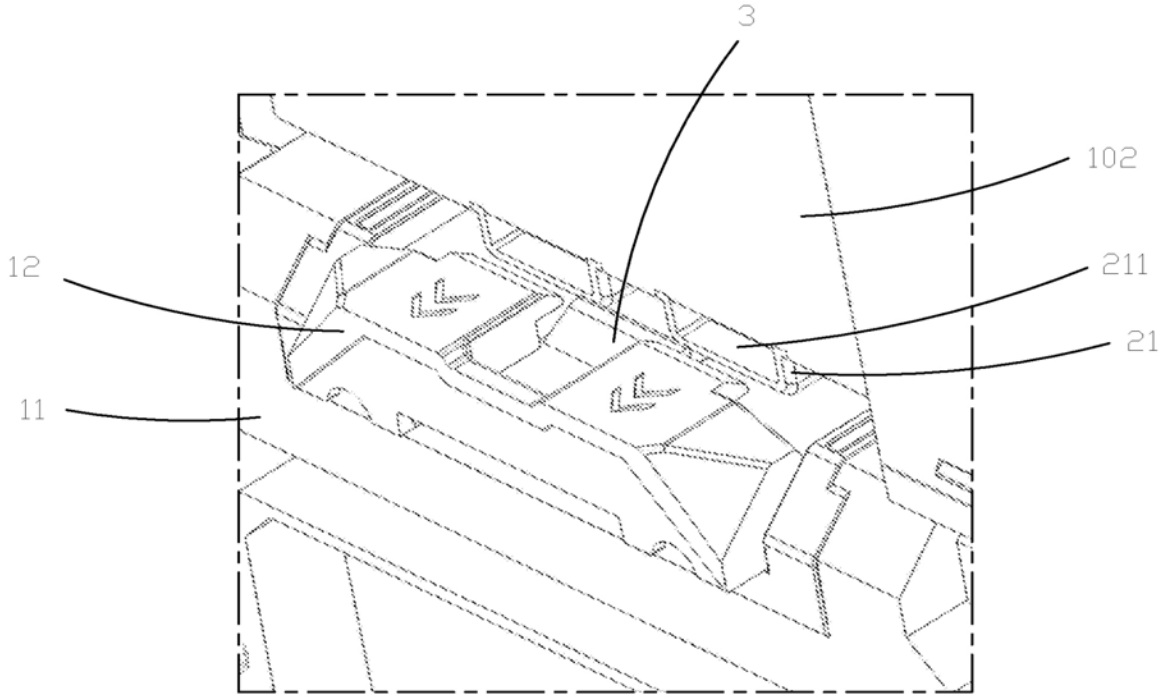

图 9

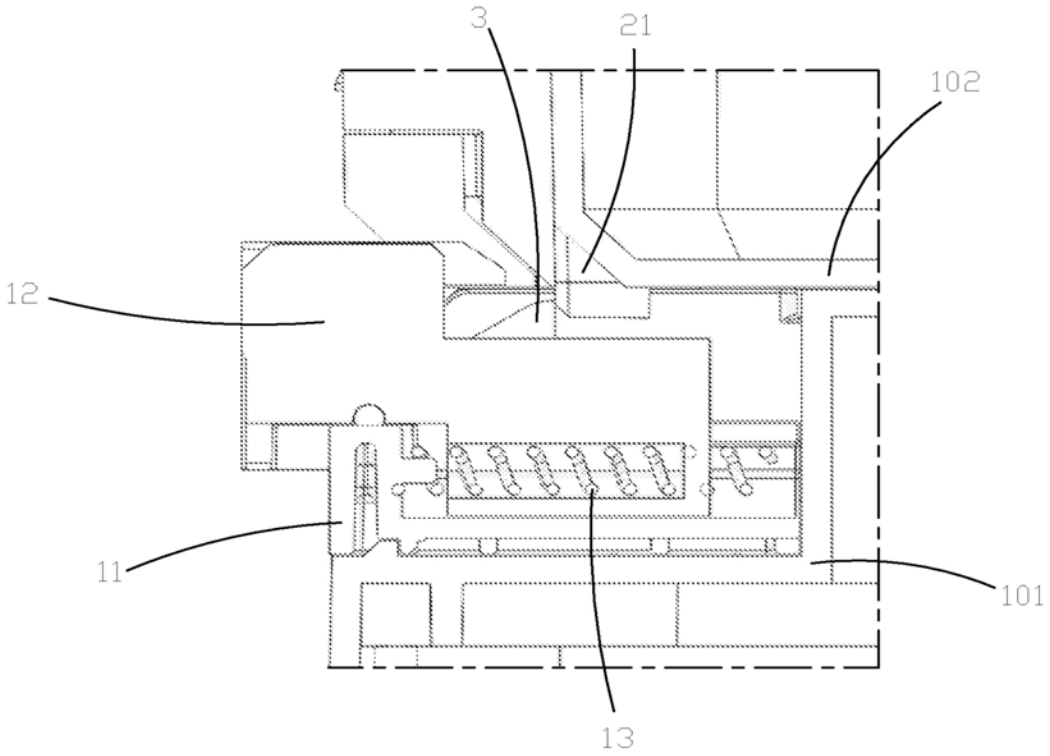

图 10

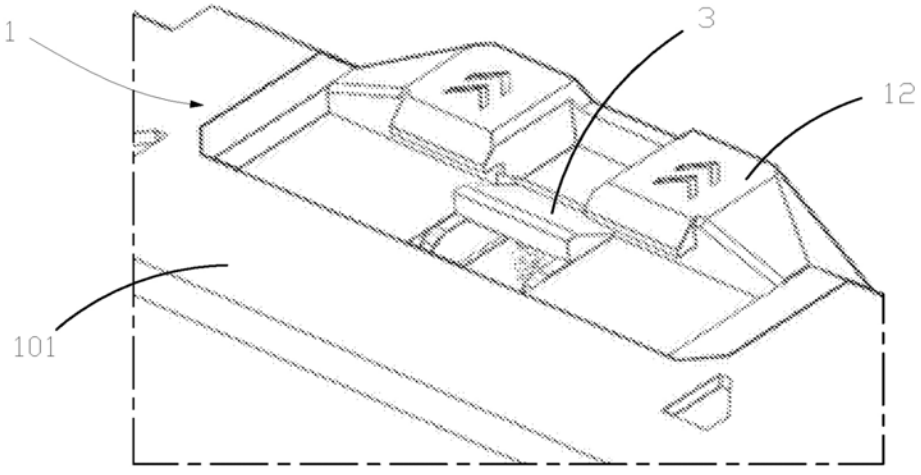

图 11

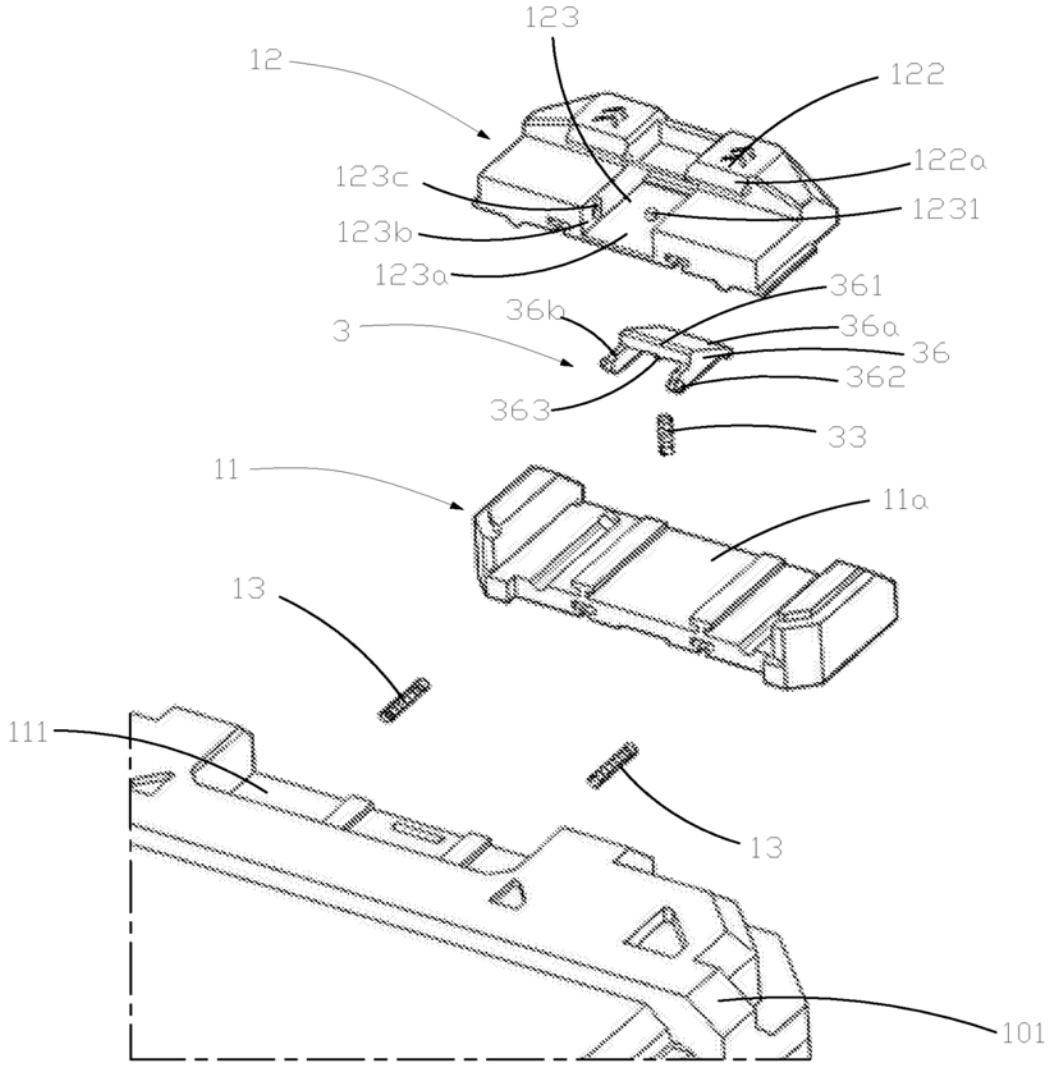
123
12
122
122a
123c
1231
123b
123a
361
36b
36a
3
36
362
363
33
11
11a
13
111
13
101

图 12

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证　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：202210212862.5

申　请　类　型：发明专利

发明 创造 名称：模块的连接结构、储物箱及储物箱组件

申　　请　　日：2022年03月04日

申　　请　　人：上海美瑞实业有限公司

发明人或设计人：张红泉、蔡书军

局长

申长雨

2023 年 02 月 16 日

2022102128625

权 利 要 求 书

1、一种模块的连接结构，其特征在于，包括位于所述模块一表面上的第一连接部、位于所述模块另一表面上的第二连接部及止动部；

所述第一连接部包括安装部、可相对于所述安装部移动的锁定部及位于所述安装部与所述锁定部之间的第一弹性件，所述第一弹性件使所述锁定部自动保持在锁定状态；

所述第二连接部包括与锁定部可相互锁定的配合部，下压一所述模块的锁定部可使其与另一模块的配合部在第一弹性件的作用下自动锁定；

当所述止动部位于锁定部的锁定路径上时，所述锁定部无法自动锁定，所述第一连接部与所述第二连接部处于保持解锁状态。

2、根据权利要求 1 所述的模块的连接结构，其特征在于，所述止动部可伸缩，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部伸展；当所述第一连接部与所述第二连接部处于锁定状态时，所述止动部压缩。

3、根据权利要求 2 所述的模块的连接结构，其特征在于，所述止动部设置在所述锁定部上且可随所述锁定部移动；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述第二连接部在锁定部的锁定路径上卡持。

4、根据权利要求 3 所述的模块的连接结构，其特征在于，所述止动部包括开设在锁定部上的容纳槽、可容纳在所述容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件伸展时，所述卡块伸展出容纳槽，当所述第二弹性件压缩时，所述卡块压缩在容纳槽内。

5、根据权利要求 2 所述的模块的连接结构，其特征在于，所述止动部设置在第二连接部上且相对于所述锁定部保持静止；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述锁定部在锁定部的锁定路径上卡持。

6、根据权利要求 5 所述的模块的连接结构，其特征在于，所述锁定部包括锁定扣和止位扣，所述锁定扣与配合部对应设置，所述止位扣与止动部对应设置。

7、根据权利要求 6 所述的模块的连接结构，其特征在于，所述止位扣在锁定方向上的延伸长度大于锁定扣在锁定方向上的延伸长度。

8、根据权利要求 6 所述的模块的连接结构，其特征在于，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述止位扣在锁定部的锁定路径上卡持；当所述第一连接部与所述第二连接部处于锁定状态时，所述锁定扣与配合部相互锁定，且所述止位扣在非锁定路径上与止动部抵持。

9、根据权利要求 8 所述的模块的连接结构，其特征在于，所述止动部包括开设在配合部上的容纳槽、可容纳在容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件压缩时，所述卡块与所述止位扣在非锁定路径上抵持，当所述第二弹性件伸展时，所述卡块与所述止位扣在锁定部的锁定路径上卡持。

10、根据权利要求 4 或 9 所述的模块的连接结构，其特征在于，所述止动部还包括固定槽及与卡块连接的固定块，当所述固定块位于所述固定槽内时，所述第二弹性件压缩，且所述止动部不位于锁定部的锁定路径上。

11、根据权利要求 1 所述的模块的连接结构，其特征在于，所述锁定部为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

12、一种储物箱，其特征在于，所述储物箱上设置有如权利要求 1~11 任一项所述的模块的连接结构，所述第一连接部设置于所述储物箱的箱盖上，所述第二连接部设置于所述储物箱箱体的底部。

13、一种储物箱组件，其特征在于，包括多个如权利要求 12 所述的储物箱，相邻两个所述储物箱之间可通过第一连接件与第二连接件相互锁定。

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说 明 书

模块的连接结构、储物箱及储物箱组件

技术领域

本发明涉及物品存储技术领域，尤其是涉及一种模块的连接结构、储物箱及储物箱组件。

背景技术

常规储物箱的各个箱体之间都是单独放置的，即使能一个一个堆放上去也只能保证放平即可。但对于需要买多个箱子的家庭及专业用户来讲，如果未设置两个箱体之间的互锁功能，那么多个箱体放置几层后很容易会翻倒，从而带来安全隐患。尤其是在需要同时移动多个箱体的时候，由于在拖行过程中整体重心改变及路面不平整产生震动，更加容易导致上方的箱体翻倒。

要避免以上问题，目前常规的解决方法是：额外增加一些如绳索等配件来协助固定多个箱体，以此来解决此问题。但是，采用此解决方法不仅增加了额外的成本，而且储物箱必须先解开绳索才能取出里面的物品，这给实际的使用带来诸多不便。

有鉴于此，确有必要提供一种模块的连接结构、储物箱及储物箱组件，以此来解决此问题。

发明内容

本发明的目的是提供一种储物箱的连接结构，旨在解决上述背景技术存在的不足，能够实现自动锁定、保持解锁及自动复位功能，从而方便用户操作使用。

本发明提供了一种模块的连接结构，包括位于所述模块一表面上的第一连接部、位于所述模块另一表面上的第二连接部及止动部；

所述第一连接部包括安装部、可相对于所述安装部移动的锁定部及位于

所述安装部与所述锁定部之间的第一弹性件，所述第一弹性件使所述锁定部自动保持在锁定状态；

所述第二连接部包括与锁定部可相互锁定的配合部，下压一所述模块的锁定部可使其与另一模块的配合部在第一弹性件的作用下自动锁定；

当所述止动部位于锁定部的锁定路径上时，所述锁定部无法自动锁定，所述第一连接部与所述第二连接部处于保持解锁状态。

进一步地，所述止动部可伸缩，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部伸展；当所述第一连接部与所述第二连接部处于锁定状态时，所述止动部压缩。

进一步地，所述止动部设置在所述锁定部上且可随所述锁定部移动；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述第二连接部在锁定部的锁定路径上卡持。

进一步地，所述止动部包括开设在锁定部上的容纳槽、可容纳在所述容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件伸展时，所述卡块伸展出容纳槽，当所述第二弹性件压缩时，所述卡块压缩在容纳槽内。

进一步地，所述止动部设置在第二连接部上且相对于所述锁定部保持静止；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述锁定部在锁定部的锁定路径上卡持。

进一步地，所述锁定部包括锁定扣和止位扣，所述锁定扣与配合部对应设置，所述止位扣与止动部对应设置。

进一步地，所述止位扣在锁定方向上的延伸长度大于锁定扣在锁定方向上的延伸长度。

进一步地，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述止位扣在锁定部的锁定路径上卡持；当所述第一连接部与所述第二连接部处于锁定状态时，所述锁定扣与配合部相互锁定，且所述止

位扣在非锁定路径上与止动部抵持。

进一步地，所述止动部包括开设在配合部上的容纳槽、可容纳在容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件压缩时，所述卡块与所述止位扣在非锁定路径上抵持，当所述第二弹性件伸展时，所述卡块与所述止位扣在锁定部的锁定路径上卡持。

进一步地，所述止动部还包括固定槽及与卡块连接的固定块，当所述固定块位于所述固定槽内时，所述第二弹性件压缩，且所述止动部不位于锁定部的锁定路径上。

进一步地，所述锁定部为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

本发明还提供了一种储物箱，所述储物箱上设置有如上任一项所述的模块的连接结构，所述第一连接部设置于所述储物箱的箱盖上，所述第二连接部设置于所述储物箱箱体的底部。

本发明还提供了一种储物箱组件，包括多个如上所述的储物箱，相邻两个所述储物箱之间可通过第一连接件与第二连接件相互锁定。

本发明提供的储物箱的连接结构，由于锁定部能够相对于安装部移动，且第一弹性件能够驱动锁定部自动保持在锁定状态，当两个储物箱在锁定时，其中一储物箱的锁定部能够与另一储物箱的配合部在第一弹性件的作用下自动锁定，从而实现第一连接部和第二连接部的自动锁定功能；同时，通过设置止动部，利用止动部可在锁定部的锁定路径上卡持，使第一连接部和第二连接部处于保持解锁状态，从而无需用手刻意将锁定部保持在解锁状态，解放用户双手；且当该两个储物箱在解锁并相互脱离后，锁定部能够在第一弹性件的驱动下自动复位，为下一次锁定做好准备，简化了锁定时的操作步骤，方便用户使用。

附图说明

图 1 为本发明第一实施例中储物箱的立体结构示意图。

图 2 为图 1 的剖视图。

图 3 为本发明第一实施例中储物箱的另一立体结构示意图。

图 4 为图 3 的局部爆炸结构示意图。

图 5 为图 4 中一储物箱的立体图。

图 6 为图 4 中一储物箱的另一立体图。

图 7 为图 6 中部分结构的爆炸示意图。

图 8 为本发明第二实施例中储物箱的立体结构示意图。

图 9 为图 8 的局部爆炸结构示意图。

图 10 为图 8 中止动部与锁定部配合关系的结构示意图。

图 11 为图 10 中第一连接部的结构示意图。

图 12 为图 11 的爆炸结构示意图。

图 13 为图 10 中止动部的结构示意图。

图 14 为图 13 的爆炸结构示意图。

具体实施方式

下面结合附图和实施例，对本发明的具体实施方式作进一步详细描述。以下实施例用于说明本发明，但不用来限制本发明的范围。

本发明的说明书和权利要求书中的术语“第一”、“第二”、“第三”、“第四”等（如果存在）是用于区别类似的对象，而不必用于描述特定的顺序或先后次序。

本发明的说明书和权利要求书中所涉及的上、下、左、右、前、后、顶、底等（如果存在）方位词是以附图中的结构位于图中的位置以及结构相互之间的位置来定义的，只是为了表达技术方案的清楚及方便。应当理解，方位词的使用不应限制本申请请求保护的范围。

本发明提供了一种模块的连接结构、具有该连接结构的储物箱及储物箱

组件。该连接结构可设置在储物箱上，相邻两个储物箱之间可通过该连接结构进行配合锁定，从而便于多个储物箱的运输。该储物箱可以是工具箱、工具篮、运输箱、中转箱等储物装置。

第一实施例

如图 1 至图 7 所示，本实施例提供了一种模块的连接结构，该连接结构可设置在储物箱上。该连接结构包括第一连接部 1、第二连接部 2 及止动部 3，第一连接部 1 与第二连接部 2 可相互配合自动锁定；止动部 3 可使第一连接部 1 与第二连接部 2 在解锁后无法自动锁定，从而使第一连接部 1 与第二连接部 2 保持在解锁状态，便于第一连接部 1 与第二连接部 2 相互解锁并分离，解放用户双手、便于用户使用。

进一步地，如图 6 及图 7 所示，在本实施例中，第一连接部 1 设置在储物箱的箱盖上，其包括安装部 11、可相对于安装部 11 移动的锁定部 12 及位于安装部 11 与锁定部 12 之间的第一弹性件 13，锁定部 12 可在第一弹性件 13 的作用下自动保持在锁定状态。此外，为了便于第一连接部 1 与第二连接部 2 互锁时的定位，可在箱盖上设置定位槽 41，定位槽 41 可恰好容纳箱体底部，第一连接部 1 可设置在定位槽 41 的边缘。在其它实施例中，定位槽 41 可与箱体底部上设置的凸起部进行上下储物箱堆叠时的定位。

进一步地，如图 7 所示，在本实施例中，安装部 11 与箱盖固定连接。安装部 11 包括开设在箱盖上的安装槽 111 及位于安装槽 111 内的安装本体 112，安装本体 112 可用螺栓固定在安装槽 111 内。在其它实施例中，安装本体 112 也可与安装槽 111 一体成型，或通过卡接等方式固定连接。

进一步地，如图 7 所示，在本实施例中，锁定部 12 可容纳在安装本体 112 内，其可相对于安装本体 112 移动。锁定部 12 为相对于安装部 11 水平移动的滑动锁扣，从而使锁定部 12 在安装槽 111 内水平移动。在其它实施例中，锁定部 12 也可为相对于安装部 11 翻转移动的翻转锁扣，或为相对于安装部 11 旋转移动的旋转锁扣。锁定部 12 包括可容纳在安装本体 112 内的锁定本体

121 及位于锁定本体 121 靠近储物箱中心一侧的锁定扣 122；当锁定扣 122 伸出安装部 11（即锁定扣 122 伸入定位槽 41 内）时，第一连接部 1 与第二连接部 2 可相互锁定，当锁定扣 122 未伸出安装部 11（即锁定扣 122 未伸入定位槽 41 内）时，第一连接部 1 与第二连接部 2 可相互解锁。同时，为了便于锁定扣 122 与第二连接部 2 之间的锁定，锁定扣 122 上设有斜面 122a。

进一步地，如图 7 所示，在本实施例中，第一弹性件 13 位于锁定本体 121 与安装本体 112 之间，从而使锁定部 12 在第一弹性件 13 的作用下自动保持在锁定状态。同时，为了提高锁定部 12 移动的可靠性，第一弹性件 13 可以设置两个，分别位于锁定本体 121 的两端。第一弹性件 13 为压缩弹簧，从而使锁定部 12 作水平移动；在其它实施例中，第一弹性件 13 也可为扭力弹簧，从而使锁定部 12 作翻转移动。

进一步地，如图 5 所示，在本实施例中，第二连接部 2 设置在储物箱的箱体底部，其包括与锁定部 12 可相互锁定的配合部 21 及可与止动部 3 相互卡持的凹陷部 22，下压一储物箱的锁定部 12 可使其与另一储物箱的配合部 21 在第一弹性件 13 的作用下自动锁定。此外，为了便于配合部 21 与锁定扣 122 的相互锁定，可在箱体底部上设置凸起部 42（此处的凸起部 42 为箱体底部），凸起部 42 可恰好容纳在定位槽 41 内。当第一连接部 1 与第二连接部 2 处于锁定状态时，锁定扣 122 与配合部 21 干涉；当第一连接部 1 与第二连接部 2 处于保持解锁状态时，锁定扣 122 不与配合部 21 干涉，止动部 3 与凹陷部 22 卡持。在其它实施例中，当第一连接部 1 与第二连接部 2 处于保持解锁状态时，止动部 3 可直接与配合部 21 卡持。此外，配合部 21 为若干卡槽 211，卡槽 211 的数量可与锁定扣 122 的数量对应设置。

进一步地，如图 6 及图 7 所示，在本实施例中，止动部 3 设置在锁定部 12 上，其可随锁定部 12 水平移动，当锁定部 12 处于解锁状态时，止动部 3 可在锁定部 12 的锁定路径上与第二连接部 2 卡持，锁定部 12 无法自动锁定，使第一连接部 1 与第二连接部 2 处于保持解锁状态。止动部 3 包括开设在锁

定部 12 上的容纳槽 31、可容纳在容纳槽 31 内的卡块 32 及位于容纳槽 31 与卡块 32 之间的第二弹性件 33，卡块 32 可在第二弹性件 33 的作用下相对于容纳槽 31 伸缩。具体地，如图 3 所示，当第一连接部 1 与第二连接部 2 处于保持解锁状态时，第二弹性件 33 伸展，卡块 32 伸展出容纳槽 31；如图 1 及图 2 所示，当第一连接部 1 与第二连接部 2 处于锁定状态时，第二弹性件 33 压缩，卡块 32 受到第二连接部 2 的挤压压缩在容纳槽 31 内。

本实施例的工作原理为：

当需要上下锁定两个储物箱时，下压上方储物箱使其与下方储物箱上的锁定扣 122 相接触，下方储物箱的锁定扣 122 受到挤压驱使锁定部 12 朝向解锁方向（即远离储物箱中心）移动，此时第一弹性件 13 压缩蓄力。当上方储物箱下移一定距离后，锁定部 12 上的锁定扣 122 与配合部 21 上的卡槽 211 相对应，锁定扣 122 失去上方储物箱的抵持作用，锁定扣 122 在第一弹性件 13 的驱动下自动卡入卡槽 211 内，从而使第一连接部 1 与第二连接部 2 处于锁定状态，即实现上下储物箱的自动锁定功能。此时，止动部 3 受到第二连接 2 的挤压压缩在容纳槽 31 内。

当需要上下解锁两个储物箱时，向外拉动下方储物箱的锁定部 12 使其朝向解锁方向移动，当锁定部 12 向解锁方向移动一定距离后，下方储物箱的锁定扣 122 与上方储物箱的卡槽 211 脱离卡合，从而使锁定部 12 与配合部 21 解锁。同时，继续向解锁方向拉动锁定部 12，直至止动部 3 失去上方储物箱的挤压，卡块 31 在第二弹性件 32 的作用下自动向上伸出容纳槽 31 并与凹陷部 22 卡持，从而使第一连接部 1 与第二连接部 2 处于保持解锁状态，即实现保持解锁功能。此时，只需向上拉起上方储物箱，便可方便地将上下两个储物箱解锁并分离。同时，此时若用户想重新锁定，只需向下按动卡块 31 使卡块 31 缩回至容纳槽 31 内即可。当上下两个储物箱分离后，卡块 31 在第二弹性件 32 的作用下保持伸展状态，锁定部 12 在第一弹性件 13 的驱动下自动复位处在锁定状态，为下一次锁定做好准备。

本实施例提供的储物箱的连接结构的优点包括：

1、该储物箱的连接结构具有自动锁定功能、保持解锁功能和自动复位功能：由于锁定部12能够相对于安装部11水平移动，且第一弹性件13能够驱动锁定部 12 自动保持在锁定状态。当两个储物箱锁定时，其中一储物箱的锁定部12能够与另一储物箱的配合部21在第一弹性件13的作用下自动锁定，从而实现第一连接部1和第二连接部2的自动锁定功能；同时，通过设置止动部3，利用止动部3与第二连接部2相配合，使第一连接部1和第二连接部2在解锁时能够保持解锁状态，而无需用手刻意将锁定部12保持在解锁状态，从而解放用户双手；同时，在两个储物箱解锁并分离后，锁定部12能够在第一弹性件 13 的驱动下自动复位，为下一次锁定做好准备，简化了锁定和解锁时的操作步骤（常规的锁定和解锁至少需要四个步骤，而本实施例只需要两个步骤），方便用户使用。

2、通过止动部3与第二连接部2的配合实现保持解锁功能，当用户想要重新锁定时（用户误操作解锁），只需向下按动卡块31即可，无需将第一连接部1和第二连接部2分离后重新锁定，且不伤害结构的可靠性。

第二实施例

如图 8 至图 14 所示，本实施例与第一实施例的不同点在于：锁定部 12 为翻转锁扣，止动部3设置在第二连接部2上且相对于锁定部12保持静止。当第一连接部1与第二连接部2处于保持解锁状态时，止动部3与锁定部12在锁定部12的锁定路径上卡持。

具体地，锁定部12包括锁定扣122和止位扣123，锁定扣122可与配合部21相互配合锁定，止位扣123与止动部3对应设置；止位扣123可与止动部3在锁定部12的锁定路径上卡持，从而使第一连接部1与第二连接部2处于保持解锁状态。锁定扣122在锁定方向上的延伸长度小于止位扣123在锁定方向上的延伸长度，从而使止位扣123与止动部3在锁定路径上解除卡持时所需翻转的角度为最大。当第二弹性件 33 压缩时，锁定扣 122 与配合部

21 相互锁定，卡块 32 与止位扣 123 在垂直方向上上下抵持，第一连接部 1 与第二连接部 2 处于锁定状态；当第二弹性件 33 伸展时，卡块 32 伸展出容纳槽 31 并与止位扣 123 在锁定路径上卡持，第一连接部 1 与第二连接部 2 处于保持解锁状态。在其它实施例中，卡块 32 与止位扣 123 也可在其它非锁定路径上抵持，例如卡块 32 与止位扣 123 在左右方向上抵持，止位扣 123 只需将卡块 32 抵持在非锁定路径上即属于本发明保护的范围。

进一步地，如图 9 及图 13 所示，在本实施例中，止动部 3 还包括开设在第二连接部 2 上的固定槽 34 及位于卡块 32 远离第二弹性件 33 一端的固定块 35，固定块 35 可滑动卡入固定槽 34 内。当固定块 35 位于固定槽 34 内时，第二弹性件 33 压缩，使止动部 3 始终固定在止位扣 123 的上方；如此设置，可使保持解锁功能可选择性的开闭，便于用户使用。在其它实施例中，也可在第一连接部 1 上开设固定槽 34，只要使止动部 3 不能位于锁定部 12 的锁定路径上（即止动部 3 部不能与止位扣 123 接触），即属于本发明保护的范围。

本实施例的工作原理为：

当需要上下锁定两个储物箱时，下压上方储物箱使其与下方储物箱上的锁定扣 122 相接触，下方储物箱的锁定扣 122 受到挤压驱使锁定部 12 朝向解锁方向（即远离储物箱中心）移动，此时第一弹性件 13 压缩蓄力。当上方储物箱下移一定距离后，锁定部 12 上的锁定扣 122 与配合部 21 上的卡槽 211 相对应，锁定扣 122 失去上方储物箱的抵持作用，锁定扣 122 在第一弹性件 13 的驱动下自动卡入卡槽 211 内，从而使第一连接部 1 与第二连接部 2 处于锁定状态，即实现上下储物箱的自动锁定功能。需要说明的是，在此过程中，下压上方储物箱，卡块 32 受到止位扣 123 的挤压压缩，第二弹簧 33 压缩蓄力，止位扣 123 与卡块 32 始终保持上下抵持。

当需要上下解锁两个储物箱时，向外拉动下方储物箱的锁定部 12 使其朝向解锁方向移动，当锁定部 12 向外移动一定距离后，下方储物箱的锁定

扣 122 与上方储物箱的卡槽 211 脱离卡合，从而使锁定部 12 与配合部 21 解锁。同时，继续向外拉动锁定部 12，直至止动部 3 失去下方储物箱止位扣 123 的抵持，卡块 31 在第二弹性件 32 的作用下自动向下伸出容纳槽 31 并与止位扣 123 在锁定部 12 的锁定路径上卡持，从而使第一连接部 1 与第二连接部 2 处于保持解锁状态，即实现保持解锁功能。此时，只需向上拉起上方储物箱，便可方便地将上下两个储物箱解锁并分离。同时，此时若用户想重新锁定，只需向上拔动卡块 31 使卡块 31 重新与止位扣 123 上下抵持即可。当上下两个储物箱分离后，卡块 31 在第二弹性件 32 的作用下保持伸展状态，锁定部 12 在第一弹性件 13 的驱动下自动复位处在锁定状态，为下一次锁定做好准备。

本实施例提供的储物箱的连接结构同样具有自动锁定功能、保持解锁功能和自动复位功能，本实施例的其它结构及功能与第一实施例相同或类似，在此不赘述。

以上所述，仅为本发明的具体实施方式，但本发明的保护范围并不局限于此，任何熟悉本技术领域的技术人员在本发明揭露的技术范围内，可轻易想到变化或替换，都应涵盖在本发明的保护范围之内。因此，本发明的保护范围应以所述权利要求的保护范围为准。

2022102128625

说　明　书　附　图

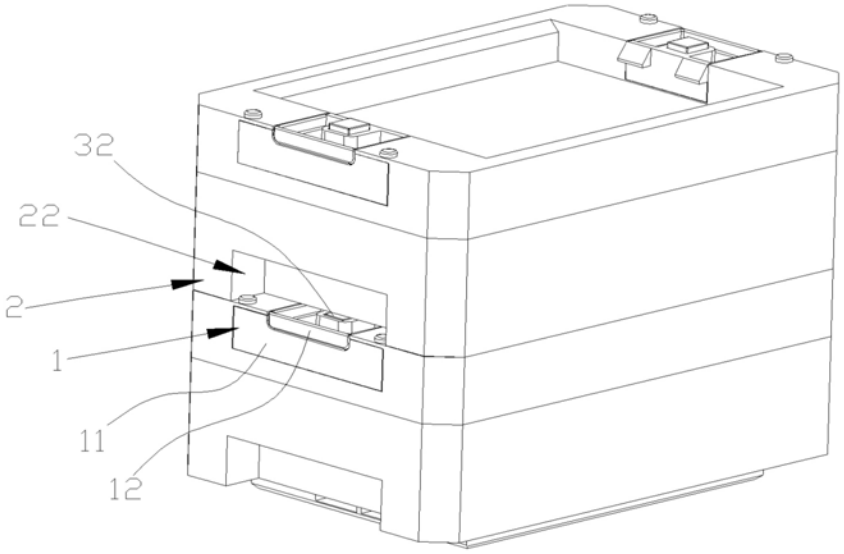

图1

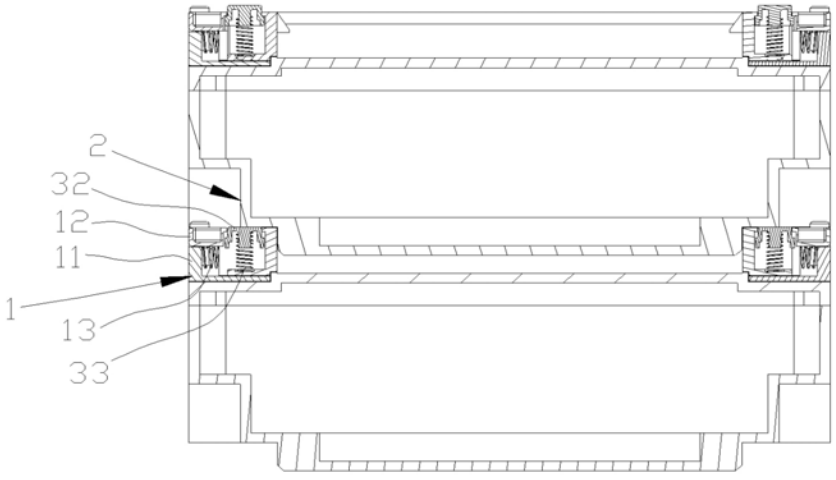

图2

2022102128625

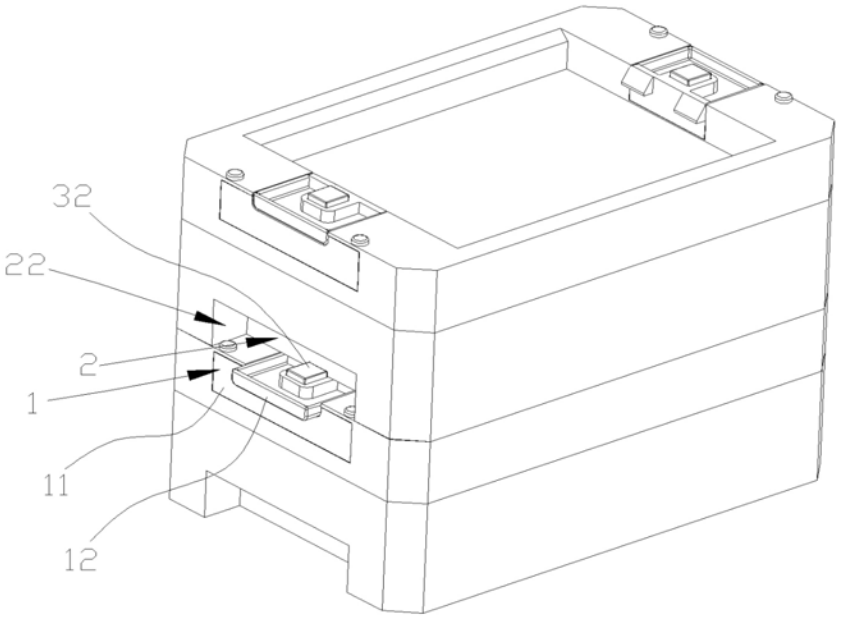

图3

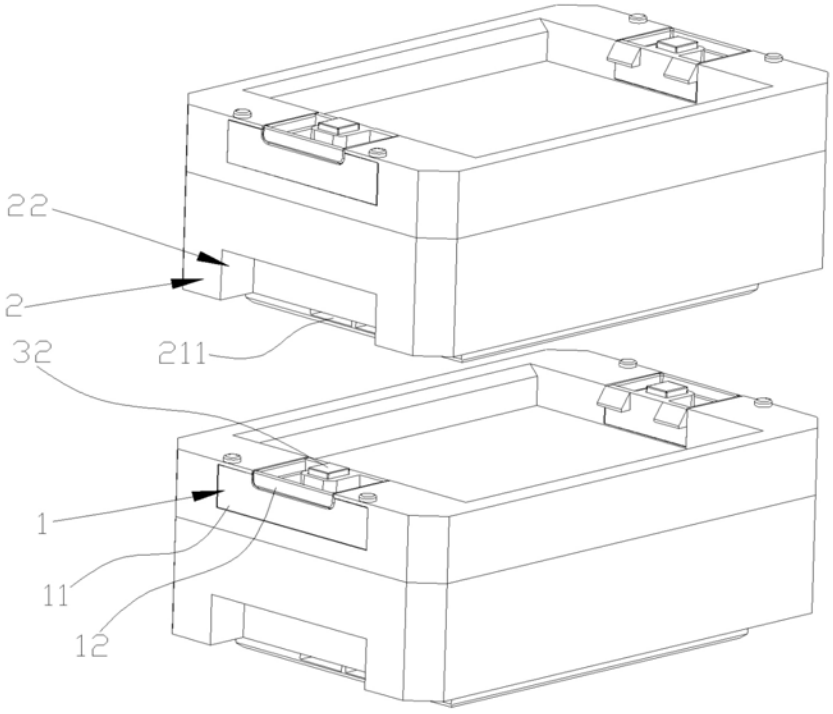

图4

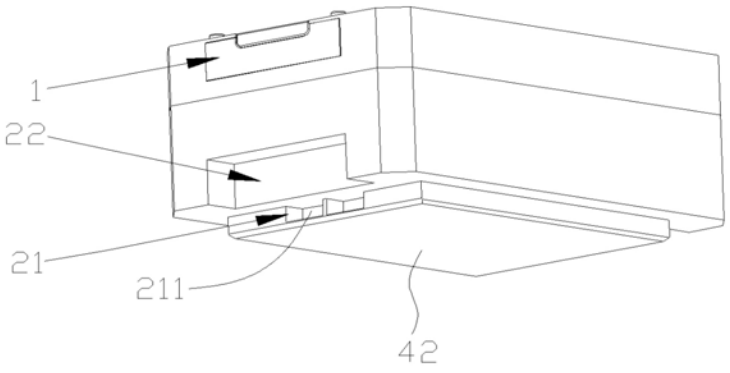

图5

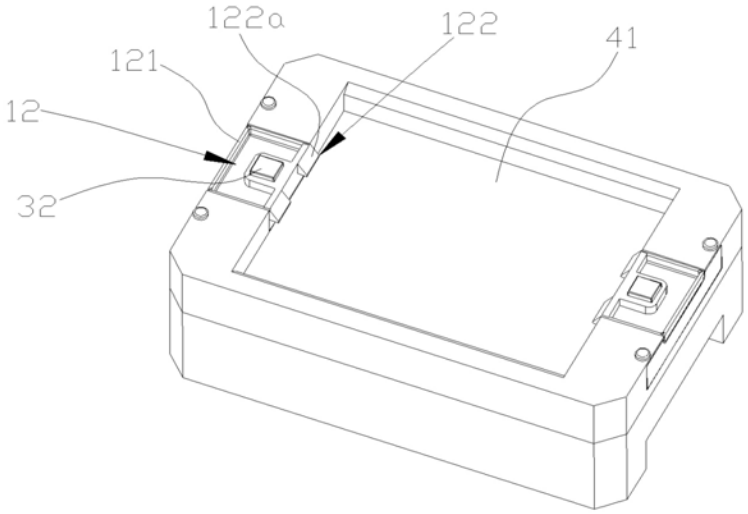

图6

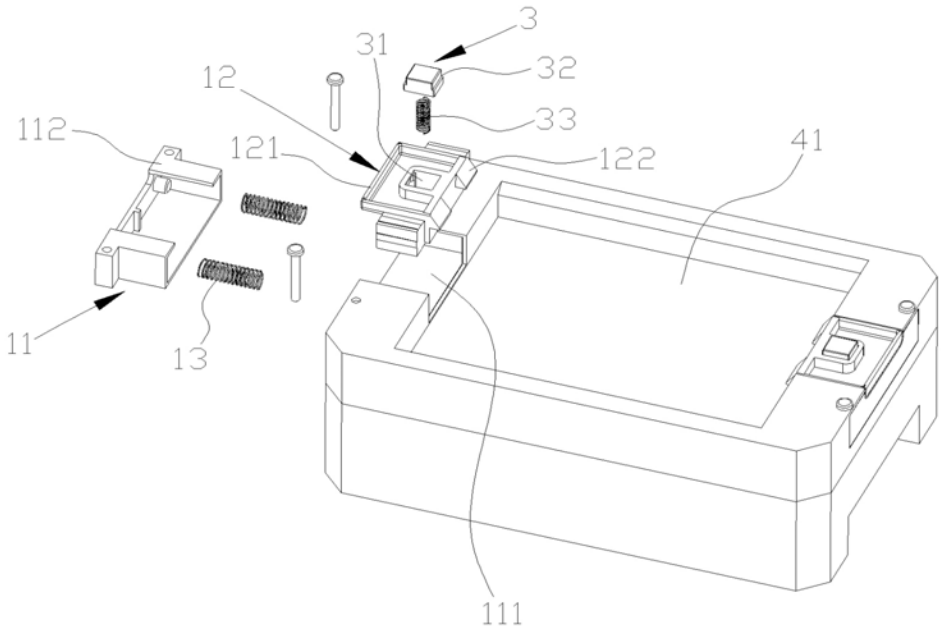

图7

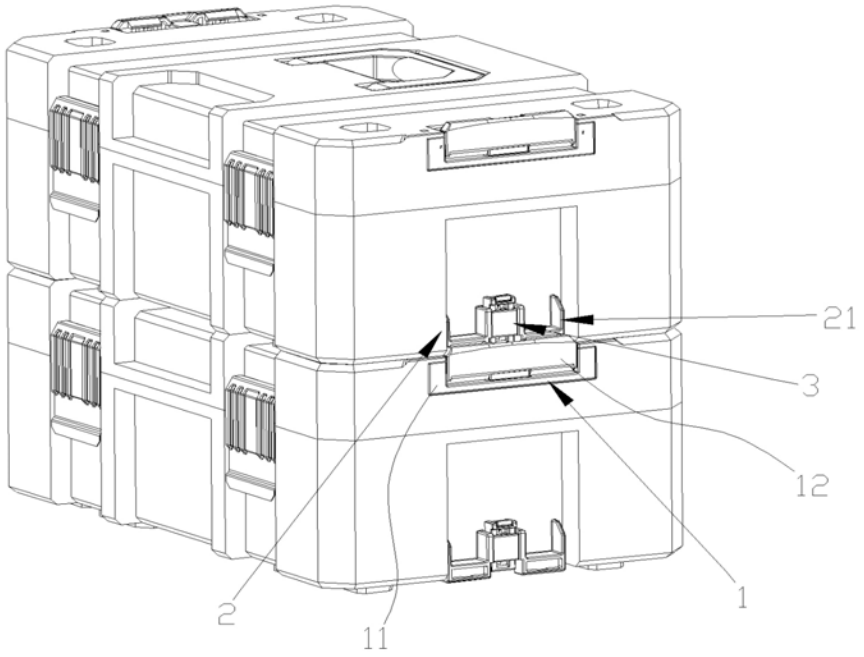

图8

2022102128625

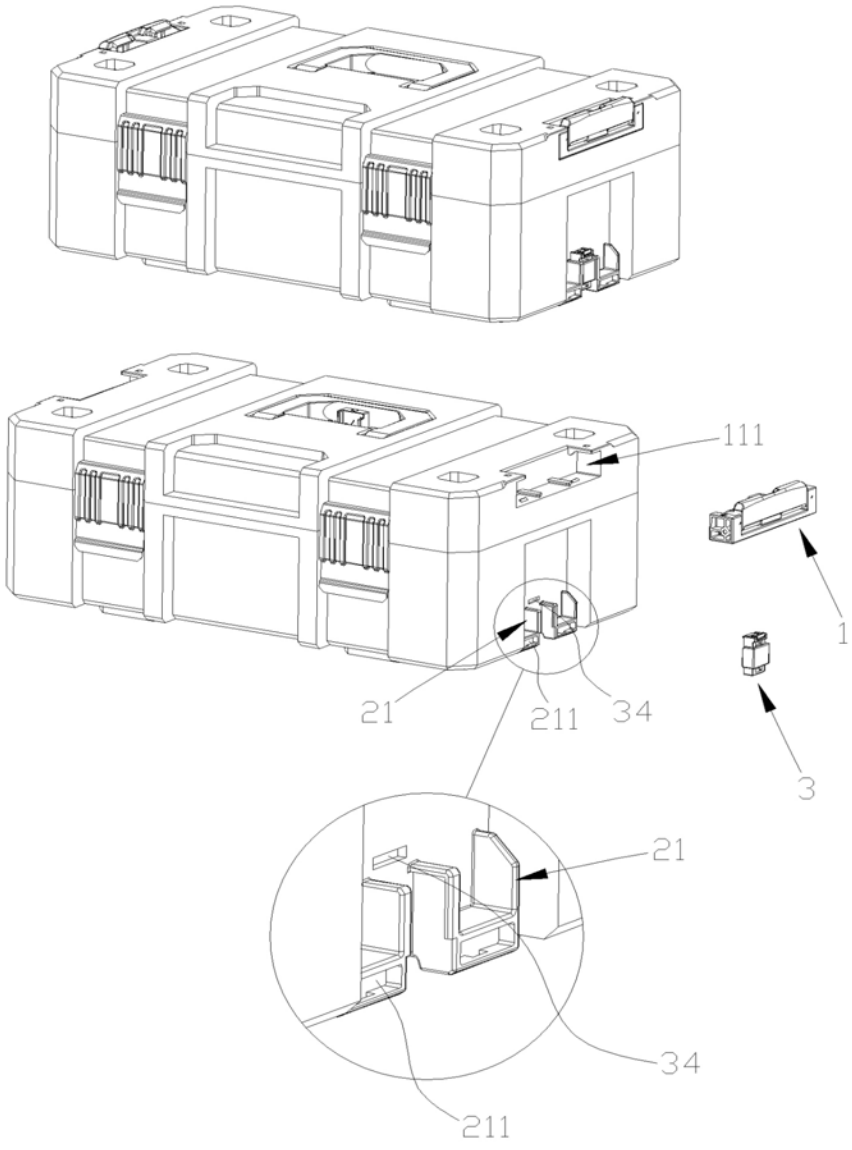

图9

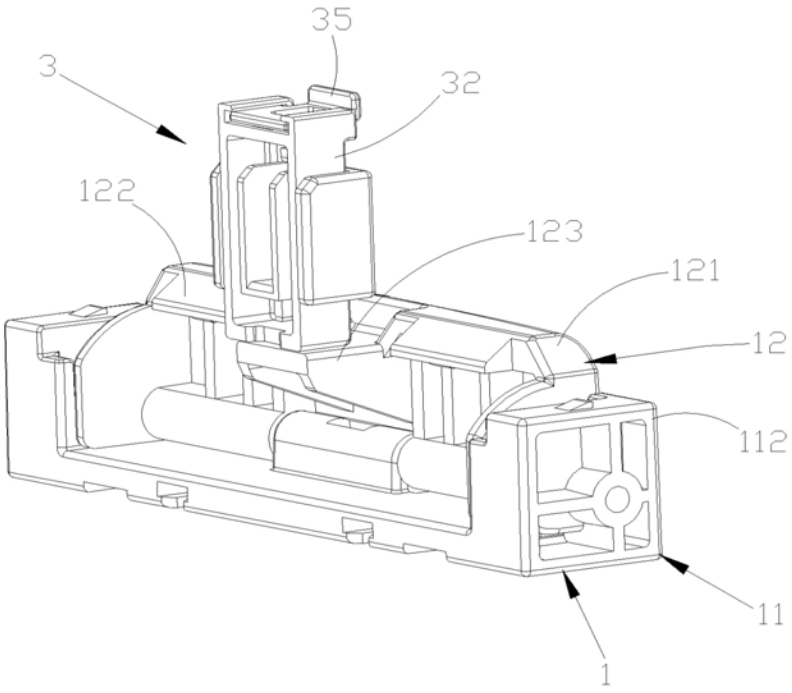

图10

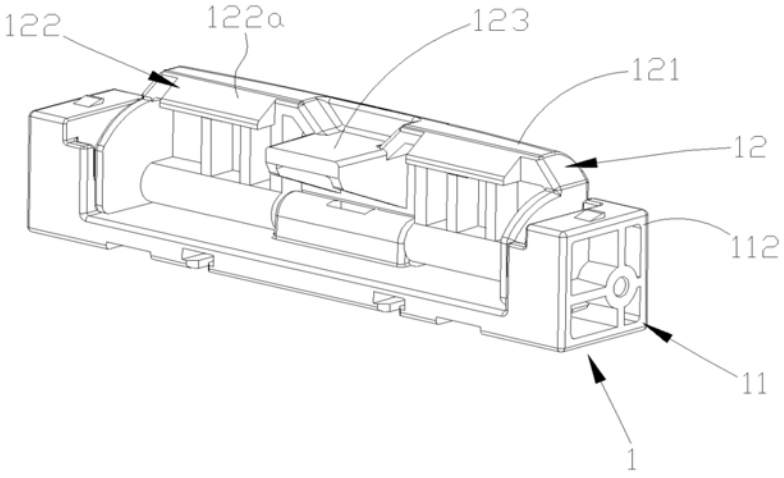

图11

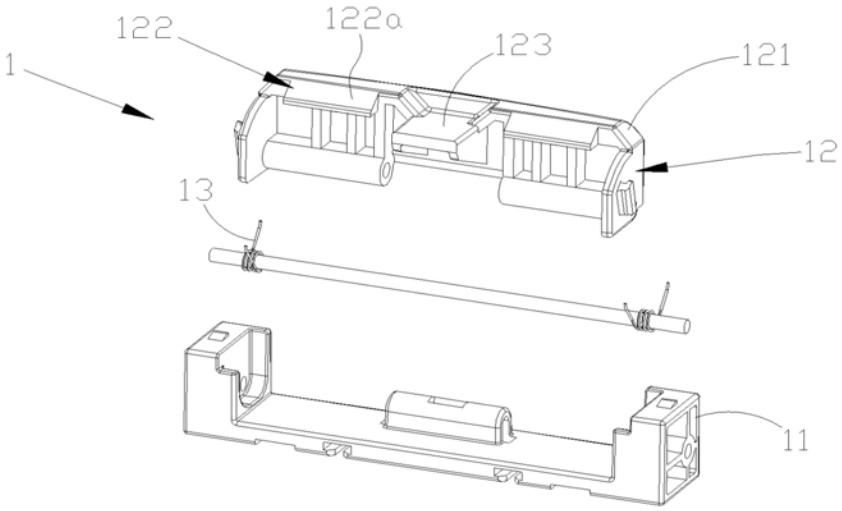

图12

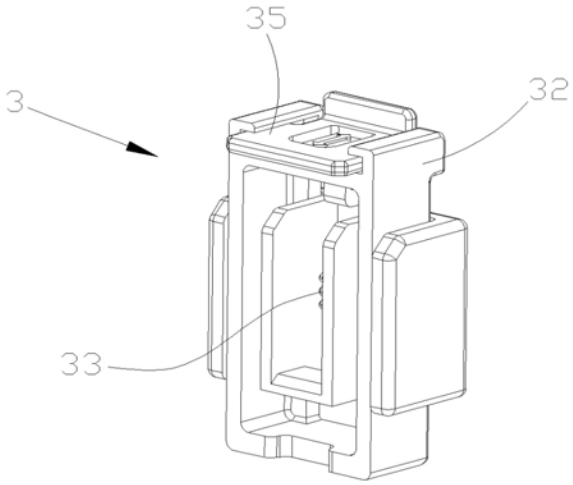

图13

2022102128625

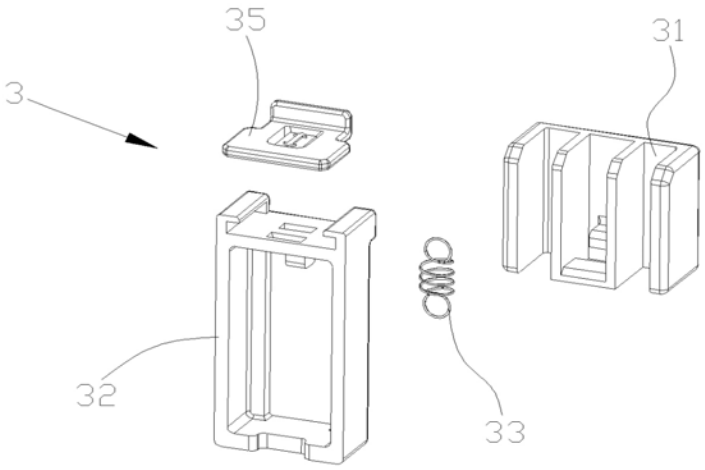

图14

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

23486 7590 12/29/2023

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

EXAMINER
CENTRAL, DOCKET

ART UNIT	PAPER NUMBER
OPAP	

NOTIFICATION DATE	DELIVERY MODE
12/29/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

deanna@shuttleworthlaw.com
jrs@shuttleworthlaw.com
uspto@shuttleworthlaw.com

Decision Granting Request for Prioritized Examination (Track I)	**Application No.** 18/518,200	**Applicant(s)** ZHANG et al.	
	Examiner FIKIRTE A GEREMEW	**Art Unit** OMBL	**AIA (FITF) Status** Yes

1. THE REQUEST FILED 22 November 2023 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☑ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination**. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims** , or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to FIKIRTE GEREMEW at (703) 756-1930. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/FIKIRTE A GEREMEW/ PROGRAM SUPPORT ASSISTANT, OMBL	

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

23486 7590 01/12/2024

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

EXAMINER	
PAL, PRINCE	

ART UNIT	PAPER NUMBER
3735	

NOTIFICATION DATE	DELIVERY MODE
01/12/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

deanna@shuttleworthlaw.com
jrs@shuttleworthlaw.com
uspto@shuttleworthlaw.com

Office Action Summary	Application No. 18/518,200	Applicant(s) ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 12/29/2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-7,10-15,17 and 19-24 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☐ Claim(s) _____ is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☑ Claim(s) 1-7,10-15,17 and 19-24 are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Election/Restrictions

2. This application contains claims directed to the following patentably distinct species:

Species A-Figs.1-7

Species B-Figs.8-14

Species C-Figs. 15-19

IF species C is elected applicant must elect which local structure is being utilized:

Sub-species A-Figs.20-22

Sub-species B-Figs.23-24

Sub-speciesC-Figs.25-26

The species are independent or distinct because the claims to the different species recite the mutually exclusive characteristics of such species A and C are different as species C discloses a utility box that has different structure compared to species A box which also have different local structures. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, or a single grouping of patentably indistinct species, for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is believed to be generic.

There is a serious search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply: the species or groupings of patentably indistinct species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search strategies or search queries) such as searching for different utility models and local structures that will be require different class searches.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species or grouping of patentably indistinct species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species or grouping of patentably indistinct species.

Should applicant traverse on the ground that the species, or groupings of patentably indistinct species from which election is required, are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing them to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of

the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

3. Applicant is reminded that upon the cancelation of claims to a non-elected invention, the inventorship must be corrected in compliance with 37 CFR 1.48(a) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. A request to correct inventorship under 37 CFR 1.48(a) must be accompanied by an application data sheet in accordance with 37 CFR 1.76 that identifies each inventor by his or her legal name and by the processing fee required under 37 CFR 1.17(i).

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PRINCE PAL whose telephone number is (571)272-7525. The examiner can normally be reached M-Th, 9:30 AM - 7:30 PM (EST).

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANTHONY STASHICK can be reached on (571)272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PRINCE PAL/
Examiner, Art Unit 3735

/STEVEN A. REYNOLDS/
Primary Examiner, Art Unit 3735

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application # : 18/518,200
Inventor(s) : Hongquan ZHANG
Filed : 11/22/2023
Invention : CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY
TC/AU : 3735
Examiner : Prince PAL
Confirm # : 7125
Docket No. : 17157-0101-1
Customer # : 23486
Date : February 28, 2024

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

RESPONSE TO RESTRICTION REQUIREMENT

In response to the Restriction Requirement dated January 12, 2024, Applicant elects without traverse Species A (Figs. 1-7). Claims 1-5, 10-15, and 19-21 read on the elected species with Claims 1-5, 11-13, 15, 19, and 21 being generic.

An early action on the merits is earnestly solicited.

Respectfully submitted,

/Jason R. Sytsma/

Jason R. Sytsma; Reg. No.: 62,262

Customer Number: 23486
Shuttleworth & Ingersoll, PLC
115 Third Street SE, Suite 500
Cedar Rapids, Iowa 52401
Telephone: (319) 365-9461
Facsimile: (319) 365-8443
E-mail: jrs@Shuttleworthlaw.com
Web Site: www.Shuttleworthlaw.com

CERTIFICATE OF TRANSMISSION

I certify that this correspondence is being transmitted to the US Patent and Trademark Office by EFS-Web on February 28, 2024.

__/Jayme M. Hunter/_____
Jayme M. Hunter

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/518,200	**02/28/2024 12:28:03 PM Z ET**	**17157-0101-1**

Title of Invention

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7125	FILED BY	JAYME HUNTER
PATENT CENTER #	64478952	FILING DATE	11/22/2023
CUSTOMER #	23486	FIRST NAMED INVENTOR	Hongquan ZHANG
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Jason Sytsma

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Response to Restriction Requirement.pdf	1	Response to Election / Restriction Filed	19 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Response to Restriction Requirement.pdf	A4760F10CE48DC5487005DA01624E3B7B743D5F978178E02E A9354C52388AD9B2D32E934CA942946EEC92CCB27F54D980 DECAE1EAA1B451569EDA9E88936AC1E

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 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

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1

CONFIRMATION NO. 7125

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PUBLICATION NOTICE

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Date Mailed: 03/14/2024

Title:CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Publication No.US-2024-0083014-A1
Publication Date:03/14/2024

NOTICE OF PUBLICATION OF APPLICATION

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

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Notice of References Cited	Application/Control No. 18/518,200	Applicant(s)/Patent Under Reexamination ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	Page 1 of 3

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*	B	US-20210221561-A1	2021-07-22	Davidian; Richard M.	B25H3/02	1/1
*	C	US-20190168376-A1	2019-06-06	BROCKET; Stephen	B25H3/028	1/1
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*	F	US-20120024739-A1	2012-02-02	Fjelland; Douglas J.	F16B45/02	403/321
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*	B	US-20030094392-A1	2003-05-22	Meier , Sven	B65D21/0213	206/503
*	C	US-8602217-B2	2013-12-10	Sosnovsky; David	B65D21/0228	220/756
*	D	US-20160130034-A1	2016-05-12	Kuhls; Timo	B65D21/023	206/510
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*	L	US-20070012694-A1	2007-01-18	Duvigneau; Nikolai	B25H3/026	220/4.27
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*	D	US-6082539-A	2000-07-04	Lee; Pei-Ling	B25H3/021	206/821
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*	H	US-11858687-B2	2024-01-02	Barabeisch; Markus	B25H3/02	1/1
*	I	US-20120312812-A1	2012-12-13	Sosnovsky; David	B65D45/22	220/23.83
*	J	US-11155382-B1	2021-10-26	Cai; Shujun	B65D21/0223	1/1
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	Art Unit
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✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/09/2024								
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	2	O								
	3	O								
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	5	O								
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	23	N								
	24	N								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	Art Unit
	PRINCE PAL	3735

CPC - Searched*		
Symbol	Date	Examiner
B65D21/0223,21/0228,21/0219,21/0217,21/0209,21/0213,21/0224,21/0212,2543/00027,21/0215,21/02,21/023	03/18/2024	PP
B25H3/023,3/021,3/02,3/026,3/028	03/18/2024	PP

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
206	499,501,503,508,509,510,511,512,1.5	03/18/2024	PP

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
inventor and assignee search	03/09/2024	PP
limited classification and text search	03/09/2024	PP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/PRINCE PAL/ Examiner, Art Unit 3735	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1410	((("ZHANG") near3 ("Hongquan")) OR (("WANG") near3 ("Qiang")) OR (("CAI") near3 ("Shujun"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2024/03/11 07:41 PM
L2	638	((("ZHANG") near3 ("Hongquan")) OR (("WANG") near3 ("Qiang")) OR (("CAI") near3 ("Shujun"))).INV. AND (storage)	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2024/03/11 07:41 PM
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		US-20120168444-A1 OR US-20170158216-A1 OR US-20170066124-A1 OR US-20140319147-A1 OR US-20140070677-A1 OR US-20170121056-A1 OR US-20110139666-A1 OR US-20100320108-A1 OR US-20070222231-A1 OR US-20050155889-A1 OR US-20090263187-A1 OR US-20210291954-A1 OR US-20030147691-A1 OR US-20120024739-A1 OR US-20210221561-A1 OR US-20210155373-A1 OR US-20200298392-A1 OR US-20190168376-A1 OR US-20120132558-A1 OR US-20090236255-A1 OR US-20150001120-A1 OR US-20120222983-A1 OR US-20110100856-A1 OR US-20080116098-A1 OR US-20030234200-A1 OR US-20110158761-A1 OR US-20120267369-A1 OR US-20090120835-A1 OR US-20040007546-A1 OR US-20020000440-A1 OR US-20200055631-A1 OR US-20210229863-A1 OR US-20100224528-A1 OR US-20160075479-A1 OR US-20190291928-A1 OR US-20170129645-A1 OR US-20160008973-A1 OR US-20120080432-A1 OR US-20190217999-A1 OR US-20140251998-A1).did. AND PGPB.dbnm.) OR ((EP-3945039-A1 OR EP-2338650-A2 OR DE-102016112853-A1 OR					

		DE-102014111337-A1 OR DE-202014103695-U1).did. AND FTDB.dbnm.) OR ((AU-2020230227-B1 OR US-20150151427-A1 OR DE-102016112853-A1).did. AND DWPI.dbnm.) OR ((US-2807387-A).did. AND USOC.dbnm.)					
L14	100	((US-11185974-B2 OR US-10575417-B2 OR US-D857388-S OR US-D851929-S OR US-10160471-B2 OR US-RE47022-E OR US-10022856-B2 OR US-9796076-B2 OR US-D798053-S OR US-9616563-B2 OR US-D744750-S OR US-D694522-S OR US-8505729-B2 OR US-D674605-S OR US-8210579-B2 OR US-8210387-B2 OR US-D637001-S OR US-7854321-B2 OR US-9193060-B2 OR US-8944537-B1 OR US-5011013-A OR US-5281045-A OR US-4893724-A OR US-5199592-A OR US-11155382-B1 OR US-8567796-B2 OR US-6585090-B2 OR US-7658887-B2 OR US-5730311-A OR US-5699925-A OR US-3659743-A OR US-8240504-B2 OR US-5967322-A OR US-3635361-A OR US-5042674-A OR US-5860527-A OR US-8851287-B2 OR US-8813960-B2 OR US-6134832-A OR US-6889838-B2 OR US-8875888-B2 OR US-6371320-B1 OR US-11230410-B2 OR US-10710770-B2 OR US-10793172-B2 OR US-10583962-B2 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/12 05:49 PM

		6874634-B2 OR US-11486427-B2 OR US-8297464-B2 OR US-10870513-B2).did. AND USPT.dbnm.) OR ((US-20200025229-A1 OR US-20120168444-A1 OR US-20170158216-A1 OR US-20170066124-A1 OR US-20140319147-A1 OR US-20140070677-A1 OR US-20170121056-A1 OR US-20110139666-A1 OR US-20100320108-A1 OR US-20070222231-A1 OR US-20050155889-A1 OR US-20090263187-A1 OR US-20210291954-A1 OR US-20030147691-A1 OR US-20120024739-A1 OR US-20210221561-A1 OR US-20210155373-A1 OR US-20200298392-A1 OR US-20190168376-A1 OR US-20120132558-A1 OR US-20090236255-A1 OR US-20150001120-A1 OR US-20120222983-A1 OR US-20110100856-A1 OR US-20080116098-A1 OR US-20030234200-A1 OR US-20110158761-A1 OR US-20120267369-A1 OR US-20090120835-A1 OR US-20040007546-A1 OR US-20020000440-A1 OR US-20200055631-A1 OR US-20210229863-A1 OR US-20100224528-A1 OR US-20160075479-A1 OR US-20190291928-A1 OR US-20170129645-A1 OR US-20160008973-A1 OR US-20120080432-A1 OR US-20190217999-A1 OR					

		US-20140251998-A1).did. AND PGPB.dbnm.) OR ((EP-3945039-A1 OR EP-2338650-A2 OR DE-102016112853-A1 OR DE-102014111337-A1 OR DE-202014103695-U1).did. AND FTDB.dbnm.) OR ((AU-2020230227-B1 OR US-20150151427-A1 OR DE-102016112853-A1).did. AND DWPI.dbnm.) OR ((US-2807387-A).did. AND USOC.dbnm.)					
L15	45	(Artificial Intelligence) Similar to: 18/518,200 with 0 CPC Selections and 0 Text Selections Text: (US-20230278191-A1 OR CN-216995407-U OR CN-116729770-A OR CN-219215939-U OR CN-116729769-A OR CN-216995406-U OR CN-216995405-U OR US-20230136626-A1 OR CN-114834728-A OR CN-111924270-B OR CN-214931552-U OR CN-219295944-U OR CN-111924270-A OR CN-211996959-U OR DE-4424841-A1 OR WO-2021196813-A1 OR CN-212448482-U OR CN-111297161-A OR WO-2023193617-A1 OR CN-216233571-U OR JP-2005161948-A OR CN-213862049-U OR CN-110816419-A OR CN-111513490-A OR JP-7348669-B2 OR CN-211442144-U OR CN-212345877-U OR CN-213384064-U OR CN-214730569-U OR CN-111928570-A OR CN-218288825-U OR CN-209855482-U OR CN-111928570-B OR CN-211894308-U OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2024/03/12 10:58 PM

		CN-115465173-A OR WO-2023193306-A1 OR CN-210605875-U OR JP-4198580-B2 OR TW-M421927-U OR CN-115432294-A OR CN-218173222-U OR JP-2022179000-A OR WO-2019174518-A1 OR JP-2023037112-A OR CN-219584869-U OR JP-2005162223-A OR CN-115402645-A OR CN-216186917-U OR CN-219726203-U OR CN-207411717-U).did.					
L16	39	((US-20230278191-A1 OR US-20230136626-A1 OR US-20200346819-A1 OR US-20200025229-A1 OR US-20180220758-A1 OR US-20170121056-A1 OR US-20120312812-A1 OR US-20110155613-A1 OR US-20210221561-A1 OR US-20190168376-A1 OR US-20170129645-A1 OR US-20160075479-A1 OR US-20120080432-A1 OR US-20120024739-A1 OR US-20110139666-A1 OR US-20100224528-A1 OR US-20020000440-A1).did. AND PGPB.dbnm.) OR ((WO-2023230852-A1 OR CN-217970389-U OR CN-216995405-U OR DE-102014111337-A1 OR DE-202014103695-U1 OR EP-2338650-A2 OR CN-216995406-U OR CN-214730569-U OR CN-214931552-U).did. AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR US-9393684-B2 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/12 11:14 PM

		US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.)					
L17	7293	(206/503 OR 206/509 OR 206/508 OR 220/324 OR 220/23.6).ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/12 11:16 PM
L18	1916	(206/503 OR 206/509 OR 206/508 OR 220/324 OR 220/23.6).ccls. AND (stack)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/12 11:16 PM
L19	765	(206/503 OR 206/509 OR 206/508 OR 220/324 OR 220/23.6).ccls. AND (stack$) AND (lock)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 10:50 AM
L20	981	(206/499 206/501 206/503 206/508 206/509 206/510 206/511 206/512 206/1.5).ccls. AND (stack$) AND (lock)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 12:35 PM
L21	1429	(206/1.5).ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 12:46 PM
L22	125	(206/1.5).ccls. AND (stack$)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 12:46 PM
L23	4582	(206/499 206/501 206/503 206/508 206/509 206/510 206/511 206/512 206/1.5).ccls. AND (stack$)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 01:04 PM
L24	3728	(206/499 206/501 206/503 206/508 206/509 206/510 206/511 206/512 206/1.5).ccls. AND (stack$) AND (container OR storage)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 01:17 PM
L25	66	((US-20230278191-A1 OR US-20230136626-A1 OR US-20200346819-A1 OR US-20200025229-A1 OR US-20180220758-A1 OR US-20170121056-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/03/18 11:28 AM

		US-20120312812-A1 OR US-20110155613-A1 OR US-20210221561-A1 OR US-20190168376-A1 OR US-20170129645-A1 OR US-20160075479-A1 OR US-20120080432-A1 OR US-20120024739-A1 OR US-20110139666-A1 OR US-20100224528-A1 OR US-20020000440-A1 OR US-20040144670-A1 OR US-20050150892-A1 OR US-20070080089-A1 OR US-20150274362-A1 OR US-20030094392-A1 OR US-20160130034-A1 OR US-20160168880-A1 OR US-20090178946-A1 OR US-20100219193-A1).did. AND PGPB.dbnm.) OR ((WO-2023230852-A1 OR CN-217970389-U OR CN-216995405-U OR DE-102014111337-A1 OR DE-202014103695-U1 OR EP-2338650-A2 OR CN-216995406-U OR CN-214730569-U OR CN-214931552-U).did. AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR US-9393684-B2 OR US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2 OR US-7780026-B1 OR US-4813542-A OR US-5464115-A OR US-3939982-A OR US-4405057-A OR US-3980185-A OR US-4736861-A OR US-	MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		8602217-B2 OR US-6983946-B2 OR US-6328355-B1 OR US-3828899-A OR US-5197601-A OR US-5617967-A OR US-8573399-B2 OR US-11643252-B2 OR US-4591065-A).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.) OR ((US-3376046-A OR US-3237800-A).did. AND USOC.dbnm.)					
L26	7112	(B65D21/0223 OR B65D21/0228 OR B65D21/0219 OR B65D21/0217 OR B65D21/0209 OR B65D21/0213 OR B65D21/0224 OR B65D21/0212 OR B65D21/022 OR B65D2543/00027 OR B25H3/023 OR B25H3/021 OR B25H3/02 OR B25H3/026 OR B25H3/028 OR B65D21/0215 OR B65D21/02 OR B65D21/023).cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/18 11:29 AM
L27	3953	(B65D21/0223 OR B65D21/0228 OR B65D21/0219 OR B65D21/0217 OR B65D21/0209 OR B65D21/0213 OR B65D21/0224 OR B65D21/0212 OR B65D21/022 OR B65D2543/00027 OR B25H3/023 OR B25H3/021 OR B25H3/02 OR B25H3/026 OR B25H3/028 OR B65D21/0215 OR B65D21/02 OR B65D21/023).cpc. AND (stack$) AND (container OR storage)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/18 11:29 AM
L28	1563	("0344661" | "0687619" | "1424819" | "1933894" | "2554091" | "2588830" | "2901262" | "2964328"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/18 01:07 PM

		| "3168329" | "3310905" | "3327841" | "3393951" | "3734526" | "3804432" | "3891230" | "3990653" | "4169607" | "4202459" | "4363496" | "4448434" | "4619363" | "4836374" | "4884689" | "4927021" | "4936594" | "4984704" | "5022546" | "5104135" | "5123666" | "5207723" | "5325966" | "5333885" | "5362078" | "5378005" | "5464104" | "5474312" | "5595395" | "5626352" | "5634649" | "5699925" | "5720535" | "5799958" | "5803254" | "5845915" | "5882097" | "5887715" | "5906381" | "5913527" | "5915554" | "5931483" | "5934466" | "5938396" | "D417338" | "6000713" | "6015064" | "6050660" | "6079719" | "6082539" | "6105767" | "6109627" | "6113129" | "6123344" | "6131926" | "6135466" | "6176559" | "D437484" | "6254112" | "6347847" | "6357063" | "6371320" | "6394471" | "6398235" | "6474930" | "6523687" | "6561528" | "6601930" | "6616152" | "6626295" | "6648166" | "6648390" | "6659476" | "6666465" | "6874634" | "6889838" | "6945546" | "6971517" | "6994214" | "7063339" | "7066475" | "7108131" | "7168715" | "D536525" | "7188846" | "7188847" | "D542496" | "7210689" | "7219969" | "7246704" | "7255229" | "7263742" | "7328905" | "7334680" | "7357268" | "7367571" | "7472730" | "7500681" | "7503569" | "7523827" | "7686260" | "7703776" | "7819407" | "7823893" | "7845653" | "7883096" | "7905353" | "7905502" | "7938412" | "D640869" | "D653832" | "D654241" | "8132819" | "8226092" | "8505729" |					

		"8567796" | "8657307" | "8668209" | "9132543" | "9566990" | "20010052681" | "20020014488" | "20020067027" | "20020074905" | "20020113386" | "20020185831" | "20030001348" | "20030146589" | "20040069668" | "20040265104" | "20050062244" | "20050104308" | "20050161357" | "20050224384" | "20050258610" | "20050275178" | "20060006619" | "20060012139" | "20060037964" | "20060038367" | "20070080512" | "20070103039" | "20070194024" | "20070194543" | "20070273114" | "20080084036" | "20080121547" | "20080128305" | "20080143069" | "20090020528" | "20090026901" | "20090096181" | "20090223853" | "20090236255" | "20090309323" | "20100052276" | "20100290877" | "20100327562" | "20110049824" | "20110181008" | "20120160886" | "20120326406" | "20140001719" | "20140023221" | "20140375181" | "3419184" | "3987829" | "4287997" | "4452555" | "5058746" | "5085448" | "5186330" | "D358765" | "5564805" | "5709008" | "5785328" | "D401412" | "6116390" | "D467424" | "D467425" | "D467426" | "6983946" | "7011214" | "7044528" | "7163122"				

		| "7350789" | "7482928" | "7530580" | "7537119" | "7714708" | "7780026" | "7854321" | "7883096" | "7938412" | "8132819" | "8146771" | "8256242" | "8561769" | "8567796" | "RE44656" | "20040007574" | "20050036847" | "20050199459" | "20070130731" | "20090178946" | "20120292867" | "4619363" | "5011013" | "6193062" | "6371320" | "8602217" | "20030062365" | "20030094392" | "20110049824" | "20110139777" | "20110155613" | "20110168599" | "20120312812" | "20120326406" | "2634020" | "3182856" | "3387732" | "3581928" | "4351448" | "5353948" | "5469961" | "5606820" | "5699925" | "5755180" | "6761266" | "6959507" | "7246718" | "20030155267" | "20050224494" | "20080308641" | "20090139892" | "20090178989" | "20090236255" | "0879455" | "2695115" | "2849151" | "3103278" | "3117692" | "3383009" | "3391824" | "3407758" | "3419184" | "3481502" | "3616943" | "3754645" | "3756396" | "3759416" | "3811747" | "D236326" | "3916803" | "3926321" | "3968879" | "4287997" | "4618059" | "4655360" | "4765252" | "4832200" | "4848605" | "4889235" | "5054617" | "D333094" | "5203494" | "5392945" | "5404829" | "D361715" | "5454477" | "5641090" | "5718350" | "5769230" | "5779051" | "5974981" | "6021916" | "6085467" |				

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		AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR US-9393684-B2 OR US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2 OR US-7780026-B1 OR US-4813542-A OR US-5464115-A OR US-3939982-A OR US-4405057-A OR US-3980185-A OR US-4736861-A OR US-8602217-B2 OR US-6983946-B2 OR US-6328355-B1 OR US-3828899-A OR US-5197601-A OR US-5617967-A OR US-8573399-B2 OR US-11643252-B2 OR US-9550605-B1 OR US-5518139-A OR US-10093445-B1 OR US-6082539-A OR US-11642777-B2 OR US-9725209-B1 OR US-10603783-B2 OR US-11858687-B2 OR US-4591065-A).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.) OR ((US-3376046-A OR US-3237800-A).did. AND USOC.dbnm.)					
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		DE-102015013053-A1 OR US-10750833-B2 OR DE-102015013053-B4 OR US-11486427-B2 OR US-20200025229-A1 OR EP-3597371-A1 OR AU-2016309923-C1 OR US-20230023410-A1 OR AT-E342201-T1 OR EP-3337645-B1).did.	JPO; DERWENT; IBM_TDB)				
L31	9	((US-4591065-A OR US-5518139-A OR US-6082539-A OR US-11642777-B2 OR US-9725209-B1 OR US-10603783-B2).did. AND USPT.dbnm.) OR ((US-20190291922-A1 OR US-20190039781-A1 OR US-20220033140-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/18 04:33 PM
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		101779518-B1 OR FR-2846890-A1 OR US-20080203666-A1 OR US-D686672-S OR US-5478085-A OR US-20190083879-A1 OR US-4257611-A OR MX-PA00012339-A OR US-3830502-A OR SU-1719002-A1 OR BE-395886-A OR US-9737793-B1 OR KR-20090015474-A OR DE-2507964-A1 OR GB-2199254-A OR US-7832732-B1 OR CN-1211140-C OR CN-1454108-A OR US-4988109-A OR CN-201058230-Y OR ES-2220201-A1 OR US-20080318653-A1 OR WO-2012012383-A2 OR CN-200957290-Y OR US-20080203667-A1 OR CA-2587298-A1).did.					
L33	33	(Artificial Intelligence) More like doc: US-20230132650-A1 Text: (US-10118090-B1 OR AT-254564-B OR GB-2617600-A OR US-4225139-A OR GB-474929-A OR DE-427928-C OR US-7287647-B1 OR US-20030227135-A1 OR US-6959926-B2 OR US-6343790-B1 OR DE-3003314-A1 OR FR-2474446-A1 OR US-6325374-B1 OR BE-347565-A OR US-20180008883-A1 OR US-20060043677-A1 OR US-3964749-A OR US-4277067-A OR US-4273338-A OR US-6609714-B1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/19 04:23 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application # :
Applicants : Hongquan ZHANG, Qiang WANG and Shujun CAI
Filed :
Invention : CONNECTION STRUCTURE OF MODULE, STORGAGE BOX AND STORAGE BOX ASSEMBLY
TC/AU :
Examiner :
Confirm # :
Docket No. : 17157-0101-1
Customer # : 23486
Date : November 22, 2023

INFORMATION DISCLOSURE STATEMENT

The current assignee of the present application is also the assignee of the following pending US patent application(s) directed to related subject matter.

Examiner's Initials	
/P.P./	CAI, Shujun - U.S. Patent Application No. 17/010,975 filed September 3, 2020 [17157-0095]
/P.P./	CAI, Shujun – U.S. Patent Application No. 17/956,459 filed September 29, 2022 [17157-0099]

Submitted with this Information Disclosure Statement is a Form PTO/SB/08a citing all the references in the above referenced application(s) that have not already been cited herein.

This Information Disclosure Statement is intended to be in full compliance with the rules, but should the Examiner find any part of its requirement content to have been omitted, prompt notice to that effect is earnestly solicited, along with additional time under 97(f), to enable Applicant to comply fully.

Consideration of the foregoing and attachments plus the return of a copy of the Form PTO/SB/08a with the Examiner's initials in the left column per MPEP 609, **as well**

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as a copy of this paper with the above identified application(s) initialed by the Examiner are earnestly solicited.

Respectfully submitted,

/Jason R. Sytsma/
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CERTIFICATE OF TRANSMISSION

I certify that this correspondence is being transmitted to the US Patent and Trademark Office by EFS-Web on November 22, 2023

__/Jayme M. Hunter/_____
Jayme M. Hunter

/PRINCE PAL/ 03/11/2024

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	
	First Named Inventor	Hongquan ZHANG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	17157-0101-1

U.S.PATENTS						Remove
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
	1	3648849	A	1972-03-14	Harris, Everett K.	
	2	4619363	A	1986-10-28	Wolfseder, Alfred	
	3	5011013	A	1991-04-30	Meisner et al.	
	4	6193062	B1	2001-02-27	Rysgaard et al.	
	5	6371320	B1	2002-04-16	Sogol, Sami	
	6	6761366	B1	2004-07-13	Klemmensen et al.	
	7	6889838	B2	2005-05-10	Meier et al.	
	8	8567796	B2	2013-10-29	Bar-Erez et al.	

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	9	8602217	B2	2013-12-10	Sosnovsky et al.	
	10	8936258	B2	2015-01-20	Bar-Erez et al.	
	11	9132543	B2	2015-09-15	Bar-Erez et al.	
	12	9277796	B1	2016-03-08	Elam, Marrell	
	13	9393684	B2	2016-07-19	Christopher et al.	
	14	9566990	B2	2017-02-14	Bar-Erez et al.	
	15	9643629	B2	2017-05-09	Bar-Erez et al.	
	16	D630435	S1	2011-01-11	Brunner, Yaron	
	17	10106180	B2	2018-10-23	Bar-Erez et al.	
	18	10434638	B1	2019-10-08	Tsai, Chung-Yu	
	19	10583962	B2	2020-03-10	Brunner et al.	

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	20	10703534	B2	2020-07-07	Brunner et al.	
	21	10793172	B2	2020-10-06	Brunner, Yaron	
	22	10981696	B2	2021-04-20	Brunner et al.	
	23	11008136	B2	2021-05-18	Brunner et al.	
	24	11027883	B1	2021-06-08	Brunner et al.	
	25	11059631	B1	2021-07-13	Brunner et al.	
	26	11066089	B2	2021-07-20	Brunner, Yaron	
	27	11155382	B1	2021-10-26	Cai, Shujun	
	28	11192689	B2	2021-12-07	Cai, Shujun	
	29	11192690	B1	2021-12-07	Brunner et al.	
	30	11459008	B2	2022-10-04	Brunner et al.	

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	1	20030062365	A1	2003-04-03	Krueger, Kevin R.	
	2	20030094392	A1	2003-05-22	Meier et al.	
	3	20080121547	A1	2008-05-29	Dur et al.	
	4	20110049824	A1	2011-03-03	Bar-Erez et al.	
	5	20110139777	A1	2011-06-16	Sosnovsky et al.	
	6	20110155613	A1	2011-06-30	Koenig et al.	
	7	20110168599	A1	2011-07-14	Koenig et al.	
	8	20120312812	A1	2012-12-13	Sosnovsky et al.	
	9	20120326406	A1	2012-12-27	Lifshitz et al.	

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	10	20160144500	A1	2016-05-26	Chen, Kun-Chen	
	11	20160236592	A1	2016-08-18	Peniche et al.	
	12	20170121056	A1	2017-05-04	Wang, Tzu-Chein	
	13	20170151972	A1	2017-06-01	Bar-Erez et al.	
	14	20180220758	A1	2018-08-09	Burchia, Rolf	
	15	20190002004		2018-06-05	Brunner, Yaron	
	16	20190308772	A1	2019-10-10	Gonitianer, Reiner	
	17	20190315515	A1	2019-10-17	Gonitianer, Reiner	
	18	20200025229	A1	2020-01-23	Baruch, Danny	
	19	20200346819	A1	2020-11-05	Kogel, Jan	

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	Attorney Docket Number	17157-0101-1

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	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]
	1	203427004	CN	U	2014-02-12	Martin Rauch		☒
	2	206841966	CN	U	2018-01-05	Wang, et al.		☒
	3	102015013053	DE	A1	2017-04-13	Burchia, Rolf		☒
	4	202013003741	DE	U1	2013-04-26	Makita Corporation		☒
	5	202015106823	DE	U1	2017-03-16	BS Systems GMBH		☒
	6	0555533	EP	A1	1993-08-18	Pauser et al.		☒
	7	1059240	EP	A1	2000-12-13	Pauser et al.		☒
	8	1238602	EP	A3	2002-09-11	Durr, Paul		☒
	9	1516703	EP	A1	2005-03-23	Runge, Erich		☒
	10	2402259	EP	A1	2012-01-04	Stegherr, Franz		☒

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	11	2005162223	JP	A	2005-06-23	Shimatani, Iwoa		☒
	12	2011135559	WO	A1	2011-11-03	Bruner, Yaron		☒
	13	2019105598	WO	A1	2019-06-06	Kogel, Jan		☒

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NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	European Search Report dated March 9, 2021 from related European Patent Application No. 20194860.1 [17157-0095]	☒
	2	Australian Examination Report dated February 19, 2022 from related Australian Patent Application No. 20220202609 [17157-0094]	☒
	3	Dewalt ToughSystems 2.0 Toolbox, DWST08165, https://www.dewalt.com/product/dwst08165/toughsystemr-20-toolbox?tid=576956, Screen print of webpage printed September 13, 2022 Original date unknown but prior to U.S. filing date	☒
	4	Dewalt ToughSystem 2.0 Full-Size Organizer, DWST08040, https://www.dewalt.com/product/dwst08040/ toughsystemr-20-full-size-organizer, Screen print of webpage printed September 13, 2022 Original date unknown but prior to U.S. filing date	☒
	5	Boschtools.com "L-boxx" products, Model #: L-BOXX-1, L-BOXX-2, L-BOXX-3, L-BOXX-4, http://www.boschtools.com/ Products/Tools/Pages/Item Results.aspx?catid=1 611, Date unknown but prior to U.S. filing date.	☒
	6	festoolproducts.com "T-Loc" products, Model #: SYS 1, SYS 2, SYS 3, SYS 4, SYS 5, http://www.festoolproducts.com/ Systainer-Storage-System-s/75.htm, Date unknown but prior to U.S. filing date	☒

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	7	dewalt.com, "TSTAK" products, Model #: DWST08201, DWST08203, DWST08204, http://www.dewait com/tool-categories/hand-tools-storage-and-work-support-mobile-work-shop-st orage.aspx, Date unknown but prior to U.S. filing date.	☒
	8	dewalt.com, "Tough System" products, Model#: DWST17804, DWST17803, DWST17807, http://www.dewait com/tool-categories/hand-tools-storage-and-work-support-tstak.aspx, Date unknown but prior to U.S. filing date.	☒

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/PRINCE PAL/	Date Considered	03/11/2024

*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.

[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.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	
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	Art Unit	
	Examiner Name	
	Attorney Docket Number	17157-0101-1

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.

☐ The 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	/Jason R. Sytsma/	Date (YYYY-MM-DD)	2023-11-21
Name/Print	Jason R. Sytsma	Registration Number	62262

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.**

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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 record s.

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 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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

23486 7590 03/27/2024

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

EXAMINER	
PAL, PRINCE	

ART UNIT	PAPER NUMBER
3735	

NOTIFICATION DATE	DELIVERY MODE
03/27/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

deanna@shuttleworthlaw.com
jrs@shuttleworthlaw.com
uspto@shuttleworthlaw.com

Office Action Summary	Application No. 18/518,200	Applicant(s) ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on Restrition-02/28/2024.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-7,10-15,17 and 19-24 is/are pending in the application.

5a) Of the above claim(s) 6-7,19 and 22-24 is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1,10-13,15 and 20 is/are rejected.

8) ☑ Claim(s) 2-5,14 and 21 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 11/22/2023 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☑ All b)☐ Some** c)☐ None of the:

1.☑ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

2. Applicant's election without traverse of Species A (figures 1-7) claims 1-5,10-15 and 19-21 in the reply filed on 02/28/2024 is acknowledged. Claims 6-7,17,22-24 are withdrawn. Claim 19 recites "wherein the lid comprises four projections and the bottom comprises four positioning recesses, wherein two adjacent said storage boxes are located with respect to each other by the projection and the four positioning recesses on the bottom and the positioning slot and the four projections on the lid; wherein the four projections on the lid project upward from a top face of the lid, and the four positioning recesses of the bottom are located in a bottom face" which is shown in third embodiment in figure 15 as four element of 1041 due to this claim 19 is also withdrawn. Claims 1-5,10-15 and 20-21 will be examined.

Claim Rejections - 35 USC § 112

3. The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11 rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

Claim 11 recites the limitation " wherein said first connection part is provided on one of a lid of said storage box and a bottom of said storage box " in line 1-3. There is insufficient antecedent basis for this limitation in the claim because it is unclear which "a bottom of said storage box" it is. For purpose of examination the limitation will be interpreted as "wherein said first connection part is provided on one of a lid of said storage box and a bottom of said another storage box."

Claim Rejections - 35 USC § 102

5. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

7. Claim(s) 1,10-13,15 and 20 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Ben-Gigi (US9725209B1).

Regarding claim 1, Ben-Gigi teaches a storage box comprising (fig.1, 2A shows tool box assembly 10):

a first connection part disposed on one area of said storage box (fig.1-3 first connection is formed where latch 26 arranged to slide along side wall 18); connectable to

a second connection part another storage box (fig.1-3 lip 24 is the second connection part of the first box 12);

wherein, said first connection part comprises a mounting body (fig.1-3 shows the latch 26 with a body 31), a locking buckle movable with respect to said mounting body (fig.4C shows catch edge 30 movable with respect to body 31), and a first resilient member located between said mounting part body and said locking buckle (fig.4A-4C first biasing device 34 located between the body 31 and edge 30), wherein said first resilient member keeping said locking part buckle automatically in a locked state (fig.4C shows it locked state);

wherein, said second connection part of the other storage box comprises a mating part interlockable with the locking buckle (fig.1-3 lip 24 of the first tool box 12 engages the catch edge 30),

wherein the locking buckle is configured to slide inward with respect to the mounting part so that it-the locking buckle is automatically locked lockable with the mating part of the other storage box by action of said first resilient member when the locking buckle is aligned with the mating part of the other storage box (fig.4C the edge 30 is capable of sliding inwards with respect to the mounting part and lock with the lip 24 with the help of device 34);

a locking part cooperating with the locking buckle, wherein manual movement of the locking part causes the locking buckle to move to an unlocked state (fig.4A-4C catch 28 cooperating with the edge 30 to move from locking to unlocking position); and

a stop part, wherein when the stop part projects outward with respect to a locking path of the locking part (fig.4A-4C shows pivot 32 that projects outward with respect to a locking patch of catch 28), said locking part is not automatically lockable and said first connection part is in a

state of remaining unlocked from said second connection part (fig.4A-4C catch 28 is not automatically locked).

Regarding claim 10, the references as applied to claim 1 above discloses all the limitations substantially claimed. Ben-Gigi further teaches wherein said locking part is a sliding latch for horizontal movement (fig.4A shows catch 28 is a sliding latch horizontal movement).

Regarding claim 11, as best understood based on 112 issue identified above, the references as applied to claim 1 above discloses all the limitations substantially claimed. Ben-Gigi further teaches wherein said first connection part is provided on one of a lid of said storage box and a bottom of said another storage box (fig.2A-3 shows first connection where the latch 26 is connection to the side wall 18 and fig.2B shows where the other part of the latch 26 is connected to lip 24 and vice versa).

Regarding claim 12, the references as applied to claim 1 above discloses all the limitations substantially claimed. Ben-Gigi further teaches wherein two adjacent storage boxes are interlockable with each other by means of the first connection part and the second connection part of the other storage box (figs. 2A-3 shows the adjected boxes interlockable with each other by first and second connection).

Regarding claim 13, the references as applied to claim 1 above discloses all the limitations substantially claimed. Ben-Gigi further teaches a second resilient member (fig.4A-C show two coils 34 in which one of them is the first and one of them is the second) and wherein the locking

part comprises of a slot (fig.4A-C the coils 34 are inserted into slot) wherein the stop part biased outward from the slot by the second resilient member (fig.4A-4C pivot 32 is biased outward from that slot by the coils 34)

Regarding claim 15, the references as applied to claim 1 above discloses all the limitations substantially claimed. Ben-Gigi further teaches wherein the stop part moved outward relative to the locking part (fig.4A-4C pivot 32 will move outward relative to the catch 28 when 28 is pushed to unhook 30)

Regarding claim 20, Ben-Gigi teaches a storage box comprising (fig.1 2A shows tool bx assembly 10):

a first connection part disposed on one area of said storage box(fig.1-3 first connection is formed where latch 26 arranged to slide along side wall 18), wherein the first connection part comprises a mounting body(fig.1-3 shows the latch 26 with a body 31), a locking buckle movable with respect to the mounting body (fig.4C shows catch edge 30 movable with respect to body 31), and a first resilient member located between the mounting body and the locking buckle to bias the locking buckle automatically outward in a locked state(fig.4A-4C first biasing device 34 located between the body 31 and edge 30 and shows in the locked state);

a locking part configured to move along a horizontal locking path and to cooperate with the locking buckle, wherein manual movement of the locking part along the horizontal locking path causes the locking buckle to move between an unlocked state retracted with respect to the mounting body and a locked state extended with respect to the mounting body (fig.4A-4C catch 28 cooperating with the edge 30 to move from locking to unlocking position);

a stop part combined to the locking part comprising an unlocked state corresponding to the unlocked state of the locking buckle with the stop part extended from the locking part and the locking buckle held retracted with respect to the mounting body (fig.4A-4C shows pivot 32 that projects outward with respect to a locking patch of catch 28), and a locked state corresponding to the locked state of the locking buckle with the stop part retracted with respect to the locking part and the locking buckle held extended with respect to the mounting body(fig.4C shows the locked stated and the unlocked stated when edge 30 is retracted); and

a second connection part disposed on another area of said storage box, wherein the second connection part comprises a mating part that corresponds to the locking buckle (fig.1-3 lip 24 is the second connection part of the first box 12).

Allowable Subject Matter

8. Claim 2-5,14 and 21 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for additional references.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PRINCE PAL whose telephone number is (571)272-7525. The examiner can normally be reached M-Th, 7:30 AM - 6 PM (EST), 1st Friday Flex.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANTHONY STASHICK can be reached on (571)272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PRINCE PAL/
Examiner, Art Unit 3735

/STEVEN A. REYNOLDS/
Primary Examiner, Art Unit 3735

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 18/518,200	Filing Date 11/22/2023	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ 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).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	04/03/2024	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/POLIN ANG/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 minutes 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES
PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/518,200	**04/03/2024 04:51:11 PM Z ET**	**17157-0101-1**

Title of Invention

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7125	FILED BY	JAYME HUNTER
PATENT CENTER #	64954519	FILING DATE	11/22/2023
CUSTOMER #	23486	FIRST NAMED INVENTOR	Hongquan ZHANG
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Jason Sytsma

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Amendment and Response.pdf	12	Amendment/Request for Reconsideration-After Non-Final Rejection	49 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Amendment and Response.pdf	2441F291C3020658769D0FE6AC96795A840510A69B1E344D238A335AD4C5AA0DAACBD215E9410548086CA33B591A8E6AFC1981E474273CAAA24858F13EB382CF

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 filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application #	: 18/518,200
Inventors	: Hongquan ZHANG, Qiang WANG and Shujun CAI
Filed	: NOVEMBER 22, 2023
TC/AU	: 3735
Invention	: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY
Examiner	: PAL, PRINCE
Confirmation No.	: 7125
Docket No.	: 17157-101-1
Customer #	: 23486

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

AMENDMENT

In response to the action of MARCH 27, 2024, please enter the following:

A listing of Claims begins on page 2 of this paper, including any amendments.

Remarks/Arguments begin on page 10 of this paper.

CLAIMS

1. (Cancelled)

2. (Currently Amended) A storage box comprising:

a first connection part disposed on one area of said storage box connectable to a second connection part of another storage box;

wherein, said first connection part comprises a mounting body, a locking buckle movable with respect to said mounting body, and a first resilient member located between said mounting body and said locking buckle, wherein said first resilient member keeping said locking buckle automatically in a locked state;

wherein, said second connection part of the other storage box comprises a mating part interlockable with the locking buckle,

wherein the locking buckle is configured to slide inward with respect to the mounting part so that the locking buckle is automatically lockable with the mating part of the other storage box by action of said first resilient member when the locking buckle is aligned with the mating part of the other storage box;

a locking part cooperating with the locking buckle, wherein manual movement of the locking part causes the locking buckle to move to an unlocked state; and

a stop part, wherein when the stop part projects outward with respect to a locking path of the locking part, said locking part is not automatically lockable and said first connection part is in a state of remaining unlocked from said second connection part ~~The storage box of claim 1~~, wherein the stop part is retractable, said stop part being extended when said first connection part is in a holding unlocked state with said second

connection part of the other storage box, and said stop part being compressed when said first connection part is in a locked state with said second connection part.

3. (Previously Presented) The storage box of claim 2, wherein said stop part is provided on said locking part and is movable with said locking part along the locking path of the locking part.

4. (Previously Presented) The storage box of claim 3, wherein said locking part comprises a holding slot opened on the locking part, and further comprising a second resilient member combined between the holding slot and the stop part to extend the stop part outward in an extended state and said stop part is accommodated in said holding slot in a compressed state.

5. (Previously Presented) The storage box of claim 4, wherein when the stop part is retractably provided in said holding slot, said second resilient member is compressed; when said stop part is biased outward and held against a mating portion, said locking buckle is not automatically lockable to the mating part of the other storage box.

6. (Previously Presented) The storage box of claim 5, wherein said second resilient member is a torsion spring with one end against said stop part and the other end against a bottom of said holding slot; when said torsion spring is extended, said stop part extends

out of said holding slot and when said torsion spring is compressed, said stop part is retracted into said holding slot.

7. (Previously Presented) The storage box of claim 6, and further comprising a shaft connected to said locking part about which said stop part rotates, said shaft being fixed to said locking part; wherein the torsion spring being positioned on said shaft .

8. (Cancelled)

9. (Cancelled)

10. (Currently Amended) The storage box of claim ~~1~~2, wherein said locking part is a sliding latch for horizontal movement.

11. (Currently Amended) The storage box of claim ~~1~~2, wherein said first connection part is provided on ~~one of~~ a lid of said storage box ~~and a bottom of said storage box~~.

12. (Currently Amended) The storage box of claim ~~1~~2, wherein two adjacent storage boxes are interlockable with each other by means of the first connection part and the second connection part of the other storage box.

13. (Currently Amended) The storage box of claim ~~1~~2, and further comprising a second resilient member, and wherein the locking part comprises of a slot, and wherein the stop part is biased outward from the slot by the second resilient member.

14. (Currently Amended) A storage box comprising:

a first connection part disposed on one area of said storage box connectable to a second connection part of another storage box;

wherein, said first connection part comprises a mounting body, a locking buckle movable with respect to said mounting body, and a first resilient member located between said mounting body and said locking buckle, wherein said first resilient member keeping said locking buckle automatically in a locked state;

wherein, said second connection part of the other storage box comprises a mating part interlockable with the locking buckle,

wherein the locking buckle is configured to slide inward with respect to the mounting part so that the locking buckle is automatically lockable with the mating part of the other storage box by action of said first resilient member when the locking buckle is aligned with the mating part of the other storage box;

a locking part cooperating with the locking buckle, wherein manual movement of the locking part causes the locking buckle to move to an unlocked state; and

a stop part, wherein when the stop part projects outward with respect to a locking path of the locking part, said locking part is not automatically lockable and said first connection part is in a state of remaining unlocked from said second connection part;

a second resilient member, and wherein the locking part comprises of a slot, and wherein the stop part is biased outward from the slot by the second resilient member ~~The storage box of claim 13~~, wherein the stop part moves perpendicular with respect to a sliding path of the locking part.

15. (Currently Amended) The storage box of claim ~~13~~14, wherein the stop part moves outward relative to the locking part.

16. (Cancelled)

17. (Currently Amended) The storage box of claim ~~13~~14, wherein the second resilient member is a torsion spring and the stop part rotates relative to the locking part.

18. (Cancelled)

19. (Currently Amended) The storage box of claim ~~1~~2, further comprising a bottom comprising a projection, four sidewalls projecting from the bottom, a hinged lid to access an interior, and a positioning slot on the hinged lid, wherein two adjacent said storage boxes are located with respect to each other by the projection of the bottom and the positioning slot on the lid, wherein the lid comprises four projections and the bottom comprises four positioning recesses, wherein two adjacent said storage boxes are located with respect to each other by the projection and the four positioning recesses on

the bottom and the positioning slot and the four projections on the lid; wherein the four projections on the lid project upward from a top face of the lid, and the four positioning recesses of the bottom are located in a bottom face.

20. (Cancelled)

21. (Currently Amended) A storage box comprising:

a first connection part disposed on one area of said storage box, wherein the first connection part comprises a mounting body, a locking buckle movable with respect to the mounting body, and a first resilient member located between the mounting body and the locking buckle to bias the locking buckle automatically outward in a locked state;

a locking part configured to move along a horizontal locking path and to cooperate with the locking buckle, wherein manual movement of the locking part along the horizontal locking path causes the locking buckle to move between an unlocked state retracted with respect to the mounting body and a locked state extended with respect to the mounting body;

a stop part combined to the locking part comprising an unlocked state corresponding to the unlocked state of the locking buckle with the stop part extended from the locking part and the locking buckle held retracted with respect to the mounting body, and a locked state corresponding to the locked state of the locking buckle with the stop part retracted with respect to the locking part and the locking buckle held extended with respect to the mounting body; and

a second connection part disposed on another area of said storage box, wherein the second connection part comprises a mating part that corresponds to the locking buckle~~The storage box of claim 20~~, wherein said locking part further comprises a holding slot opened on the locking part, and further comprising a second resilient member combined between the holding slot and the stop part, wherein the stop part is extended from the slot in the locking part when the stop part is in the unlocked state, and wherein the stop part is retracted in the slot in the locking part when the stop part is in the locked state.

22. (Currently Amended) The storage box of claim ~~20~~21, further comprising a bottom comprising a projection, four sidewalls projecting from the bottom, a hinged lid to access an interior, and a positioning slot on the hinged lid, wherein two adjacent said storage boxes are located with respect to each other by the projection of the bottom and the positioning slot on the lid, wherein the lid comprises four projections and the bottom comprises four positioning recesses, wherein two adjacent said storage boxes are located with respect to each other by the projection and the four positioning recesses on the bottom and the positioning slot and the four projections on the lid; wherein the four projections on the lid project upward from a top face of the lid, and the four positioning recesses of the bottom are located in a bottom face.

23. (Cancelled)

24. (Cancelled)

REMARKS

Reconsideration and allowance are respectfully requested.

STATUS OF THE CLAIMS

Claims 2-7, 10-15, 17, 19, 21, and 22 are pending, with claims 2, 14, and 21 being independent. Claims 1, 8, 9, 16, 18, 20, 23, and 24 have been cancelled. Claims 2, 10-15, 17, 19, 21, and 22 have been amended. No new subject matter has been added.

ALLOWABLE SUBJECT MATTER

Applicant thanks the Examiner for indicating that claims 2-5, 14, and 21 contain allowable subject matter. In order to expedite a Notice of Allowance, Applicant has amended the claims to place them in condition for allowance.

Claim 2 has been amended to include the limitations of claim 1, thus placing it in condition for allowance.

Claim 14 has been amended to include the limitations of claims 1 and 13, thus placing it in condition for allowance.

Claim 21 has been amended to include the limitations of claim 20, thus placing it in condition for allowance.

The remaining claims depend from one of the foregoing claims 2, 14, and 21, thus placing each of them in condition for allowance.

Applicant has rescinded its withdrawal of claims 6, 7, 19, and 22, since each of these claims depend from an allowed claim. As such these claims are eligible for rejoinder under MPEP § 821.04.

REJECTIONS

Claim 11 stand rejected under 35 USC §112(b) for being indefinite. In response, Applicant has amended claim 11 to state, as follows: "The storage box of claim ~~1~~2, wherein said first connection part is provided on ~~one of~~ a lid of said storage box ~~and a bottom of said storage box~~." Applicant respectfully requests that the rejection of claim 11 be withdrawn.

Claims 1, 10-13, 15 and 20 stand rejected under 35 USC §102(a)(1) as being anticipated by Ben-Gigi. Applicant does not concede the merits of this rejection and reserves the right to argue against such in one or more continuing applications.

NO DISCLAIMERS OR DISAVOWALS

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application.

Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution.

Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In view of the above, it is believed that the application is in condition for allowance and such a Notice is respectfully requested. If anything else is needed to place the application in condition for allowance, it is kindly requested that the undersigned be contacted.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being transmitted to the United States Patent and Trademark Office by EFS-Web on April 03, 2024.

/Jayme M. Hunter/
Jayme M. Hunter

Notice of References Cited	Application/Control No. 18/518,200	Applicant(s)/Patent Under Reexamination ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	Page 1 of 5

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-5518139-A	1996-05-21	Trower; David A.	A45C11/20	206/379
*	B	US-10093445-B1	2018-10-09	Hertz; Allen D.	B65D21/0223	1/1
*	C	US-20070194543-A1	2007-08-23	Duvigneau; Nikolai	A45C5/14	280/47.26
*	D	US-6082539-A	2000-07-04	Lee; Pei-Ling	B25H3/021	206/821
*	E	US-11642777-B2	2023-05-09	Baruch; Danny	B25H3/022	403/322.4
*	F	US-9725209-B1	2017-08-08	Ben-Gigi; Zion	B25H3/021	1/1
*	G	US-10603783-B2	2020-03-31	Brocket; Stephen	B65D21/02	1/1
*	H	US-11858687-B2	2024-01-02	Barabeisch; Markus	B25H3/02	1/1
*	I	US-20120312812-A1	2012-12-13	Sosnovsky; David	B65D45/22	220/23.83
*	J	US-11155382-B1	2021-10-26	Cai; Shujun	B65D21/0223	1/1
*	K	US-20050150892-A1	2005-07-14	Miller, Daniel R.	B65D19/18	220/324
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in YYYY-MM-DD format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 18/518,200	Applicant(s)/Patent Under Reexamination ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	Page 2 of 5

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-20170121056-A1	2017-05-04	Wang; Tzu-Chien	B65D21/0228	1/1
*	B	US-20210221561-A1	2021-07-22	Davidian; Richard M.	B25H3/02	1/1
*	C	US-20190168376-A1	2019-06-06	BROCKET; Stephen	B25H3/028	1/1
*	D	US-8875888-B2	2014-11-04	Koenig; Andreas	B65D21/0223	206/508
*	E	US-8851287-B2	2014-10-07	Becklin; Dennis M.	B65D21/0224	108/55.3
*	F	US-20120024739-A1	2012-02-02	Fjelland; Douglas J.	F16B45/02	403/321
*	G	US-20110139666-A1	2011-06-16	Sosnovsky; David	B25H3/021	206/508
*	H	US-20020000440-A1	2002-01-03	Sagol, Sami	B25H3/00	220/23.6
*	I	US-7780026-B1	2010-08-24	Zuckerman; Edward S.	B65D21/0223	206/508
*	J	US-20040144670-A1	2004-07-29	Riley, Edward D.	A61B50/30	206/439
*	K	US-20050150892-A1	2005-07-14	Miller, Daniel R.	B65D19/18	220/324
*	L	US-3980185-A	1976-09-14	Cain; Clyde R.	B65D88/022	206/509
*	M	US-4736861-A	1988-04-12	Basili; Robert A.	G11B23/027	G9B/23.018

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Country	Name	CPC Classification
	N					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in YYYY-MM-DD format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 18/518,200	Applicant(s)/Patent Under Reexamination ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	Page 3 of 5

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-20150274362-A1	2015-10-01	CHRISTOPHER; Brent	B65D21/0219	206/506
*	B	US-20030094392-A1	2003-05-22	Meier , Sven	B65D21/0213	206/503
*	C	US-8602217-B2	2013-12-10	Sosnovsky; David	B65D21/0228	220/756
*	D	US-20160130034-A1	2016-05-12	Kuhls; Timo	B65D21/023	206/510
*	E	US-20090178946-A1	2009-07-16	Patstone; Christopher H.	B65D21/0223	206/509
*	F	US-20100219193-A1	2010-09-02	Becklin; Dennis M.	B65D21/0224	220/630
*	G	US-11643252-B2	2023-05-09	Barabeisch; Markus	B65D25/2858	206/508
*	H	US-20190291922-A1	2019-09-26	GONITIANER; Reiner	B65D21/0228	1/1
*	I	US-20190039781-A1	2019-02-07	KÖGEL; Jan	B65D21/0212	1/1
*	J	US-20220033140-A1	2022-02-03	Barabeisch; Markus	B65D21/023	1/1
*	K	US-20220041336-A1	2022-02-10	Barabeisch; Markus	B65D21/0223	1/1
*	L	US-20070012694-A1	2007-01-18	Duvigneau; Nikolai	B25H3/026	220/4.27
*	M	US-9550605-B1	2017-01-24	Summers; Matthew A.	B62B3/004	1/1

FOREIGN PATENT DOCUMENTS

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Notice of References Cited	Application/Control No. 18/518,200	Applicant(s)/Patent Under Reexamination ZHANG et al.	
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U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-20150274362-A1	2015-10-01	CHRISTOPHER; Brent	B65D21/0219	206/506
*	B	US-20030094392-A1	2003-05-22	Meier , Sven	B65D21/0213	206/503
*	C	US-8602217-B2	2013-12-10	Sosnovsky; David	B65D21/0228	220/756
*	D	US-20160130034-A1	2016-05-12	Kuhls; Timo	B65D21/023	206/510
*	E	US-20090178946-A1	2009-07-16	Patstone; Christopher H.	B65D21/0223	206/509
*	F	US-20100219193-A1	2010-09-02	Becklin; Dennis M.	B65D21/0224	220/630
*	G	US-11643252-B2	2023-05-09	Barabeisch; Markus	B65D25/2858	206/508
*	H	US-20190291922-A1	2019-09-26	GONITIANER; Reiner	B65D21/0228	1/1
*	I	US-20190039781-A1	2019-02-07	KÖGEL; Jan	B65D21/0212	1/1
*	J	US-20220033140-A1	2022-02-03	Barabeisch; Markus	B65D21/023	1/1
*	K	US-20220041336-A1	2022-02-10	Barabeisch; Markus	B65D21/0223	1/1
*	L	US-20070012694-A1	2007-01-18	Duvigneau; Nikolai	B25H3/026	220/4.27
*	M	US-9550605-B1	2017-01-24	Summers; Matthew A.	B62B3/004	1/1

FOREIGN PATENT DOCUMENTS

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Notice of References Cited	Application/Control No. 18/518,200	Applicant(s)/Patent Under Reexamination ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	Page 5 of 5

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*		Document Number Country Code-Number-Kind Code	Date YYYY-MM-DD	Name	CPC Classification	US Classification
*	A	US-5518139-A	1996-05-21	Trower; David A.	A45C11/20	206/379
*	B	US-10093445-B1	2018-10-09	Hertz; Allen D.	B65D21/0223	1/1
*	C	US-20070194543-A1	2007-08-23	Duvigneau; Nikolai	A45C5/14	280/47.26
*	D	US-6082539-A	2000-07-04	Lee; Pei-Ling	B25H3/021	206/821
*	E	US-11642777-B2	2023-05-09	Baruch; Danny	B25H3/022	403/322.4
*	F	US-9725209-B1	2017-08-08	Ben-Gigi; Zion	B25H3/021	1/1
*	G	US-10603783-B2	2020-03-31	Brocket; Stephen	B65D21/02	1/1
*	H	US-11858687-B2	2024-01-02	Barabeisch; Markus	B25H3/02	1/1
*	I	US-20120312812-A1	2012-12-13	Sosnovsky; David	B65D45/22	220/23.83
*	J	US-11155382-B1	2021-10-26	Cai; Shujun	B65D21/0223	1/1
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	L					
	M					

FOREIGN PATENT DOCUMENTS

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Dates in YYYY-MM-DD format are publication dates. Classifications may be US or foreign.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	**Art Unit**
	PRINCE PAL	3735

CPC						
Symbol					**Type**	**Version**
B25H	/	3	/	026	F	2013-01-01
B65D	/	21	/	0228	I	2013-01-01
B65D	/	2255	/	00	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

/PRINCE PAL/ Examiner, Art Unit 3735	04 April 2024	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	16	
/STEVEN A. REYNOLDS/ Primary Examiner, Art Unit 3735	04 April 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	2	4

U.S. Patent and Trademark Office — Part of Paper No.: 20240404-1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	**Art Unit**
	PRINCE PAL	3735

INTERNATIONAL CLASSIFICATION					
CLAIMED					
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B65D21/02	/	21	/	02	

NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
206	503

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

/PRINCE PAL/ Examiner, Art Unit 3735	04 April 2024	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	16	
/STEVEN A. REYNOLDS/ Primary Examiner, Art Unit 3735	04 April 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	2	4

U.S. Patent and Trademark Office — Part of Paper No.: 20240404-1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	**Art Unit**
	PRINCE PAL	3735

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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1	2	8	11		20										
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	8	13	17												
	9		18												

/PRINCE PAL/ Examiner, Art Unit 3735	04 April 2024	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	16	
/STEVEN A. REYNOLDS/ Primary Examiner, Art Unit 3735	04 April 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	2	4

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	Art Unit
	PRINCE PAL	3735

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
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	23	N	-							
	24	N	-							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/518,200	ZHANG et al.
	Examiner	Art Unit
	PRINCE PAL	3735

CPC - Searched*		
Symbol	Date	Examiner
B65D21/0223,21/0228,21/0219,21/0217,21/0209,21/0213,21/0224,21/0212,2543/00027,21/0215,21/02,21/023	03/18/2024	PP
B25H3/023,3/021,3/02,3/026,3/028	03/18/2024	PP

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
206	499,501,503,508,509,510,511,512,1.5	03/18/2024	PP

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
inventor and assignee search	03/09/2024	PP
limited classification and text search	03/09/2024	PP
update search	04/04/2024	PP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	see search history	04/04/2024	PP

/PRINCE PAL/ Examiner, Art Unit 3735	

Bibliographic Data

Application No: 18/518,200

Foreign Priority claimed: (•) Yes ( ) No

35 USC 119 (a-d) conditions met: [✓] Yes [ ] No [ ] Met After Allowance

Verified and Acknowledged: /PRINCE PAL/ Examiner's Signature | Initials

Title: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/22/2023	206	3735	17157-0101-1
RULE			

APPLICANTS

INVENTORS

CONTINUING DATA

This application is a CON of 18176907 03/01/2023

FOREIGN APPLICATIONS

CHINA CN202210212862.5 03/04/2022

CHINA CN202320135456.3 01/13/2023

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1410	((("ZHANG") near3 ("Hongquan")) OR (("WANG") near3 ("Qiang")) OR (("CAI") near3 ("Shujun"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2024/03/11 07:41 PM
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		US-20120168444-A1 OR US-20170158216-A1 OR US-20170066124-A1 OR US-20140319147-A1 OR US-20140070677-A1 OR US-20170121056-A1 OR US-20110139666-A1 OR US-20100320108-A1 OR US-20070222231-A1 OR US-20050155889-A1 OR US-20090263187-A1 OR US-20210291954-A1 OR US-20030147691-A1 OR US-20120024739-A1 OR US-20210221561-A1 OR US-20210155373-A1 OR US-20200298392-A1 OR US-20190168376-A1 OR US-20120132558-A1 OR US-20090236255-A1 OR US-20150001120-A1 OR US-20120222983-A1 OR US-20110100856-A1 OR US-20080116098-A1 OR US-20030234200-A1 OR US-20110158761-A1 OR US-20120267369-A1 OR US-20090120835-A1 OR US-20040007546-A1 OR US-20020000440-A1 OR US-20200055631-A1 OR US-20210229863-A1 OR US-20100224528-A1 OR US-20160075479-A1 OR US-20190291928-A1 OR US-20170129645-A1 OR US-20160008973-A1 OR US-20120080432-A1 OR US-20190217999-A1 OR US-20140251998-A1).did. AND PGPB.dbnm.) OR ((EP-3945039-A1 OR EP-2338650-A2 OR DE-102016112853-A1 OR					

		DE-102014111337-A1 OR DE-202014103695-U1).did. AND FTDB.dbnm.) OR ((AU-2020230227-B1 OR US-20150151427-A1 OR DE-102016112853-A1).did. AND DWPI.dbnm.) OR ((US-2807387-A).did. AND USOC.dbnm.)					
L14	100	((US-11185974-B2 OR US-10575417-B2 OR US-D857388-S OR US-D851929-S OR US-10160471-B2 OR US-RE47022-E OR US-10022856-B2 OR US-9796076-B2 OR US-D798053-S OR US-9616563-B2 OR US-D744750-S OR US-D694522-S OR US-8505729-B2 OR US-D674605-S OR US-8210579-B2 OR US-8210387-B2 OR US-D637001-S OR US-7854321-B2 OR US-9193060-B2 OR US-8944537-B1 OR US-5011013-A OR US-5281045-A OR US-4893724-A OR US-5199592-A OR US-11155382-B1 OR US-8567796-B2 OR US-6585090-B2 OR US-7658887-B2 OR US-5730311-A OR US-5699925-A OR US-3659743-A OR US-8240504-B2 OR US-5967322-A OR US-3635361-A OR US-5042674-A OR US-5860527-A OR US-8851287-B2 OR US-8813960-B2 OR US-6134832-A OR US-6889838-B2 OR US-8875888-B2 OR US-6371320-B1 OR US-11230410-B2 OR US-10710770-B2 OR US-10793172-B2 OR US-10583962-B2 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/12 05:49 PM

		6874634-B2 OR US-11486427-B2 OR US-8297464-B2 OR US-10870513-B2).did. AND USPT.dbnm.) OR ((US-20200025229-A1 OR US-20120168444-A1 OR US-20170158216-A1 OR US-20170066124-A1 OR US-20140319147-A1 OR US-20140070677-A1 OR US-20170121056-A1 OR US-20110139666-A1 OR US-20100320108-A1 OR US-20070222231-A1 OR US-20050155889-A1 OR US-20090263187-A1 OR US-20210291954-A1 OR US-20030147691-A1 OR US-20120024739-A1 OR US-20210221561-A1 OR US-20210155373-A1 OR US-20200298392-A1 OR US-20190168376-A1 OR US-20120132558-A1 OR US-20090236255-A1 OR US-20150001120-A1 OR US-20120222983-A1 OR US-20110100856-A1 OR US-20080116098-A1 OR US-20030234200-A1 OR US-20110158761-A1 OR US-20120267369-A1 OR US-20090120835-A1 OR US-20040007546-A1 OR US-20020000440-A1 OR US-20200055631-A1 OR US-20210229863-A1 OR US-20100224528-A1 OR US-20160075479-A1 OR US-20190291928-A1 OR US-20170129645-A1 OR US-20160008973-A1 OR US-20120080432-A1 OR US-20190217999-A1 OR					

		US-20140251998-A1).did. AND PGPB.dbnm.) OR ((EP-3945039-A1 OR EP-2338650-A2 OR DE-102016112853-A1 OR DE-102014111337-A1 OR DE-202014103695-U1).did. AND FTDB.dbnm.) OR ((AU-2020230227-B1 OR US-20150151427-A1 OR DE-102016112853-A1).did. AND DWPI.dbnm.) OR ((US-2807387-A).did. AND USOC.dbnm.)					
L15	45	(Artificial Intelligence) Similar to: 18/518,200 with 0 CPC Selections and 0 Text Selections Text: (US-20230278191-A1 OR CN-216995407-U OR CN-116729770-A OR CN-219215939-U OR CN-116729769-A OR CN-216995406-U OR CN-216995405-U OR US-20230136626-A1 OR CN-114834728-A OR CN-111924270-B OR CN-214931552-U OR CN-219295944-U OR CN-111924270-A OR CN-211996959-U OR DE-4424841-A1 OR WO-2021196813-A1 OR CN-212448482-U OR CN-111297161-A OR WO-2023193617-A1 OR CN-216233571-U OR JP-2005161948-A OR CN-213862049-U OR CN-110816419-A OR CN-111513490-A OR JP-7348669-B2 OR CN-211442144-U OR CN-212345877-U OR CN-213384064-U OR CN-214730569-U OR CN-111928570-A OR CN-218288825-U OR CN-209855482-U OR CN-111928570-B OR CN-211894308-U OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2024/03/12 10:58 PM

		CN-115465173-A OR WO-2023193306-A1 OR CN-210605875-U OR JP-4198580-B2 OR TW-M421927-U OR CN-115432294-A OR CN-218173222-U OR JP-2022179000-A OR WO-2019174518-A1 OR JP-2023037112-A OR CN-219584869-U OR JP-2005162223-A OR CN-115402645-A OR CN-216186917-U OR CN-219726203-U OR CN-207411717-U).did.					
L16	39	((US-20230278191-A1 OR US-20230136626-A1 OR US-20200346819-A1 OR US-20200025229-A1 OR US-20180220758-A1 OR US-20170121056-A1 OR US-20120312812-A1 OR US-20110155613-A1 OR US-20210221561-A1 OR US-20190168376-A1 OR US-20170129645-A1 OR US-20160075479-A1 OR US-20120080432-A1 OR US-20120024739-A1 OR US-20110139666-A1 OR US-20100224528-A1 OR US-20020000440-A1).did. AND PGPB.dbnm.) OR ((WO-2023230852-A1 OR CN-217970389-U OR CN-216995405-U OR DE-102014111337-A1 OR DE-202014103695-U1 OR EP-2338650-A2 OR CN-216995406-U OR CN-214730569-U OR CN-214931552-U).did. AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR US-9393684-B2 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/12 11:14 PM

		US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.)					
L17	7293	(206/503 OR 206/509 OR 206/508 OR 220/324 OR 220/23.6).ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/12 11:16 PM
L18	1916	(206/503 OR 206/509 OR 206/508 OR 220/324 OR 220/23.6).ccls. AND (stack)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/12 11:16 PM
L19	765	(206/503 OR 206/509 OR 206/508 OR 220/324 OR 220/23.6).ccls. AND (stack$) AND (lock)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 10:50 AM
L20	981	(206/499 206/501 206/503 206/508 206/509 206/510 206/511 206/512 206/1.5).ccls. AND (stack$) AND (lock)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 12:35 PM
L21	1429	(206/1.5).ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 12:46 PM
L22	125	(206/1.5).ccls. AND (stack$)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 12:46 PM
L23	4582	(206/499 206/501 206/503 206/508 206/509 206/510 206/511 206/512 206/1.5).ccls. AND (stack$)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 01:04 PM
L24	3728	(206/499 206/501 206/503 206/508 206/509 206/510 206/511 206/512 206/1.5).ccls. AND (stack$) AND (container OR storage)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/13 01:17 PM
L25	66	((US-20230278191-A1 OR US-20230136626-A1 OR US-20200346819-A1 OR US-20200025229-A1 OR US-20180220758-A1 OR US-20170121056-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2024/03/18 11:28 AM

		US-20120312812-A1 OR US-20110155613-A1 OR US-20210221561-A1 OR US-20190168376-A1 OR US-20170129645-A1 OR US-20160075479-A1 OR US-20120080432-A1 OR US-20120024739-A1 OR US-20110139666-A1 OR US-20100224528-A1 OR US-20020000440-A1 OR US-20040144670-A1 OR US-20050150892-A1 OR US-20070080089-A1 OR US-20150274362-A1 OR US-20030094392-A1 OR US-20160130034-A1 OR US-20160168880-A1 OR US-20090178946-A1 OR US-20100219193-A1).did. AND PGPB.dbnm.) OR ((WO-2023230852-A1 OR CN-217970389-U OR CN-216995405-U OR DE-102014111337-A1 OR DE-202014103695-U1 OR EP-2338650-A2 OR CN-216995406-U OR CN-214730569-U OR CN-214931552-U).did. AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR US-9393684-B2 OR US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2 OR US-7780026-B1 OR US-4813542-A OR US-5464115-A OR US-3939982-A OR US-4405057-A OR US-3980185-A OR US-4736861-A OR US-	MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		8602217-B2 OR US-6983946-B2 OR US-6328355-B1 OR US-3828899-A OR US-5197601-A OR US-5617967-A OR US-8573399-B2 OR US-11643252-B2 OR US-4591065-A).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.) OR ((US-3376046-A OR US-3237800-A).did. AND USOC.dbnm.)					
L26	7112	(B65D21/0223 OR B65D21/0228 OR B65D21/0219 OR B65D21/0217 OR B65D21/0209 OR B65D21/0213 OR B65D21/0224 OR B65D21/0212 OR B65D21/022 OR B65D2543/00027 OR B25H3/023 OR B25H3/021 OR B25H3/02 OR B25H3/026 OR B25H3/028 OR B65D21/0215 OR B65D21/02 OR B65D21/023).cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/18 11:29 AM
L27	3953	(B65D21/0223 OR B65D21/0228 OR B65D21/0219 OR B65D21/0217 OR B65D21/0209 OR B65D21/0213 OR B65D21/0224 OR B65D21/0212 OR B65D21/022 OR B65D2543/00027 OR B25H3/023 OR B25H3/021 OR B25H3/02 OR B25H3/026 OR B25H3/028 OR B65D21/0215 OR B65D21/02 OR B65D21/023).cpc. AND (stack$) AND (container OR storage)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/18 11:29 AM
L28	1563	("0344661" | "0687619" | "1424819" | "1933894" | "2554091" | "2588830" | "2901262" | "2964328"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2024/03/18 01:07 PM

		| "3168329" | "3310905" | "3327841" | "3393951" | "3734526" | "3804432" | "3891230" | "3990653" | "4169607" | "4202459" | "4363496" | "4448434" | "4619363" | "4836374" | "4884689" | "4927021" | "4936594" | "4984704" | "5022546" | "5104135" | "5123666" | "5207723" | "5325966" | "5333885" | "5362078" | "5378005" | "5464104" | "5474312" | "5595395" | "5626352" | "5634649" | "5699925" | "5720535" | "5799958" | "5803254" | "5845915" | "5882097" | "5887715" | "5906381" | "5913527" | "5915554" | "5931483" | "5934466" | "5938396" | "D417338" | "6000713" | "6015064" | "6050660" | "6079719" | "6082539" | "6105767" | "6109627" | "6113129" | "6123344" | "6131926" | "6135466" | "6176559" | "D437484" | "6254112" | "6347847" | "6357063" | "6371320" | "6394471" | "6398235" | "6474930" | "6523687" | "6561528" | "6601930" | "6616152" | "6626295" | "6648166" | "6648390" | "6659476" | "6666465" | "6874634" | "6889838" | "6945546" | "6971517" | "6994214" | "7063339" | "7066475" | "7108131" | "7168715" | "D536525" | "7188846" | "7188847" | "D542496" | "7210689" | "7219969" | "7246704" | "7255229" | "7263742" | "7328905" | "7334680" | "7357268" | "7367571" | "7472730" | "7500681" | "7503569" | "7523827" | "7686260" | "7703776" | "7819407" | "7823893" | "7845653" | "7883096" | "7905353" | "7905502" | "7938412" | "D640869" | "D653832" | "D654241" | "8132819" | "8226092" | "8505729" |					

		"8567796" | "8657307" | "8668209" | "9132543" | "9566990" | "20010052681" | "20020014488" | "20020067027" | "20020074905" | "20020113386" | "20020185831" | "20030001348" | "20030146589" | "20040069668" | "20040265104" | "20050062244" | "20050104308" | "20050161357" | "20050224384" | "20050258610" | "20050275178" | "20060006619" | "20060012139" | "20060037964" | "20060038367" | "20070080512" | "20070103039" | "20070194024" | "20070194543" | "20070273114" | "20080084036" | "20080121547" | "20080128305" | "20080143069" | "20090020528" | "20090026901" | "20090096181" | "20090223853" | "20090236255" | "20090309323" | "20100052276" | "20100290877" | "20100327562" | "20110049824" | "20110181008" | "20120160886" | "20120326406" | "20140001719" | "20140023221" | "20140375181" | "3419184" | "3987829" | "4287997" | "4452555" | "5058746" | "5085448" | "5186330" | "D358765" | "5564805" | "5709008" | "5785328" | "D401412" | "6116390" | "D467424" | "D467425" | "D467426" | "6983946" | "7011214" | "7044528" | "7163122"				

		| "7350789" | "7482928" | "7530580" | "7537119" | "7714708" | "7780026" | "7854321" | "7883096" | "7938412" | "8132819" | "8146771" | "8256242" | "8561769" | "8567796" | "RE44656" | "20040007574" | "20050036847" | "20050199459" | "20070130731" | "20090178946" | "20120292867" | "4619363" | "5011013" | "6193062" | "6371320" | "8602217" | "20030062365" | "20030094392" | "20110049824" | "20110139777" | "20110155613" | "20110168599" | "20120312812" | "20120326406" | "2634020" | "3182856" | "3387732" | "3581928" | "4351448" | "5353948" | "5469961" | "5606820" | "5699925" | "5755180" | "6761266" | "6959507" | "7246718" | "20030155267" | "20050224494" | "20080308641" | "20090139892" | "20090178989" | "20090236255" | "0879455" | "2695115" | "2849151" | "3103278" | "3117692" | "3383009" | "3391824" | "3407758" | "3419184" | "3481502" | "3616943" | "3754645" | "3756396" | "3759416" | "3811747" | "D236326" | "3916803" | "3926321" | "3968879" | "4287997" | "4618059" | "4655360" | "4765252" | "4832200" | "4848605" | "4889235" | "5054617" | "D333094" | "5203494" | "5392945" | "5404829" | "D361715" | "5454477" | "5641090" | "5718350" | "5769230" | "5779051" | "5974981" | "6021916" | "6085467" |				

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		AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR US-9393684-B2 OR US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2 OR US-7780026-B1 OR US-4813542-A OR US-5464115-A OR US-3939982-A OR US-4405057-A OR US-3980185-A OR US-4736861-A OR US-8602217-B2 OR US-6983946-B2 OR US-6328355-B1 OR US-3828899-A OR US-5197601-A OR US-5617967-A OR US-8573399-B2 OR US-11643252-B2 OR US-9550605-B1 OR US-5518139-A OR US-10093445-B1 OR US-6082539-A OR US-11642777-B2 OR US-9725209-B1 OR US-10603783-B2 OR US-11858687-B2 OR US-4591065-A).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.) OR ((US-3376046-A OR US-3237800-A).did. AND USOC.dbnm.)					
L30	33	(Artificial Intelligence) More like doc: AU-2020230227-B1 Text: (EP-3945039-A1 OR EP-3945039-B1 OR US-11155382-B1 OR US-11072461-B2 OR EP-3822041-B1 OR AU-2005338922-A1 OR US-11279518-B2 OR EP-3945039-C0 OR AU-2010246445-B2 OR AU-2010246445-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO;	OR	ON	ON	2024/03/18 04:31 PM

		DE-102015013053-A1 OR US-10750833-B2 OR DE-102015013053-B4 OR US-11486427-B2 OR US-20200025229-A1 OR EP-3597371-A1 OR AU-2016309923-C1 OR US-20230023410-A1 OR AT-E342201-T1 OR EP-3337645-B1).did.	JPO; DERWENT; IBM_TDB)				
L31	9	((US-4591065-A OR US-5518139-A OR US-6082539-A OR US-11642777-B2 OR US-9725209-B1 OR US-10603783-B2).did. AND USPT.dbnm.) OR ((US-20190291922-A1 OR US-20190039781-A1 OR US-20220033140-A1).did. AND PGPB.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/18 04:33 PM
L32	44	(Artificial Intelligence) Similar to: 17/515,620 with 0 CPC Selections and 0 Text Selections Text: (US-20230132650-A1 OR US-3556529-A OR US-6164648-A OR US-20050051954-A1 OR US-20060249905-A1 OR GB-2113559-A OR EP-0413506-A1 OR US-6176490-B1 OR WO-2010003099-A2 OR BE-418639-A OR US-4968040-A OR US-20040140619-A1 OR US-4239231-A OR KR-200276874-Y1 OR US-3826500-A OR DE-6905028-U OR US-7080837-B2 OR KR-20170088131-A OR US-3827695-A OR CA-2022268-A1 OR GB-2247409-A OR US-4740185-A OR CA-1281549-C OR US-4423876-A OR KR-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2024/03/19 04:22 PM

		101779518-B1 OR FR-2846890-A1 OR US-20080203666-A1 OR US-D686672-S OR US-5478085-A OR US-20190083879-A1 OR US-4257611-A OR MX-PA00012339-A OR US-3830502-A OR SU-1719002-A1 OR BE-395886-A OR US-9737793-B1 OR KR-20090015474-A OR DE-2507964-A1 OR GB-2199254-A OR US-7832732-B1 OR CN-1211140-C OR CN-1454108-A OR US-4988109-A OR CN-201058230-Y OR ES-2220201-A1 OR US-20080318653-A1 OR WO-2012012383-A2 OR CN-200957290-Y OR US-20080203667-A1 OR CA-2587298-A1).did.					
L33	33	(Artificial Intelligence) More like doc: US-20230132650-A1 Text: (US-10118090-B1 OR AT-254564-B OR GB-2617600-A OR US-4225139-A OR GB-474929-A OR DE-427928-C OR US-7287647-B1 OR US-20030227135-A1 OR US-6959926-B2 OR US-6343790-B1 OR DE-3003314-A1 OR FR-2474446-A1 OR US-6325374-B1 OR BE-347565-A OR US-20180008883-A1 OR US-20060043677-A1 OR US-3964749-A OR US-4277067-A OR US-4273338-A OR US-6609714-B1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/19 04:23 PM
L34	84	((US-20230278191-A1 OR US-20230136626-A1 OR US-20200346819-A1 OR US-20200025229-A1 OR US-20180220758-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2024/04/04 05:54 PM

		A1 OR US-20170121056-A1 OR US-20120312812-A1 OR US-20110155613-A1 OR US-20210221561-A1 OR US-20190168376-A1 OR US-20170129645-A1 OR US-20160075479-A1 OR US-20120080432-A1 OR US-20120024739-A1 OR US-20110139666-A1 OR US-20100224528-A1 OR US-20020000440-A1 OR US-20040144670-A1 OR US-20050150892-A1 OR US-20070080089-A1 OR US-20150274362-A1 OR US-20030094392-A1 OR US-20160130034-A1 OR US-20160168880-A1 OR US-20090178946-A1 OR US-20100219193-A1 OR US-20190291922-A1 OR US-20190039781-A1 OR US-20220033140-A1 OR US-20220041336-A1 OR US-20170165828-A1 OR US-20240059454-A1 OR US-20180213934-A1 OR US-20070012694-A1 OR US-20070194543-A1 OR US-20140069832-A1).did. AND PGPB.dbnm.) OR ((WO-2023230852-A1 OR CN-217970389-U OR CN-216995405-U OR DE-102014111337-A1 OR DE-202014103695-U1 OR EP-2338650-A2 OR CN-216995406-U OR CN-214730569-U OR CN-214931552-U).did. AND FTDB.dbnm.) OR ((US-11155382-B1 OR US-11192689-B2 OR US-11059631-B1 OR US-10583962-B2 OR	HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		US-9393684-B2 OR US-11230410-B2 OR US-10870513-B2 OR US-RE47022-E OR US-8875888-B2 OR US-8851287-B2 OR US-8567796-B2 OR US-6874634-B2 OR US-7780026-B1 OR US-4813542-A OR US-5464115-A OR US-3939982-A OR US-4405057-A OR US-3980185-A OR US-4736861-A OR US-8602217-B2 OR US-6983946-B2 OR US-6328355-B1 OR US-3828899-A OR US-5197601-A OR US-5617967-A OR US-8573399-B2 OR US-11643252-B2 OR US-9550605-B1 OR US-5518139-A OR US-10093445-B1 OR US-6082539-A OR US-11642777-B2 OR US-9725209-B1 OR US-10603783-B2 OR US-11858687-B2 OR US-4591065-A).did. AND USPT.dbnm.) OR ((AU-2020230227-B1).did. AND DWPI.dbnm.) OR ((US-3376046-A OR US-3237800-A).did. AND USOC.dbnm.)					

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

23486 7590 04/16/2024

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

EXAMINER	
PAL, PRINCE	
ART UNIT	**PAPER NUMBER**
3735	

DATE MAILED: 04/16/2024

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

TITLE OF INVENTION: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	07/16/2024

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23486 7590 04/16/2024
SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

TITLE OF INVENTION: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	07/16/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
PAL, PRINCE	3735	206-503000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑Issue Fee ❑Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via the USPTO patent electronic filing system ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

23486 7590 04/16/2024

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

EXAMINER	
PAL, PRINCE	
ART UNIT	**PAPER NUMBER**
3735	

DATE MAILED: 04/16/2024

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. 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 30 minutes 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/ owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).
https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to:

1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
2) a federal, state, local, or international agency, in response to its request;
3) a contractor of the USPTO having need for the information in order to perform a contract;
4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
8) 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));
9) the Office of Personnel Management (OPM) for personnel research purposes; and
10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 18/518,200	Applicant(s) ZHANG et al.	
	Examiner PRINCE PAL	Art Unit 3735	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to reply filed 04/03/2024.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are See Continuation Sheet . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☑ All b) ☐ Some* c) ☐ None of the:

   1. ☑ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☑ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☑ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/PRINCE PAL/ Examiner, Art Unit 3735	/STEVEN A. REYNOLDS/ Primary Examiner, Art Unit 3735

Continuation of 3. The allowed claim(s) is/are: 2-7,10-15,17,19 and 21-22

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Election/Restrictions

2. Claim 2 is allowable. The restriction requirement of species A-C and sub-species A-C, as set forth in the Office action mailed on 01/12/2024, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). **The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable claim.** Specifically, the restriction requirement of 01/12/2024 is withdrawn. Claims 6-7, 19 and 22, directed to different species are no longer withdrawn from consideration because the claim(s) requires all the limitations of an allowable claim.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See In re Ziegler, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Allowable Subject Matter

3. Claims 2-7, 10-15,17,19 and 21-22 are allowed.

4. The following is an examiner's statement of reasons for allowance: applicant inserted the allowable subject matter into the independent claims overcoming prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PRINCE PAL whose telephone number is (571)272-7525. The examiner can normally be reached M-Th, 9:30 AM - 7:30 PM (EST).

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANTHONY STASHICK can be reached on (571)272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC)

at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PRINCE PAL/
Examiner, Art Unit 3735

/STEVEN A. REYNOLDS/
Primary Examiner, Art Unit 3735

PART B – FEE(S) TRANSMITTAL

Complete and send this form, together with the applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By fax, send to: (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3rd STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IOWA 52406
UNITED STATES OF AMERICA

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Jayme M. Hunter	(Typed or printed name)
/Jayme M. Hunter/	(Signature)
April 17, 2024	(Date)

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
18518200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

TITLE OF INVENTION: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	07/16/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
Prince PAL	3735	206-503000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-09 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. SHUTTLEWORTH & INGERSOLL, PLC
2. Jason R. Sytsma
3.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Meridian International Co., Ltd.

(B) RESIDENCE: (CITY and STATE or COUNTRY): Shanghai, China

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ■ Corporation or other private group entity ☐ Government

4a. Fees Submitted: ■ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment (*Please first reapply any previously paid fee shown above*):

■ Electronic Payment via Patent Center or EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

■ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 504904

5. Change of Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29. NOTE: Absent a valid Certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27. NOTE: If the application was previously under micro entity status, checking this box will be taken as a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. NOTE: Checking this box will be taken as a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Jason R. Sytsma/ Date April 17, 2024

Typed or printed name Jason R. Sytsma Registration No. 62262

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

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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.
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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.

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/518,200	**04/17/2024 12:41:05 PM Z ET**	**17157-0101-1**

Title of Invention

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7125	FILED BY	JAYME HUNTER
PATENT CENTER #	65128492	FILING DATE	11/22/2023
CUSTOMER #	23486	FIRST NAMED INVENTOR	Hongquan ZHANG
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Jason Sytsma

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Issue Fee Transmittal.pdf	2	Issue Fee Payment (PTO-85B)	246 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Issue Fee Transmittal.pdf	2C70CD9288DCA022354F751623C27A73D357C4D0B4B655F72A0F25F3089B89D101E76A5AE353A0AADD642DF49065070AEAD05AD6920490179E25425F179D715

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

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

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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.

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/518,200	04/17/2024 12:41:05 PM Z ET	17157-0101-1

Title of Invention

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7125	FILED BY	JAYME HUNTER
PATENT CENTER #	65128492	AUTHORIZED BY	Jason Sytsma
CUSTOMER #	23486	FILING DATE	11/22/2023
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Hongquan ZHANG

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 7215	E20244GC41535610	JAYME HUNTER

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
			TOTAL AMOUNT:	$1,200.00

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 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

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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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Hongquan ZHANG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	17157-0101-1

	10	20160144500	A1	2016-05-26	Chen, Kun-Chen	
	11	20160236592	A1	2016-08-18	Peniche et al.	
	12	20170121056	A1	2017-05-04	Wang, Tzu-Chein	
	13	20170151972	A1	2017-06-01	Bar-Erez et al.	
	14	20180220758	A1	2018-08-09	Burchia, Rolf	
Change(s) applied to document, /S.D./ 4/19/2024	15	20190002004		~~2018-06-05~~ 01/2019	Brunner, Yaron	
	16	20190308772	A1	2019-10-10	Gonitianer, Reiner	
	17	20190315515	A1	2019-10-17	Gonitianer, Reiner	
	18	20200025229	A1	2020-01-23	Baruch, Danny	
	19	20200346819	A1	2020-11-05	Kogel, Jan	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	05/21/2024	11986946	17157-0101-1	7125

23486 7590 05/01/2024

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Hongquan ZHANG, Shanghai, CHINA;
Qiang WANG, Shanghai, CHINA;
Shujun CAI, Shanghai, CHINA;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

Meridian International Co., Ltd, Shanghai, CHINA;

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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1	7125

23486 7590 05/21/2024

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
P.O. BOX 2107
CEDAR RAPIDS, IA 52406

EXAMINER	
PAL, PRINCE	

ART UNIT	PAPER NUMBER
3735	

NOTIFICATION DATE	DELIVERY MODE
05/21/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

deanna@shuttleworthlaw.com
jrs@shuttleworthlaw.com
uspto@shuttleworthlaw.com

APPLICATION NO.	ISSUE DATE	PATENT NO.
18/518,200	21-May-2024	11986946

SHUTTLEWORTH & INGERSOLL, P.L.C.
115 3RD STREET SE, SUITE 500
CEDAR RAPIDS, IA 52406

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 09/30/2025. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	18/518,200
Filing Date	November 22, 2023
First Named Inventor	Hongquan ZHANG et al.
Title	CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY
Art Unit	3735
Examiner Name	Prince PAL
Attorney Docket Number	95821-0093 (21-021-US-11)

SIGNATURE of Applicant or Patent Practitioner

Signature	/Lindsay M. Kriz/	Date (Optional)	07/08/2024
Name	Lindsay M. Kriz	Registration Number	79,726
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

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If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DocuSign Envelope ID: A068E914-DD08-4162-B2BB-E6A4AAED6229

Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY BY APPLICANT

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

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 29052

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

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

Meridian International Co., 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)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

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	DocuSigned by: Anthony Kriz 0AEBA7ADA7894B8...	Date (Optional)	6/11/2024
Name	Anthony Kriz		
Title	President		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 1.11 and 1.14. This collection is estimated to take 3 minutes 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.**

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/518,200	**07/08/2024 02:34:07 PM Z ET**	**17157-0101-1**

Title of Invention

CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	11986946
CONFIRMATION #	7125	FILED BY	Rachel Robinson
PATENT CENTER #	66270603	FILING DATE	11/22/2023
CUSTOMER #	23486	FIRST NAMED INVENTOR	Hongquan ZHANG
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Lindsay Kriz

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
95821-0093_POA.pdf	3	Power of Attorney	406 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
95821-0093_POA.pdf	F825D8C2C53BEA535683144725A818B17F6699CE3D9F5EECE 89BAE41862CA8A45C2502B37BD32EE4AA5691FF57A0D7A332 7764090DCEFC1D4E42363DBF680BA6

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 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.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1

CONFIRMATION NO. 7125

POWER OF ATTORNEY NOTICE

OC000000075385461

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Date Mailed: 07/18/2024

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/08/2024.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

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**.

/mteklemichael/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/518,200	11/22/2023	Hongquan ZHANG	17157-0101-1

CONFIRMATION NO. 7125

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POA ACCEPTANCE LETTER

OC000000075385440

Date Mailed: 07/18/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/08/2024.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

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**.

/mteklemichael/