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(54) **A COOLING DEVICE**

KÜHLVORRICHTUNG

DISPOSITIF DE REFROIDISSEMENT

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Description

Technical Field of the Invention

[0001] The present invention relates to a cooling device having a drawer assembly, enabling a snap-fit connection between a shaft and a gear.

Background of the Invention

[0002] There exist various types of cooling devices in the market. Each of the cooling devices includes a pullout drawer, especially for a freezer compartment. Pull-out drawers are designed to be wide in order to maximize the volume of the storage space. In bottom mount cooling devices, pull out drawers are used frequently for enhancing the accessibility of items stored in the lower compartment of the cooling device cabinet.

[0003] These drawers are generally mounted on the slides fastened to the inner surface of the walls of the cooling devices and move along the longitudinal axis of said slides. During the pushing and pulling of the drawers, slides extend horizontally towards the opening or closing direction of the drawers. One of the problems of the wide drawers is misalignment of the drawer assembly. In some cases, slides may not extend at the same length/distance and at the same speed; thereby resulting in the wobbling of the drawers. For instance, if the drawer is pushed or pulled from one side, instead of applying a force to the center, the other side tends to stay in its remaining position. This causes instability of the drawers and results in impractical use.

[0004] Rack and gear systems in the drawer assembly are provided for enabling the movement of the slide assemblies and drawers at the same speed and at the same distance/length. The gear rotates along the rack as the drawer extends out of the cabinet and stays within the cabinet. The movement of the drawer is thus synchronized by the rack and gear system attached on the slide assemblies by a shaft.

[0005] In conventional rack-gear systems, the shaft is fixed to the gear by a tool such as screws. Such an installation method may be difficult and takes too much time for the user and may damage the adjacent sections while assembling and disassembling. In addition to this, it is a fact that, support arrangement including a shaft reduces the usable volume of the compartment for some items. In such cases, the user prefers to use a rack and gear system without any shaft for increasing the inner volume of the drawer; however, it may be too complicated to disassemble the shaft.

[0006] At this point, there is a need for a simple and reliable support arrangement of the rack and gear systems which eliminates the requirement of a tool during assembling and disassembling the shaft in the rack and gear system, while keeping the alignment of the drawer assembly.

[0007] The document US2010219727 discloses a syn-

chronizing device for use with a pair of drawer slide assemblies where each drawer slide assembly has at least a first slide member moveable relative to a second slide member, and includes a first stabilization element configured to be coupled to the second slide member of one of the slide assemblies, and a second stabilization element configured to be coupled to the second slide member of the other slide assembly. A linking element extends transverse to an extension direction of the slide assemblies and synchronizes movements of the first slide members of the slide assemblies.

[0008] EP 2 248 442 A1, WO 2010/017505 A1, EP 2 644 053 A1 and CA 2699699 A1 also disclose synchronizing devices.

[0009] The invention provides an additional improvement, an additional advantage or an alternative to the prior art.

Summary of the Invention

[0010] The present invention proposes a cooling device having a cabinet with heat sealed closed walls configured to form a compartment and a drawer assembly. Said drawer assembly comprises a first rail unit and a second rail unit mounted on an interior surface of the cabinet of the cooling device and being opposite to each other; a first gear configured to rotate throughout a first rack, a second gear configured to rotate throughout a second rack, a shaft which interconnects said first gear and second gear for transmitting the movement to each other. said drawer assembly further comprises at least one locking member which is adapted to be movable along said shaft for providing the fixation of the shaft with one of the first gear and/or the second gear. Said locking member enables a snap-fit connection between the shaft and gears; thereby providing a simple and quick method for assembling and disassembling of the shaft.

[0011] In a possible embodiment of the invention, the compartment is a freezer compartment. In a possible embodiment of the invention, the interior surface of the cabinet is an interior surface of the freezer compartment. In a possible embodiment of the invention, the first rail unit and the second rail unit are mounted on an interior surface of the freezer compartment of the cooling device and configured to be opposite to each other.

[0012] According to the invention, the first gear is configured to be adjacent to a first elongated connection part provided in the first rail unit.

[0013] According to the invention, the second gear is configured to be adjacent to a second elongated connection part provided in the second rail unit.

[0014] According to the invention, the locking member is configured to engaged at least partly over the first elongated connection part. In a possible embodiment of the invention, the locking member is configured to engaged at least partly over the second elongated connection part.

[0015] According to the invention, both of said first connection part and said second connection part have at

least one aperture thereon and are adapted to be engaged with said shaft having a locking aperture thereon. Thus, the user quickly recognizes the connection points and the time required for the installation is reduced.

[0016] In a possible embodiment, the locking member is shaped and dimensioned with respect to said shaft. Since, the locking member is arranged to be movable on the shaft and disposed to be in solid contact with said shaft; the size and shape of the locking member is important in ensuring a stable connection. By adjusting the shape and dimension of the locking member with respect to the shape and dimension of the shaft provides stability in the locking member performance and a secure connection thereof.

[0017] According to the invention, said locking member includes a fixation portion at the inner surface of the locking member, providing a connection by an engagement with said locking aperture on the shaft. Thus, the necessity of the requirement of using any type of tool in assembling and disassembling is eliminated.

[0018] In a possible embodiment, said fixation portion has at least one protrusion which is shaped and dimensioned with respect to locking aperture on the shaft. Thus, the connection of the locking member to the first rail unit and the second rail unit is provided without using any tool such as screws.

[0019] In a possible embodiment, said locking member and connection part form a snap fit connection by the engagement of said fixation portion of the locking member and said locking aperture of the shaft. Thus, the user may easily and quickly assemble and disassemble the shaft to the rail units depending on the needs.

[0020] In a possible embodiment, at least one of the first connection part and the second connection part is partly engaged within the shaft. Thus, the connection of the shaft with the first gear and second gear is provided in a robust manner.

[0021] In a possible embodiment, said locking member comprises a tab which is protruded outwardly from said locking member for releasing the engagement of the locking member and the shaft. Thus, a practical way is obtained for disassembling the locking member and shaft manually without the need of any tool and more than one person.

[0022] In a possible embodiment, said locking member has at least one elongated slit provided in the proximity of said tab of the locking member. A wider space is provided by means of said at least one elongated slit resulting in an easy holding of the tab.

[0023] In a possible embodiment, said gear is a pinion gear having a plurality of teeth along the circumferential direction of said pinion gear.

[0024] In a possible embodiment, the first gear and the second gear are adapted to rotate throughout said first rack and second rack respectively. Thus, synchronization of the drawer assembly is provided.

[0025] In a possible embodiment, said first gear and second gear have a monolithic structure with said first

connection part and second connection part respectively. Thus, a durable structure is ensured by said monolithic form.

[0026] In a possible embodiment, said aperture on the first connection part and the second connection part has a polygonal cross-section, preferably a circular cross-section.

[0027] In a possible embodiment, said drawer assembly includes a first rail guide and a second rail guide adapted to extend along the longitudinal axis of the first rack and the second rack, and to be engaged with the first gear and a second gear providing the opening and closing said drawer assembly.

Brief Description of the Figures

[0028]

FIG.1 is a perspective view of a cooling device having a drawer assembly according to the present invention.

FIG.2 is a perspective view of a drawer assembly wherein the drawer is open according to the present invention.

FIG.3 is a perspective view of a freezer compartment of the cooling device wherein the drawer is retracted according to the present invention.

FIG.4 is a perspective view of a rack and gear system for the drawer assembly according to the present invention.

FIG.5 is an top view of a rack and gear system according to the present invention.

FIG.6 is an exploded view of a rack and gear system according to the present invention.

FIG.7 is an enlarged perspective view of a locking member mounted on a shaft according to the present invention.

FIG.8 is an enlarged perspective view showing the connection of a shaft and a gear according to the present invention.

FIG.9 is a perspective view of a rail unit having a gear and a shaft having a locking member being in a disassembled state according to the present invention.

FIG.10 is a perspective view of a rail unit in which a shaft and a gear are disassembled according to the present invention.

FIG.11 is a perspective view of a locking member being mounted on a shaft according to the present invention.

FIG.12 is a cross-section of a locking member being mounted on a shaft according to the present invention.

FIG. 13 is a cross-section of a locking member being engaged with a shaft according to the present invention.

FIG.14 is a perspective view of a shaft and a rail unit, wherein the shaft is engaged with a screw according

to the prior art.

Detailed Description of the Invention

[0029] As shown in the Fig. 1 and Fig. 2, the present invention proposes a cooling device (10) having a mainly a drawer assembly (20) with a first rail unit (30) and a second rail unit (31). The cooling device (10) according to the present invention, includes a cabinet (11), compartments provided in the cabinet (11), and a freezer door (16) and a fridge compartment door (18) for opening and closing the compartments. The cooling device (10) mainly comprises a freezer compartment and a fridge compartment. A horizontal wall (13) divides the inner space of the cabinet (11) into the fridge compartment and freezer compartment.

[0030] The present invention proposes a cooling device (10) having a cabinet (11) with heat-sealed closed walls (12) configured to form a freezer compartment (14) and a drawer assembly (20), said drawer assembly (20) comprising; a first rail unit (30) and a second rail unit (31) mounted on an interior surface of the freezer compartment (14) of the cooling device (10) and being opposite to each other; a first gear (40) configured to rotate throughout a first rack (42) and being adjacent to a first elongated connection part (54) provided in the first rail unit (30); a second gear (41) configured to rotate throughout a second rack (43) and being adjacent to a second elongated connection part (55) provided in the second rail unit (31); a shaft (50) which interconnects said first gear (40) and second gear (41) for transmitting the movement to each other. Said drawer assembly (20) further comprises at least one locking member (60) which is adapted to be movable along said shaft (50) for providing the fixation of the shaft (50) with one of the first gear (40) and/or the second gear (41).

[0031] FIG.1 illustrates a schematic representation of a cooling device (10), in particular a refrigerator, which comprises a fridge compartment (15) and a freezer compartment (14) both for holding items. As depicted in FIG. 1, the freezer compartment (14) is disposed at the bottom of the cooling device (10) and the fridge compartment (15) is located at the upper section of the freezer compartment (14).

[0032] The fridge compartment door (18) may be mounted to cabinet (11) through hinges. The freezer compartment (14) is adapted to be sealed by means of the freezer door (16) and includes a drawer assembly (20) as seen in FIG. 1. Referring to FIG.1 and FIG. 2; the cooling device (10) accommodates the drawer assembly (20) which may be insertable within the freezer compartment (14) and includes a drawer (21) having a box-like structure. The drawer (21) is accessed from the outer part of the cabinet (11) by pulling out the drawer (21) via a grasping means (17) such as a handle. The drawer assembly (20) can have at least one drawer part and a drawer door part having the grasping means (17) thereon.

[0033] As illustrated in FIG. 4, FIG. 5 and FIG.6; the drawer assembly (20) includes a first rail unit (30) and a second rail unit (31) which allow the drawer (21) to move in and out of the freezer compartment (14). The first rail unit (30) and the second rail unit (31) are coupled to the opposing inner walls of the freezer compartment (14).

[0034] Referring to FIG.4 and FIG. 6; the first rail unit (30) and the second rail unit (31) comprise a rail bracket (34) coupled to the inner walls of the freezer compartment (14), as being opposite to each other. Each of the first rail unit (30) and second rail unit (31) includes the rail bracket (34) which is coupled to the inner wall of the freezer compartment (14), an inner rail (32) and a middle rail (33) which is disposed between the rail bracket (34) and the inner rail (32). The rail brackets (34), middle rails (33) and inner rails (32) may be formed of metal. The rail units (30, 21) can move linearly with each side of the drawer assembly (20). The rail bracket (34) remains in a fixed state; while the middle rail (33) and the inner rail (32) moves in or out of the freezer compartment (14) depending on the position of the drawer assembly (20). Referring to FIG.2 and FIG.4, the inner rail (32) and the middle rail (33) extends outwardly from the freezer compartment (14), when the drawer (21) is in its extended position. The rail bracket (34), the middle rail (33) and the inner rail (32) are all overlapped in case the drawer assembly (20) is closed.

[0035] According to the present invention; the drawer assembly (20) includes the inner rails (32) adapted to extend along the longitudinal axis of the first rack (42) and the second rack (43), and to be engaged with the first gear (40) and a second gear (41).

[0036] As depicted in FIG. 7 and FIG. 8; each of the first rail units (30) and the second rail unit (31) further comprises a rack coupled to the rail bracket (34) on the inner wall of the freezer compartment (14) and a gear adapted to be rotated along the rack. According to the present invention, the first gear (40) and second gear (41) are interconnected with the shaft (50) at the opposite ends. The first rack (42) and the second rack (43) are configured to be on the first rail unit (30) and second rail unit (31) respectively, and mounted as being opposite to each other to the inner walls of the freezer compartment (14). Each of the racks (42, 43) includes a plurality of teeth provided longitudinally along said racks. Each of the gears (40, 41) includes a plurality of teeth provided circumferentially. The first gear (40) and the second gear (41) as shown in FIG 7 and FIG. 8 are a pinion gear having a plurality of teeth along the circumferential direction thereof.

[0037] The first gear (40) and the second gear (41) have rotational and linear movement equally and are configured to rotate along the first rack (42) and the second rack (43) respectively as the drawer (21) moves in and out of the freezer compartment (14). The first gear (40) and the second gear (41) are coupled to each other by the shaft (50). Therefore, the first rail unit (30) and the second rail unit (31) are also connected to each other by

said shaft (50). The gear and rack system is provided to facilitate the movement of the drawer assembly in a controlled manner and helps to keep the alignment of the drawer.

[0038] When one of the gears (40, 41) is rotated along the racks (42, 43), the other gear is also rotated equally; thereby the drawer (21) moves in the same direction due to the engagement of the gears with the racks. The shaft (50) and gear-rack system synchronizes the movement of the rail units (30, 31) as the rail units (30, 31) is extended or retracted for opening or closing the drawer (21).

[0039] Referring to FIG. 4 and FIG. 6; the shaft (50) comprises a first end (51) and a second end (52), which are engaged with the first gear (40) and second gear (41) respectively in order to provide the rotation of the gears at the same time. The first end (51) and the second end (52) of the shaft (50) has a cavity along the longitudinal axis of the shaft (50) which provides the engagement of the first elongated connection part (54) and second elongated connection part (55) to said cavities of the shaft (50). The first gear (40) and the second gear (41) includes the first elongated connection part (54) and the second elongated connection part (55) respectively as depicted in FIG. 9. The first gear (40) and the second gear (41) have a monolithic structure with the first elongated connection port (54) and the second elongated connection port (55), respectively. Hence, a unitary body can be obtained.

[0040] When the shaft (50) is pressed at its one first end (51) onto the first elongated connection part (54) of the gear, the engagement of the shaft (50) and the gears is provided as shown in FIG. 10. Hence, the shaft (50) is held securely by the first elongated connection part (54) and the second elongated connection part (55). As shown in FIG. 9; the elongated connection parts (54, 55) of the gears (40, 41) have at least one aperture (56) which has a polygonal cross-section, preferably a circular cross-section. The shaft (50) is coupled to the first elongated connection part (54) and the second elongated connection part (55) at its opposite ends through a partly formed cavity on one surface of the shaft (50). Thus, the first elongated connection part (54) and the second elongated connection part (55) is partly engaged within the shaft (50).

[0041] FIG. 6 depicts an exploded view of the shaft (50) and rack - gear system in accordance with one embodiment of the present invention. Referring to FIG. 10; the drawer assembly (20) includes a locking member (60) which is adapted to be movable along said shaft (50) and said elongated connection parts (54, 55) for providing the fixation of the shaft (50) with one of the first gear (40) and the second gear (41). The locking member (60) is a separate part and arranged to be slidable.

[0042] FIG. 11 illustrates the locking member (60) which is shaped and dimensioned with respect to the shaft (50). The cross-section of the locking member (60) can be larger than the cross-section of the shaft (50) since the locking member (60) is mounted onto the shaft (50).

The shaft (50) has a locking aperture (60) which provides an engagement with the shaft (50) and the locking member (60). The locking member (60) can include a fixation portion (62) at the inner surface thereof, providing a connection with the engagement with said locking aperture (61) on the shaft (50). The locking aperture (61) is shaped and dimensioned with respect to the fixation portion (62) for directly receive said fixation portion (62). As shown in FIG. 13; the fixation portion (62) is formed as a protrusion which is shaped and dimensioned with respect to the locking aperture (61) on the shaft (50).

[0043] As depicted in FIG. 13; the connection is established as the fixation portion (62) of the locking member (60) and the locking aperture (61) of the shaft (50) is overlapped. When the fixation portion (62) is fitted within the locking aperture (61) of the shaft (50), the locking member (60) engages to the shaft (50) securely with a snap-fit connection. Thus, the assembly of the shaft (50) to the first gear (40) and/or second gear (41) is simply realized by moving the locking member (60) towards the direction of the locking aperture (61) being on the shaft (50).

[0044] The locking member (60) includes a tab (63) which is protruded outward from the locking member (60). The engagement between the shaft (50) and the first gear (40) and/or second gear (41) can be released by pulling out the tab (63) of the locking member (60). The locking member (60) can be formed of elastic/resilient/thermoplastic material. The locking member (60) further includes at least one elongated slit (64) provided in the proximity of the tab (63). The elongated slit (64) provides a space for pulling the tab (63) easily. When the user holds the tab (63) and pulls it outwardly, the fixation portion (62) gets out of the locking aperture (61) of the shaft (50). Following this, disassembly of the shaft (50) and the first gear (40) and/or second gear (41) is provided by the movement of the locking member (60) to the opposite direction of the current position, namely towards the other the gear.

[0045] The cooling device (10) according to the present invention may be a side-by-side refrigerator, a top mount refrigerator or a bottom mount refrigerator. As shown in FIG. 1; the cooling device (10) is a bottom mount refrigerator.

Reference list:

[0046]

10. Cooling device
11. Cabinet
12. Heat-sealed closed walls
13. Horizontal wall
14. Freezer compartment
15. Fridge compartment
16. Freezer door
17. Grasping means
18. Fridge compartment door

20.	Drawer assembly	
21.	Drawer	
30.	First rail unit	
31.	Second rail unit	
32.	Inner rail	5
33.	Middle rail	
34.	Rail bracket	
40.	First gear	
41.	Second gear	
42.	First rack	10
43.	Second rack	
50.	Shaft	
51.	First end	
52.	Second end	
54.	First elongated connection part	15
55.	Second elongated connection part	
56.	Aperture	
60.	Locking member	
61.	Locking aperture	
62.	Fixation portion	20
63.	Tab	
64.	Elongated slit	
65.	Screw	25

Claims

1. A cooling device (10) having a cabinet (11) with heat-sealed closed walls (12) configured to form a compartment and a drawer assembly (20), said drawer assembly (20) comprising;
 - a first rail unit (30) and a second rail unit (31) mounted on an interior surface of the cabinet (11) of the cooling device (10) and being opposite to each other;
 - a first gear (40) configured to rotate throughout a first rack (42);
 - a second gear (41) configured to rotate throughout a second rack (43);
 - a shaft (50) which interconnects said first gear (40) and second gear (41) for transmitting the movement to each other;
 - said drawer assembly (20) further comprises at least one locking member (60) which is adapted to be movable along said shaft (50) for providing the fixation of the shaft (50) with one of the first gear (40) and/or the second gear (41), wherein the first gear (40) is configured to be adjacent to a first elongated connection part (54) provided in the first rail unit (30), wherein the second gear (41) is configured to be adjacent to a second elongated connection part (55) provided in the second rail unit (31), **characterized in that** the first elongated connection part (54) and the second elongated connection part (55) have at least one aperture (56) thereon and are adapted to be engaged with said shaft (50) having a locking aperture (61) thereon, and wherein said locking member (60) includes a fixation portion (62) at the inner surface of the locking member (60), providing a connection by an engagement with said locking aperture (61) on the shaft (50).
2. The cooling device (10) according to claim 1, wherein said fixation portion (62) has at least one protrusion which is shaped and dimensioned with respect to locking aperture (61) on the shaft (50).
3. The cooling device (10) according to claims 1 or 2, wherein said locking member (60) and the first elongated connection part (54) or the second elongated connection part (55) are configured to form a snap fit connection by the engagement of said fixation portion (62) of the locking member (60) and said locking aperture (61) of the shaft (50).
4. The cooling device (10) according to any one of the preceding claims; wherein at least one of the first elongated connection part (54) and the second elongated connection part (55) is partly engaged within the shaft (50).
5. The cooling device (10) according to any one of the preceding claims, wherein said locking member (60) comprises a tab (63) which is protruded outwardly from said locking member (40) for releasing the engagement of the locking member (40) and the shaft (32).
6. The cooling device (10) according to claim 5, wherein said locking member (60) has at least one elongated slit (64) provided in the proximity of said tab (63) of the locking member (60).
7. The cooling device (10) according to one any of the preceding claims, wherein said first gear (40) and second gear (41) are a pinion gear having a plurality of teeth along the circumferential direction.
8. The cooling device (10) according to any one of the preceding claims, wherein the first gear (40) and the second gear (41) are adapted to rotate throughout said first rack (42) and second rack (43), respectively.
9. The cooling device (10) according to any one of the preceding claims, wherein said first gear (40) and second gear (41) have a monolithic structure with said first elongated connection part (54) and second elongated connection part (55), respectively.
10. The cooling device (10) according to any one of the preceding claims, wherein said drawer assembly (20) includes a first rail unit (30) and a second rail

unit (31) adapted to extend along the longitudinal axis of the first rack (42) and the second rack (43), and to be engaged with the first gear (40) and a second gear (41) providing the opening and closing said drawer assembly (20).

11. The cooling device (10) according to any one of the preceding claims; wherein said cooling device (10) is a bottom mount refrigerator.

Patentansprüche

1. Kühlvorrichtung (10) mit einem Gehäuse (11) mit zugeschweißten Wänden (12), die so konfiguriert sind, dass sie ein Fach und eine Einschubbaugruppe (20) bilden, wobei die Einschubbaugruppe (20) Folgendes umfasst:

eine erste Schieneneinheit (30) und eine zweite Schieneneinheit (31), die an einer Innenfläche des Gehäuses (11) der Kühlvorrichtung (10) angebracht sind und sich gegenüberliegen, ein erstes Zahnrad (40), das so konfiguriert ist, dass es über eine gesamte erste Zahnstange (42) hinweg rotiert, ein zweites Zahnrad (41), das so konfiguriert ist, dass es über eine gesamte zweite Zahnstange (43) hinweg rotiert, eine Welle (50), die das erste Zahnrad (40) und das zweite Zahnrad (41) zum Übertragen der Bewegung aufeinander miteinander verbindet, wobei die Einschubbaugruppe (20) ferner mindestens ein Verriegelungselement (60) umfasst, das so ausgelegt ist, dass es zum Fixieren der Welle (50) an dem ersten Zahnrad (40) und/oder dem zweiten Zahnrad (41) an der Welle (50) entlang beweglich ist, wobei das erste Zahnrad (40) so konfiguriert ist, dass es an ein in der ersten Schieneneinheit (30) vorgesehenes erstes längliches Verbindungsstück (54) anschließt, wobei das zweite Zahnrad (41) so konfiguriert ist, dass es an ein in der zweiten Schieneneinheit (31) vorgesehenes zweites längliches Verbindungsstück (55) anschließt, **dadurch gekennzeichnet, dass** das erste längliche Verbindungsstück (54) und das zweite längliche Verbindungsstück (55) mindestens eine Öffnung (56) aufweisen und so ausgelegt sind, dass sie mit der Welle (50) in Eingriff stehen, die eine Verriegelungsöffnung (61) aufweist, und wobei das Verriegelungselement (60) einen Fixierabschnitt (62) an seiner Innenfläche aufweist, der durch Eingreifen in die Verriegelungsöffnung (61) an der Welle (50) für eine Verbindung sorgt.

2. Kühlvorrichtung (10) nach Anspruch 1, wobei der Fi-

xierabschnitt (62) mindestens einen Vorsprung aufweist, der der Verriegelungsöffnung (61) an der Welle (50) entsprechend geformt und bemessen ist.

3. Kühlvorrichtung (10) nach Anspruch 1 oder 2, wobei das Verriegelungselement (60) und das erste längliche Verbindungsstück (54) oder das zweite längliche Verbindungsstück (55) so konfiguriert sind, dass sie durch Eingreifen des Fixierabschnitts (62) des Verriegelungselements (60) in die Verriegelungsöffnung (61) der Welle (50) eine Schnappverbindung bilden.

4. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei das erste längliche Verbindungsstück (54) und/oder das zweite längliche Verbindungsstück (55) teilweise in die Welle (50) eingreift.

5. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei das Verriegelungselement (60) eine Lasche (63) zum Lösen des Eingriffs des Verriegelungselements (40) und der Welle (32) umfasst, die von dem Verriegelungselement (40) nach außen hin vorsteht.

6. Kühlvorrichtung (10) nach Anspruch 5, wobei das Verriegelungselement (60) mindestens einen länglichen Schlitz (64) aufweist, der in der Nähe der Lasche (63) des Verriegelungselements (60) vorgesehen ist.

7. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei es sich bei dem ersten Zahnrad (40) und dem zweiten Zahnrad (41) um ein Ritzel mit mehreren Zähnen in Umfangsrichtung handelt.

8. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei das erste Zahnrad (40) und das zweite Zahnrad (41) so ausgelegt sind, dass sie über die gesamte erste Zahnstange (42) beziehungsweise die gesamte zweite Zahnstange (43) hinweg rotieren.

9. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei das erste Zahnrad (40) und das zweite Zahnrad (41) mit dem ersten länglichen Verbindungsstück (54) beziehungsweise dem zweiten länglichen Verbindungsstück (55) monolithisch konstruiert sind.

10. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei die Einschubbaugruppe (20) eine erste Schieneneinheit (30) und eine zweite Schieneneinheit (31) aufweist, die so ausgelegt sind, dass sie die Längsachse der ersten Zahnstange (42) und der zweiten Zahnstange (43) entlang verlaufen und das erste Zahnrad (40) und ein zweites Zahnrad

(41) in Eingriff nehmen und so für das Öffnen und Schließen der Einschubbaugruppe (20) sorgen.

11. Kühlvorrichtung (10) nach einem der vorhergehenden Ansprüche, wobei es sich bei der Kühlvorrichtung (10) um einen Kühlschrank handelt, bei dem sich der Gefrierteil unterhalb des Kühlteils befindet.

Revendications

1. Appareil frigorifique (10) comprenant une armoire (11) qui comprend des parois fermées thermoscellées (12) configurées pour former un compartiment et un ensemble tiroir (20), ledit ensemble tiroir (20) comprenant :

une première unité de rail (30) et une deuxième unité de rail (31) montées sur une surface intérieure de l'armoire (11) de l'appareil de refroidissement (10) et étant opposées l'une à l'autre, un premier engrenage (40) configuré pour tourner tout au long d'une première crémaillère (42), un deuxième engrenage (41) configuré pour tourner tout au long d'une deuxième crémaillère (43),

un arbre (50) qui interconnecte ledit premier engrenage (40) et ledit deuxième engrenage (41) afin de transmettre le mouvement de l'un à l'autre,

dans lequel ledit ensemble tiroir (20) comprend en outre au moins un élément de verrouillage (60) qui est adapté pour être mobile le long dudit arbre (50) afin d'assurer la fixation de l'arbre (50) sur l'un du premier engrenage (40) et/ou du deuxième engrenage (41),

dans lequel le premier engrenage (40) est configuré pour être adjacent à une première pièce de connexion allongée (54) agencée dans la première unité de rail (30), et

le deuxième engrenage (41) est configuré pour être adjacent à une deuxième pièce de connexion allongée (55) agencée dans la deuxième unité de rail (31),

caractérisé en ce que la première pièce de connexion allongée (54) et la deuxième pièce de connexion allongée (55) possèdent au moins un orifice (56) sur celles-ci et sont adaptées pour être mises en prise avec ledit arbre (50) comportant un orifice de verrouillage (61) sur celui-ci, et

dans lequel ledit élément de verrouillage (60) inclut une partie de fixation (62) sur la surface intérieure de l'élément de verrouillage (60), fournissant une connexion par une mise en prise avec ledit orifice de verrouillage (61) sur l'arbre (50).

2. Appareil frigorifique (10) selon la revendication 1, dans lequel ladite partie de fixation (62) comprend au moins une partie saillante qui est formée et dimensionnée en fonction d'un orifice de verrouillage (61) sur l'arbre (50).

3. Appareil frigorifique (10) selon la revendication 1 ou 2, dans lequel ledit élément de verrouillage (60) et la première pièce de connexion allongée (54) ou la deuxième pièce de connexion allongée (55) sont configurés pour former une connexion encliquetable par la mise en prise de ladite partie de fixation (62) de l'élément de verrouillage (60) et dudit orifice de verrouillage (61) de l'arbre (50).

4. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel au moins l'une parmi la première partie de connexion allongée (54) et la deuxième partie de connexion allongée (55) est partiellement mise en prise à l'intérieur de l'arbre (50).

5. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel ledit élément de verrouillage (60) comprend un onglet (63) qui fait saillie à l'extérieur dudit élément de verrouillage (40) pour libérer la mise en prise de l'élément de verrouillage (40) et de l'arbre (32).

6. Appareil frigorifique (10) selon la revendication 5, dans lequel ledit élément de verrouillage (60) comprend au moins une fente allongée (64) agencée à proximité dudit onglet (63) de l'élément de verrouillage (60).

7. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel ledit premier engrenage (40) et ledit deuxième engrenage (41) sont des pignons comportant une pluralité de dents le long de la direction circonférentielle.

8. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel ledit premier engrenage (40) et ledit deuxième engrenage (41) sont adaptés pour tourner respectivement tout au long de ladite première crémaillère (42) et de ladite deuxième crémaillère (43).

9. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel ledit premier engrenage (40) et ledit deuxième engrenage (41) forment respectivement une structure monolithique avec ladite première pièce de connexion allongée (54) et ladite deuxième pièce de connexion allongée (55).

10. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel ledit en-

semble tiroir (20) inclut une première unité de rail (30) et une deuxième unité de rail (31) adaptées pour s'étendre le long de l'axe longitudinal de la première crémaillère (42) et de la deuxième crémaillère (43) et pour être en prise avec le premier engrenage (40) et un deuxième engrenage (41) assurant l'ouverture et la fermeture dudit ensemble tiroir (20). 5

11. Appareil frigorifique (10) selon l'une quelconque des revendications précédentes, dans lequel ledit appareil frigorifique (10) est un réfrigérateur à compartiment de congélation inférieur. 10

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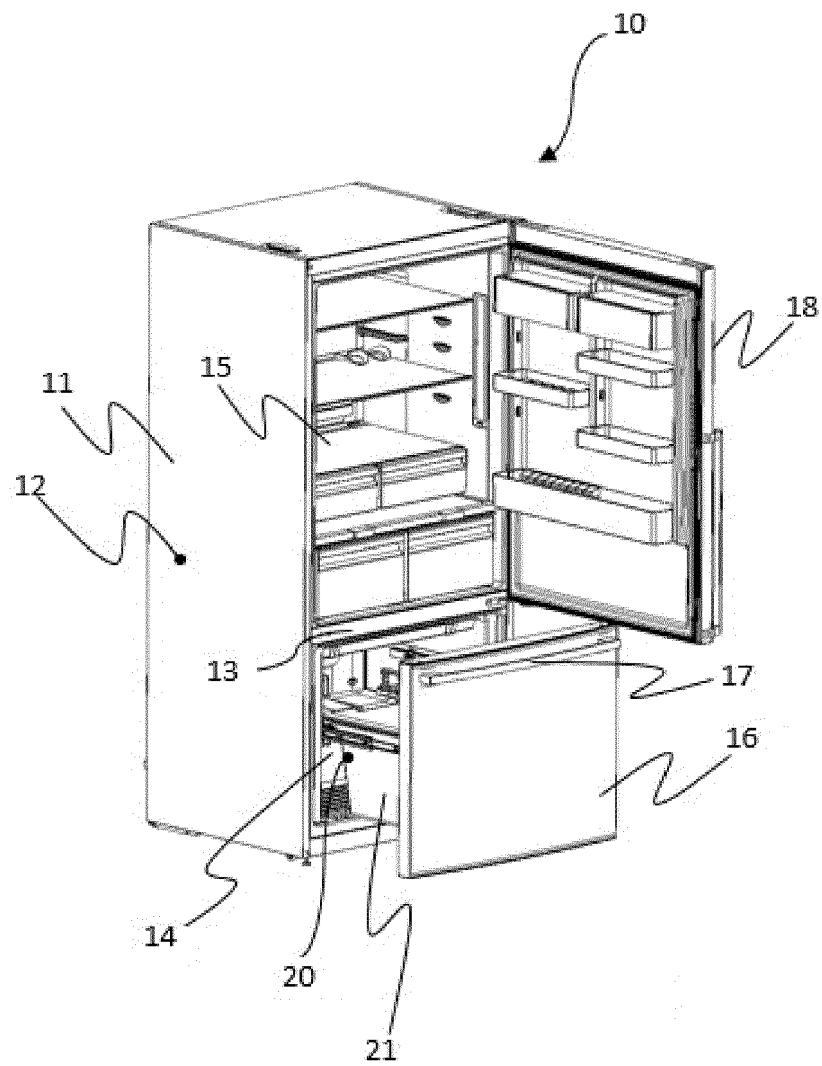


Fig.1

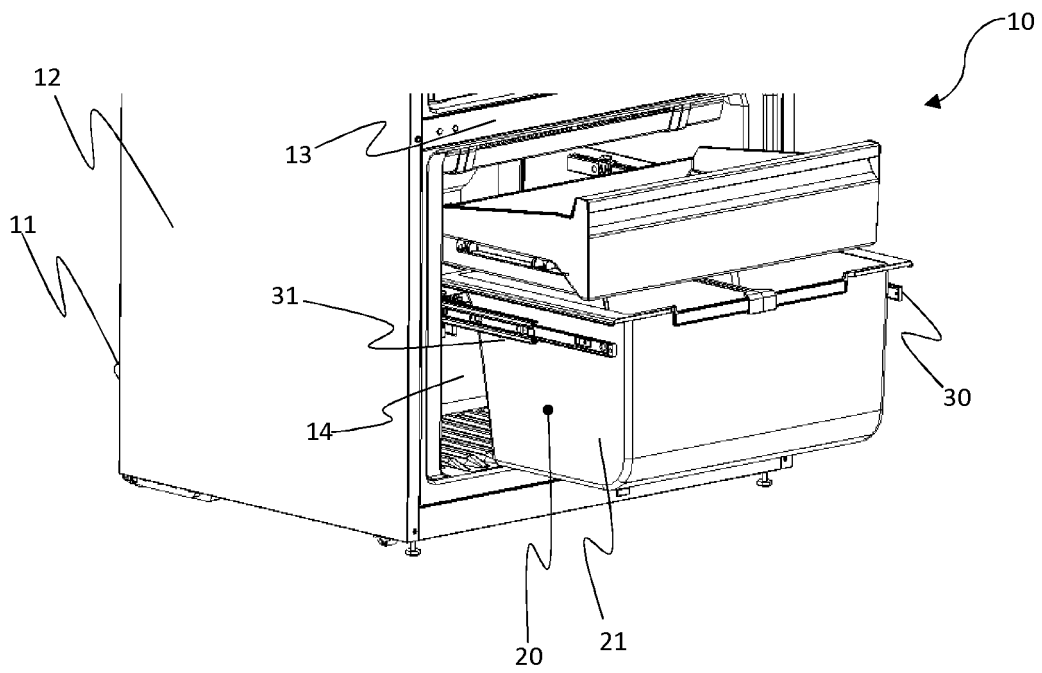


Fig.2

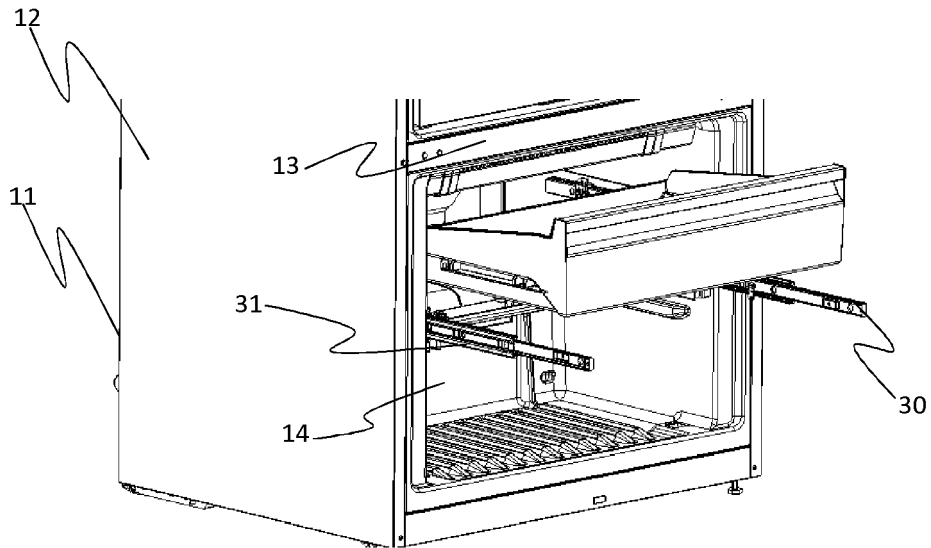


Fig.3

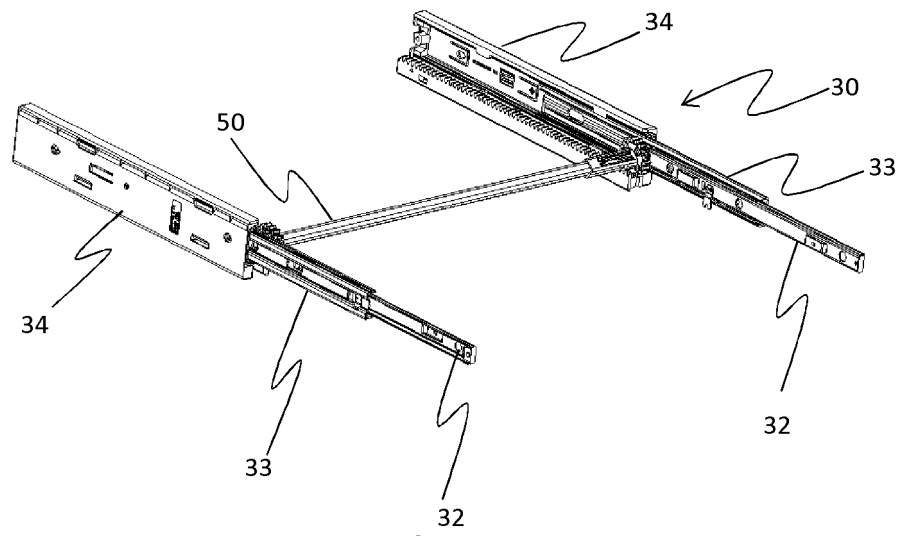


Fig.4

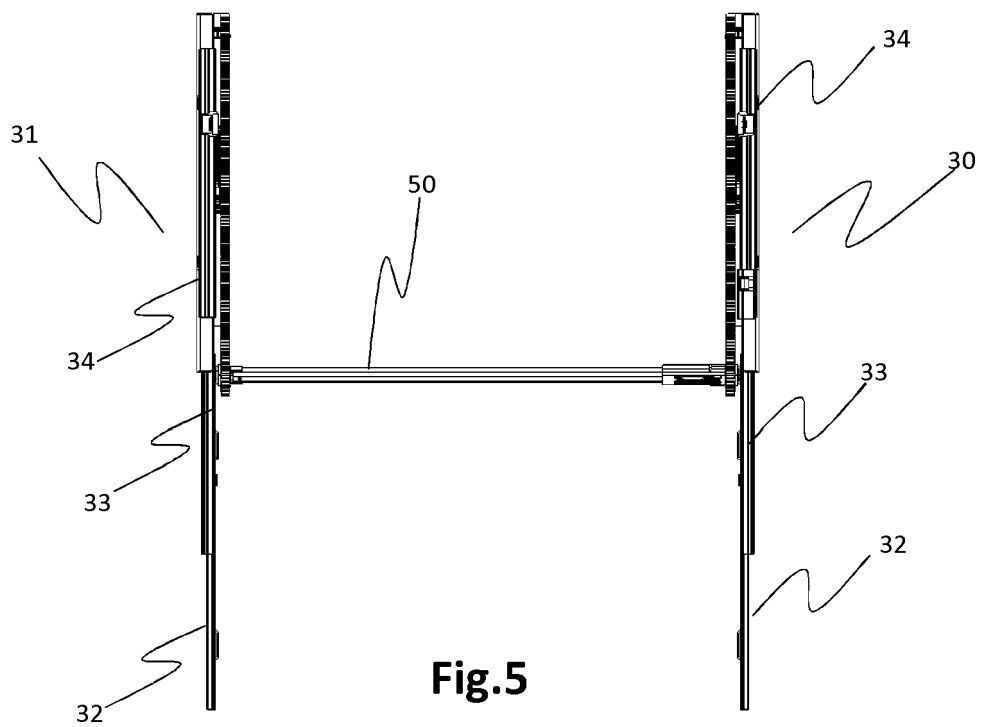


Fig.5

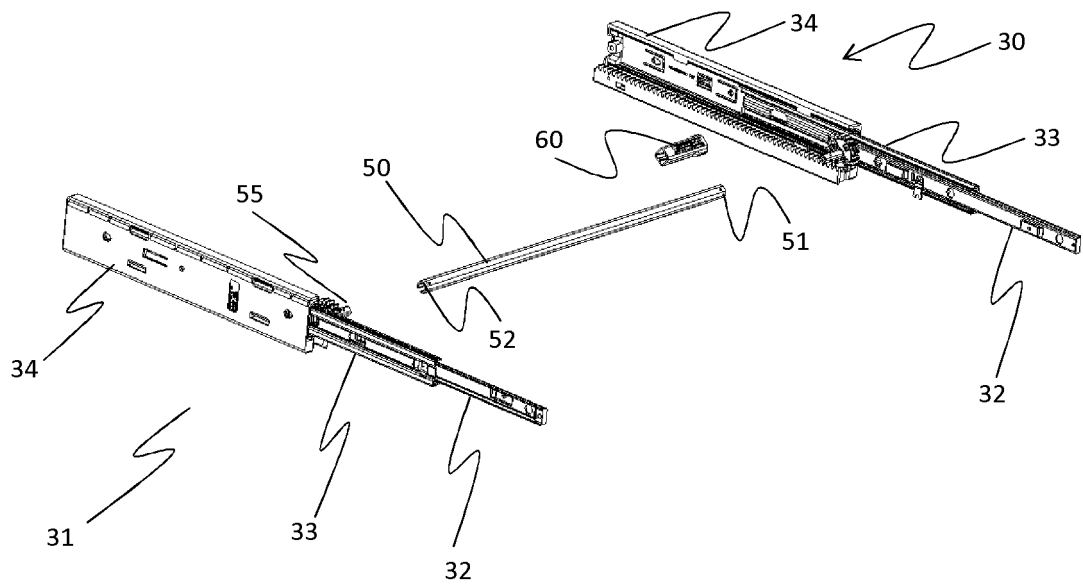


Fig.6

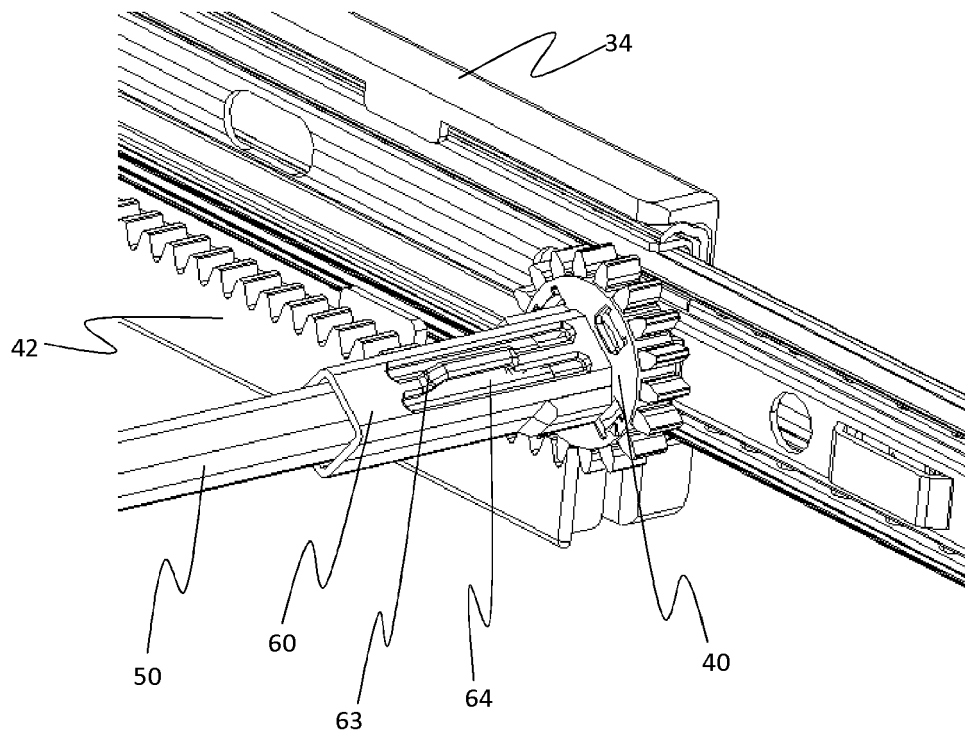


Fig.7

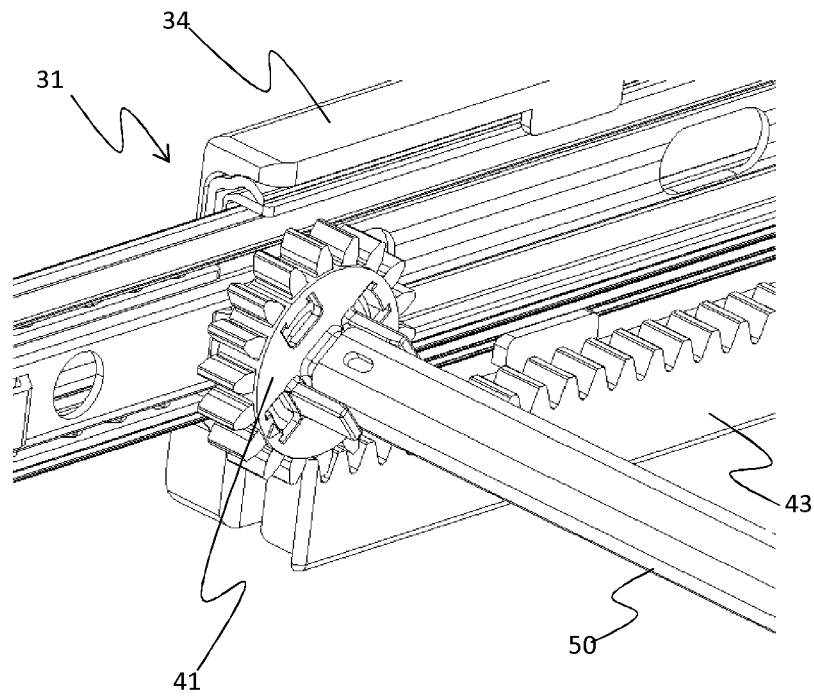


Fig.8

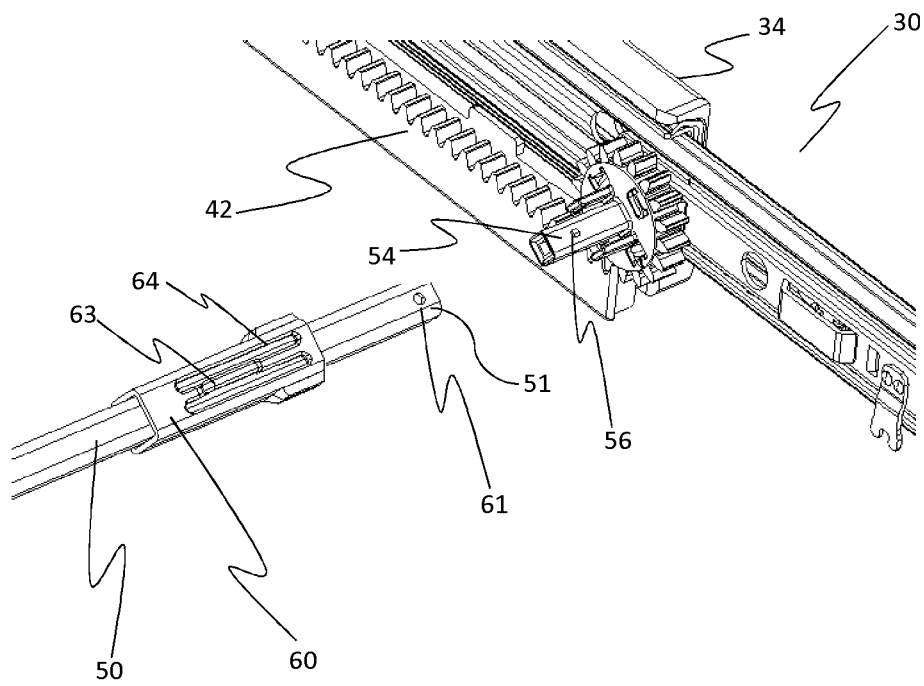


Fig.9

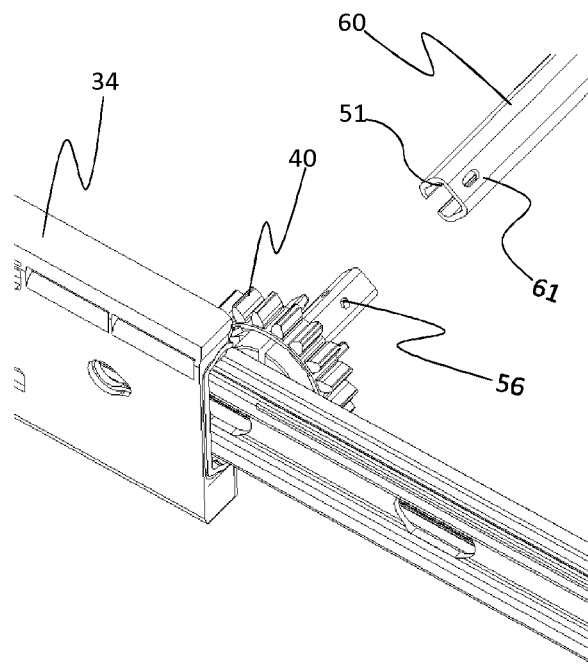


Fig.10

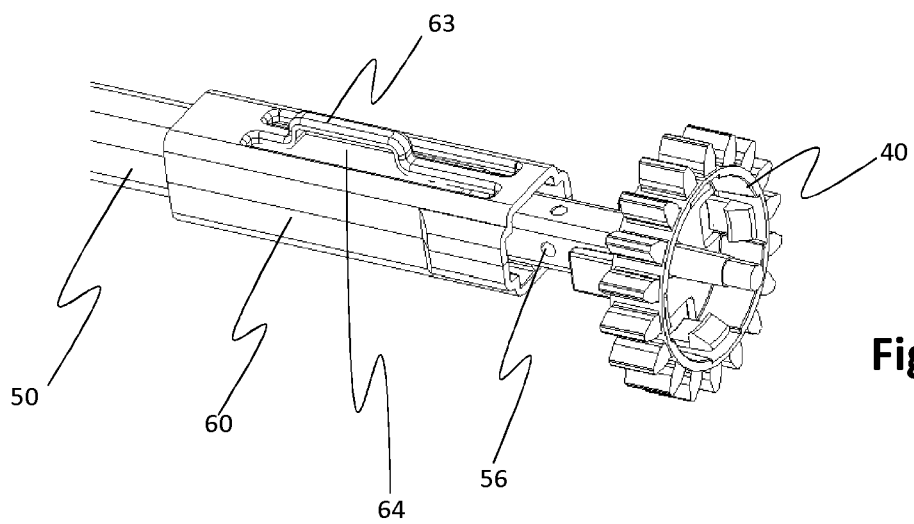


Fig.11

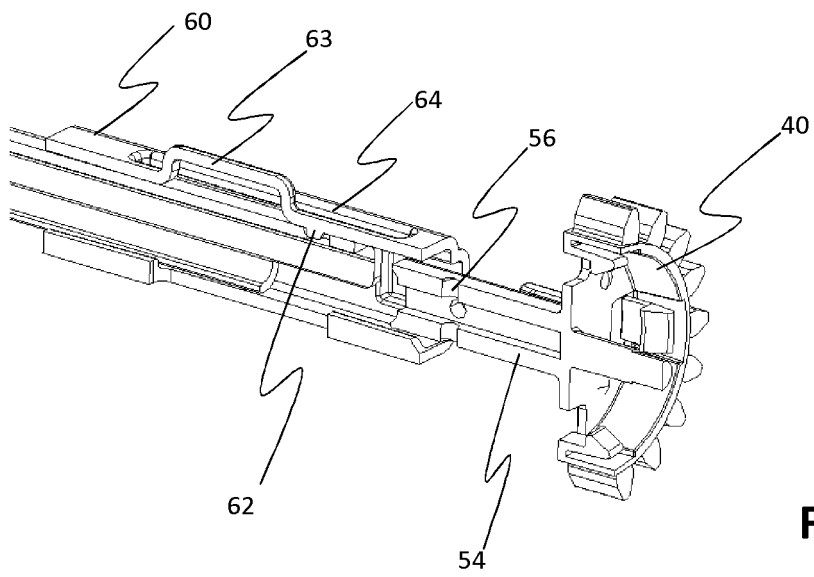


Fig.12

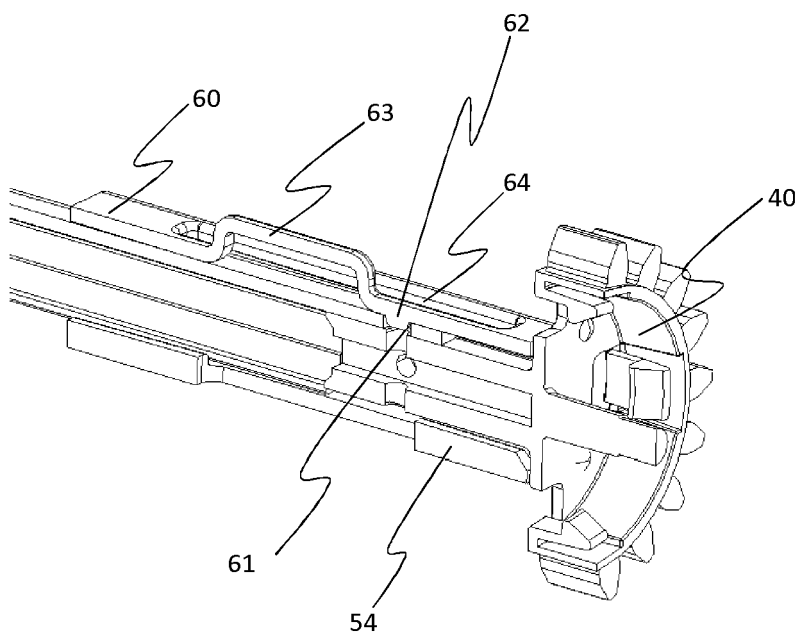


Fig.13

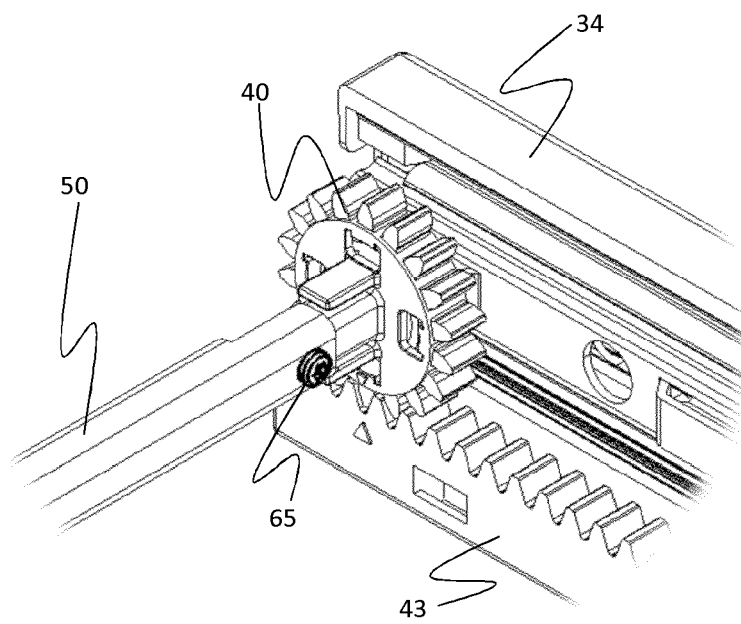


Fig.14 (Prior Art)

REFERENCES CITED IN THE DESCRIPTION

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