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(54) **CABINET WITH ONE OR MORE PULL-OUT SHELVES**

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(56) References cited:
**EP-A1- 1 925 238 EP-A2- 1 925 237
DE-U1-202006 017 567 US-A- 5 312 003**

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Description

[0001] The present patent application relates to a cabinet with one or more pull-out shelves capable of coming out of the cabinet by means of a basically semi-circular travel. Such a cabinet is described in DE 202006017567 U1.

[0002] In particular, the cabinet of the invention belongs to the type of parallelepiped cabinets that are used, for instance, as base units in modular kitchens, with considerable width and one door in off-centred position.

[0003] It is evident that the off-centred position of a similar door allows the user of a similar cabinet to reach out easily only for the objects that are situated on the internal shelves in a position immediately behind the opening where the door is mounted.

[0004] Likewise, in a similar situation, it is particularly difficult to reach for the objects that are situated on the shelves in "lateral" position with respect to the door that is to say at the back of the fixed panel that covers the front of the cabinet.

[0005] It must be noted that the latter problem has been already addressed with the creation of cabinets provided with pull-out shelves, which are capable of going from an "internal" stop position, in which they have an "idle" position and are completely contained inside the cabinet, to an "external" stop position, in which they are pulled out completely on the front of the cabinet, thus allowing the user to take and store objects as desired.

[0006] However, it must be noted that the solutions that have been used so far to realise the pull-out shelves are not completely satisfactory, being impaired by at least two types of significant drawbacks.

[0007] The first drawback is of technical and economic type, and refers to the complexity and expensiveness of the sophisticated mechanisms used to obtain the complete extraction of the shelves from the cabinet.

[0008] It must be noted that the majority of the shelves that are currently available on the market make their extraction travel from the cabinet by means of a complex roto-translation movement that requires the cooperation and sequential actuation of a plurality of kinematic mechanisms.

[0009] The second drawback is of merely practical type and is related with the complexity of the operations that must be carried out by the user to completely extract a shelf from the cabinet.

[0010] In fact, the user must rotate the front door of the cabinet to open it and then, with a second manual operation, grab the shelf and pull to extract it completely.

[0011] Those who are familiar with household activities very well know that the hands of people working in the kitchen are often dirty or used to hold tools or products of miscellaneous nature.

[0012] In such a context it can be especially uncomfortable to make the two aforesaid manual operations in sequence in order to pull out the shelf completely.

[0013] A careful examination of the traditional art has

allowed remedying the inconveniences that are typical of pull-out shelves, in view of the design of the specific cabinet with pull-out shelves claimed in the present patent application.

[0014] The new cabinet of the invention is provided (in one or more specimens) with a shelf that uses a very simple and inexpensive sliding mechanism, which is basically formed of two cooperating pairs of curved guides that are not too different from the ones that are normally used in drawers of modular kitchens or office furniture.

[0015] In view of this simple, yet ingenious solution, the shelf is comes out of the cabinet and returns inside it by means of a simple rotation, which has nothing to do with the more complex roto-translation provided for in the prior art.

[0016] On the other hand, the cabinet of the invention takes advantage of the fact that the pull-out shelf is also capable of supporting the door designed to cover the front opening.

[0017] This means that, in such a case, the cabinet provided with the shelf of the invention abandons the traditional door hinged on one side, in favour of a translating door that is mounted on the front of the shelf and consequently forced to follow the alternate travels of the shelf.

[0018] In view of the above, it appears evident that the removal of the door from the opening and the extraction of the shelf no longer require the two manual operations of the prior art, being combined in a single manual operation.

[0019] By holding the handle provided on the front of the door and exerting a sufficiently long traction, the user can pull out the shelf from the internal compartment of the cabinet and remove the door from the front opening that gives access to the same compartment.

[0020] Of course, by exerting the opposite force, the user can gradually reintroduce the shelf inside the cabinet and, once reintroduction has been completed, bring the translating door in such a position to exactly close the same front opening through which the shelf makes its alternate extraction and reintroduction travels.

[0021] It must be noted that the cabinet of the invention can be alternatively provided with a single pull-out shelf or with an overlapped series of said shelves, each of them being able to slide independently.

[0022] In such a case, each shelf frontally supports a corresponding panel that contributes, in cooperation with similar panels supported by all the other shelves, to close the common opening that gives access to the cabinet.

[0023] It can be otherwise said that the front panels of the overlapped shelves form a sort of chest of drawers with vertical direction that entirely occupies the off-centred opening of the cabinet of the invention.

[0024] For major clarity the description of the invention continues with reference to the enclosed drawings, which are intended for purposes of illustration only and not in a limiting sense, wherein:

- figures 1 A, 1 B and 1 C are top views of the shelf of the invention, inserted in the corresponding cabinet, in three different positions during its alternate sliding travels;
- figure 2 is an axonometric view of a cabinet that houses two overlapped specimens of the shelf of the invention, without the upper horizontal wall, the front panel and part of the translating door of the cabinet;
- figure 3 is basically the same as figure 2, except for it shows in a "transparent" mode the cooperation of the means used for the alternate travels of the pull-out shelves;
- figure 4 is an additional axonometric view of the cabinet of the invention, with reference to the embodiment that provides for motorising the sliding shelves.

[0025] Referring to the enclosed figures, the cabinet of the invention (M) has a parallelepiped shape and is frontally provided with an off-centred opening obtained next to a fixed wall (P).

[0026] In the embodiment of figures 2 and 3 the cabinet (M) is provided with two overlapped specimens of the same pull-out shelf (1).

[0027] Each shelf (1) is provided with arc-of-circumference profile, longitudinally defined by two concentric curved borders (1a, 1b) and, at the ends, by two rectilinear borders (2a, 2b) with 90° angular deviation.

[0028] Referring to figure 1 A, when the shelf of the invention (1) is completely arranged inside the cabinet (M), the first of the two rectilinear borders (2a) is basically in contact with the internal side of the lateral border (SL) of the cabinet (M), whereas, in this same condition, the second of the rectilinear borders (2b) is arranged in a slightly more internal position than the opening of the cabinet (M).

[0029] Figures 1 B and 1 C show two different positions of the shelf (1) during the outward rotation of the cabinet of the invention (M); in particular, figure 1 B shows the shelf (1) at approximately half of the rotation, whereas figure 1 C shows it at the end of the pull-out travel.

[0030] In the latter case, the entire shelf (1) is arranged in projecting position on the front of the opening of the cabinet (M), in which the first rectilinear border (2a) is arranged in a slightly more internal position than the opening.

[0031] After explaining the operating principle of the pull-out shelf (1) of the invention, this description continues with reference to the means used to allow the alternate rotations of the shelf (1).

[0032] In particular, the shelf (1) of the cabinet (M) is provided on the lower side with a concentric pair of guides with arc-of-circumference profile (4a, 4b).

[0033] The first guide (4a) follows the profile of the first longitudinal border (1 a) of the shelf, although in a slightly more internal position; on the other hand, the second guide (4b) follows the profile of the second longitudinal border (1 b) of the shelf (1), in a slightly more internal

position.

[0034] The pair of guides (4a, 4b) is adapted to be coupled, with possibility of mutual sliding, with a corresponding pair of fixed counter guides (5a, 5b) horizontally mounted inside the cabinet (M) and provided with suitable length to extend basically from the internal side of the lateral edge (SL) of the cabinet (M) to the front opening of the same cabinet (M).

[0035] In the cooperation between guides (4a, 4b) and counter guides (5a, 5b), the guides (4a, 4b), being joined with the shelf (1), make alternative travels with respect to the counter guides (5a, 5b) that are fixed to the cabinet (M).

[0036] Likewise, it appears evident that the counter guides (5a, 5b) are also capable of supporting the shelf (1) at the corresponding operating height inside the cabinet (M).

[0037] According to the preferred embodiment shown in figures 1A-1C, the cooperation between guides (4a, 4b) and counter guides (5a, 5b) provides for the guides (4a, 4b) to have a slightly lower centre-to-centre distance than the counter guides (5a, 5b), in such a way that the guides (4a, 4b) can be arranged on the inside of the counter guides (5a, 5b) at a very close distance.

[0038] Referring to figure 3, the two guides (4a, 4b) are provided, on the outside of the back ends, with overlapped pairs of splined wheels with horizontal axis (4c, 4d) and the counter guides (5a, 5b) are provided, on the inside of the front ends, with corresponding overlapped pairs of splined wheels (5c, 5d).

[0039] The function of the pairs of wheels (4c, 4d / 5c, 5d) is to guide and contain the mutual sliding of the guides (4a, 4b) and counter guides (5a, 5b).

[0040] During the alternate travels of the sliding guides (4a, 4b), the pairs of wheels (4c, 4b) slide along the fixed counter guides (5a, 5b), "embracing" them from below and from above.

[0041] In the same occasions the pairs of wheels (5c, 5d) of the fixed counter guides (5a, 5b) favour and contain the alternate travels of the sliding guides (4a, 4b) from below and from above.

[0042] Still referring to the same figures 1A-1C, it must be noted that the pair of counter guides (4a, 4b) is supported inside the cabinet (M), at the desired height, by means of a vertical arm (6) that protrudes from the bottom of the cabinet and is applied at approximately half of the length of the counter guide (4b) with higher radius of curvature, as well as by means of a support (7) that protrudes internally on the lateral edge (SL) of the cabinet (M) and directly supports a rod (8) that connects the two back ends of the counter guides (5a, 5b).

[0043] As mentioned earlier, it must be noted that each specimen of the shelf (1) provided in the cabinet of the invention (M) is also capable of supporting a panel (3) designed to close the opening of the cabinet (M).

[0044] As respectively shown in Figures 1 A, 1 B and 1 C, the panel (3) closes the opening of the cabinet (M) when the shelf (1) has reached the "internal" end-of-travel

position and frees the opening as soon as the shelf (1) resumes its outward rotation.

[0045] According to the preferred embodiment of figures 2 and 3, the panel (3) is fixed with the interposition of a metal plate (3a) at the front ends of the two sliding guides (4a, 4b).

[0046] Reference is made to figure 2, wherein the lower shelf is provided with the front panel (3), whereas the upper shelf, which is deprived of a similar panel, shows the plate (3a) fixed to the two sliding guides (4a, 4b).

[0047] Moreover, it must be said that, according to a preferred embodiment of the present invention, the alternate travels of each shelf (1) are favoured by a small electrical engine (ME).

[0048] As shown in Figure 4, the engine (ME) is flanged on the external counter-guide (5b) and adapted to actuate one of the wheels (5d) with respect to which the guide (4b) alternatively slides.

[0049] Finally, figures 1A to 1C show a traditional shock-absorber (9) mounted between the cabinet (M) and the shelf (1), which is adapted to guarantee a "soft" stop to the shelf (1).

[0050] The same figures show a rod (10) that connects the back ends of the two sliding guides (4a, 4b), as well as an additional connecting bracket (11) provided approximately at half of the length of the same.

Claims

1. Cabinet provided with one off-centred opening and one or more internal shelves with arc-of-circumference profile, adapted to alternatively slide to go, through the off-centred opening, from a position in which they are contained in the cabinet (M) to a position in which they project on the front of the opening, cabinet **characterised in that** each shelf (1) is provided on the lower side with a pair of concentric guides with arc-of-circumference profile (4a, 4b) adapted to alternatively slide with respect to corresponding fixed counter-guides (5a, 5b) horizontally mounted inside it.
2. Cabinet as claimed in claim 1, **characterised in that** the fixed counter-guides (5a, 5b) extend from the internal side of one of the lateral edges (SL) to a front opening situated near the opposite lateral edge.
3. Cabinet as claimed in the above claims, **characterised in that** each shelf (1) is provided with rectilinear borders (2a, 2b) that are staggered by approximately 90° in such a way that, when the shelf (1) is completely contained in the cabinet (M), the first border (2a) is in aligned close position with respect to the internal side of the lateral edge (SL) and the second border (2b) is slightly to the rear of the off-centred position of the cabinet (M).

4. Cabinet as claimed in one or more of the above claims, **characterised in that** the counter-guides (5a, 5b) are supported in horizontal position by one or more vertical arms (6) protruding from the bottom of the cabinet (M) and a shelf (7) protruding from the internal side of the lateral edge (SL), which supports a rod (8) connecting the back ends of the counter-guides (5a, 5b).
5. Cabinet as claimed in one or more of the above claims, **characterised in that**, in each shelf (1), the guides (4a, 4b) are provided, on the outside of the back ends, with overlapped pairs of splined wheels with horizontal axis (4c, 4d) adapted to slide above and below the counter-guides (5a, 5b), which are provided in turn, on the inside of the front ends, with similar pairs of splined wheels (5c, 5d) with the guides (4a, 4b) sliding between them.
6. Cabinet as claimed in one or more of the above claims, **characterised in that** each shelf (1) vertically supports, on the front of the second rectilinear border (2b), a panel (3) adapted to close the off-centred opening either partially or completely, once the shelf (1) is completely inside the cabinet (M).
7. Cabinet as claimed in claim 6, **characterised in that** the panel (3) mounted on the front of each shelf (1) is anchored to a plate (3a) mounted edgewise on the front ends of the sliding guides (4a, 4b).
8. Cabinet as claimed in one or more above claims, **characterised in that** the sliding guides (4a, 4b) of each shelf (1) are connected at the back by means of a rod (10) and centrally by means of a bracket (11).
9. Cabinet as claimed in one or more of the above claims, **characterised in that** each of the pull-out shelves (1) is associated with an end-of-travel shock-absorber (9).
10. Cabinet as claimed in one or more of the above claims, **characterised in that** each shelf (1) is aided by at least one electric engine (ME) to favour alternate travels.
11. Cabinet as claimed in claim 10, **characterised in that**, in each shelf (1), the electrical engine (ME) is flanged on the external counter-guide (5b) with possibility to actuate one of the wheels (5d) with respect to which the adjacent guide (4b) alternatively slides.

Patentansprüche

1. Möbelstück, versehen mit einer dezentrierten Zugangsöffnung und einem oder mehreren inneren Fachböden, die ein Profil im Wesentlichen in Form

- eines Umfangsbogens besitzen und geeignet sind, alternierend zu gleiten, um durch die dezentrierte Öffnung hindurch aus einer innerhalb des Möbelstücks (M) befindlichen Position in eine Position zu gelangen, in der sie auf der Vorderseite der Öffnung auskragend überstehen, welches Möbelstück **dadurch gekennzeichnet ist, dass** jeder Fachboden (1) auf seiner Unterseite ein Paar konzentrischer Führungen mit einem Profil in Form eines Umfangsbogens (4a, 4b) aufweist, die geeignet sind, alternierend bezüglich gleichförmigen, festen, horizontal im Innern montierten Gegenführungen (5a, 5b) zu gleiten.
2. Möbelstück nach Anspruch 1, **dadurch gekennzeichnet, dass** die festen Gegenführungen (5a, 5b) sich von der Innenseite einer der seitlichen Kanten (SL) zu einer vorderen Öffnung in der Nähe der gegenüberliegenden seitlichen Kante hin erstrecken.
 3. Möbelstück nach den vorstehenden Ansprüchen, **dadurch gekennzeichnet, dass** jeder Fachboden (1) mit geradlinigen, um circa 90° versetzten Rändern (2a, 2b) versehen ist, derart, dass der erste Rand (2a), wenn der Fachboden (1) sich im Innern des Möbelstücks (M) befindet, eine auf die Innenseite der seitlichen Kante (SL) ausgerichtete und an sie angenäherte Position einnimmt, und der zweite Rand (2b) eine leicht hinter der dezentrierten Öffnung des Möbelstücks (M) befindliche Position einnimmt.
 4. Möbelstück nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Gegenführungen (5a, 5b) in ihrer horizontalen Position durch einen oder mehrere, aus dem Boden des Möbelstücks (M) auskragende, vertikale Arme (6) und eine Konsole (7) gehalten werden, die aus der Innenseite der seitlichen Kante (SL) auskragt, auf welcher eine Stange (8) aufliegt, die die hinteren Enden der Gegenführungen (5a, 5b) verbindet.
 5. Möbelstück nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** auf jedem Fachboden (1) die Führungen (4a, 4b) an der Außenseite ihrer hinteren Enden jeweils überlappende Paare gerippter Rollen mit horizontaler Achse (4c, 4d) aufweisen, die geeignet sind, oberhalb und unterhalb der jeweiligen Gegenführungen (5a, 5b) zu gleiten, welche wiederum auf der Innenseite ihrer vorderen Enden ähnliche Paare gerippter Rollen (5c, 5d) aufweisen, zwischen denen jeweils die Führungen (4a, 4b) gleiten.
 6. Möbelstück nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** jeder Fachboden (1) auf der Vorderseite des jeweiligen geradlinigen Randes (2b) eine Platte (3) vertikal trägt, die geeignet ist, die dezentrierte Öffnung ganz oder teilweise zu verschließen, wenn der Fachboden (1) sich vollständig im Innern des Möbelstücks befindet.
 7. Möbelstück nach Anspruch 6, **dadurch gekennzeichnet, dass** die auf der Vorderseite eines jeden Fachbodens (1) montierte Platte (3) mit einer Tafel (3a) verbunden ist, die jeweils seitlich an den vorderen Enden der Gleitführungen (4a, 4b) angebracht ist.
 8. Möbelstück nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Gleitführungen (4a, 4b) eines jeden Fachbodens (1) rückseitig mithilfe eines Stabs (10) und auf der Mittellinie mithilfe eines Halters (11) verbunden sind.
 9. Möbelstück nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** jeder ausziehbare Fachboden (1) jeweils einem Endanschlag-Stoßdämpfer (9) zugeordnet ist.
 10. Möbelstück nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** jeder Fachboden (1) jeweils durch mindestens einen Elektromotor (ME) unterstützt wird, der geeignet ist, die alternierenden Verfahrwege desselben zu begünstigen.
 11. Möbelstück nach Anspruch 10, **dadurch gekennzeichnet, dass** der Elektromotor (ME) auf jedem Fachboden (1) an der äußeren Gegenführung (5b) angeflanscht ist und die Möglichkeit besitzt, eine der Rollen (5d) zu betätigen, bezüglich denen die angrenzende Führung (4b) alternierend gleitet.

Revendications

1. Meuble équipé d'une ouverture d'accès décentrée et d'une ou de plusieurs étagères internes ayant un profil substantiellement en forme d'un arc de circonférence et aptes à coulisser alternativement de manière à se porter, à travers ladite ouverture décentrée, d'une position où elles résultent renfermées dans le meuble même (M) sur une position où elles débordent sur la façade avant de ladite ouverture, meuble **caractérisé en ce que** chacune des dites étagères (1) présente, en correspondance de sa face inférieure, une paire de coulisses concentriques et profilées en forme d'un arc de circonférence (4a, 4b) aptes à coulisser alternativement par rapport à des sous-jacentes et conformes contre-coulisses fixes (5a, 5b) montées horizontalement à son interne.

2. Meuble selon la revendication 1, **caractérisé en ce que** lesdites contre-coulisses fixes (5a, 5b) se déploient de la face interne d'un des rebords latéraux (SL) jusqu'à une ouverture centrale positionnée en proximité du rebord latéral opposé.
3. Meuble selon les revendications précédentes, **caractérisé en ce que** chacune des dites étagères (1) présente des bords rectilignes d'extrémité (2a, 2b) qui résultent déphasés d'environ 90°, de manière que, lorsque l'étagère (1) est renfermée à l'intérieur du respectif meuble (M), le premier de ces bords d'extrémité (2a) assume une position alignée et rapprochée par rapport à la face interne du ledit bord latéral (SL) et le second (2b) se dispose dans une position juste derrière ladite ouverture décentrée du meuble (M).
4. Meuble selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** lesdites contre-coulisses (5a, 5b) résultent supportées dans leur position horizontale par un ou plusieurs bras verticaux (6) qui débordent du fond du meuble même (M) et par une tablette (7), qui déborde de la face interne du dit rebord latéral (SL), sur laquelle est appuyée une tige (8) qui relie les extrémités postérieures des contre-coulisses mêmes (5a, 5b).
5. Meuble selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que**, dans le champ de chacune des dites étagères (1), lesdites coulisses (4a, 4b) présentent, à l'extérieur de leurs extrémités postérieures, des respectives paires superposées de roues cannelées à axe horizontal (4c, 4d) aptes à coulisser au-dessus et au-dessous des respectives contre-coulisses (5a, 5b), qui à leur tour présentent, à l'intérieur de leurs extrémités antérieures, des paires identiques de roues cannelées (5c, 5d) entre lesquelles glissent les respectives dites coulisses (4a, 4b).
6. Meuble selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** chacune de ses étagères (1) soutient verticalement, en façade de son respectif second bord rectiligne d'extrémité (2b), un panneau (3) apte, lorsque l'étagère (1) est déplacée intérieurement à l'intérieur de son respectif meuble (M), à fermer totalement ou partiellement ladite ouverture décentrée du meuble.
7. Meuble selon la revendication 6, **caractérisé en ce que** ledit panneau (3) monté en façade de chacune des dites étagères (1) est ancré à une plaque (3a) montée de chant en correspondance des extrémités antérieures des respectives coulisses (4a, 4b).
8. Meuble selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** les coulisses (4a, 4b) de chaque étagère (1) sont reliées postérieurement par le biais d'une tige (10) et au centre par le biais d'une bride (11).
9. Meuble selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** chacune des dites étagères extractibles (1) résulte associée à un respectif amortisseur de fin de course (9).
10. Meuble selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** chacune des dites étagères (1) est assistée par au moins un respectif moteur électrique (ME) apte à en favoriser les courses alternées.
11. Meuble selon la revendication 10, **caractérisé en ce que**, dans le champ de chaque étagère (1), ledit moteur électrique (ME) résulte bridé sur la contre-coulisse externe (5b) avec capacité d'activer une des roues (5d) par rapport auxquelles l'adjacente coulisse (4b) glisse de manière alternée.

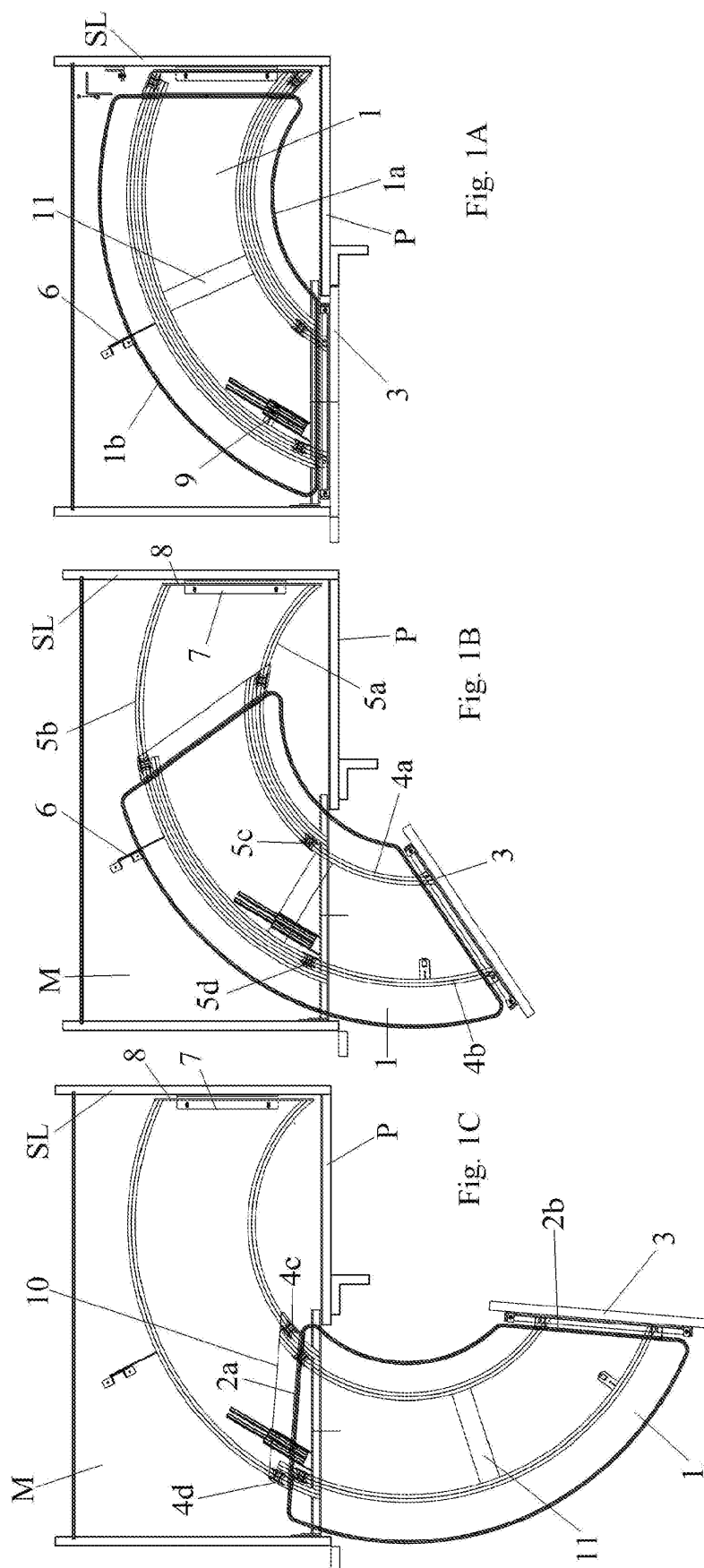


Fig. 1A

Fig. 1B

Fig. 10

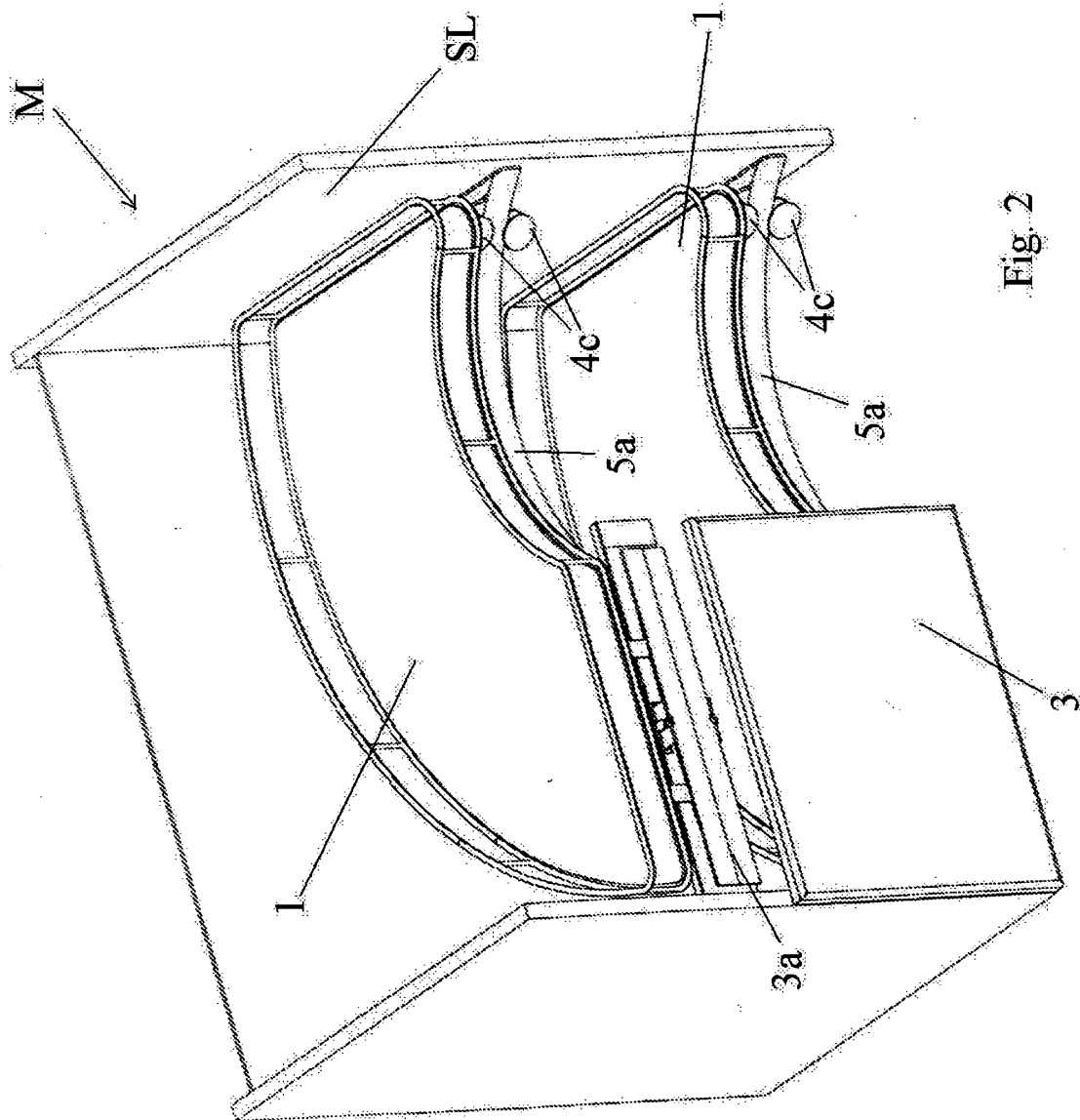


Fig. 2

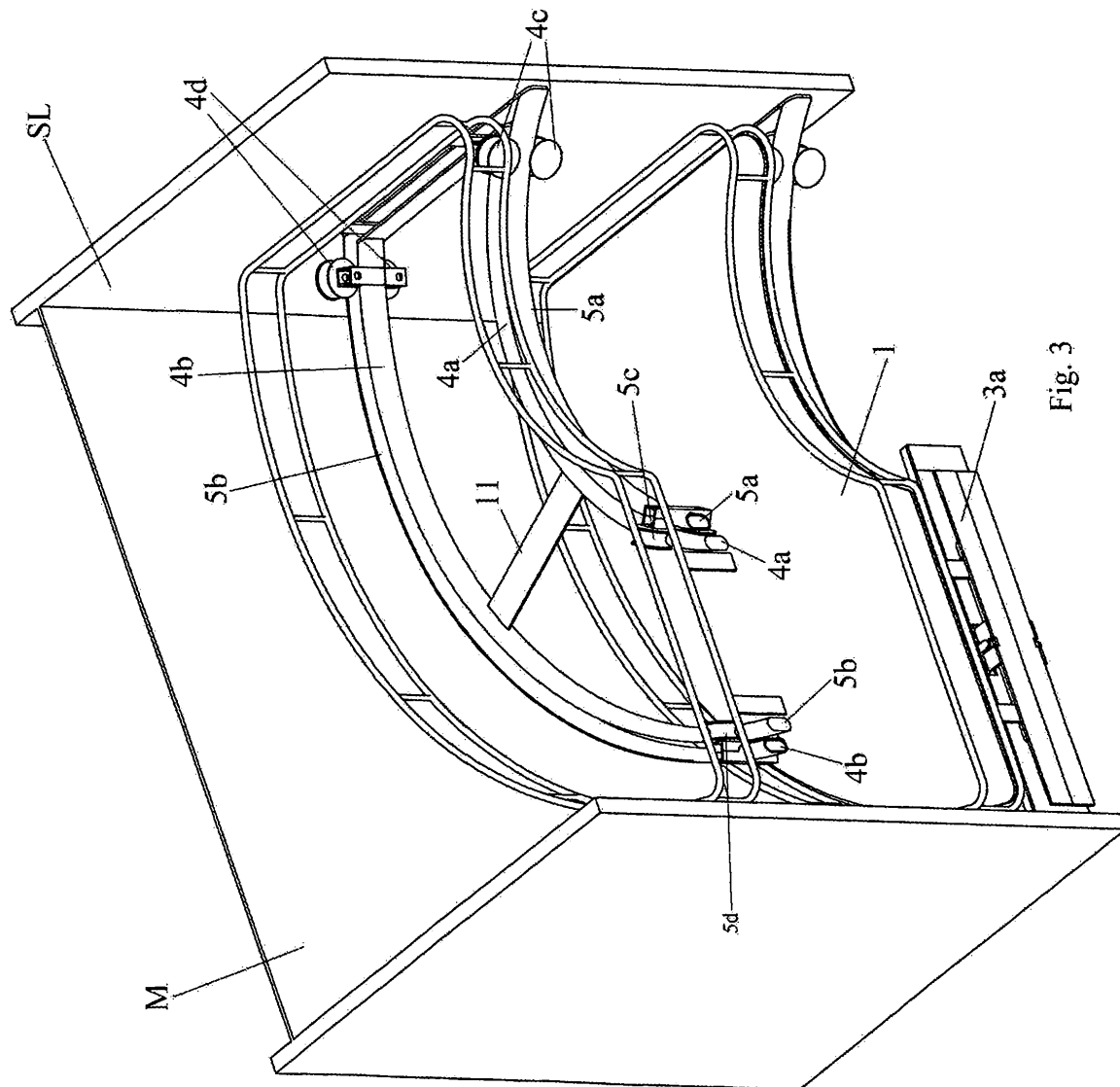


Fig. 3

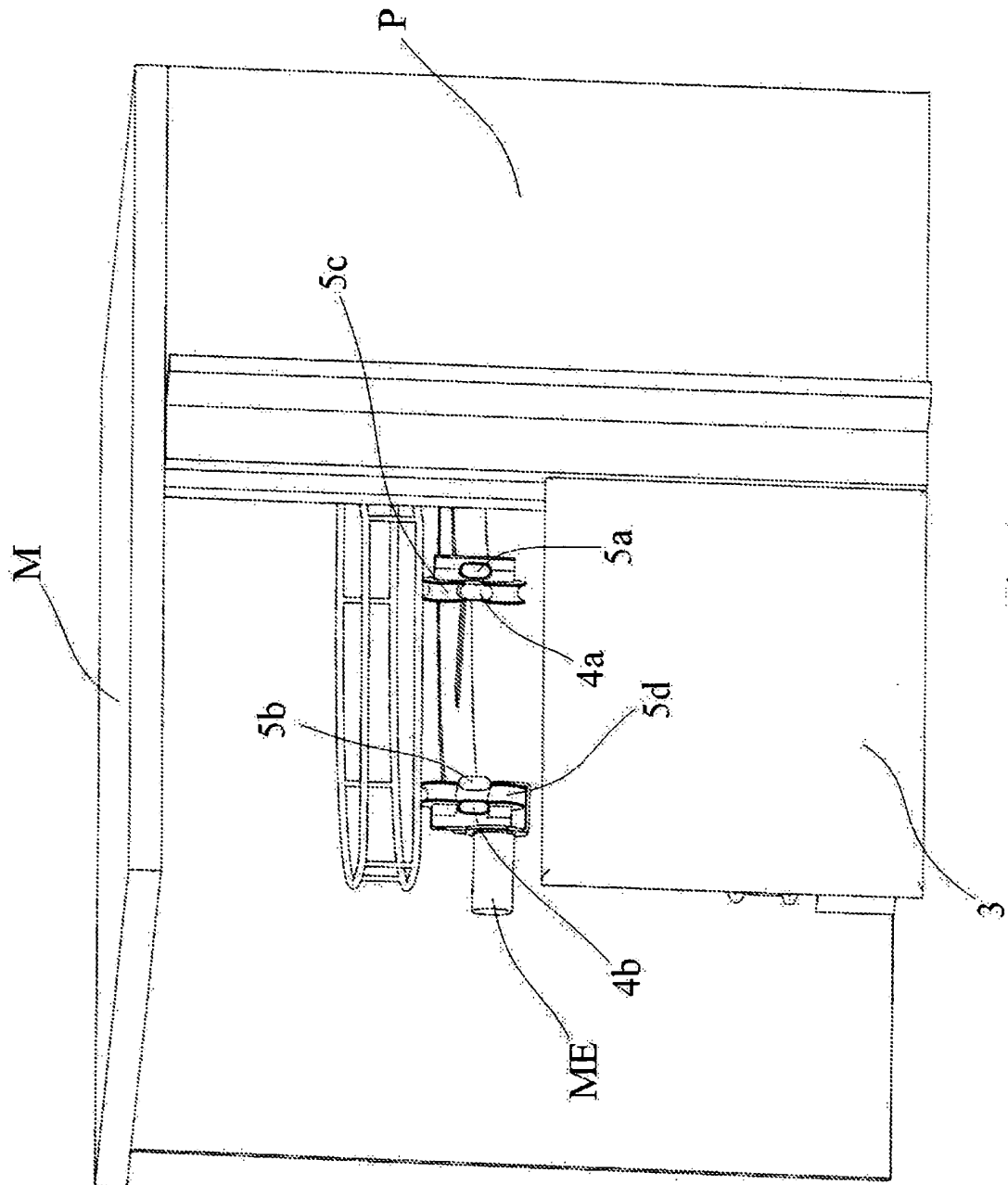


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 202006017567 U1 [0001]