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(54) **HINGE PROVIDED WITH AN AUTOMATIC OPENING AND CLOSING DEVICE FOR A FURNITURE PIECE DOOR**

SCHARNIER MIT EINER AUTOMATISCHEN ÖFFNUNGS- UND SCHLIESSVORRICHTUNG FÜR DIE TÜR EINES MÖBELSTÜCKS

CHARNIÈRE COMPORTANT UN DISPOSITIF D'OUVERTURE ET DE FERMETURE AUTOMATIQUE POUR UNE PORTE DE MEUBLE

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(73) Proprietor: **Arturo Salice S.p.A.**
22060 Novedrate (Como) (IT)

(72) Inventor: **SALICE, Luciano**
I-22060 Carimate (Como) (IT)

(74) Representative: **Rapisardi, Mariacristina et al**
Ufficio Brevetti Rapisardi S.r.l.
Via Serbelloni, 12
20122 Milano (IT)

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Description

[0001] The present invention relates to a hinge provided with an automatic opening and closing device for a furniture piece door, particularly, but not exclusively, a hinge of the push self-closing type, i.e. one which enables the door to be both opened and subsequently closed in an automatic manner.

[0002] In the realm of furniture without handles or similar opening means, the use of opening means which, following a push on the closed door by the user, generate a movement of the door in the opening direction by a first distance that is sufficient in order for the user to grasp it and open it completely, is well known.

[0003] In particular, there is conventionally provided an opening device comprising an expulsion member for the door, which member is subjected to an elastic force, and means for retaining the expulsion member itself, which can generally be released by the user by pressing on the closed door to impose a backward movement of a few millimetres.

[0004] Once its action has been performed, the opening device must then be reloaded, for example by means of a push exerted by the user in the opposite direction on the door in the final part of the closing movement thereof, or by special reloading means actuated by the movement of the door itself.

[0005] Accordingly, therefore, such devices are placed on the furniture piece on the side opposite the one where the hinges are fixed, requiring specific operations for the assembly and correct functioning thereof.

[0006] In fact, if said opening device is placed in the area of the hinges or in any case applied to the furniture piece on the hinge side, the movement of the hinge elements or of the door itself on the hinge side, which is generated as a consequence of the push exerted by the user on the closed door, will be of an order of magnitude of only a few tenths of a millimetre, and thus insufficient to generate the movement necessary to enable the release of the retaining means of the expulsion member.

[0007] Document DE 20 2004019238 U1 discloses a hinge provided with an automatic opening and closing device for a furniture piece door according to the preamble of claim 1.

[0008] The technical task that the present invention has set itself, therefore, is to realize a hinge provided with an automatic opening and closing device for a furniture piece door which allows the aforementioned technical drawback of the prior art to be overcome.

[0009] Within the scope of this technical task, one object of the invention is to provide a hinge provided with an automatic opening and closing device for a furniture piece door which enables the expulsion member to be released even in the presence of movements of the door on the order of a few tenths of a millimetre.

[0010] Another object of the invention is to provide a hinge provided with an automatic opening and closing device for a furniture piece door which can function in a lasting manner without any deterioration in performance and which can be applied to the furniture piece without requiring any particular processes or operations.

[0011] The technical task according to the present invention is achieved by realizing a hinge according to claim 1. The hinge is provided with an automatic opening and closing device for a furniture piece door, said opening device comprising an expulsion member movable in opposition and under the action of first elastic means which subject it to a force in the opening direction of the door, and releasable retaining means for the expulsion member comprising a hooking element for the expulsion member, movable between a position of engagement and a position of disengagement with the expulsion member, said hooking element being held in the engagement position by the push exerted by the expulsion member via said first elastic means.

[0012] The releasable retaining means further comprise second elastic means for actuating the hooking element configured and disposed in such a way as to move the hooking element toward the disengagement position as a result of pressure exerted on the expulsion member in the direction opposite to the opening direction of the door. The hooking element is provided at the end of a first arm of a lever pivotable in opposition and under the action of the second elastic means.

[0013] Other characteristics of the present invention are defined, moreover, in the appended claims.

[0014] Further characteristics and advantages of the invention will be more apparent from the description of a preferred, but not exclusive embodiment of the hinge provided with an automatic opening and closing device for a furniture piece door, in which:

figure 1 shows a median longitudinal cross section of the hinge in the closing configuration of the door;
figure 2 shows a side view of the hinge of figure 1 in a configuration assumed during the push exerted by the user on the closed door;
figure 3 shows a partial cross section of the hinge in the configuration illustrated in figure 2;
figure 4 shows a side view of the hinge of figure 1 in a configuration assumed after the push exerted by the user on the closed door, at the moment of release of the expulsion member;
figure 5 shows a partial cross section of the hinge in the configuration illustrated in figure 4;
figure 6 shows a side view of the hinge of figure 1 in a configuration assumed at the end of the extraction of the expulsion member;
figure 7 shows a partial cross section of the hinge in the configuration illustrated in figure 6;
figure 8 shows a side view of the hinge of figure 1 in a configuration in which the expulsion member has been reset, and an enlargement of a detail thereof;
figure 9 shows a partial cross section of the hinge in the configuration illustrated in figure 8.

[0015] With reference to the figures, there is shown a hinge 2 provided with an automatic opening and closing device for a furniture piece door.

[0016] The hinge 2 has a hinge box 3 applied to the door 1, a hinge arm 4 applied to a base 5 for fastening to a fixed part of the furniture piece, in particular to a shoulder 6 of the furniture piece, and rocker arms 7 and 8 which operatively connect the hinge box 3 to the hinge arm 4.

[0017] The hinge 2, in a known manner, comprises pins 10, 11 articulating with the rocker arms 7 and 8 with the hinge arm 4, pins 12 and 13 articulating with the rocker arms 7 and 8 with the hinge box 3, a closing deceleration device 14 for the door 1 of the type with friction discs immersed in a viscous fluid, applied to the outer side of the bottom of the hinge box 3, and an elastic element 15 positioned between the back of the hinge arm 4 and an actuating cam 16 present at one end of the rocker arm 7 and suitable for assisting the closure of the door 1.

[0018] The opening device comprises an expulsion member 17 movable in opposition and under the action of first elastic means 18, which subject it to a force in the opening direction of the door 1, and releasable retaining means for the expulsion member 17.

[0019] The retaining means comprise a hooking element 19 for the expulsion member 17. The hooking element 19 is movable between a position of engagement and a position of disengagement with the expulsion member 17.

[0020] The hooking element 19 is held in the engagement position by the push exerted by the expulsion member 17 via the first elastic means 18.

[0021] The retaining means further comprise second elastic means 20 configured and disposed in such a way as to move the hooking element 19 toward the disengagement position as a result of pressure exerted on the expulsion member 17 in the direction opposite to the opening direction of the door 1.

[0022] The opening device has a base body 21 applied to the hinge arm 4 and translatably supporting the expulsion member 17.

[0023] The base body 21 supports a lever 23 pivotable in opposition and under the action of the second elastic means 20.

[0024] The hooking element 19 is fashioned at one end of a first arm 22 of the lever 23. The first arm 22 of the lever 23 extends beyond the rear end of the base body 21, where the hooking element 19 is engageable with a catch 24 present on the rear end of the expulsion member 17.

[0025] The lever 23 has a pivot fulcrum 25 oriented orthogonally to the translation direction of the expulsion member 17.

[0026] The second elastic means 20 comprise a torsion spring, interposed between the base body 21 and the lever 23, which in particular is wrapped around a pin constituting the pivot fulcrum 25 and has one end coupled to the first arm 22 of the lever 23 and one end positioned against a stop 26 present on the base body 21.

[0027] The base body 21 has a box-like configuration for containing the expulsion member 17, whose rear end 26 extends out through a rear aperture 27 of the base body 21 and whose front end 28 extends out through a front aperture 29 of the base body 21.

[0028] The base body 21 internally defines a housing 30 for the expulsion member 17 and the first elastic means 18, which in this case are represented by a helical spring deformable in the direction of movement of the expulsion member 17.

[0029] The lever 23 extends adjacent to a side 31 of the base body 21 and has a first lever arm 22 of greater length and a second lever arm 32 of less length, which extends on the side opposite that of the first lever arm 22 relative to the pin 25.

[0030] The base body 21 has an elongated hole 47 at the top for front adjustment of the fixing thereof to the hinge arm 4 by means of the screw 48.

[0031] The hole 47 is elongated in the translation direction of the expulsion member 17, so that the fixing position of the base body 21 in the translation direction of the expulsion member 17 can be calibrated by loosening the screw 48 to modify the fastening position thereof in the hole 47 and subsequently re-tightening the screw 48.

[0032] Integrated within the hinge 2 there is a device for automatically resetting the hooking element 19 to the configuration of engagement with the expulsion member 17.

[0033] The resetting device comprises a pivotable member 33 for the combined driving of the expulsion member 17 and lever 23.

[0034] The driving member 33 is fulcrumed to the hinge arm 4 at 40 and has a drive cam 34 suitable for interfering with the wall of a recess 35 present on the expulsion member 17 so as to transform the pivoting of the driving member 33 into a backward translation of the expulsion member 17; the driving member 33 further has a pin 36 for driving a transmission rod 37 which at one end is fulcrumed to the pin 36 and at the opposite end has a pin 39 slidingly engaged in a slot 38 present on the second lever arm 32 so as to transform the pivoting of the driving member 33 into a pivoting of the lever 22 toward the engagement position of the hooking element 19.

[0035] The pin 36 slidingly and freely extends through a curved slot 45 centred at 40 and fashioned on a side 31 of the box-like body 21.

[0036] The driving member 33 can be directly or indirectly actuated by a mobile part of the hinge during the opening of the door 1.

[0037] In particular, the driving member 33 can be actuated by a lever 8' solidly joined to the rocker arm 8 by means of a transmission member 42 fulcrumed to the hinge arm 4 at 44.

[0038] The pivot fulcrums 40 and 44 of the driving member 33 and the transmission member 42 are parallel to each other and to the pivot fulcrum of the lever 23 and

in turn to the pivot fulcrums 10, 11, 12, and 13 of the rocker arms 7 and 8 which connect the hinge arm 4 to the hinge box 3.

[0039] The hooking element 19 and/or preferably the catch 24 present on the expulsion member 17 is provided with a slanting surface 46 suitable for causing, when the hooking element 19 goes into the engagement position, an additional backward movement of the expulsion member 17 relative to the position reached under the action of the resetting device, in such a way as to increase the contact pressure of the hooking element 19 against the catch 24 determined by the first elastic means 18.

[0040] The functioning of the hinge 2 is briefly as follows.

[0041] The opening device is integrated into the hinge 2 in a position such that the front end of the expulsion member 17 can interfere with the edge 49 of the hinge box 3, which projects from the thickness of the door 1, or directly with the inside surface of the door 1.

[0042] In the illustrated embodiment, the door 1 is initially closed (figures 2 and 3) and the edge 49 of the hinge box 3 is resting against the front end of the expulsion member 17, which posteriorly restrains the hooking member 19 with the catch 24.

[0043] The retaining force of the hooking member 19 in the engagement position is substantially determined by the pushing action that the first elastic means 18 exert on the expulsion member 17 in the extraction direction and in particular it is proportional to the degree of compression of the helical spring.

[0044] The user pushes the closed door 1 (figures 4 and 5) and consequently the edge 49 of the hinge box 3 pushes against the front end of the expulsion member 17, which moves back until determining the release of the hooking element 19 under the action of the pivoting (in an anticlockwise direction in the figures) of the lever 23 caused by the stretching of the second elastic means 20.

[0045] When the hooking member 19 is uncoupled and the user releases the door 1, the expulsion member 17 can freely snap forward due to the expansion of the first elastic means 18 and thereby give rise to the first opening phase of the door 1 (figures 6 and 7).

[0046] The resetting of the opening device takes place during the subsequent phase of completion of the opening of the door 1 imposed by the user and is due to the rocker arm 8, which actuates the kinematic chain comprising the transmission member 42 and driving member 33 in cascade fashion.

[0047] In the initial part of the opening phase (up to an opening angle of about 75°) of the door 1 the rocker arm 8 pivots in a direction (anticlockwise in the figures) which determines the pivoting of the transmission member 42 in the opposite direction (clockwise in the figures) 42 and the pivoting of the driving member 33 in a concordant direction (anticlockwise in the figures).

[0048] The driving member 33, by virtue of the pivoting thereof, performs a dual action: on the one hand, with the drive cam 34 it engages and pushes against the rear wall of the recess 35, generating a backward movement of the expulsion member 17, opposed by the first elastic means 18, which are compressed; on the other hand, with the pin 36, the driving member 33 actuates the transmission rod 37, which, with the pin 39, first slides in the slot 38 and finally pushes against the rear end of the slot 38, generating a pivoting movement of the lever 23 toward the engagement position of the hooking element 19, opposed by the second elastic means 20, which are compressed.

[0049] The actuation of the lever 23 is thus time-delayed relative to that of the expulsion member 17, so that the lever 23 is made to pivot only after the catch 24 has passed over the hooking member 19 in its retraction movement.

[0050] As said, when the hooking element 19 goes back into the engagement position (figure 8 and 9), the hooking element 19 engages the slanting surface 46 present on the catch 24, causing an additional backward movement of the expulsion member 17 relative to the position reached under the action of the resetting device, so as to assure the contact pressure of the hooking element 19 against the catch 24 determined by the first elastic means 18. In this manner a stable and secure configuration of engagement is obtained between the hooking element 19 and the expulsion member 17.

[0051] In the last part of the phase of completion of the opening of the door 1, the rocker arm 8 reverses the pivoting direction and this simply causes the disengagement of the drive cam 34 from the rear wall of the recess 35 and the disengagement of the pin 39 from the rear end of the slot 38, while the opening device remains in the reset configuration since the hooking element 19 remains held in the engagement position thanks to the prevalence of the retaining action generated by the first elastic means 18 over the release action generated by the second elastic means 20.

[0052] A particularly advantageous aspect of the invention consists in the fact that the automatic opening and closing device has a special configuration, thanks to which it can be integrated directly into the hinge, the retaining means being capable of achieving a correct release of the expulsion member even when the door pivots by a few tenths of a millimetre. This undoubtedly results in a simplification of the installation of the opening device, which does not require specific operations and improves the exploitability of the internal spaces of the furniture piece.

[0053] The hinge thus conceived is susceptible of numerous modifications and variants, all falling within the scope of the inventive concept as defined in the appended claims; moreover, all the details may be replaced with other technically equivalent elements.

[0054] In practice, the materials used, as well as the dimensions, can be any whatsoever according to need and the state of the art.

Claims

1. A hinge (2) provided with an automatic opening and closing device for a furniture piece door (1), said opening device said first elastic means (18) generating on said hooking element (19) a retaining action in the engagement position and said second elastic means (20) generating on said hooking element (19) a releasing action in the engaging position, the first one being prevailing over the second one, comprising an expulsion member (17) movable in opposition and under the action of first elastic means (18) which subject the expulsion member (17) to a force in the opening direction of the door (1), and releasable retaining means for the expulsion member (17) comprising a hooking element (19) for the expulsion member (17), movable between a position of engagement and a position of disengagement with the expulsion member (17), said hooking element (19) being held in the engagement position by the push exerted by the expulsion member (17) via said first elastic means (18), **characterized in that** the releasable retaining means further comprises second elastic means (20) for actuating said hooking element (19) configured and disposed in such a way as to move the hooking element (19) toward the disengagement position as a result of pressure exerted on the expulsion member (17) in the direction opposite to the opening direction of the door (1), being activated by a push on the closed door by an user and said hooking element (19) being provided at the end of a first arm (22) of a lever (23) of the opening device pivotable in opposition and under the action of said second elastic means (20).

2. The hinge (2) according to the preceding claim, **characterized in that** said lever (23) is supported by a base body (21) of said opening device applied to a hinge arm (4) of the hinge (2).

3. The hinge (2) according to the preceding claim, **characterized in that** said first lever arm (22) extends beyond the rear end of said base body (21), where said booking element (19) is engageable with a catch (24) present on the rear end of the expulsion member (17).

4. The hinge (2) according to any one of previous claims, **characterized in that** said lever (23) has a pivot fulcrum (25) oriented orthogonally to the translation direction of said expulsion member (17).

5. The hinge (2) according to any one of claims 2 to 4, **characterized in that** said second elastic means (20) comprise a torsion spring interposed between the base body (21) and the lever (23).

6. The hinge (2) according to any preceding claim, **characterized in that** it comprises a device for automatically resetting the configuration of engagement of the hooking element (19) with the expulsion member (17).

7. The hinge (2) according to the preceding claim, **characterized in that** said resetting device comprises a pivotable member (33) for the combined driving of said expulsion member (17) and said lever (23), said driving member (33) being directly or indirectly actuatable by a mobile part of the hinge during the opening of the door (1).

8. The hinge (2) according to the preceding claim, **characterized in that** said pivotable driving member (33) has a drive cam (34) suitable for interfering with the wall of a recess (35) present on the expulsion member (17) so as to transform the pivoting of the driving member (33) into a backward translation of the expulsion member (17), the driving member (33) further having a pin (36) for driving a transmission rod (37) which at one end is fulcrumed to the driving pin (36) and at the opposite end has a pin (39) slidingly engaged in a slot (38) present on the second lever arm (32) of the lever (23) so as to transform the pivoting of the driving member (33) into a pivoting of the lever (22) toward the engagement position of the hooking element (19).

9. The hinge (2) according to either of claims 7 and 8, **characterized in that** said driving member (33) is fulcrumed to the hinge arm (4).

10. The hinge (2) according to the preceding claim, **characterized in that** said driving member (33) is actuatable, via a pivotable transmission member (42), by a rocker arm (8) connecting between the hinge arm (4) and a hinge box (3).

11. The hinge (2) according to the preceding claim, **characterized in that** said rocker arm (8), said transmission member (42), said driving member (33) and said lever (23) have parallel pivot fulcrums.

12. The hinge (2) according to claim 3 and any one of claims 6 to 11 **characterized in that** the hooking element (19) and/or the catch (24) present on the expulsion member (17) have a slanting surface (46) suitable for causing, when the hooking element (19) goes into the engagement position, an additional backward movement of the expulsion member (17) relative to the position reached under the action of the resetting device, in such a way as to assure the contact pressure of the hooking element (19) against the catch (24) determined by the first elastic means (18).

13. The hinge (2) according to any one of claims 2 to 12,

characterized in that said base body (21) has an elongated hole (47) for front adjustment of the fixing thereof to the hinge arm (4) by means of a screw (48).

14. A furniture piece **characterized in that** it has at least one hinge (2) in accordance with any preceding claim.

Patentansprüche

1. Scharnier (2) mit einer automatischen Öffnungs- und Schließvorrichtung für die Tür (1) eines Möbelstücks, wobei diese Öffnungsvorrichtung dadurch aktiviert wird, dass ein Nutzer auf die geschlossene Tür drückt, und ein Ausstoßelement (17) umfasst, bewegbar entgegengesetzt zu und unter der Wirkung von ersten elastischen Mitteln (18), die das Ausstoßelement (17) einer Kraft in der Öffnungsrichtung der Tür (1) aussetzen, sowie lösbare Haltemittel für das Ausstoßelement (17), umfassend ein Hakenelement (19) für das Ausstoßelement (17), bewegbar zwischen einer Eingriffposition und einer Freigabeposition mit dem Ausstoßelement (17), wobei das Hakenelement (19) durch den vom Ausstoßelement (17) über die ersten elastischen Mittel (18) ausgeübten Druck in der Eingriffposition gehalten wird, **dadurch gekennzeichnet, dass** die lösbaren Haltemittel zudem zweite elastische Mittel (20) zum Betätigen des Hakenelements (19) umfassen, so ausgelegt und angeordnet, dass das Hakenelement (19) zur Freigabeposition bewegt wird, und zwar infolge des auf das Ausstoßelement (17) in die entgegengesetzte Richtung zur Öffnungsrichtung der Tür (1) ausgeübten Drucks, wobei diese ersten elastischen Mittel (18) auf dem Hakenelement (19) eine Haltewirkung in der Eingriffposition erzeugen und die zweiten elastischen Mittel (20) auf dem Hakenelement (19) eine Freigabewirkung in der Eingriffposition erzeugen, wobei die erste Wirkung über die zweite überwiegt, wobei das Hakenelement (19) am Ende eines ersten Arms (22) eines Hebels (23) der Öffnungsvorrichtung, drehbar entgegengesetzt zu den und unter der Wirkung der zweiten elastischen Mittel (20), bereitgestellt ist.

2. Scharnier (2) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der Hebel (23) von einem Basiskörper (21) der Öffnungsvorrichtung, angebracht am Scharnierarm (4) des Scharniers (2), getragen wird.

3. Scharnier (2) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** sich der erste Hebelarm (22) jenseits des rückseitigen Endes des Basiskörpers (21) erstreckt, wo das Hakenelement (19) mit einer Arretierung (24) in Eingriff gelangen kann, die am rückseitigen Ende des Ausstoßelements (17) ausgebildet ist.

4. Scharnier (2) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Hebel (23) einen Drehpunkt (25) besitzt, der rechtwinklig zur Verschieberichtung des Ausstoßelements (17) ausgerichtet ist.

5. Scharnier (2) nach einem der Ansprüche 2 bis 4, **dadurch gekennzeichnet, dass** die zweiten elastischen Mittel (20) eine Drehfeder umfassen, die zwischen dem Basiskörper (21) und dem Hebel (23) eingesetzt ist.

6. Scharnier (2) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** es eine Vorrichtung zum automatischen Verstellen der Eingriffkonfiguration des Hakenelements (19) mit dem Ausstoßelement (17) umfasst.

7. Scharnier (2) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** diese Verstellvorrichtung ein drehbares Element (33) für den kombinierten Antrieb des Ausstoßelements (17) und des Hebels (23) umfasst, wobei das Antriebselement (33) direkt oder indirekt durch einen mobilen Teil des Scharniers während der Öffnung der Tür (1) betätigt werden kann.

8. Scharnier (2) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** das drehbare Antriebselement (33) einen Antriebsnocken (34) aufweist, der geeignet ist, um mit der Wand einer Vertiefung (35) zu interferieren, die auf dem Ausstoßelement (17) vorhanden ist, um das Drehen des Antriebselements (33) in eine Rückwärtsverschiebung des Ausstoßelements (17) zu verwandeln, wobei das Antriebselement (33) zudem einen Zapfen (36) aufweist, um eine Übertragungsstange (37) anzutreiben, die an einem Ende drehbar mit dem Antriebszapfen (36) verbunden ist und am entgegengesetzten Ende einen Zapfen (39) aufweist, der verschiebbar in eine Aussparung (38) auf dem zweiten Hebelarm (32) des Hebels (23) eingreift, sodass das Drehen des Antriebselements (33) in ein Drehen des Hebels (22) zur Eingriffposition des Hakenelements (19) verwandelt wird.

9. Scharnier (2) nach einem der Ansprüche 7 oder 8, **dadurch gekennzeichnet, dass** das Antriebselement (33) drehbar mit dem Scharnierarm (4) verbunden ist.

10. Scharnier (2) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** das Antriebselement (33) über ein drehbares Übertragungselement (42) mittels eines Kipparms (8) zur Verbindung zwischen dem Scharnierarm (4) und einem Scharnier-

gehäuse (3) betätigt werden kann.

11. Scharnier (2) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der Kipparm (8), das Übertragungselement (42), das Antriebselement (33) und der Hebel (23) parallele Drehpunkte aufweisen.

12. Scharnier (2) nach Anspruch 3 und einem der Ansprüche 6 bis 11, **dadurch gekennzeichnet, dass** das Hakenelement (19) und/oder die Arretierung (24) auf dem Ausstoßelement (17) eine abgeschrägte Oberfläche (46) aufweisen, die geeignet ist, um eine zusätzliche Rückwärtsbewegung des Ausstoßelements (17) zur unter der Wirkung der Verstellvorrichtung erreichten Position zu verursachen, wenn das Hakenelement (19) in die Eingriffposition gelangt, sodass der Kontaktdruck des Hakenelements (19) gegen die Arretierung (24), verursacht von den ersten elastischen Mitteln (18), gewährleistet wird.

13. Scharnier (2) nach einem der Ansprüche 2 bis 12, **dadurch gekennzeichnet, dass** der Basiskörper (21) ein verlängertes Loch (47) für die frontseitige Einstellung dessen Befestigung am Scharnierarm (4) mittels einer Schraube (48) aufweist.

14. Möbelstück, **dadurch gekennzeichnet, dass** es mindestens ein Scharnier (2) nach einem der vorhergehenden Ansprüche aufweist.

Revendications

1. Charnière (2) comportant un dispositif d'ouverture et de fermeture automatique pour une porte (1) de meuble, ledit dispositif d'ouverture étant activé par une poussée sur la porte fermée par un utilisateur et comprenant un organe d'expulsion (17) mobile en opposition et sous l'action des premiers moyens élastiques (18) qui soumettent l'organe d'expulsion (17) à une force dans la direction d'ouverture de la porte (1), et des moyens de retenue amovibles pour l'organe d'expulsion (17) comprenant un élément d'accrochage (19) pour l'organe d'expulsion (17), mobile entre une position de couplage et une position de découplage avec l'organe d'expulsion (17), ledit élément d'accrochage (19) étant maintenu dans la position de couplage par la poussée exercée par l'organe d'expulsion (17) par le biais desdits premiers moyens élastiques (18), **caractérisée en ce que** les moyens de retenue amovibles comprennent de plus des seconds moyens élastiques (20) permettant d'actionner ledit élément d'accrochage (19) configuré et disposé de manière à déplacer l'élément d'accrochage (19) vers la position de découplage suite à la pression exercée sur l'organe d'expulsion (17) dans la direction opposée à la direction d'ouverture de la porte (1), lesdits premiers moyens élastiques (18) générant sur ledit élément d'accrochage (19) une action de retenue dans la position de couplage et lesdits seconds moyens élastiques (20) générant sur ledit élément d'accrochage (19) une action de relâchement dans la position de couplage, la première action étant dominant sur la seconde, ledit élément d'accrochage (19) étant pourvu au niveau de l'extrémité d'un premier bras (22) d'un levier (23) du dispositif d'ouverture pouvant pivoter en opposition et sous l'action desdits seconds moyens élastiques (20).

2. Charnière (2) selon la revendication précédente, **caractérisée en ce que** ledit levier (23) est supporté par un corps de base (21) dudit dispositif d'ouverture appliqué à un bras d'articulation (4) de la charnière (2).

3. Charnière (2) selon la revendication précédente, **caractérisée en ce que** ledit premier bras de levier (22) se développe au-delà de l'extrémité arrière dudit corps de base (21), dans laquelle ledit élément d'accrochage (19) peut s'engager avec un cliquet (24) présent sur l'extrémité arrière de l'organe d'expulsion (17).

4. Charnière (2) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ledit levier (23) possède un appui pivotant (25) orienté orthogonalement à la direction de translation dudit organe d'expulsion (17).

5. Charnière (2) selon l'une quelconque des revendications de 2 à 4, **caractérisée en ce que** lesdits seconds moyens élastiques (20) comprennent un ressort de torsion interposé entre le corps de base (21) et le levier (23).

6. Charnière (2) selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**elle comprend un dispositif permettant de rétablir automatiquement la configuration de couplage de l'élément d'accrochage (19) avec l'organe d'expulsion (17).

7. Charnière (2) selon la revendication précédente, **caractérisée en ce que** ledit dispositif de rétablissement comprend un organe pivotant (33) pour l'entraînement combiné dudit organe d'expulsion (17) et dudit levier (23), ledit organe d'entraînement (33) étant directement ou indirectement actionnable par une partie mobile de la charnière lors de l'ouverture de la porte (1).

8. Charnière (2) selon la revendication précédente, **caractérisée en ce que** ledit organe d'entraînement

pivotant (33) possède une came d'entraînement (34) pouvant interférer avec la paroi d'un renfoncement (35) présent sur l'organe d'expulsion (17) afin de transformer le pivotement de l'organe d'entraînement (33) en une translation arrière de l'organe d'expulsion (17), l'organe d'entraînement (33) possédant de plus un goujon (36) permettant d'entraîner une tige de transmission (37) dont une extrémité est en appui sur le goujon d'entraînement (36) et dont l'extrémité opposée possède un goujon (39) engagé de façon coulissante dans une fente (38) présente sur le second bras de levier (32) du levier (23) afin de transformer le pivotement de l'organe d'entraînement (33) en un pivotement du levier (22) vers la position de couplage de l'élément d'accrochage (19).

9. Charnière (2) selon l'une quelconque des revendications 7 ou 8, **caractérisée en ce que** ledit organe d'entraînement (33) est en appui sur le bras d'articulation (4).

10. Charnière (2) selon la revendication précédente, **caractérisée en ce que** ledit organe d'entraînement (33) est actionnable par le biais d'un organe de transmission (42) pouvant pivoter par un bras oscillant (8) raccordant le bras d'articulation (4) et une boîte d'articulation (3).

11. Charnière (2) selon la revendication précédente, **caractérisée en ce que** ledit bras oscillant (8), ledit organe de transmission (42), ledit organe d'entraînement (33) et ledit levier (23) possèdent des points d'appui pivotants parallèles.

12. Charnière (2) selon la revendication 3 et selon l'une quelconque des revendications de 6 à 11, **caractérisée en ce que** l'élément d'accrochage (19) et/ou le cliquet (24) présent(s) sur l'organe d'expulsion (17) possède(nt) une surface oblique (46) apte à provoquer, lorsque l'élément d'accrochage (19) se trouve dans la position de couplage, un déplacement arrière supplémentaire de l'organe d'expulsion (17) par rapport à la position atteinte sous l'action du dispositif de rétablissement, de manière à assurer la pression de contact de l'élément d'accrochage (19) contre le cliquet (24) déterminée par les premiers moyens élastiques (18).

13. Charnière (2) selon l'une quelconque des revendications de 2 à 12, **caractérisée en ce que** ledit corps de base (21) possède un orifice allongé (47) permettant le réglage antérieur de la fixation au bras d'articulation (4) par le biais d'une vis (48).

14. Une pièce de meuble **caractérisée en ce qu'**elle possède au moins une charnière (2) selon l'une quelconque des revendications précédentes.

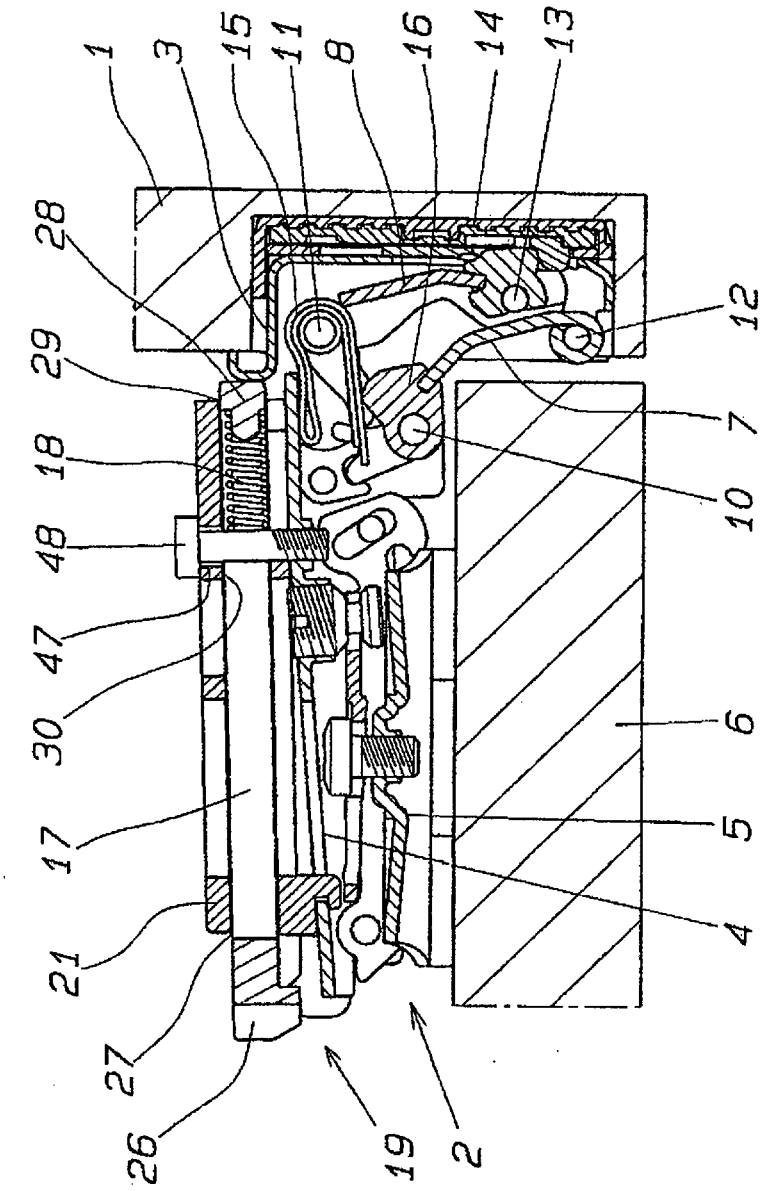


Fig. 1

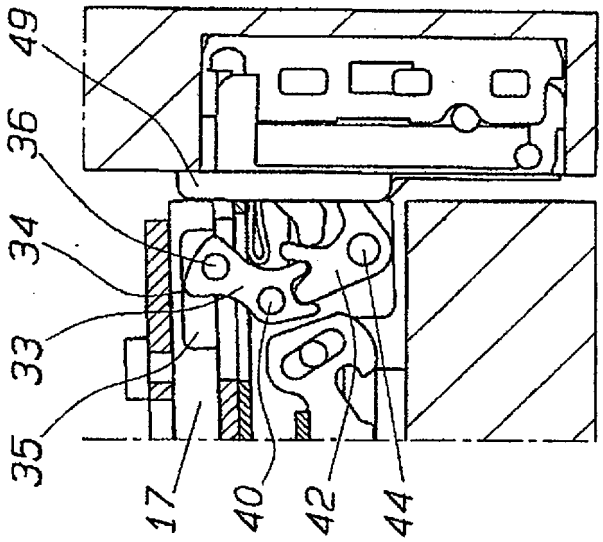


Fig.3

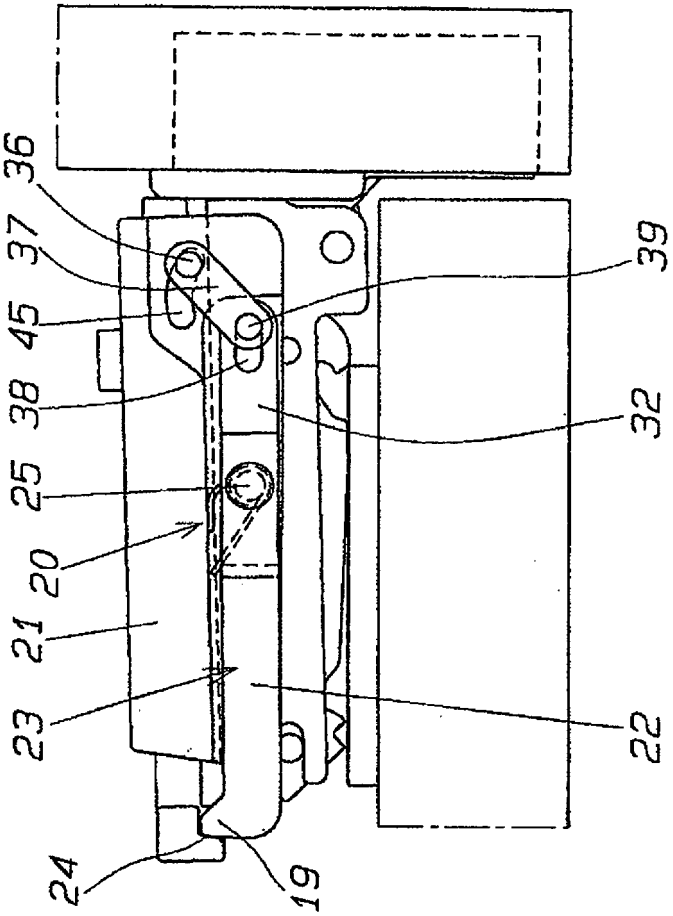


Fig.2

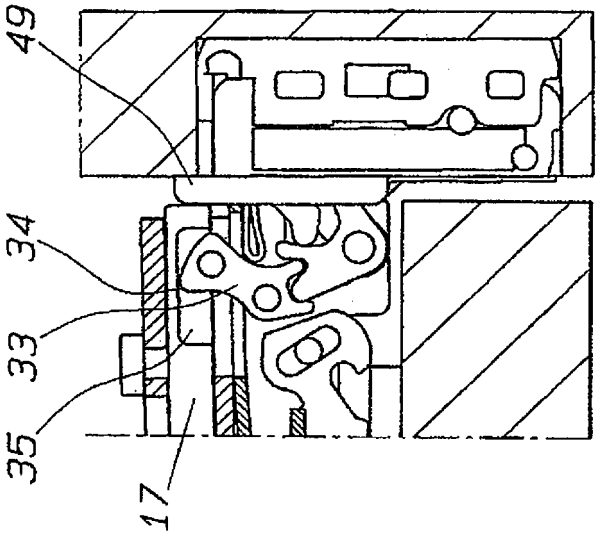


Fig. 5

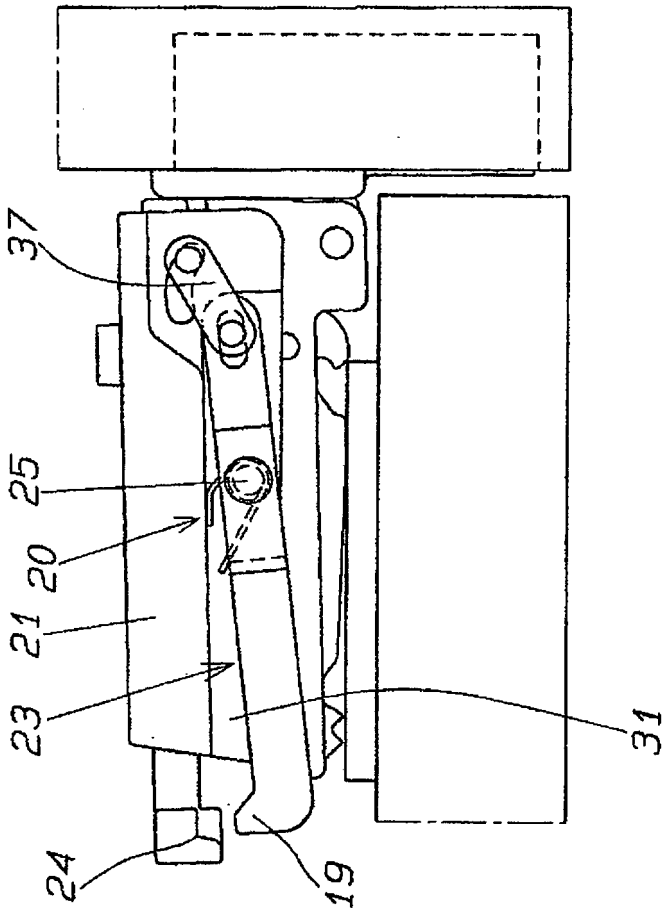


Fig. 4

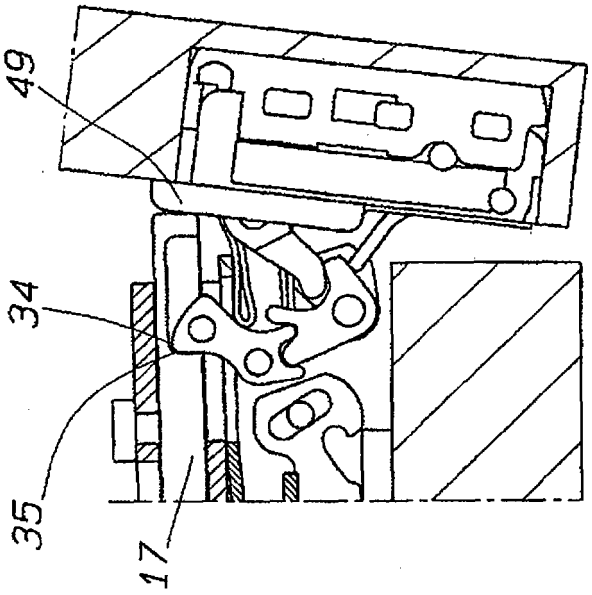


Fig. 7

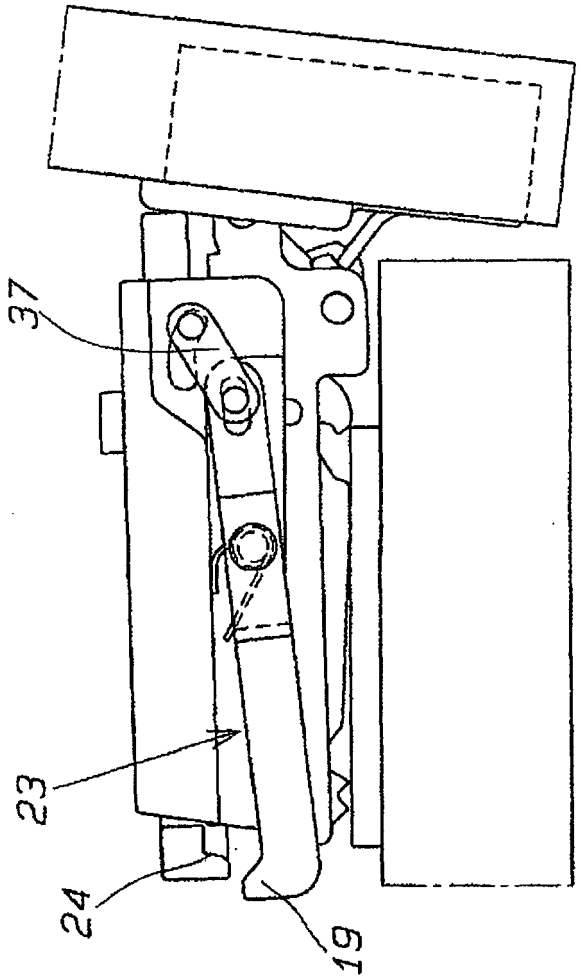


Fig. 6

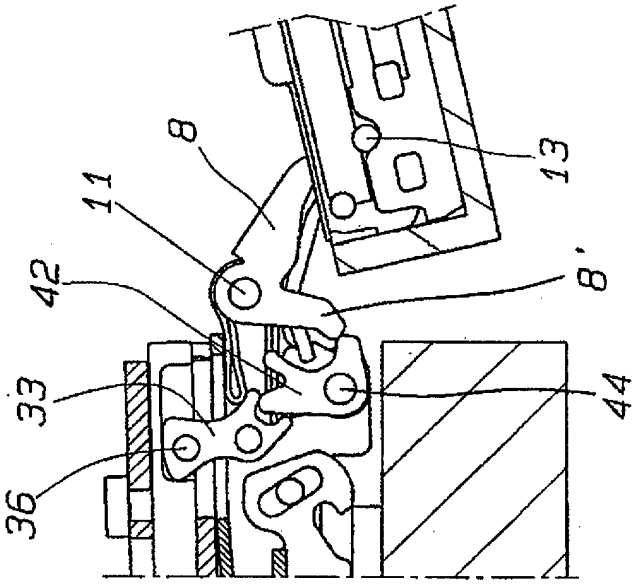


Fig.9

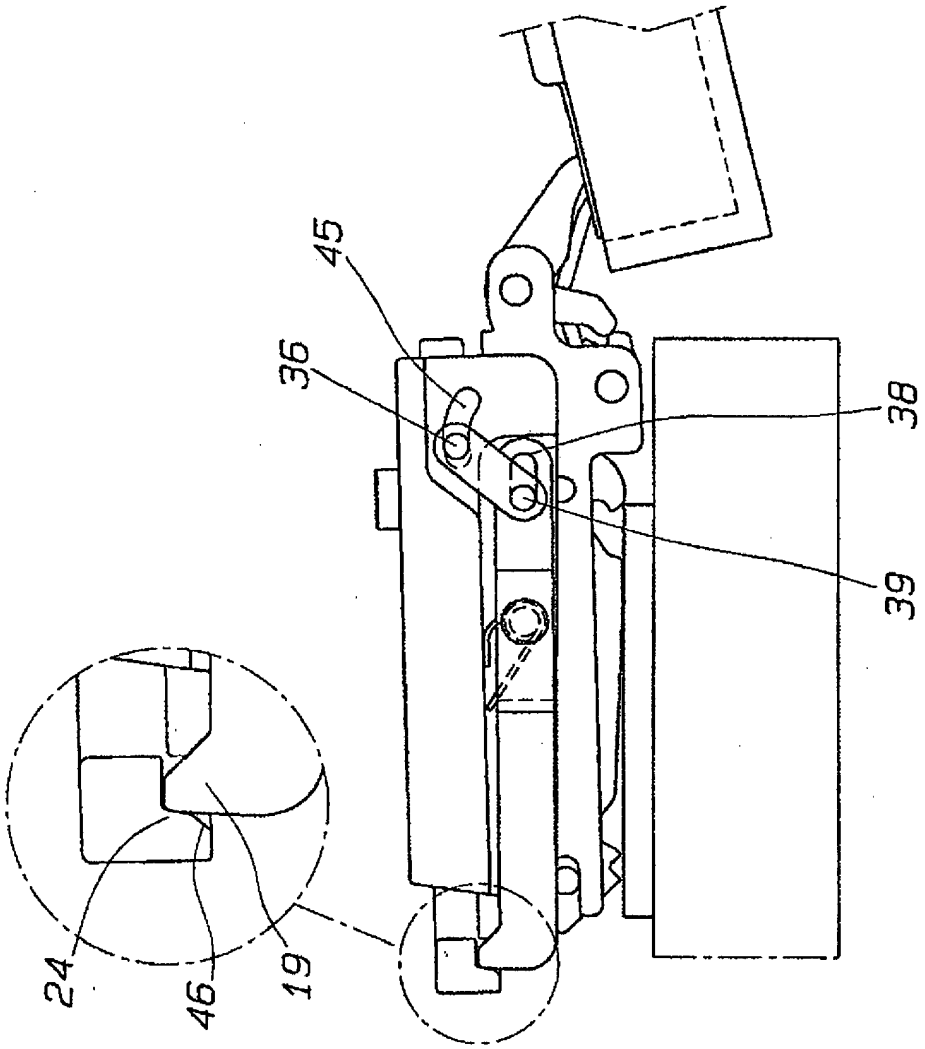


Fig.8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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