(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 549 039 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.01.2013 Bulletin 2013/04

(51) Int Cl.:
E05D 11/10 *(2006.01)*

(21) Application number: **12004948.1**

(22) Date of filing: **03.07.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **20.07.2011 IT ME20110012**

(71) Applicant: **DE MARIA, FABIO**
98124 Messina (IT)

(72) Inventor: **DE MARIA, FABIO**
98124 Messina (IT)

(74) Representative: **Garavelli, Paolo**
A.BRE.MAR. S.R.L.
Via Servais 27
10146 Torino (IT)

(54) **Hinge with mechanical-automatic unlock**

(57) An hinge is described, adapted to allow locking and unlocking moving frames, due to a mecanical-automatic feature that operates as blind-locker, window-locker, door-locker; the hinge is composed of a male hinge (1) component and a female hinge (2) component adapted to be operatively coupled with the male hinge (1) component, which is equipped with a pin (10) with ball bearing (10') that is partially shaped and partially smooth, while the female hinge (2) component is equipped with a bush (50) shaped in order to allow, through its coupling with the pin (10), an on-off mechanical-automatic latch-type handling with consequent locking and unlocking of the moving frame in a plurality of positions in a rotation range of the moving frame around the hinge from 0° to 180°.

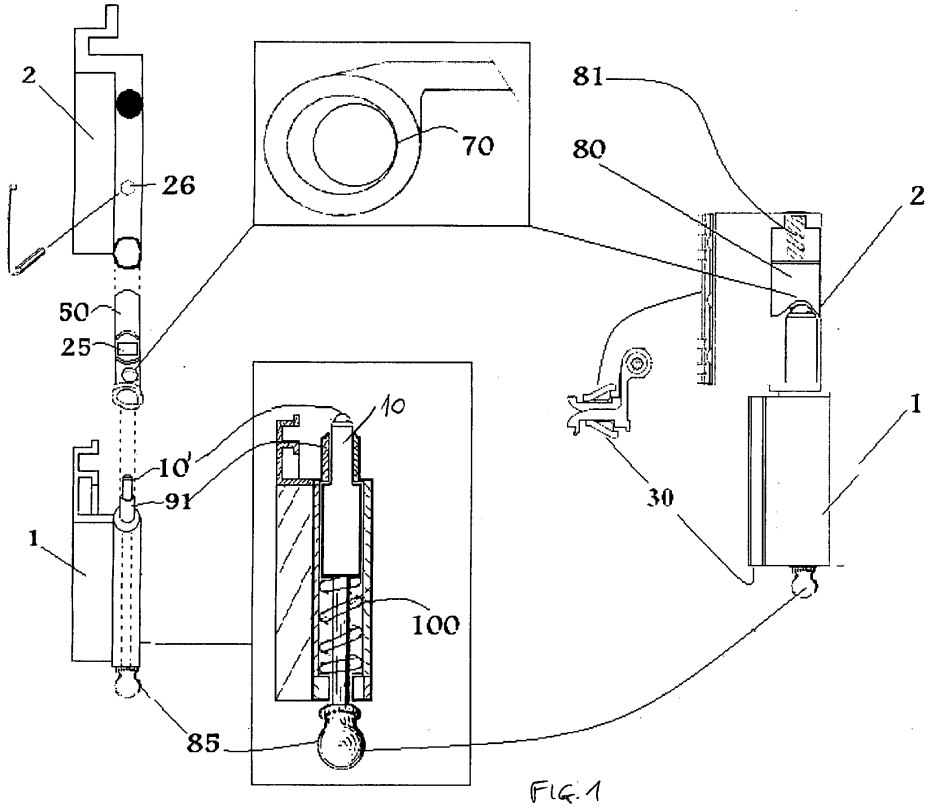

FIG. 1

EP 2 549 039 A2

Description

[0001] The present invention deals with a hinge with mechanical-automatic unlock in the field of accessories for window and door frames.

[0002] In particular, the invention refers to an innovative hinge device for blinds, windows and doors. The device, since it can be adapted to any type of window and door frame, is able to lock and unlock indifferently various moving frames in different positions.

[0003] Nowadays, several accessories of this type are marketed, but none includes all requirements of the automatic-mechanical unlocking hinge of the invention.

[0004] In a common window and door frame, the currently known blind-locker has inconveniences so that it limits the opening lock only to the 180-degrees position, with the consequent impossibility of locking the wing if there are possible obstacles present in the moving frame range. Other problems of known window and door frames are those deriving from a scarcely safe assembly to be performed in the external wall of a building, with the risk of actuation by a user, who must externally project in order to lock or unlock the wind.

[0005] European Patent Application EP 2385202 of the same Applicant of the present invention discloses a self-locking hinge that is actuated due to a spring present inside the male hinge 1; such spring allows the pin to be extended and blocked inside the bush. This happens when the two halves are mutually axial and therefore are blocked when the hinge performes the end of its rotation.

[0006] The hinge, and therefore also the wing, is then unlocked, and this could happen also through a handle connected to the pin, thereby guaranteeing an easy and comfortable use in the unlocking actuation of the locking hinge.

[0007] An evident limit of the prior art is that there are no hinge self-unlocking devices, that allow changing their own unlocking force intensity on the hinge, so that, every time the moving frame is closed without unlocking the device for closing the locking hinge, there are clear breakages in the frame and in the wing of the window and door frame.

[0008] Object of the present invention, therefore, is providing an innovative self-unlocking arrangement that solves the above inconveniences; in particular, object of the invention is providing a hinge with a mechanical-automatic unlocking feature so that, in case of accidental closure of the window and door frame, no damages are generated for the locking devices and the parts in which they are fastened, solving the problems of possible breakages.

[0009] These and other objects are obtained by the present hinge with mechanical-automatic unlocking feature, as disclosed and claimed in the independent claim.

[0010] Other features of the present invention are disclosed in the dependent claims.

[0011] Further features and advantages of the present invention will appear evident from the following description of some preferred embodiments, provided as a non-limiting example, with reference to the enclosed drawings, in which:

- figure 1, for more clarity, shows in an application example, with axonometrical view, what has been cited above before its laying, according to its constructive solution;
- figure 2, for more clarity, shows in an application example, with axonometrical view, what has been cited above, laid into a frame, according to its constructive solution.

[0012] Figure 1 shows the hinge with mechanical-automatic unlock on-off feature, in particular a self-locking system, in which component 1 is called male hinge, and is equipped with a pin 10 with ball bearing 10', that is partially shaped and partially smooth, and with a latch mechanism 100 with spring, equipped with an external concentric pin 91. The component 2 is called female hinge, and is equipped with independent bush 50 having inside a circular opening 70, offset, shaped and recessed with respect to the bush: such opening 70 is adapted to engage the ball bearing 10' and has a center that is offset with respect to the longidutinal hinge centre-distance. The female hinge 2 component is further equipped with a mechanism 80 for adjusting the unlocking force intensity, in order to allow a socket hear screw 81, placed at the top end of the hinge, to adjust the bush 50 that exerts various degrees of force onto the pin 10. The bush 50 is composed of a mechanism 25 to adjust the centre-distance recessed therein, in order to allow the screw 26, placed on the neck of the hinge 2, to lock the rotation of the bush 50.

[0013] Figure 2, for more clarity, shows, in an application example, what has been described above for laying the hinge in a fixed frame 200, and in a moving frame 200'.

[0014] In particular, the device comprises, in the hinge 1, a pin 10 with ball bearing in its upper end that is engaged into the opening 70, offset with respect to the hinge 2 axis, in order to create a relative lock between pin 10 and opening 70, thereby allowing its unlocking in case a greater force that the force provided by testing is exerted.

[0015] Moreover, an on-off latch system can be directly controlled by a cremone bolt or a bushhammer, with band or rods movements, and therefore allows the driving operation in the on-off position of the mechanical-automatic device.

[0016] Preferably, the male hinge 1 component is further equipped with a lever-type latch suitable to provide a greater thrust in the opening handling of the hinge with mechanical-automatic feature, limiting its use to an open moving frame, thereby comprising only the functions of blind-locker, window-locker and internal door-locker.

[0017] In this way, the hinge can be preferably of the type with two wings 1, 2, as shown, or can be of the type with three wings, not shown.

[0018] Moreover, the inventive hinge can be made of

aluminium, or steel, or iron, or plastic, or brass.

[0019] What has been described above can be obtained due to the compliance of the pin 10 with ball bearing 10', that does not create friction between the connected parts and that operates in order to move downwards, unlocking the moving frame 200'.

[0020] In order to optimise the unlocking of the hinge 2, the screw 81 for adjusting the opening 70 is installed, that exerts a pressure on the ball-type pin 10 in order to adjust the unlocking force intensity.

[0021] The device is applied in the profile track without workings, due to its quick fastening system 30 in agreement with the contruction solution: in fact, both the male hinge 1 component and the female hinge 2 component are equipped with quick fastening components 30 in order to arrange them into the tracks of the respective profiles 200, 200'.

[0022] The hinge 2, and therefore also the wing, is unlocked and this could also happen through the handle 85 connected to the pin 10, guaranteeing an easy and comfortable use in the unlocking actuation of the moving frame 200'.

[0023] A different shape or position of the devices forming the self-unlocking hinge can be anyway devised without departing from the scope of the present invention for a mechanical-automatic on-off locking and unlocking feature of the moving frames of the window and door frames, such as blinds, windoes and doors, object of the present invention.

Claims

1. Hinge adapted to allow locking moving frames (200') and to operate as blind-locker, window-locker, door-locker, said hinge being composed of a male hinge (1) component and of a female hinge (2) component, adapted to be operatively coupled with said male hinge (1) component, said hinge being **characterised in that** said male hinge (1) component is equipped with a pin (10) having in its upper part a ball bearing (10'), and said female hinge (2) component is equipped with an offset, shaped opening (70), said opening (70) being adapted to engage said ball bearing (10') and having a centre that is offset with respect to the hinge longitudinal centre-distance, in order to allow, through coupling with the part shaped as a ball bearing (10') of said pin (10), performing movements of the on-off mechanical-automatic spring type like a latch system, with consequent locking and unlocking of the moving frame (200') in a plurality of positions, in a rotation range of the moving frame (200') around the hinge from 0° to 180°.

2. Hinge according to claim 1, **characterised in that** the on-off latch system is actuated mechanically-automatically.

3. Hinge according to claim 1, **characterised in that** the on-off latch system is directly controlled by a cremone bolt or a bushhammer, with band or rods movements, and therefore allows the driving operation in the on-off position.

4. Hinge according to claim 1, **characterised in that** it is made of aluminium, or steel, or iron, or plastic, or brass.

5. Hinge according to claim 1, **characterised in that** said male hinge (1) component is further equipped with a lever-type latch suitable to provide a greater thrust in the opening handling of the hinge with mechanical-automatic feature, limiting its use to an open moving frame, thereby comprising only the functions of blind-locker, window-locker and internal door-locker.

6. Hinge according to claim 1, **characterised in that** it is of a type with two wings (1, 2).

7. Hinge according to claim 1, **characterised in that** it is of a type with three wings.

8. Hinge according to any one of the previous claims, **characterised in that** it is further equipped with at least one hinge-covering component.

9. Hinge according to any one of the previous claims, **characterised in that** said male hinge (1) component and said female hinge (2) component are equipped with quick-fastening components (30) in order to arrange them into the tracks of their respective installation profiles (200, 200').

10. Hinge according to claim 1, **characterised in that** the female hinge (2) component is composed of an independent bush (50) having inside a circular opening (70) offset with respect to the hinge axis, and equipped with a device (80) for adjusting the unlocking force intensity, in order to allow a screw (81) placed at the top end of the hinge female (2) component, to adjust the bush (50) that exerts various degrees of force on the pin (10) to be unlocked.

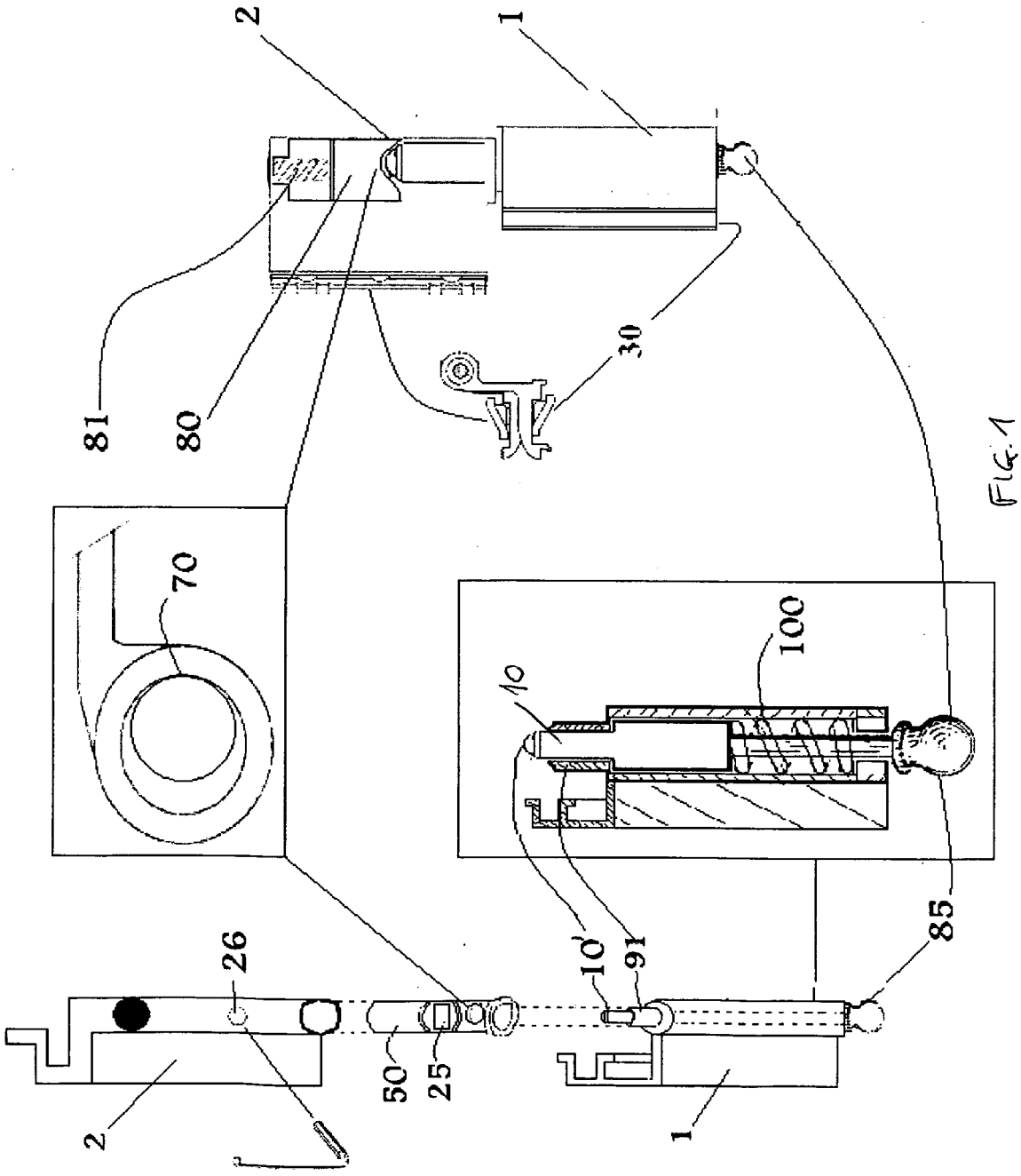

FIG. 1

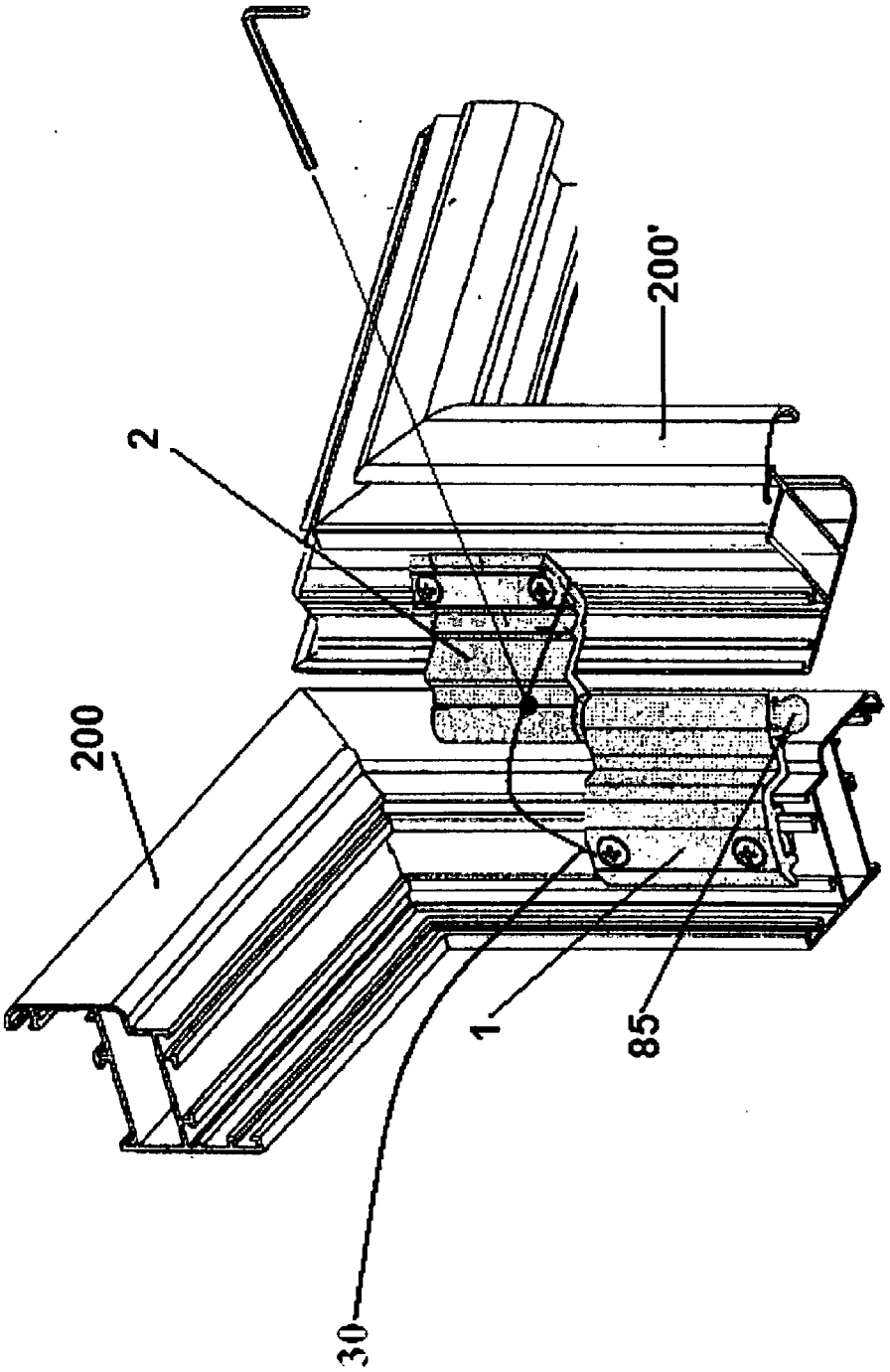

Fig. 2

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 2385202 A **[0005]**