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(54) **Device for opening and closing a shutter from the inside.**

(57) A device for opening/closing blinds or outside shutters (9) without having to open the relative window or door (10) includes a mechanism provided with a package lever (2) able to drive a suitable cinematic mechanism (5, 6, 7) which operates at least a hinge (12) of the relative blind (9) to cause the latter to open/close without opening glass window (10). Said mechanism being able to be installed inside at least a side post of window frame (8) of glass window (10).
Said cinematic mechanism includes a sliding drive guide (5) able to interact with hinge carrier (7) to cause at least a hinge (12) of blind (9) pivoted about a vertical pivot (P) to rotate.

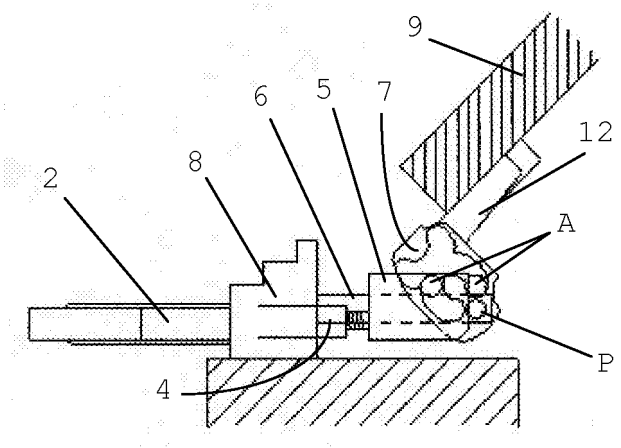

FIG. 9B

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Description

[0001] The present invention relates to window frames and particularly relates to a new device able to be installed inside a window frame to allow the user to open/close the blinds or outside shutters without having to open the glass window.

[0002] It is well known nowadays that getting access to the blinds for their opening or closing requires firstly to open the glass window.

Such operation, especially during winter, brings with it an useless, undesired loss of heat from the inside of the room with the window concerned to the outside. Said heat has to be restored by the heating system, thus causing a waste of thermal energy.

The same problem occurs during summer again when the opening of the window brings with it a decrease in air conditioning of the room.

The main object of the present invention is then to overcome said problems by providing a device which allows the blinds or outside shutters to be opened/closed without having to open also the glass window.

This has been accomplished according to the invention by a device comprising a mechanism provided with a "package" lever able to drive a suitable cinematic mechanism operating at least a pivot or hinge of the relative blind to cause the latter to open/close without opening the glass window.

[0003] A better understanding of the invention will result from the following detailed description with reference to the accompanying drawings that show a preferred embodiment thereof only by way of a not limiting example. In the drawings:

Figure 1A is a top view of the finding applied to a window shutter with the glass window and the blind being closed;

Figure 1B is a side elevation view of the finding corresponding to fig. 1;

Figure 2A, similar to figure 1B, shows the finding during the operation of release from the window frame;

Figure 2B is a front view of the device from the outer side of the window frame, with the blind being closed;

Figure 3, similar to figure 2A, shows the device with driving lever being rotated and folded;

Figure 4, similar to figure 3, shows the device with open blind after having operated the lever;

Figure 5A, corresponding to figure 4, shows the lever under blocked condition and open blind;

Figure 5B is a front view of the device from the outside of the window frame, with open blind;

Figures 6A and 6B show some details of the finding;

Figures 7 and 8 are top views showing the device on a window frame with open glass window and with closed and open blinds, respectively, where there is shown that the lever does not interfere with the opening of the window;

Figures 9A-9E show a top view of the opening sequence of a blind by the device of the present invention;

Figure 10 is a top view showing the main parts of the cinematic mechanism of the device according to the invention;

Figures 11 and 12 are three-dimensional and exploded views showing the main parts of the finding, respectively.

[0004] With reference to the figures the device disclosed includes a package lever 2 installed at the inner side of side window frame 8 of a glass window 10.

Unlike other known systems, package lever 2 has the advantage of taking up no room (e.g., like cranks, etc.) and does not require to be removed when not in use. In addition, it does not cause any hindrance to the opening or closure of the wings of glass window 10.

The operation is advantageously very simple: with closed blinds 9, it is sufficient to lift vertically sliding hook 1 and to move lever 2 by rotating and folding it downwards until its lower end of stroke consisting of a suitable slot is reached (figs. 2 and 3).

Thus, a pushing/pulling hook 3 is arranged to operate a corresponding sliding member 4 disposed horizontally. By rotating lever 2 to the opposite direction towards frame 8 of glass window 10, said hook 3 and sliding member 4 are able to push a drive guide 5 to the outside.

Drive guide 5 pushed by hook 3 and sliding member 4 connected thereto slides horizontally with respect to the outside hinges 6 by means of a suitable cinematic mechanism (figs. 9A-9E) able to cooperate with a corresponding hinge carrier 7. Such sliding causes blind 9 to rotate about its pivot P which is fixed with respect to frame 8 of glass window 10.

Similarly to what disclosed above, with open blinds 9 (fig. 5), it is sufficient to lift sliding hook 1 again and to rotate and to fold lever 2 again. This causes hook 3 to shift backwards as described above, thus pulling sliding member 4 which in turn pulls back drive guide 5 and causes blind 9 to rotate to the opposite direction (fig. 3) and to be closed.

At this point, to block the device as blinds 9 are closed it is necessary to lift hook 1 again and to rotate lever 2, thus bringing the latter into contact with frame 8 of glass window 10 and to lower vertically sliding hook 1 again

(fig. 1B).

According to a peculiar feature of the invention (fig. 10) sliding member 4 which is moved back and forth horizontally by package lever 2 is integral with drive guide 5 which slides horizontally on hinges 6 and is provided with two cylindrical members A which are parallel to pivot P about which blind 9 rotates and are able to interact with shaped housings arranged in hinge carrier 7.

The assembly consisting of sliding drive guide 5 and hinge carrier 7 which interact with each other through said cylindrical members A and said shaped housings is an innovative cinematic mechanism able to cause blind 9 to rotate (figs. 9A-9E).

It should be appreciated that said two outside hinges 6 on which outside guide 5 slides are superimposed and their free end supports pivot P about which blind 9 rotates. Advantageously, such configuration gives the assembly a particular mechanical strength because the pressure of sliding members 3 and 4 to outside drive guide 5 is applied to the centre of the superimposed hinges 6.

A further peculiar feature of the invention consists in that hook 3 and sliding member 4 connecting the inside portion to the outside portion (figs. 6A and 6B) are held together by a compression spring which is able to keep blind 9 in its position. Drive guide 5 is connected to sliding member 4 by a threaded bar 13 of the known type.

Advantageously, this technical solution also allows blind 9 to be opened/closed manually by disconnecting the device disclosed so far just releasing hook 3.

Under such situation, drive guide 5 acts as stop for open blinds.

It is self-evident from the foregoing that the device disclosed can also be applied to already existing window frames by connecting it to the fixed frame 8 of glass window 10 and replacing at least one of the hinges of each blind 9.

What disclosed above is also applicable to the door frames without modifications.

[0005] The present invention has been described and illustrated according to a preferred embodiment thereof, however, it should be understood that anyone skilled in the art can make technically and/or functionally equivalent modifications and/or replacements without departing from the scope of the present industrial invention as defined in the appended claims.

Claims

1. A device for opening/closing blinds or outside shutters (9) without having to open the relative glass window or door (10), **characterized in that** there is provided at least a mechanism provided with a package lever (2) able to drive a suitable cinematic mechanism (3, 4, 5, 7) operating at least a hinge (12) of the relative blind (9) to cause the latter to open/close without opening glass window (10), said mechanism being able to be installed inside at least a side post of window frame (8) of glass window (10) .

2. The device according to the preceding claim, **characterized in that** said cinematic mechanism includes a sliding drive guide (5) able to interact with hinge carrier (7) to cause at least a hinge (12) of blind (9) pivoted about a vertical pivot (P) to rotate.

3. The device according to the preceding claim, **characterized in that** said drive guide (5) slides horizontally on outer hinges (6) and is provided with two cylindrical members (A) which are parallel to pivot (P) of blind (9) and able to interact with shaped housings arranged in said hinge carrier (7) integral with hinge (12) of blind (9).

4. The device according to the preceding claim, **characterized in that** said drive guide (5) is integral with a sliding member (4) able to be moved back and forth horizontally by the user through package lever (2).

5. The device according to claim 3 or 4, **characterized in that** said two outside hinges (6) on which outside guide (5) slides are superimposed and their free ends support pivot (P) about which blind (9) rotates, thus providing a particular mechanical strength for the assembly because the pressure on drive guide (5) is applied centrally between hinges (6).

6. The device according to claim 4, **characterized in that** said package lever (2) is able to cooperate with a suitable pushing/pulling hook (3) able to operate sliding member (4).

7. The device according to the preceding claim, **characterized in that** said package lever (2) is provided with a fixing hook (1) able to slide vertically on lever (2).

8. The device according to the preceding claim, **characterized in that** said lever (2) is able to rotate and to be folded so as to slide downwards until its end of stroke consisting of a suitable slot is reached.

9. The device according to the preceding claim, **characterized in that** said hook (3) and sliding member (4) are able to push drive guide (5) to the outside to open the relative blind (9) following the rotation of lever (2) towards frame (8) of glass window (10).

10. The device according to the preceding claim, **characterized in that** said hook (3) and sliding member (4) are able to pull drive guide (5) to the inside to close the relative blind (9) because of the rotation and the folding of lever (2) which move drive guide away from frame (8) of glass window (10) .

11. The device according to the preceding claim, **char-**

acterized in that said hook (3) and sliding member (4) connecting the inside portion to the outside portion are held together by a compression spring which is able to keep blind (9) in its position.

12. The device according to claim 6, **characterized in that** hook (3) can be released from sliding member (4), thus causing blind (9) to be opened/closed manually.

13. The device according to the preceding claim, **characterized in that** sliding drive guide (5) is able to be further pushed to the outside to force slightly the cinematic mechanism to its end of stroke to block the blinds in their open position after having been opened manually.

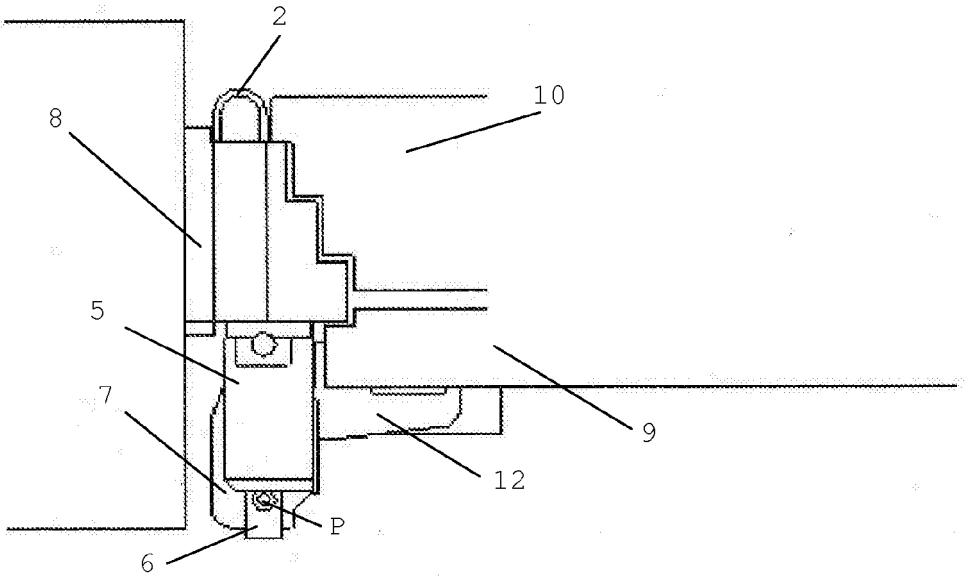

FIG. 1A

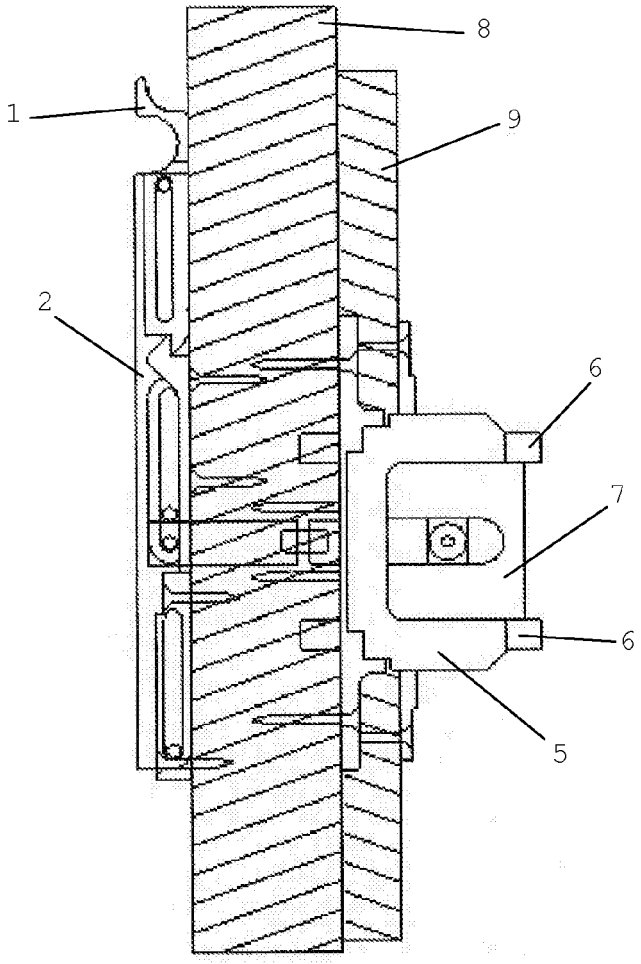

FIG. 1B

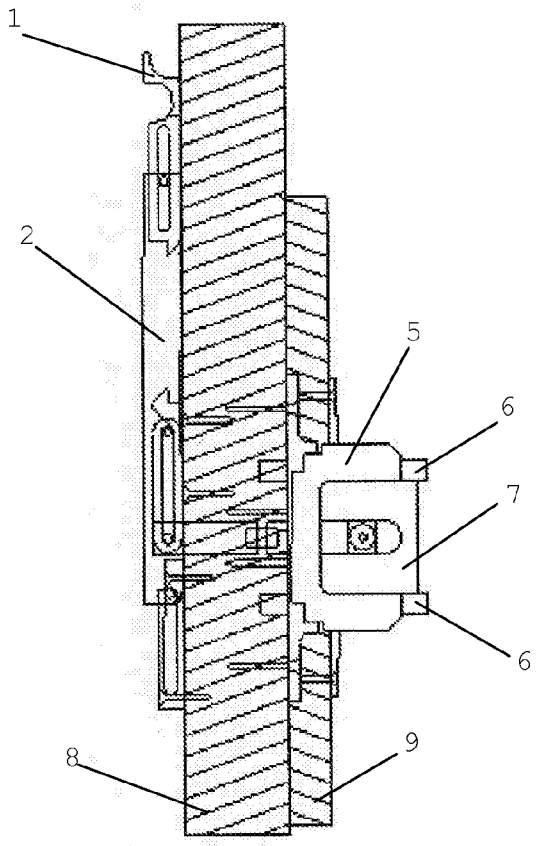

FIG. 2A

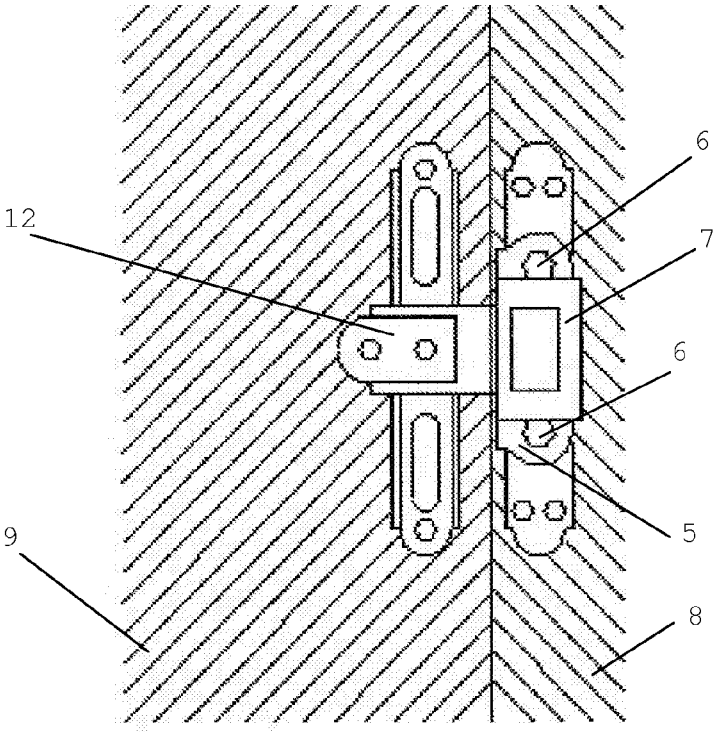

FIG. 2B

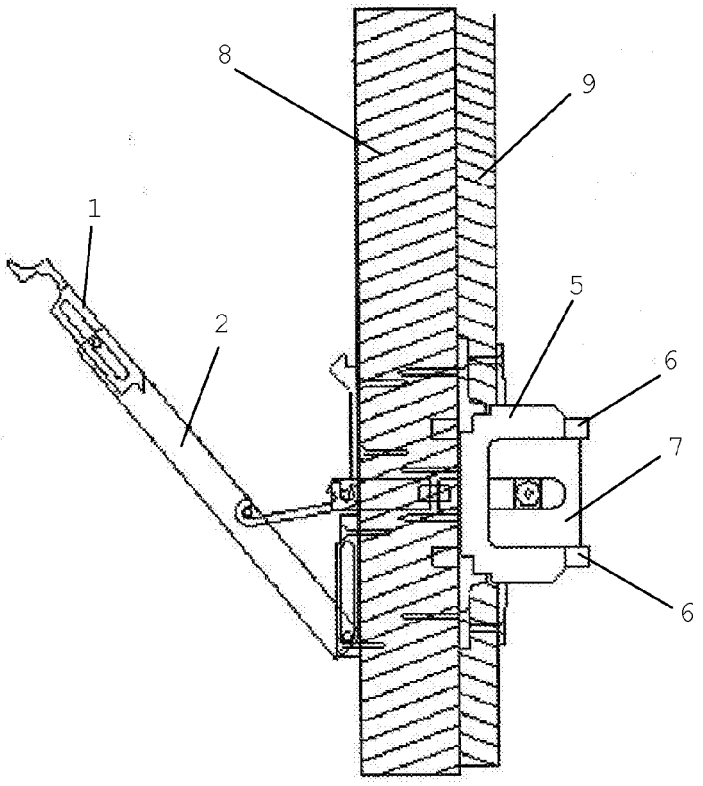

FIG. 3

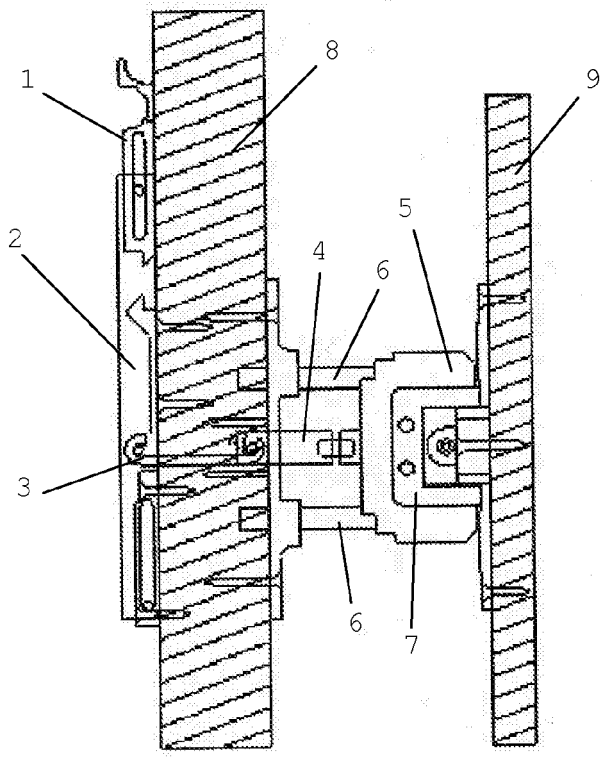

FIG. 4

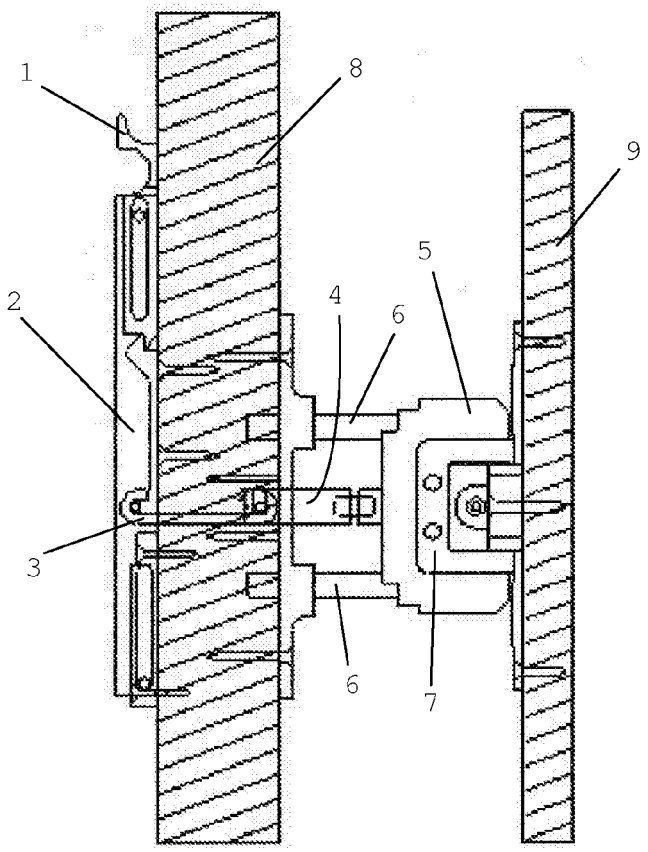

FIG. 5A

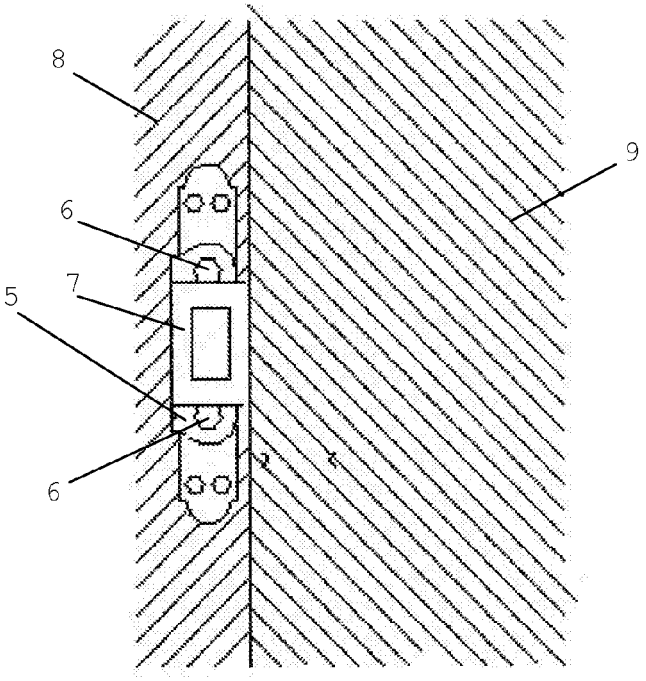

FIG. 5B

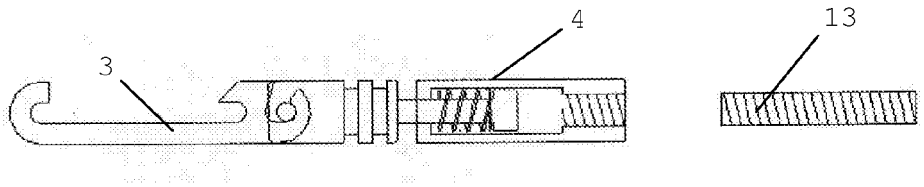

FIG. 6A

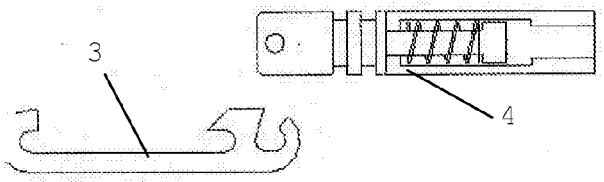

FIG. 6B

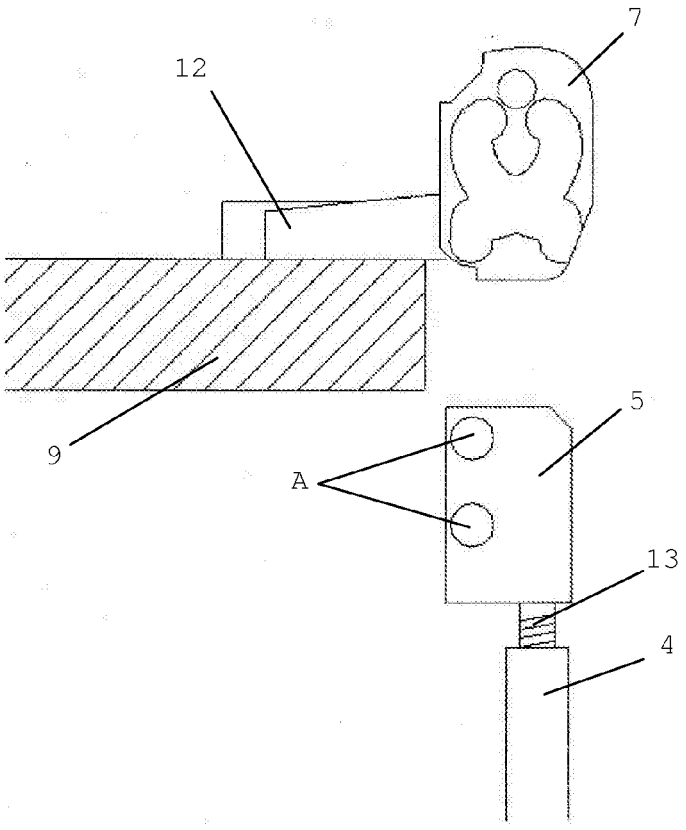

FIG. 10

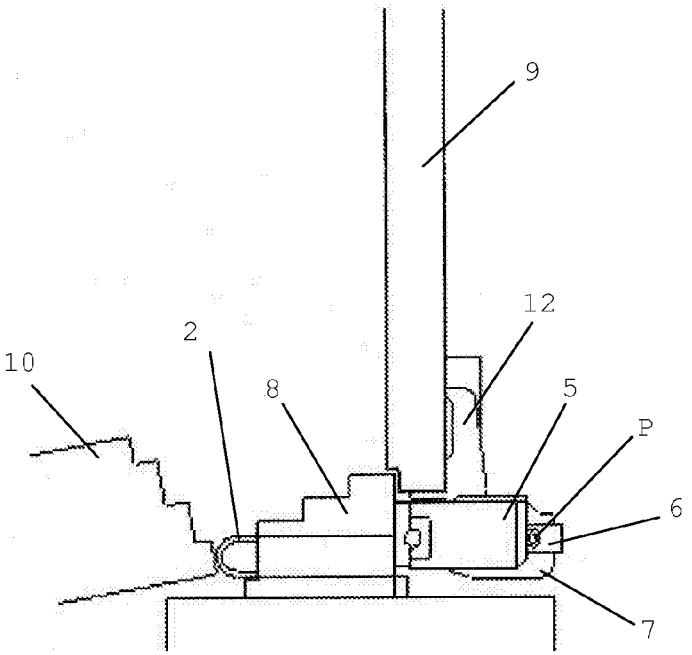

FIG. 7

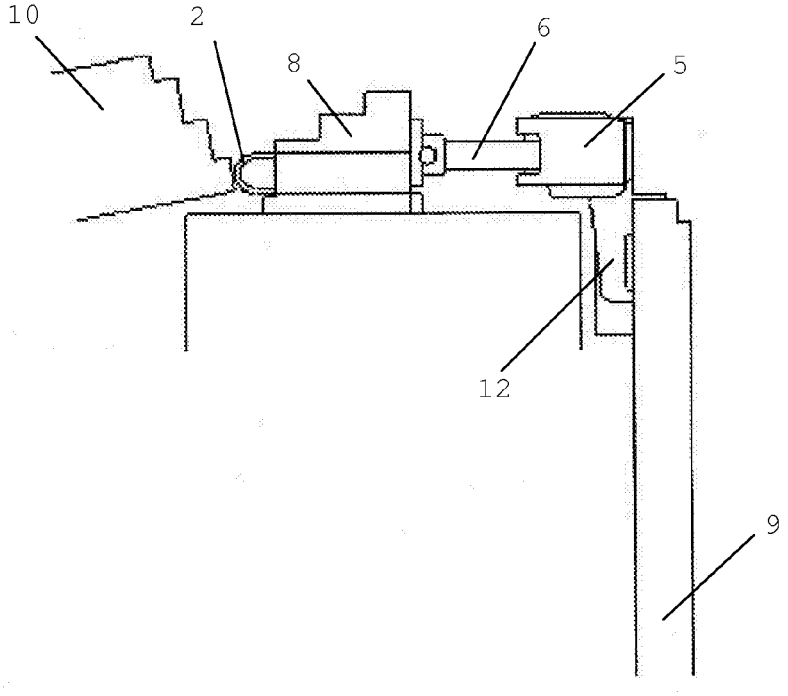

FIG. 8

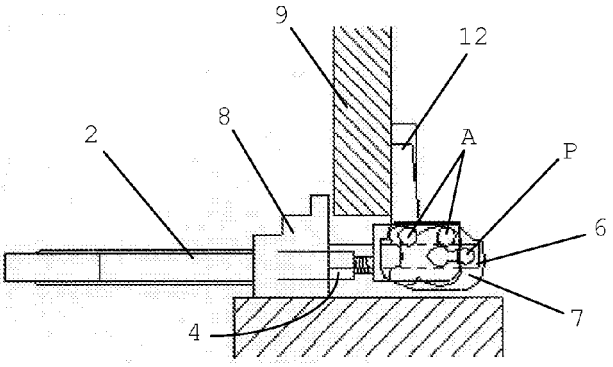

FIG. 9A

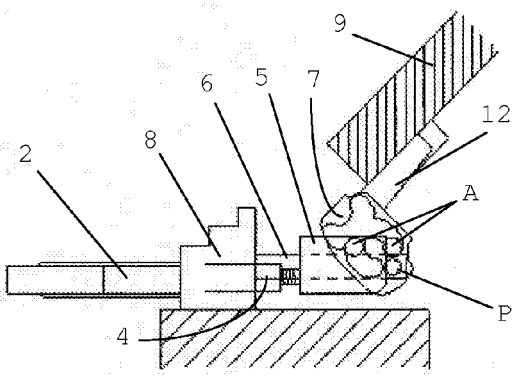

FIG. 9B

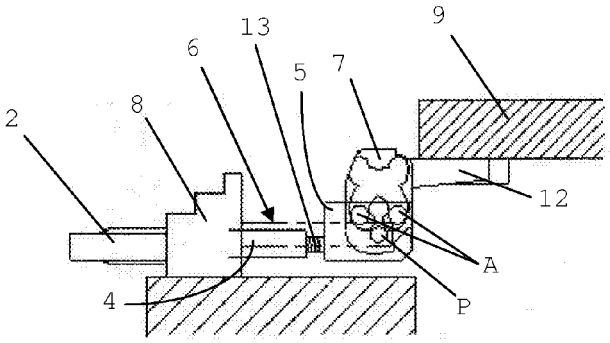

FIG. 9C

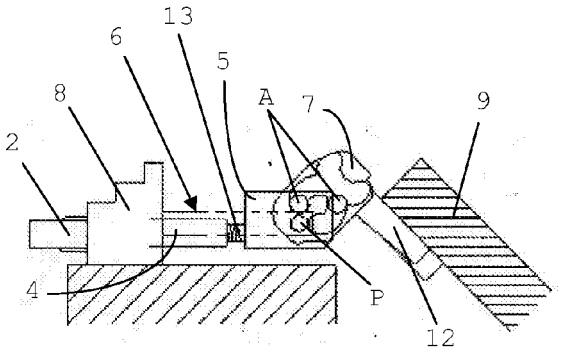

FIG. 9D

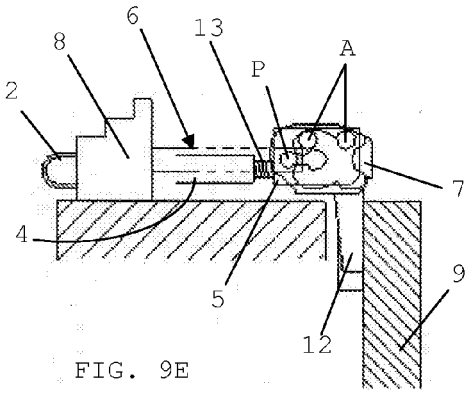

FIG. 9E

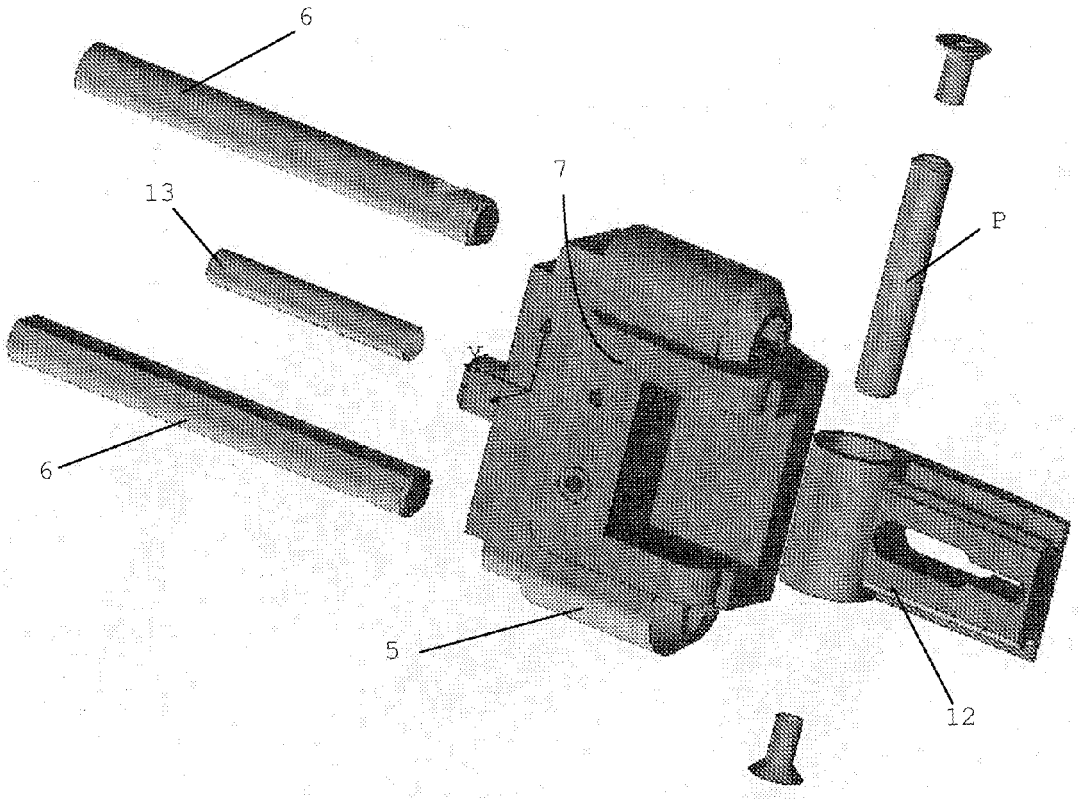

FIG. 11

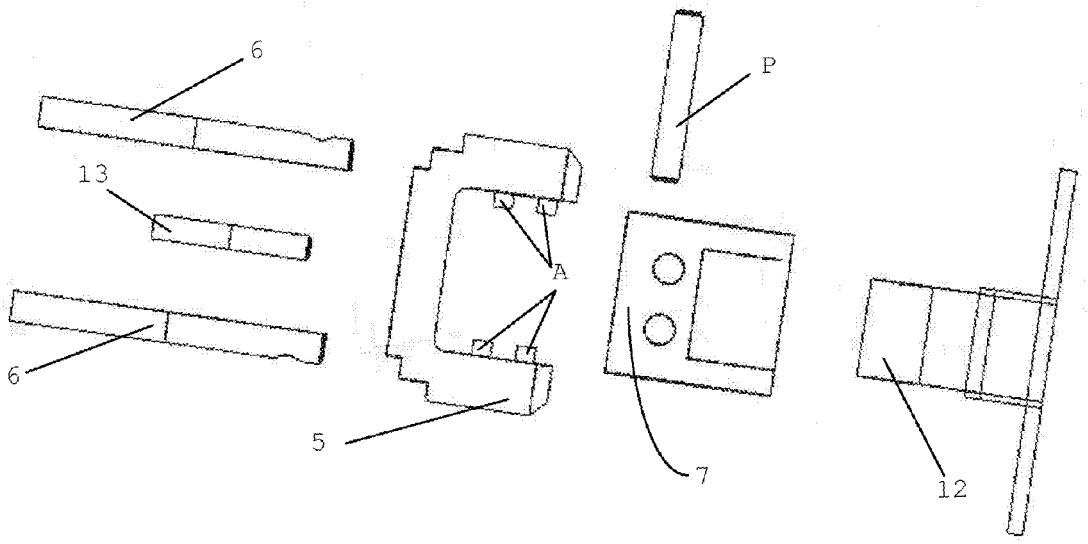

FIG. 12