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REPLACED SHEETS SG

- ☐ Description : paged to paged
☒ Claim(s) : paged to paged
☐ Drawing(s) : paged to paged
☐ Abstract : paged to paged

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A RESTRICTOR DEVICE

This invention relates to a restrictor device for use in restricting the extent of opening of an openable closure and
5 more particularly a window.

Restrictor devices for limiting the extent of opening of a window sash for security and safety purposes are known. Such restrictor devices can, for example, limit the opening of the
10 sash so as to provide for ventilation but prevent unauthorised entry from the outside through the window. Such restrictor devices are also useable to provide safety so as to prevent a window sash opening to such an extent that, say, a small child could pass through the gap between the open
15 sash and the window frame. Additionally a restrictor device can limit the extent of opening so as to prevent, in the event of uncontrolled opening, a person from being drawn through the window opening.

20 On exceptionally large window sashes restrictor devices can also provide additional control of the sash when friction stays are fitted. Furthermore, when the sash is simply hung on hinges the restrictor device provides the sole means of control of the extent of opening and in many cases
25 maintenance of the sash in the open position.

Restrictor devices whether they be for security or safety purposes or simply to control the sash suffer from a number of drawbacks. For example, they are not versatile in operation in that they usually provide control only at
5 specific degrees of openness of the sash. Furthermore they usually only provide control in one direction. Even further, some restrictor devices can become disengaged upon a force in the opening direction arising, eg due to a wind gust. Such disengagement will permit the sash to slam closed resulting
10 in damage and/or physical danger to someone attending the window or can result in the security/safety purpose of the restrictor being lost.

The object of the present invention is to provide a
15 restrictor device which overcomes or at least goes some way to overcoming the drawbacks associated with known restrictor devices and in particular provides for control at any angle of opening of the closure within a range of open angles.

20 Broadly in one aspect of the invention there is provided a restrictor device for limiting the degree of opening of an openable closure, the restrictor device comprising an arm adapted for pivotal mounting to either the closure or the frame in which the closure is mounted, said arm furthermore
25 being coupled to the closure or the frame as the case may be, said coupling being effected by a slideable element pivotally coupled to the arm, there being included restricting means

whereby the movement of the slideable element can be selectively restricted.

In the following more detailed description of the invention
5 reference will be made to the accompanying drawings in which:-

Figure 1 is an elevation view of the restrictor device according to one form of the invention, and
10 Figure 2 is a cross-sectional view through the slideable element and the track in which the slideable element is engaged.

As shown in Figure 1 the restrictor device comprises an arm
15 10 which is pivotally coupled at one end via pivot 11 to a mounting plate 12. The mounting plate includes a pair of spaced apart openings 13 through which mechanical fasteners can engage so as to mount the mounting plate 11 to either the frame of a window or the window sash but preferably the
20 frame.

The arm 10 is provided with a cranked end 14 which is engaged via a pivot 15 to a carriage 16. In the preferred form of the invention the arm 10 includes a longitudinally extending
25 reinforcing rib 17.



Carriage 16 is slidingly engaged within a track 18. At each end of the track 18 there is provided an opening 19 through which mechanical fastenings can engage in order to fixedly mount the track 18 to the edge of the window sash. In the event that the mounting plate 11 is attached to the window sash the track is naturally mounted to an edge surface of the window frame.

In the illustrated form of the invention the track includes side walls 20 which are configured and cooperate with the carriage 16 such that the carriage is slidingly captured. As is apparent from Figure 1 the carriage is free to move relative to the track along the longitudinal axis of both the track and the carriage.

According to the present invention a mechanism is incorporated with the carriage such that the movement of the carriage relative to the track can be selectively restricted. This is more particularly illustrated in Figure 2 of the accompanying drawings.

In the length of the carriage 16 there is formed a waisted portion 21 which includes two pairs of inclined surfaces 22 and 23, the surfaces of each pair converging toward the respective ends of the carriage 16. A roller or ball 24 is held against each of inclined surfaces 22 by springs 25 having one end thereof engaged in a suitable bore 26 in the

body of the carriage 16. Likewise rollers or balls 27 are held against inclined surfaces 23.

When the carriage 16 is moved relative to track 18 the rollers become wedged between the carriage and the track preventing movement of the carriage 16 relative to the track 18.

A sliding switch 28 is fitted to the carriage and by movement of the switch as hereinafter described three modes of control can be achieved, these modes of control being:

1. Free to open - unable to close.
2. Unable to open - unable to close.
3. Unable to open - free to close.

15

Switch 28 has three positions in which it can be placed with each position being determined by a detent mechanism. In illustrated form the detent mechanism is a ball 29 biased by a spring 30 located in a bore 31 in the waisted portion 21 of the carriage 16. The ball 29 can selectively be engaged in any one of openings 32. In the illustrated arrangement in Figure 2 the ball 29 is in the central opening 32 with the result that all four rollers 24 and 27 are held against their respective inclined surfaces or ramps 22 and 23 respectively. As a consequence the carriage 16 is locked in position relative to the track and is unable to move in either direction along the track.

When the switch is moved in either direction it displaces one pair of rollers 24 or 27 and holds them clear of their abutting inclined surfaces 22 and 23 respectively. The rollers then cannot become wedged between the carriage 16 and the side walls 20 of the track with the result that movement of the carriage relative to the track can occur in the direction that the switch 28 is moved. The carriage is, however, still prevented from moving in the opposite direction by the second pair of balls.

Consequently the selected position of switch 28 can result in the three modes of control referred to above, namely, the window may be free to open but unable to be closed or is locked in a position where it is unable to open or close or it can be closed but unable to be opened.

Provision can be made for remotely operating switch 28. This is particularly necessary when the sash reaches the closed position so as to enable the switch 28 to be moved such as to allow the sash to be opened. If the restrictor is contained within a closed cavity the switch will be inaccessible hence the need for remote control thereof. Alternatively, the switch can be automatically displaced as the sash nears the fully closed position by bearing against a suitably disposed fixed stop or some other appropriate actuator. In a simple remote control arrangement a lever can be coupled to the

switch. By having the lever accessible when the sash is closed the switch can be slid to the position necessary to permit the carriage to slide along the track and hence allow the sash to open.

5

The restrictor device according to the present invention thus can provide control at any angle of opening up to the maximum open angle and this is selectively achievable by manipulation of the switch 28. It is therefore believed that the
10 restrictor according to the present invention overcomes the limitations and drawbacks associated with known restrictor devices used for limiting the opening of a window sash relative to a window frame or, for that matter, any openable closure mounted within a frame such as a hinged door.



CLAIMS

1. A restrictor device for limiting the degree of opening
of an openable closure, the restrictor device comprising
5 an arm adapted for pivotal mounting to either the
closure or the frame on which the closure is mounted,
said arm furthermore being coupled to the closure or the
frame as the case may be, said coupling being effected
by a slideable element pivotally coupled to the arm,
10 there being included restricting means whereby the
movement of the slideable element can be selectively
restricted.
2. A restrictor device as claimed in claim 1 wherein the
15 end of the arm coupled to the slideable element is
cranked.
3. A restrictor device as claimed in claim 1 or 2 wherein
the slideable element is slidingly engaged with a
20 mounting plate adapted for attachment to the closure or
the frame as the case may be.
4. A restrictor device as claimed in claim 3 wherein the
slideable element is a carriage slidingly engaged with a
25 track carried by or incorporated with the mounting
plate.





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5. A restrictor device as claimed in claim 4 wherein the track includes side walls configured and cooperating with the carriage such that the carriage is slidably captured.
- 5
6. A restrictor device as claimed in claim 5 wherein the restricting means includes wedging means which are selectively operable to wedgingly restrict the carriage from movement along the track.
- 10
7. A restrictor device as claimed in claim 6 wherein there is provided a pair of oppositely inclined wedging surfaces and a wedging element located between each inclined wedging surface and a part of the track, there being biasing means for biasing the wedging elements toward a wedging position.
- 15
8. A restrictor device as claimed in claim 7 wherein selector means is provided for movement of a wedging element against the biasing means away from its wedging position.
- 20
9. A restrictor device as claimed in claim 8 wherein the selector means is associated with detent means whereby the selector means can be held in a desired position relative to the wedging elements.
- 25



10. A restrictor device as claimed in claim 8 or 9 further including means for operating the selector means from a remote location.
- 5 11. A restrictor device as claimed in claim 8 or 9 further including actuating means for automatically operating the selector means as the slideable member approaches or reaches a position corresponding to said closure reaching a closed or nearly closed position in the
- 10 frame.

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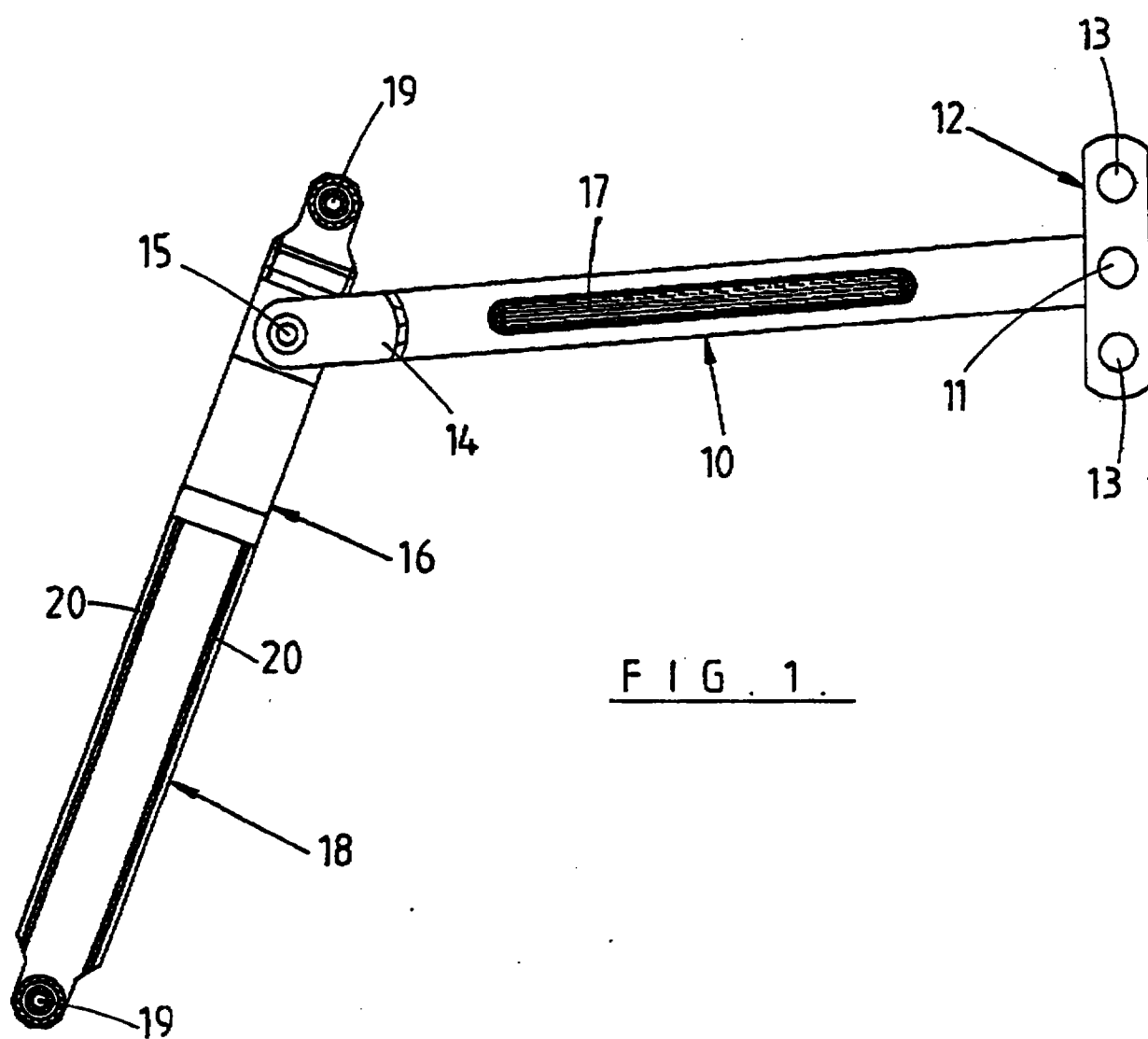
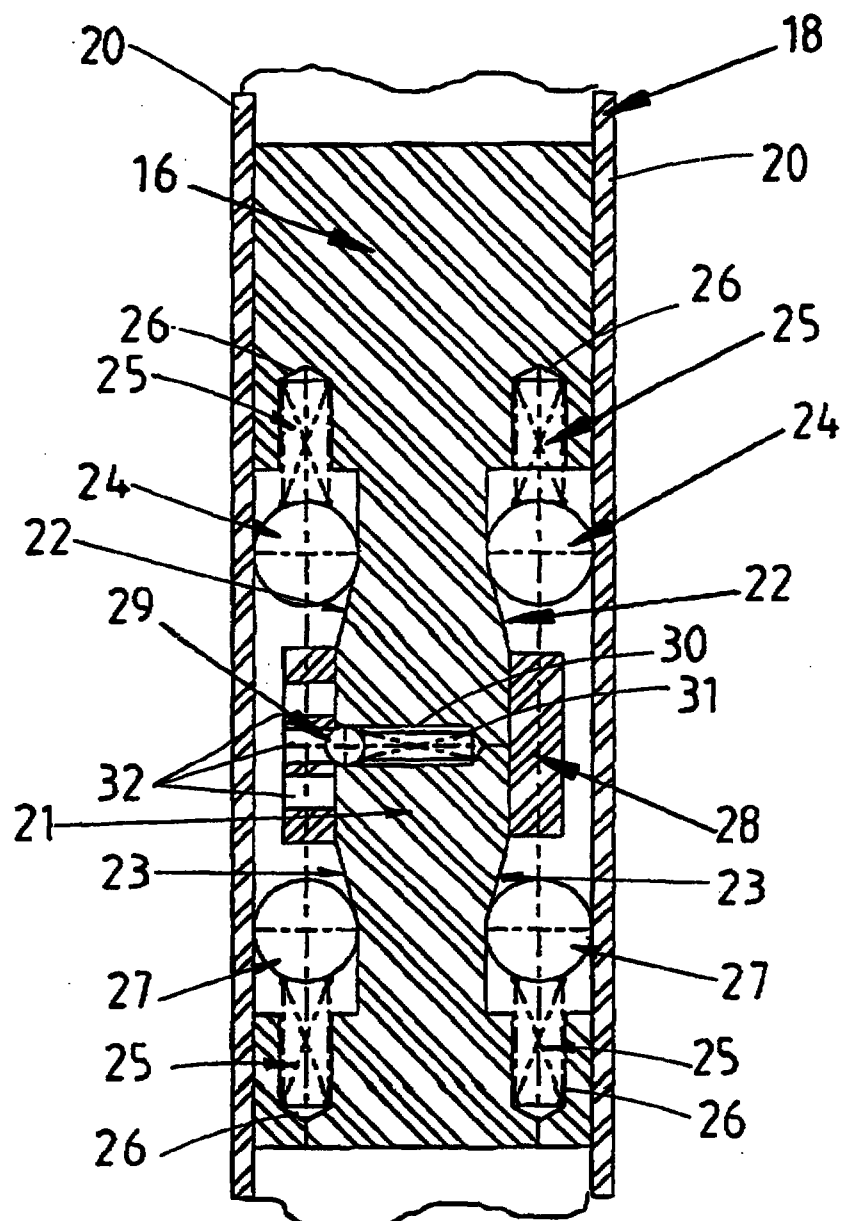


FIG. 1.

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FIG. 2.

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☐ Drawing(s) : paged to paged
☐ Abstract : paged to paged

1. A restrictor device for limiting the degree of opening of an openable closure, the restrictor device comprising an arm (10) adapted for pivotal mounting (11) to either the closure or the frame on which the closure is mounted, said arm furthermore being coupled to the closure or the frame as the case may be, said coupling being effected by a slideable element (16) pivotally coupled to the arm (10), said slideable element (16) being slidably engaged with an elongate mounting (18) associated with the closure or the frame as the case may be, the restrictor device being characterised by restricting means which permit the slideable element (16) to move freely in one direction along the mounting (18) between positions on the mounting representing open and closed positions of the closure and to be prevented from movement in an opposite direction upon any force being applied to the slideable element (16) to cause it to move in said opposite direction, said restricting means including at least one wedging element (24) movable with the slideable element (16) to wedge between an inclined wedging surface (23) of the slideable element (16) and a surface of a fixed part (20) of the mounting (18) when a force is applied to said slideable element to cause it to move in said opposite direction, there being selector means (28) to selectively hold said

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wedging element (24) in a non-wedging position to permit the slideable element to move freely in said opposite direction.

- 5 2. A restrictor device as claimed in claim 1 wherein the end (14) of the arm (10) coupled to the slideable element (16) is cranked.
- 10 3. A restrictor device as claimed in claim 1 or 2 wherein the slideable element is a carriage (16) slidably engaged with a track (18) carried by or incorporated with the mounting plate.
- 15 4. A restrictor device as claimed in claim 3 wherein the fixed part of the mounting is a side wall (20) there being a pair of said side walls (20) configured and cooperating with the carriage (16) such that the carriage is slidably captured in the mounting (18).
- 20 5. A restrictor device as claimed in claim 4 wherein the restricting means (28) includes a pair of said wedging elements (22, 24) which are operable to wedgely engage between respective wedging surfaces (23) and said side walls (20) to restrict the carriage (16) from movement
- 25 along the track (18) in said opposite direction.



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6. A restrictor device as claimed in claim 5 wherein there is provided biasing means (25) for biasing the wedging elements toward a wedging position.
- 5 7. A restrictor device as claimed in claim 6 wherein said selector means (28) is movable relative to the slideable element (16) to move said wedging element (24) against the biasing means (25) away from its wedging position.
- 10 8. A restrictor device as claimed in claim 7 wherein the selector means (28) is associated with detent means (29) whereby the selector means when moved relative to the slideable element (16) can be held in such position relative to the wedging elements (24).
- 15 9. A restrictor device as claimed in claim 7 or 8 further including means for operating the selector means (28) from a remote location.
- 20 10. A restrictor device as claimed in claim 7 or 8 further including actuating means for automatically operating the selector means (28) as the slideable member approaches or reaches a position corresponding to said closure reaching a closed or nearly closed position in
- 25 the frame.

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11. A restrictor device as claimed in any one of the preceding claims wherein at least one additional wedging element (24) is provided which is maintainable in a non-wedging position by said selector means (28) to permit said slideable element to be freely movable in said one direction, the selector means (28) being operable to permit said at least one additional wedging element (24) to move to a wedging position and move the wedging element(2) (24) to move to a wedging position.
12. A restrictor device as claimed in claim 11 wherein the selector means (28) is operable to permit the wedging element(s) (24) and said at least one additional wedging element (24) to both assume wedging positions and thereby lock the slideable element (16) against movement along the mounting (18) in either of the one and opposite directions.

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☒ Claim(s) :	paged 8 to paged 11	
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specific degrees of openness of the sash. Furthermore they usually only provide control in one direction. Even further, some restrictor devices can become disengaged upon a force in the opening direction arising, eg due to a wind gust. Such disengagement will permit the sash to slam closed resulting in damage and/or physical danger to someone attending the window or can result in the security/safety purpose of the restrictor being lost.

The object of the present invention is to provide a restrictor device which overcomes or at least goes some way to overcoming the drawbacks associated with known restrictor devices and in particular provides for control at any angle of opening of the closure within a range of open angles.

Broadly in one aspect of the invention there is provided a restrictor device for limiting the degree of opening of an openable closure, the restrictor device comprising an arm adapted for pivotal mounting to either the closure or the frame in which the closure is mounted, said arm furthermore being coupled to the closure or the frame as the case may be, said coupling being effected by a slideable element pivotally coupled to the arm, said slideable element being slidably engaged with an elongate mounting associated with the closure or the frame as the case may be and restricting means which permit the slideable element to move freely in one direction along the mounting between positions on the mounting representing open and closed positions of the closure and to be prevented from movement in an opposite direction upon any

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force being applied to the slideable element to cause it to move in said opposite direction.

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WHAT WE CLAIM IS:-

1. A restrictor device for limiting the degree of opening of an openable closure, the restrictor device comprising an arm adapted for pivotal mounting to either the closure or the frame on which the closure is mounted, said arm furthermore being coupled to the closure or the frame as the case may be, said coupling being effected by a slideable element pivotally coupled to the arm, said slideable element being slidably engaged with an elongate mounting associated with the closure or the frame as the case may be and restricting means which permit the slideable element to move freely in one direction along the mounting between positions on the mounting representing open and closed positions of the closure and to be prevented from movement in an opposite direction upon any force being applied to the slideable element to cause it to move in said opposite direction.
2. A restrictor device as claimed in claim 1 wherein said restricting means including at least one wedging element movable with the slideable element to wedge between an inclined wedging surface of the slideable element and a surface of a fixed part of the mounting when a force is applied to said slideable element to cause it to move in said opposite direction, there being selector means to selectively hold said wedging element in a non-wedging



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position to permit the slideable element to move freely in said opposite direction.

3. A restrictor device as claimed in claim 1 or 2 wherein the end of the arm coupled to the slideable element is cranked.
4. A restrictor device as claimed in claim 1, 2 or 3 wherein the slideable element is a carriage slidably engaged with a track carried by or incorporated with the mounting plate.
5. A restrictor device as claimed in claim 4 wherein the fixed part of the mounting is a side wall there being a pair of said side walls configured and cooperating with the carriage such that the carriage is slidably captured in the mounting.
6. A restrictor device as claimed in claim 5 wherein the restricting means includes a pair of said wedging elements which are operable to wedgely engage between respective wedging surfaces and said side walls to restrict the carriage from movement along the track in said opposite direction.



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7. A restrictor device as claimed in claim 6 wherein there is provided biasing means for biasing the wedging elements toward a wedging position.
8. A restrictor device as claimed in claim 7 wherein said selector means is movable relative to the slideable element to move said wedging element against the biasing means away from its wedging position.
9. A restrictor device as claimed in claim 8 wherein the selector means is associated with detent means whereby the selector means when moved relative to the slideable element can be held in such position relative to the wedging elements.
10. A restrictor device as claimed in claim 8 or 9 further including means for operating the selector means from a remote location.
11. A restrictor device as claimed in claim 8 or 9 further including actuating means for automatically operating the selector means as the slideable member approaches or reaches a position corresponding to said closure reaching a closed or nearly closed position in the frame.



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12. A restrictor device as claimed in any one of the preceding claims wherein at least one additional wedging element is provided which is maintainable in a non-wedging position by said selector means to permit said slideable element to be freely movable in said one direction, the selector means being operable to permit said at least one additional wedging element to move to a wedging position and move the wedging element(s) to move to a wedging position.
13. A restrictor device as claimed in claim 12 wherein the selector means is operable to permit the wedging element(s) and said at least one additional wedging element to both assume wedging positions and thereby lock the slideable element against movement along the mounting in either of the one and opposite directions.
14. A restrictor device substantially as herein described with reference to the accompanying drawings.



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(21) International Application Number: PCT/NZ96/00029 (22) International Filing Date: 10 April 1996 (10.04.96) (30) Priority Data: 270874 5 April 1995 (05.04.95) NZ (71) Applicant (for all designated States except US): INTERLOCK INDUSTRIES LIMITED [NZ/NZ]; Portsmouth Road, Miramar, Wellington 6003 (NZ). (72) Inventor; and (75) Inventor/Applicant (for US only): FISCHER, John [DE/NZ]; 184 Neva Road, Miramar, Wellington 6003 (NZ). (74) Agents: HOPKINS, Donald, Leslie et al.; Northcote Office Park, Unit 2, 145 Queen Street, Palmerston North 5330 (NZ).		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report. ✓

(54) Title: A RESTRICTOR DEVICE

(57) Abstract

A restrictor device for limiting the degree of opening of an openable closure. The restrictor device has an arm (10) with a mounting plate (12) to pivotally mount the arm to either the closure or the frame on which the closure is mounted. The arm (10) is furthermore coupled to the closure or the frame as the case may be by a slideable element (16) to which the arm is pivotally coupled by pivot (15). A movement restricting device is incorporated in the slideable element (16) whereby the movement of the slideable element can be selectively restricted.

