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(54) Door latch holding force adjustment assembly.

(57) An overhead adjustable door holder assembly (10) for attachment between a door jamb (14) and a door (13) to hold the door in an open position includes a jamb bracket (16) attached to the door jamb and a jamb arm (18) pivotally attached to the jamb bracket. A channel assembly (22) having a longitudinally extending channel (23) is attached to the door and a mechanism for holding the door is positioned within the channel assembly, the door holding mechanism having a slide assembly (26) with a slot (30) defined therein for engagement with rollers (42). An adjustment assembly (50) for varying force on the rollers for engagement with the slot of the slide assembly includes a primary wedge (52) connected to a wedge adjust screw (56), with the primary wedge being configured for horizontal movement with respect to a secondary wedge (54) through adjustment of the wedge adjust screw, the horizontal movement acting to vary the force on the rollers.

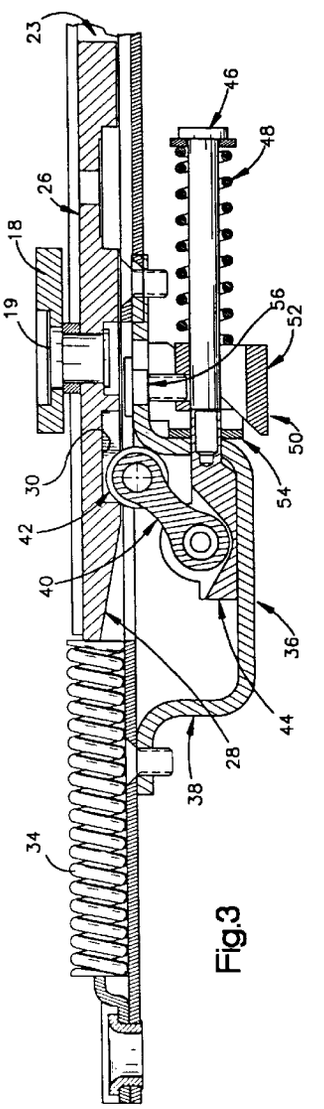

Fig.3

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This invention relates to an adjustable overhead door holder assembly and more particularly to an overhead door holder assembly having a low profile suitable for mounting in a door top inset, that can be easily adjusted without removal of a hold open stop.

Temporarily holding a door in an open position is often necessary for convenience and safety. One commonly employed method uses an overhead door control device that includes a pivoting arm attached between an upper portion of a door jamb and an upper part of a door. When the door is to be held open at an angle that does not exceed about 110 degrees, an overhead door control device is efficient, effective and convenient to install and maintain. Overhead door control devices are less subject to damage by vandalism or accidents and do not present a potential stumbling hazard.

However, many conventional overhead door control devices are difficult to mount properly in an inset door top because of their thickness. Since time consuming or expensive modifications to the door are required to properly fit the door holder, door holders necessary for convenience or safety may be omitted. Alternatively, marginal performance conventional low profile door holders may be attached, leading to dissatisfaction and high maintenance and replacement costs.

According to one aspect of the present invention, there is provided an overhead adjustable door holder assembly for attachment between a door jamb and a door, for selectively holding the door in an open position; comprising a jamb bracket for attachment to the door jamb; a jamb arm pivotally attached to the jamb bracket; a channel assembly having a channel therein defined by channel walls; a slide assembly positioned for movement in the channel, said slide assembly being pivotally attached to the jamb arm; and a hold open assembly attached to the channel assembly: characterised in that said hold open assembly has a roller link with connected rollers for engaging the slide assembly to hold the door in an open position, and a movable rod for modifying position of the roller link to allow for engagement/disengagement with the slide assembly and there being an adjustment assembly for varying force of a spring on the movable rod, the adjustment assembly having primary and secondary wedges positioned between the roller link and the movable rod.

According to a second aspect of the present invention, there is provided an overhead adjustable door holder assembly for attachment between a door jamb and a door, comprising means for pivotally attaching a jamb arm to said door; a channel assembly for attachment to the door and having a channel defined therein; means positioned within the channel assembly for holding the door and comprising a slide assembly positioned for movement in the channel, the slide assembly being pivotally attached to the jamb arm and having slot defined therein, characterised by an adjustment assembly for varying force on rollers for engagement with the slot of the slide assembly, the adjustment assembly comprising a primary wedge movable with respect to a secondary wedge to adjust position of the rollers.

According to a third aspect of the present invention, there is provided an overhead door holder assembly for attachment between a door jamb and a door, the assembly being configured to allow adjustment, in use, of horizontal distance between components by vertical adjustments of a wedge adjust screw, the assembly including a channel assembly attached to the door and having an upwardly opening channel defined therein, means positioned within the channel assembly for holding the door and comprising a slide assembly having slot defined therein, and an adjustment assembly, characterised in that said adjustment assembly is for varying force on rollers for engagement with the slot of the slide assembly, the adjustment assembly comprising a primary wedge connected to a wedge adjust screw, the primary wedge being configured for horizontal movement, in use, with respect to a secondary wedge through adjustment of the wedge adjust screw, the horizontal movement acting to vary the force on the rollers.

The invention also extends to a door incorporating a door holder assembly essentially as just defined.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings in which:-

Figure 1 is a perspective view of an overhead adjustable door holder assembly that includes a channel assembly inset into a top of a door;

Figure 2 is a plan view of the assembly of Figure 1, showing longitudinal compression springs in the channel to distribute force from door opening;

Figure 3 is a side view of a hold-open assembly; and

Figure 4 is a perspective view of the hold open assembly.

As illustrated in Figures 1 and 2, an overhead adjustable door holder assembly 10 has a channel assembly 22 positioned in a door inset 20 at an upper edge 13 of a door 12. The channel assembly 22 is attached to the door 12 so that its longitudinally extending and generally U-shaped channel 23 is upwardly open. Positioned for sliding movement within the channel 23 is a slide assembly 26.

The overhead adjustable door holder assembly 10 also includes a jamb bracket 16 permanently affixed by screws, bolts, rivets or other fasteners to a door jamb 14. A jamb arm 18 is pivotally connected at one end to the jamb bracket 16 and at its opposite end to the slide assembly 26. In preferred embodiments, the jamb bracket 16, jamb arm 18 and channel as-

sembly 22 are formed from brass or other durable, wear resistant material such as steel.

When the door 12 is normally closed with its upper edge 13 positioned parallel to and adjacent to the door jamb 14, the slide assembly 26 is positioned in the channel 23 at its maximum distance from the spring support 24. As the door 12 is about fully opened, as shown in Figure 1, the pivoting connection of the jamb arm 18 between the jamb bracket 16 and the slide assembly 26 allows the slide assembly 26 to move along the channel 23 towards a spring support 24. When force is applied to open the door, the slide assembly 26 moves along the channel toward the spring support 24 to engage the hold open assembly.

As best illustrated in Figures 3 and 4, the hold open assembly 36 includes a bracket 38 that is fixed to the channel assembly 22. A roller block 44, supporting a roller link 40 and rollers 42 movable in relation to the bracket 38, is attached to a movable rod 46 and its enveloping rod spring 48. Positioned between the rod spring 48 and the roller link 40 is an adjustment assembly that includes a primary wedge 52 and a secondary wedge 54. The primary wedge 52 is connected to a wedge adjust screw 56 that can move both vertically and a limited horizontal distance.

In operation, the rollers 42 first engage ramp 28 of the slide assembly as the slide assembly advances toward the rollers when the connected door is opened. The required force necessary to depress the rollers 42 provides positive feedback for imminent engagement of the slide assembly and the hold open assembly 36. Engagement of these elements to hold open the door is realised when the rollers 42 are forced into a slot 30 defined in the slide assembly 26. The door remains in a held open position until substantial force is applied to the door to depress the rollers 42 to disengage the slide assembly 26 from the hold open assembly 36.

The exact force required to engage or disengage the slide assembly from the hold open assembly can be easily varied using the adjustment assembly 50. The primary wedge 52 is connected to a wedge adjust screw 56 extending in a vertical orientation for easy access. Adjusting the screw 56 changes the spatial relationship between the primary and secondary wedge, increasing or decreasing a horizontal distance across the combined primary and secondary wedge and altering the length of the rod spring 48 and subsequent force transferred to the rollers 42. Instead of needing to readjust the position of the partially hidden and horizontally extending adjustment rod 50 directly, the vertical manipulation of the wedge adjust screw is converted into a horizontal movement of the wedges, which in turn modify the force necessary to engage or disengage from the rollers.

An additional aspect of the present construction is its capacity for absorption of door opening impact. As best illustrated in Figure 2, when the door is opened far enough, the slide assembly 26 impacts and is slowed by contact with springs 32 and 34 held by the spring support 24 to extend longitudinally in parallel spaced apart relationship along the channel 23. Both springs have substantially equal spring constants and resistance to compressive force. By slowly distributing the force of door opening, the springs prevent shock damage to the assembly 10.

Claims

1. An overhead adjustable door holder assembly (10) for attachment between a door jamb (14) and a door (13), for selectively holding the door in an open position; comprising a jamb bracket (16) for attachment to the door jamb (14); a jamb arm (18) pivotally attached to the jamb bracket (16); a channel assembly (22) having a channel (23) therein defined by channel walls; a slide assembly (26) positioned for movement in the channel (23), said slide assembly being pivotally attached to the jamb arm (18); and a hold open assembly (36) attached to the channel assembly; characterised in that said hold open assembly (36) has a roller link (40) with connected rollers (42) for engaging the slide assembly to hold the door in an open position, and a movable rod (46) for modifying position of the roller link (40) to allow for engagement/disengagement with the slide assembly and there being an adjustment assembly (50) for varying force of a spring (48) on the movable rod, the adjustment assembly having primary and secondary wedges (52, 54) positioned between the roller link (40) and the movable rod (46).

2. An assembly according to claim 1, wherein the primary and secondary wedges are configured slidably to engage each other.

3. An assembly according to claim 1 or 2, wherein the secondary wedge (54) is connected to a bracket (38) of the hold open assembly (36) and the primary wedge (52) is connected to a wedge adjust screw (56) capable of vertical adjustment to change the spatial relationship between the primary and secondary wedges, increasing or decreasing a horizontal distance across the combined primary and secondary wedges and moving the roller link (40) to alter the position of the rollers for engaging the slide assembly.

4. An assembly according to claim 1, 2 or 3, wherein the slide assembly (26) has a first ramp (28) for engaging the rollers (42) as the slide assembly advances toward the hold open assembly (36), and the slide assembly further defines a slot (30)

to accommodate the rollers and hold the door in an open position.

5. An assembly according to any one of the preceding claims, wherein the primary wedge (52) is connected to said rod spring (48), which urges the rod (46) away from the primary and secondary wedge (52, 54).

6. An assembly according to any one of the preceding claims, wherein a spring support (24) is attached to the channel assembly (22) at a fixed position within the channel and first and second springs (32, 34) are attached to the spring support to resist compressive force of the slide assembly as the slide assembly approaches the spring support.

7. An assembly according to claim 6, wherein the first and second springs (32, 34) are longitudinally positioned in the channel in parallel, spaced apart relationship to each other, with both springs having substantially equal spring constants and resistance to compressive force.

8. An overhead adjustable door holder assembly (10) for attachment between a door jamb (14) and a door (13), comprising means (16) for pivotally attaching a jamb arm (18) to said door; a channel assembly (22) for attachment to the door and having a channel (23) defined therein; means (36) positioned within the channel assembly for holding the door and comprising a slide assembly (26) positioned for movement in the channel, the slide assembly being pivotally attached to the jamb arm and having a slot (30) defined therein, characterised by an adjustment assembly (50) for varying the force on rollers (42) for engagement with the slot of the slide assembly, the adjustment assembly comprising a primary wedge (52) movable with respect to a secondary wedge (54) to adjust the position of the rollers (42).

9. An assembly according to claim 8, wherein the secondary wedge (54) is connected to a bracket (38) and the primary wedge (52) is connected to a wedge adjust screw (56) capable of vertical (in use) adjustment with respect to the bracket to change the spatial relationship between the primary and secondary wedge and increasing or decreasing a horizontal distance across the combined primary and secondary wedge to adjust vertical force applied to the rollers.

10. An overhead door holder assembly (10) for attachment between a door jamb (14) and a door (13), the assembly being configured to allow adjustment, in use, of horizontal distance between components by vertical adjustments of a wedge adjust screw, the assembly including a channel assembly (22) attached to the door and having an upwardly opening channel (23) defined therein, means positioned within the channel assembly for holding the door and comprising a slide assembly (26) having slot (30) defined therein, and an adjustment assembly, characterised in that said adjustment assembly is for varying force on rollers (42) for engagement with the slot of the slide assembly, the adjustment assembly comprising a primary wedge (52) connected to a wedge adjust screw (56), the primary wedge being configured for horizontal movement, in use, with respect to a secondary wedge (54) through adjustment of the wedge adjust screw, the horizontal movement acting to vary the force on the rollers.

11. A door incorporating a door holder assembly according to any one of the preceding claims.

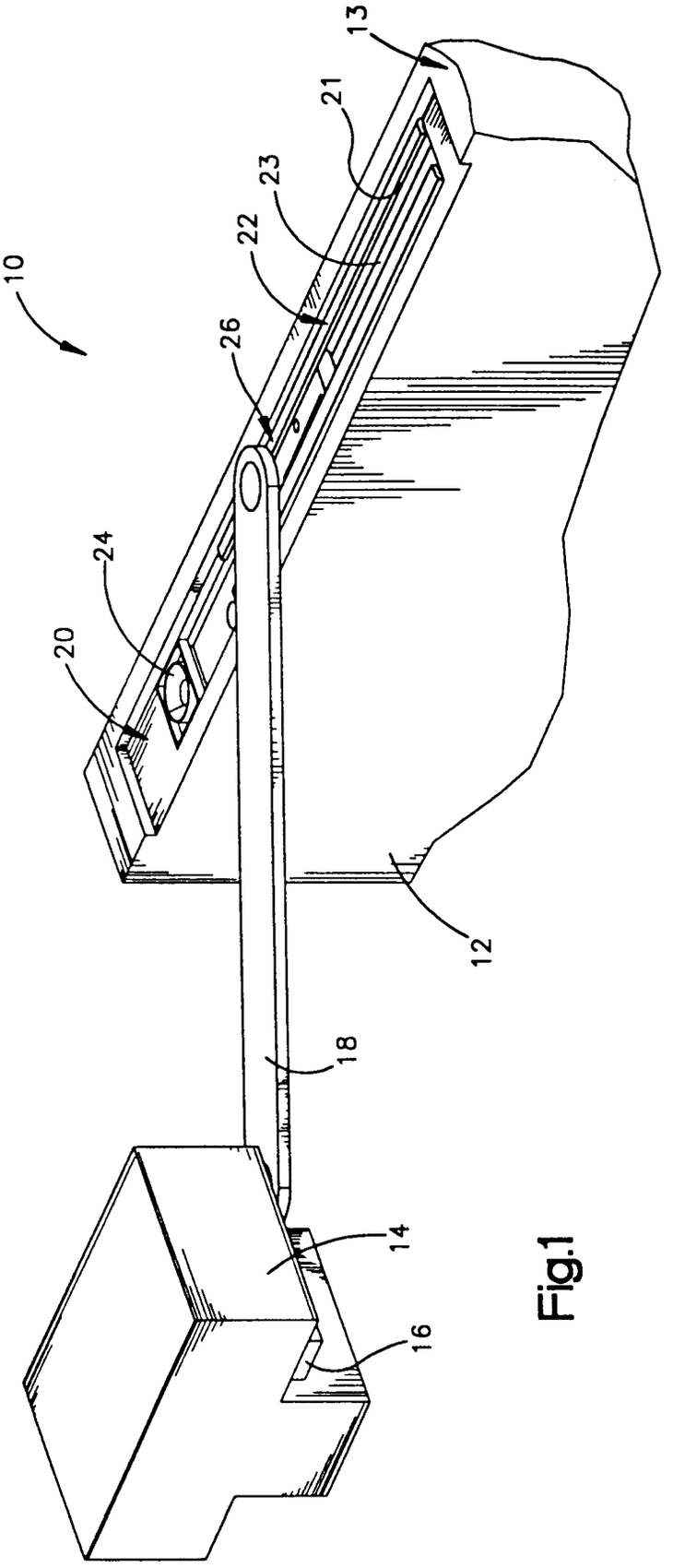

Fig.1

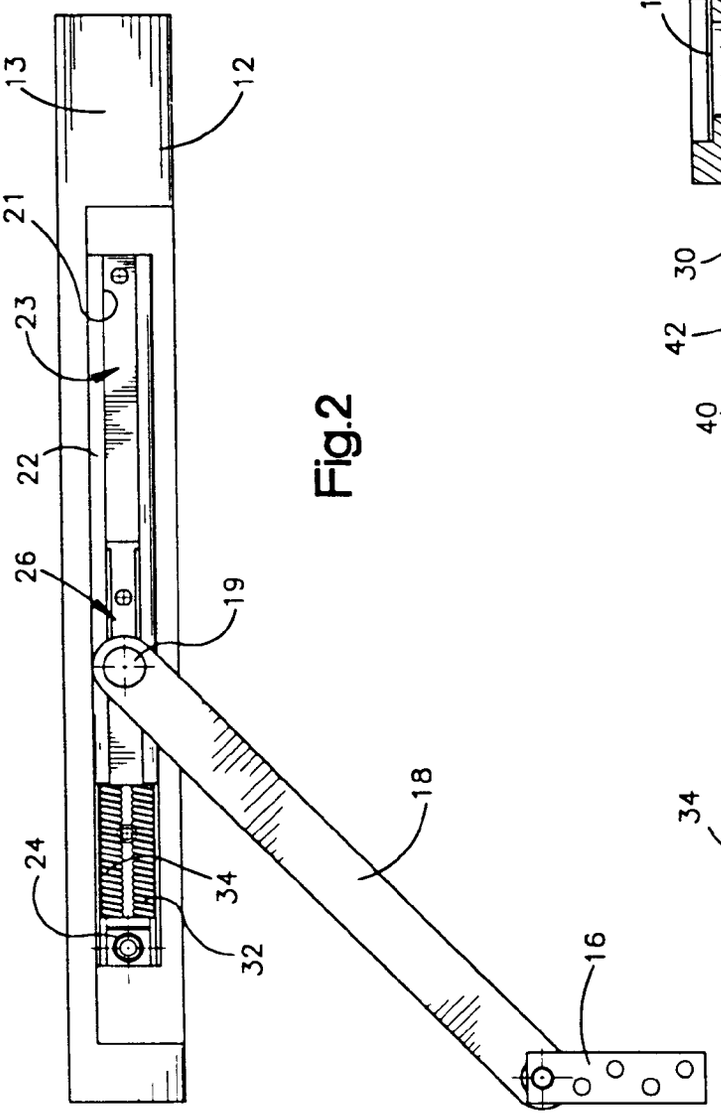
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Fig.2

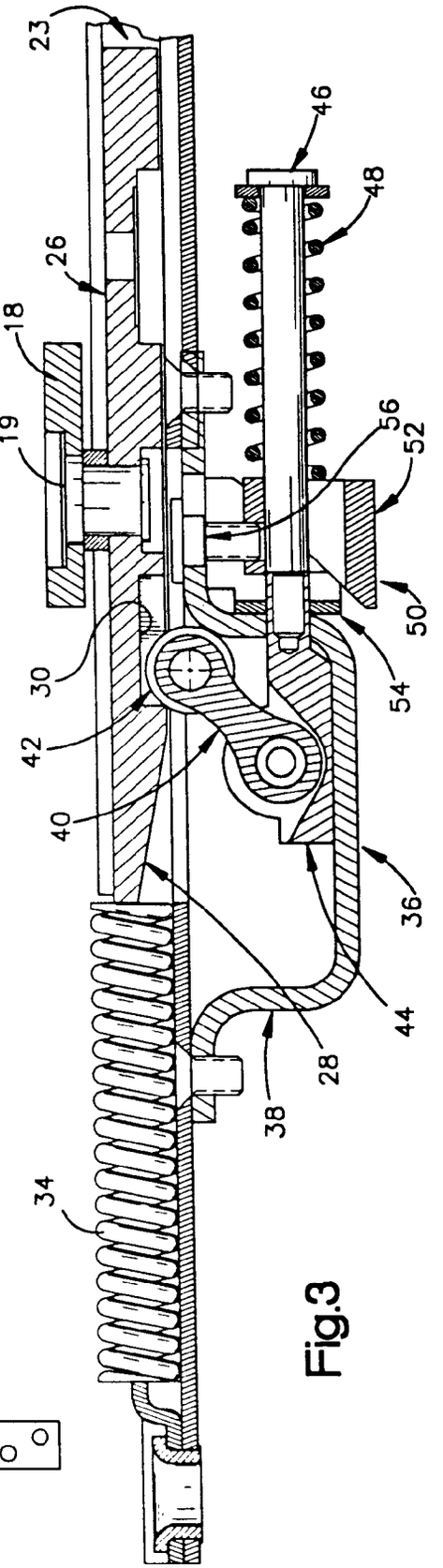
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Fig.3

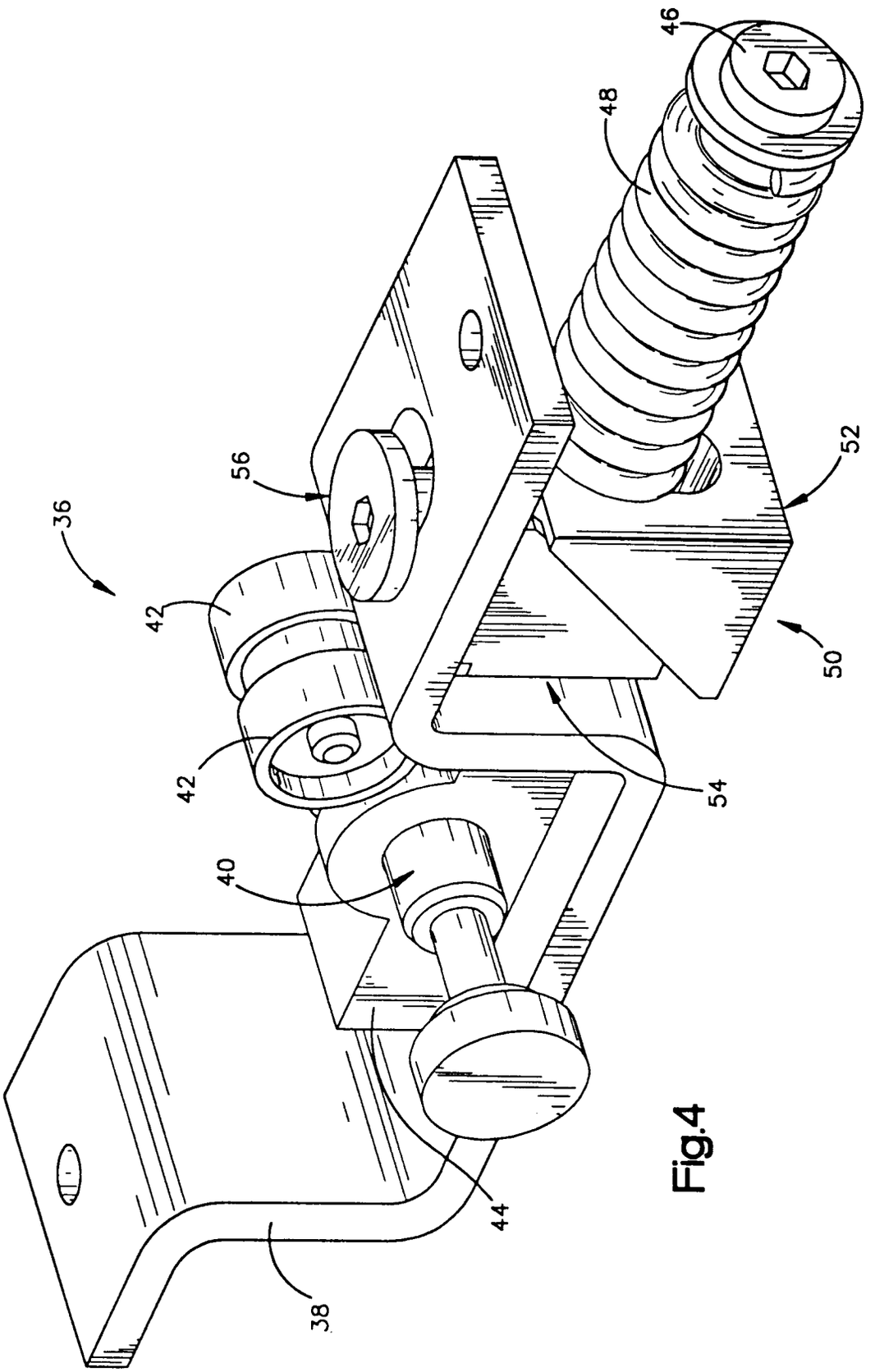

Fig.4

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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 7555

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-1 986 677 (JOHNSON) * the whole document *	1,2,4, 6-8,11	E05C17/28
A	US-A-3 164 404 (ARNOLD) * the whole document *	1,8,10, 11	
A	US-A-2 497 830 (BERNHARD) * the whole document *	1,8,10, 11	
A	EP-A-0 273 346 (YALE SECURITY INC) * the whole document *	1,8,10, 11	
A	FR-A-2 446 911 (WILH. FRANK G.M.B.H.) * the whole document *	1,8,10, 11	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 February 1995	Vestin, K

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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