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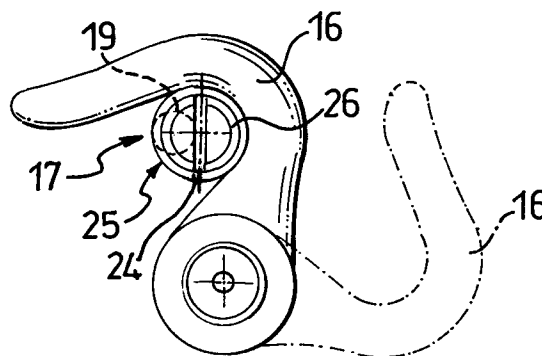
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I-20122 Milano (IT)(54) **A catch system for furniture doors and the like.**

(57) A catch system for bolting, on a piece of furniture, a door panel to a stationary frame by means of at least one hook (16) mounted to one of said two parts of the piece of furniture and engaging a corresponding peg (17) attached to the other of said two parts of the piece of furniture, has the peg (17) provided, in order to attenuate the frictional resistance between the hook (16) and the peg (17), with a freely rotatable outer cylinder surface (25) which contacts the hook (16) during its bolting/unbolting movements.

**FIG. 2****EP 0 577 166 A1**

This invention relates to a catch system for furniture doors and the like.

Known is a catch system for furniture doors which comprises two hooks mounted to the top and bottom ends, respectively, of a door panel and cooperating with two corresponding pegs attached to the stationary frame of a piece of furniture. The hooks can be moved, e.g. through a suitable key-actuated mechanism, between a position of engagement with their respective pegs, wherein the door panel would be bolted to the stationary frame, and a turned-away or release position, wherein the door panel would be unbolted.

Catches of this kind may be used on office and home furniture, such as closets, filing cabinets, etc.

Each hook and its corresponding peg in the catch system must be mounted in exact alignment at their selected locations, if they are to engage each other smoothly.

However, the required accuracy in the mutual positioning of the hook and peg is seldom complied with at the assembly stage due to unavoidable variations in the mounts of the catch operating mechanism and the catch itself, not to mention the hinges which secure the door panel to the stationary frame of a piece of furniture.

Such unavoidable inaccuracies in the hook-to-peg alignment are a cause of frictional resistance therebetween during the bolting/unbolting movements.

This frictional resistance between the hook and the peg may require the exertion of an extra effort on the operation mechanism and result in premature wear of the mechanism and the catch system, and ultimately in possible malfunction or jamming of same.

The underlying problem of this invention is to provide a catch system which has such constructional and operational features as to obviate the drawbacks affecting the background art.

This problem is solved by a catch system for furniture doors and the like, adapted to bolt a door panel to a stationary frame of a piece of furniture, comprising at least one hook mounted to one of said two parts of the piece of furniture and a corresponding peg mounted to the other of said two parts of the piece of furniture, the hook being movable between a position of engagement with the peg and a release position away from the peg, characterized in that said peg is provided with a freely rotatable outer cylinder surface which contacts the hook during the bolting/unbolting movements thereof.

To further illustrate the invention, a description of an exemplary embodiment thereof will be given herein below with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a door-fitted closet module incorporating a catch system according to the invention;

Figure 2 is a plan view of two elements of the catch system shown in Figure 1;

Figure 3 is an exploded view of one of the two elements in Figure 2;

Figure 4 shows the element in Figure 3 in its assembled state; and

Figure 5 is a sectional view, drawn to an enlarged scale, of the element in Figure 4 as fitted to the closet module.

The closet module generally shown at 10 in Figure 1 comprises a stationary frame 11 and a door panel 12 which is hinged to the frame 11 for pivotal movement to close and open the module 10.

Mounted on the inside face of the door panel 12 is a conventional operation mechanism 13 which can be actuated from outside using a key 14. Connected drivingly to the operation mechanism 13 are two rods 15 which extend vertically in opposite directions along a common axis X and are terminated at the top and bottom ends, respectively, of the door panel 12.

Attached to the end sections of the two rods 15 are two respective hooks 16 identical with each other, and correspondingly attached to the frame 11 are two identical pegs 17, namely an upper and a lower one.

To bolt the door panel 12 to the frame 11 in the closed condition of the module 10, the key 14 is turned such that the operation mechanism 13 will rotate the rods 15 about the axis X and bring the hooks 16 to engage the pegs 17. To unbolt the door panel 12, the key 14 is turned in the opposite direction, thereby the hooks 16 will be rotated in the opposite direction out of engagement with the pegs 17.

Shown in Figure 2 are the upper hook 16 and peg 17, and specifically shown in full outline is the engaged position, and in broken outline the disengage or release position, of the hook 16. It will be appreciated that the movement of the lower hook 16 relative to the lower peg 17 is similar to that of the upper hook 16 with respect to the upper peg 17.

Figures 3, 4 and 5 show the peg 17 in greater detail. This peg 17 comprises a stationary body 18 whence a cylindrical shank 19 extends which is formed integrally with the body 18 and has an offset axis Y from the axis Z of the body 18. The shank 19 is threaded partway and screw fitted into a sunk bush 20, as shown in Figure 5, in a hole 28 of the frame 11.

Formed in the body 18 is a cylindrical seat 21 delimited by two opposite shoulders 22, 23. A bushing 24 is received in said seat 21 for free

rotation about the seat 21 and retained axially by the two shoulders 22, 23. The axis of rotation of the bushing 24 is the axis Z of the body 18.

The outer cylinder surface 25 of the bushing 24 is intended to contact the hook 16 during the bolt/unbolt movements thereof. Since the surface 25 will turn while in contact because of the bushing 24 being mounted for free rotation, the frictional resistance between the hook 16 and the surface 25 can be significantly reduced to thereby eliminate the drawbacks brought about by friction between the hook and the peg as mentioned in the introductory part.

Advantageously, the bushing 24 is made of an antifriction material, such as nylon, in order to minimize the frictional resistance between the hook 16 and the surface 25.

To allow the bushing 24 to be driven into the seat 21, the bushing 24 may be made of a resilient material, such as the aforesaid nylon material, so that it can be force fitted over the body 18 from a free end 26 of the latter, over and past the shoulder 23 by virtue of its resilient nature, and into the cylindrical seat 21. For greater convenience in driving the bushing 24, its end 26 is tapered and radiused to the shoulder 23. In case of failure of the bushing 24, it can be removed from the seat 21 and replaced with a new bushing to be force fitted over the body 18: in this way, replacement of the whole peg 17 can be avoided.

The distance between the hook 16 and the peg 17 can be adjusted by turning the peg 17 about the axis Y of the shank 19. In fact, with the shank 19 offset from the body 18, this rotation will result in the surface 25 being moved toward or away from the hook 16. The end 26 of the body 18 is slotted at 27 to receive a screwdriver for more convenient rotation of the peg 17 in performing the adjustment.

The bush 20 is formed on its outer surface with longitudinal and circumferential elevations in order for it to become firmly locked in the hole 28 of the frame 11.

The bush 20 is also formed with longitudinal slots 29 allowing it to expand at the final stage of the shank 19 screwing into it, thereby the thread engagement will become a forced one at that stage. Thus, a dual objective is achieved of permitting the hook-to-peg distance to be adjusted and, once the adjusting is made, causing the peg to retain its position setting.

The bushing 24 may be made of any suitable material, e.g. a plastics material such as nylon, or a metal material; in the latter case, the elastic expansion of the bushing may be ensured by slotting the bushing throughout its length.

A freely rotatable roller could be substituted for the bushing 24.

The offset shank is, as mentioned above, specially advantageous, but a shank simply extending along the same axis as the peg body could be provided instead.

The configurations of the hook and the peg may be other than those described and illustrated herein.

The catch system of this invention may comprise one hook/peg combination, as in the embodiment just described, or any number of such hook/peg combinations. The hook(s) may be pivoted using any key-actuated operation mechanism, as in the embodiment just described, or one actuated by means of a knob or the like.

The catch system of this invention may also be used, with obvious adaptations, for bolting drawers or other furniture components.

Claims

1. A catch system for furniture doors (12) and the like, adapted to bolt a door (12) panel to a stationary frame (11) of a piece of furniture, comprising at least one hook (16) mounted to one of said two parts (11,12) of the piece of furniture and a corresponding peg (17) mounted to the other of said two parts (11,12) of the piece of furniture, the hook (16) being movable between a position of engagement with the peg (17) and a release position away from the peg (17), characterized in that said peg (17) is provided with a freely rotatable outer cylinder surface (25) which contacts the hook (16) during the bolting/unbolting movements thereof.
2. A catch system according to Claim 1, wherein said outer cylinder surface is the outer surface (25) of a bushing (24) fitted for free rotation over a stationary body (18) of the peg (17).
3. A catch system according to Claim 2, wherein said bushing (24) is received into a cylindrical seat (21) in the peg (17) body (18), said seat (21) being delimited by two opposite shoulders (22,23).
4. A catch system according to Claim 3, wherein said bushing (24) is made of a resilient material to make a force fit in said seat (21).
5. A catch system according to Claim 1, wherein the peg (17) includes a cylindrical shank (19) having an offset axis (Y) from the axis (Z) of rotation of said outer cylinder surface (25), said shank (19) forming a means of securing the peg (17) on the stationary frame (11) of the piece of furniture.

6. A catch system according to Claim 5, wherein the shank (19) is driven rotatively into the stationary frame (11) to form a force fit therewith.

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7. A catch system according to either Claim 5 or 6, wherein a bush (20), which is inserted into and made fast with the frame (11), interposes between the shank (19) and the stationary frame (11).

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8. A catch system according to either Claim 2 or 3 or 4, wherein said bushing (24) is made of an antifriction material.

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9. A catch system according to Claim 8, wherein said bushing (24) is made of nylon.

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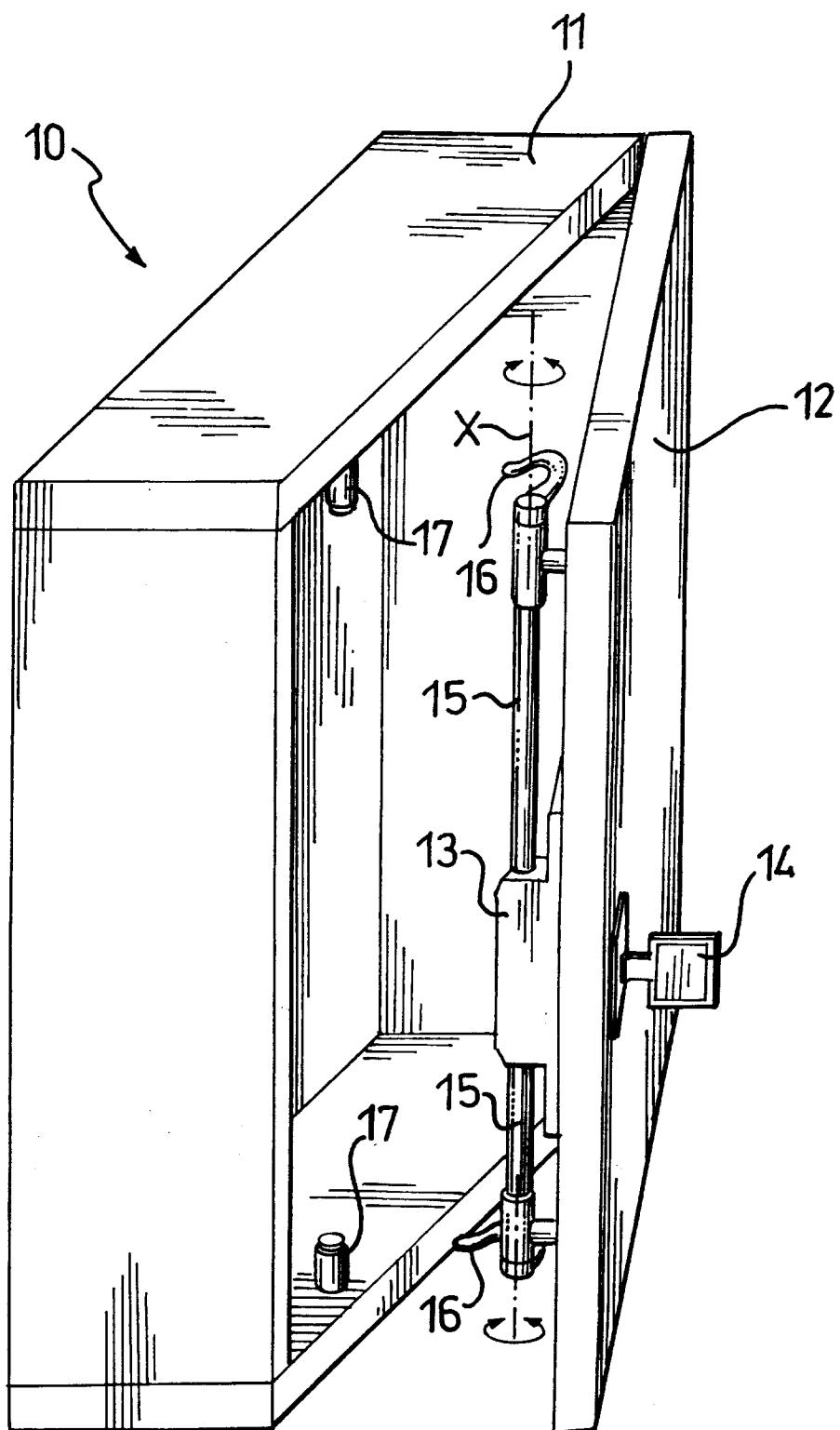


FIG.1

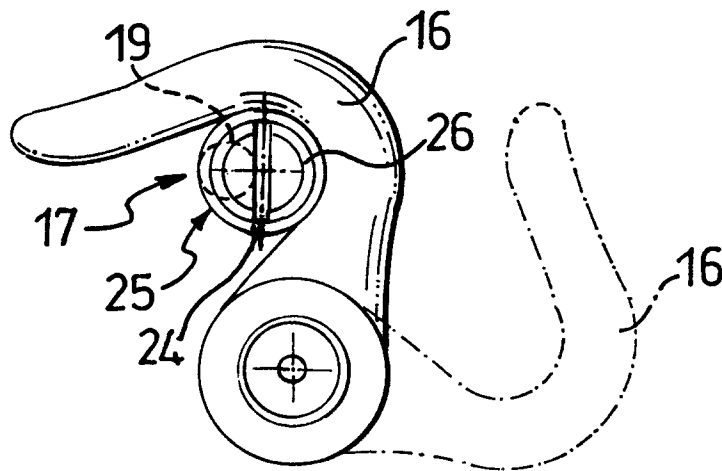


FIG. 2

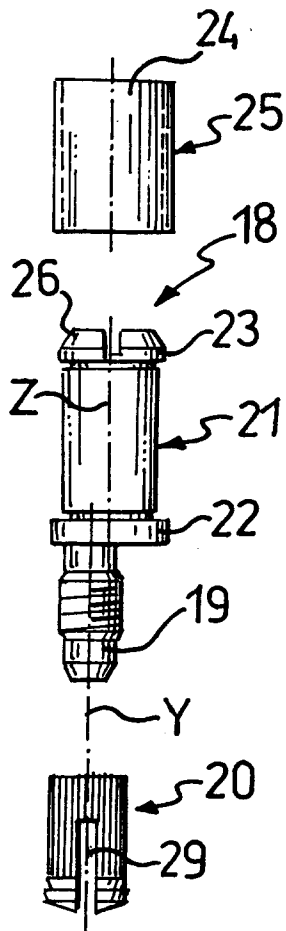


FIG. 3

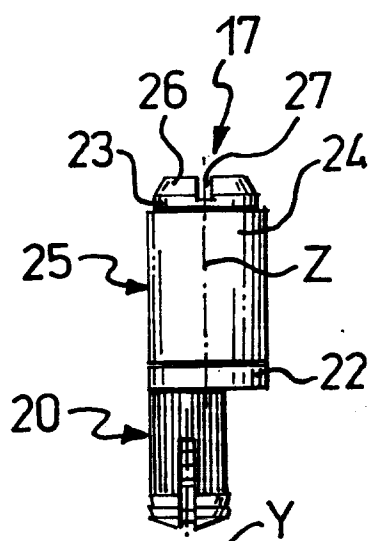


FIG. 4

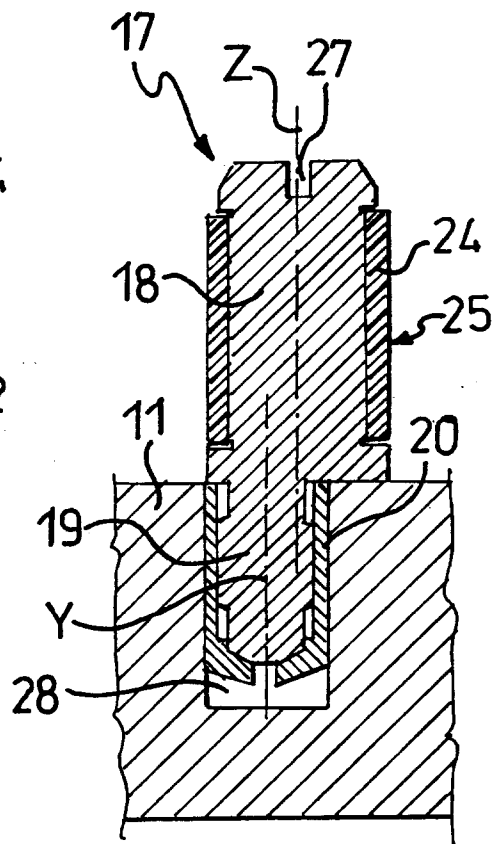


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number

EP 93 20 1336

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.5)
X	CH-A-314 195 (FAHRNER) * the whole document *	1,2,8	E05C9/08
Y	---	3,5,6	
Y	FR-A-1 363 595 (GRETSCH-UNITAS GMBH) * the whole document *	3,5,6	
A	---	4,7	
A	DE-A-1 955 838 (MUELLER) * page 5, line 23 - page 6, line 12; figure 1 *	1,2,8	
A	---	1,2	
A	FR-A-820 807 (SCHAERER) * page 2, line 4 - line 8; figures 1,2 *	1	
A	FR-A-2 568 618 (SUAP SARL) * abstract; figures *		

			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E05C E05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03 SEPTEMBER 1993	Examiner GIMENEZ BURGOS R.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document			