United States Patent [19]

Fantoni

[11] **3,890,814**

[45] **June 24, 1975**

[54] **PUSHBUTTON LOCKSET MECHANISM**

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[73] Assignee: **McClure Furniture Industries, Inc.**, Milton, Pa.

[22] Filed: **Aug. 28, 1974**

[21] Appl. No.: **501,333**

[30] **Foreign Application Priority Data**

Sept. 21, 1973 Italy 83427/73

[52] **U.S. Cl.** **70/106;** 16/85; 49/276; 70/152; 292/170; 292/DIG. 72

[51] **Int. Cl.**[2] **E05B 63/22;** E05F 1/10

[58] **Field of Search** ..... 16/85; 49/276; 70/81, 85, 70/102, 106, 152; 292/170, DIG. 72

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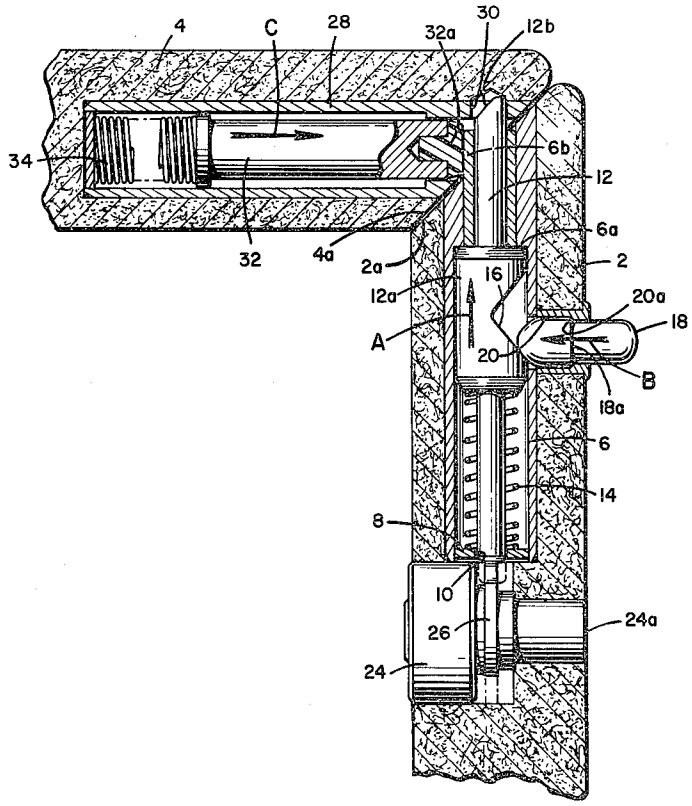
Primary Examiner—Albert G. Craig, Jr.

[57] **ABSTRACT**

A pushbutton lockset for furniture and the like, equipped with a device that, upon disengagement of the lock, thrusts open the part of the furniture piece that opens or slides out. The lockset includes two cylindrical elements, which are engaged head to head diagonally at about a 90° angle; one of the two cylinders contains a latchbolt that engages with the head of the second cylinder and which is withdrawn by action of a pushbutton; the other of the two cylinders, latched by the bolt to the first one, contains a spring-loaded plunger constantly under tension and pressing perpendicularly on the first latchbolt cylinder.

7 Claims, 2 Drawing Figures



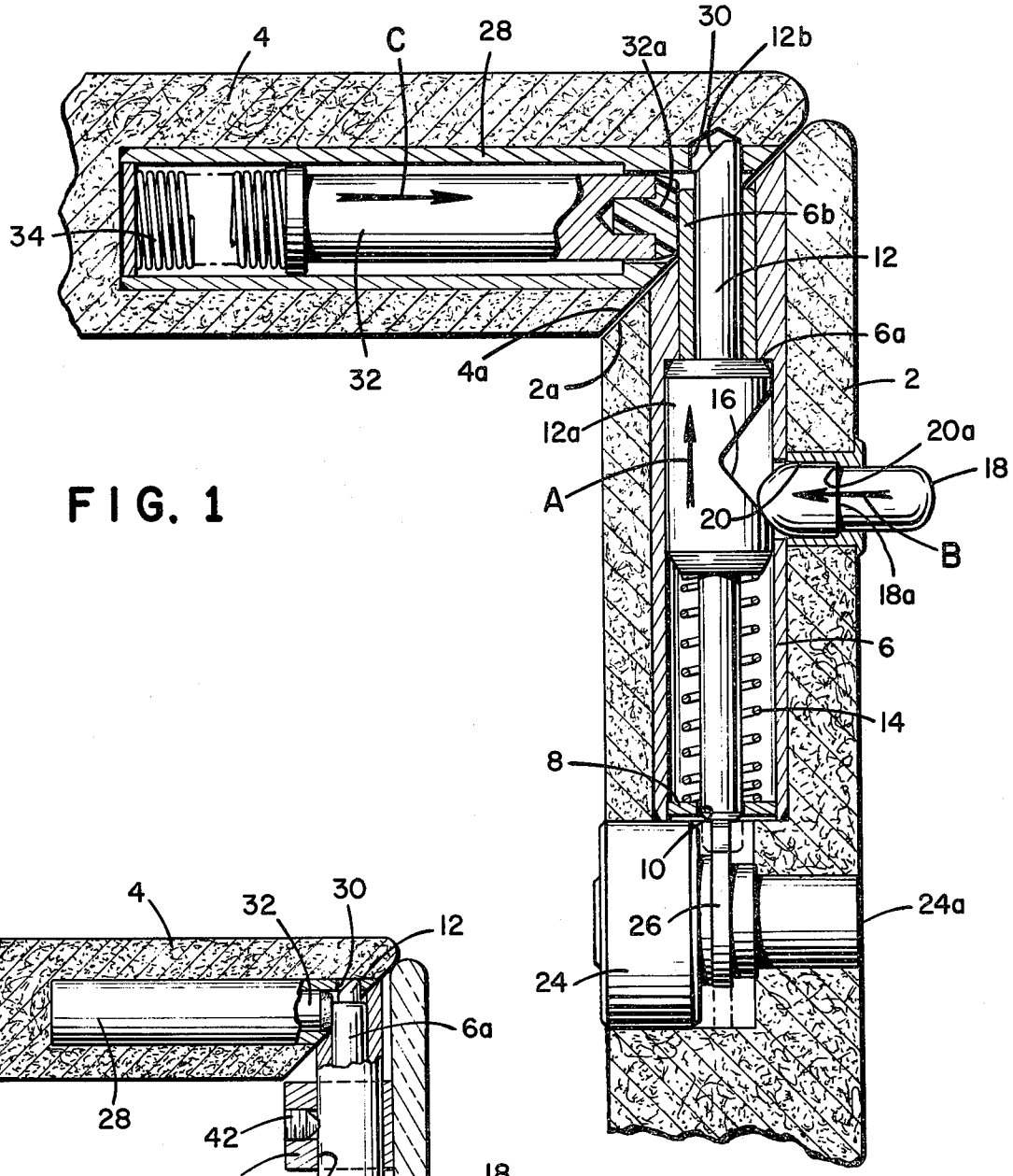

4
C
28
32a
30
12b
34
6b
12
6a
32
4a
2a
2
12a
16
20a
18
A
20
B
18a
6
14
8
10
24a
26
24

FIG. 1

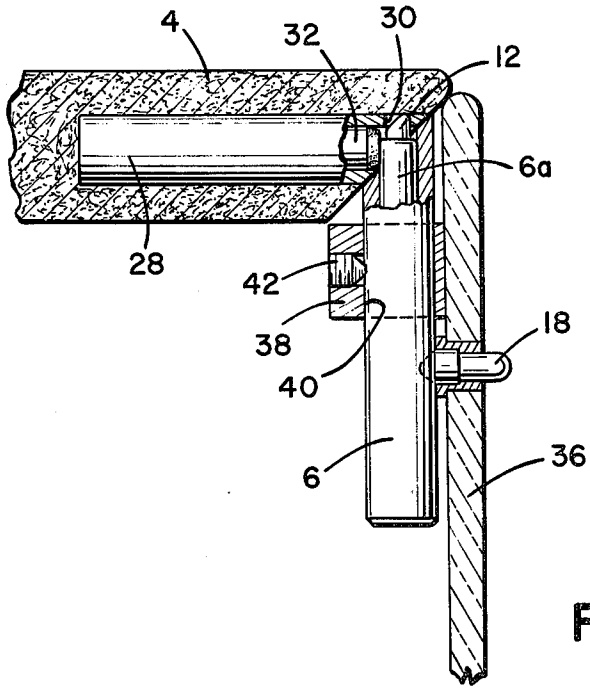

4
32
30
12
6a
28
42
38
18
40
6
36

FIG. 2

PUSHBUTTON LOCKSET MECHANISM

BACKGROUND OF THE INVENTION

The present invention relates to a pushbutton lockset, equipped with a springloaded device which, upon disengagement of the lock thrusts open the part that opens or slides out. This lockset is especially suitable for furniture and the like, including moving furniture parts that open or slide out, or are of any other type requiring a lock.

Presently a great variety of locks are available, and many different types are used on furniture and the like. Most of the known locks include at least one handle pull and at least one latching and/or locking mechanism. In addition, the disengagement of the fastening mechanism of most of the prior art locks merely provides a release of the latch and/or lock of the door or other engaged part.

General objects of the invention are to minimize the visibility of such a lock, to do away with the pull, and to provide a slight thrust to the part that is released upon disengagement of the bolt, allowing the user to grasp the edge of the disengaged part and pull it open fully. In order to achieve this, the panels employed are suitably bevelled on their inside faces, which results in an improved joining of the panels as well as in an improved handling of the opening panel.

SUMMARY OF THE INVENTION

With the present invention, therefore, a combined opening and closing device is obtained. This particular feature, combined with the shape of the panels employed, makes it possible to eliminate the pull; consequently the whole piece of furniture displays a more functional design. Furthermore, according to the present invention, a cylinder type springlock is employed, embedded lengthwise in the opening panel. This lock acts upon a cylinder arranged normal to it and also embedded in the locking normal panel. The latching point lies on the diagonal, coinciding with the bisector plane of the dihedral angle formed by the panels.

Also according to the invention, the second cylinder, placed normal to the latchbolt, is loaded with a spring powered plunger constantly under tension and pressing upon a certain spot of the first cylinder; consequently, upon withdrawal of the latchbolt, the first cylinder is thrust forward, which results in a partial opening of the engaged panel, in which the first cylinder is embedded. In addition the first cylinder, equipped with an axial latchbolt, is conveniently operated by means of a pushbutton, placed on the outside face of the embedding panel. The pushbutton activates the withdrawal of the latchbolt, and, consequently, the opening of the panel, by applying a perpendicular stress on an inclined plane located on the surface of the bolt. Lastly, the latchbolt can be conveniently blocked in a locked position by means of a cam operated shaft, which is positioned at the base of the first cylinder in such a way as to prevent the withdrawal of the latchbolt. Depending on the specific requirements, the lock can be embedded as well as anchored into or fastened to the face of the panel in any suitable fashion.

BRIEF DESCRIPTION OF THE DRAWING

In the attached drawings, which illustrate, by way of example, some preferred but non-limitative embodiments of the present invention:

FIG. 1 shows a sectional view of the lockset mechanism embedded in two panels; the lock is also provided with key operated latchbolt blocking mechanism; and

FIG. 2 shows a sectional view of the lockset mechanism with one part fastened to but not embedded in a glass panel.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the recessed lockset mechanism of this invention is shown in FIG. 1. A first furniture panel 2 has an edge surface 2*a* bevelled at an angle of about 45°. Similarly, a second furniture panel 4 has a complementary bevelled edge surface 4*a*. The panels 2 and 4 are movable relative to each other; for example, panel 2 may be hinged at one side (not shown) to form a door of a cabinet. A suitable hinge mechanism is, in fact, disclosed and claimed in my copending application Ser. No. 480,276, filed June 12, 1974.

A cylindrical hole is drilled into the furniture panel 2 from its bevelled surface 2*a* and a metal cylinder case 6 may be press-fitted and/or glued in the hole to secure it to the furniture panel; the face portion of the casing 5 is bevelled so that when inserted, the face of the casing is flush with the surface 2*a*. At its innermost end, the cylinder 6 has an end plate 8 with a central opening 10. A movable elongated cylindrical shaft 12 is located in the housing 6. A spring 14 is mounted coaxially with shaft 12; one end of spring 14 abuts the end plate 8 and the other end contacts one end of the enlarged central portion 12*a* of the shaft 12. By this arrangement, the shaft 12 is biased in the direction of arrow A. The movement of the shaft 12 in the direction of arrow A is restricted by the reduced diameter portion 6*a* of housing 6.

The central portion 12*a* of the shaft 12 has a notched surface 16 which cooperates with a pushbutton 18 located in an opening 20 in the furniture panel 2. The pushbutton protrudes outwardly from the furniture panel to permit actuation by the user. The inner end of the button cooperates with the notched portion 16 so that when the button is pushed in the direction of arrow B, it acts to push the shaft backward (in a direction opposite to that of arrow A) against the biasing force of spring 14. When the button is released, the spring 14 returns the shaft 12 forwardly in the direction of arrow A thus urging the button outwardly in a direction opposite to that of arrow B. Movement of the button in this direction is limited by the enlarged diameter ridge 18*a* of the button engaging a reduced diameter portion 20*a* of the button opening 20.

The lockset mechanism may also be provided with a lock, such as a key operated lock 24 having a keyhole located at 24*a*. Eccentrically mounted on the rotatable shaft of lock 24 is a cam member 26. In the locking position, the cam 26 engages the end of shaft 12 protruding through opening 10 in end plate 8. This prevents movement of the shaft 12 in an opening direction (opposite to arrow A) when button 18 is actuated by being pushed in the direction of arrow B. In the unlocking position, cam 26 is moved out of contact with the end of shaft 12 (as shown in dotted line configuration in FIG. 1) to permit the pushbutton 18 to move shaft 12 backward.

Furniture panel 4 also has an opening drilled therein from bevelled face 4*a* into which a cylindrical metal

casing **28** is fitted, by press-fitting, gluing, etc. The face of cylindrical casing **28** is also bevelled in conformance with the bevelling on face **4***a*. The casings **6** and **28** are located opposite each other so that their respective longitudinal axes intersect each other at approximately right angles. The casing **28** has an opening or recess **30** formed therein. When the panels **2** and **4** are located adjacent each other in their closed positions (as shown in FIG. **1**), shaft **12** is biased by spring **14** to extend into recess **30**; this provides the locking action to prevent relative movement between the panels **2** and **4**, i.e., to prevent panel **2** from swinging open away from panel **4**. When the shaft **12** is moved backward by the action of pushbutton **18**, the end of the shaft becomes disengaged from recess **30**, thereby permitting panel **2** to be swung away from panel **4**. The end face **12***b* of shaft **12** is bevelled to permit the shaft to be moved backward upon closing of the panel **2** by forces acting on the face **12***b* as it contacts the end of cylindrical casing **28**. When the panel **2** is in its fully closed position adjacent panel **4**, spring **14** causes shaft **12** to snap back into its full forward position so that the end of the shaft extends into recess **30** again.

Movably mounted in casing **28** is a springloaded shaft or plunger **32**, normally biased in the direction of arrow C by means of a spring **34** mounted between the rear face of shaft **32** and the inner end face of casing **28**. The front end face **32***a* of shaft **32** (which may be made of a rubber or plastic material) abuts against an extension **6***b* of casing **6**. When the shaft **12** is moved out of recess **30**, plunger **32**, pressing against extension **6***b*, provides sufficient thrust to push panel **2** away from panel **4** to an open position.

In an alternative embodiment shown in FIG. **2**, the furniture panel **2** is replaced by a glass plate or panel **36**. In this embodiment, the cylindrical casing **6** is mounted to the glass plate by means of a mounting block **38** which is secured to the inside of the glass by glue or any other known means. The block **38** has an opening **40** with a diameter corresponding to the outside diameter of casing **6**. The casing is secured to the block **38** by a set screw **42**, for example. In all other important respects, this embodiment is substantially the same as that described above with respect to FIG. **1**.

It is to be understood that various modifications in the structural details of the preferred embodiment described herein may be made within the scope of this invention and without departing from the spirit thereof. It is intended that the scope of this invention shall be limited solely by the hereafter appended claims.

What is claimed is:

1. Locking apparatus for furniture articles and the like, comprising: a first elongated member; first means mounting said first member to a first furniture panel for movement along the longitudinal axis of said first member; a second elongated member; second means mounting said second member to a second furniture panel for movement along the longitudinal axis of said second member; first biasing means urging said first member into locking engagement with said second mounting means for locking said first and second furniture panels against relative movement; second biasing means urging said second member into engagement with said first mounting means; and means coupled to said first member for moving said first member in a direction opposite to its normally biased direction and out of locking engagement with said second mounting means to permit relative movement of said first and second furniture panels.

2. The locking apparatus according to claim **1**, wherein: said first mounting means comprises a first hollow cylinder in which said first elongated member is movably mounted; said first biasing means comprises a first spring located in said first hollow cylinder and engaging said first member and a wall of said first hollow cylinder; said second mounting means comprises a second hollow cylinder in which said second elongated member is movably mounted; and said second biasing means comprises a second spring located in said second hollow cylinder and engaging said second member and a wall of said second hollow cylinder.

3. Locking apparatus according to claim **2**, wherein said first elongated member comprises a shaft having a notched central portion; and said means coupled to said first elongated member for moving said first member comprises a pushbutton mounted to said first furniture panel for engagement with said notched central portion.

4. Locking apparatus according to claim **1**, further comprising: locking means movable between locking and unlocking positions, wherein in said locking position, said locking means engages said first member to prevent movement thereof out of locking engagement with said second mounting means and in said unlocking position said locking means is disengaged from said first member to permit movement of the latter out of locking engagement with said second mounting member.

5. Locking apparatus according to claim **4**, wherein said locking means comprises a cam eccentrically mounted on a rotatable shaft, said cam engaging one end of said first member in said locking position and being disengaged from said first member in said unlocking position.

6. Locking apparatus according to claim **1**, wherein said first and second elongated members are located such that their respective longitudinal axes intersect at an angle of approximately **90°**.

7. Locking apparatus according to claim **6**, wherein said first and second furniture panels have complementary bevelled facing edges, said first and second elongated members being mounted to their respective panels to project outwardly from the respective bevelled edges of said panels, wherein the plane of said bevelled edges substantially bisects the angle formed by the intersecting longitudinal axes of said first and second members.

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