United States Patent [19]

Read et al.

[11] **3,830,535**

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[54] **CLOSURE**

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[52] **U.S. Cl.** **292/170,** 292/336.3, 292/337, 292/DIG. 38

[51] **Int. Cl.** **E05c 1/14**

[58] **Field of Search** ..... 292/57, 60, 145, 170, 174, 292/175, 251.5, 337, 350, DIG. 38, DIG. 53

[56] **References Cited**

UNITED STATES PATENTS

951,836	3/1910	Noack	292/350
1,833,945	12/1931	Janonis	292/170
2,121,530	6/1938	Murphy	70/146
3,346,289	10/1967	Anderson	292/175

FOREIGN PATENTS OR APPLICATIONS

86,785	7/1936	Sweden	292/174
153,680	3/1956	Sweden	292/170

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[57] **ABSTRACT**

A closure for utilization with doors for vehicles or cabinets and the like wherein a positive latching function is obtained by unique design of the components making up the closure which is practically maintenance free, easily and economically produced and wherein a simple pulling movement unlatches the closure and permits opening of a door with which it is used in a single movement.

16 Claims, 5 Drawing Figures

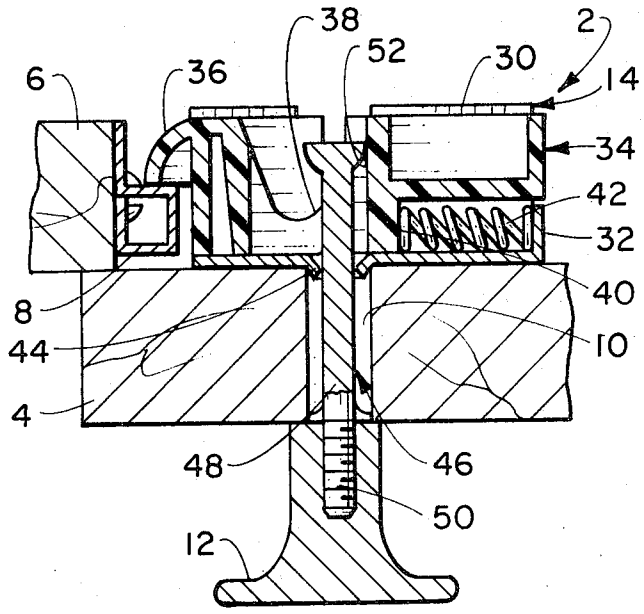


Fig. 1.

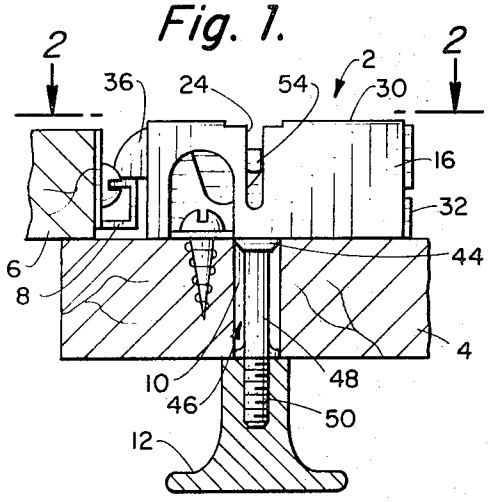


Fig. 4.

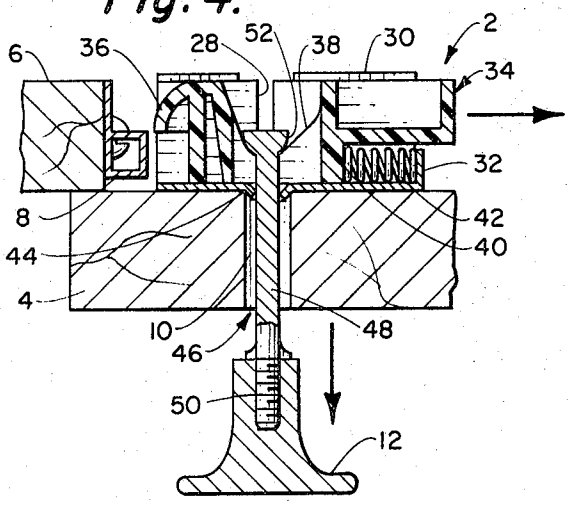


Fig. 2.

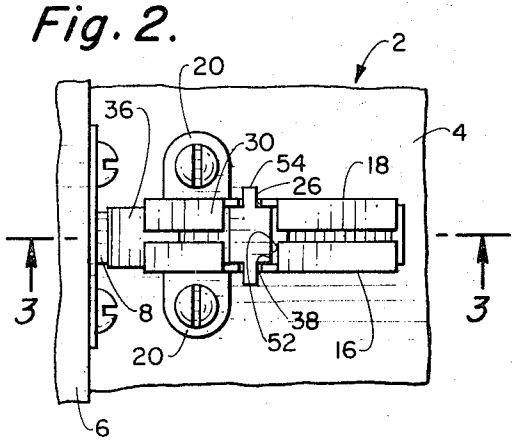


Fig. 3.

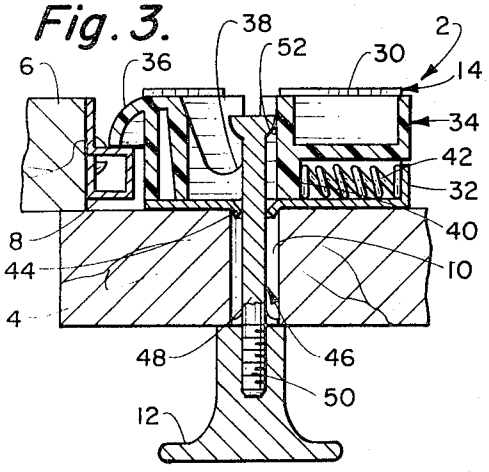
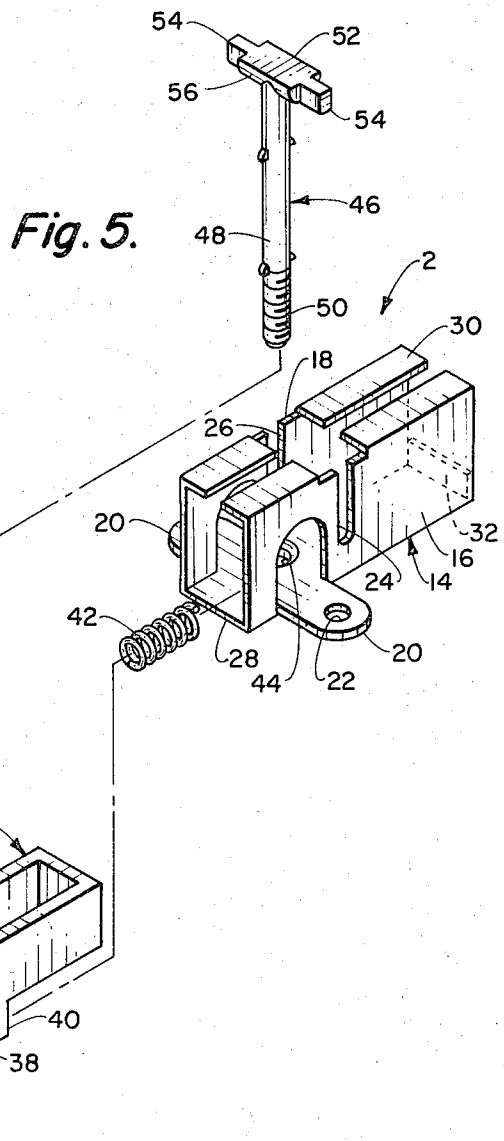


Fig. 5.



CLOSURE

BACKGROUND OF THE INVENTION

This invention pertains to a closure of the type that may be used in recreational vehicles, stationary cabinet doors or any application where it is desired to have a positive acting latch which is easily unlatched by a single manipulative movement which also permits opening of a door or the like with which the closure is used.

While the prior art has suggested many different types of closures to be utilized with doors (of a myriad of applications) whether for the doors of vehicles, doors of containers or doors of cabinets, for the most part these latches have involved sophisticated and complicated mechanisms which are difficult to maintain in the operable state, are expensive to produce or require an additional movement to open a door with which the closure is utilized.

With the hereindescribed invention, an economically manufactured and readily maintainable positive latch closure is made possible which permits unlatching and opening of a door with which the closure of the invention is utilized in a single movement. Additionally, because of the unique configuration and cooperation of the limited number of parts making up the closure of the invention, operability of the closure over sustained working conditions is improved over prior art devices.

OBJECTS AND SUMMARY OF THE INVENTION

It is an object of the invention to provide a closure which may be utilized with doors of any type.

It is another object of the invention to provide a closure which effects positive latching of a door with which the closure is utilized.

It is still another object of the invention to provide a positive latching closure which is easily unlatched and the door opened with which the closure is used in but a single movement.

It is still another and further object of the invention to provide a closure which is economically manufactured comprising mechanics of operation which will give long usage.

It is still another and further object of the invention to provide a closure wherein a one piece housing member is formed of metal and a latch member is captively disposed therein for inward and outward movement by a simple cam and actuator arrangement.

It is still another and further object of the invention to provide a closure having a housing member with a latch member disposed therein wherein a pull member moves normal to the path of travel of the latch member.

It is still another and still further object of the invention to provide a closure wherein the latch member has a cam surface which is engaged by an actuator member comprising a pull knob which moves the latch member into the latching or unlatching position.

It is still another and further object of the invention to provide a closure wherein a latch member is captively received within a housing and has resilient means biasing the latch member into the latching position and wherein the latch member is provided with a cam surface which is acted upon by an actuator to move the latch member into the latched position, return thereof being caused by said biasing means.

Other objects of the invention will become apparent from the figures of drawing and the description herein.

Basically, the invention is directed to a closure comprising the combination of a housing member forming a guide path and having a latch member captively disposed within the housing for linear movement along the guide path and having one end adapted to engage a cooperating catch.

The latch member has a cam surface portion which is acted against by a pull member having an actuator portion disposed adjacent the cam surface portion wherein the pull member is adapted for movement normal to the guide path. Resilient means is provided to urge the latch member to a terminus of the guide path or locked position and movement of the actuator portion of the pull member will position the latch member in the unlatching position.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of a closure of this invention showing its use with a cabinet door or the like;

FIG. 2 is a view taken along the line 2—2 of FIG. 1;

FIG. 3 is a view taken along the line 3—3 of FIG. 2;

FIG. 4 is a view similar to that shown in FIG. 1 but illustrating the closure in the unlatched or unlocked position; and

FIG. 5 is an exploded view showing the components of the closure of this invention.

DESCRIPTION OF THE BEST EMBODIMENTS CONTEMPLATED:

Referring to the drawings wherein like numerals of reference refer to like elements throughout an exemplary embodiment of a closure of this invention is illustrated. The closure **2** in this instance is illustrated in FIGS. **1** and **4** in the latched or locked position and the unlatched or open position respectively. Basically, the closure **2** may be secured to a door **4** (in this instance a wooden door comprising a cabinet) wherein the style **6** of the cabinet has strike member **8** of the usual type and forming no part of this invention.

The cabinet door **4** is provided with through bore **10** through which the actuator portion of the closure may project and to which the knob **12** may be affixed.

The closure **2** comprises a housing member **14** having opposed walls **16** and **18** from which cutout tabs **20** have been punched and brought out of the plane formed by the walls **14** and **18** and provided with apertures **22** by which means the closure **2** may be secured to the door **4.** It will be noted that the opposed walls **16** and **18** are provided with opposed and aligned slots **24** and **26** in order to receive an actuator member as will be later described.

As seen in FIG. **5,** the housing member **14** also includes a side or lateral wall **28** and an opposite discontinuous wall **30** which, in conjunction with wall portion **32** (FIG. **3**) forms an open front guide path for latch member **34.** In this instance, the housing member **14** is formed of metal and the wall portions thereof are integral with one another, the housing **14** being made in accordance with known and recognized metal fabricating techniques. Obviously, housing member **14** may be made of other materials and in accordance with other manufacturing techniques.

The latch member 34 is captively disposed within housing member 14 and has a latch portion 36 which is quadrant-shaped in configuration (FIG. 1) and is provided with an intermediate cam surface portion 38 of V-like shape, curvilinear configuration. In this instance, the latch member 34 is of molded plastic having the usual cutout portions to economize on material and to lend light weight to the closure 2. A bottom cutout portion 40 is provided so that upon assembly, a resilient means or coil spring 42 is captively associated between the cutout portion 40 of latch member 34 and the partial rear wall 32 of housing member 14.

It will be noted that upon disposition of coil spring 42 within housing member 14, the latch member 34 is reciprocally movable inward and outward of housing 14 as seen in FIGS. 4 and 1 respectively. The latch member 34 is captively associated within the confines of housing member 14 by means that will now be described.

The wall 28 of housing member 14 is provided with through hole 44 of a diameter large enough to receive an extending portion of actuator 46. Actuator 46 has a stem portion 48, the terminus 50 of which is threaded so as to receive the knob 12 in threaded relationship therewith. (Obviously other means of affixing the knob 12 to actuator 46 may be used).

Actuator 46 has an upper portion 52,T-shaped in configuration, having projections 54 of the T which are received by opposed slots 24 and 26, the slots forming a track for movement of actuator 46.

It will be noted that an upper portion of the actuator 46 and more specifically, the portion 56, is provided with a curved surface so as to ride smoothly within the cam surface 38 provided in latch member 34. Disposition of actuator 46 through the opening 44 and alignment of the tabs 54 in the slots 24 and 18 retain actuator 46 in operable relationship with respect to latch member 34 particularly when the knob 12 is secured to the threaded end 50 of actuator 46.

In operation of the device, referring to FIGS. 1 and 4, it will be noted that the housing member 14 provides a guide path within which the latch member 34 is free to move. The spring 42 normally biases the latch member 34 into the latching position as seen in FIG. 1 thereby engaging the catch portion 36 of latch member 34 with the strike 8 on the style 6 of the cabinet.

However, upon pulling or movement of the actuator 46 (as by means of grasping the knob 12), in a direction normal to the path of travel of latch member 34, the actuator 46 engages the cam surface 38 thereby causing retraction of latch member 34 and disengagement of the catch portion 36 thereof with the catch 8 located on the style 6 of the cabinet, as seen in FIG. 4. Thus, one simple movement of the actuator 46 unlatches the closure 2 and moves the door 4 into the open position.

Movement of the actuator 46, as seen in FIG. 4, compresses coil spring 42 and causes the end of the latch member 34 opposite the catch portion 36 to move exteriorly of the housing member 14.

In the illustrated closure 2, the actuator 46 is of metal while latch member 34, is of molded plastic construction but of course other materials and means of fabrication are possible. Additionally, while closure 2 has been shown in a field of use comprising cabinets and the like, it should be understood that the closure 2 may be used with any type of doors, for example, those found on electronic consules and the like, and that the scope of the invention is not to be limited.

Indeed, while certain structural and design relationships have been shown for the closure of this invention, those of ordinary skill in the art will ascertain that various modifications and changes are indeed possible but none of which will depart from the essence and scope of the invention as defined in the appended claims. For example, the biasing means may be integral with the latch member and may be a leaf as opposed to a compression spring. Other modifications will suggest themselves.

We claim:

1. A closure comprising the combination of a housing member having spaced, opposed walls forming a guide path and being provided with mounting means comprising tab portion cut outs of said spaced, opposed walls to affix said closure; a latch member captively disposed within said housing for linear movement along said guide path and having one end adapted to engage a cooperating strike and having a V-like shaped and curvilinear cam surface portion, said one end of said latch member normally projecting exteriorly of said housing and being quadrant-shaped; a pull member having an actuator portion disposed adjacent said cam surface portion and being adapted for movement normal to said guide path; and resilient means to urge said latch member to a terminus of said guide path, said cam surface portion coacting with said actuator portion of said pull member to retract said latch member inwardly of said housing member.

2. A closure in accordance with claim 1 wherein said housing member has lateral walls coacting with said spaced, opposed walls to form said guide path.

3. A closure in accordance with claim 2 wherein said housing member has an open end and said one end of said latch member projects therethrough.

4. A closure in accordance with claim 3 wherein said latch member, in cooperation with said housing member, forms a resilient means retaining area.

5. A closure in accordance with claim 4 wherein said resilient means retaining area is formed between an end wall of said housing member and an intermediate wall of said latch member.

6. A closure in accordance with claim 5 wherein said resilient means is a compression spring.

7. A closure in accordance with claim 6 wherein said housing member is formed of metal and said latch member is plastic.

8. A closure in accordance with claim 1 wherein said pull member has a stem portion extending through said latch member and a wall of said housing.

9. A closure in accordance with claim 8 wherein said housing member has at least a pair of opposed walls forming said guide path and have opposed slots forming a track guide for the movement of said pull member.

10. A closure in accordance with claim 9 wherein the end of said pull member adjacent said stem is T-shaped and the ends of the crossbar of the T are disposed in said opposed slots.

11. A closure in accordance with claim 10 wherein said pull member is cooperatively guided in said housing by said opposed slots.

12. A closure in accordance with claim 11 wherein said housing is integrally formed.

13. A closure in accordance with claim 12 wherein said latch member is prevented from movement outward of said housing member by said pull member.

14. A closure in accordance with claim 13 wherein said housing member is metal and said latch member is plastic.

15. A closure in accordance with claim 14 wherein a spring means is positioned within said housing to act against said latch member and an end wall of said housing.

16. A closure in accordance with claim 15 wherein the terminus of said stem is threaded to receive a knob or pull member whereby said pull member may be moved normal to the path of travel of said latch member.

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