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Shelton

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[54] **LATCH ASSEMBLY**

[75] Inventor: **Billy George Shelton**, Hutchins, Tex.

[73] Assignee: **Shur-Lok Manufacturing Co., Inc.**, Hutchins, Tex.

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[52] **U.S. Cl.** **292/87**; 292/252

[51] **Int. Cl.²** **E05C 19/06**

[58] **Field of Search** 292/76, 77, 87, 252

[56] **References Cited**

UNITED STATES PATENTS

3,397,001	8/1968	Friedman	292/87
3,618,995	11/1971	McLean	292/66
3,782,765	1/1974	Wallyn	292/103

Primary Examiner—Robert L. Wolfe

Attorney, Agent, or Firm—Ned L. Conley; Murray Robinson; David Alan Rose

[57] **ABSTRACT**

A latch assembly for use with a stationary member having a drawer opening and a drawer to limit the distance which the drawer may be pulled from the opening, including a curved resilient bifurcated stop for affixing to the stationary member and a ball on the end of a resilient arm for affixing to the drawer, the ball being engageable with the stop to limit outward movement of the drawer and the ball being movable, by bending of the arm, from one side of the stop to the other.

2 Claims, 3 Drawing Figures

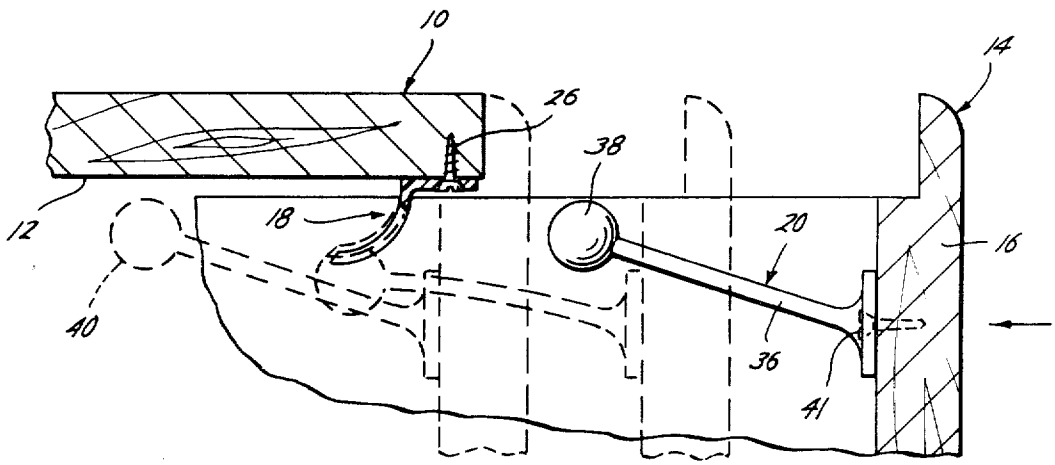


Fig. 1

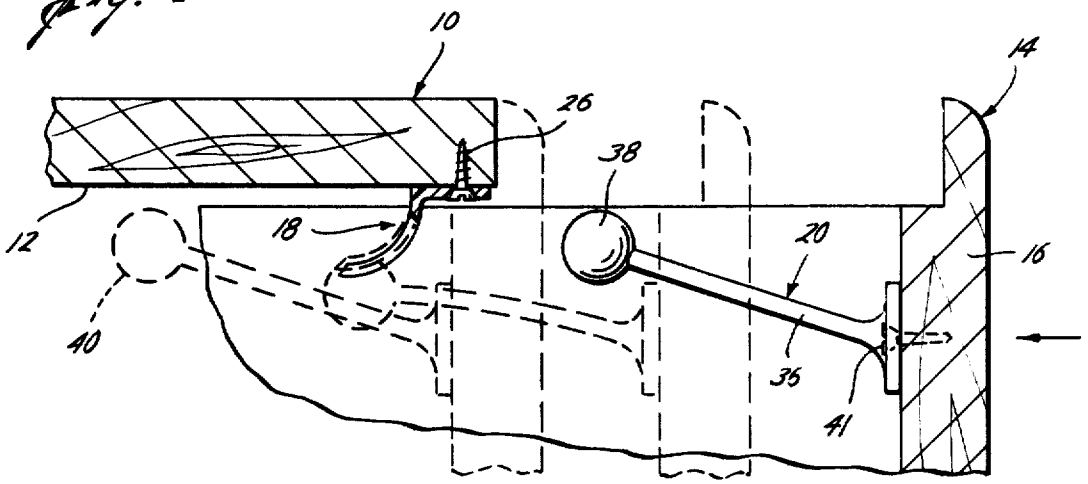


Fig. 2

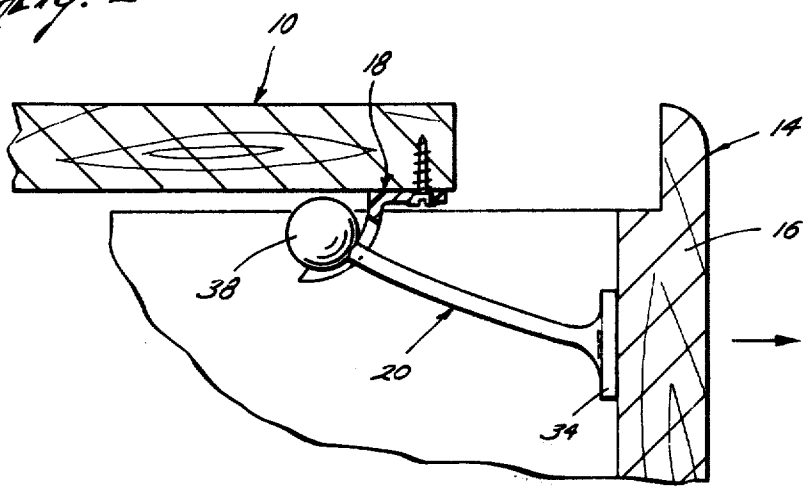
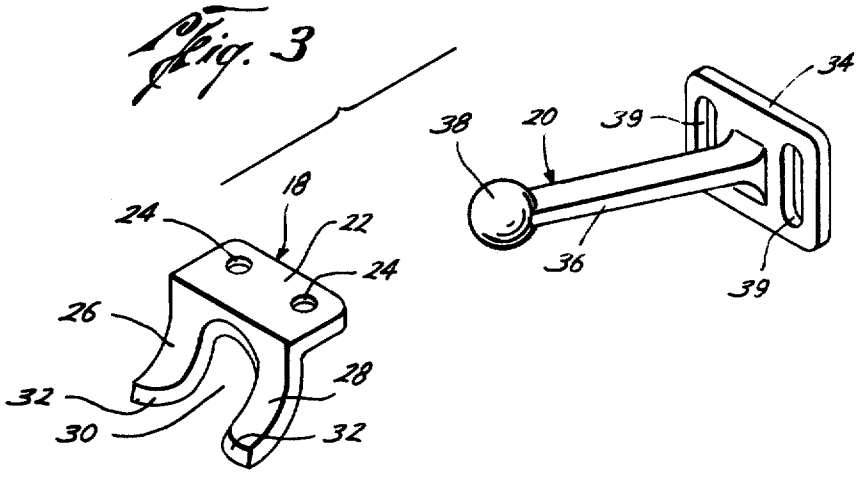


Fig. 3



LATCH ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to closure latches designed primarily for the purpose of keeping small children out of various drawers of cabinets around the home.

2. Description of the Prior Art

Many closure latches have heretofore been devised for use on cabinet doors, drawers and other apparatus which are designed to allow partial opening of a drawer, door or the like, and which have a latch member which can be manually biased out of engagement to allow full opening of the drawer, door or the like. Examples of such latches are disclosed in U.S. Pat. Nos. 2,731,321 to Thompson, 2,765,208 to Bush, and 3,397,001 to Friedman.

Applicant is aware of the use of similar latches in many other environments, as for example, automobile hoods, automobile ashtrays, and building doors and windows. However, the latches disclosed in the aforesaid patents are believed to be the closest to the present invention.

SUMMARY OF THE INVENTION

According to the present invention a latching lug having a circular surface is mounted on a flexible arm and is used to engage parallel spaced-apart arcuate abutment portions of a stop so that the circular surface slides over the arcuate abutment portions upon closing of the closure member, and is engaged by the arcuate abutment portions upon opening of the closure member.

It is an object of this invention to provide a safety latch assembly which is dependable in preventing accidental opening of a closure but which is readily moved to a latching position with little stress on the elements.

It is another object of this invention to provide a safety latch assembly which, when in latched position, is moved more firmly into latched position by pulling on the closure.

Still another object is to provide a safety latch assembly in which both the stop and the latching lug are resilient, for improved ease of latching.

Another object is to provide a safety latch having a ball-shaped latching lug and a bifurcated stop for smoothness in latching action.

The accomplishment of these and other objects of the invention will become more apparent upon consideration of the following description of certain preferred embodiments and the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a vertical sectional view of one embodiment of the invention, shown installed on a drawer, with two operating positions thereof being shown in broken lines;

FIG. **2** is a vertical sectional view of the embodiment of FIG. **1**, showing that embodiment in the position that it assumes upon attempted opening of the drawer; and

FIG. **3** is an exploded view of the elements of the embodiment of the latch assembly shown in FIGS. **1** and **2**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. **1** shows a stationary member comprising a receptacle **10**, such as a kitchen cabinet or the like, having a drawer opening **12** formed therein, and a drawer assembly **14** designed to be slidingly received within the opening. The front of the drawer, closure member **16**, is designed to fit within the opening **12** to completely close the opening. The receptacle and drawer are provided with conventional guides (not shown) for supporting the drawer for movement into and out of the receptacle, so that the closure member may be moved to a closed position.

According to the present invention a stop member **18** is affixed to the receptacle **10**, inside the opening **12**, and a latch member **20** is fastened to the inside of the closure **16** and extends inwardly and upwardly from its point of connection with the closure, toward the stop member **18**.

As best seen in FIG. **3** the stop member comprises a base portion **22** having a plurality of screw holes **24** through which screws **26** may be positioned for fastening the stop member to the receptacle. The base portion, in the embodiment shown, is substantially flat, but has depending therefrom a pair of parallel spaced-apart arcuate abutment portions **26** and **28**. In the embodiment shown the arcuate abutment portions intersect the base portion at approximately a 90° angle and curve downwardly and away from the base portion through an arc which extends approximately 90° and which has a center approximately at the surface of the base portion. In the preferred embodiment this arc should extend at least 75°, but an arc longer than about 90° would usually be undesirable. In some applications, depending upon the proportions of the various elements, an arc as short as 45° might be used.

In the preferred embodiment shown in the drawing the two depending abutment portions have an opening **30** between them which is semi-circular in shape at its end adjacent the juncture of the abutment portions with the base, and which is wider at the depending ends of the abutment portions, the wider end of the opening being formed by curved surfaces **32** of the abutment portions curving away from each other.

In the preferred embodiment of the invention the stop member is made of a resilient plastic material, such as nylon or polypropylene, and is made in such proportions that it will deflect to some extent when engaged by the latch, as hereinafter described. However, such resiliency is not required for proper operation of the structure of this invention, and a rigid stop member made of any suitable material may be used without departing from the scope of this invention.

The preferred embodiment of the latch member shown in the drawing comprises a base portion **34**, a resilient arm **36** and a ball **38** on the end of the arm forming a latching lug. The base portion **34** has a plurality of screw slots **39** formed therein through which screws **41** may be positioned for fastening the latch member to the closure member **16**. The slots allow positioning of the latch to properly engage the stop. Instead of a ball, the latching lug may be of another shape having a circular surface, as for example, a cylinder having its axis extending horizontally and transversely of the arm **36**. The circular surface preferably has a radius substantially less than the radius of the arcuate abutment portions **26** and **28**. As previously noted, the arm **36** extends upwardly at an incline from the base portion **34**. The diameter of the ball is greater than the width of

opening **30,** and the thickness of arm **36** is less than the width of opening **30.**

The operation of the latching assembly of this invention during the closing of a drawer is illustrated in FIG. **1.** Thus, as shown in solid lines, when the closing operation begins, the ball **38** moves horizontally toward the stop **18.** Upon engagement with the arcuate surface of the stop **18,** the ball is biased downwardly against the resilience of the arm **36.** In the preferred embodiment of the invention the abutment members **26, 28** are also resiliently biased upwardly. As the drawer is closed further, the forces of engagement are more nearly at right angles to the axis of the resilient arm **36** and to the portion of the abutment portions adjacent the base **22** of the stop, so that relative movement of the latch and stop members is accomplished with less stress on the members. It will be appreciated that the ball **38** will engage the abutment portions **26** and **28** on their facing edges, so that as the ball moves to the left, as seen in FIG. **1,** the ball tends to slide through the opening **30,** until finally as the opening **30** widens the ball does pass through the opening. The resilient arm **36,** being less wide than the opening **30,** passes through the opening, and the drawer may then be completely closed, with the latch moving to the left to the position shown in broken lines at **40.**

Upon opening the drawer, the ball **38** is moved to the right until, being larger than the width of the opening **30,** it engages the abutment portions **26** and **28** so that the opening of the drawer is stopped. In the preferred embodiment of the invention the proportioning and positioning of the elements is such that the ball slides upwardly along the inner arcuate surface of the abutment portions **26** and **28,** to provide a more secure engagement of the latch and the stop.

To open the drawer it is merely necessary to reach inside with the fingers and push downwardly on the arm **36** until the ball **38** is disengaged from the stop. In the preferred embodiment, where a flexible stop is used, such disengagement is facilitated by the flexibility of the stop. Furthermore, the use of an opening **30** between the abutment portions which is wider at its open end increases the flexibility of the stop member at the end so as to make disengagement more easily accomplished.

Although preferred embodiments of the invention have been shown and described herein, numerous modifications and changes will readily occur to those skilled in the art. Accordingly, it is not desired to limit the invention to the exact construction shown and described and accordingly all modifications and equivalents falling within the scope of the appended claims are intended to be included within the invention.

I claim:

1. A latch assembly for use with a receptacle member having an access opening, a closure member, and means for supporting the closure member for movement along a predetermined path toward and away from said receptacle on the exterior thereof, said latch assembly releasably preventing more than minimum movement of said closure member from a closed position toward a fully opened position, said latch assembly comprising:

a stop member and a latch member,

said stop member comprising

a base portion, and

a pair of parallel, spaced-apart arcuate, resilient abutment portions depending from said base portion and extending over an arc of from about 45° to about 90°, the space between said abutment portions being greater at their depending ends than adjacent their point of attachment to the base portion, said latch member comprising

a base portion,

a resilient arm extending upwardly at an incline from said base portion, and

a latching lug with a circular surface on the end of said arm,

the diameter of said circular surface being greater than the space between said abutment portions and the width of said arm being less than the space between said abutment portions, and the radius of said circular surface being substantially less than the radius of the arc of the abutment portion whereby upon movement of said closure member toward said receptacle member said circular surface slides on and is cammed downwardly by said abutment portions until it passes the abutment portions, at which point the resiliency of the arm moves it upwardly into the space between the abutment portions, and whereby upon movement of said closure member away from said receptacle member the circular surface engages the arcuate abutment portions to stop such movement of the closure member.

2. A latch assembly as defined by claim **1** wherein said latching lug is a ball.

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