

- [54] **SAFETY LOCKING DEVICE**
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- [22] Filed: **Apr. 11, 1974**

- [21] Appl. No.: 459,880

- [52] U.S. Cl. 292/174; 292/150; 292/277;
292/302; 292/DIG. 65; 312/333

- [51] **Int. Cl.²** **E05C 17/08**

- [58] **Field of Search** 70/93; 292/150, 151, 174,
292/277, 302, DIG. 65; 312/333

- [56] **References Cited**
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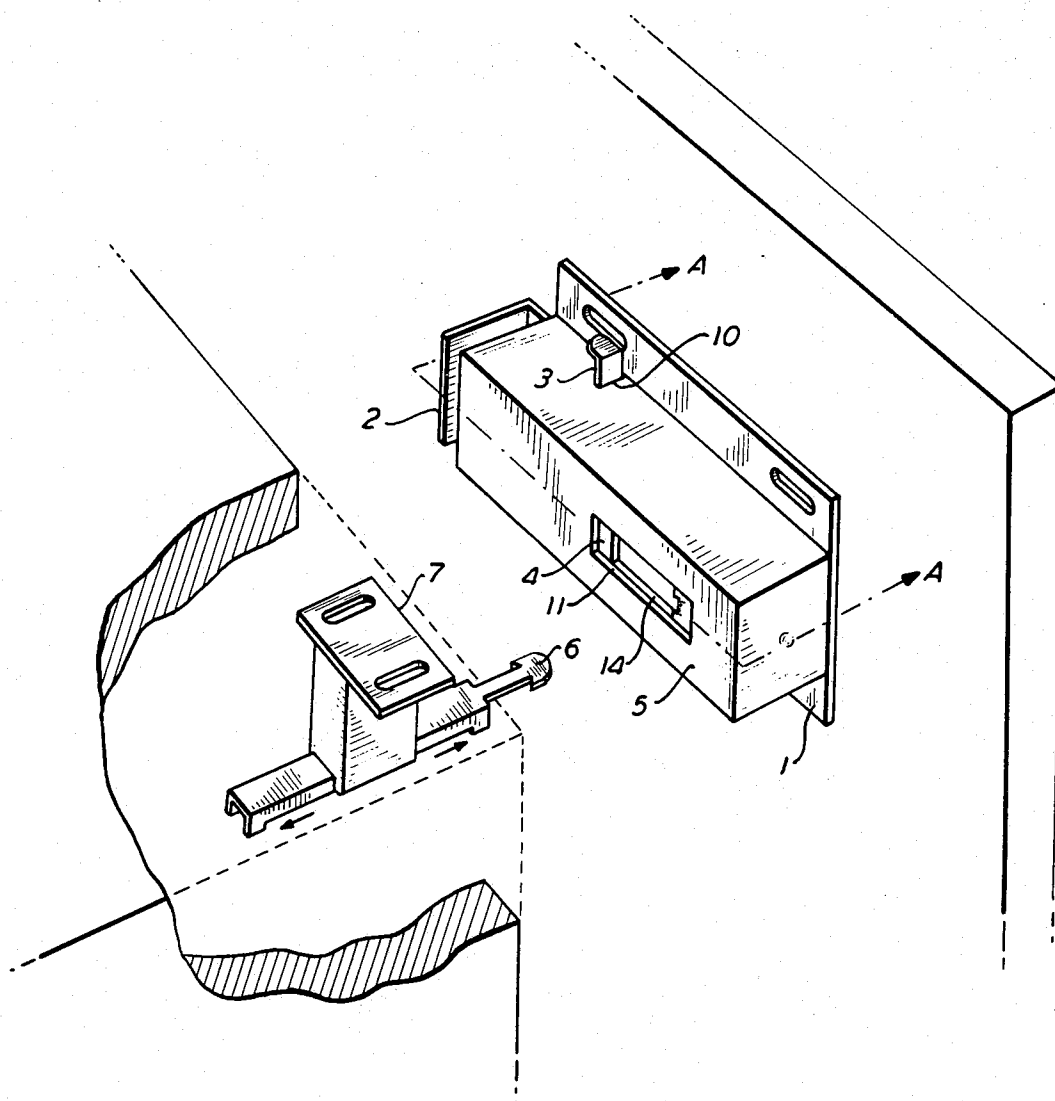
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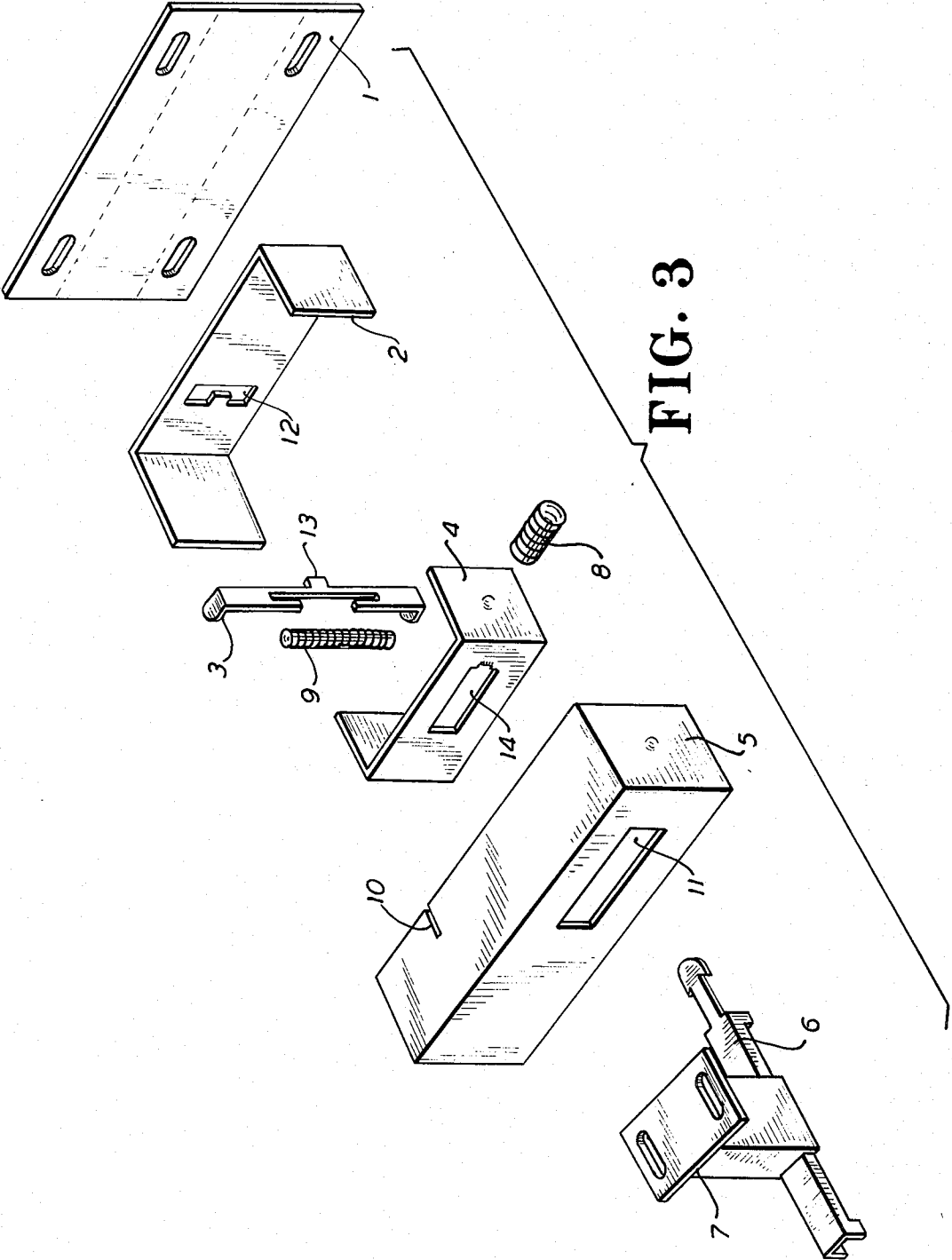
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[57] **ABSTRACT**

A safety locking device for enclosures having doors, panels and drawers as entrance means comprising a detent mechanism attached to the enclosure body and a safety latch mechanism attached to the movable enclosure entrance means arranged such that the detent mechanism coacts with the safety latching mechanism to permit the enclosure entrance means to be opened partially, but no further until the safety latching mechanism is properly manipulated from the outside of the enclosure once the mechanism is exposed by partial opening.

1 Claim, 3 Drawing Figures





SAFETY LOCKING DEVICE

BACKGROUND OF INVENTION

Numerous accidental poisonings and other types of injuries occur to infants because they gain access to dangerous drugs and chemicals which are stored in and around the average dwelling. Considerable effort has been made to prevent children from gaining access to containers of various sorts by making the container caps difficult to open. The object of this invention is to prevent infants from gaining access to dangerous chemicals and drugs rather than to prevent their opening containers once access is accomplished.

The prior art teaches that latch members can be arranged to be sufficiently exposed by partial opening of a drawer or door so that the latch member may be manually sprung to bring a hook member out of engagement with a pin member thereby permitting the drawer or door to be fully opened. U.S. Pat. Nos. 3,381,992 and 3,397,001 show two variations of that concept. Unfortunately, all such prior art creates a hazard in that the latching member protrudes into the working space of the drawer or door poised to catch on clothing or inflict injury to the user, unless unusual care is taken to avoid the projecting latch member. Also, such prior art contends that small children are not capable of manipulating the latch members. This contention is dubious in view of the simple nature of the prior art latches.

A primary object of this invention is to provide a safety locking device which is not hazardous to operate and which has a truly child-proof safety latching mechanism.

SUMMARY OF INVENTION

Using this invention on medicine cabinets and chemical and other dangerous item storage enclosures involves opening the enclosure entrance means until the invention restrains further opening. This partially opened position would be insufficient for an infant to gain access to the enclosure but would be sufficient for an adult to reach into the partially opened enclosure and to manipulate the safety latching mechanism of this invention, thereby releasing the locking device to access the enclosure. When the enclosure is reclosed, the safety locking device of this invention automatically resets itself for another cycle.

The invention comprises two mechanisms which constitute the safety locking device. The first mechanism is a safety latching mechanism and the second is a safety detent mechanism. The detent mechanism is firmly affixed to the inside of the enclosure and is arranged to coact with the latching mechanism which is affixed to the opening portion of the enclosure, such as a door, drawer or panel. In sample operation using a door, closing of the door engages the barb portion of a slidable detent member in the detent mechanism with a floating slide latch member of the latching mechanism affixed to the door. As the door and latching mechanism combination is opened, the detent slidable member barb remains engaged with the latching mechanism floating slide latch and such engagement causes the detent slidable member to slide until its full length is extended. At this point the door is partly opened but can open no further until an inter-locking slide latch and safety inter-lock are manipulated in a predetermined manner by a person who reaches through the partially opened door to access the safety locking device. Once the

safety inter-lock and inter-locking slide latch are properly manipulated, the detent slidable member barb will be disengaged from the floating slide latch of the latching mechanism and the door will be free to open to its full extent. Upon reclosure of the door the detent slidable member barb re-engages the latching mechanism floating slide latch and the aforementioned process must be repeated to reaccess the enclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of the safety detent mechanism and the safety latching mechanism in a drawer enclosure application with the safety locking device open and the drawer extended.

FIG. 2 is a perspective view of the safety latching mechanism of FIG. 1, shown in cross section along Plane A—A of FIG. 1.

FIG. 3 is a disassembled perspective view of the safety locking device.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring now in detail to the various views of the drawings, FIG. 1 shows a cut away of an open drawer. The safety latching mechanism is firmly affixed to the drawer by means of back plate 1 and the safety detent mechanism is firmly attached to the drawer housing by means of detent housing 7. Cover 5 of the latching mechanism encloses numerous coacting members. Cover 5 is firmly affixed to back plate 1. Interlocking slide latch 2, safety inter-lock 3, and floating slide latch 4, are more fully described in the description of subsequent drawings. Detent 6, which is housed in detent housing 7 is slidably engaged therewith to permit motion as shown by the arrows adjacent to detent 6. Said detent 6 has stops to prevent disengagement from detent housing 7 and can be arranged with bias means such as a spring to return detent 6 to a position with its barb end retracted.

FIG. 2 shows a cross section of the safety latching mechanism of FIG. 1 with cross sectioning along Plane A—A. In this figure, cover 5 and back plate 1 form an enclosure for various sliding members including interlocking slide latch 2 which projects beyond the end of cover 5 in an L shape such that it may be manipulated from outside by an individual wishing to open the safety locking device. Arrows indicating the direction of motion of the inter-locking slide latch are shown at its portion which projects beyond the cover 5. Safety inter-lock 3 is arranged with a projecting key portion shown in FIG. 3 and a safety interlock spring 9, such that when no external force is applied to safety inter-lock 3, spring 9 forces it to a normal position which locks interlocking slide latch 2 thus preventing said inter-locking slide latch 2 from moving in any direction. However, when safety inter-lock 3 is caused to travel transversely as shown by its associated arrow, sufficient transverse motion enables a simultaneous application of force on inter-lock slide latch 2 to cause translation of inter-lock slide latch 2 such that floating slide latch spring 8 is compressed. By virtue of the interconnection of interlocking slide latch 2 and floating slide latch 4 adjacent floating slide latch spring 8 translation of interlocking slide latch 2 results in an equal translational displacement of floating slide latch 4. Displacement of floating slide latch 4 thereby disengages the barb of detent 6 from the mating portion of floating slide latch opening 14, thereby releasing the safety latch mechanism from the safety detent mechanism.

FIG. 3 shows cover latch opening 11 through which the barb of detent 6 projects and engages the edge of floating slide latch opening 14. In addition, safety inter-lock notch 10 on cover 5 is shown, but its counterpart on the symmetrically opposite side of cover 5 is not shown. For the first time safety inter-lock 3 is shown in complete detail, including safety inter-lock key projection 13 which engages inter-locking slide latch key opening 12 of inter-locking slide latch 2. From these figures it should be apparent that when force is applied to safety inter-lock 3 in either direction and subsequent force is applied to inter-locking slide latch 2 in a direction such that floating slide latch spring 8 is compressed, then floating slide latch 4 disengages the barb of detent 6 and enables the safety locking mechanism to be freely moved away from the safety detent mechanism. When external force is no longer applied to safety inter-lock 3 and inter-locking slide latch 2, floating slide latch spring 8 urges inter-locking slide latch 2 to resume its initial position. When inter-locking slide latch 2 is repositioned by spring 8, safety inter-lock 3 in turn is urged to resume its initial locking position by safety inter-lock spring 9 which forces against safety inter-lock 3 and the inside wall of cover 5 adjacent safety inter-lock notch 10. When spring 8 and spring 9 have repositioned the safety latching mechanism, it should be observed that floating slide latch 4 is again ready to engage the barb of detent 6.

A preferred embodiment of this invention comprises safety detent means attached to the enclosure arranged to coact with safety latching means attached to the openable portion of said enclosure, which coaction permits partial opening of the enclosure, unlocking means arranged as a portion of said safety latching means, which unlocking means is reachable from outside the enclosure through said partial opening, whereby predetermined manipulation of said unlocking means disengages the safety detent means and permits complete opening of the enclosure access means.

The safety latching means comprises a backplate portion arranged to securely attach to the openable portion of the enclosure; a cover means securely attached to said backplate portion; an interlocking slide latch member having a latch key opening therein and which interlocking slide latch member is arranged within said cover means with a portion thereof extending beyond said cover means and arranged to be manipulable from the outside of said cover means; at least one safety interlock member arranged to coact with the latch key opening portion of said interlocking slide latch member enclosed within said cover means with a manipulable portion of said safety interlock member arranged outside of said cover means; a floating slide latch member arranged within said cover means having an opening therein for receiving and engaging said slidable detent member which floating slide latch member coacts with a portion of said interlocking slide latch member such that a predetermined manipulation of both the safety interlock member and the interlocking slide latch member permits the interlocking slide latch member to coact with said floating slide latch member to release engagement of said floating slide latch member from said detent member; and bias means arranged to return the safety interlock member, interlocking slide latch member and the floating slide latch member to their initial coacting positions to effectuate resetting of the safety latching mechanism.

The unlocking means comprises at least two interlocking members which must be manipulated in a predetermined manner before said unlocking means disengages the safety detent means from the safety latching means.

The safety detent means comprises a detent housing means arranged to securely attach to the enclosure and a slidable detent member supported by said detent housing and arranged to slide back and forth through said detent housing with stops on said slidable detent member to limit its sliding motion to within a predetermined distance relative to said detent housing means.

The slidable detent member has one end arranged in the shape of a barb to engage the safety latching means attached to the openable portion of the enclosure and a bias means is arranged to return the slidable detent member to a position such that its barb end is retracted.

The foregoing illustrations and descriptions encompassed the preferred embodiment of this invention; however, it is to be understood that there is no intention to limit the invention to such embodiment. Apparent variations and modifications may be made without departing from the underlying concept and scope of this invention.

What is claimed is:

1. In a safety locking device for restraining the opening of enclosures having doors, drawers, panels and the like, having a safety detent means attached to the enclosure arranged to coact with the safety latching means attached to the openable portion of said enclosure, which coaction permits partial opening of the enclosure, unlocking means arranged as a portion of said safety latching means, which unlocking means is reachable from outside the enclosure through said partial opening, whereby predetermined manipulation of said unlocking means disengages the safety detent means and permits complete opening of the enclosure access means, the improvement wherein the safety latching means comprises a backplate portion arranged to securely attach to the openable portion of the enclosure; a cover means securely attached to the said backplate portion; an interlocking slide latch member having a latch key opening therein and which interlocking slide latch member is arranged within said cover means with a portion thereof extending beyond said cover means and arranged to be manipulable from the outside of said cover means; at least one safety interlock member arranged to coact with the latch key opening portion of said interlocking slide latch member enclosed within said cover means with a manipulable portion of said safety interlock member arranged outside of said cover means; a floating slide latch member arranged within said cover means having an opening therein for receiving and engaging said slidable detent member which floating slide latch member coacts with a portion of said interlocking slide latch member such that a predetermined manipulation of both the safety interlock member and the interlocking slide latch member permits the interlocking slide latch member to coact with said floating slide latch member to release engagement of said floating slide latch member from said detent member; and bias means arranged to return the safety interlock member, interlocking slide latch member and the floating slide latch member to their initial coacting positions to effectuate resetting of the safety latching mechanism.

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