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CABINET ANTI-LOCK MEANS

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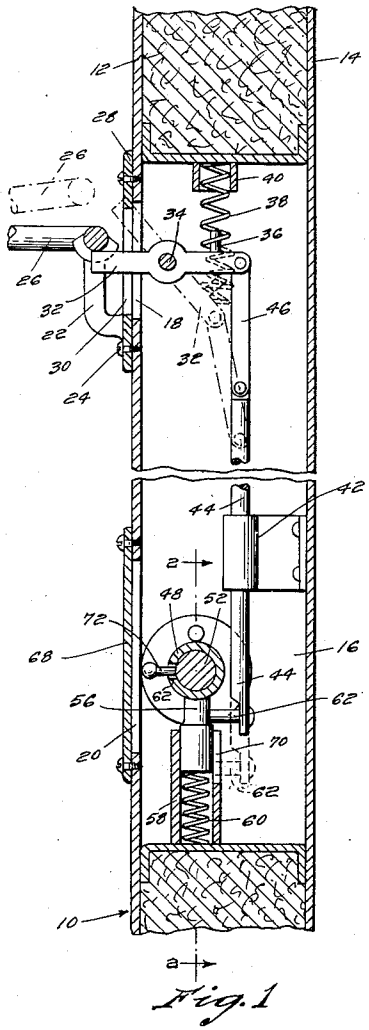


Fig. 1

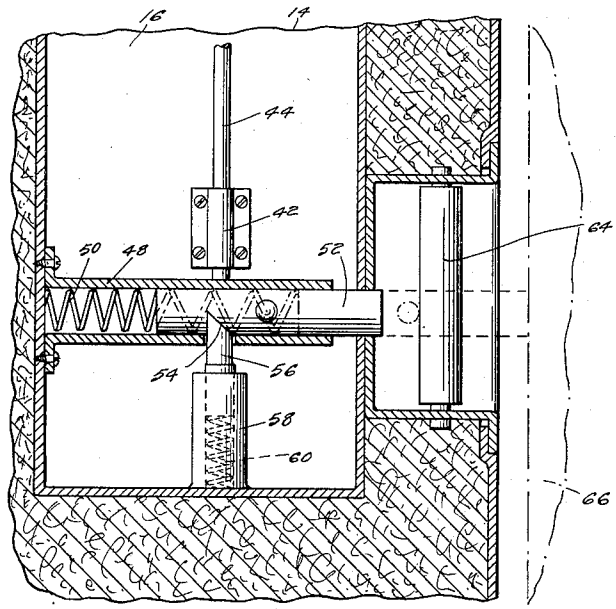


Fig. 2

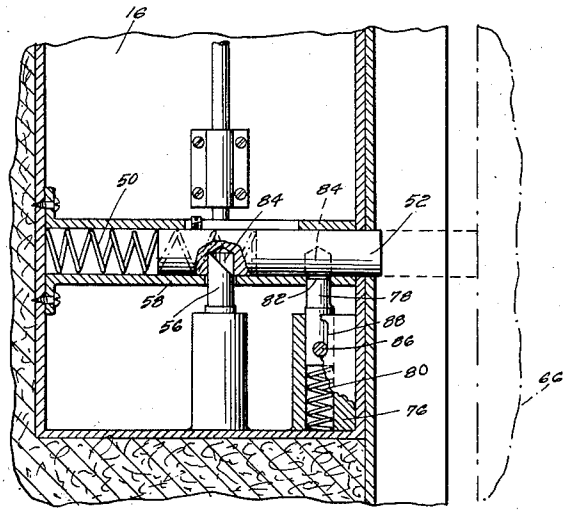


Fig. 3

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CABINET ANTI-LOCK MEANS

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Original application November 8, 1954, Serial No. 467,486, now Patent No. 2,811,119, dated October 29, 1957. Divided and this application March 11, 1957, Serial No. 645,067

3 Claims. (Cl. 109—63.5)

This invention relates generally to anti-lock devices, and more specifically, to means for preventing the inadvertent closing and/or latching of a door to a cabinet or the like when someone is within said cabinet.

This application is a division of my copending application entitled "Safety Means for Refrigerators, Etc.," Serial No. 467,486, filed November 8, 1954, now Patent No. 2,811,119, and actually constitutes the species disclosed in my said copending application in Figs. 5 and 6 therein.

A primary object of my invention is the provision of an anti-locking device for cabinets such as refrigerators, iceboxes, and the like, which will prevent accidental deaths due to suffocation of children who may enter such cabinets during the course of play.

Another object of the present invention is the provision of an anti-locking device for cabinets or the like which embodies a simple, inexpensive means of insuring that the box will close and lock when in transit from store to home and when in use in the home, but which, upon being emptied of its contents, including its removable shelves, will prevent the cabinet or the like from locking or closing, whereupon it will be impossible for a child to become entrapped therein.

A further object of the instant invention is the provision of an anti-locking device of the character described which may be built into a refrigerator, icebox, or the like and which will automatically prevent the door from closing and/or locking upon the removal of one of the shelves of the refrigerator, without which removal sufficient space is not afforded therein for the entrance of a child.

Still another object of my invention is the provision of an anti-lock device of the above character which is durable and effective in use, but which at the same time is relatively simple and economically feasible to manufacture.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated by me for carrying out my invention:

Fig. 1 is a fragmentary vertical sectional view showing the triggering mechanism which forms a part of my invention;

Fig. 2 is a section taken on line 2—2 of Fig. 1 showing anti-lock means for preventing latching of the cabinet door; and

Fig. 3 is a fragmentary sectional view showing a slightly modified form of anti-lock means wherein the cabinet door is prevented from closing.

It has been found desirable to provide means for preventing the inadvertent closure of a cabinet door or the like when someone is inside the cabinet. More specifically, refrigerating boxes and the like are normally of the self-latching type and most generally are provided with no means for the opening thereof from within

the box. Accordingly, it not infrequently happens that someone finds it necessary to go inside such a box, and in such a situation the possibility exists that the door may close accidentally or else it may be pushed closed by another person who happens by and is ignorant of the fact that someone is inside the box. No matter how it happens, however, the closing of the door in a situation such as this can have disastrous consequences for the person unknowingly trapped within. Furthermore, it is a well-known fact that old, discarded iceboxes and the like form an attractive nuisance for small children, who are inclined to climb inside during the course of their play. If the door accidentally happens to close, suffocation is a likely consequence should the child not be discovered in time.

Heretofore, attempts directed at the overcoming of this problem have all taken the approach of providing means within the cabinet for unlatching the door. Such attempts have proven largely unsuccessful, however, due to the fact that the provision of such means destroys to a large degree the air-tightness of the box, an important feature where refrigerating boxes are concerned. Furthermore, nothing has been developed that is foolproof in operation or practical to put in use, particularly in the situation where a child is entrapped since the darkness within the cabinet, and the normal panic which attends such a situation, renders unlikely the possibility of the child effectively actuating some type of internal mechanism for providing his release.

The instant invention takes an entirely different approach to the problem. Instead of providing latching means within the cabinet, I have provided means for automatically preventing the closing and/or latching of the cabinet door responsive to the removal of one of the cabinet shelves, without which removal sufficient space is not afforded within the cabinet for the entrance of even a small child. While it will be understood that the instant invention is broadly applicable to any type of enclosed cabinet structure having removable shelves therein, its prime utility is in connection with refrigerators, iceboxes, and the like, and the following description is directed to such a use.

Referring now to the drawings, there is shown a refrigerator side wall **10** comprising inner and outer plates **12** and **14**, respectively, between which there is provided a hollow compartment **16**. The inner wall **12** is provided with upper and lower openings **18** and **20**, respectively, it being noted that the opening **18** is adjacent a bracket **22** secured to inner wall **12** as at **24** for supporting the uppermost refrigerator tray **26** in conventional and well-known detachable fashion. A cover plate **28** is secured across the opening **18** and includes an opening **30**, through which extends a toggle bolt **32** rotatably mounted on a shaft **34**. The inner end of the toggle bolt **32** fixedly carries a pin **36** which receives therearound one end of a coil spring **38**, the other end of which is received within a cylinder **40** extending downwardly from the top of the hollow compartment **16**. As will be obvious, the spring **38** tends to urge the bolt **32** in a clockwise direction about the shaft **34** (viewing Fig. 1). However, the bolt **32** will normally be retained in a substantially horizontal position against the action of spring **38** by means of the weight placed thereon by the uppermost tray **26** when the latter is in its mounted, operative position.

A bearing member **42** is mounted on the inner face of the outer wall **14** and slidably receives therethrough an elongated rod **44**. As will be noted, the upper end of the rod **44** is pivotally connected to a link **46** which in turn is pivotally connected to the inner end of the toggle bolt **32**, whereupon clockwise rotation of said toggle bolt resulting from the release of the inner end

thereof by tray 26 and the resultant clockwise torque applied by spring 38, will cause downward movement of the elongated rod or shaft 44 through its bearing 42.

A cylinder 48 is suitably secured at the lower end of the hollow compartment 16 and houses a spring 50, which cooperates with a shaft or bolt 52 slidably received within said cylinder, whereupon said bolt is normally urged outwardly. As will be apparent, the bolt 52 is provided with a notch 54 which is adapted to receive upwardly therein the correspondingly shaped upper end of a plunger 56 slidable vertically within a cylinder 58 suitably mounted at the bottom of compartment 16, the plunger 56 being normally biased into its upward position within the notch 54 by means of a spring 60. Thus, while the afore-described spring 50 tends to urge bolt 52 outwardly, said bolt will lock against such outward displacement by the locking plunger 56. However, a laterally extending pin 62 is fixedly carried by the plunger 56, the outer end of said pin being connected to the lower end of the rod or shaft 44.

In operation, upon the removal of the tray 26 by the child or the like to permit his body to be received within the refrigerator, the spring 38 will rotate the bolt 32 in a clockwise direction, thereby moving the rod or shaft 44 downwardly, which in turn causes the plunger 56 to move downwardly against the action of its spring 60, whereby the upper end of said plunger becomes disengaged from the notch 54, permitting outward displacement of the bolt 52 to the dotted-line position shown in Fig. 2, in which position said bolt will interfere with the conventional refrigerator latch mechanism 64 so as to prevent operation of the latter upon closure of the door 66. A cover plate 68 is secured across the opening 20 and may be removed when it is desired to reset the mechanism. It will be noted that without removal of plate 68, once the bolt 52 has been sprung, it will be impossible for the door 66 to latch closed. As will be noted, the cylinder 58 is provided with a slot 70 for receiving therewithin the pin 62.

A pin 72 is fixedly carried by the bolt 52 and extends outwardly therefrom through an elongated slot 74 provided in cylinder 48, said pin 72 being adapted to engage the refrigerator latch 64 whereby to limit the outward displacement of the bolt 52 from its cylinder.

Referring now to Fig. 3, a slightly modified form of my invention is shown wherein instead of interfering with the refrigerator latch mechanism to prevent operation of same, the bolt 52 is maintained in its outwardly displaced position by positive locking means whereupon refrigerator door 66 is prevented from being completely closed. It will be understood that in this form of my invention the exact same structure disclosed and described in connection with Figs. 1 and 2 supra is employed, but that additional means are provided for locking the plunger 52 in its door blocking position. Said additional means comprise still another cylinder 76 mounted at the bottom of compartment 16 adjacent the front portion thereof, said cylinder 76 being in alignment with the afore-described cylinder 58, whereupon it underlies the bolt or plunger 52. Within the cylinder 76 there is provided a slidable latch 78 normally urged upwardly by means of spring 80. The upper edge of latch 78 is slightly chamfered as at 82 whereupon said latch will be adapted to resiliently snap into the opening 84 provided in bolt 52, it being understood that said opening corresponds to the notch 54 shown in Fig. 2.

Thus, upon actuation of the triggering mechanism by removal of the tray 26, the bolt or plunger 56 will be moved downwardly against the action of its spring 60 in the manner aforedescribed, whereupon the bolt 52 will be outwardly displaced by means of its spring 50. As the bolt 52 moves outwardly, the latch 78 makes spring-pressed engagement with its under surface until said latch snaps into the opening 84, whereupon the bolt 52 will be positively locked in its outwardly displaced position. In order to reset the mechanism, latch 78 may be provided with a laterally extending pin 86 extending outwardly through a slot 88 provided in the wall of cylinder 76, whereupon removal of afore-described cover plate 68 readily enables the latch 78 to be manually retracted to its inoperative position, whereupon the bolt 52 may be forced inwardly until engaged and maintained by plunger 56.

As aforementioned, the only practical difference which exists between the two forms of my invention resides in the fact that in the first form the door may be closed, but the latch mechanism is prevented from functioning, while in the second form, the door is positively blocked against complete closure.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except in so far as indicated by the scope of the appended claims.

I claim:

1. An anti-locking device for refrigerator cabinets and the like having a door movable from an open to a closed position, a hollow portion in one of the cabinet walls contiguous to said door, said hollow portion being defined by inner and outer walls, an opening at the upper portion of said inner wall, a removable tray within said cabinet, a pivotally mounted member extending outwardly through said opening with the outer end thereof in engagement with the undersurface of said tray, spring means normally urging said member outer end upwardly, an elongated rod mounted within said hollow portion for vertical sliding movement, link means pivotally connecting the upper end of said rod with the inner end of said member, whereupon removal of the tray causes said member to rotate about its pivot so as to move said rod downwardly, and bolt means adjacent the bottom of said hollow portion movable from a retracted, non-operative position to an extended position in which the door is prevented from latching closed, means biasing said bolt to said extended position, and means associated with the lower end of said rod engageable with said bolt for releasably retaining it in its said retracted position, said retaining means being disengaged from the bolt when the rod has been moved downwardly.

2. An anti-locking device for refrigerator cabinets and the like having a door movable from an open to a closed position, a hollow portion in one of the cabinet walls contiguous to said door, said hollow portion being defined by inner and outer walls, an opening at the upper portion of said inner wall, a removable tray within said cabinet, a pivotally mounted member extending outwardly through said opening with the outer end thereof in engagement with the undersurface of said tray, spring means normally urging said member outer end upwardly, an elongated rod mounted within said hollow portion for vertical sliding movement, link means pivotally connecting the upper end of said rod with the inner end of said member, whereupon removal of the tray causes said member to rotate about its pivot so as to move said rod downwardly, bolt means adjacent the bottom of said hollow portion movable from a retracted, non-operative position to an extended position in which the door is prevented from latching closed, means biasing said bolt to said extended position, movable means releasably retaining said bolt in said retracted position, and means interconnecting said movable means and said rod whereby downward movement of the latter actuates the former to release said bolt for movement to its said extended position.

3. An anti-locking device as set forth in claim 2 further comprising means automatically operable for locking said bolt in its extended position.

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