

[54] SAFETY LATCH FOR BOXES

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[58] Field of Search 220/55 H, 55 P, 57, 55 Y, 220/55 K; 24/224 SS, 224 PS, 224 LS; 312/333, 215, 265; 292/80, 83, 87, 85, 88; 339/95 D; 206/1.9

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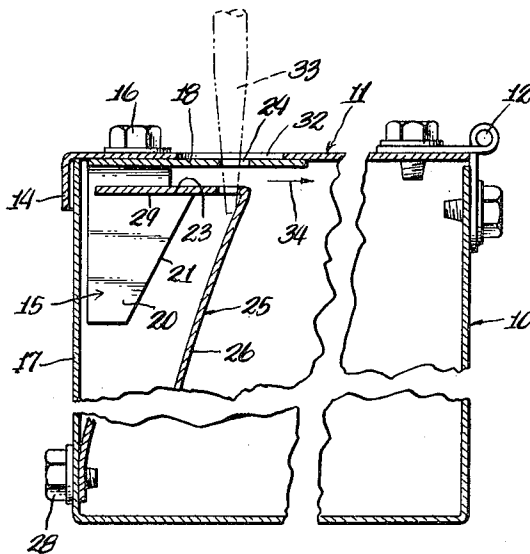
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[57] ABSTRACT

The combination of a box and a cover having hinge connection to one side of the box. A bracket is secured to the inside of the cover opposite the hinge connection, and a spring latch is secured to the inside of the box in position for interengagement with the bracket. The latch engages the bracket when the cover is in box-closing position to prevent the cover from opening. The bracket and latch have aligned openings and the cover has an opening through which a blade may be disposed for insertion into the aligned openings. Prying action of the blade disengages the latch from the bracket so that the cover may be swung to open position.

6 Claims, 4 Drawing Figures



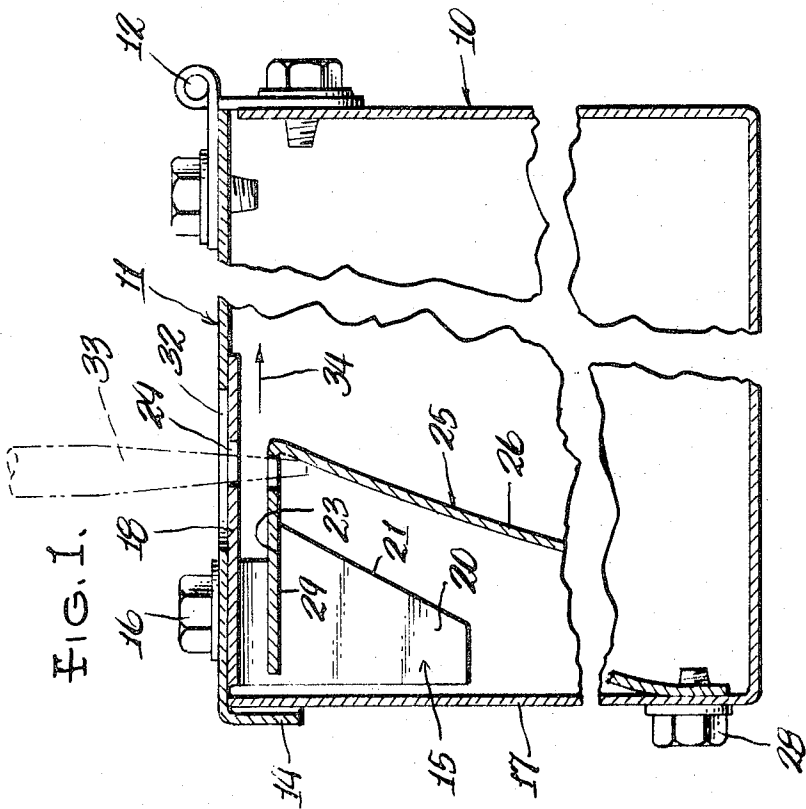
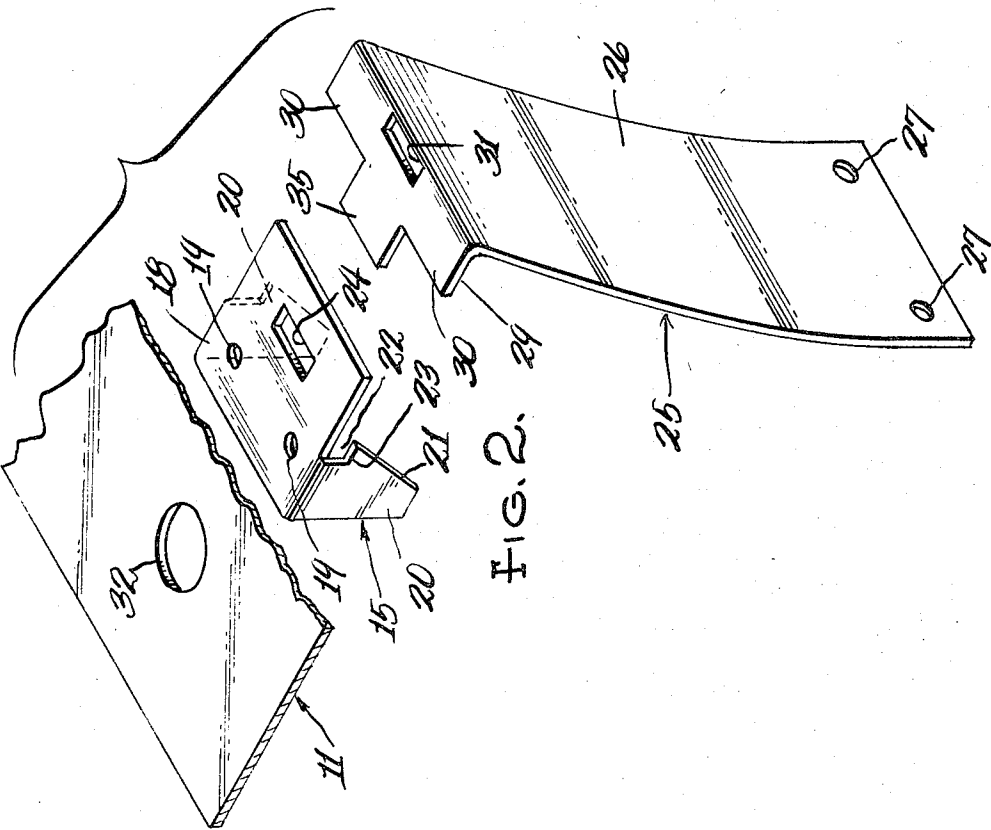


FIG. 4.

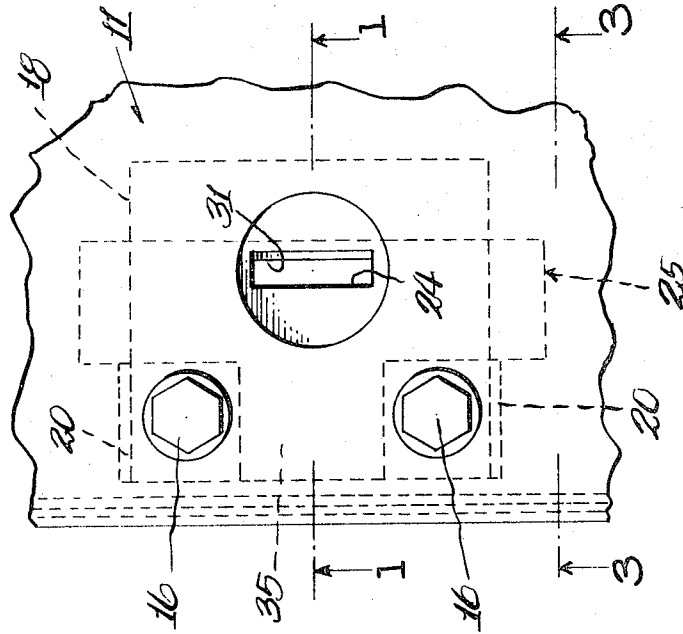
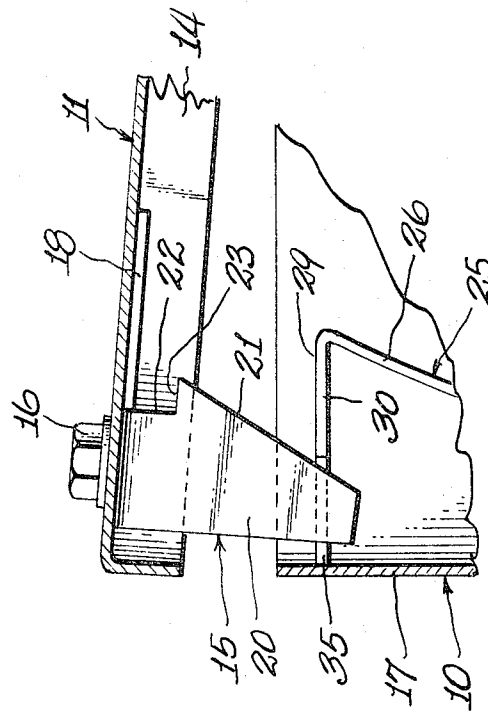


FIG. 3.



SAFETY LATCH FOR BOXES

BACKGROUND AND SUMMARY

Safety requirements dictate a need for a box that cannot be freely entered. This is particularly true in cases where the box contains electrical equipment and controls since free entry in a control box may not only create a safety hazard because of electrical shock, but also may result in damage to controls or apparatus regulated by the controls if an inexperienced person has free access to the box. Although the present invention is particularly applicable to electrical control boxes, it may also be applied to medicine chests or other boxes where free entry is undesirable.

The prior art discloses inside latches for a box and hinged cover but, insofar as I am aware, such latches may be operated by a person's finger from the exterior of the box and thus the safety feature is considerably diluted. Other latches of the prior art, wherein a separate tool is required to unlatch parts, are complicated and unreliable.

My invention makes it necessary to utilize a separate tool to disengage the latch and, in a preferred form, such tool may be an ordinary screw driver blade since the need to get into the box may sometimes become urgent and an authorized maintenance man always carries a screw driver.

Briefly, the latch parts consist of a bracket secured to the inside of the cover and a spring latch carried by the inside of the box, the parts automatically engaging when the cover is moved to box-closing position. The latch parts have aligned openings and the cover has an opening through which a screw driver blade may be disposed for insertion into the aligned openings. Proper prying action of the screw driver blade will move the spring latch away from engagement with the bracket to permit the cover to be opened.

DESCRIPTION OF THE DRAWINGS

In the drawings accompanying this specification and forming a part of this application there is shown an embodiment which my invention may assume, and in these drawings:

FIG. 1 is a broken sectional view through a box and cover, illustrating the preferred embodiment of my invention, the view corresponding to the line 1—1 of FIG. 4,

FIG. 2 is a perspective view of the latch components and a fragmentary view of the cover,

FIG. 3 is a fragmentary sectional view corresponding to the line 3—3 of FIG. 4, and showing the cover partly open, and

FIG. 4 is a fragmentary top plan view of a portion of the structure shown in FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a rectangular box 10 and a cover 11 hinged at 12 to one side of the box. The box and cover may be formed of any suitable rigid material and in the case of a box for electrical controls, the parts are preferably made of sheet metal. As seen in the drawing, the cover preferably has a side lip 14 surrounding at least three sides of the box to exclude dust and other foreign matter, and to prevent access to the latch mechanism.

Secured to the inside of the cover 11 is a bracket 15, which is preferably formed as a sheet metal stamping.

The bracket is rigidly secured to the cover in any suitable manner, such as by the self-threading bolts 16. As seen in FIG. 1, the bracket 15 is positioned adjacent to the wall 17 of the box, which wall is opposite to the one that has the hinge connection, and the bracket 15 and lip 14 have clearance with the wall 17 to permit the cover to be swung about the hinge.

The bracket 15 includes a flat body portion 18 having holes 19 for receiving the shanks of the self-threading bolts 16 so that the portion 18 is secured flatwise to the inside surface of the cover. Side wings 20 extend from the body portion 18 and have upwardly inclined marginal surfaces 21 which terminate short of the body portion at a recess 22 providing a shoulder 23. A rectangular opening 24 is also formed in the body portion, for a purpose to be explained.

A spring latch 25 is provided for cooperation with the bracket 15 and in the presently disclosed embodiment this takes the form of a plate 26 of suitable spring metal having its lower end provided with openings 27 to receive the shanks of self-threading screws 28. As shown in FIG. 1, the lower end of the spring plate is secured to the inside surface of the box wall 17. The free end 29 of the spring latch is bent transversely so as to lie substantially parallel to, but spaced from, the body portion 18 of the bracket 15. Marginal portions 30 of the free end 29 are adapted to fit within respective recesses 22 and overlie and engage respective shoulders 23 to prevent opening of the cover 11.

The free end 29 of the spring latch 25 has a rectangular opening 31 which, in the closed position of the cover is in alignment with the opening 24 of the bracket 15 although, as seen in FIGS. 1 and 4, the right hand margin of the opening 31 is offset relative to the right hand margin of the opening 24. The cover 11 is formed with an opening 32 through which a member, such as the blade 33 of a screw driver, may be disposed for insertion into the openings 24 and 31. Prying action of the blade 33 to move its lower end in the direction of the arrow 34 shown in FIG. 1, will move the free end 29 of the latch spring in a direction away from the bracket to withdraw the marginal portions 30 from the recesses 22 and thereby permit the cover to be opened.

The free end 29 of the latch spring 25 has a tongue 35 extending from the marginal portions 30 and this tongue is of a width so that it may be freely disposed between the wings 20 of the bracket. When the cover is open, as seen in FIG. 2, the terminal margin of the tongue 35 bears against the inside surface of the box wall 17 to limit the amount of movement of the free end 29.

The marginal surfaces 21 of the wings 20 form cam surfaces and are engageable with the margins of latch portions 30 when the cover is being moved to closed position so as to cam the free end 29 away from the bracket 15 until the cover is completely closed, at which time the portions 30 will ride off of the cam surfaces and snap into the recesses 22 and engage over the shoulders 23.

I claim:

1. The combination of a box having an open side and a cover to close said box side, a bracket secured to the inside of said cover, a latch secured to the inside of said box and having a movable portion underlying said bracket and resiliently urged in one direction to latching engage-

ment with a complementary portion of said bracket to prevent opening of said cover, said bracket and said latch having aligned openings, and said cover having an opening in line with said aligned openings for free passage of a blade, whereby said blade may be inserted through said cover opening with its tip within said latch opening and a blade portion spaced from said tip within said bracket opening and engageable with a defining surface thereof to provide a fulcrum point, tilting action of said blade in a predetermined direction causing said blade tip to be forced against a defining surface of said latch opening to move said latch movable portion in an opposite direction against the urging force and from latching engagement with said complementary portion of said bracket, thereby permitting opening of said cover.

2. The construction according to claim 1 wherein said cover has one side hinged to one side of said box, said bracket and said latch being respectively secured to said cover and said box at sides opposite the hinge connection.

3. The combination of a box having an open side, and a cover having hinge connection to one side of said box and adapted to swing to close said box open side, a bracket secured to the inside of said cover opposite said hinge connection and having a body portion closely underlying the cover inside surface, a latch secured to the inside of said box in position for cooperation with said bracket, said latch having a movable portion underlying said bracket body portion in closely spaced relation and resiliently urged in one direction to latching engagement with a complementary portion of said bracket to prevent opening of said cover,

said bracket body portion and said latch movable portion having aligned openings, and said cover having an opening in line with said aligned openings for free passage of a blade, whereby said blade may be inserted through said cover opening with its tip within the opening in said latch movable portion and a blade portion spaced from said tip within the opening in said bracket body portion and engageable with a defining surface of such opening to provide a fulcrum point, tilting action of said blade in a predetermined direction causing said blade tip to be forced against a defining surface of the opening in said latch movable portion to move the latter in an opposite direction against the urging force and from latching engagement with said complementary bracket portion, thereby permitting opening of said cover.

4. The construction according to claim 3 wherein said latch is formed as a leaf spring, having one end secured to said box and the opposite end formed with an angular extremity providing said movable portion of said latch.

5. The construction according to claim 4 wherein said bracket has a wing depending from said body portion, said wing being formed with a recess into which said angular extremity is spring pressed.

6. The construction according to claim 5 wherein said wing has an inclined surface engaged by said angular extremity in cam fashion as said cover is moved to closed position to move said angular extremity in said opposite direction, said recess being related to an end of said inclined surface so that as said angular extremity leaves said end it is quickly spring-pressed in said one direction to enter said recess.

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