A safety latch for picnic coolers is provided which permits the door of the cooler to be unlatched when pressure is applied to the door from inside the cooler. The latch assembly includes a latch rotatable between locking and unlocking positions which includes a keeper plate which is engageable with a strike for maintaining the door closed when the latch is in the locking position. The stroke is formed of flexible and resilient material and includes a shank portion extending generally parallel to the side wall on which the latch is mounted and a foot portion which extends generally laterally outwardly from the shank portion. The keeper plate extends laterally inwardly to engage the foot portion when the latch is in the locking position to prevent inadvertent opening of the door. When a predetermined force is applied to the interior of the door, the shank portion flexes inwardly to release the foot portion from the keeper plate to permit the door to swing open. When the door opens, the resilient shank portion returns to its unflexed position, and the foot portion is engageable with the keeper plate to prevent the door from closing until the latch is moved to the unlocking position.
This invention relates to a latch assembly for coolers, and, more particularly, to a pressure-releasing latch assembly which permits the door of the cooler to be opened from the inside and prevents reclosing of the door until the latch is moved to the unlocking position.

Any enclosure having a door which can be opened only from the outside presents a hazard, particularly to children. For example, many unfortunate accidents have occurred when children have crawled into refrigerators and the door has closed behind them. Although some safety latches have been provided for refrigerator doors which permit these doors to be opened from the inside, these latches are generally not suitable for use with smaller containers such as picnic coolers because of relative expense, size, or the like.

A safety latch should hold the door securely closed and prevent inadvertent opening thereof and should also permit the door to be opened by a relatively small force applied to the inside of the door. For example, most children who might become locked within a cooler can exert a force of at least about ten pounds against the door, and it is desirable that the latch release the door when such a force is applied. It is also desirable to provide means for preventing the door from reclosing after the safety latch is released to permit the child to escape the enclosure without further difficulty.

SUMMARY

The invention provides a safety latch for use with coolers which permits the door of the cooler to be opened by a relatively small force applied to the inside of the door and which prevents the door from reclosing until the latch is first moved to the unlocking position. The latch assembly includes a flexible and resilient strike which securely holds the door closed and prevents inadvertent opening thereof but which can readily flex away from the keeper of the latch assembly to permit the door to be opened from the inside. When the door opens, the resilient strike returns to its original position and is engageable with the keeper to prevent the door from closing. When it is desired to relock the door, the keeper is moved to the unlocking position to permit the door to close and is then returned to the locking position.

DESCRIPTION OF THE DRAWINGS

The invention will be explained in conjunction with an illustrative embodiment shown in the accompanying drawings, in which:

FIG. 1 is a perspective view of a picnic cooler equipped with the inventive latch assembly;
FIG. 2 is an enlarged fragmentary view of FIG. 1 showing the latch being moved to the unlocking position;
FIG. 3 is a perspective view of the strike;
FIG. 4 is a fragmentary transverse sectional view of the cooler taken through the latch assembly;
FIG. 5 is an enlarged fragmentary view of a portion of FIG. 4;
FIG. 6 is a view similar to FIG. 5 showing the top being opened by a force applied to the inside of the top;
FIG. 7 is a view showing the top swinging open after the strike has been disengaged from the latch;
FIG. 8 is a view showing the strike preventing the door from being reclosed;
FIG. 9 is an enlarged front elevational view of the strike; and
FIG. 10 is a side elevational view taken along the line 10—10 of FIG. 9.

DESCRIPTION OF THE EMBODIMENT

The invention will be explained in conjunction with a chest-type picnic cooler 15 illustrated in FIG. 1, although it will be understood that the invention can be used with other types of coolers, for example, upright coolers, and coolers having other configurations.

The cooler includes four generally orthogonally related side walls 16, 17, 18, and a fourth wall (not shown) and a bottom wall (also not shown) which define an interior cooling enclosure 19. A door or top 20 for closing the enclosure is hingedly secured to the side wall 18 by hinge 21 (FIG. 4), and the door can be releasably locked in the closed position illustrated in FIGS. 1 and 4 by a latch assembly designated generally by the numeral 22.

The side walls are formed by an outer metal lining 23, an inner plastic tub-like liner 25, and a layer of insulating plastic foam 28 sandwiched between the liners. The door 20 is similarly formed from an outer metal liner 26, an inner plastic liner 27, and an insulating foam layer 28. The metal liner 26 extends upwardly adjacent the sides of the cooler to form a reinforcing rib 26a and terminates in a generally planar downwardly extending peripheral flange 29 which extends generally parallel to the side walls when the door is closed. One half of the hinge member 21 is secured to the rear portion of the peripheral flange 29 and the other half of the hinge is secured to the portion of the metal liner 23 which extends along the back side wall 18. The plastic liner 27 of the door includes a rectangularly extending generally triangularly shaped rib 30 which cooperates with the rounded upper edge 31 of the chest provided by the plastic liner 24 to seal the cooling enclosure when the door is closed. A handle 32 is secured to the center of the front portion of the peripheral flange 29 by sheet metal screws 33 (FIG. 5) which extend through attaching tabs 34 on the handle. If desired, the cooler may include a rust-proof plastic bottom liner 35 which extends downwardly from the lower edge of the metal liner 23.

As can be seen best in FIG. 2, the latch assembly 22 includes a mounting base 36 which includes a generally box-like central portion 37 and a pair of attaching ears 38 which are secured to the metal liner 23 by screws 39. A latch 40 and a latch handle 41 are pivotally secured to the central portion of the mounting base by a rivet 42. The latch 40 includes a generally planar attaching portion 43 (FIG. 5) and a U-shaped end portion 44 which includes a generally planar keeper plate 45 extending generally perpendicularly to the front side wall 16 toward the cooling enclosure.

The latch 40 and latch handle 41 can be of the type commonly used in which cam members interconnect the attaching portion of the mounting base to permit the latch to be rotated with the handle when the handle is rotated between the 3 o’clock and the 6 o’clock positions as viewed in FIG. 2. When the handle is rotated to
the 6 o'clock position, the keeper plate extends generally horizontally inwardly toward the cooling enclosure, and further rotation of the handle from 6 0'clock to 9 o'clock will cam the latch downwardly to draw the keeper plate vertically downwardly to a locking position. Since the camming action of the latch forms no part of the present invention, the details need not be shown. It is sufficient that the latch be movable into and out of a locking position in which the keeper plate extends generally horizontally.

The latch assembly also includes a strike 48 which is secured to the inner surface of the door flange 29 above the latch and extends downwardly therefrom. Referring to FIGS. 3, 9 and 10, the strike includes a generally T-shaped planar flexing portion 51 which extends transversely from the attaching portion intermediate the ends 52 and 53 thereof. A pair of screw openings 54 are provided through the attaching portion laterally outwardly of the side edges 55 and 56 of the shank portion, and planar foot portion 57 extends generally perpendicularly from the bottom of the shank portion 51.

The strike is secured to the door flange 29 by the screws 33 which also secure the handle 32 and which pass through the screw openings 54. The shank portion extends downwardly adjacent the door flange beyond the bottom edge of the flange, and the foot portion 57 extends laterally outwardly away from the cooling enclosure. As can be see in FIG. 5, when the door is closed, the foot portion extends generally horizontally and generally perpendicularly to the front side wall 16.

The door is closed by first rotating the latch handle 41 counter-clockwise from the 6 0'clock position to bring the latch 40 out of the locking position as illustrated in FIG. 2. After the door is closed, the latch handle can be returned to the 6 0'clock position to bring the keeper plate 45 above the foot portion 57 of the strike. The inner edge of the keeper plate extends inwardly beyond the outer edge of the foot portion, and further clockwise rotation of the latch handle will cam the keeper plate downwardly into firm engagement with the foot portion as shown in FIG. 5.

If the latch is of the non-camming type, the keeper plate will be arranged relative to the foot portion so that the keeper plate will be positioned adjacent the foot portion merely by rotating the latch handle to the vertical position.

The engagement of the keeper plate with the strike holds the door normally closed and prevents inadvertent opening thereof. However, the strike is formed of flexible and resilient material such as plastic, spring steel, and the like, and the door can be opened when sufficient force is applied to the inside of the door. Referring to FIG. 6, a force applied to the inside of the door in the direction of the arrow will be transmitted to the strike by the metal liner 26 and will cause the foot portion of the strike to exert an upward force on the keeper plate 45. The latch is made of relatively rigid material such as metal, and the keeper plate 45 will maintain its horizontal position. If the upward force applied to the door is of sufficient magnitude, the shank portion 51 will flex inwardly away from the door flange 29 about the attaching portion 50 to permit the foot portion 57 to pull away from the keeper plate. When the outer end of the foot portion passes the inner end of the keeper plate, the door can swing freely open as shown in FIG. 7, and the resilient strike will return to its original unflexed position in which the shank portion lies against the door flange.

After the door has been forced open, the door will not completely close until the latch is moved out of the locking position. Referring to FIG. 8, when the door swings downwardly, the foot portion of the strike, which has returned to its original position, will engage the top of the keeper plate and prevent the door from full closing and being relatched. When it is desired to relock the door in the closed position, the latch handle need merely be rotated to bring the keeper plate out of the locking position and to permit the strike and the door to move downwardly into the fully closed position. Thereafter, the keeper plate can be returned to engage the upper side of the foot portion of the strike.

As the shank portion is flexed away from the door flange, the longitudinal end portions of the attaching portion remain anchored by the screws 33, although there will be some flexing of the central portion of the attaching portion away from the flange where the attaching portion joins with the shank portion.

It is advantageous if the dimensions and flexibility of the strike be such that the door can be forced open by a force of about 10 pounds applied to the inside of the door. The flexibility of the strike can be adjusted to open upon the application of a desired force by varying the thickness of the strike.

We have found it desirable that the shank portion 51 have a longer length than the foot portion 57 so that the shank portion is relatively more flexible than the foot portion. Accordingly, when an upward force is applied on the door, the shank portion will preferentially flex away from the door flange rather than the foot portion flexing relative to the shank portion. This preferential flexing is shown in FIG. 6 and 10, the flexed strike being shown in phantom at 48' in FIG. 10, and the foot portion is seen to remain substantially perpendicular to the bottom of the shank portion.

It is also desirable that the dimensions of the foot portion and the keeper plate and the relationship therebetween be such that there is a relatively firm locking engagement therebetween to prevent inadvertent opening of the top and to ensure that the top will not be relatched after it is forced open. In one specific embodiment of the invention, the keeper plate and the foot portion had approximately the same horizontal extent, and the inner end of the keeper plate extended inwardly beyond the mid-point of the foot portion. The substantial overlap of the keeper plate and the foot portion not only provides a relatively secure lock but substantially prevents the foot portion from being flexed upwardly when the strike is pushed downwardly against the latch.

In one specific embodiment of the strike, the attaching portion had a length of 1 ¾ inches, with the centers of the screw openings being 1 ¾ inches apart, and the width of the attaching portion was seven-sixteenths inches. The screw openings were offset slightly below the longitudinal center line of the attaching portion, being located nine-thirty second inch below the upper edge of the attaching portion. The shank portion had a width of one-half inch and the length of the shank portion between the lower edge of the attaching por-
tion and the upper surface of the foot portion was nineteen-thirty second inch. The foot portion was also one half inch wide, and the outer end of the foot portion had a length B (FIG. 10) of seven-sixteenth inch. The strike was molded integrally from Delrin plastic, an acetal resin plastic available from E. I. duPont de Nemours & Co. and had a thickness of one-sixteenth inch.

While in the foregoing specifications, a detailed description of a specific embodiment of the invention was set forth for the purpose of illustration, it is to be understood that many of the details herein given may be varied considerably by those skilled in the art without departing from the spirit and scope of my invention.

I claim:

1. A safety latch assembly for a cooler having a box-like body having a plurality of side walls defining a door opening and a door hingedly secured to the body for closing the door opening comprising a latch movably mounted on one side wall of the body adjacent the door opening, the latch including a laterally inwardly extending keeper portion and being movable between a locking position and an unlocking position, and a strike member secured to the door, the strike including:
   a. an attaching portion secured to the door,
   b. a flexible and resilient shank portion extending from the attaching portion toward the latch, and
   c. a foot portion extending laterally outwardly from the shank portion generally perpendicularly thereto, the foot portion being engageable with the keeper portion of the latch when the door is closed and the latch is in the locking position to prevent inadvertent opening of the door, the shank portion and the foot portion being flexible away from the keeper portion when a predetermined opening force is applied to the door whereby the foot portion may be disengaged from the keeper portion and the door may be opened, the shank portion and the foot portion returning to their unflexed position when the door is opened.

2. The latch assembly of claim 1 in which the keeper portion of the latch and the foot portion of the strike extend generally perpendicularly to said one side wall and the keeper portion extends laterally inwardly beyond the outer end of the foot portion when the door is closed.

3. The latch assembly of claim 1 in which the keeper portion of the latch extends laterally inwardly beyond the outer end of the foot portion for at least about one-half of the length of the foot portion.

4. The latch assembly of claim 1 in which the strike is molded integrally from plastic and the shank portion is longer than the foot portion to provide the shank portion with greater flexibility than the foot portion whereby the shank portion will preferentially flex about the attaching portion rather than the foot portion flexing about the shank portion when an opening force is applied to the door.

5. The latch assembly of claim 1 in which the attaching portion and the shank portion are generally planar, the shank portion including a pair of side edges extending from the attaching portion to the foot portion, the attaching portion extending laterally beyond each side edge of the shank portion and being provided with a screw opening laterally outwardly of each side edge of the shank portion, the strike being secured to the door by screws extending through the screw openings.

6. The latch assembly of claim 1 in which the door includes a planar flange extending generally parallel to said one side wall when the door is closed, the strike being secured to the flange laterally inwardly thereof, the shank portion extending adjacent the flange.

7. In a cooler having a plurality of generally planar side walls defining an inner cooling enclosure with a door opening, a door hingedly secured to a side wall for closing the door opening and including a generally planar flange, and a door latch rotatably mounted on the outside of one side wall, the latch being rotatable in an arc extending parallel to the plane of said one side wall between a locking position and an unlocking position and including a keeper plate extending generally perpendicularly to said one side wall toward the cooling enclosure and terminating in an inner end, an improved strike for engagement with the keeper plate to lock the door in the closed position comprising a generally planar flexible and resilient flexing portion and a generally planar foot portion extending generally perpendicularly to the flexing portion, the flexing portion being secured to the inside of the door flange, the foot portion extending laterally outwardly beyond the door flange and terminating in an outer end, the keeper plate extending generally parallel to the foot portion when the latch is in the locking position and the door is closed and the inner end of the keeper plate extending laterally inwardly beyond the outer end of the foot portion whereby the foot portion is engageable with the keeper plate to prevent inadvertent opening of the door, the flexing portion and the foot portion being flexible inwardly away from the door flange and the keeper plate when a predetermined opening force is applied to the door whereby the foot portion may be disengaged from the keeper plate and the door may be opened, the flexing portion returning to its unflexed position when the door is opened.

8. The structure of claim 7 in which the keeper plate of the latch and the foot portion of the strike extend generally perpendicularly to said one side wall when the door is closed, the keeper plate extending laterally inwardly beyond the outer end of the foot portion when the door is closed.

9. The structure of claim 7 in which the flexing portion is generally T-shaped and includes an elongated attaching portion having a pair of end portions and a shank portion extending generally transversely from the attaching portion intermediate the end portions thereof.

10. The structure of claim 9 in which the length of the shank portion between the attaching portion and the foot portion is greater than the length of the foot portion between the shank portion and the outer end of the foot portion, the shank portion having greater flexibility than the foot portion.

11. The structure of claim 9 in which the attaching portion is provided with a screw opening through each end portion thereof, the strike being secured to the door flange by screws passing through the screw openings.