

[54] **SAFETY LATCH ASSEMBLY FOR
PICNIC COOLERS**

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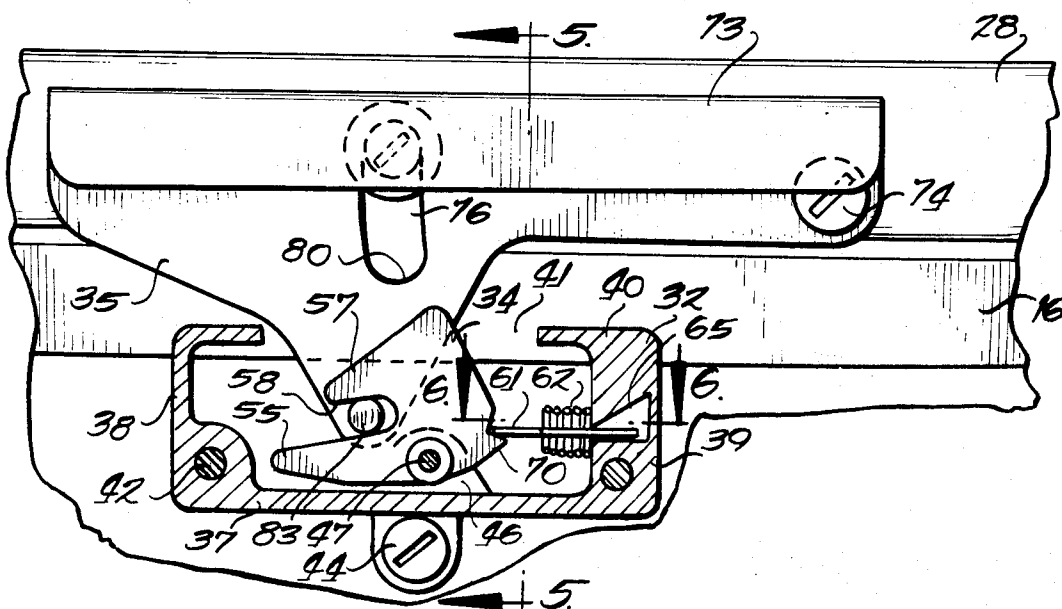
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[57] **ABSTRACT**

A safety latch for a picnic cooler permits the door of the cooler to be unlatched when pressure is applied to the door from inside the cooler and prevents the door from becoming inadvertently relatched when the door is closed. The latch assembly includes a latch mounted on the body of the cooler and rotatable over-center between latched and unlatched positions. The latch is resiliently urged away from the over-center position into one of the latched or unlatched positions by a spring mounted on the body and engaging the latch. A strike plate is swingably mounted on the door of the cooler and carries a strike which is receivable in a slot provided in the latch. As the door closes the strike engages the latch, and the strike plate is pushed upwardly to permit the door to be closed without rotating the latch to the latched position. When the door is to be locked, the strike plate may be pushed downwardly to force the strike against the latch and to rotate the latch over center to the latched position. The door can be opened when sufficient force is exerted to rotate the latch over center to the unlatched position.

10 Claims, 9 Drawing Figures



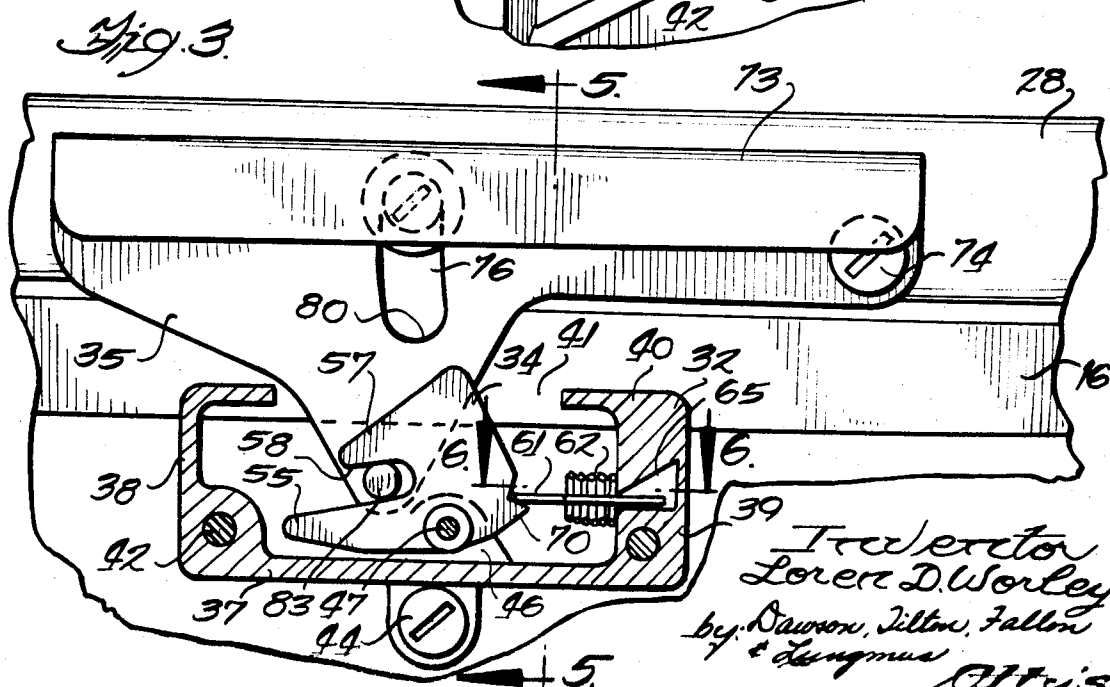
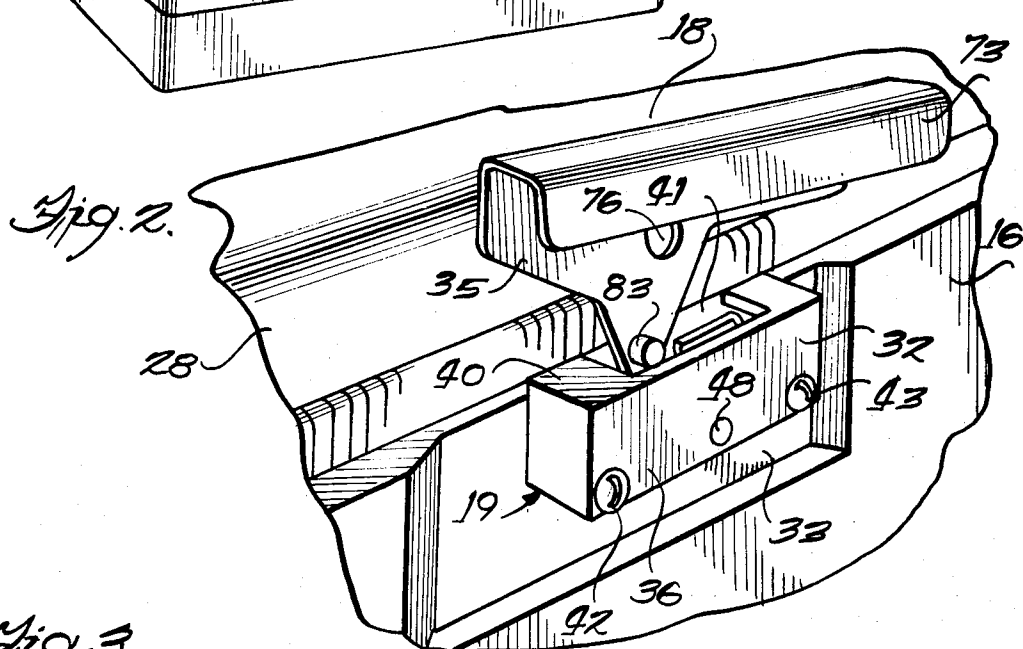
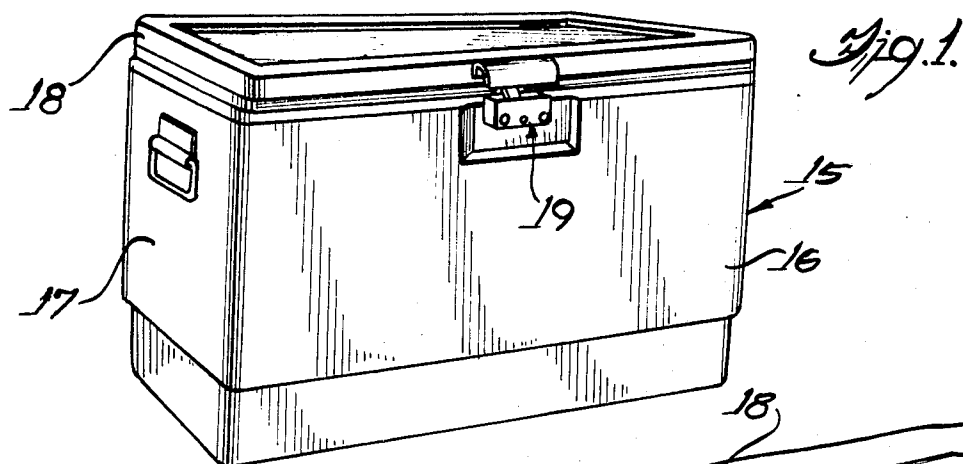


Fig. 4

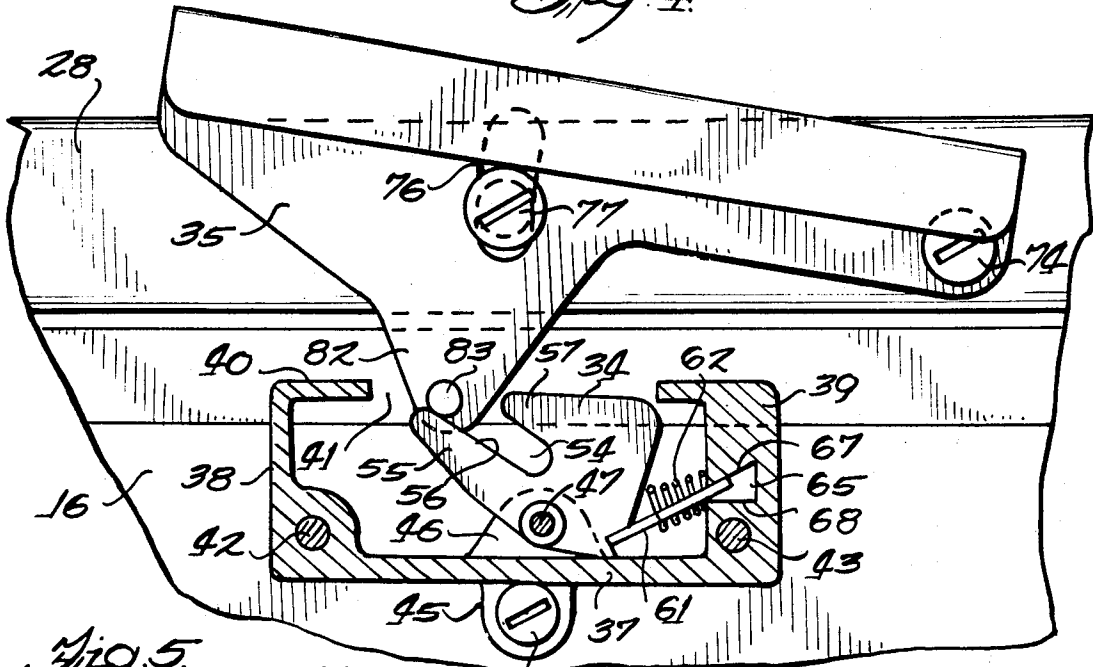


Fig. 5

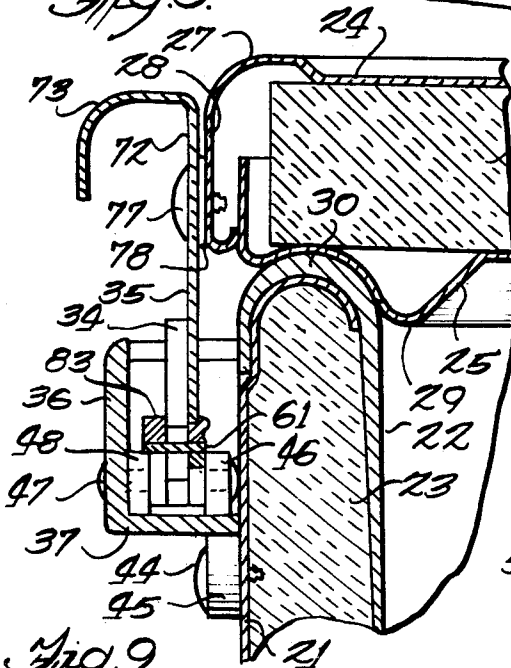


Fig. 6

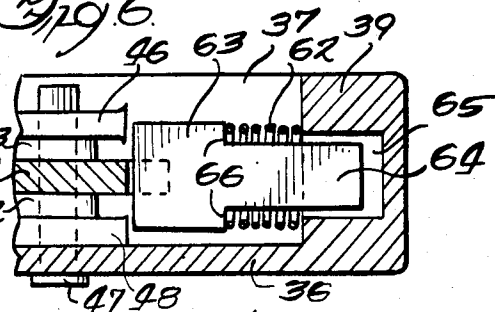


Fig. 7

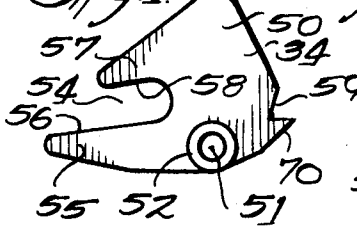


Fig. 8

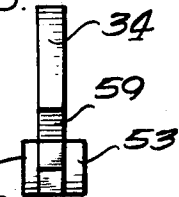
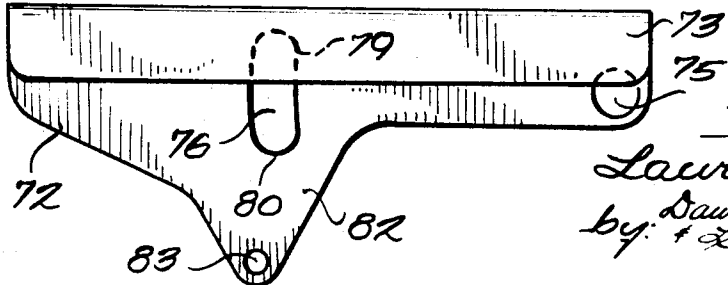


Fig. 9



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SAFETY LATCH ASSEMBLY FOR PICNIC COOLERS

BACKGROUND

This invention relates to a latch assembly for picnic coolers, and, more particularly, to a safety latch assembly which permits the door of the cooler to be opened from the inside and prevents inadvertent relatching of the door.

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 safety latches have been provided for refrigerator doors which permit these doors to be opened from the inside, these latches generally are self-latching and will automatically relatch the door when the door is closed. It is desirable to provide a safety latch which is not self-latching so that the door will not be inadvertently latched, as when a child crawls into the cooler and the door closes behind him.

A safety latch should hold the door securely closed and prevent inadvertent opening thereof, but it 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 10 pounds against the door, and it is desirable that the latch release the door when such a force is applied.

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 inadvertent latching of the door. The door is latched by a rotatable over-center latch which can be moved from the latched position to the unlatched position by a force of about 10 pounds applied to the inside of the door. The strike which engages the latch is movably mounted on the door and will move relative to the door as the door closes so that the latch will not be rotated over center to the latched position. When it is desired to latch the door, a force can be applied to the strike to cause it to rotate the latch over center to the latched position. When the latch is in the latched position, it will exert a positive closing force on the door to seal the cooler and to hold the door securely closed.

DESCRIPTION OF THE DRAWING

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

FIG. 1 is a perspective view of a picnic cooler equipped with the inventive safety latch assembly;

FIG. 2 is an enlarged fragmentary perspective view showing the door of the cooler closed and the latch assembly in the unlatched position;

FIG. 3 is a fragmentary front elevational view, partially in section, showing the latch assembly in the latched position;

FIG. 4 is a view similar to FIG. 3 showing the door closed and the latch assembly in the unlatched position;

FIG. 5 is a fragmentary sectional view of the latch assembly taken along the line 5—5 of FIG. 3;

FIG. 6 is a fragmentary sectional view taken along the line 6—6 of FIG. 3;

FIG. 7 is a front elevational view of the latch;

FIG. 8 is a side elevational view of the latch; and

FIG. 9 is a front elevational view of the strike plate.

DESCRIPTION OF SPECIFIC 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 generally planar side walls, front side wall 16 and end side wall 17 being visible in FIG. 1. A rear side wall and an opposite end side wall extend generally parallel to the front and end walls 16 and 17, respectively. The cooler also includes a bottom wall, and the side walls and bottom wall define a cooler body having an interior cooling enclosure which can be closed by a door or top 18 hingedly secured to the rear wall of the cooler. The door can be releasably latched in the closed position illustrated in FIG. 1 by a safety latch assembly designated generally by the number 19.

Referring to FIG. 5, the side walls of the cooler illustrated are formed by an outer metal lining 21, an inner plastic tub-like liner 22, and a layer of insulating plastic foam 23 sandwiched between the liners. The door is similarly formed from an outer metal liner 24, an inner plastic liner 25, and an insulating foam layer 26. The metal liner 24 extends upwardly adjacent the sides of the cooler to form a peripheral reinforcing rib 27 and terminates in a generally planar downwardly extending perimetric flange 28 which extends generally parallel to the front wall when the door is closed. The plastic liner 25 of the door includes a triangularly shaped rib 29 which cooperates with the rounded upper edge 30 of the side walls to seal the cooling enclosure when the door is closed.

The latch assembly 19 includes a generally box-like case 32 which is mounted on the front wall 16 within a concave or inwardly extending recess 33 therein adjacent the top edge of the front wall. Latch or bolt 34 is rotatably supported by the casing 32 and is cooperable with a strike plate 35 secured to the door 18 to maintain the door latched in a closed position.

The casing 32 is seen to include a front wall 36, bottom wall 37, opposite side walls 38 and 39, and an interrupted top wall 40 which is provided with a central opening 41. The casing is secured to the front wall of the cooler by sheet metal screws 42 and 43 which extend through openings in the side walls 38 and 39 of the casing and sheet metal screw 44 which extends through a lug 45 on the bottom wall of the casing. The sheet metal screws extend through the metal lining 22 of the front wall of the cooler.

The latch 34 is rotatably supported by the casing 32 by means of a lug 46 which extends upwardly from the bottom wall 37 of the casing adjacent the rear thereof and a pin 47 which extends through an opening in the front wall 36 of the casing, through the latch, and through an opening in the lug 46. As can be seen best in FIGS. 5 and 6, the front wall is reinforced or thickened at 48 in the area surrounding the opening for the pin 47.

Referring now to FIGS. 7 and 8, the latch 34 is seen to include a generally planar body 50 provided with an opening 51 for rotatably receiving the mounting pin 47 and reinforcing annular flanges 52 and 53 which surround the opening 51 and which extend between the lugs 46 and 48 of the casing 32. The latch is provided with an elongated substantially straight slot 54 which extends inwardly from the periphery thereof and which provides a latching arm 55 having a strike engaging surface or edge 56 and a trip arm 57 having a strike engaging surface or edge 58. A V-shaped notch 59 is provided in the latch generally opposite the slot 54.

The latch is mounted within the casing 32 so that the slot 54 extends above the pivot pin 47 and the latching and trip arms 55 and 57 extend generally laterally to the left. The latch is resiliently urged into either the latching position illustrated in FIG. 3 or the unlatched position illustrated in FIG. 4 by over-center spring means which includes an elongated spring bar 61 and a compression coil spring 62. As can be seen best in FIG. 6, the spring bar 61 is generally T-shaped and includes a first relatively wide portion 63 which is received by the notch 59 in the latch and a second relatively narrow portion 64 which extends into a recess 65 provided in the side wall 39 of the casing. The wide portion 63 of the spring bar provides a pair of shoulders 66 which engage the coil spring 62 and compress the spring against the side wall 39 of the casing. The recess 65 is provided with a pair of angularly related walls 67 and 68 (FIG. 4) which converge toward the inner surface of the side wall 39 and which are spaced apart at the inner surface a distance slightly greater than the thickness of the spring bar 61 to provide a fulcrum or pivot for the bar.

Comparing FIGS. 3 and 4, the position of the notch 59 in the latch is such that the notch moves closer to the recess 65 as the latch first begins to rotate from either the latched or unlatched position to the other position. Movement of the latch from one position to the other therefore causes the bar 61 to move longitudinally into the recess 65 against the bias of the spring 62 until the notch begins to move away from the recess. As the notch moves over center relative to the recess, the compression spring 62 urges the latch toward the other position. A flat stop surface 70 on the latch adjacent the notch 59 engages the bottom wall 37 when the latch is moved to the unlatched position shown in FIG. 4 and prevents further rotation of the latch. In this position the bar 61 extends generally parallel to the surface 67 of the recess 65.

The strike plate 35 includes a generally planar portion 72 and a handle portion 73 which curves outwardly and downwardly from the top portion of the planar portion. The strike plate is pivotally secured to the perimetric flange 28 of the door by screw 74 which extends through an opening 75 (FIG. 9) adjacent one end of the plate, and the central portion of the plate is provided an arcuate slot 76 which receives a screw 77 which also extends through the flange 28 of the door. Spacers or washers 78 (FIG. 5) of nylon or other suitable material can be carried by the screws 74 and 77 between the strike plate and the flange 28 to facilitate relative movement therebetween, and pivoting movement of the strike plate about the screw 74 brings the ends 79 and 80 of the slot 76 into and out of engagement with the stop screw 77.

The planar portion of the strike plate includes a generally triangularly shaped projection 82 above the opening 41 in the top of the casing 32, and a strike pin 83 is secured to this projection adjacent the lower end thereof. Referring to FIG. 5, the strike plate is positioned relative to the latch 34 so that the strike plate will pass behind the latch as the door is closed but the forwardly extending strike pin 83 will engage the latch. The strike plate extends generally perpendicularly to the plane of the door, and as the door is brought to a closed position, the strike plate becomes generally parallel to the latch.

OPERATION

When the door is fully open, the latch 34 will be in the unlatched position shown in FIG. 4. As the door is pivoted about its hinged connection to the rear wall of the cooler to close the cooling enclosure, the strike pin 83 will eventually engage the strike-engaging surface 56 of the latching arm 55 of the latch. However, since the strike plate is freely pivotable about the screw 74 relative to the door, the door can be moved to the fully closed position illustrated in FIG. 4 without moving the latch from the unlatched position. The compression spring 62 will maintain the latch in the unlatched position, and the latching arm 55 will force the strike pin 83 and the strike plate to move upwardly. The strike can pivot upwardly until the stop screw 77 engages the lower end 80 of the arcuate slot 76, but the length of this slot is such that the door can be fully closed and supported by the front wall of the cooler before the stop pin reaches the lower end of the slot. Accordingly, the door will not become latched merely by closing the door.

When it is desired to latch the door, the handle portion 73 of the strike plate can be pushed downwardly with one hand. Downward pivotal movement of the strike plate and the strike 83 rotates the latching arm 55 about the support pin 47 and causes the latch to rotate over center to the latching position against the bias of the spring 62. As the latch approaches the latched position shown in FIG. 3, the trip arm 57 will begin to swing over the strike 83, and as the notch 59 of the latch moves over center and begins to move away from the recess 65 in the casing, the compression spring 62 will force the spring bar 61 away from the recess and will urge the latch to rotate counterclockwise. The strike-engaging surface 58 of the trip arm 57 will thereby be urged against the strike 83 to urge the strike downwardly. The length of the slot 76 in the strike plate is such that the stop pin 77 will engage the upper end 79 of the slot as the latch moves over center into the latching position, and the downward force exerted on the strike by the trip arm 57 will thereby tend to draw the door tightly against the upper edges of the side walls of the cooler to seal the cooling enclosure.

After the door is latched, it can still be opened from inside the cooler by exerting an upward force on the door. The upward force on the door will be transmitted to the strike plate by the screws 74 and 77, and the strike 83 will be urged upwardly against the trip arm 57. If the force on the inside of the door is sufficient to compress the spring 62, the trip arm 57 and the latch will rotate counterclockwise to move the latch over

center and back to the unlatched position, thereby freeing the strike. The sealing force exerted on the closed door by the latch and the maximum force required to open the door from the inside can be varied as desired by selecting a spring 62 of appropriate size and spring constant. Since most children that are likely to become trapped in a cooler can exert a force against the door of about 10 pounds, the spring 62 is chosen to permit the latch to be moved over center from the latched position to the unlatched position under the influence of such an opening force.

The door can also be opened in the conventional manner by applying an upward lifting force directly to the handle 73 of the strike plate to trip the latch into the unlatched position.

While in the foregoing specification 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 hereingiven may be varied considerably by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A safety latch assembly for a picnic cooler having a body defining a door opening and a door hingedly secured to the body for closing the door opening comprising a latch rotatably mounted on the body and being rotatable between latched and unlatched positions, the latch having a pair of strike-engaging surfaces, spring means mounted on the body and engaging the latch, the spring means applying a force on the latch to resiliently urge the latch into one of the latched and unlatched positions, the force applied on the latch by the spring means increasing as the latch is moved from either the latched or unlatched position toward an intermediate position, and a strike movably mounted on the door and being movable between first and second positions, the strike being engageable with one of the strike-engaging surfaces of the latch when the latch is in the unlatched position as the door is closed and being movable from the first toward the second position by the latch without rotating the latch to the latched position, the strike being engageable with the other strike-engaging surface of the latch and being held in the first position by the latch when the latch is in the latched position, whereby the latch can be rotated from the unlatched position to the latched position by forcing the strike against the first strike-engaging surface to move the strike to the first position and to rotate the latch, and the latch can be rotated from the latched position to the unlatched position by forcing the strike against the other strike-engaging surface of the latch to rotate the latch.

2. The latch assembly of claim 1 in which the door engages the body and closes the door opening before the strike is moved to the second position by the latch whereby the door can be fully closed without exerting sufficient force against the latch to rotate the latch out of the unlatched position.

3. The latch assembly of claim 1 in which the strike is mounted on a strike plate, the strike plate being pivotally secured to the door for swinging movement between first and second positions in a plane generally perpendicular to the plane of the door.

4. The latch assembly of claim 1 in which the strike is mounted on a strike plate, the strike plate being

pivotally secured to the door for swinging movement between first and second positions in a plane generally parallel to the plane of rotation of the latch when the door is closed.

5. The latch assembly of claim 4 in which the strike plate is provided with a slot having at least one end, stop means secured to the door and extending through the slot and being engageable with said one end when the strike plate is in the first position whereby the latch exerts a sealing force on the door and the door cannot be opened without rotating the latch.

6. The latch assembly of claim 1 in which the spring means include an elongated bar, bar mounting means for supporting the bar for pivotal movement and for longitudinal sliding movement toward and away from the center of rotation of the latch, the bar including abutment means, and resilient compressible spring means carried by the bar between the abutment means and the bar mounting means for urging the bar against the latch and for restraining longitudinal movement of the bar away from the center of rotation of the latch, rotation of the latch between the latched and unlatched positions causing longitudinal movement of the bar away from the center of rotation of the latch.

7. In a cooler having a plurality of generally planar side walls defining an inner cooling enclosure having a door opening and a generally planar door hingedly secured to a side wall for closing the door opening, a safety latch assembly comprising a latch rotatably mounted on one of the side walls for rotation in a plane generally parallel to said one side wall between latched and unlatched positions, the latch having a slot extending inwardly from the periphery thereof to provide a pair of strike-engaging surfaces, spring means mounted on said one side wall and engaging the latch, the spring means applying a force on the latch to resiliently urge the latch into one of the latched and unlatched positions, the force applied on the latch by the spring means increasing as the latch is moved from one of the latched and unlatched positions toward an intermediate position, a strike plate pivotally mounted on the door for swinging movement in a plane generally perpendicular to the door between first and second positions, a strike secured to a strike plate engageable with one of the strike-engaging surfaces of the latch when the latch is in the unlatched position and engageable with the other strike-engaging surface when the latch is in the latched position, the strike plate being movable by the latch from the first toward the second position as the door is closed without rotating the latch from the unlatched to the latched position, the latch being rotatable from the unlatched to the latched position against the bias of the spring means after the door is closed by application of a force on the strike plate to move it to the first position whereby the second strike-engaging surface of the latch is engageable with the strike and the door is maintained in the closed position by the force exerted on the latch by the spring means.

8. The structure of claim 1 including stop means on the door engageable with the strike plate when the strike plate is moved from the second to the first position to limit further movement of the strike plate away from the second position whereby the door is urged against the side walls by the force exerted by the latch on the strike under the influence of the spring means

and whereby movement of the door away from the closed position causes the strike to rotate the latch from the latched to the unlatched position.

9. The structure of claim 8 in which the stop means includes screw means secured to the door and extending through a slot in the strike plate, the screw means engaging an end of the slot in the strike plate when the strike plate is moved to the first position.

10. The structure of claim 9 in which the spring means include an elongated bar, bar mounting means for supporting the bar for pivotal movement and for

longitudinal sliding movement toward and away from the center of rotation of the latch, the bar including abutment means, and resilient compressible spring means carried by the bar between the abutment means and the bar mounting means for urging the bar against the latch and for restraining longitudinal movement of the bar away from the center of rotation of the latch, rotation of the latch between the latched and unlatched positions causing longitudinal movement of the bar away from the center of rotation of the latch.

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