May 30, 1939. W. M. DWYER 2,160,260

HATCH COVER FASTENER

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Fig. 1

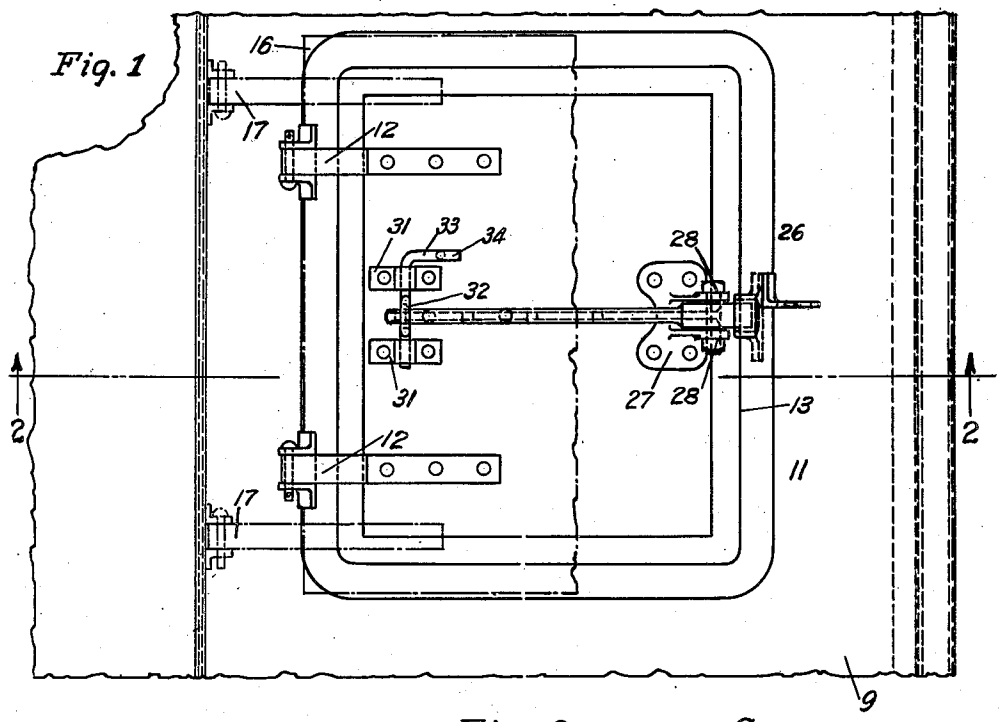
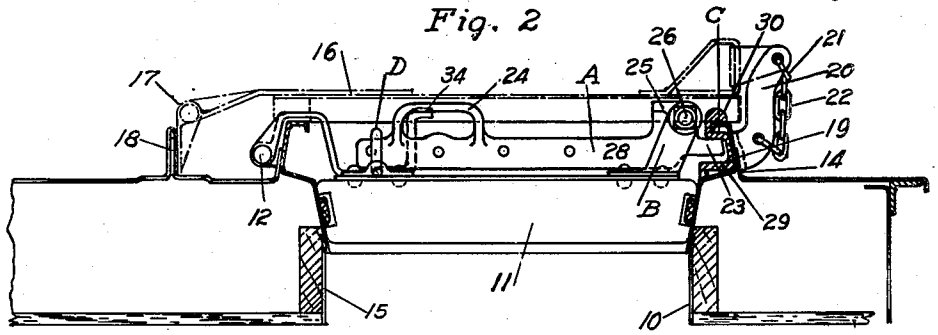


Fig. 2



Inventor
William M. Dwyer
By Henry Fuchs
Atty.

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Fig. 3

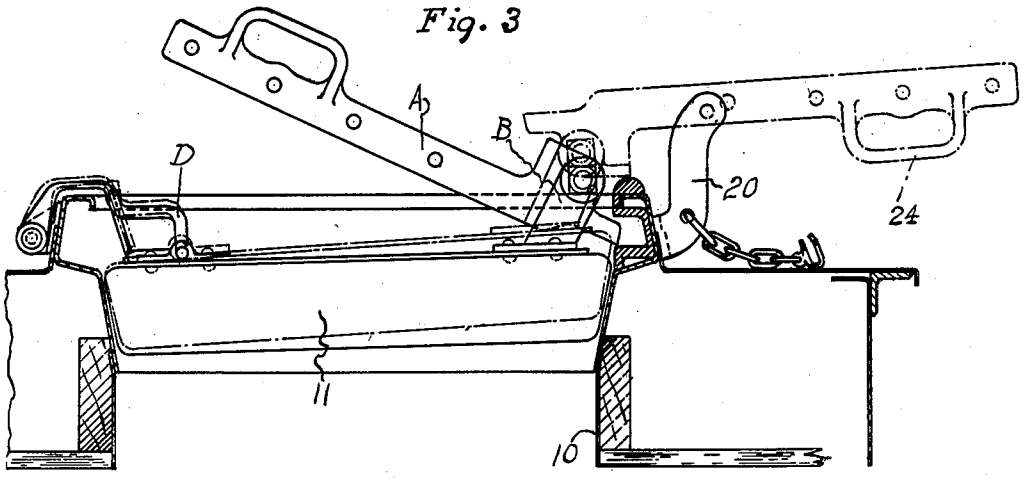
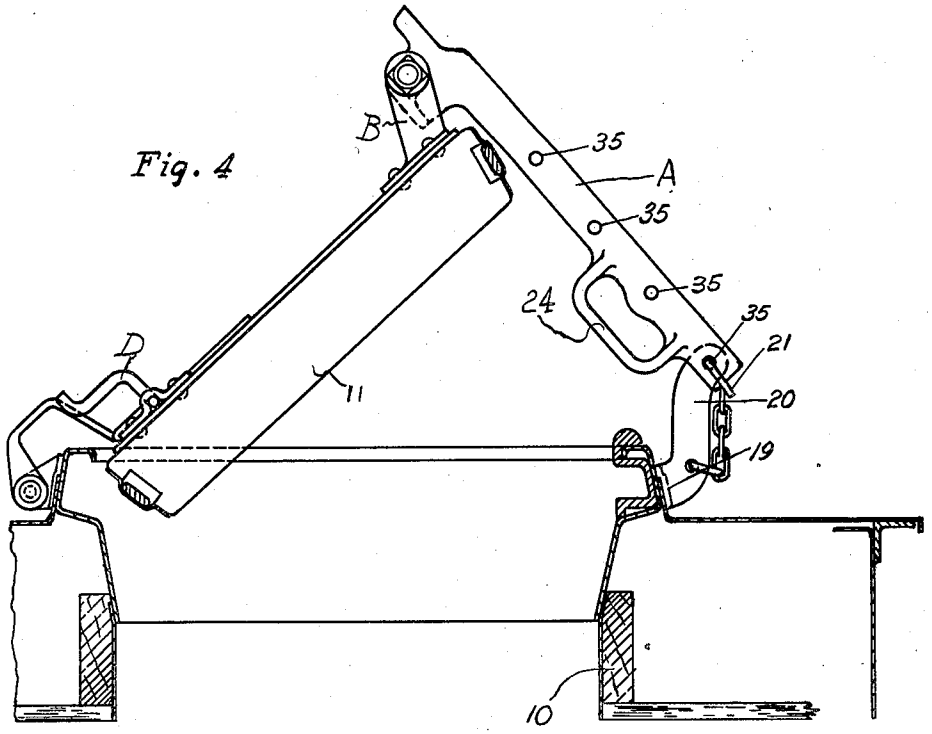


Fig. 4



Inventor
William M. Dwyer
By Henry Fuchs
Atty.

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HATCH COVER FASTENER

William M. Dwyer, Chicago, Ill., assignor to W. H. Miner, Inc., Chicago, Ill., a corporation of Delaware

Application September 30, 1936, Serial No. 103,344

9 Claims. (Cl. 98—7)

This invention relates to improvements in combined fastener and locking means for hatch covers of refrigerator cars.

One object of the invention is to provide simple and efficient, manually operated means permanently connected to the hatch cover of a refrigerator car for prying the cover open, or forcing the same closed, together with latching means for locking said manually operated means in position to hold the hatch cover tightly closed.

Another object of the invention is to provide manually operated means of the character set forth in the preceding paragraph, arranged and designed to also serve to hold the hatch cover partly open for ventilating purposes.

A more specific object of the invention is to provide a fastener for hatch covers of refrigerator cars comprising a single manually operated lever, mounted on the hatch cover and engageable with keeper means on the car for forcing the cover tightly closed or prying the same open, wherein sufficient opening movement of the hatch cover to completely free the same from the hatch opening is assured during operation of said lever by successive lever engagement of said lever with said keeper and a separate fulcrum support in addition to said keeper.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings forming a part of this specification, Figure 1 is a plan view of a portion of the roof of a refrigerator car, showing a well-known form of hatch cover or plug and illustrating my improvements in connection therewith, said view also showing, in dotted lines, the usual auxiliary cover member which is employed to protect the hatch cover proper against the weather and shield the same from snow and ice. Figure 2 is a vertical sectional view, corresponding to the line 2—2 of Figure 1. Figure 3 is a view, similar to Figure 2, on an enlarged scale, and partly broken away, but showing the parts in different positions, the hatch cover and cooperating fastener being shown in full lines in a position which these parts occupy during the first part of the operation of prying the cover open, and, in dotted lines, the position occupied by these parts during the final stages of said operation. Figure 4 is a view, similar to Figure 2, on an enlarged scale, showing the hatch cover opened and locked in said opened position for ventilating purposes.

In said drawings, 9 indicates a portion of the roof of a refrigerator car, 10 the usual hatchway, 11 the pivoted hatch cover or plug which is supported by hinge members 12—12 secured to the top of the car adjacent to the hatchway. The mouth of the hatchway 10 is formed by a rectangular metal frame 13, which is fixed within the opening 14 in the roof proper of the car and projects into the opening of the hatchway proper and has the side and end walls thereof forming continuations of the corresponding walls of the hatchway. The hatchway proper is provided with the usual metal lining, indicated by 15. An auxiliary cover 16, indicated in dotted lines in Figures 1 and 2, is employed to shield the hatch cover or plug, as is common in the type of refrigerator car hatch plug structure illustrated herein, the cover 16 overlying the closed hatch cover as shown in Figures 1 and 2 and being hinged for swinging movement by hinge members 17—17 secured to an upstanding structure 18 on the roof of the car. Means commonly employed for locking the auxiliary cover in closed position is also illustrated and this means comprises a bracket 19 fixed to the frame 13, said bracket having an upstanding arm 20 to which the cover 16 is locked by means of a latch pin or hook 21 engaged through an opening at the upper end of the arm 20 and an opening provided in an outstanding bracket fixed to the outer edge portion of the cover 16. As shown, the latch or hook 21 is carried on a chain 22 fixed to the bracket 19. As illustrated in the drawings, in Figures 2, 3, and 4, the walls of the frame 13 at the mouth of the hatchway are inclined inwardly and downwardly to provide the usual flaring opening, and the hatch cover or plug 11 is similarly shaped to snugly fit said opening and has its edge faces provided with the usual insulation for effecting a tight seal between the plug and the walls of the hatch opening.

My improved combined fastener and locking means for hatch covers comprises broadly a lever A; a supporting bracket B fixed to the hatch cover and on which the lever A is pivoted; a fixed keeper C with which the lever A is engageable; and a latch D for locking the lever to hold the hatch cover closed.

The lever A is in the form of an elongated bar having a projecting toe 23 at the inner end thereof adapted to cooperate with the keeper C. At the outer end, the lever A is provided with an upstanding hand grip 24 of loop-form by which the lever may be manipulated. The hand grip 24 is spaced inwardly from the outer end of the lever A, thus providing a projecting end portion of said lever, adapted for engagement by the

latch D, as hereinafter pointed out. Inwardly of the toe 23, the lever has an outstanding enlarged portion 25 through which a pivot pin or bolt 26 extends for pivotally supporting the lever on the bracket B which is secured to the hatch cover 11 adjacent to the free edge of the latter. As will be seen upon reference to Figures 2, 3, and 4, the top edge of the enlargement 25 is substantially flat and provides a bearing face on the lever adapted to cooperate with the fulcrum means, as hereinafter pointed out.

The bracket B comprises a base portion 27 fixed to the cover 11 by any well-known securing elements, such as rivets. The base portion 27 has a pair of laterally spaced, outwardly inclined, upstanding arms 28—28 projecting therefrom, between which the inner end portion of the lever A is disposed. The pivot bolt 26, which swingingly supports the lever on the bracket B extends through aligned openings in the upper ends of the arms 28—28. As clearly illustrated in Figures 1 and 2, the lever A is mounted on the hatch cover 11 in such a manner that the toe 23 thereof protrudes beyond the free edge of the hatch cover 11 when the cover is in the closed position shown in said figures.

The keeper C is in the form of a casting secured to the inner side of the upstanding end wall of the frame 13 and is shaped to fit said wall as clearly shown in Figures 2, 3, and 4. The casting C has a laterally opening pocket or seat 29 therein, within which the toe 23 of the lever A is adapted to engage, said pocket being of slightly greater vertical dimensions than the toe of the lever and having horizontally disposed spaced top and bottom walls with which said toe cooperates in forcing the cover closed and prying the same open. The casting C further has an upstanding portion, provided with an enlarged section 30, which overlies the top of the corresponding wall of the frame 13 and has a rounded top surface forming a fulcrum abutment for the lever A, as hereinafter pointed out.

The latch D, which is in the form of a bail, is engaged over the outer end portion of the lever A. The latch D is swingingly or pivotally supported by a pair of bearing brackets 31—31 at opposite sides of the lever A, and comprises horizontally disposed sections journaled in said brackets, and an offset loop section 32 between said brackets engageable over the outer extremity of the lever A. To facilitate manipulation of the latch D, the same is provided with a radially disposed stem portion 33 having an angular hooked end portion 34. As shown, the stem 33 is preferably formed at the outer end of one of the horizontally disposed journal sections of the latch D. The latch D is preferably formed from a metal rod or bar bent to proper shape.

The operation of my improved combined fastener and locking means, assuming that the hatch cover is closed as shown in Figures 1 and 2, is as follows:

The attendant after unlocking the auxiliary cover 16 from the bracket 19 by disengaging the locking pin 21 swings the auxiliary cover to fully opened position, thus completely clearing the hatch cover and making the latter and the operating mechanism thereof readily accessible. The latch D is then swung toward the left as viewed in Figures 1 and 2 to free the lever A for operation. Grasping the hand grip 24, the operator then swings the lever upwardly and to the right as viewed in Figures 2 and 3, from the position shown in Figure 2 through the full line position shown in Figure 3 to the dotted line position shown in said last named figure, thereby prying the cover open and completely freeing the same from the hatch opening. During the first part of this movement of the lever A, the toe 23 thereof is swung into operative engagement with the lower wall of the pocket 29 of the keeper C and rides on said wall to cam the cover outwardly and pry the same open to the full line position shown in Figure 3. During further swinging movement of the lever A beyond the full line position shown in Figure 3, the toe 23 leaves the socket of the keeper C and the enlargement 25 of said lever is engaged with the rounded face section 30 of the keeper C and fulcrums on said rounded face. This fulcrum movement of the lever A exerts an upward pull on the bracket B by means of the pivotal connection of the lever with the latter to force the hatch cover upwardly and pry the same further open, to and beyond the dotted line position shown in Figure 3. After the hatch cover has been thus freed from the hatch opening, the attendant swings the cover completely open or open to any desired extent.

In closing the hatch cover, it is first swung or dropped to partly closed position and the toe 23 of the lever A engaged within the pocket of the keeper C. The outer or hand grip end of the lever A is then pressed downwardly to swing the lever on its pivot and rock the toe 23 thereof on the top wall of the pocket of the keeper C to pry the cover to fully closed position, as shown in Figure 2. After the cover has been fully closed, the latch D is swung over the projecting outer end of the lever A to lock the same in position and retain the cover in closed condition.

Means is also provided for supporting the hatch cover 11 in various positions of open condition to effect ventilation of the hatch. The lever A in addition to serving to force the hatch cover open or closed serves as the means for holding the cover open for ventilating purposes, and cooperates with the bracket 19 for this purpose. As shown most clearly in Figures 2, 3, and 4, the lever A is provided with a plurality of spaced openings 35—35 therethrough, any one of which is adapted to receive the locking pin or hook 21 of the chain 22. To support the hatch cover 11 in open ventilating position, the lever A is locked to the bracket 19 by the locking pin 21 engaged through the opening at the outer end of the arm 20 and any one of the openings 35 of the lever A. In Figure 4 the pin 21 is shown as engaged through the outermost opening 35 of the lever A, thus holding the hatch cover in a position to provide a relatively wide opening for ventilation. As will be evident, the hatch cover 11 may be supported in various partly open positions which provide a more restricted opening by making use of any one of the openings 35 inwardly of said outermost opening at the end of the lever A.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with fixed spaced abutments on the car; of an operating lever pivoted to the hatch cover, said operating lever having one pair of engaging portions only thereon, the two por-

tions of said pair being disposed at opposite sides of the pivotal axis thereof and successively engageable with said abutments to force said cover open.

2. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a keeper fixed to the car, said keeper having a pocket; of a fulcrum abutment member spaced from the pocket of said keeper; and a lever pivoted on said cover, said lever comprising a single pair of arms, the arms of said pair extending in opposite directions from the pivot thereof, said arms being respectively engageable with the keeper and said fulcrum abutment member to pry said cover open.

3. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a lever pivoted on the hatch cover, said lever having a single pair of arms only, the arms of said pair extending in opposite directions with respect to the axis of pivotal movement of said lever; of fixed means on said car engageable successively by said arms for prying the cover open.

4. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a keeper fixed to the car, said keeper having a seat in the form of a pocket; of a lever pivoted to said hatch cover, said lever having a single pair of operating members only thereon, the members of said pair comprising a keeper engaging portion projecting from one side of the axis of pivotal movement thereof engageable within the pocket of said keeper for forcing the cover either closed or partly open, and a fixed abutment on said car engageable by a portion of said lever located at the opposite side of the pivot thereof with respect to said keeper engaging portion, said lever being rockable on said fixed support for forcing the cover further open.

5. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a lever pivoted to the hatch cover, said lever having an actuating handle arm and a keeper engaging projection extending from opposite sides of the pivotal axis thereof; of a keeper fixed to the car having a pocket within which said keeper engaging portion is engageable to effect closing and opening movements of the cover; and a fixed fulcrum abutment on said car engageable by said actuating handle arm outwardly of the pivot thereof, and on which said arm is rockable to effect additional opening movement of said cover.

6. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a fixed keeper on the car, said keeper having a laterally opening pocket therein adapted to receive a keeper engaging member; of an upwardly facing fulcrum abutment shoulder above said keeper; and a lever pivoted between its ends on said hatch cover and having a relative long arm and a relatively shorter arm at opposite sides of the pivot thereof, said short arm being engageable within the keeper opening to force said cover open or closed, said long arm of the lever at a point inwardly of the free end of the lever being engageable with and rockable on said fulcrum abutment to effect additional opening movement of said cover.

7. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a fixed keeper having a pocket provided with opposed top and bottom walls; of a fulcrum abutment spaced above said pocket; and a lever pivoted between its ends on said hatch cover, said lever having a short arm and a long arm, said short arm presenting a toe portion at one side of the pivotal axis thereof, and a bearing face portion on said long arm of the lever between the outer end of said arm and the pivot of said lever, said bearing face being at the opposite side of said pivotal axis, said toe and bearing face being successively engageable with said keeper and fulcrum abutment to force said cover open, said toe portion being engageable with the top wall of said pocket of the keeper to force said cover closed, and being engageable with the bottom wall of said keeper pocket to pry said cover partly open, and said bearing face of said lever being engageable with said fulcrum abutment to support said lever for swinging movement on said fulcrum abutment to effect additional opening movement of said cover.

8. In a combined fastener and locking means for hinged hatch covers of refrigerator cars, the combination with a fixed keeper having opposed abutment walls on the car; of an operating lever pivoted on said cover, said lever having only two arms, said arms extending oppositely from the pivot of said lever, one of said arms having engagement with the opposed walls of said keeper for forcing said cover respectively open or closed; and means for locking said cover in partly open position, including a member engageable with said cover and the other arm of said lever, remote from the pivot of the latter.

9. In a combined fastener and locking means for hinged hatch covers of refrigerator cars the combination with a lever pivoted to the hatch cover, said lever having an actuating arm and a keeper engaging projection extending from opposite sides of the pivotal axis thereof; of a keeper fixed to the car having means thereon with which said keeper engaging portion is engageable to effect closing movement of the cover, said keeper having additional means thereon with which said keeper engaging portion is engageable to effect opening movement of the cover; a fixed fulcrum abutment on said car engageable by said actuating arm on the lever and on which said lever is rockable to effect additional opening movement of said cover; and a latch engageable with said actuating arm portion of the lever while the keeper engaging portion thereof is in engagement with said first named means for holding said lever in position with the cover closed.

WILLIAM M. DWYER.