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BOX CAR DOOR SAFETY LATCH

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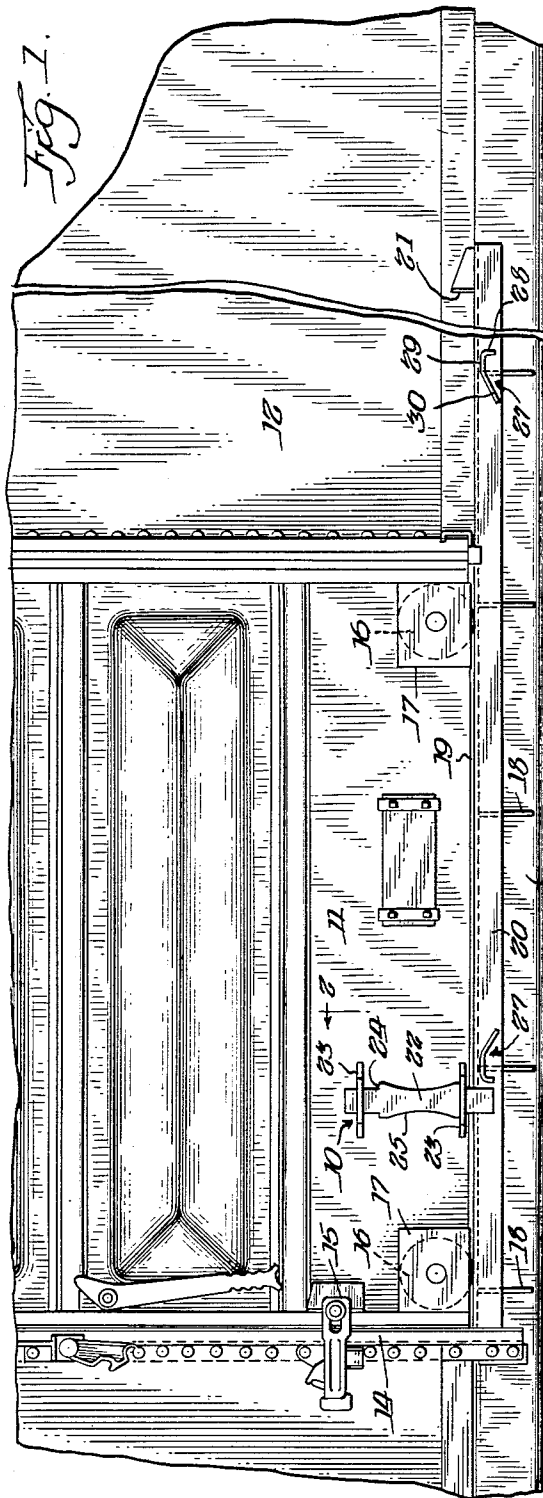
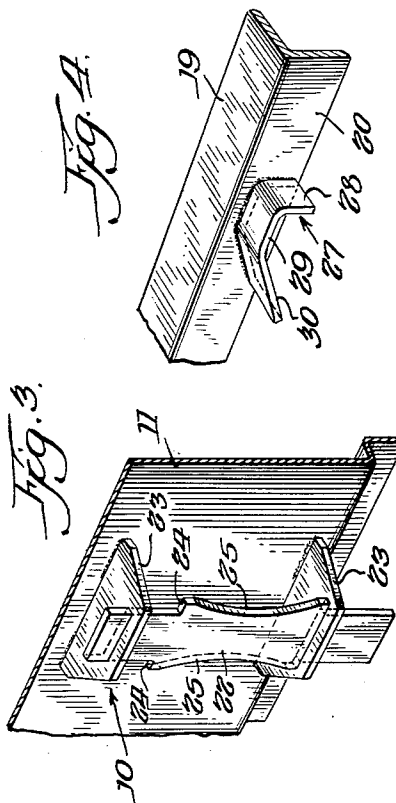
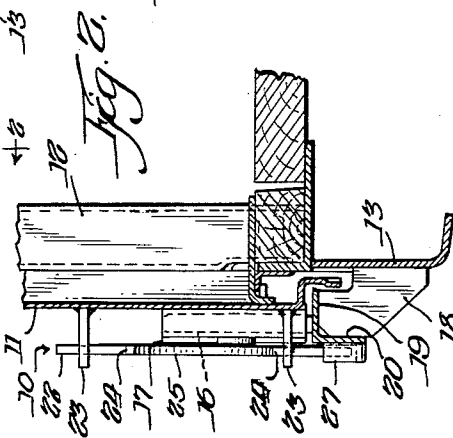


Fig. 2.

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BOX CAR DOOR SAFETY LATCH

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2 Claims. (Cl. 292—189)

The present invention relates to a lock for sliding box car doors or the like, and more particularly to safety latch means for such doors.

In the embodiment of the invention disclosed herein, a latch member is slidably mounted in brackets extending outwardly from a box car sliding door, normally projecting downwardly below the lower edge of the door for engagement with one or the other of a pair of keepers fixedly mounted on the car adjacent the door. The keepers have cam surfaces by which the latch member is raised so as to ride over the keeper when the door is moved to one position, and a relatively abrupt abutment face with which the latch member engages as it drops back to the normal projecting position after riding off the cam surface. Return movement of the door is thus prevented until the latch member is intentionally raised out of engagement with the abutment face of the keeper. Front and rear stop members are provided for the door, the front one of which is that commonly employed at the forward end of a box car opening closed by the door, and the keepers are so located relative to the stop members that the door is held against substantial movement in either direction when disposed in its closed or open positions. The latch member, brackets, keepers, and rear stop member are all formed of flat sheet or plate material of suitable characteristics, preferably steel, and the latch member particularly is in the form of a flat, straight strip of the material and carried parallel to the door so that it engages edgewise with the keepers and all stresses imposed on it in holding the door against movement act in its single plane. The possibility of shearing off or breaking of the latch member, which might occur through torsional strain if the latch member were of offset formation so as to extend in more than one plane, is minimized and in fact practically eliminated. In addition, the latch and other parts may be formed by a simple, rapid operation such as stamping, instead of by casting or forging as would be necessary otherwise, so that the cost of manufacture is greatly reduced. The latch is formed with integral lugs on the portion thereof extending between the brackets so that its movement in either direction is limited and it is held against disengagement with the brackets. The thickness, width, and shape of this portion of the latch are such that it provides a hand grip which may readily be grasped for release from latching engagement with a keeper, and the latch is held appreciably spaced from the door by the brackets, so that a hand may easily close around it. Thus no operating levers or other members are required to move the latch manually, and the construction is made as simple as is possible.

The advantages pointed out—cheapness of manufacture, resistance to breakage, simplicity of construction, and ease of operation—are very important in practice, particularly in the case of railroad cars, because of the reduction of cost, elimination of repairs, reduction of weight, and increased safety.

It is therefore an important object of the invention to

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provide safety latch means for sliding doors such as employed on box bars which has its parts formed of sheet or plate material by simple operations.

Another object is the provision of safety latch means for sliding doors including a latch member of flat, straight construction extending in a single plane and so disposed that the stresses imposed thereon act only in that plane, to obtain maximum stress distribution and resistance to shocks and minimize breakage.

Another object is the provision of safety latch means for sliding doors in which a slidable latch is mounted on the door in spaced relation thereto and has a portion in the same plane as the remainder thereof of such shape and transverse dimensions as to provide a hand grip by which it may readily be grasped.

It is another object to provide safety latch means for sliding box car doors and the like of the simplest possible construction.

It is also an object of the invention to provide safety latch means for sliding doors which are easily and cheaply manufactured and applied to the doors.

Other and further objects, advantages, and features of the invention will be apparent to those skilled in the art from the following description in conjunction with the accompanying drawing, in which:

Fig. 1 is a fragmentary side elevation of a box car and sliding door therefor showing the safety latch applied thereto;

Fig. 2 is an enlarged vertical sectional view taken substantially as indicated by the line 2—2 of Fig. 1;

Fig. 3 is an enlarged perspective view of the latch and its brackets; and

Fig. 4 is an enlarged perspective view of one of the keepers.

Referring to Fig. 1 of the drawing, safety latch 10 is shown as applied to the sliding door 11 of a box car 12 having the usual sub-side sill 13 and front door stop member 14 at the forward edge of the car door opening. Door locking and sealing means 15 of known construction may be provided. The door 11 is shown as made of steel and of the bottom hung type, having rollers 16 adjacent its outer face disposed in housings 17. Brackets 18 extending from the sub-sill 13 support a horizontal track 19 for the rollers 16 which extends rearwardly from the front stop member 14. A flange 20 depends from the outer edge of the track 19, the track and flange preferably being provided by an angle member. A rear door stop member 21 is welded or otherwise secured on the rear portion of the track 19, at a point to be engaged by the rear edge of the door when it is fully opened. The stop member 21 may conveniently be formed of a strip of steel.

A latch 22 in the form of a flat, straight strip of steel or the like is supported vertically on the door by horizontally disposed brackets 23 spaced vertically to each other and projecting outwardly from the door and having suitable slots through which the latch extends in slidable relation. In the present instance, the brackets are shown as simple flat lugs of steel or the like having one edge welded to the door 11. The brackets hold the latch parallel to and spaced appreciably from the door, as best shown in Figs. 2 and 3, so that it may project downwardly below the lower bracket alongside the flange 20 of the track 19. The side edges of the latch 22 are formed with projections or stop lugs 24 at points inwardly of the upper and lower ends thereof. The upper and lower lugs are spaced apart a distance less than the spacing of the brackets and are disposed between the brackets to abut thereagainst for limiting the sliding movement of the latch in the brackets. In its normal or latching position, the latch has its lower end extending below the track 19 and alongside the

flange 20, the lower lugs resting on the lower bracket 23. Between the upper and lower lugs 24, the side edges of the latch have portions 25 curved inwardly toward each other so that the perimeter at the central portion of the latch 22 is such as to be easily grasped and encircled by the hand, and wider portions are provided adjacent the stop lugs to prevent the hand from slipping along the latch. A hand grip is thus formed by the central latch portion to facilitate manipulation of the latch. The spacing of the latch from the door allows the fingers to pass freely therebetween.

A pair of keepers 27 are secured on the outer face of the flange 20, in position to be engaged by the latch in its normal position. Each keeper is formed of a steel strip bent to provide a vertical abutment portion 28, having its upper edge joined by a horizontal portion 29 to the upper edge of an angled cam portion 30. Each keeper is welded by one side edge to the flange 20, one keeper being located at a point on the flange to engage the latch 22 in the closed position of door 11 with its abutment portion 28 facing forwardly, and the other being reversely arranged at a point on the flange to engage the latch in the open position of the door with its abutment portion facing rearwardly. The forward keeper is spaced rearwardly of the front stop member 14 a distance corresponding to the spacing of the latch 22 from the forward edge of the door, while the rear keeper is spaced forwardly from the rear stop member 21 a distance corresponding to the distance of the latch from the rear edge of the door.

In the closed position of the door 11, as shown in Fig. 1, the latch 22 is disposed in latching position just forwardly of the abutment portion of the forward keeper 27, against which it abuts upon attempted rearward movement of the door to prevent such movement. Since the forward edge of the door in this position engages the front stop member 14, the door is prevented from moving in either direction, except that the parts may be arranged to permit some clearance if desired. To open the door, assuming the locking means 15 have been released, the latch 22 is grasped by the hand grip constituted by the central portion thereof and is lifted so as to clear the abutment portion of the keeper, and the door is moved rearwardly. The latch may be released to ride over the horizontal keeper portion 29 and down the cam portion 30, if desired. As the door approaches fully open position, the latch in its normal position engages the cam portion of the rear keeper and is raised thereby so as to ride over the keeper until it passes the abutment portion, when it drops to the normal latching position to prevent forward movement of the door. As the latch passes to the rear of the keeper, the rear edge of the door comes into engagement with the rear stop member 21, so that the door in its open position is held against any substantial movement in either direction. To close the door, the latch 22 is again manually lifted and the door is rolled forwardly, the latch passing over and dropping into latching relation with the forward keeper in the manner described in connection with the rear keeper.

Since all the shocks and stresses of any moment imposed on the latch 22 arise from its movement in a plane parallel to the door, the straight-line or single-plane formation of the latch 22 and its disposition parallel to the door and edgewise to the keepers provides for the best

possible reception and absorption of impact shocks, the strains being imposed on the latch in only one plane and having no torsional effect. The latch, brackets, keepers, and rear stop member may be stamped or punched from a sheet or plate of steel in a simple, expeditious, and inexpensive operation, the latch and brackets being so formed in substantially their final forms and the keepers and rear stop member requiring in addition only a simple bending operation. The latch without any but its single forming operation is adapted to serve as its own handle, and requires no additional members or means for its manipulation. It will therefore be clear that a very simple, inexpensive, and easily formed latch means has been provided, yet one which affords optimum stress distribution and consequent resistance to shock and breakage in use.

What I claim is:

1. Latching means for a door slidable along a vertical wall to open and close an aperture therein, comprising a pair of vertically spaced flat bracket plates extending horizontally from the door each having a closed elongated slot therein extending substantially parallel to the door, said slots being located in vertically registering relation, and a flat plate-like latching element slidably engaged for vertical movement in said slots of said bracket plates and mounted thereby in spaced substantially parallel relation to the door, said latch element having upper and lower end portions of a width corresponding to the length of the slots in the respective upper and lower bracket plates and portions of greater width adjacent the end portions vertically spaced a distance less than the spacing of said bracket plates and respectively engageable with the adjacent of said plates to limit sliding movement of the latch element in opposite direction, said latch element also having a portion between said wider portions defined by inwardly curving side edges and providing a hand grip for ready grasping in raising of said element and moving of the door.

2. Latching means for a door slidable along a vertical wall to open and close an aperture therein, comprising a pair of vertically spaced bracket members extending from the door each having a closed elongated slot defined therein extending substantially parallel to the door, said slots being located in vertically registering relation, a flat plate-like latching element engaged for vertical sliding movement in said slots of the bracket members and located thereby in spaced substantially parallel relation to the door, said latch element having upper and lower end portions of a width corresponding to the length of the slots in the respective upper and lower bracket members and vertically spaced portions of greater width adjacent the end portions respectively engageable with the adjacent bracket members to limit sliding movement of the latch element in opposite directions, said latch element also having the portion thereof between said wider portions narrowed for ready grasping in raising of said latch element and moving of the door.

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