United States Patent [19]

Bailey

[11] **3,791,688**

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[54] **OPENING, CLOSING AND LOCKING DEVICE**

[75] Inventor: **John D. Bailey**, Orland Park, Ill.

[73] Assignee: **Pullman Incorporated**, Chicago, Ill.

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[21] Appl. No.: **295,757**

[52] **U.S. Cl.** **292/283,** 292/241

[51] **Int. Cl.** **E05c 19/08**

[58] **Field of Search** ... 292/241, 283, 284, 285, 286, 292/327, DIG. 32

[56] **References Cited**

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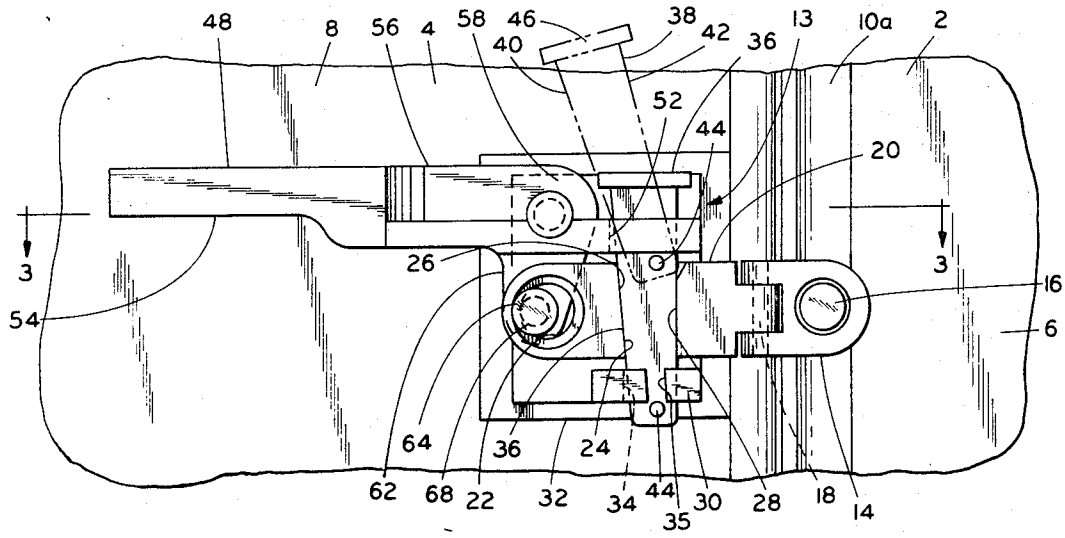
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Primary Examiner—Marvin A. Champion
Assistant Examiner—Richard P. Tremblay
Attorney, Agent, or Firm—Richard J. Myers

[57] **ABSTRACT**

In a railroad car having sliding doors, a lock device including a hasp pivotally mounted on a first sliding door and a bell crank lever pivotally mounted on the second door with the lever pivotally carrying a wedge to wedgingly lock the hasp, lever and a keeper on the second door to keep the doors locked together, the bell crank lever having a drive arm releasably connecting with the hasp for moving the first door away from the second door when the locking wedge pin is removed from the door and the hasp in a freed position by a downward movement of the handle of the lever while at the same time freeing the lever held wedge.

5 Claims, 5 Drawing Figures



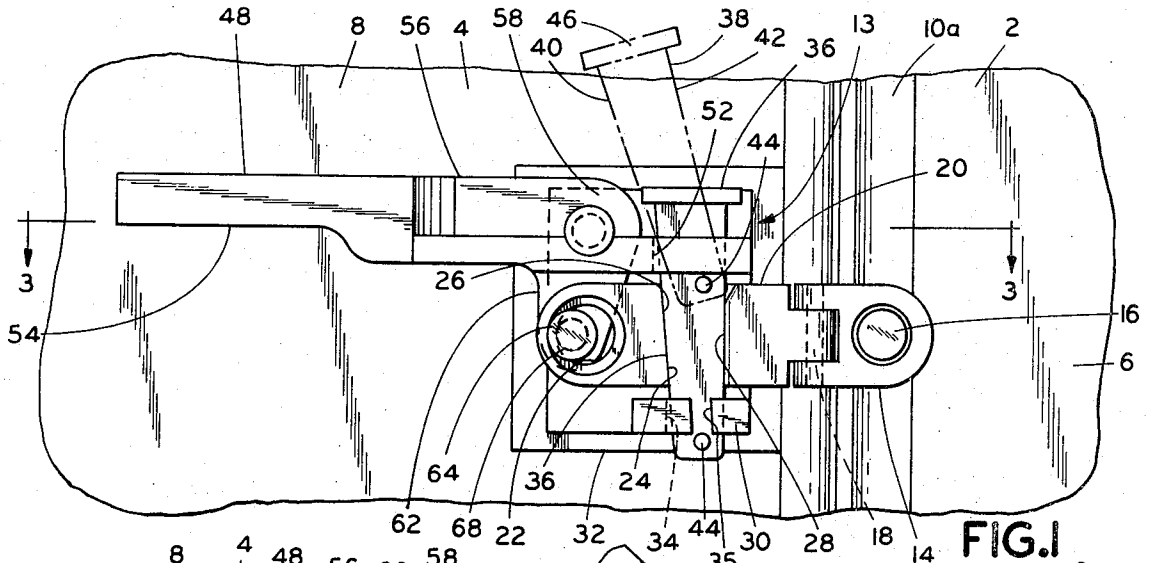


FIG.1

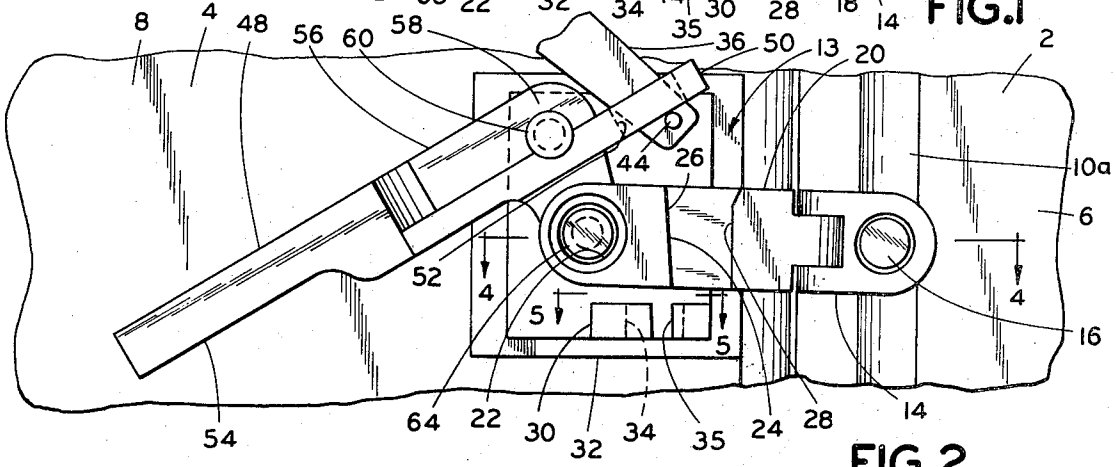


FIG.2

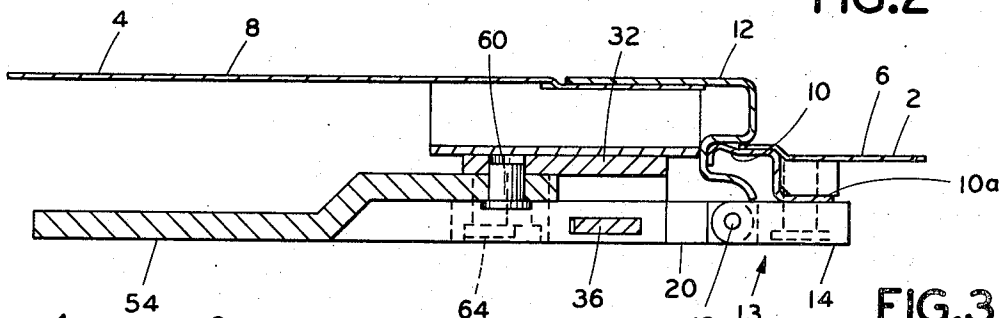


FIG.3

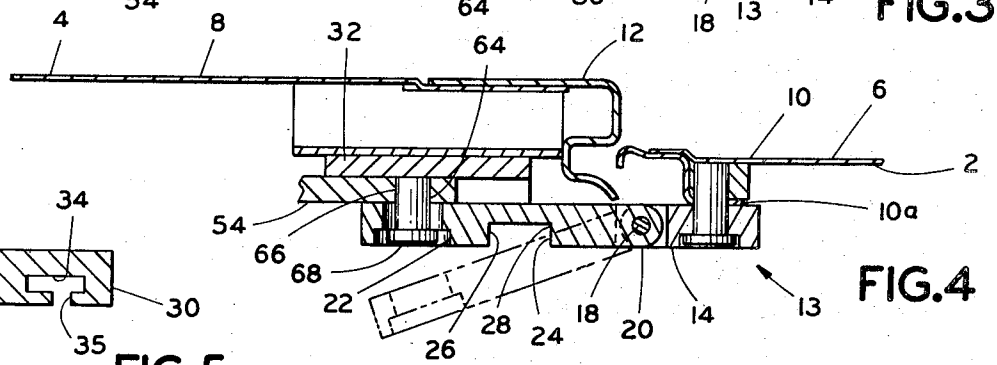


FIG.4

FIG.5

OPENING, CLOSING AND LOCKING DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to the field of railroad cars having sliding doors as, for instance, with railroad box cars and, in particular, deals with locking devices for holding the sliding doors together and releasing same as, for instance, seen by U. S. Pat. No. 3,596,959 which is hereby incorporated herein by reference.

2. Description of the Prior Art

The prior art teaches the use of locking devices for the sliding doors of railroad box cars such as U. S. Pat. No. 2,788,995 but does not disclose a type of lock device which is designed to most effectively apply opening and closing forces on the lever working on the hasp or coupling link between the doors, and further a device where a locking wedge or pin is prevented from being lost. This is what the invention purports to do.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial view of the railroad car sliding doors in a closed locked position;

FIG. 2 is a partial view of the said doors in an unlocked unclosed position;

FIG. 3 is a sectional view taken generally along line 3—3 of FIG. 1;

FIG. 4 is a sectional view taken generally along line 4—4 of FIG. 1; and

FIG. 5 is a sectional view taken generally along line 5—5 of FIG. 4.

SUMMARY OF THE INVENTION

This invention relates to lock devices for the sliding doors of railroad box cars. The invention is for the open and closing of the railroad car doors as well as for locking and unlocking of the doors where at least one of the doors is of the sliding type. A slotted bell crank lever drivingly cooperates with a pivotal slotted hasp to receive a locking wedge pin to insure positive locking and to retain the locking wedge pin when not in use. The invention therefore provides for a more effective application of forces on the operating lever in opening and closing the doors by movement of the hasp and prevents loss of the locking wedge pin in transit.

These and other objects will become more apparent from reference to the following description, appended claims and attached drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The lock mechanism for a sliding door assembly of a railroad car, as embodied in this invention, is of such construction to be utilizable for the double doors of a box car as well as for the single door of a box car. As seen from the drawings, the double doors of the box car comprise a first door **2** and a second door **4**, these doors being mounted for sliding movement upon the side of the car. The door **2** is provided with a panel **6** and the door **4** is provided with a panel **8**. The door **2** is provided with a seal structure **10** which intermeshes with the seal arrangement **12** of the door **4**.

The opening, closing and locking device **13** of the instant invention comprises a hasp fastener or hinge member **14** which is held on the seal edge portion **10a** of the door **2** by the fixed pin **16**. The hinge **14** carries a pivot pin **18** to which is pivotally attached the hasp **20**. Consequently, the hasp **20** is capable of pivoting toward and away from the door **2**. The hasp **20** is generally a horizontally elongated member which is provided at its free or non-pivoted end with an enlarged eye **22** and intermediate its end is provided with a slot or groove **24** which is provided with a sloped or biased edge **26** and an upright or vertical edge **28**. As viewed in FIG. **4**, the hasp slot **24** is generally rectangular in shape. The locking device **13** further comprises a lock or guide bracket **30** which is mounted on backing plate **32** mounted on the door **4**. The lock or guide bracket **30** is provided with a wedge or locking pin receiving slot **34** as seen, for instance, in partial sectional view FIG. **5**. The lock bracket **30** is adapted to receive through its slot **34** the wedge or locking pin **36** which also is receivable in the slot **24** of the hasp (see FIG. **1**). The pin **36** includes an elongated flat plate portion **38** that is wedge-shaped or having downwardly sloping sides **40, 42**, the plate portion having at its lower end a catch pin **44** to prevent removal of the wedge pin **36** and at its upper end an elongated horizontal top end part **46** which limits downward movement of the pin **36**. The wedge-shaped sides **40** and **42** conform generally to the slot sides **26, 28** with the side **40** being tapered while the side **42** is more vertical when the pin is inserted in upright position into the slot **24**. The lower portion of the pin is held in its position within the slot **24** by the lower guide bracket **30** which has an open slot **35** to allow passage of the pin **44** therethrough, as best seen in FIG. **1**.

The opening and closing lever **48** carries the locking pin **36** by means of the U-shaped bracket or wedge carrier or ring **50** in the forward end of the lever. The ring portion **50** is defined by the wedge receiving slot **52**. The lever **48** further includes, at the end opposite the ring portion **50**, a handle **54**. The central part of the lever defines a bell crank portion **56** which includes a pivot portion **58** pivotally mounted on pin **60** mounted on the backing plate **32** for allowing the handle to fulcrum about such pin **60**. The lower end of the bell crank portion **56** is provided with a downwardly projecting head portion **62** which is provided with a drive arm or pin **64** which includes a shaft portion **66** and an enlarged head portion **68** that extends through the circular opening or enlarged eye **22** of the hasp **20**. The shaft portion **66** and head portion **68** are smaller in size than the respective eyelet portions **22*a*** and **22*b*** of the eye **22** so that the hasp **20** may be pivoted about hinge pin **18** away from the backing plate **32** and the drive arm **64** when the wedge pin **36** has been removed.

The lock device **13** is shown in solid line in FIG. **1** in the locked position holding the first and second doors together in the locked sealed condition. In this locked condition the locking device has its hasp member against the outside of the door **4** and the eye **22** of the hasp is over the drive arm **64** of the operating lever **48** which has its arm or handle **54** in the horizontal position. The wedge element **36** of the locking device is inserted through the ring portion **50** of the operating lever **48** and is also inserted through the slot **24** in the hasp **20** and is also extending through the lock or guide bracket **30** mounted on the back plate **32**. In order to unlock the doors the wedge pin **34** must first be raised upwardly as shown in dotted line in FIG. **1** and then the handle of the lever **48** is pulled downwardly (see FIG.2) which causes the bell crank portion **56** to move the hasp **20** to the right with consequent separation of

the door 2 from the door 4 and thereby opening the doors. Then the hasp eye 22 may be pivoted away from the pin 64 for further separation of the doors. In order to lock the doors, the procedure is reversed. The downwardly extending bell crank portion 56 and the handle 54 provide an advantageous force lever arrangement which allows the operator to exert his weight downwardly to force open the doors. The ring portion 50 not only carries the wedge 36 but assists in prying the wedge loose from its connection with the hasp and also acts as a keeper element with the wedge keeper surfaces 26 and 28 of the slot 24 and the keeper or guide bracket 30 to present a unique and effective locking device. By applying a downward force on the top 46 of the pin 36 it is wedged effectively between the surfaces 26 and 28 of the groove 24 to prevent removal of the pin from its engaged locked position.

The foregoing description and drawings merely explain and illustrate the invention and the invention is not limited thereto, except insofar as the appended claims are so limited, as those skilled in the art who have the disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

What is claimed is:

1. In a sliding door assembly for railroad cars a locking device comprising:

a hasp pivoted on one movable door having a free end with a lever drive arm receiving eye therein extendable over the other door,

a bell crank lever spaced vertically from the hasp and pivotally mounted on the other door and having a lever arm carrying a drive arm releasably coupling with the eye,

said hasp having a vertically extending wedge receiving slot spaced between the eye and the pivotal end of the hasp,

said lever having at a first end adjacent the one door a pin carrying portion,

a wedge receiving slotted keeper on the other door below the hasp slot and a wedge pin carried by the lever pin carrying portion and extending therethrough and extendable through the slot and the keeper, the pin carrying portion and the slot and the keeper coacting to entrap and hold the wedge pin in the door locked position of the locking device, and

handle means on a second end of said lever generally horizontally spaced from the first end and, after removal of the wedge pin from the hasp, said handle means being movable to operate the hasp for opening the one door pursuant to placing the locking device in the door unlocked position.

2. The invention according to claim 1, and

said lever arm extending downward below the pivotal connection with the other door and the pin carrying portion being extendable above the hasp over the slot.

3. The invention according to claim 1, and

means on the upper and lower end of the wedge pin cooperative with the pin carrying portion loosely entrapping the wedge pin on the pin carrying portion for movement thereabout.

4. The invention according to claim 1, and

said wedge pin having a sloping side and a vertical side and said hasp slot having complemental sloped and vertical sides for said wedge pin to accommodate a wedging action of said wedge pin.

5. In a sliding door assembly for railroad cars a locking device comprising:

a hasp pivoted on one movable door having a free end with a lever drive arm receiving eye therein extendable over the other door,

a bell crank lever spaced above the hasp and pivotally mounted on the other door and having a lever arm extending downward below the pivotal connection with the other door, the lever arm carrying a drive arm releasably coupling with the eye,

said hasp having a vertically extending wedge receiving slot spaced between the eye and the pivotal end of the hasp,

said lever having at a first end adjacent the one door a pin carrying portion extendable above the hasp over the slot,

a wedge receiving slotted keeper on the other door below the hasp slot and a wedge pin carried by the lever pin carrying portion and extending therethrough and extentable through the slot and the keeper, the pin carrying portion and the slot and the keeper coacting to entrap and hold the wedge pin in the door locked position of the locking device, and

handle means on a second end of said lever generally horizontally spaced from the first end and, after removal of the wedge pin from the hasp, said handle means being movable to operate the hasp for opening the one door pursuant to placing the locking device in the door unlocked position.

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