

June 30, 1925.

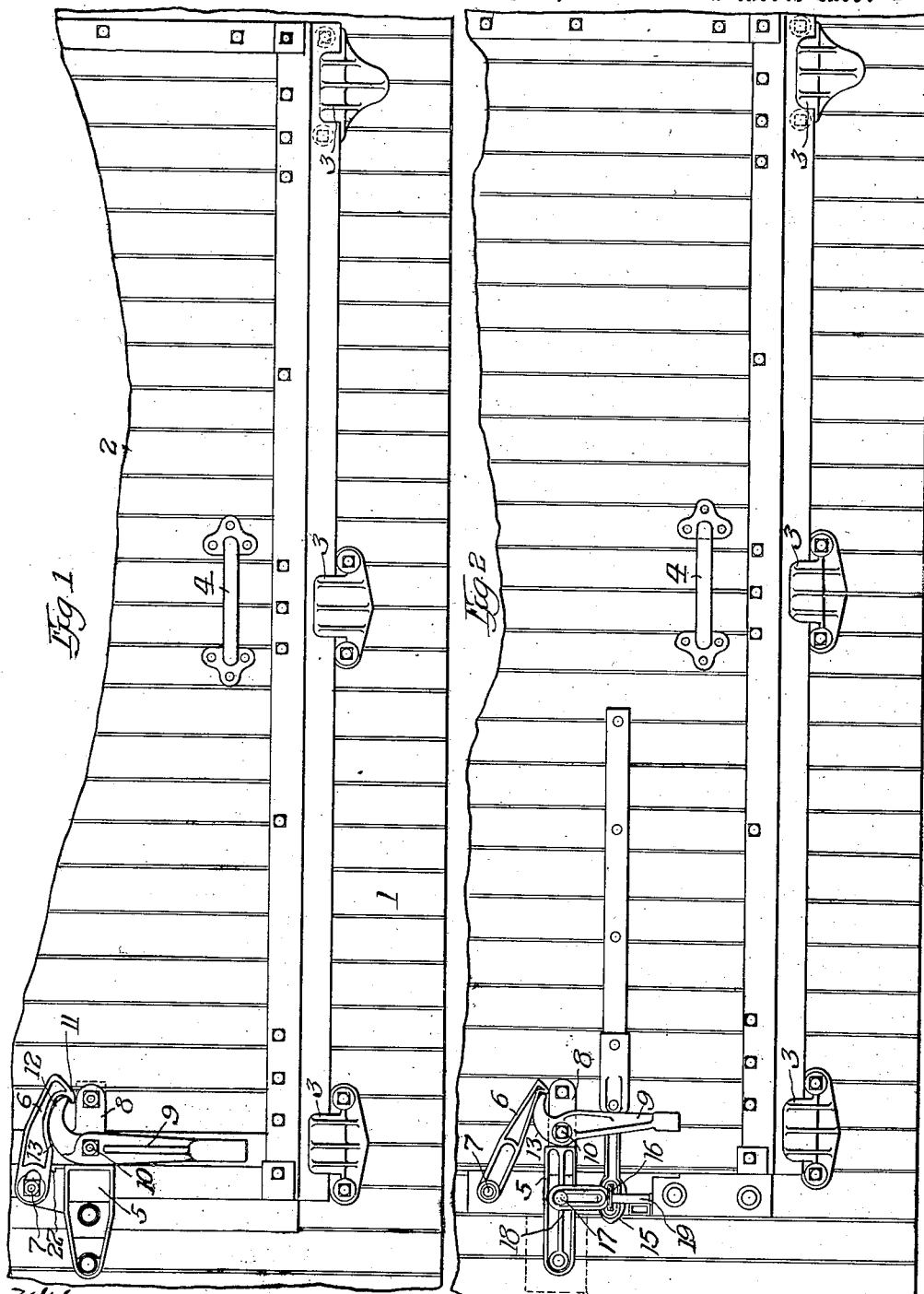
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H. E. CREER

DOOR OPERATING MECHANISM

Filed May 27, 1921

2 Sheets-Sheet 1



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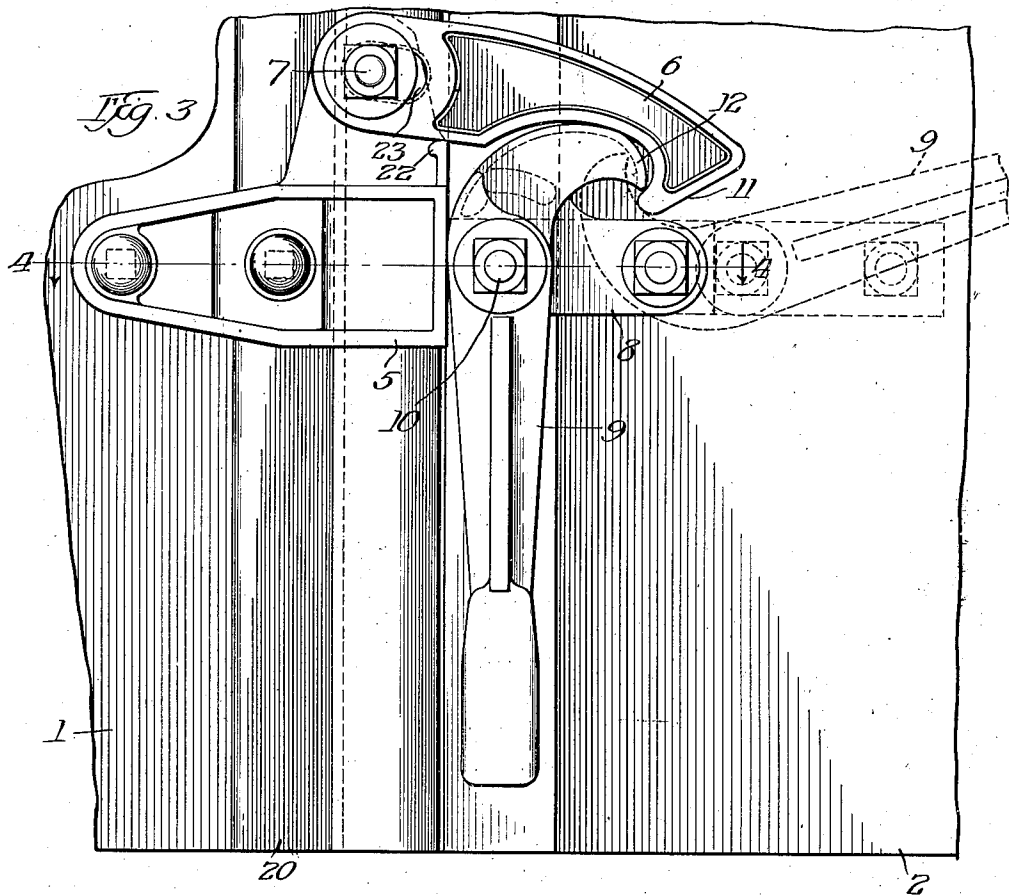
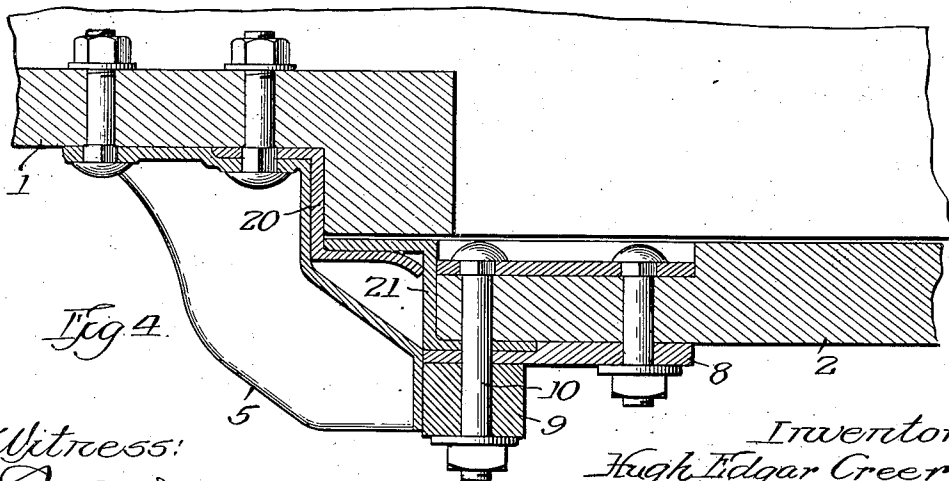
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DOOR OPERATING MECHANISM

Filed May 27, 1921

2 Sheets-Sheet 2



Witness:

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UNITED STATES PATENT OFFICE.

HUGH EDGAR CREER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CAMEL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DOOR-OPERATING MECHANISM.

Application filed May 27, 1921. Serial No. 473,030.

To all whom it may concern:

Be it known that I, HUGH EDGAR CREER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Operating Mechanism, of which the following is a specification.

The present invention relates to door operating mechanism.

More particularly, the present invention relates to mechanism for operating sliding doors such as freight car doors. Hand grips are ordinarily provided on doors of this variety for the purpose of sliding said doors but frequently it is difficult to completely close a door without the exercise of violent force greater than a man can exert by pulling or pushing the door with his hands. Difficulty is also encountered in opening doors of the variety referred to.

An object of the present invention is to provide mechanism whereby a man may readily force shut a sliding door without the exercise of any violent effort on his part.

A further object is to provide a mechanism which will have the dual function of closing a sliding door and of opening the same with ease.

A further object is to provide a simple and sturdy structure of the kind referred to which may be readily installed upon the cars now in service and which will be unobtrusive in appearance.

Further objects will appear as the description proceeds.

Referring to the drawings, Figure 1 represents part of a sliding car door having an embodiment of the present invention applied thereto.

Figure 2 illustrates a slightly modified structure showing locking mechanism for the sliding door.

Figure 3 is a detail view drawn to a larger scale showing the operating mechanism disclosed in Figure 1.

Figure 4 is a detail sectional view taken along the line 4—4 of Figure 3, showing the adaptation of the present invention to a car door whereby a tight seal may be had between the door and the door jamb.

A side of the car is indicated in the drawings by the numeral 1. A sliding door is indicated by the numeral 2, which door is

adapted to slide along the guide plates 3—3 which are fast to the side of the car. The door 2 may be provided with a hand grip 4 for the purpose of manipulating said door.

Referring particularly to Figures 1 and 3, the side of the car is provided with an abutment plate 5, which has pivoted thereto the catch 6, said catch 6 being mounted to be rotatable about the pin 7. The door 2 has rigidly fastened thereto the lever plate 8 which pivotally carries the cam lever 9, said cam lever 9 being pivotally mounted to rotate about the pin 10. The catch member 6 has a hook shaped end portion 11 under which the arm 12 of the cam lever 9 is adapted to engage. If the door 2 is in a partially closed position and the hook member 11 of the catch member 6 is mounted over the arm 12 of the cam lever 9, as illustrated in dotted lines in Figure 3, a clockwise movement of the cam lever 9 will result in forcing the car door in a left hand direction as indicated in the drawings and will move said car door into closed position. The moment arms of the lever 9 may be chosen so that a man may readily close the door without the exercise of violent exertion or without resorting to the use of blows to effect a complete closing of the door.

The arm 12 of the cam lever 9 is provided with a cam surface 13. Said cam surface 13 is so designed that the distance from the center of the pin 10 to said cam surface 13 increases progressively toward the end of the arm 12, whereby the result is produced that when the cam lever 9 is moved in a counterclockwise direction, the cam surface 13 operating against the abutment member 5, will force the car door 2 open. The structure illustrated and described, therefore, has the dual function of forcing the door to closed position and opening said door.

The modification illustrated in Figure 2 includes locking mechanism for the car door 2. Figure 2 illustrates an abutment plate 5 having a hook member 6, with which the cam lever 9 is adapted to cooperate, as in Figure 1. The car door 2 is provided with a hasp member 15, adapted to fit over a staple 16 on the door jamb of the car. The details of the hasp and the hinge therefor have not been illustrated, such details being unnecessary for a complete understanding of the invention. The abutment member 5 of Figure 2, is provided with a pin 17 upon

which a slotted member 18 is adapted to slide with a vertical reciprocating movement. As will be noted from the drawing, the pin 17 has a head portion larger than the corresponding slot in the locking member 18 so that the abutment member 5, pin 17 and locking member 18 form a normally non-divisible unit. Locking member 18 is provided with a locking pin 19 adapted to slide within the staple 16 to releasably lock the hasp member 15. Any preferred means may be provided for securing the locking member 18 in locking position.

Figure 4 illustrates in detail how the present invention may be applied to a car while permitting a good seal between the car door and the door jamb. The sealing means for the car door include a pair of vertical angle strips, one of which, indicated by the numeral 20, is located on the door jamb of the car while the other of which, indicated by the numeral 21, is located upon the car door. The two angle strips 20 and 21 will cooperate in a manner which need not be described herein to provide an effectual seal between the door and the door jamb.

Figure 4 also serves to illustrate in sectional plan view, a preferred construction of the abutment plate 5 illustrated in Figures 1 and 3. As shown in Figures 1 and 3, a stop 22 may be provided for the purpose of limiting movement of the catch member 6 in a clockwise direction. If preferred, the catch member 6 may be provided with a slot 23 for receiving the pin 7. By this slotted construction, the catch member may be moved into position with the pin 7 occupying that end of the slot 23 which is nearer the end portion 11. The catch member 6 will then rest upon the lug 22 out of engaging position.

One embodiment of the present invention has been described in detail. Many modifications will occur to those skilled in the art. It is intended in this patent to cover all such modifications that fall within the scope of the invention as defined by the appended claims.

What I claim as new and desire to secure by Letters Patent in the United States, is:

1. Door operating mechanism comprising abutment means, a pivoted catch member and a pivoted cam lever member, said cam lever member including a projection, said projection being provided with a cam portion to engage said abutment means and with means for engaging said catch member.

2. Door operating mechanism comprising abutment means, a pivoted catch member and a pivoted cam lever member said cam lever member having a projection adapted to have either pushing functions against said abutment means or pulling functions against said catch member in response to the direction of movement of said lever member.

3. In combination a door jamb, an abutment member mounted on said jamb, a catch member supported by said jamb, a sliding door, a cam lever member mounted on said door intermediate of the length of said lever, said lever member having an end portion adapted to push against said abutment member to open said door, said end portion being adapted to engage said catch member to pull said door closed.

4. In combination, a door jamb, a sliding door, and means for closing and opening said door comprising abutment means on said door jamb, a pivoted catch member supported upon said door jamb, a cam lever mounted on said door, said cam lever having a cam surface for engaging said abutment means, and a portion for engaging said catch member.

5. Door control mechanism comprising a pivoted catch member and a pivoted lever member for co-operation with said catch member, means for pivotally mounting said catch member, said catch member being provided with a slot, said mounting means being provided with a pin extending through said slot, and unitary stop means for said catch member for limiting rotary movement of said catch member, said stop means setting one limit when said pin is at one end of said slot and another limit when said pin is at the other end of said slot.

6. Door control mechanism comprising a pivoted lever member and a pivoted catch member, mounting means for said catch member, said mounting means including a pin, said catch member being provided with a slot for receiving said pin, said lever member having a portion adapted to co-operate with said catch member, and unitary stop means operative when said pin is at one end of said slot for holding said catch member in operative relationship with said lever member, and operative when said pin is at the other end of said slot to hold said catch member out of operative relationship with said lever member.

7. In door operating mechanism, in combination, a catch member, a lever member pivoted intermediate of its length and having a handle at one end and an operating arm at the other end, one of said members being adapted to be mounted on a door and the other of said members being adapted to be mounted on a door jamb adjacent to said door and adapted to hook over the arm of said lever member, said catch member being provided with a slot, a relatively fixed pin mounted in said slot and providing a pivotal support for said catch member, and unitary stop means for holding said catch member in operative relationship with said lever member when said pin is at one end of said slot and holding said catch member out of operative relationship with said lever

member when said pin is at the opposite end of said slot.

8. Door operating mechanism comprising abutment means, a pivoted catch member and a pivoted cam lever member, said cam lever member being provided with a cam portion to engage said abutment means and with means for engaging said catch member, said pivoted catch member being provided with a slot, said abutment member being provided with a pin mounted within said slot, said abutment member being also provided with unitary stop means for holding said catch member in operative relationship with said lever member when said pin is at one end of said slot and holding said catch member out of operative relationship with said lever member when said pin is at the opposite end of said slot.

9. Door operating mechanism comprising abutment means, a pivoted catch member and a pivoted cam lever member adapted to have either pushing functions against said abutment means or pulling functions against said catch member in response to the direction of movement of said lever member, said catch member being provided with a slot, a pin providing a pivotal mounting for said catch member, and unitary stop means for holding said catch member in operative relationship with said lever member when said pin is at one end of said slot and for holding said catch member out of operative relationship with said lever member when said pin is at the opposite end of said slot.

10. Door control mechanism comprising a catch member and a lever member, said members being adapted for mounting, one upon a doorway and the other upon a co-acting door, said catch member having an abutment commonly mounted, relative to said doorway and door, with said catch member, said lever member carrying a working part whose position is changed as said lever is swung about its pivotal axis, said catch member being adapted to lie across the path of movement of said working part as a stop to receive direct leverage action from said lever member to move said door in one direction, one of said members being movable to a position in which said catch member is free from the path of movement of said working part, said working part having a portion for exerting pressure against said abutment to move said door in the opposite direction.

11. Door control mechanism comprising a catch member and a lever member, said members being adapted for mounting, one upon a doorway and the other upon a co-acting door, said catch member having an abutment commonly mounted, relative to said doorway and door, with said catch member, said lever member carrying a working part whose position is changed as said lever

is swung about its pivotal axis, said catch member being adapted to lie across the path of movement of said working part as a stop to receive direct leverage action from said lever member to move said door in one direction, one of said members being movable to a position in which said catch member is free from the path of movement of said working projection, said lever member having a portion for exerting pressure against said abutment to move said door in the opposite direction, the working part on the lever member and the catch member being fashioned to permit them to interlock at varying angular positions of said lever member.

12. Door control mechanism comprising a catch member and a lever member, said members being adapted for mounting, one upon a doorway and the other upon a co-acting door, said catch member having an abutment in the form of a curved toe commonly mounted, relative to said doorway and door, with said catch member, said lever member carrying a working part whose position is changed as said lever is swung about its pivotal axis, said catch member being concave to receive said toe and adapted to lie across the path of movement of said working part as a stop to receive direct leverage action from said lever member to move said door in one direction, one of said members being movable to a position in which said catch member is free from the path of movement of said working part, said lever member having a portion for exerting pressure against said abutment to move said door in the opposite direction.

13. Door control mechanism comprising a catch member and a lever member, said members being adapted for mounting, one upon a doorway and the other upon a co-acting door, said lever member carrying a working part whose position is changed as said lever is swung about its pivotal axis, said catch member being adapted to lie across the path of movement of said working part as a stop to receive direct leverage action from said lever member, one of said members being movable to a position in which said catch member is free from the path of movement of said working part, one of said members having a pin and slot mounting and stop means for said one member whereby said one member is movable to a position wherein said catch member is held free from the path of movement of said working part.

14. Door control mechanism comprising a catch member and a lever member, said members being adapted for mounting, one upon a doorway and the other upon a co-acting door, said lever member carrying a working part whose position is changed as said lever is swung about its pivotal axis,

said catch member being adapted to lie across the path of movement of said working part as a stop to receive direct leverage action from said lever member, one of said members being movable to a position in which said catch member is free from the path of movement of said working part, one of said members having a pin and slot mounting and stop means for said one member whereby said one member is movable to a position wherein said catch member is held free from the path of movement of said working part, the working part on said lever member and said catch member being fashioned to permit them to have operative abutting relation at varying angular positions of said lever member.

15. Door control mechanism comprising a catch member and a lever member, said members being adapted for mounting, one upon a doorway and the other upon a co-acting door, said lever member carrying a working part in the form of a curved toe whose position is changed as said lever member is swung about its pivotal axis, said catch member being concave to receive said toe and adapted to lie across the path of movement of said working part as a stop to receive direct leverage action from said lever member, one of said members being movable to a position in which said catch member is free from the path of movement of said working part, one of said members having a pin and slot mounting and stop means for said one member whereby said one member is movable to a position wherein said catch member is held free from the path of movement of said working part.

Signed at Chicago, Illinois, this 23rd day of May, 1921.

HUGH EDGAR CREER.