Sept. 29, 1931. K. J. TOBIN ET AL 1,825,027

DOOR OPERATING MEANS

Filed March 29, 1929 2 Sheets-Sheet 1

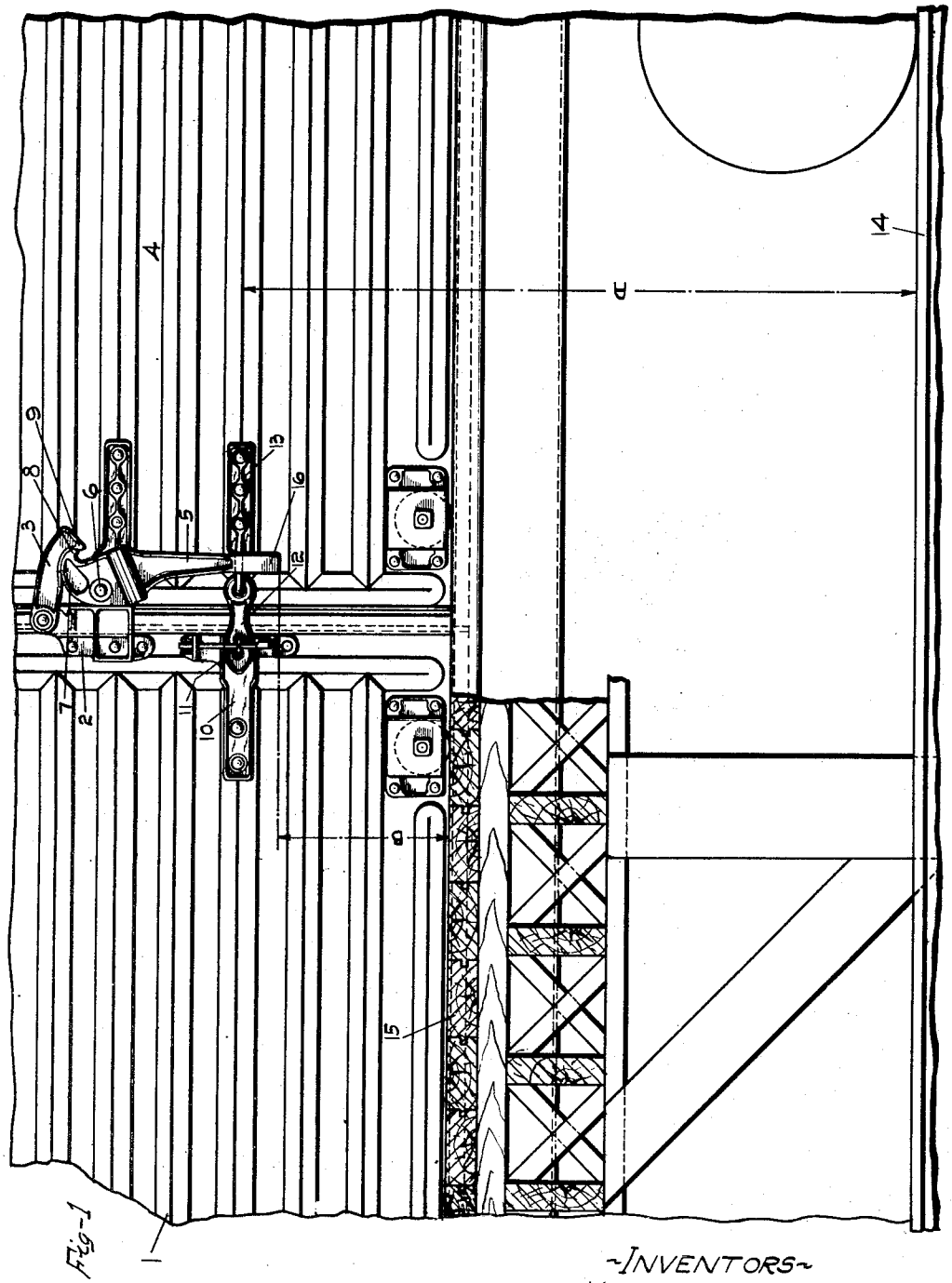


Fig. 1.

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Fig-2

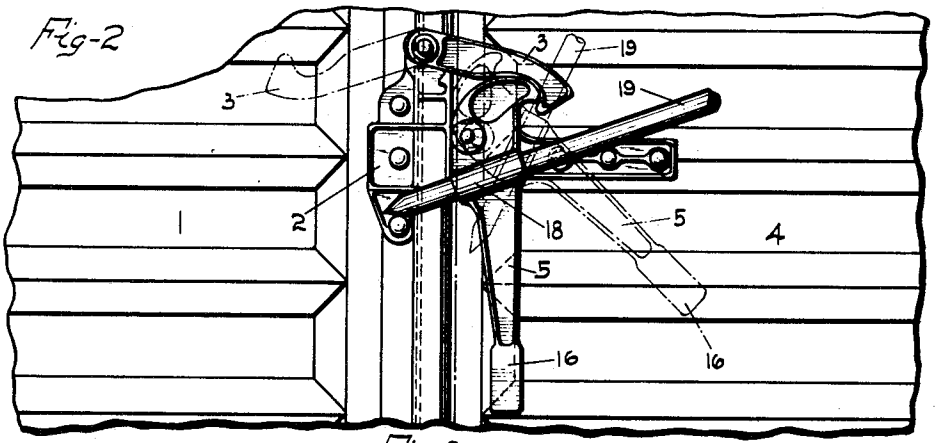


Fig-3

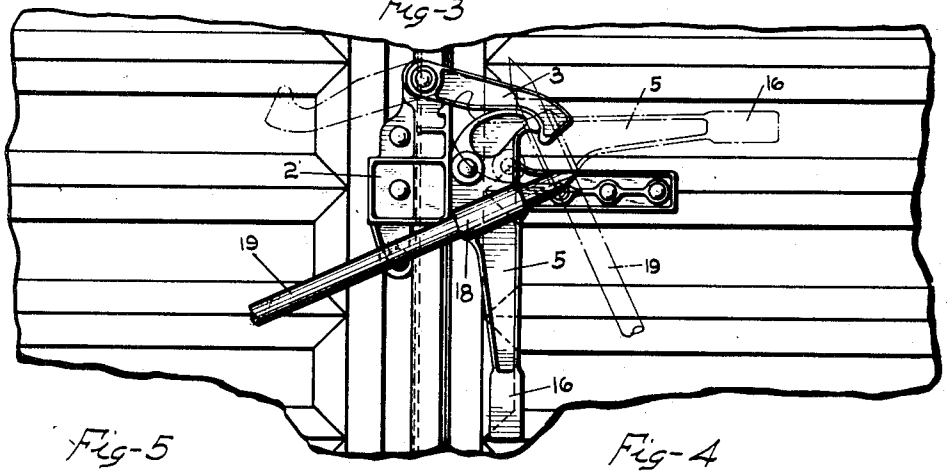


Fig-5

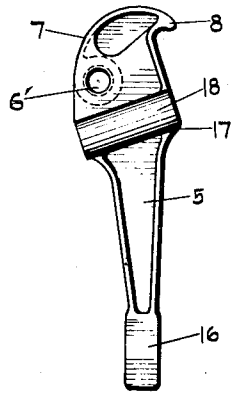
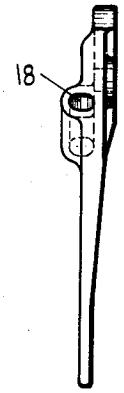


Fig-4



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UNITED STATES PATENT OFFICE

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DOOR OPERATING MEANS

Application filed March 29, 1929. Serial No. 351,000.

The present invention relates to door operating mechanisms and particularly to improvements in the means employed for tightly closing and starting the opening of sliding freight car doors. The improvements will be illustrated and described in connection with door operating mechanisms of the type disclosed and claimed in the patent to Creer, No. 1,544,736, granted June 20, 1925.

The mechanism disclosed in the patent consists of an abutment or buffer plate mounted on the side of the car and pivoted cam lever or starting lever having an operating handle mounted on the movable door and adapted to cooperate with the abutment plate so as to force the door open by turning movement of the lever. In addition, a pivoted catch is mounted on the abutment plate designed to cooperate with the toe of the operating lever to force the door into tightly closed position by movement in an opposite direction to that first mentioned. Thus the operating lever has the dual function of opening or closing the door. Necessarily the lever must be relatively short since a long lever would be very much in the way on the outside of a freight car door. In some instances the door of the freight car may bind or stick so that the operator is not able to develop sufficient leverage by pulling on the starter lever to open the door. In such case it has been customary for the operator to insert a pipe over the handle of the starter lever whereby the increased leverage is sufficient to open the door but breakage of the starter lever may occur especially since the extension lever is applied to a portion of the handle which is relatively narrow. Furthermore, in cases where the freight car is drawn alongside a loading platform, the starter lever handle will be adjacent the floor necessitating that the operator should stoop in order to grasp the handle. This is usually too much trouble for the workmen especially if they are piece-work operators, so in order to save time they will force the car open with a crow bar, usually inserted between the cam surface of the lever and the abutment plate, after the closing latch has been thrown back. Naturally such abuse results in either disalignment of the buffer plates or breakage of the fulcrum pivots.

It is, therefore, the purpose of the present invention to so design the operating mechanism of the type mentioned that the operator can readily and quickly open the door by the use of increased leverage without resulting in breakage or disalignment of the operating parts.

It is further a purpose of the present improvements to provide a door opening mechanism which may be readily operated by a man who is standing either on the ground or on a loading platform.

In carrying out the above mentioned purposes, it is a particular feature of the present invention that a socket is formed in the starter lever which is adapted to receive the end of a crow bar from either above or below the pivot of the lever whereby the increased leverage developed by the bar will readily open the door.

It is further a feature of the present invention that the socket above mentioned is provided in a portion of the starter lever that is adjacent the fulcrum and is sufficiently wide to prevent breakage of the lever.

Further objects and advantages of the improved construction will be more readily apparent as the invention is fully described in connection with the attached drawings in which—

Figure 1 is a vertical elevation of a portion of a freight car showing a portion of a loading platform in section.

Figure 2 is a detail vertical elevation of the door-operating mechanism showing the manner of cooperation with a crow bar inserted from above, while

Figure 3 is a detail view similar to Figure 2 showing a bar inserted from below.

Figures 4 and 5 are detail views of the improved construction of the starter lever.

The operating mechanism shown in the present drawings is generally similar to that of the above mentioned patent. Thus upon the relatively stationary member 1 of the freight car is mounted an abutment or buffer plate 2 to which is pivoted a latch 3. Upon the movable door 4 is mounted an operating

lever 5 pivoted about a fulcrum 6 and having a cam surface 7 which cooperates with the abutment plate to force the door open by turning movement of said lever. The lever has a toe 8 at the end of the cam surface 7 which engages with the end 9 of the latch 3 in order to force the door closed by movement of the lever in a clockwise direction. According to standard regulations, the freight car is provided with sealing means which may consist of a plate 10 having a locking staple 11 which is engaged by a hasp 12 pivoted to a plate 13 mounted on the movable door. The regulations provide that the center line of the sealing means shall be not less than five feet or more than five feet six inches from the top of the rail, shown at 14. This dimension is indicated by A in Figure 1. A loading platform 15 is partially shown in section in Figure 1 and it is apparent that the floor of the loading platform corresponds to the floor of the car. The handle 16 of the starter lever 5 is so designed that it normally extends down to a point adjacent the seal and the distance from the end of the handle 16 to the floor of the car or to the floor of a loading platform, which is shown by B, should not be too small. It is necessary that the handle be readily reached by a workman standing on the ground and should not be so close to the loading platform that it is difficult to grasp by an operator standing on the loading platform.

As previously stated, however, even with the position of the handle 16, as shown, which is the most preferable arrangement, an operator standing upon the loading platform 15 may not take the trouble to slightly stoop and grasp the handle 16 to operate the starting lever 5 and for the other reasons previously described, namely, where the door is stuck and difficult to move by grasping the handle 16, the operator standing upon the loading platform will use a crow bar inserted between the cam surface 7 and the buffer 2 in order to force the door open after throwing back the catch 3 or with the operator standing upon the ground he may insert a pipe over the handle 16 in order to obtain sufficient leverage to open the door. Both of these undesirable operations can be prevented by providing the improved construction of this invention whereby the operator may readily open the door from either of the described positions by the development of increased leverage by means of a crow bar.

Thus the present invention discloses a novel construction of the operating lever whereby it has a widened portion 17 in which is formed a socket opening 18 passing completely therethrough. The opening is sufficiently large to receive the end of a crow bar 19, shown in Figures 2 and 3, and it will be noted that the socket 18 is relatively close to the fulcrum pivot 6 of the lever 5. Also in the normal position of the lever in which the longitudinal axis of the lever is vertical, the socket 18 will be slightly inclined to the horizontal. Thus if the operator is standing upon the loading platform and above the fulcrum pivot 6, he may insert the crow bar 19 at a slight downward angle, as shown in Figure 2, and by pulling up upon the crow bar 19, the lever 5 will be turned in an anti-clockwise direction to the dotted position shown thereby causing the opening movement of the door 4. On the other hand, if the operator is standing upon the ground he may insert the crow bar 19 in the opposite direction in a slight upward direction through the socket 18, shown in full lines in Figure 3, and by pulling downward upon the end of the crow bar 19, the lever 5 will be moved in an anti-clockwise direction and cause the opening movement of the door in the same manner as described with reference to Figure 2. It is, of course, understood that a crow bar is of standard equipment at all loading platforms so that the operator may readily open the door without the objectionable results of an improper forcing of the operating mechanism. It is to be noted that by providing a socket 18 in a widened part of the lever 5 and substantially close to the pivot receiving opening 6', that undue stress is not exerted upon the lever 5 and therefore breakage will not occur.

The improvements have been described in connection with a preferred embodiment of the device but it will be readily apparent that many modifications may be resorted to without departing from the spirit of our invention as disclosed in the appended claims.

We claim:

1. In a door operating lever, a pivoted operating lever, said lever having a relatively short handle and said lever having a socket opening adjacent its pivot adapted to receive a bar to obtain increased leverage.

2. In a door operating lever, an operating lever, said lever having a pivot point adjacent the operating end thereof and a relatively short handle, said lever having a socket opening having its axis at an angle to the longitudinal axis of the lever adapted to receive an operating bar to obtain increased leverage.

3. A door opening member, said member comprising a relatively short lever handle, a fulcrum adjacent the operating end of said member and a socket integrally formed in said member adjacent the fulcrum thereof, said socket passing completely through said member and adapted to receive an operating bar in either direction in order to obtain increased leverage to turn said member.

4. In a railway car, a relatively stationary member, a movable door member, a pivoted cam lever for opening said door, said lever being pivoted to one of said members, said lever having its normal position such that its longitudinal axis is in a vertical position,

and a socket opening formed in said lever having its axis slightly inclined from the horizontal when said lever is in normal position, said socket being adapted to receive an operating bar from above or below said pivoted point in order to obtain the increased leverage to open said door.

5. In a railway car, a relatively stationary member, a movable door member, a cam lever for opening said door pivoted to said door, said cam lever being normally in a vertical position and having a socket opening formed therein, said socket opening passing through said lever and having its axis normally slightly inclined from the horizontal, said socket opening being adapted to receive an operating bar from above or below the pivot point of said lever in order to obtain increased leverage to open said door.

6. In a railway car, a relatively stationary member, a movable door member, an abutment on said first mentioned member and a pivoted lever upon said door member, said lever having a cam surface adapted to engage said abutment in order to open said door, said lever having a relatively short handle and a socket opening formed therein adjacent the pivot point thereof and adapted to receive an operating bar in order to obtain increased leverage to open said door.

7. In a railway car, a relatively stationary member, a relatively movable door member, an abutment upon said first mentioned member and a pivoted cam lever upon said movable door member, said cam lever being normally in vertical position and adapted upon movement to engage said abutment and cause the opening of said door, sealing means between said stationary frame member and said door below the mounting of said abutment and said pivoted lever, said lever having a handle extending to a point adjacent the sealing means, said lever having a socket opening passing completely therethrough formed adjacent the pivot point of said lever and normally having its axis slightly inclined to the horizontal and adapted to receive an operating bar from above or below the pivot point thereof in order to obtain increased leverage to open said door.

8. In a railway car, a door member, and an adjacent member relatively movable, an abutment on one of said members, and a pivoted door operating lever on the other of said members, said lever having a cam surface adapted to engage said abutment in order to open said door, and said lever having a socket opening formed therein and extending entirely therethrough adjacent the pivot point thereof, and adapted to receive a cooperating bar from either direction in order to obtain increased leverage to open said door.

9. In a railway car, a door member and an adjacent member relatively movable, an abutment on one of said members, and a pivoted door operating lever on the other of said members, said lever having a cam surface adapted to engage said abutment in order to open said door, and said lever having socket openings formed adjacent the pivot point thereof and on opposite sides of said lever, said socket openings facing in substantially opposite directions and being adapted to receive a cooperating bar from either direction in order to obtain increased leverage to open said door.

10. A door opening member comprising a pivoted lever, a fulcrum adjacent the operating end of said lever, and a socket integrally formed in said lever adjacent the pivot point thereof, said socket passing completely through said member and adapted to receive an operating bar from either direction, in order to obtain increased leverage to retain said member.

Signed by KENNETH J. TOBIN, at Chicago, Illinois, the 18th day of March, 1929, and by WILLIAM W. DARROW, at Alcalde, New Mexico, this 20th day of March, 1929.

KENNETH J. TOBIN.
WILLIAM W. DARROW.