A. WITHALL.

SLIDING DOOR CLOSING AND LOCKING DEVICE.

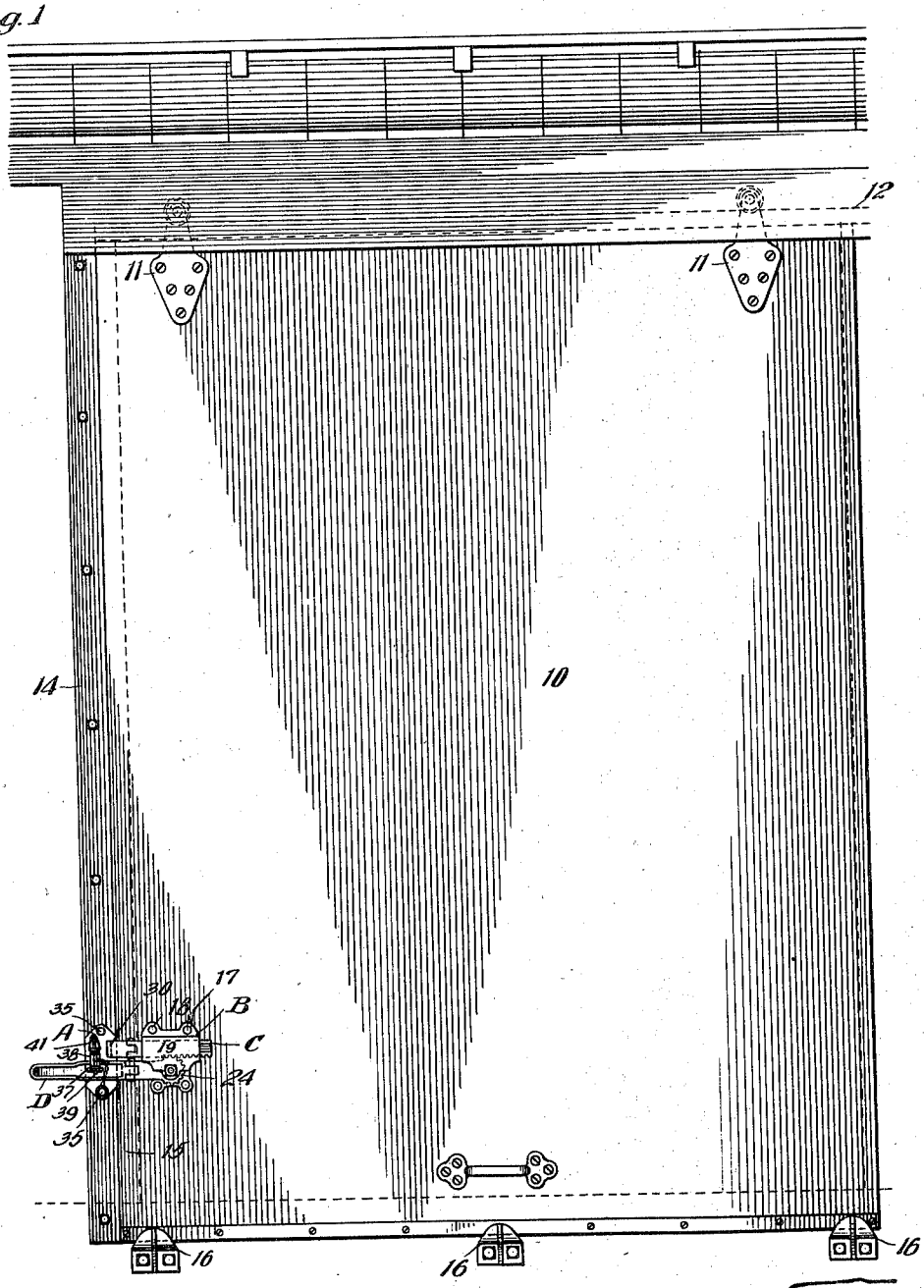
APPLICATION FILED MAR. 21, 1917.

1,290,462.

Patented Jan. 7, 1919.

2 SHEETS—SHEET 1.

Fig. 1



WITNESSES:

Wm. Geiger

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2 SHEETS—SHEET 2.

Fig. 2

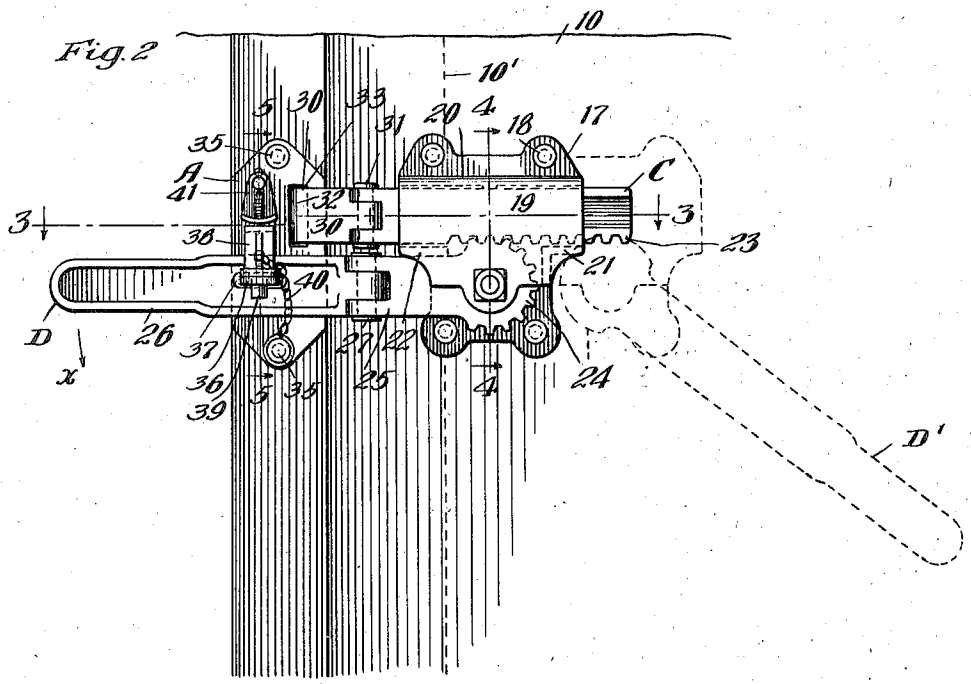


Fig. 3

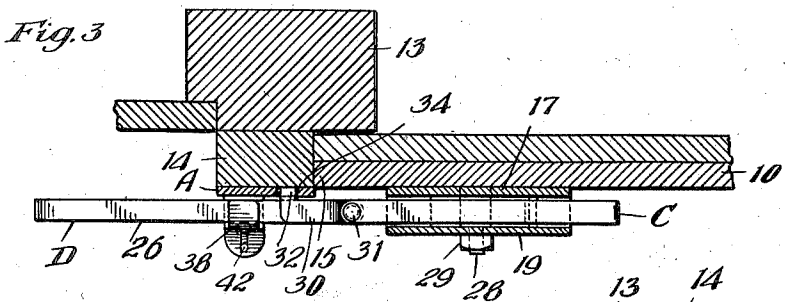


Fig. 4

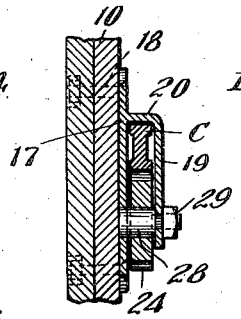
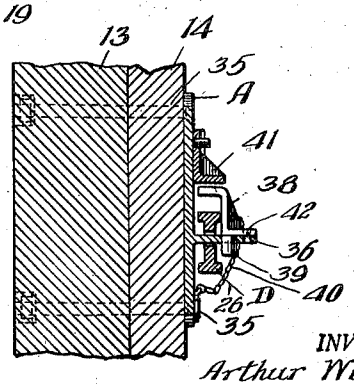


Fig. 5



WITNESSES:

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UNITED STATES PATENT OFFICE.

ARTHUR WITHALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM H. MINER, OF CHAZY, NEW YORK.

SLIDING-DOOR CLOSING AND LOCKING DEVICE.

1,290,462. Specification of Letters Patent. Patented Jan. 7, 1919.

Application filed March 21, 1917. Serial No. 156,402.

To all whom it may concern:

Be it known that I, ARTHUR WITHALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Sliding-Door Closing and Locking Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in sliding door closing and locking devices.

Heretofore great difficulty has been experienced in properly closing the sliding side doors of railway box cars due to the fact that, after the cars have been in service for a short time, the doors begin to sag with the result that the upper forward corner of the door engages the door post or guide before the entire forward edge of the door can be brought into snug engagement with the door post. In practice, it often happens that the men in charge of closing and opening the doors are compelled to use crow-bars or other tools to force the doors to closed position or to start the opening thereof, consequently seriously injuring the doors and requiring frequent and expensive repairs.

The object of my invention is to provide a simple and relatively inexpensive device which can be applied to doors of the type above indicated and which will have effective means for drawing the doors to tightly closed position and which will also be of service in starting the opening operation.

In the drawing forming a part of this specification, Figure 1 is a side elevation of a portion of a box-car showing the side door thereof with my improvements in connection therewith. Fig. 2 is an enlarged side elevation of the door closing and locking device, the dotted lines therein indicating the position of the parts assumed at the beginning of the final closing movement of the door. Figs. 3, 4 and 5 are enlarged sectional views taken on the lines 3—3, 4—4 and 5—5 respectively of Fig. 2.

In said drawing, 10 denotes a sliding side door of a railway box-car, the same being suspended by roller brackets 11—11, the rollers thereof riding upon a track 12. One of the door posts is indicated at 13 in Fig. 3, the latter having applied thereto a door stop or guide 14 in the usual manner and against which the forward edge 15 of the door is adapted to bear when the door is in fully closed position. The lower edge of the door 10 is preferably guided by a series of guide brackets 16—16. All of the foregoing parts are or may be of standard construction.

The improved door closing and locking device, as illustrated, comprises broadly a plate A, a guiding or housing casting B, a slidable pulling bar C and an operating handle D. The housing or guiding casting B consists of a base plate 17 suitably bolted or riveted to the door, as indicated at 18—18. Formed integrally with the plate 17 is a cap plate 19 which is extended outwardly and then downwardly, as clearly indicated in Fig. 4, to thereby provide a suitable recess to accommodate the pulling bar C and the operating means between the handle D and said bar C. The pulling bar or member C is slidably mounted within the casting B, and is guided on its upper edge by the portion 20 of the casting B and on its lower edge by two shelves or ledges 21 and 22. On its under edge, the bar C is provided with a rack 23 with which coöperates a gear 24 formed on the inner end of the operating handle D. The operating handle D comprises two portions 25 and 26 pivotally connected as indicated at 27, the inner portion 25 being journaled on a pin or bushing 28 bolted to the casting B, as indicated at 29. The pulling bar C is provided, at that end adjacent the door stop, with a hook member 30, which is pivotally connected to the main body of the bar C, as indicated at 31. The hook 30 has a shoulder or lip 32 which is adapted to engage in a corresponding slot 33 formed in the plate A, and preferably said slot 33 and the flange 32 is beveled or under-cut, as indicated at 34, to thereby prevent accidental disengagement of the hook, (see Fig. 3).

As clearly shown in the drawing, the plate A is secured to the door stop 14 and post 13 by bolts 35—35. In addition to being provided with the slot 33, said plate A is provided with a staple 36 over which the member 26 of the operating handle is adapted to fit, said portion 26 being slotted at 37 to provide for this result. To lock the operating handle when in the position shown in Figs. 1 and 2, a locking pin 38 is pro-

vided which has an extension 39 fitting through a corresponding recess provided in the hasp, as clearly indicated in Fig. 5. The locking pin 38 is secured to the plate A by any suitable means, such as the chain 40 to thereby prevent its loss. To prevent the locking pin 38 from pulling out of position when the car is in motion, a pivoted plate 41 is secured to the plate A just above the locking pin 38, which plate 41 hangs down in the position shown in the drawing under the influence of gravity and may be swung up whenever the pin 38 is to be removed. Said locking pin 38 and the hasp 36 are also provided with alined recesses 42 to accommodate the usual lead seal employed with devices of this character.

Assuming the parts in the position shown in full lines in the drawing, when it is desired to open the door the following sequence of operations takes place. The lead seal is first removed, after which the pin 38 is taken out and the handle 26 of the operating lever disengaged from the plate A. Thereupon, the operating handle D is swung downwardly, as indicated by the arrow x in Fig. 2, which will positively force the door away from the door stop since the bar C has the hook thereof in engagement with the plate A. When the door has been thus partly opened, the hook 34 may be disengaged from the plate A and then the door fully opened by merely pushing the same in the usual manner. When it is desired to close the door, the latter is moved to a position as near the door stop 14 as can be conveniently done by the operator without the use of tools. Such a position is indicated by the dotted lines 10′ in Fig. 2. Thereupon, the pulling bar C is pulled outwardly, thus swinging the operating lever D to the position indicated by dotted lines at D′ in Fig. 2. The hook 34 is then engaged in the plate A, after which the operator swings the handle D downwardly in a clock-wise direction, thus positively pulling the door to fully closed position. When this condition has been reached, the portion 26 of the operating lever is swung over the hasp and the pin 38 and seal applied.

By locating the pivotal points 27 and 31 on the operating lever and pulling bar, respectively, inside of the forward edge of the door, it is apparent that all parts can be swung clear of the door when the door is in opened position, and furthermore, that there will be no parts from the plate A projecting into the door opening when the car is being loaded or unloaded, thus eliminating danger of breaking of parts as will be understood. With the arrangement which I have provided, a strong pulling force can easily be obtained to force the door to closed position, even though the door may be badly sagged or distorted, and in this way I am enabled to eliminate the undesirable use of crow-bars or other tools which have hitherto been found necessary in many instances.

I have herein shown and described the plate A as secured to the door post and stop and the other parts of the device on the sliding door. It will be understood, however, that the position of the parts may be interchanged without departing from the spirit of the invention and I contemplate all changes that come within the scope of the claims appended hereto.

I claim:

1. In a closing and locking mechanism for a sliding door and door framework, the combination with a pulling member, a housing by which said pulling member is carried, an operating handle, means interposed between the handle and pulling member for actuating the latter, all of said parts being adapted to be secured to the same element of the door structure, of a plate adapted to be secured to another element of the door structure, said plate having means coöperable with the pulling member while the door is being closed, and coöperating means on said plate and handle for locking the latter when the door is in closed position.

2. In a closing and locking mechanism for a slidable door and door framework, the combination with a plate adapted for attachment to one element of the door structure, a guiding casting adapted to be attached to another element of the door structure, a slidable pulling member mounted on and carried by said guiding casting, an operating handle, and coöperating means on said handle and pulling member adapting the latter to actuate said handle.

3. In a device of the character described, the combination with a supporting casting adapted to be secured to one member, said casting having a bar slidably mounted thereon provided with a rack, of an operating lever handle mounted on said casting, said handle having a gear coöperable with said rack, and a plate adapted to be secured to another member independent of the first named member, said plate and bar having coöperable engaging shoulders so arranged that, when said shoulders are engaged and the handle is operated, the members may be moved toward or from each other through the instrumentality of said bar.

4. In a device of the character described, the combination with a bar adapted to be slidably mounted on one member, of a plate adapted to be secured to another member, said plate and bar having coöperable engageable shoulders, an operating handle, and means interposed between said handle and said bar arranged to slide the bar upon actuation of said handle and thereby move said members relatively to each other while said shoulders are engaged.

5. In a device of the character described, the combination with a sliding door and door stop, of a plate secured to the door stop, a pulling bar slidably mounted on the door and having a hook-shaped end adjacent the door stop, said plate being provided with a recess to accommodate said hook-shaped end, and means mounted on the door for effecting a relative movement between said bar and door when the bar is engaged with said plate.

6. In a device of the character described, the combination with a door stop and a sliding door, of a plate mounted on the door stop, a bar slidably mounted on the door, an operating handle coöperative with said bar to effect relative movement between the bar and door, said bar having a pivoted section at the end adjacent said plate, said pivoted section having a shoulder coöperable with a corresponding shoulder on said plate.

7. In a device of the character described, the combination with a sliding door and door stop, of a housing casting mounted on the door, a bar slidably mounted in said casting and having a rack, an operating handle pivotally mounted on said casting and having a gear coöperable with said rack, a plate mounted on the door stop, said plate being provided with a recess and said bar having a hook-shaped end coöperable with the recessed plate, said handle having a pivoted portion adapted to be swung over said plate and locked thereto.

In witness that I claim the foregoing I have hereunto subscribed my name this 28th day of Feb., 1917.

ARTHUR WITHALL.