F. AHLSTROM.

TRAP DOOR MECHANISM.

APPLICATION FILED APR. 29, 1914.

1,102,220. Patented June 30, 1914.

Fig. 1.

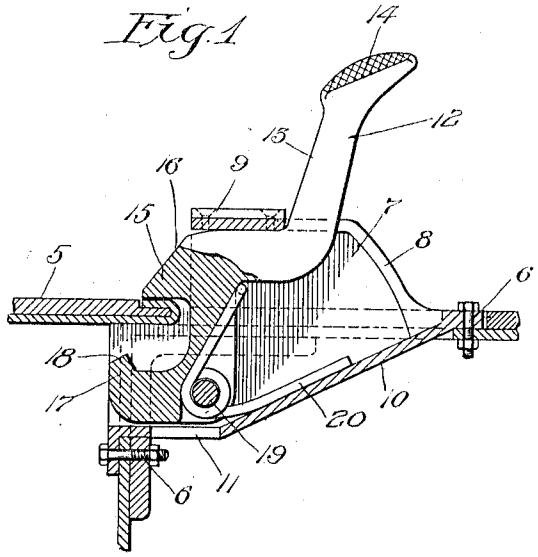


Fig. 2.

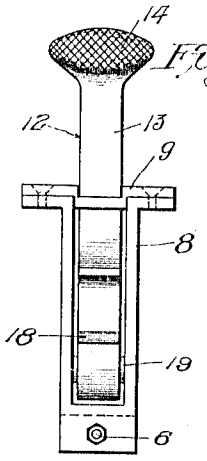


Fig. 3.

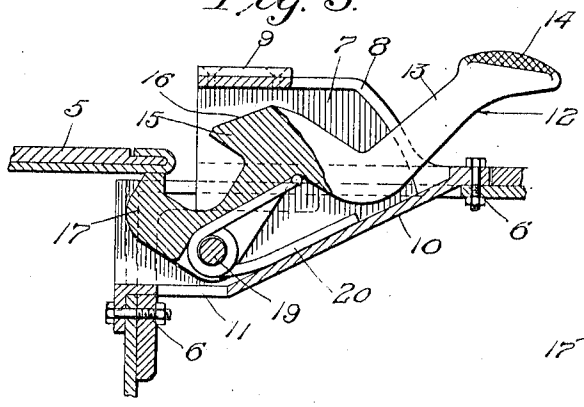
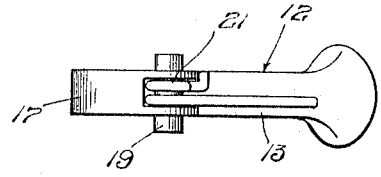


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK AHLSTROM, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO METALS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TRAP-DOOR MECHANISM.

1,102,220. Specification of Letters Patent. **Patented June 30, 1914.**

Application filed April 29, 1914. Serial No. 835,114.

To all whom it may concern:

Be it known that I, FREDERICK AHLSTROM, a subject of the King of Sweden, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Trap-Door Mechanism, of which the following is a specification.

The mechanism of the present invention relates more particularly to one employed in connection with trap doors used for closing stair openings in vestibule railroad cars.

The objects of the present invention are to provide a mechanism of the class specified which is composed of a single part or piece, and which is cheap and simple of manufacture, and at the same time will be durable of use.

A further object of the invention is to so configure the said piece as to provide a latch member for holding the doors in closed position and an auxiliary lifting member for giving to the door an initial opening movement under certain conditions.

A further object of the invention is to arrange tension mechanism for moving the mechanism in one direction and to provide means for limiting the movement of the member to maintain it in its desired normal position.

The invention further consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings: Figure 1 is a side view partly in section of the door operating mechanism of the present invention together with the casing or housing therefor and also showing a portion of the trap door; Fig. 2 is a front view of the operating mechanism and casing therefor with the door removed; Fig. 3 is a view similar to Fig. 1 showing the latch portion of the mechanism withdrawn and the auxiliary lifting portion of the mechanism in acting position; and Fig. 4 is a view of the under face of the mechanism showing the method of applying the spring thereto.

As stated, the present invention relates to a mechanism used in conjunction with the trap doors of vestibule cars, which doors are utilized for the purpose of covering the stair openings in said vestibules, thus maintaining, when desired, a continuous floor across the vestibule.

Referring now to the drawings, and particularly to Fig. 1, the device is shown in connection with a suitable trap door 5 of the class described, which trap door is mounted as usual upon suitable hinges, not shown, and such doors are usually provided with tension mechanism for moving the same to open position. Joined to the car structure by suitable fastening means as by bolts 6 is a casing 7 which has the upper portion thereof formed with a slot 8 and the forward portion of said slot is closed by means of a removable plate 9, which plate serves to limit the forward movement of the mechanism whereby the piece composing said mechanism is maintained in proper normal position, which is the position shown in Fig. 1. The lower face or wall 10 of the casing is, as shown, provided with an opening 11 at the outermost corner thereof whereby any dust or dirt entering through the slot 8 will find a means for passing out of the casing through the hole or opening 11. This will prevent the undesirable accumulation of dirt or other material within the interior of the casing. Owing to the one piece formation of the operating member the casing can be of an unusually narrow construction utilizing less material and enabling it to be positioned readily and simply, requiring the cutting away of a very small portion of the car structure.

The mechanism which is in the form of a single member 12 is, as stated, of one piece formation, and is formed to provide an arm 13 terminating in a foot piece 14, and is further formed to provide a lip 15 having its outer face 16 beveled, and this lip is intended to overlie the edge of the top of the door when the door is in closed position, that is the position shown in Fig. 1, and serves as a latch for maintaining the door in such lowered or closed position. The member 12 is also formed to provide a second lip or projection 17, which, as will be seen from Fig. 1, underlies the door and has the edge 18 thereof normally spaced away from contact with the door. The member 12 is pivoted upon a suitable pin 19.

When pressure is applied to the foot piece 14 the member 12 is swung about the pin 19 into the positions shown in Fig. 3. The first result of this movement will be to withdraw the lip 15 from its position over the door allowing the door to move to open position. Ordinarily such movement to open position

will be brought about by the spring or other opening means incorporated in the door mounting, but it sometimes happens that owing to a collection of sleet or ice the door will stick to the extent that the spring will not suffice to open it. In such event it is desirable to provide some auxiliary means for moving the door to open position, and in the present invention this consists of the lip 17. By the configuration given to the operating member 12 this lip 17 comes into engagement with the lower face of the door after the lip 15 has been withdrawn from a position above the door, and thus if the door does not move to open position by the normal means, the acting end 18 of the lip 17 will strike the under face of the door and by the blow thus given, impart to the door an initial opening movement as will be understood from Fig. 3. This initial opening movement will suffice to break the film of ice or sleet which is holding the door and after this has been broken the usual spring will act to move the door to its full open position. After the door is open the operator removes his foot from the foot piece 14 and a spring 20 then acts to return the operating member to the position shown in Fig. 1. When the door is lowered the side edge thereof engages with the sloping face 16 of the lip 15 and forces the operating member back until the door has cleared the lip 15 after which the spring acts to move the mechanism into the position shown in Fig. 1. As will be seen from Fig. 4 the under face of the operating member is cut away as at 21 to permit of the interposition of the spring 20.

I claim:

1. In a device of the class described, a combined catch and door opener consisting of a single piece formed to provide an arm terminating in a foot piece and formed to provide a lip arranged to overlie the door when the door is closed, said lip constituting a catch member, and also formed to provide a second lip arranged to lie below the door when the door is closed and to be spaced away from the lower face of the door and constituting an auxiliary door opening member, and a pivotal mounting for said piece arranged below the door, substantially as described.

2. In a device of the class described, a combined catch and door opener consisting of a single piece formed to provide an arm terminating in a foot piece, and formed to provide a lip arranged to overlie the door when the door is closed, said lip constituting a catch member, the outer face of the lip being beveled, and said piece being formed to also provide a second lip arranged to lie below the door when the door is closed and to be spaced away from the door and constituting an auxiliary door opening member and a pivotal mounting for said piece arranged below the door, substantially as described.

3. In a device of the class described, the combination of a casing, a combined catch and door opener pivotally mounted within the casing, said opener consisting of a single piece formed to provide an arm terminating in a foot piece, and formed to provide a lip arranged to overlie the top of the door when the door is closed, said lip constituting a catch member, and further formed to provide a second lip arranged to lie below the door when the door is closed and to be spaced away from the door and constituting an auxiliary door opener, said casing being slotted at its upper portion to permit movement of said arm and having an opening at its lower portion to permit discharge of dirt from the casing, substantially as described.

4. In a device of the class described, the combination of a casing, a combined catch and door opener within said casing, including a swinging arm, the upper wall of said casing being slotted to permit said arm to travel, the bottom wall of said casing having an opening to permit the egress of dirt from the casing and said lower wall sloping from its upper end to said opening, substantially as described.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."