C. I. WALKER.

DOOR LOCKING MECHANISM.

APPLICATION FILED JAN. 30, 1922.

1,438,730.

Patented Dec. 12, 1922.

Fig. 1

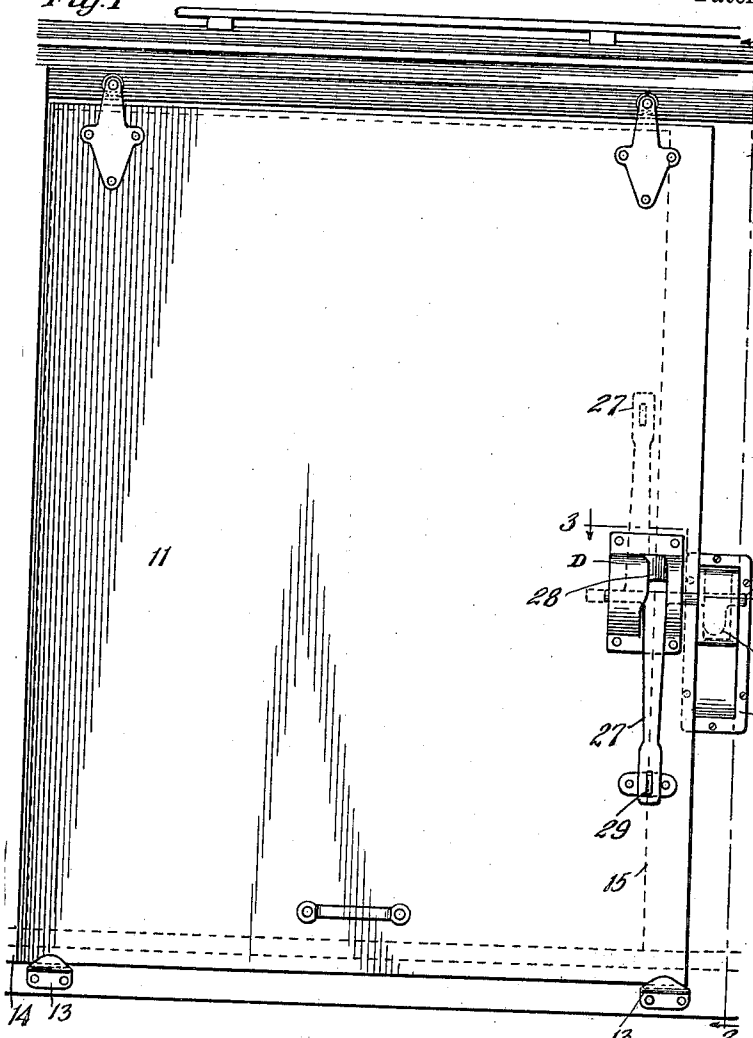


Fig. 2

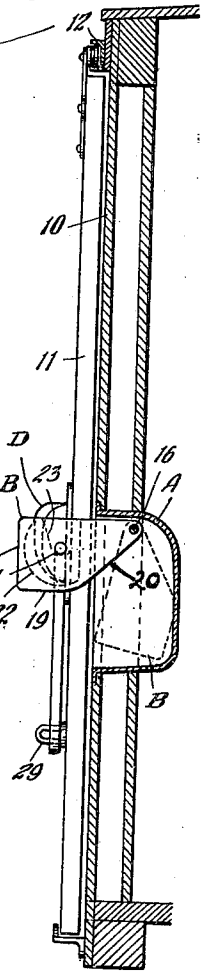


Fig. 3

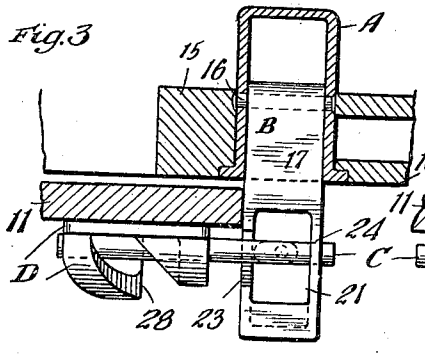
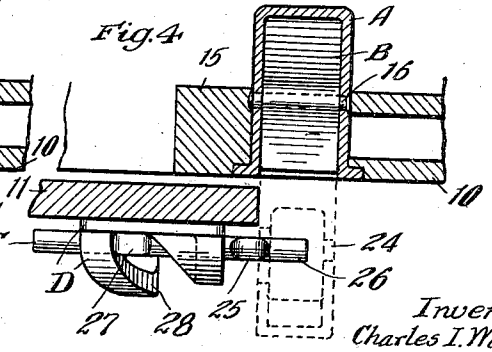


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES I. WALKER, OF LOS ANGELES, CALIFORNIA.

DOOR-LOCKING MECHANISM.

Application filed January 30, 1922. Serial No. 532,928.

To all whom it may concern:

Be it known that I, CHARLES I. WALKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a certain new and useful Improvement in Door-Locking Mechanism, 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 door locking mechanism.

One object of the invention is to provide an easily operated, economical and efficient locking mechanism for doors, especially car side doors.

More specifically, the object of my invention is to provide a locking mechanism adapted to be located at one edge of the door and so arranged that, in locked position of the parts, one of the elements of the locking mechanism serves as an effective abutment or stop to prevent sliding movement of the door.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawing forming a part of this specification, Figure 1 is a side elevational view of a portion of a box car showing my improvements applied thereto. Figure 2 is a vertical sectional view corresponding substantially to the section line 2—2 of Figure 1. Figure 3 is a sectional view corresponding to the broken section line 3—3 of Figure 1 and showing the parts in locked condition. Figure 4 is a view similar to Figure 3 but illustrating the position of the parts when in unlocked condition. In Figure 4 also one of the locking members is shown in dotted position to better illustrate the manner of interengaging the several parts.

In said drawing, the side wall of a box car is indicated at 10, the same having the usual side door opening adapted to be closed by a horizontally slidable door 11 which is supported by suitable roller brackets from a top rail 12. The lower edge of the door is guided by any suitable means as the brackets 13—13. It is customary in cars of this character, to engage the front or forward edge of the door beneath a strip as indicated at 14 so that the front or forward edge of the door cannot be pried open.

In carrying out my invention, I preferably employ the locking mechanism on the rear vertical edge of the door, as shown best in Figure 1. Said locking mechanism, as shown, comprises, broadly, a housing A; a locking member B pivoted within the housing A; a bolt C; and a combined attaching and cam bracket D secured to the door.

The housing A is preferably countersunk into the side wall of the car adjacent the door post or jamb 15, the outer face of the housing being flush with the car side wall. Said housing A is secured in place by any suitable means, as for instance the screws shown, and is vertically elongated and of appreciable depth so as to receive completely therein, the pivoted locking member B when the latter is in inoperative position and as shown by the dotted lines in Figure 2.

The locking member B is preferably in the form of a casting or forging of suitable substantial construction and is pivotally attached to the housing A near the top of the latter as indicated at 16. Said member B has a flat face 17 extending approximately radially from the pin 16, an outer end face 18 perpendicular to the face 17, a bottom face 19 parallel with the face 17, and an inclined face 20 leading from the face 19 to a point adjacent the pivot pin 16, as best shown in Figure 2. With this construction, it is evident that the member B is adapted to fall under the influence of gravity to a position wholly within the housing A as shown in Figure 2.

On its top side, assuming it in horizontal position, the member B is provided with a recess 21 of substantially rectangular outline as shown in Figure 3. The surface defining the edge of said recess nearest the free end of the member B, is curved and undercut as indicated at 22, said surface 22 corresponding to the portion of a cylindrical surface, the axis of which coincides with the axis of the bolt C, for the purpose hereinafter described. The wall on the side of the recess 21 adjacent the door, when the latter is in closed position, is cut away as indicated at 23 to a point on a level with or below the bolt C so as to allow the latter to enter the member B, as hereinafter described. The wall on the opposite side of the recess 21 is provided with an opening 24 therethrough adapted to be alined with and of the size to receive the adjacent end of the bolt C.

The bolt C is of circular cross section and more or less in the form of a rod or bar adapted for both rotative and longitudinal movement. Near the end adjacent the locking member B, the bolt C is provided with a radially extended lug 25 of a width corresponding approximately to the width of the recess 21 and of a slightly shorter radius than the radius of the curved surface 22. Beyond the lug 25, the end portion 26 of the bolt is of such length that, when the bolt is in the position shown in Figure 1, the end 26 will lie close to and opposite the opening 24 in the member B and when the bolt is rotated through an arc of 180°, as hereinafter explained, said end 26 will enter the opening 24 and preferably pass slightly beyond.

The bolt C is rotatably mounted in suitable bearings provided in the bearing casting D which is secured to the door 11 adjacent its rear edge as shown in Figure 1. Rotation of the bolt is effected by means of a lever handle 27 extending radially therefrom, the latter working within a cam groove 28 formed in the casting D. The top portion of the cam groove 28, as shown in Figures 3 and 4, is extended downwardly and toward the rear edge of the door through an arc of approximately 90° and below this point is slightly offset in the opposite direction. With this arrangement, when the lever handle 27 is in its uppermost vertical position as shown by dotted lines in Figure 1, the bolt C will be in its extreme position toward the left and as shown in Figure 4. When the member B is elevated to its horizontal position which corresponds to the dotted line position shown in Figure 4, the end 26 of the bolt will be opposite the opening 24 and, upon swinging the lever handle 27 downwardly, the bolt C will not only be rotated but will be simultaneously advanced longitudinally so as to engage the end 26 within the opening 24 and also swing the lug 25 within the recess 21 and until the lug 25 is in a depending vertical position as shown in Figures 1, 2 and 3. During the last portion of the downward movement of the lever handle 27, there will be a slight backward shifting of the bolt C, thus pulling the member B tightly against the rear edge of the door and securely locking the door against movement in an opening direction. The member B will of course be held up in its operative position by reason of the end 26 of the bolt extended through the opening 24.

The lower end of the lever handle 27 is preferably slotted so as to fit over a staple 29 in the manner of a hasp, the extended end of the staple 29 being adapted to receive the usual lead seal employed on railroad cars.

With my arrangement, it will be seen that the member B, when in locked position, serves as a substantial abutment for the rear edge of the door to prevent its opening movements and furthermore, when the parts are in locked position, the rear edge of the door cannot be sprung outwardly, thereby minimizing danger of theft which is a more or less common occurrence from railroad box cars, the thieves frequently prying outwardly the lower rear corner portion of the door to enter the car without breaking the lead seal which is usually employed with a locking mechanism on the forward or front edge of the door.

I have herein shown and described what I now consider the preferred manner of carrying out the invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a locking mechanism for a door slidable on a wall, the combination with a member mounted on the wall adjacent one edge of the door when the latter is in closed position, said member being movable from a position out of the plane of the door to a position opposite said edge and vice versa; of a bolt carried by the door arranged to project over said edge thereof and provided with a projecting lug, said member having a shouldered recess to receive said lug; and means for rotating said bolt to engage said projection within said recess to thereby retain the latter opposite said edge of the door.

2. In a locking mechanism for a door slidable on a wall, the combination with a member mounted on the wall adjacent one edge of the door when the latter is in closed position, said member being movable from a position out of the plane of the door to a position opposite said edge and vice versa; of a bolt carried by the door adjacent said edge thereof, said member having an opening therein adapted to be alined with the adjacent end of the bolt; and means for shifting said bolt endwise toward said member to enter said end of the bolt within said opening.

3. In a locking mechanism for a door slidable on a wall, the combination with a member mounted on the wall adjacent one edge of the door when the latter is in closed position, said member being movable from a position out of the plane of the door to a position opposite said edge and vice versa; of a bolt carried by said door adjacent said edge and provided with a radially extending lug, said member having an opening adapted to be alined with the adjacent end of the bolt and a recess to receive said lug; and means for rotating said bolt to engage said bolt lug within said recess and shift the bolt endwise toward said member to enter the end of the bolt within said opening.

4. In a locking mechanism for a door slidable on a wall, the combination with a mem-

ber mounted on the wall adjacent one edge of the door when the latter is in closed position, said member being movable from a position out of the plane of the door to a position opposite said edge and vice versa; of a bolt carried by said door adjacent said edge and provided with a radially extending lug, said member having an opening adapted to be alined with the adjacent end of the bolt and a recess to receive said lug; and, means for simultaneously rotating said bolt to engage said bolt lug within said recess and shift the bolt endwise toward said member to enter the end of the bolt within said opening.

5. In a locking mechanism for a door slidable on a wall, the combination with a member mounted on the wall adjacent one edge of the door when the latter is in closed position, said member being movable from a position out of the plane of the door to a position opposite said edge and vice versa; of a bolt carried by said door adjacent said edge and provided with a radially extending lug, said member having an opening adapted to be alined with the adjacent end of the bolt and a recess to receive said lug; and means for rotating said bolt to engage said bolt lug within said recess and shift the bolt endwise toward said member to enter the end of the bolt within said opening, said means comprising a lever on the bolt and a cam with which said lever cooperates.

6. In a locking mechanism for a slidable car side door, the combination with a member pivotally mounted on the car side adjacent one edge of the door when the latter is in closed position, said member being movable from a position out of the plane of the door to a position extending across said edge and vice versa; of a bolt carried by the door arranged to project beyond said edge, said bolt being provided with a radially extended lug and said member having a recess therein to accommodate said lug; and means for rotating said bolt to engage said lug within said recess.

7. In a locking mechanism for slidable car doors, the combination with a locking member pivotally supported on the car wall adjacent the rear edge of the door when the latter is in closed position, said member being oscillatable in a plane perpendicular to the car wall and adapted to fall to inoperative position, clear of the door, under the influence of gravity; and means carried by the door adjacent said edge adapted to cooperate and interlock with said pivoted member.

8. In a locking mechanism for slidable car side doors, the combination with a housing mounted flush with the car side wall adjacent the rear edge of the door when the latter is in closed position; of a gravity locking member pivoted within said housing adapted to be swung in a plane perpendicular to the wall to a position extending across the rear edge of the door, said member having an opening therein extending horizontally and adapted to be alined with the adjacent end of a cooperable bolt; a bolt carried by said door adjacent the rear edge thereof; and means for sliding said bolt endwise toward said member to enter the adjacent end of the bolt within said opening.

9. In a locking mechanism for slidable car side doors, the combination with a housing countersunk flush within the side wall of the car adjacent the rear edge of the door when the latter is in closed position; of a pivotally mounted locking member within said housing adapted to fall, under the influence of gravity, to an inoperative position clear of the path of movement of the door, said member having a recess therein and a horizontally extending opening; of a bolt mounted on said door near the rear edge thereof, said bolt having a radially extended lug near the end adjacent said member; and means for simultaneously rotating said bolt and shifting same longitudinally toward said member to thereby engage said lug within said recess and enter the end of the bolt within said opening.

In witness that I claim the foregoing I have hereunto subscribed my name this 11 day of January 1922.

CHARLES I. WALKER.

Witnesses:
C. W. BISH,
C. E. FISH.