L. J. REMMELE.

DOOR STOP FOR RAILWAY CARS.

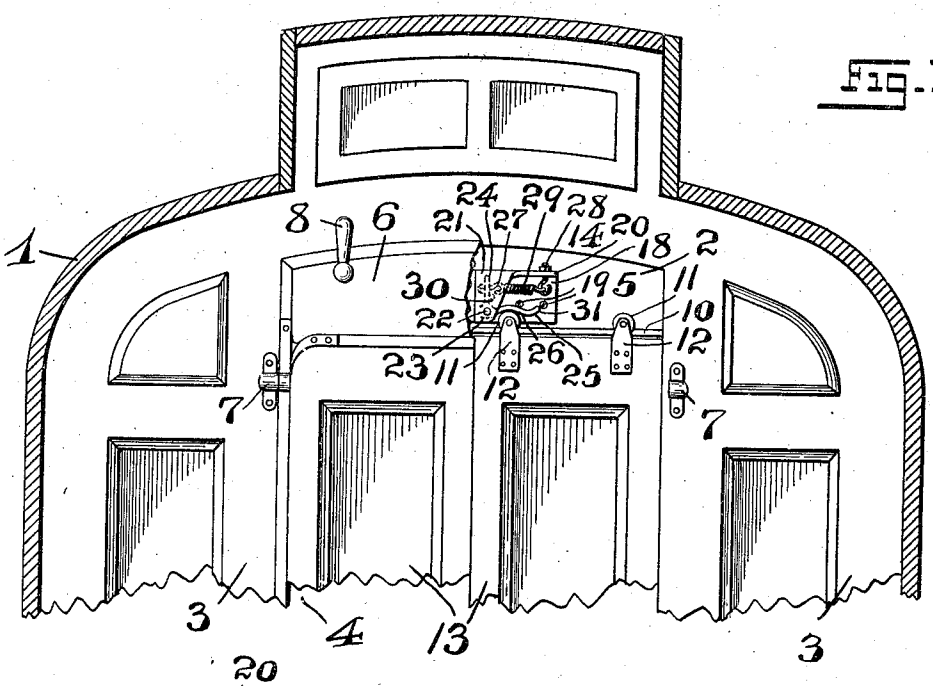
APPLICATION FILED SEPT. 27, 1912.

1,066,222.

Patented July 1, 1913.

2 SHEETS—SHEET 1.

Fig. 1



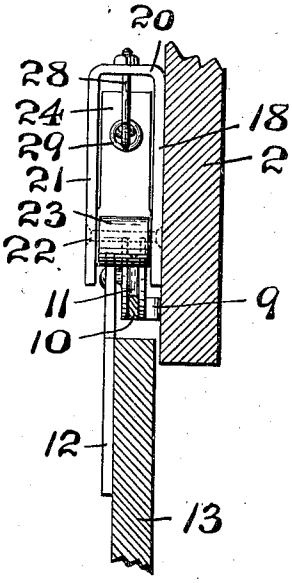


Fig. 3

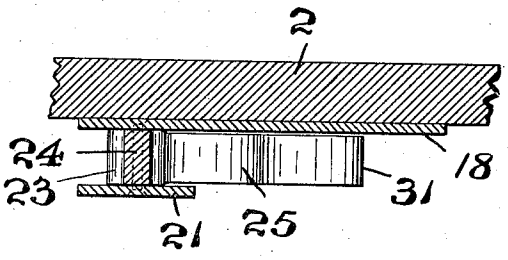


Fig. 4

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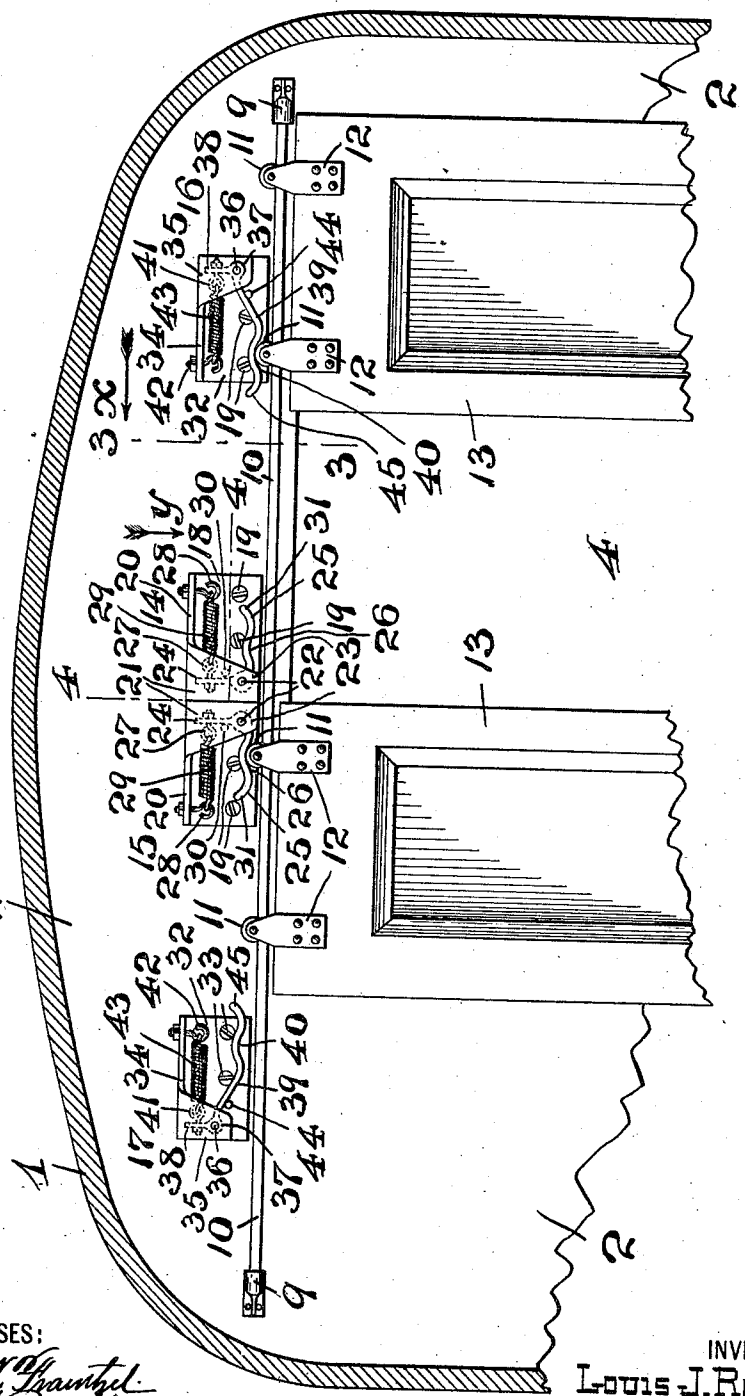
2 SHEETS—SHEET 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

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DOOR-STOP FOR RAILWAY-CARS.

1,066,222. Specification of Letters Patent. Patented July 1, 1913.

Application filed September 27, 1912. Serial No. 722,672.

To all whom it may concern:

Be it known that I, LOUIS J. REMMELE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Door-Stops for Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention has reference, generally, to improvements in doors for cars; and, the present invention relates, more particularly, to an arrangement of sliding doors, located at the intersections of the end-portions of the car-body and the platforms thereof, provided with suitable means for retaining the door-sections in either their closed or opened relations, but without interfering with the opening or closing movements of the door-sections.

The invention has for its principal object to provide a novel arrangement of sliding doors for street-railway and other cars, combined with means for retaining the doors in their opened or closed relations, but without interfering with the opening or closing movements of the doors, said means being arranged and constructed with a view of preventing any sliding movements of the doors or door-sections, when in their opened or closed relations, due to the lateral or other motions of the car-body, caused by the vibrations of the car when running rapidly.

Other objects of the present invention will be clearly understood from the following detailed description of the present invention.

With the various objects of the present invention in view, the said invention consists, primarily, in the novel arrangement of sliding doors or door-sections for cars, and means coöperating therewith for retaining the doors or door-sections in their opened or closed relations, without interfering with the sliding movements of the doors or door-sections, so as to permit the doors or door-sections to be easily operated to bring them into their opened or closed positions; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a cross-sectional representation of the upper part of the body of a railway car, showing in connection therewith, and in elevation, the upper portion of one end of the car and the upper portions of a pair of slidably arranged door-sections, said view showing a part of the end-casing broken away, and illustrating, also in elevation, the manner of slidably hanging the said door-sections, and one of the devices or door-stops for retaining the door-sections in their closed relation. Fig. 2 is a transverse vertical section, on an enlarged scale, said section being taken through the hollow end-portion of the body of the car, in which the said door-sections are slidably mounted, said view illustrating in connection therewith, and in elevation, the upper portions of the slidably mounted door-sections, sheaves secured to said door-sections, a rail upon which said sheaves are supported so as to be adapted to roll thereon, and variously formed devices or door-stops, with which some of said sheaves are adapted to separably engage, so as to retain the doors or door-sections in their closed or their opened relations. Fig. 3 is a detail vertical section taken on line 3—3 in said Fig. 2, looking in the direction of the arrow *x;* and Fig. 4 is a horizontal sectional representation taken on line 4—4 in said Fig. 2, looking in the direction of the arrow *y*.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the said figures of the drawings, the reference-character 1 indicates a portion of the body of any usual type of street-railway car, and 2 and 3 indicate, respectively, the usual outer and inner walls of either end of the car-body, said walls being formed with the usual space between them, and having an opening, as 4, to permit passengers to enter from the platform into the body of the car, or from the latter onto the platform. The upper part

5 of the said opening in the outer wall 2 is closed in the usual and well-known manner, and in the inner wall 3 this portion is closed by means of the usual transom-like member or element, as 6, of which only a portion is shown in Fig. 1 of the drawings, said member or element 6 being hinged, as at 7, to said wall 3, so as to be adapted to swing in a downward direction, and being held in its closed position by means of a suitably constructed locking device or catch, as 8. Suitably secured within said hollow space between the said walls 2 and 3 are a pair of suitably constructed brackets, as 9, and suitably connected with said brackets are the respective end-portions of a laterally extending bar 10 which forms a rail upon which the rollers 11 of the usual sheaves 12 are mounted and are adapted to roll thereon, in either direction. The usual doors or door-sections, as 13, are slidably suspended from said rail 10 by means of the said rollers 11 and sheaves 12, as will be clearly understood from an inspection of said Figs. 1 and 2 of the drawings. Located within the hollow space between the said walls, and at suitable points above the said rail 10, are suitably constructed retaining devices or door-stops, as 14, 15, 16 and 17, each pair of said devices 14 and 15, and 16 and 17, being respectively right and left devices, and while the general arrangement of the parts of the stops 14 and 15 is practically the same as the general arrangement of the parts of the stops 16 and 17, still there is a slight difference of construction between the parts of the stops 14 and 15 and the parts of the stops 16 and 17.

Referring now to the right and left door-stops 14 and 15, it will be seen that each door-stop consists, of a back-plate 18, provided with perforations for the reception of screws 19, by means of which the said stops are secured in place. Extending along its upper marginal edge-portion, each back-plate 18 is made with a longitudinally extending flange, as 20, extending at a right angle, or approximately so, from the face of said back-plate, and extending in a downward direction, at right angles, or approximately so, from a part of the marginal edge-portion of the flange 20, is a plate-like portion 21. Connected with the said plate-like member or portion 21, and the back-plate 18, so as to extend directly across the space between the said parts, is a pintle or pivot-pin 22. Upon the pintle or pivot-pin 22 of each door-stop 14 and 15 is arranged so as to be adapted to swing thereon, an eye-portion 23 of a suitably formed bell-crank, comprising an upwardly projecting finger or arm 24, and a laterally extending arm 25, said arm being formed with a lower receiving and retaining depression, as 26, which is preferably of a concave configuration, as shown. Connected with the upper portion of each upwardly projecting finger or arm 24 and also with each flange 20, substantially as shown, are suitable eye-bolts, as 27 and 28, or other suitable fastening means, between which are arranged, with their end-portions secured to said eye-bolts 27 and 28, suitably coiled springs 29, the initial tendency of said springs being to force the said fingers or arms 24 against suitable stops or pins, as 30, with which the parts are provided, and whereby the normally supported position of each bell-crank is that represented in said Fig. 2 of the drawings, and the tendency of the arms 25 is to move in downward directions, whereby the rollers 11 of the sheaves 12, as they roll into engagement with the convex portions 31 of said arms 25, as the doors or door-sections are brought into their closed relation, will cause said arms 25 to be raised, until the rollers 11 reach the depressions 26, and the springs 29 will thereupon cause the parts to coact to retain the doors or door-sections in their closed relation.

It will also be seen from an inspection of the drawings, that each door-stop 16 and 17 consists of a back-plate 32 provided with perforations for the reception of screws 33 by means of which the said stops are secured in their respective places, and in a manner as indicated in said Fig. 2 of the drawings. Extending along its upper marginal edge-portion, the back-plate 32 is also made with a longitudinally extending flange, as 34, extending at a right angle, or approximately so, from the face of said back-plate, and extending in a downward direction, at right angles, or approximately so, from a part of the marginal edge-portion of said flange 34, is a plate-like portion 35. Connected with this plate-like portion 35 and the back-plate 32, so as to extend directly across the space between the said parts, is a pintle or pivot-pin 36. Upon said pintle or pivot-pin 36 of each door-stop 16 and 17 is arranged so as to be adapted to swing thereon, an eye-portion 37 of a suitably formed bell-crank, comprising an upwardly projecting finger or arm 38, and a laterally extending arm 39, said arm 39 being formed with a lower receiving and retaining depression, as 40, which also is preferably of a concave configuration, as shown.

Connected with the upper portion of each upwardly projecting finger or arm 38, and also with each flange 34, substantially as shown, are suitable eye-bolts 41 and 42, or other suitable fastening means, between which are arranged, with their end-portions secured to said eye-bolts 41 and 42, suitably coiled springs 43, the initial tendency of said springs being to force the said fingers or arms 38 against suitable pins or stops, as 44, with which the back-plates 32 are pro-

vided, and whereby the normally supported position of each bell-crank is that represented in said Fig. 2 of the drawings, and the tendency of the arms 39 is to move in downward directions, whereby the rollers 11 of the sheaves 12, as they roll into engagement with the convex portions 45 of said arms 39, as the doors or door-sections are brought into their opened relation, will cause said arms 39 to be raised, until the rollers 11 reach the depressions 40, and the springs 43 will thereupon cause the parts to co-act to retain the doors or door-sections in their opened relation.

From the foregoing description of my present invention it will be evident that I have devised a simply constructed and readily operating means in the form of a door-stop, which will hold the door or door-section in either its closed or opened relation, but will still permit of the door or door-section to be operated in either direction. The door-stops are also arranged in such a manner, so that where two door-sections are used, as in the present case, the doors or door-sections may be independently moved, or may be operated simultaneously.

I am aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of the present invention as set forth in the foregoing specification and as defined in the clauses of the claim which are appended to the said specification. Hence, I do not limit my present invention to the exact arrangements and combinations of the devices and parts, as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts, as illustrated in the accompanying drawings.

I claim:—

1. In a railway-car, the combination with a sliding door, sheaves secured to said door, and a rail upon which the rollers of said sheaves are mounted and are adapted to roll, of door-stops, each door-stop comprising a pivoted bell-crank consisting of a vertically extending finger and a sheave-engaging arm, said sheave-engaging arm being formed with a receiving depression with which the roller of a sheave is adapted to be brought into separable retaining engagement, and a stop with which said finger is adapted to be brought into engagement for limiting the movement of said sheave-engaging arm, substantially as and for the purposes set forth.

2. In a railway-car, the combination with a sliding door, sheaves secured to said door, and a rail upon which the rollers of said sheaves are mounted and are adapted to roll, of door-stops, each door-stop comprising a pivoted bell-crank consisting of a vertically extending finger and a sheave-engaging arm, said sheave-engaging arm being formed with a receiving depression with which the roller of a sheave is adapted to be brought into separable retaining engagement, and a coiled spring connected with said finger for exerting a pull upon said finger, so as to normally bring the said sheave-engaging arm into the path of movement of the roller of the sheave, substantially as and for the purposes set forth.

3. In a railway-car, the combination with a sliding door, sheaves secured to said door, and a rail upon which the rollers of said sheaves are mounted and are adapted to roll, of door-stops, each door-stop comprising a back-plate, a marginal flange connected with said back-plate, and a plate-like portion extending in a downward direction from said flange, a pivot-pin connected with said plate-like portion and said back-plate, and a lever pivotally mounted on said pivot-pin, said lever being formed with a receiving depression with which the roller of a sheave is adapted to be brought into separable retaining engagement, and a spring coöperating with said lever, so as to bring the receiving depression of said lever normally in the path of the movement of the roller of a sheave, substantially as and for the purposes set forth.

4. In a railway-car, the combination with a sliding-door, sheaves secured to said door, and a rail upon which the rollers or said sheaves are mounted and are adapted to roll, of door-stops, each door-stop comprising a back-plate, a marginal flange connected with said back-plate, and a plate-like portion extending in a downward direction from said flange, a pivot-pin connected with said plate-like portion and said back-plate, a bell-crank pivotally mounted upon said pivot-pin, said bell-crank consisting of a vertically extending finger and a sheave-engaging arm, said sheave-engaging arm being formed with a receiving depression with which the roller of a sheave is adapted to be brought into separable retaining engagement, and a coiled spring connected with said finger and the flange with which said back-plate is provided, for exerting a pull upon said finger, so as to normally bring the said sheave-engaging arm into the path of movement of the roller of the sheave, substantially as and for the purposes set forth.

5. In a railway-car, the combination with a sliding door, sheaves secured to said door, and a rail upon which the rollers of said sheaves are mounted and are adapted to roll, of door-stops, each door-stop comprising a back-plate, a marginal flange connected with said back-plate, and a plate-like portion extending in a downward direction

from said flange, a pivot-pin connected with said plate-like portion and said back-plate, a bell-crank pivotally mounted upon said pivot-pin, said bell-crank consisting of a vertically extending finger and a sheave-engaging arm, said sheave engaging arm being formed with a receiving depression with which the roller of a sheave is adapted to be brought into separable retaining engagement, a coiled spring connected with said finger and the flange with which said back-plate is provided, for exerting a pull upon said finger, so as to normally bring the said sheave-engaging arm into the path of movement of the roller of the sheave, and a stop connected with said back-plate for limiting the downward movement of said sheave-engaging arm, substantially as and for the purposes set forth.

6. The herein-described door-stop comprising a back-plate, a marginal flange connected with said back-plate, a plate-like portion extending in a downward direction from said flange, a pivot-pin connected with said plate-like portion and said back-plate, a bell-crank pivotally mounted upon said pivot-pin, said bell-crank consisting of a vertically extending finger and a roller-engaging arm, said arm being provided with a roller-receiving depression, a coiled spring connected with said finger and the flange of said back-plate for exerting a pull upon said finger, so as to normally bring the said roller-engaging arm into the path of movement of the roller, and a stop connected with said back-plate for limiting the downward movement of said sheave-engaging arm, substantially as and for the purposes set forth.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 25th day of September, 1912.

LOUIS J. REMMELE.

Witnesses:

FREDK. C. FRAENTZEL,

FREDK. H. W. FRAENTZEL.

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