No. 849,291. PATENTED APR. 2, 1907.

J. VAN SLYKE.

DOOR FOR FREIGHT CARS.

APPLICATION FILED JAN. 12, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

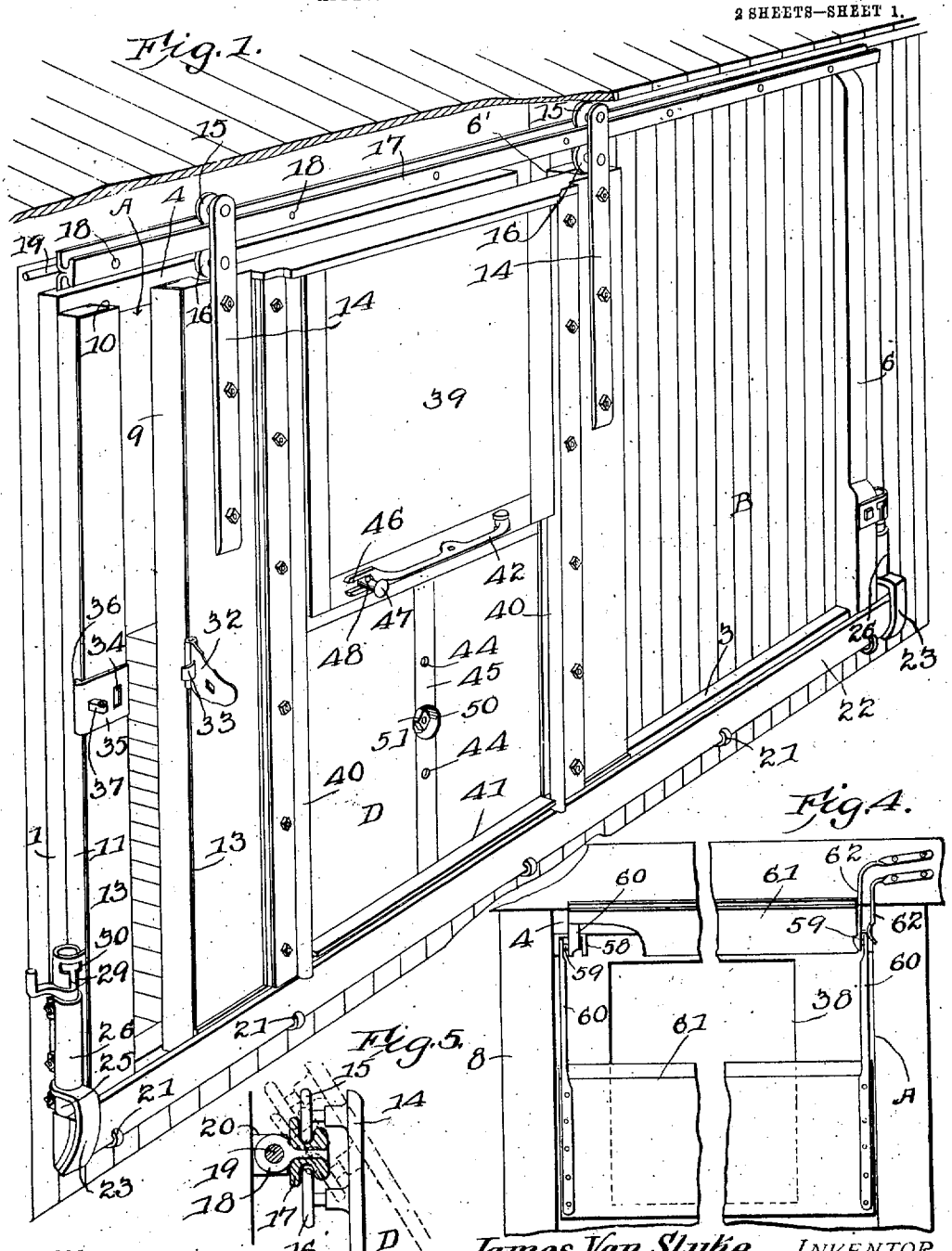

Fig. 4.

Fig. 5.

WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 2.

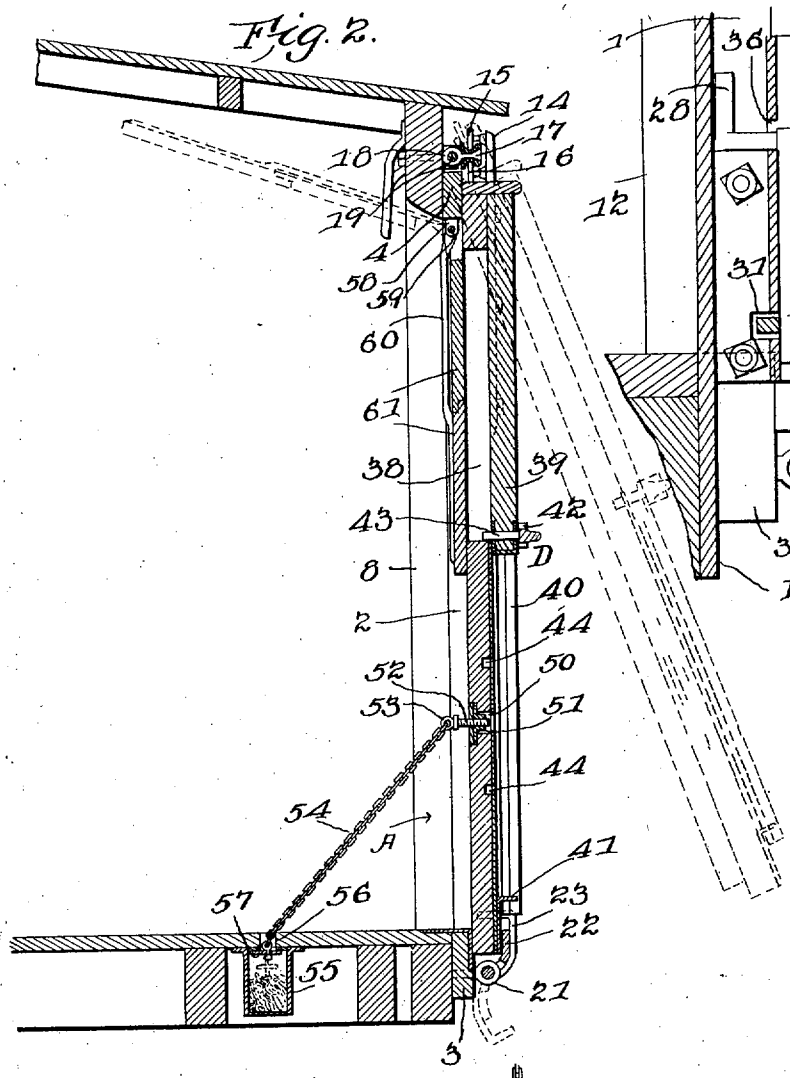


Fig. 6.

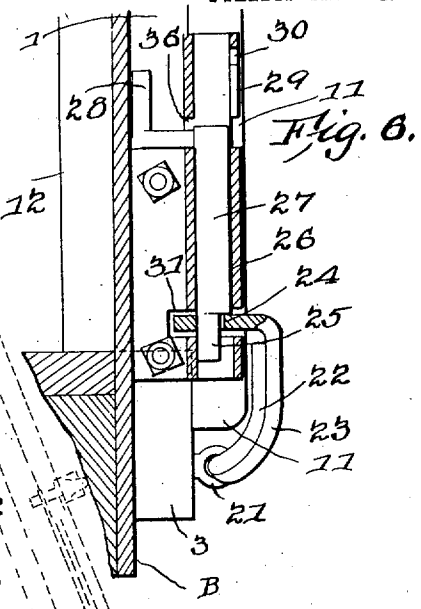
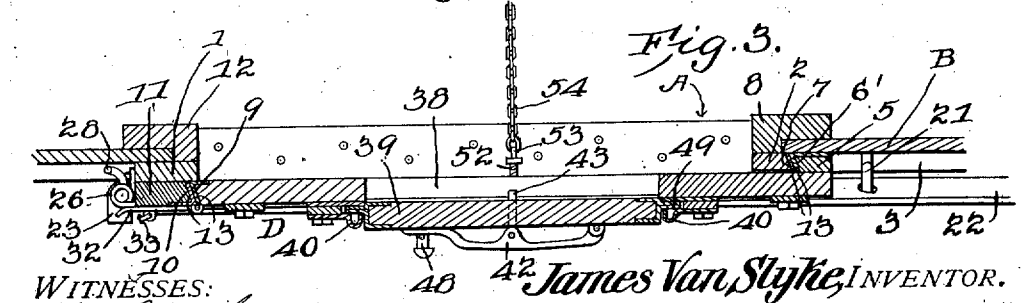


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES VAN SLYKE, OF SHELLROCK, IOWA.

DOOR FOR FREIGHT-CARS.

No. 849,291. Specification of Letters Patent. Patented April 2, 1907.

Application filed January 12, 1906. Serial No. 295,815.

To all whom it may concern:

Be it known that I, JAMES VAN SLYKE, a citizen of the United States, residing at Shellrock, in the county of Butler and State of Iowa, have invented a new and useful Door for Freight-Cars, of which the following is a specification.

This invention relates to doors for freight-cars; and among the objects of the invention are to facilitate the opening and closing of the door at all times and under all conditions, to provide for the snug and tight closing of the door, to permit the latter to swing outward when necessary in order to enable it to be manipulated, and to simplify and improve the general construction and operation of the door.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be made when desired.

In the drawings, Figure 1 is a perspective view of a portion of a freight-car, showing the same equipped with a door constructed in accordance with the principles of the invention. Fig. 2 is a vertical sectional view taken through the door and a portion of the car. Fig. 3 is a horizontal sectional view. Fig. 4 is an inside view in elevation, showing the swinging panels used in connection with the door. Fig. 5 is a transverse sectional view of the door-supporting rail and related parts. Fig. 6 is an end view, partly in section, of the bottom rail and one of the fastening members for the same.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The door-opening A in the side B of an ordinary freight-car is surrounded by an exteriorly-disposed frame, including the uprights or side members 1 and 2, the sill-bar 3, and the lintel-bar 4. This frame serves to offset the door outwardly from the side of the car, spacing the door from the side, so that the door may move easily and without direct frictional contact with the car side. The sill-bar 3 is extended in the direction in which the car-door opens, as clearly seen in Fig. 1 of the drawings, so as to form a support for the lower end of a cleat 5, which is secured upon the inside of the door and which when the door moves to an open position serves to engage a post 6, secured vertically upon the side of the car and constituting a stop member. The edge of the door near which the cleat 5 is secured will be described as the rear edge, and the opposite end and edge of the door will be described as the front end and edge. The door as a whole is designated D.

The front edge of the cleat 5 is beveled, as shown at 6′, and is adapted when the door is closed to engage the correspondingly-beveled rear edge of the upright 2, which is secured upon the rear door-post 8. The front edge of the door D is beveled, as shown at 9, and is adapted when the door is closed to engage the correspondingly-beveled rear edge 10 of a cleat 11, which is connected with the upright 1, which latter is secured upon the front door-post 12. The beveled contacting edges of the parts just described are protected by angle-irons, as 13. It will be seen that when the door is closed, as shown in Fig. 3 of the drawings, the beveled edges 6′ 7 and 9 10 will be in close engagement, while the lower portion of the door is in intimate contact with the sill-bar 3 and its upper portion with the lintel-bar 4, and the door will thus constitute a very tight and closely-fitting closure. Any tendency of the door to warp will be counteracted by the beveled engaging edges.

The door D may be constructed of wood or of metal or of wood and metal combined. In the drawings a door has been shown constructed mainly of wood, but reinforced with metallic straps and braces, and it is desired to be understood that these straps and braces are to be applied wherever they may be needed. The door is provided with hangers 14, each carrying a pair of pulleys 15 16. A track is provided for these pulleys, consisting of a T-rail 17, which is provided with eyebolts 18, hingedly engaging a rod 19, which is supported in lugs or brackets 20 upon the car, so that the said T-rail will be capable of swinging upon the supporting-rod

19. The upper and lower pulleys 15 and 16 are designed to engage the upper and lower sides of the web of the rail 17, the head of which serves to keep the pulleys in engagement with the track and to prevent the possibility of accidental displacement of the pulleys.

The sill-bar 3 is provided with eyebolts 21, serving to hingedly support a bottom guard-rail 22, which affords a guiding means for the lower end of the door, said guard-rail being curved in an outward and upward direction adjacent to the outer side of the door at the lower end of the latter, as clearly seen in Fig. 2 of the drawings. This guard-rail is capable of swinging down to the position indicated in dotted lines in Fig. 2, and when the guard-rail is in this position the lower end of the door may be swung outward from the side of the car, as likewise shown in dotted lines in Fig. 2, the supporting-rail 17 swinging upon its supporting-rod 19, as will be readily understood. For the purpose of securing the guard-rail 22 in its normal raised position in engagement with the lower end of the car-door fastening means are provided, the construction of which will be best understood by reference to Fig. 6 of the drawings. These fastening means comprise straps or brackets 23, which are secured upon the ends of the guard-rail and which have portions extending inwardly over the guard-rail and provided with apertures 24, adapted to aline with sockets 25, that are secured, respectively, upon the cleat 11 and upon the stop member 6. Secured upon the cleat 11 and upon the stop member 6 in vertical alinement with the sockets 25 are housings 26 for bolts 27, which are provided with operating-handles 28, that are slidable in slots 29 in the housings and capable of engaging notches 30, that extend laterally from said slots, thereby permitting the bolts to be adjusted vertically and to be secured at various adjustments. The lower notch 30 is extended about one-half of the circumference of the housing more or less, so as to enable the bolt to be turned upon its axis to the extent of about one-half of a revolution. Each of the bolts 27 is provided at its lower end with an eccentrically-disposed pin or extension 31, that constitutes the engaging portion of the bolt, which is adapted to engage the aperture 24 in the corresponding bracket 23. By this construction when the guard-rail 22 is moved to the door-engaging position (shown in full lines in Fig. 2) and the bolts are placed in engaging position with the aperture 24 then by turning the bolts axially the eccentric-pins 25 will draw the brackets 23 in the direction of the side of the car, thus causing the guard-rail to move in the direction of and to clamp the lower end of the door, which will be thus securely held free from rattling and in such a manner as to effect a tight and efficient closure. By making the lower notches 30 sufficiently long the handles 28, whereby the bolts are operated, may be moved slightly past a dead-center, and the bolts will thus be locked against reasonable possibility of accidental disengagement.

The door is provided near its front edge with a fastening member, consisting of a hasp 32, having a tongue 33, adapted to engage a slot 34 in a plate 35, which is secured upon the cleat 11 and which has a flange 36 hooking over the front edge of said cleat. The plate 35 also carries a staple 37, adapted to be engaged by the hasp 32. The tongue 33, engaging the slot 34, serves to assist in drawing the door to a tightly-closed position, after which it may be secured by means of a seal or locking device applied to the staple 37.

The door proper, D, is provided with an opening 38 in the upper half thereof, and for this opening a closure 39 is provided, which is adapted to slide between a pair of guide-cleats 40, secured vertically upon the outer side or face of the door D adjacent to the opening 38 and extending beneath the latter. Upon the door D, near the lower edge of said door, is secured a flange 41, constituting a stop member upon which the closure 39 may be supported when it is moved to an unobstructing position with relation to the opening 38. Upon the closure 39 there is hingedly mounted a handle 42, having a pivoted pin 43, which extends through an aperture in the body of the closure and which is adapted to engage any one of a series of recesses 44 in the face of the door D, said apertures extending through a reinforcing-strap 45, secured vertically upon the face of the door. When the closure 39 is in an obstructing position with relation to the opening 38, the pin 43 engages the edge of the door at the bottom of said aperture, as will be seen in Fig. 2 of the drawings. The free end of the handle 42 is bifurcated or provided with a slot or notch 46, straddling a headed stud 47, which is secured upon the closure member 39 and which is provided with a transverse perforation 48 for the reception of means—such as a pin, a cotter, or the hasp of a padlock—whereby the handle 42 may be secured against movement in an outward direction. The pin 43 will thus be secured in engagement with the recess 44 or with the edge of the door, thus locking the closure 39 in any position to which it may have been adjusted. The closure member is preferably provided at the edges thereof with metallic flange members 49, engaging the guide-cleats 40, which are likewise constructed, preferably, of metal. A very close and tight fit will thus be insured and all tendency to warping will be counteracted and overcome.

The car-door D is provided with an opening or recess 50, in which there is swiveled a nut 51, adapted to engage a bolt 52, which

may be placed in engagement with said nut from the inside of the car. The bolt 52 is provided with an eye 53, whereby it is connected with a chain 54, for the reception of which a suitably-disposed housing 55 is provided. This housing, as illustrated in Fig. 2 of the drawings, may be arranged beneath the floor of the car; but it is desired to be distinctly understood that said housing may be arranged in any suitable and desired location. Said housing has an aperture 56 (shown in the drawings as extending through the car-floor) for the passage of the chain 54, which latter is provided with a stop member 57, which prevents the chain from being entirely withdrawn through the aperture. Said aperture also serves as a housing for the accommodation of the bolt 52, which may thus be stored in an out-of-the-way position when not in use. The chain 54 is made of such a length that when the bolt 52 is placed in engagement with the nut 50 and the latter is tightened the entire door D will be forcibly drawn and tightened against the frame composed of the members 1, 2, 3, and 4, and thus forming a closure sufficiently tight to prevent the leakage of grain or any kind of merchandise of a similar nature which may be stored or packed in bulk in the car.

Upon the under side of the lintel-bar 4 there are secured lugs or ears 58, having pins 59, with which are pivotally connected pairs of arms 60, carrying overlapping panels 61, which are adapted to swing flat against the inside of the door D in alinement with the opening 38 in the latter, thus constituting an inside closure for said opening. These panels may be independently secured in a raised and out-of-the-way position by means of spring-catches 62, depending from the roof of the car, it being understood that the lower panel may be moved to a door-engaging position independently of the upper panel. These panels are retained in a door-engaging position by no other means than the inside pressure of the material, such as grain, that may be loaded in the car, and by the use of these panels the car may be loaded practically to the roof without danger of leakage. Thus by the use of the improved door of the present invention the use of auxiliary so-called "grain-doors" may be dispensed with.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. A car equipped with doors constructed according to the present invention may be utilized for hauling all kinds of freight. The contents of the car may be readily inspected by opening the auxiliary-door closure 39, and the latter may, if desired, be secured in a partly-open position to afford ventilation to the interior of the car, but without possibility of entering the latter. If by any possibility, such as the shifting of the contents of the car while in transit, the door should become blockaded on the inside, it is only necessary to disengage the bottom guard-rail from the lower end of the door, which latter may thus be swung outwardly and opened. This is an extremely important and valuable feature of the present invention, inasmuch as a serious objection to most car-doors as ordinarily constructed is thereby entirely overcome.

The general construction of the improved car-door is simple and inexpensive, and it may be readily applied to freight-cars of ordinary construction, it being understood that the invention is equally applicable to doors and cars constructed of wood and of metal.

Having thus described the invention, what is claimed is—

1. A slidably-supported car-door capable of swinging outwardly at its lower end, a hingedly-supported guard member adapted to engage the lower end of the door and having apertured brackets, suitably-supported housings, and bolts slidable and oscillatory in said housings and having eccentric terminal-engaging members.

2. The combination with a slidably-supported car-door capable of swinging and means for preventing vertical movement of the door; of a bottom guard-rail hingedly mounted below and normally out of contact with the door and adapted to overlap the bottom portion of the door, said rail constituting a guide for the door when sliding, and means at each end of the rail for locking it in guiding position.

3. The combination with a hinged supporting-rail and a longitudinally-movable car-door suspended from and held against vertical movement by the rail and disposed to swing therewith; of a hinged bottom guard-strip normally out of contact with the door and adapted to overlap the lower edge of the car-door and to constitute a guide therefor throughout the longitudinal movement of the door, said guard-strip adapted to prevent swinging of the door.

4. The combination with a hinged supporting-rail and a car-door suspended from and adapted to move longitudinally of the rail and to swing therewith, said rail holding the door against vertical movement; of a hinged bottom guard-strip normally out of contact with the door and adapted to overlap the lower edge of the car-door and to constitute a guide therefor throughout the longitudinal movement of the door, said guard-strip adapted to prevent swinging of the door, and means adjacent the ends of the strip for locking it in overlapping position.

5. The combination with a hinged supporting-rail and a car-door suspended from and

adapted to move longitudinally of the rail and to swing therewith, said rail holding the door against vertical movement; of a hinged bottom guard-strip normally out of contact with the door and adapted to overlap the lower edge of the car-door and to constitute a guide therefor throughout the longitudinal movement of the door, said guard-strip adapted to prevent swinging of the door, and stop-cleats fixedly secured between the ends of the guard-strip and supporting-rail and in the path of the longitudinally-movable door.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES VAN SLYKE.

Witnesses:
JIM CARTER,
B. S. STODDARD.