

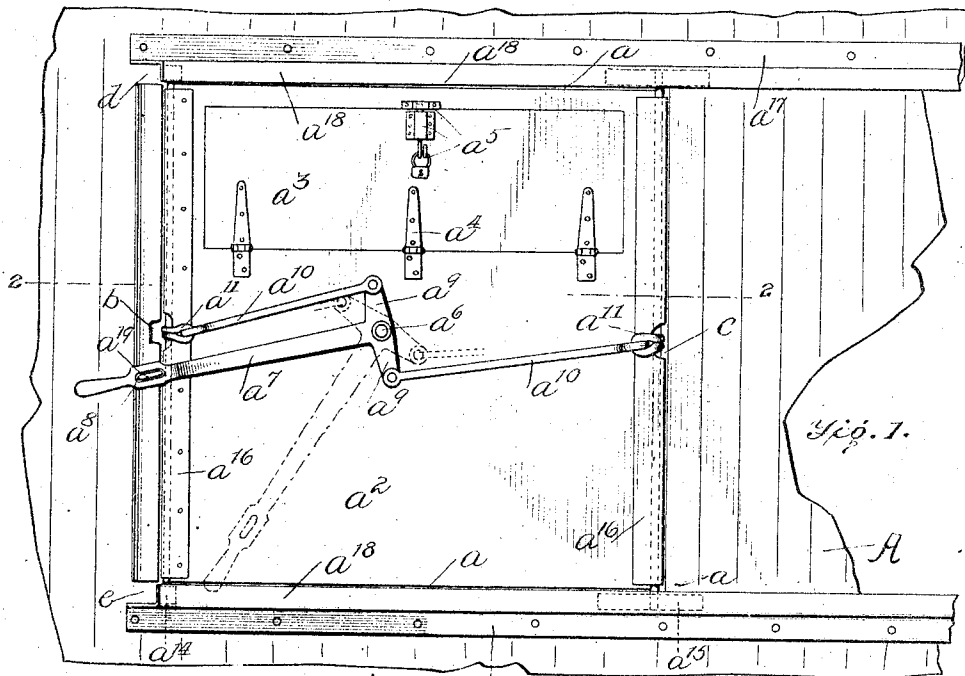
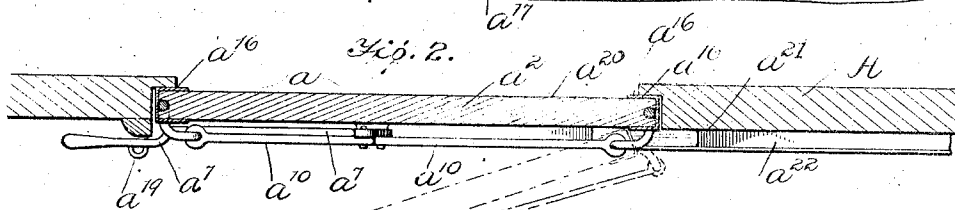
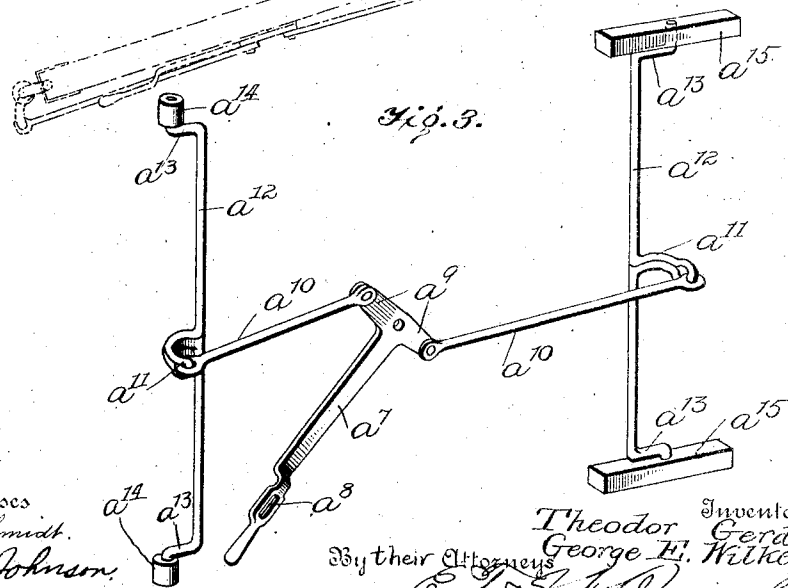
T. GERDES & G. E. WILKEN.

GRAIN CAR DOOR.

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901,531.

Patented Oct. 20, 1908



Witnesses
L. H. Schmidt.
M. W. Johnson.

By their Attorneys

Inventors:
Theodor Gerdes,
George E. Wilken,
C. F. Raubach.

UNITED STATES PATENT OFFICE.

THEODOR GERDES AND GEORGE E. WILKEN, OF DANFORTH, ILLINOIS.

GRAIN-CAR DOOR.

No. 901,531.

Specification of Letters Patent.

Patented Oct. 20, 1908.

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To all whom it may concern:

Be it known that we, THEODOR GERDES and GEORGE E. WILKEN, citizens of the United States, residing at Danforth, in the county of Iroquois and State of Illinois, have invented new and useful Improvements in Grain-Car Doors, of which the following is a specification.

The object of this invention is to provide a novel construction of grain-car door, which shall be simple in construction, easy to operate, and positive and certain in operation, and which can be manufactured and sold at a small cost.

The invention has reference to that class of grain-car door in which the use of bolts and analogous locking-devices is dispensed with, and is characterized by the fact that, when in closed position, the door lies flush with the side of the car, and, when the locking and unlocking lever is actuated to open the door, the door is moved first bodily away from the same plane as the side of the car, when it can either be swung open on its rear pivot, whereby the door, when open, will be at an angle to the plane of the side of the car, or it can be slidably moved rearward, whereby the door, when open, will occupy a position in a plane parallel to the side of the car, or it can be simultaneously swung upon its rear pivot and slid rearward, as may be preferred to meet the wishes of the operator and to suit the varying exigencies of the particular situation: Thus, when a wagon is backed up to the door in the side of the car, to load freight thereon, or to unload freight therefrom, it will not be desirable to swing the door open on its pivot, since the wagon would obstruct the path of movement of the door. In such a case, the door can be slid back or rearward in a plane parallel and in juxtaposition to the side of the car.

With these objects in view, and others appearing as the specification proceeds, our invention consists of the novel construction, combination and arrangement of parts, as hereinafter fully described in the specification, summed up in the claims, and illustrated in the drawings.

In the drawings, which, for illustrative purposes, show one form of embodiment of our invention, capable of carrying into effect the broad principles of the invention (it being understood that other forms of embodiment may be adopted without departing from the spirit of the invention): Figure 1 is

a side elevation of a fragmentary section of a railroad freight-car, or the like, embodying our invention; Fig. 2 is a section on the line 2—2, Fig. 1; and Fig. 3 is a detail view of certain parts of our invention shown in Fig. 1.

Now, referring in detail to the drawings, A represents, in this instance, the side of a railway freight-car, as a grain-car, having an opening *a* therethrough, to afford access to the interior thereof. Adapted to close passage through the opening *a* is a door *a*², which may, if desired, be provided with a supplemental or auxiliary door *a*³, in this instance shown disposed near the top of the main door *a*² and preferably hinged thereto, as at *a*⁴. This supplemental door may be locked or held closed, when desired, by any suitable or appropriate locking means, as *a*⁵. The supplemental door, if provided, may be appropriately used when loading the car with grain, the latter being shot, by gravity, or the like, through the open supplemental door, by means of a conveyer-spout, or chute (not shown), or the like; or the door may, under certain conditions, be used to ventilate the car while in transit, or at other times, or used for any other purpose for which it may be found suitable.

Carried by the door and having its fulcrum point at *a*⁶ is a lever *a*⁷, which may be provided with an aperture *a*⁸ toward its outer end, its inner end carrying two arms *a*⁹, *a*⁹. Pivotaly connected to the free end of each of these arms is one end of a link *a*¹⁰, the other end of which is pivotaly connected with the hook portion *a*¹¹ of a rod or axle *a*¹², provided, at each end, with a crank *a*¹³ (clearly shown in Fig. 3), carrying a roller or wheel *a*¹⁴, working on the exterior of the car side-frame and traversing, in this instance, a path of movement in proximity to the upper and lower edges of the opening *a*. The rods *a*¹² work in bearings in the ends of the door *a*², and both of the rods may carry, at their ends, rollers or wheels *a*¹⁴, or (as we have illustrated in the drawings), the forward rod, only, may be provided with these rollers and the rear rod may be rotatably mounted in end blocks *a*¹⁵ (shown in dotted lines in Fig. 1 and in full lines in Fig. 3). In this instance, we have conveniently provided a strip of suitable material *a*¹⁶, such as tin, iron, steel, or the like, bent so as to inclose the rods *a*¹² and the vertical ends of the door *a*².

Secured in any suitable manner longitudinally of the exterior face of the side frame of

the car are two strips a^{17} , a^{17} of suitable material, such as iron, tin, steel, or the like, and having each a longitudinally-extending, horizontal wall a^{22} , terminating in a longitudinally-extending, flange a^{18} , between which and the side of the car work the rollers a^{14} , a^{14} and blocks a^{15} , a^{15} , as shown in dotted lines in Fig. 1, these strips, with their walls a^{22} and flanges a^{18} , constituting guide-ways for the rollers or wheels a^{14} and blocks a^{15} in their movement. When the door is in closed position, the rollers a^{14} are just between the flange a^{18} , and the side of the car but, when the lever a^7 is operated, said rollers move away from said flange to the points d and e , whereby the door may be rotated or swung about the rod a^{12} as a pivot, the door thus occupying a position at an angle to the plane of the car-side.

Desirably, a staple a^{19} is driven into the car side, and the staple is adapted to project through the aperture a^8 of the lever a^7 , a pin, or the like (not shown) being passed through said aperture temporarily to lock, when desired, the lever against accidental movement; but it is entirely obvious that a padlock, or analogous means, may be employed in lieu of the pin. As padlocks and pins are common and well known expedients, we have not deemed it necessary to illustrate them in the drawings.

While our invention has been shown as applied in use to a grain-car door, it is to be understood that our invention is not limited to such use, as it may be applied to any situation and use where it may be found efficacious or desirable, as, for instance, in a barn, store, or the like.

From the above description, taken in connection with the drawings, it is believed that the operation of our device is apparent; but briefly stated, it may be described as follows: The door is shown in Fig. 1 as in its closed position. In this position, the rollers a^{14} , a^{14} are disposed between the flanges a^{18} of the guide-ways and the side of the car, and the lever is shown at the limit of its upward range of movement. To open the door, the operator pulls down upon the lever, which moves on its fulcrum or pivot a^6 . This downward movement of the lever rocks the links a^{10} in opposite directions and farther apart. The result is that the hooks a^{11} , a^{11} are pushed backward onto the side walls of the opening a , at the points b and c , and continued movement of the lever will cause the hooks a^{11} , a^{11} to ride up on top of the edges b and c , the rollers a^{14} , a^{14} and the blocks a^{15} , a^{15} sliding or moving away from each other in opposite directions. The rollers a^{14} , a^{14} are thus pushed beyond the forward ends of the flanges a^{18} , to the points d , e ; whereupon, at this period of the operation, the door, which had previously been flush with the exterior surface of the car side-frame A, has been

moved bodily out of the opening a and into a plane parallel to the exterior surface of the car-frame A. In this position, the car-door occupies a position with its inner surface a^{20} just out of contact with the exterior surface a^{21} of the car-frame A. Since the rollers a^{14} , a^{14} are, as stated, now removed from a position between the flange a^{18} and the side of the car, the door may obviously be swung outward on its pivot (the rear rod a^{12} , which turns in its bearings in the blocks a^{15} , a^{15}); or, if desired, the door may be swung outward somewhat and then pushed rearward, the blocks a^{15} , a^{15} sliding in the guide-ways; or the door may not be swung outward at all, but simply pushed back, the rollers or wheels a^{14} , a^{14} , and blocks a^{15} , a^{15} sliding in the guide-ways.

From the foregoing detailed analysis of the salient features of our invention, it will be recognized that we have devised a structure which embodies a maximum of simplicity with a minimum degree of effort and labor to operate; that the door is operated by a single lever; that the door may be moved longitudinally of the car, or may be swung outward at an angle to the side of the car, or may be simultaneously swung outward and moved longitudinally; that the parts of the device, being few and simple, are not likely to get out of order; and that the device may be manufactured and sold at a very moderate cost.

Having thus fully described our invention, what we claim as new and desire to secure by Letters-Patent is:

The combination with the side of a freight-car having an opening therethrough, of a door adapted to close said opening, a lever pivoted to said door and provided at its inner end with two arms, a rotatable rod carried by said door, at each of the two side ends thereof, and carrying on its ends slidable members adapted to travel on the exterior surface of said car, two links, each pivotally connected to one of said rods and to one of said arms, and two guide-strips extending longitudinally of the exterior of the car, and each comprising a base secured to said car, a horizontal wall, and a longitudinally-extending flange on top of which horizontal wall and between said longitudinally-extending flange and the side of the car said slidable members work, the front end of said longitudinally-extending flange terminating flush with the front pair of slidable members when the door is completely closed.

In testimony whereof, we hereunto affix our signatures, in the presence of two witnesses.

THEODOR GERDES.
GEORGE E. WILKEN.

Witnesses:
WARREN BAILEY,
ALBERT C. BAILEY.