

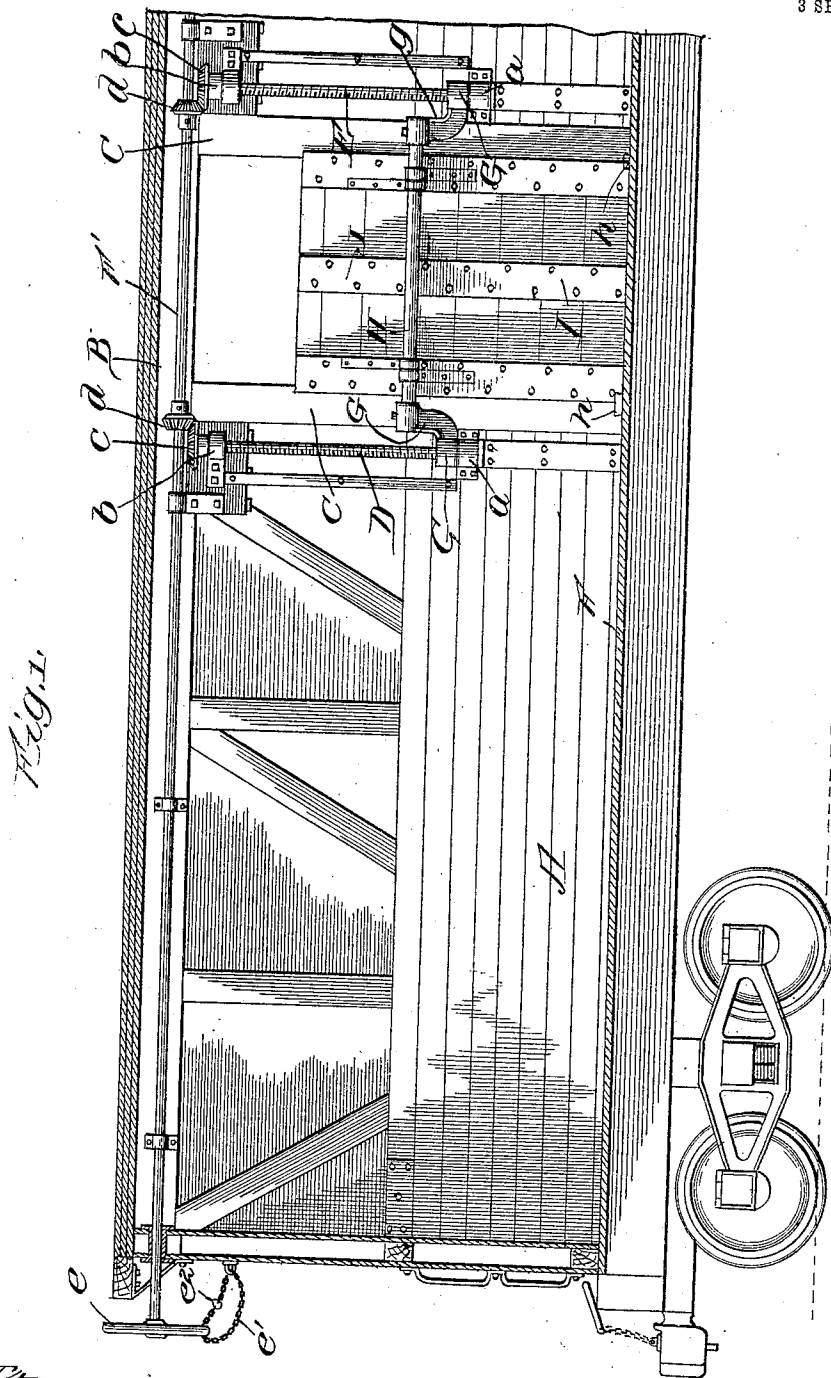
No. 813,631.

V. ELMQUIST.

PATENTED FEB. 27, 1906.

DOOR FOR GRAIN CARS.
APPLICATION FILED DEC. 12, 1904.

3 SHEETS—SHEET 1.



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Inventor:
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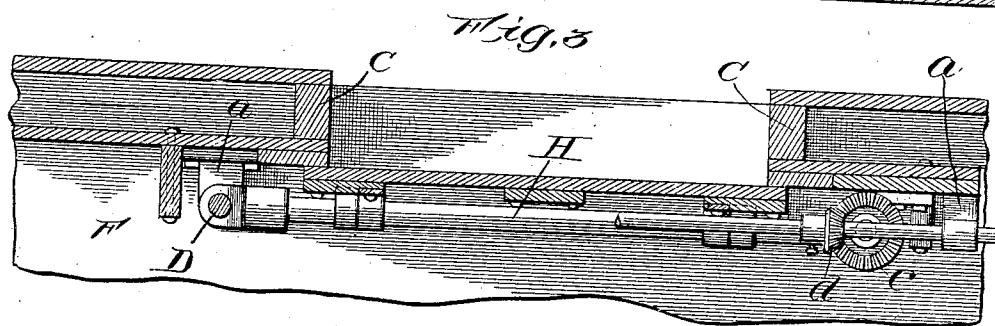
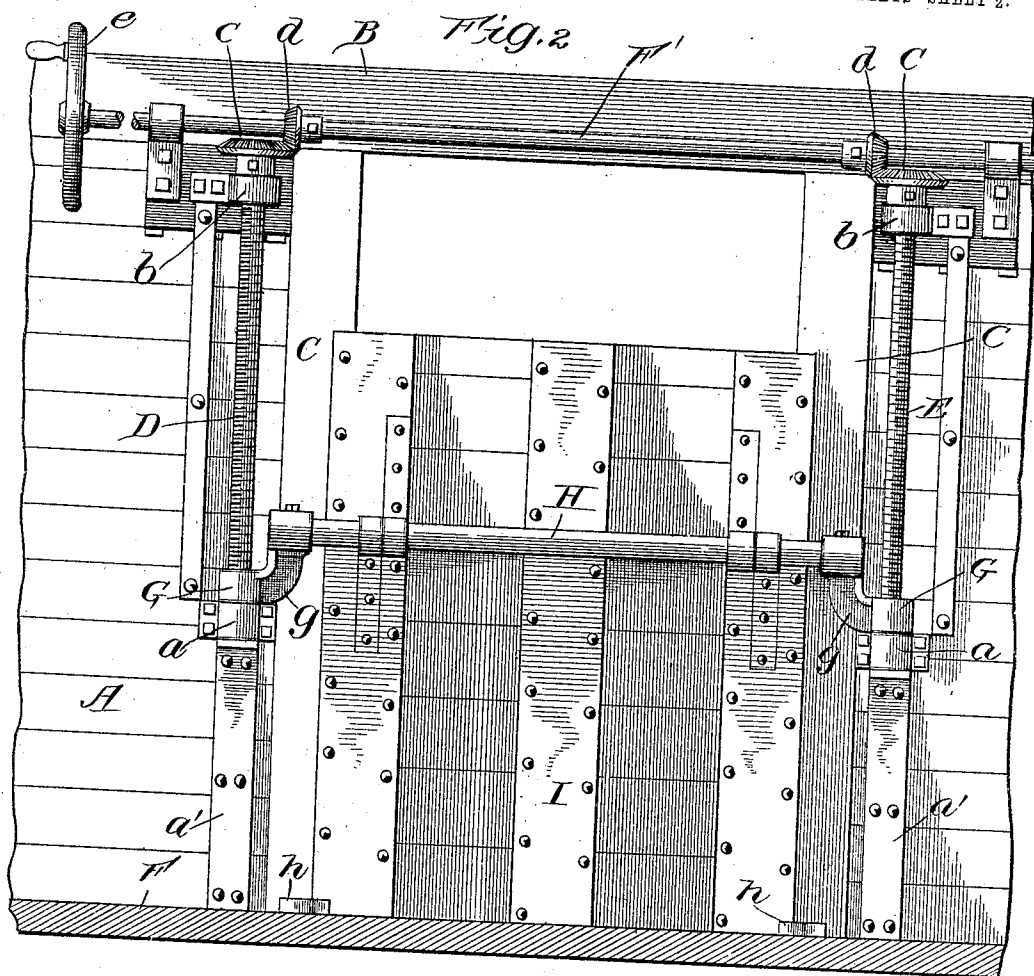
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

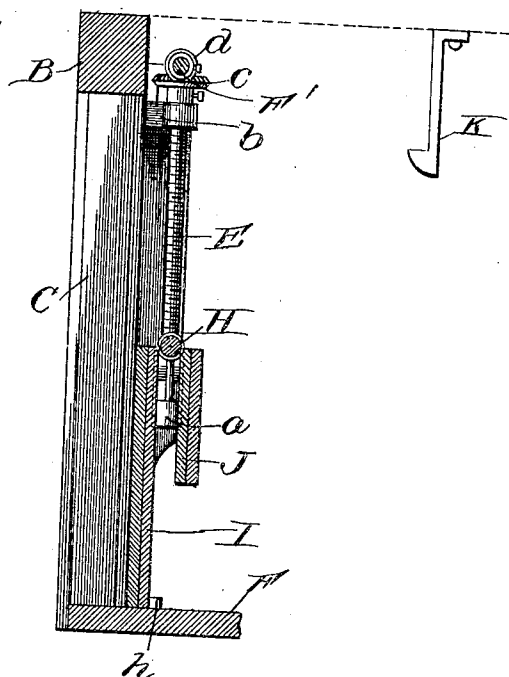
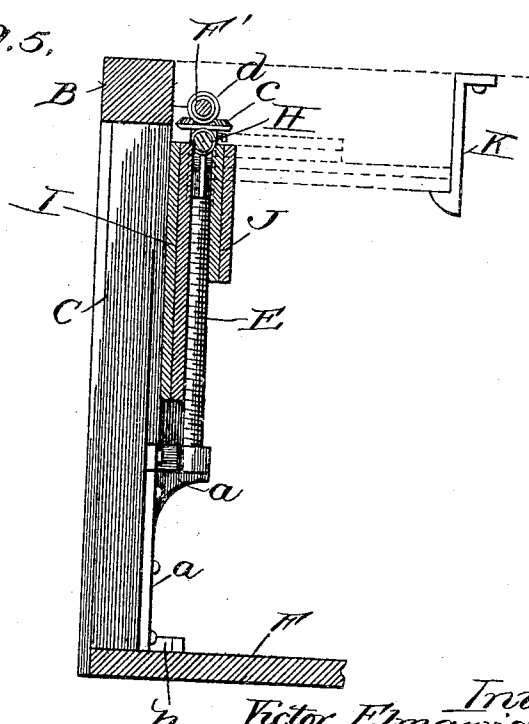


Fig. 5.



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UNITED STATES PATENT OFFICE.

VICTOR ELMQUIST, OF CHICAGO, ILLINOIS.

DOOR FOR GRAIN-CARS.

No. 813,631.

Specification of Letters Patent.

Patented Feb. 27, 1906.

Application filed December 12, 1904. Serial No. 236,544.

To all whom it may concern:

Be it known that I, VICTOR ELMQUIST, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Doors for Grain-Cars, of which the following is a full, clear, and exact description.

My invention relates to doors for grain-cars; and its object is to enable the door to be manipulated from the outside and raised and lowered easily without the necessity of crowbars or other implements of violence so often used by desperate men upon refractory doors and often to the great injury of the cars. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a longitudinal vertical section of slightly more than one-half of a grain-car having my improvements applied thereto. Fig. 2 is a side elevation of my improved grain-door and the door-frame therefor drawn to a larger scale. Fig. 3 is a plan view thereof. Fig. 4 is a transverse vertical section thereof, showing the door down. Fig. 5 is a similar view showing in dotted lines the door swung up out of the way.

Referring to the drawings, A represents the body of a box-car suitable for the carrying of grain, and B represents the longitudinal timber or plate over the doorway, and C C the door-posts. Journaled in suitable bearings *a* and *b*, secured to the said door-posts or to the inner walls of the car adjacent to and on each side of the door, are parallel vertical screws D and E. The lower bearings *a a* for the heel of these screws are located about the center of height of the door, and in order to reinforce and assist these lower bearings to sustain the weight of these screws and the load carried thereby I have provided the columns or pilasters *a' a'*, which rest upon the floor F of the car and extend vertically up to and bear against the under side of the said bearings. The screws D and E extend up through the upper bearings *b* to about the horizontal plane of the top of the doorway, and each has a mitered gear *c* suitably secured thereto, which are engaged by the mitered pinions *d d*, that are secured to a horizontal shaft F'. This shaft is journaled in bearings that are preferably fastened to or in front of the plate B of the car, and it extends from a point slightly beyond

one side of the door to and through suitable bearings in the opposite end of the car, where its outer end is provided with a suitable hand-wheel *e*, by means of which it can be turned. If desired, the shaft can be locked against turning by means of a chain *e'* on the outside of the car, one end of which is secured to the end of the car and the other end looped through the wheel and fastened by a seal or lock *e''* back upon itself. If desired, shaft F' may be operated by a suitably-connected vertical shaft extending either up through the roof of the car or down through the floor of the same. This suggestion is not embodied in the drawings, because it is obviously the equivalent of the elongation of shaft F through the end of the car.

The screws D and E may, if desired, correspond, but I prefer to make them right and left, respectively. Mounted on and engaged by these screws are correspondingly-tapped sleeves G G, which are of any desired outer design and have L-shaped arms *g g* projecting therefrom toward each other that extend horizontally and then vertically a short distance and are provided with bearings in their upper ends in which the ends of the horizontal pivotal shaft or pintle H is journaled on which the grain-door I is suspended. The door I is of such height that when the sleeves G are at the limit of their downward movement its lower edge will bear down upon the floor of car and is of such width that its side edges can lap against the edges of the door-frame or door-posts. When the door is at the limit of its downward movement, its lower corners enter the recesses made to receive them in plates *h h*, secured to the floor at the base of the door-posts, and hold the door tightly against the door-frame and close the lower portion of the doorway.

If desired, a door J for closing or partly closing the upper portion of the doorway when the door I is down can be hinged to the pintle I and secured in such raised position in any desired manner.

The operation of my invention is as follows: Suppose the door to be closing the lower portion of the doorway and it is desired to raise the same. The shaft F is first unlocked and then turned in the proper direction, so that, through the miter gears and pinions *c* and *d*, it turns screws D E and causes the sleeves G G to simultaneously move upward thereon and lift the door I until its upper edge is in front of and it closes the upper portion of the

doorway. The door is then swung inward and upward to a horizontal position, and its lower edge is forced past and catches on the spring-hooks K K, which are of an inverted-L shape and have their horizontal portions screwed or otherwise suitably secured to the roof of the car. When it is desired to lower the door, its lower edges are released from the hooks and it is allowed to gravitate to a perpendicular position, and then, through shaft F, the screws are turned so that the sleeves move downward and lower the door to its first-mentioned position, where it can be secured, as hereinbefore explained.

15 What I claim as new is—

1. The combination with a car-body having a suitable doorway in the side thereof, of a grain-door, a pintle-bolt from which said door is suspended, two revolving vertical screws arranged one on one side and the other on the other side of said doorway, internally-screw-threaded non-revolving sleeves on said screws having L-shaped projections extending above the same which are provided with horizontal bearing-bosses in which the ends of the pintle-bolt are journaled, and means engaging said screws whereby said sleeves and the parts carried thereby are raised and lowered.

2. The combination with a car-body having a suitable doorway in the side thereof, of a swinging grain-door, a pintle-bolt from which said door is suspended, an auxiliary door mounted thereon and adapted to be swung above said first-mentioned door, two revolving vertical screws arranged one on one side and the other on the other side of said doorway, internally-screw-threaded non-revolving sleeves on said screws having L-shaped projections extending above the same which are provided with horizontal bearing-bosses in which the ends of the pintle-bolt are journaled, miter-gears on the upper ends of said screws, a longitudinal shaft, miter-pinions thereon engaging said miter-gears, and a hand-wheel mounted on said shaft on the outside of said car for revolving said shaft whereby said door is raised and lowered.

3. The combination with a car-body having a suitable doorway in the side thereof, of a grain-door, a pintle-bolt from which said door is suspended, a superimposed auxiliary

door pivotally connected to said pintle, two revolving vertical screws arranged one on one side and the other on the other side of said doorway and internally-screw-threaded non-revolving sleeves on said screws in which the ends of said pintle-bolt are journaled.

4. The combination with a car-body having a suitable doorway in the side thereof, of a grain-door, a pintle-bolt from which said door is suspended, a superimposed auxiliary door pivotally connected to said pintle, two revolving vertical screws arranged one on one side and the other on the other side of said doorway, internally-screw-threaded non-revolving sleeves on said screws in which the ends of said pintle-bolt are journaled and bearings in which the heels of said screws are journaled and columns supporting the same.

5. The combination with a car-body having a suitable doorway in the side thereof, of a grain-door, a pintle-bolt from which said door is suspended, a superimposed auxiliary door pivotally connected to said pintle, two revolving vertical screws arranged one on one side and the other on the other side of said doorway, internally-screw-threaded non-revolving sleeves on said screws in which the ends of said pintle-bolt are journaled, miter-gears on the upper ends of said screws, a longitudinal shaft, and miter-pinions thereon engaging said miter-gears.

6. The combination with a car-body having a suitable doorway in the side thereof, of a grain-door, a pintle-bolt from which said door is suspended, a superimposed auxiliary door pivotally connected to said pintle, two revolving vertical screws arranged one on one side and the other on the other side of said doorway, internally-screw-threaded non-revolving sleeves on said screws in which the ends of said pintle-bolt are journaled, miter-gears on the upper ends of said screws, a longitudinal shaft, miter-pinions thereon engaging said miter-gears, and means on the outside of said car for operating said shaft.

In testimony whereof I have hereunto set my hand this 3d day of December, A. D. 1904.

VICTOR ELMQUIST.

Witnesses:

E. F. ELMBERG,
FRANK D. THOMASON.