



No. 692,522.

Patented Feb. 4, 1902.

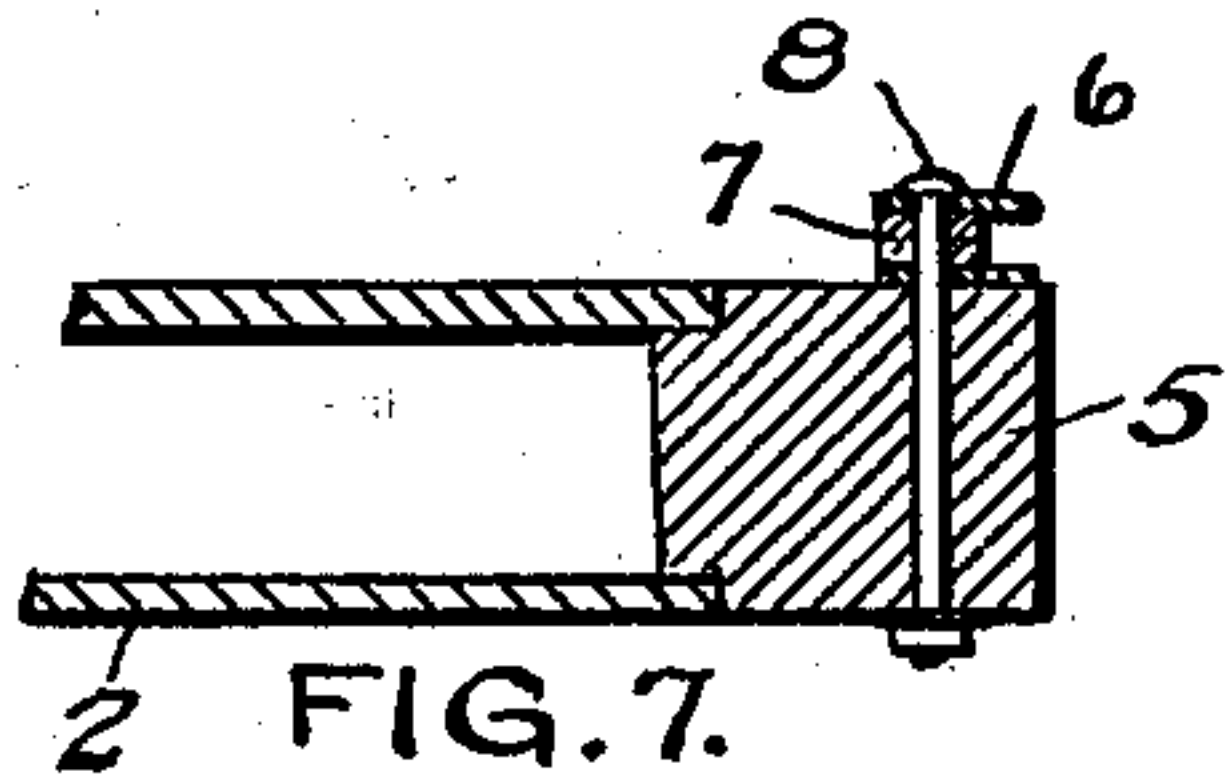
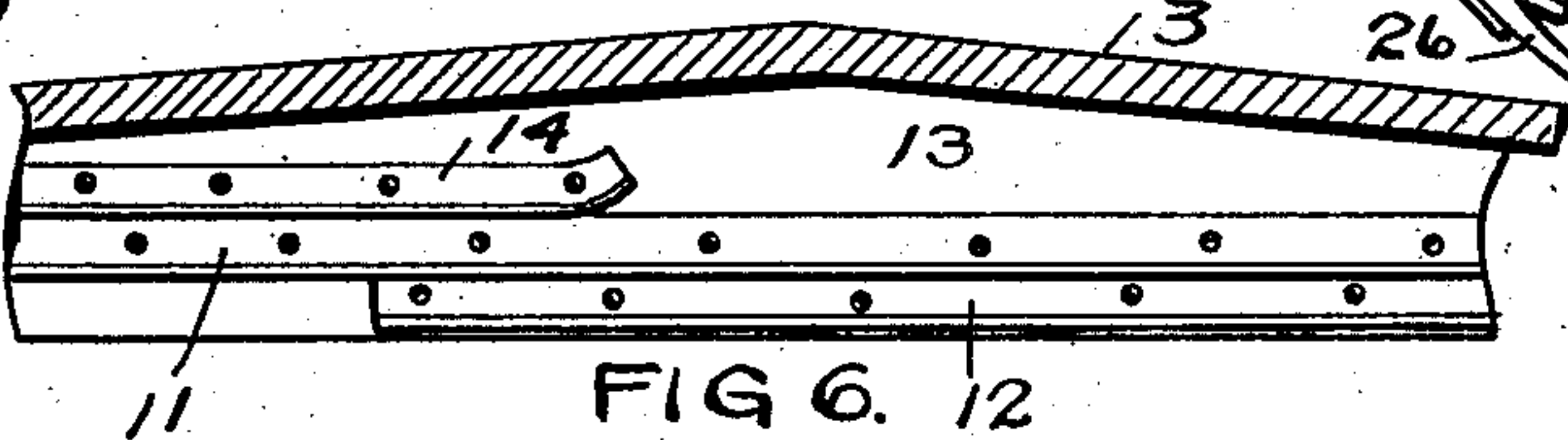
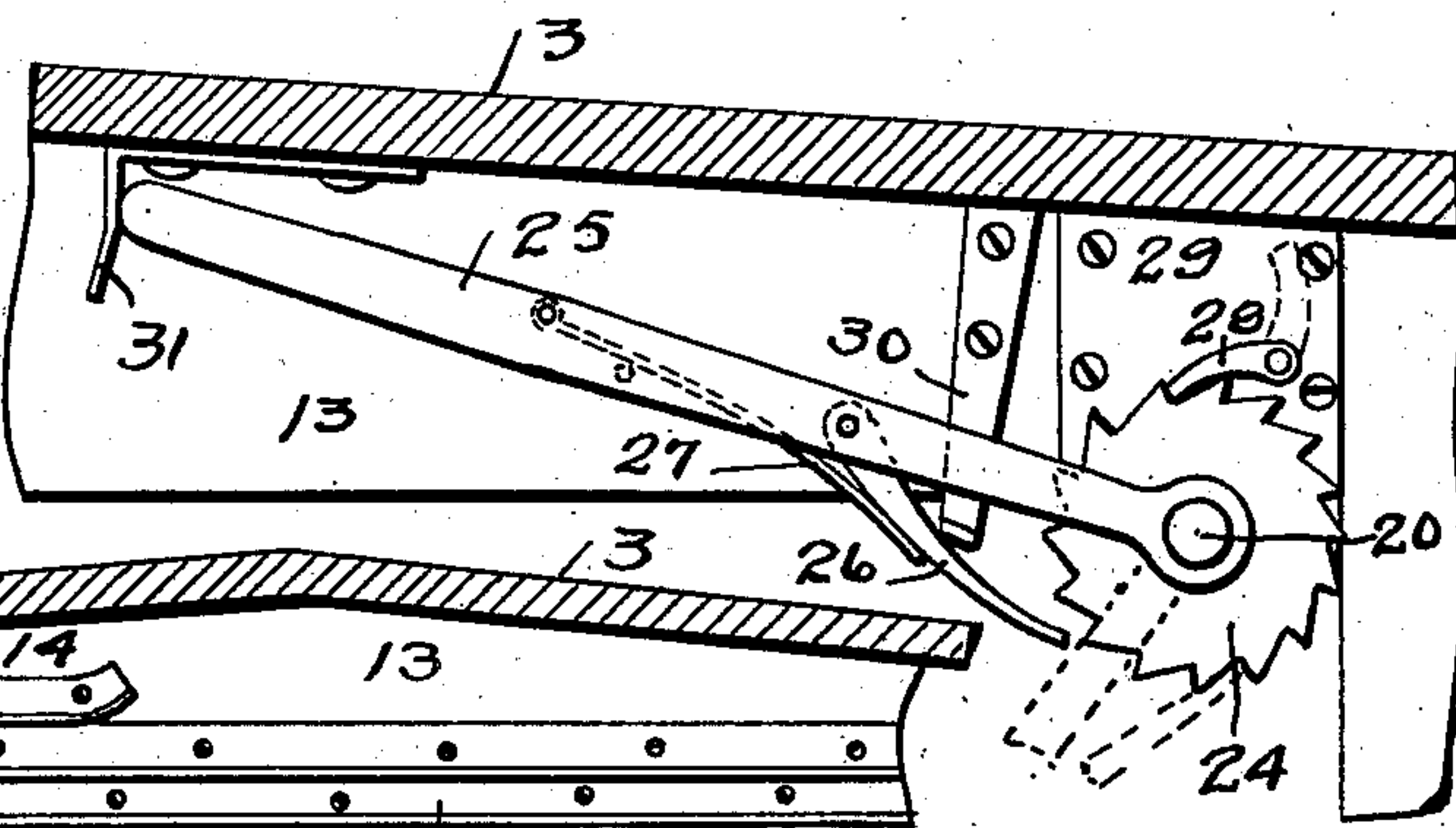
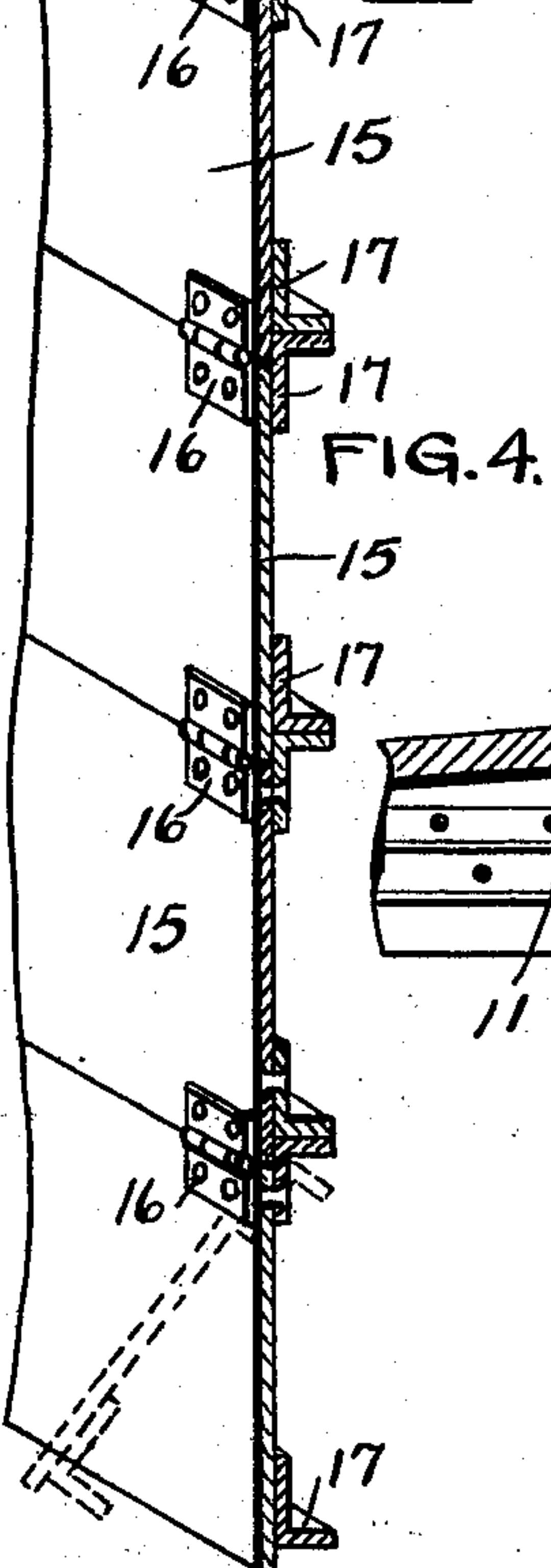
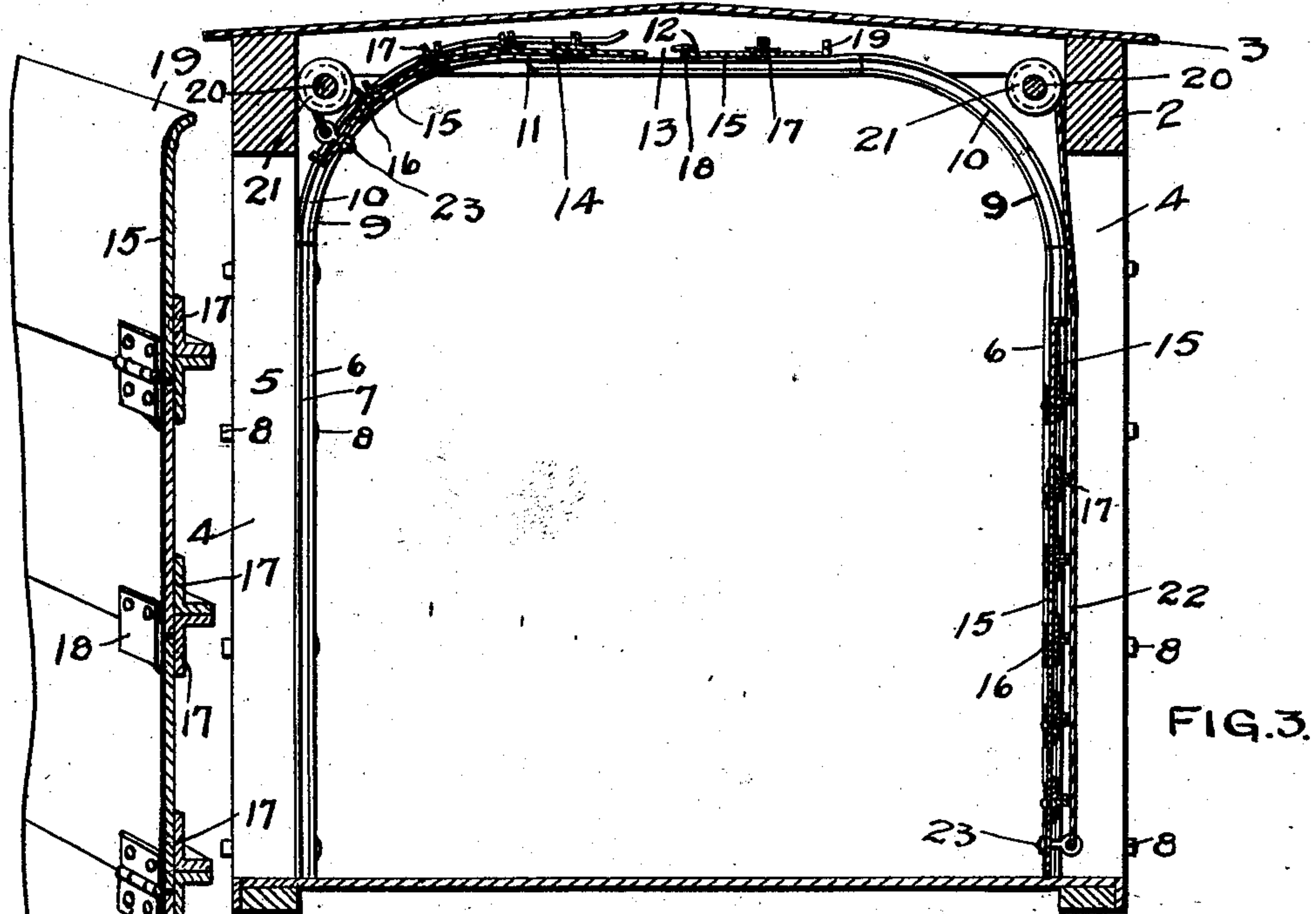
F. H. JONES.

GRAIN DOOR FOR FREIGHT CARS.

(Application filed Apr. 29, 1901.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

FRANK H. JONES, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO E. K. PROCTOR AND W. J. FARRAR, OF MINNEAPOLIS, MINNESOTA.

## GRAIN-DOOR FOR FREIGHT-CARS.

SPECIFICATION forming part of Letters Patent No. 692,522, dated February 4, 1902.

Application filed April 29, 1901. Serial No. 57,524. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK H. JONES, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Grain-Doors for Freight-Cars, of which the following is a specification.

My invention relates to grain-doors; and the object of the invention is to provide a door which will form a close grain-tight joint with the side of the car and effectively prevent the leakage of grain.

A further object is to provide a door which when not in use may be moved up out of the way under the car-roof.

A further object is to provide a door whose height may be varied according to the material with which the car is loaded.

A further object is to provide a door of simple durable construction and one that can be easily raised or lowered.

The invention consists generally in a door composed of a series of connected sections, several of the upper sections being separable from the lower.

Further, the invention consists in providing angle-bars at the abutting edges of the sections.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a portion of a freight-car, showing my improved door applied thereto. Fig. 2 is a longitudinal section showing the door from the inside of the car. Fig. 3 is a transverse section of the car. Fig. 4 is an enlarged detail of the end of the door, showing the manner of connecting the sections and the stiffening angle-bars. Fig. 5 is a detail of the ratchet mechanism for operating the doors. Fig. 6 is a detail of the angle-bars that support the doors under the car-roof. Fig. 7 is a detail of the manner of securing the door-guideways to the door-posts.

In the drawings, 2 represents the side of a freight-car; 3, the roof; 4, the door-opening, and 5 the door-posts. To each post on the in-

side of the car I secure guides or runways for the door, consisting, preferably, of flat iron bars 6, with a narrower bar 7 between them, said bars being secured together and to the posts 5 by bolts 8. The edges of the bars 6 are flush with the door-posts and will not interfere with the loading or unloading of freight.

Near the top of the door I prefer to provide continuations of the door-post guides, consisting, preferably, of curved malleable castings 9, having channels or grooves 10. Angle-bars 11 and 12 are provided, one above the other, on the cross-beams 13, abutting the castings 9 and supporting the doors on both sides of the car when they are in their raised position. Similar bars 14 overlap the bars 11 and 12 on one side and form guards for the upper door.

The doors, guideways, and operating means are substantially the same on both sides of the car, and hence a description of and the terms and expressions applied to one will apply to the other also.

Each door consists of a series of sections 15, preferably of sheet metal, connected by hinges 16, by link belts, or in any other suitable way that will permit the doors to slide freely in their curved guideways. The abutting edges of the door-sections are provided with angle-bars 17, that are riveted thereto and serve to stiffen and brace the sections, preventing warping and twisting of the same. One bar of the abutting pairs preferably overlaps the edge of its section, and the other bar is set back from the edge of its section, so that the edge of one section will lap over and form a close grain-tight joint with the angle-bar on the adjoining section. The doors are preferably constructed with the angle-bars on the outside, so that the bulging or outward pressure of the grain will not open the joints between the sections and allow leakage of the grain. The two upper sections are preferably separable from the others to permit their being left in the top of the car when it is loaded with heavy comparatively less bulky material, such as wheat, coal, &c. These two sections are shown separated from



the others in Fig. 3 of the drawings. I prefer to provide clips 18 at the bottom of the lower of the two sections to drop down over the upper edge of the adjoining section and prevent bulging of the former. The top edge of the upper section is preferably turned out to form a flange 19 thereon.

Any suitable means may be provided for lifting the doors; but I prefer to provide a shaft 20, mounted in bearings in the door-posts above each door. Small drums or pulleys 21, having grooved faces, are provided on the shaft 20 and connected by cables 22 with eyebolts 23, provided in the lower section of the series. Any suitable means may be employed for revolving the shaft 20; but I prefer to secure a ratchet 24 thereon and loosely mount a lever 25 on the end of said shaft, said lever having a dog 26, that is normally held in engagement with the teeth of the ratchet by a spring 27. A pawl 28, pivoted on a plate 29, that is secured to a cross-beam 13, normally engages the ratchet and prevents any backward turning of the same and of said shaft. To revolve the shaft and raise the doors, the lever is drawn down to the position indicated by dotted lines in Fig. 5 and moved up and down till the door is raised to the desired height. When the lever is swung up to the position indicated by full lines in said figure, the dog 26 will be engaged by an arm 30 and disengaged from the teeth of the ratchet. The lever is held in its raised position by a catch 31. When it is desired to close a door, the pawl is raised to the position indicated by dotted lines in Fig. 5, and the operating-lever being raised also the shaft may be turned backward and the door-sections allowed to slide down to the bottom of their guideways. When the car is loaded with a bulky comparatively heavy material, each section of the door will be employed; but when the car is loaded with coal or wheat the two upper sections are preferably left in the guideways under the roof of the car, while the others are moved down to close the door-opening. In this way I am able to regulate the height of the door according to the material with which the car is loaded. The separable sections being supported up under the car-roof are entirely out of the way and at any time may be moved down into position on the other sections when the car is loaded with a light bulky material.

Any suitable means may be provided on the cross-beams for locking the separable sections in their horizontal position to prevent them from being accidentally disengaged by the jolting or jarring of the car. I have shown the sections connected by hinges of the ordinary type; but obviously link belts or any other suitable means may be employed for pivotally connecting these sections. The

guideways being flush with the edges of the door-post will not interfere with loading or unloading freight and will form a close grain-tight joint with the ends of the door.

I have shown a ratchet-and-lever device for revolving the shaft and raising each door; but obviously any other suitable mechanism may be employed, if preferred.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A grain-door for freight-cars, comprising a series of pivotally-connected sections, and angle-bars provided lengthwise of the abutting edges of said sections, for the purpose specified.

2. A grain-door for freight-cars, comprising a series of pivotally-connected sections, angle-bars provided upon said sections lengthwise of their abutting edges, one bar of each pair overlapping the edge of its section and the adjoining bar being set back from the edge of its section, for the purpose set forth.

3. The combination, with a freight-car door, of guideways provided thereon, a door composed of a series of sheet-metal sections hinged together and movable vertically in said guideways, angle-bars provided lengthwise of the abutting edges of said sections, and means for raising said sections.

4. The combination, with a freight-car-door frame, of guideways provided thereon, a door composed of a series of sheet-metal sections movable vertically in said guideways, said sections being hinged together and several of the upper sections being connected to each other and in contact with the other sections but not attached thereto, strengthening or bracing bars provided lengthwise of and near the abutting edges of said sections, and means attached to the lower portion of the door for raising all of said sections simultaneously.

5. The combination, with a freight-car-door frame, of guideways provided thereon and extending up under the car-roof, a door composed of a series of sheet-metal sections adapted to move vertically in said guideways, angle-bars provided lengthwise of the abutting edges of said sections, the lower sections being pivotally connected and several of the upper sections being connected to each other but not to the lower sections, and means for raising said sections to a horizontal position beneath the car-roof.

In testimony whereof I have hereunto set my hand, this 19th day of April, 1901, at Minneapolis, Minnesota.

FRANK H. JONES.

In presence of—

RICHARD PAUL,  
A. L. WHELAN.