911,701.

T. J. CAMPBELL.

GRAIN DOOR.

APPLICATION FILED AUG. 4, 1908.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

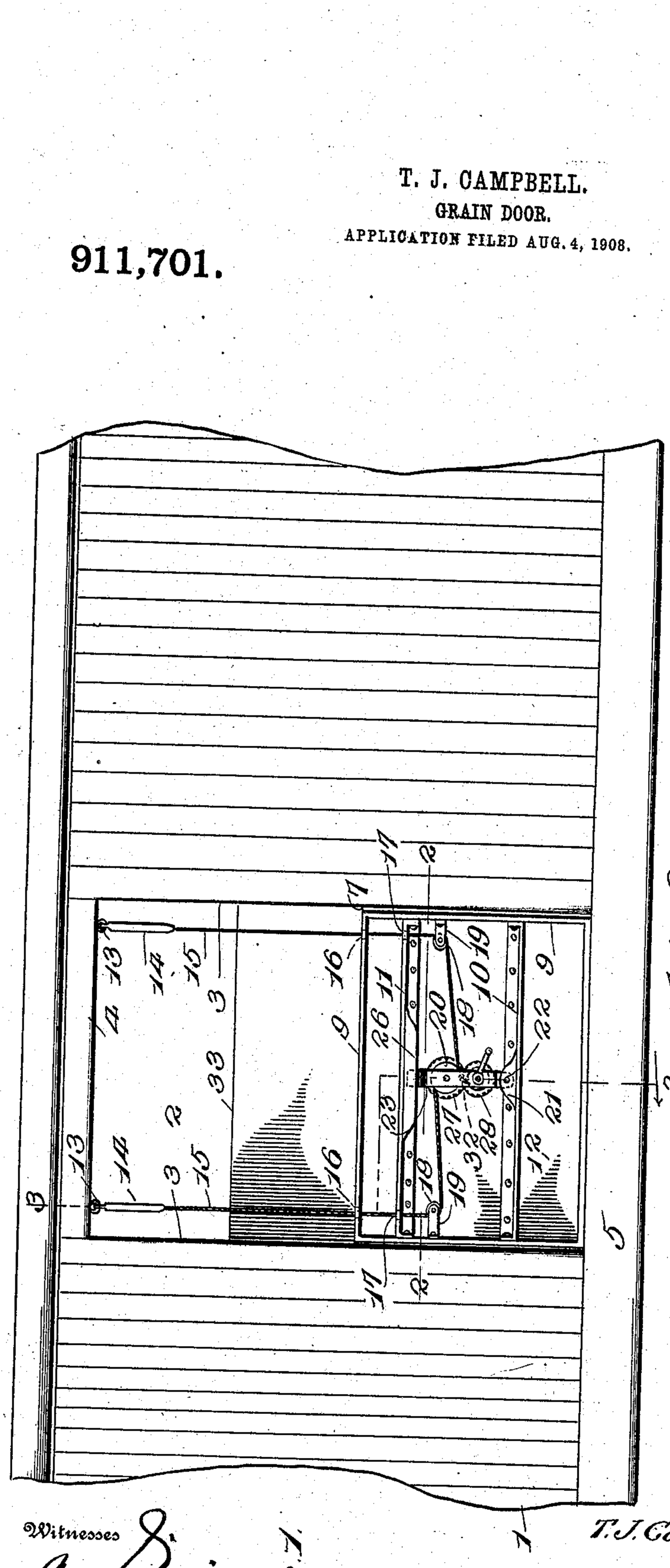
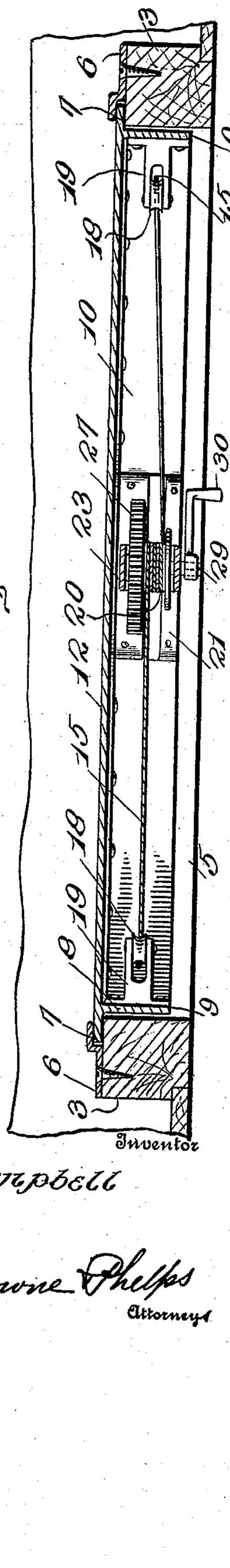


Fig. 2.



Witnesses

S. S. Wesson.

Fig. 1.

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Fig. 3.

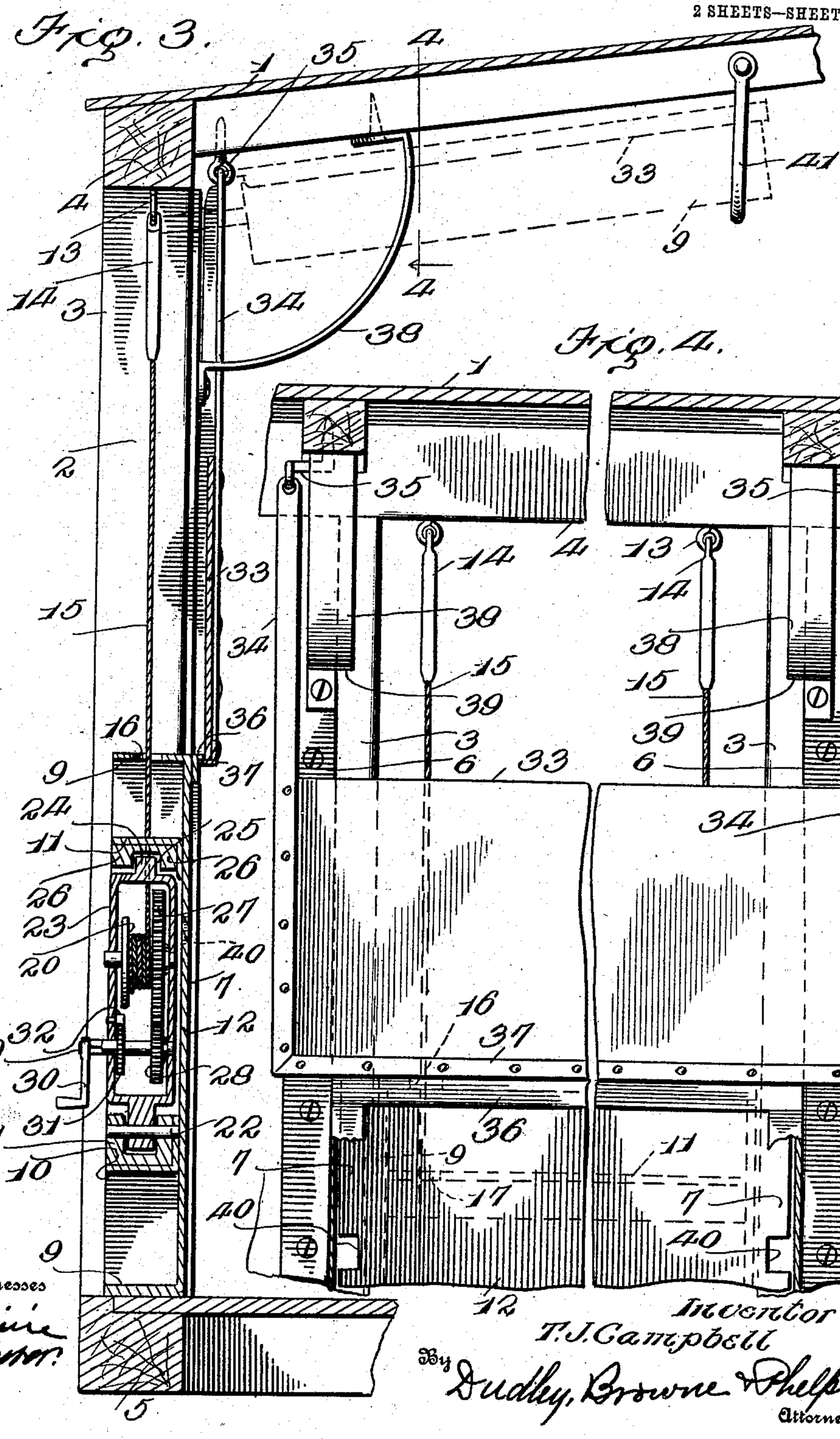

Fig. 4.

Witnesses

[illegible]

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UNITED STATES PATENT OFFICE.

THOMAS J. CAMPBELL, OF LATHROP, MISSOURI.

GRAIN-DOOR.

No. 911,701. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed August 4, 1908. Serial No. 446,844.

To all whom it may concern:

Be it known that I, THOMAS J. CAMPBELL, a citizen of the United States, residing at Lathrop, in the county of Clinton and State of Missouri, have invented certain new and useful Improvements in Grain-Doors, of which the following is a specification.

My invention relates to certain new and useful improvements in grain doors, and the object of my invention is to produce a door which will be cheap in construction, simple in operation and durable, and also a door which may be readily raised when the car is filled to facilitate unloading.

With these and other objects in view my invention consists in certain constructions, combinations and arrangements of parts, the preferred form of which will be first described in connection with the accompanying drawings and the invention particularly pointed out in the appended claims.

Referring to the drawings wherein the same part is designated by the same reference numeral wherever it occurs, Figure 1 is a front elevation of a portion of the outside of a freight car showing the same as provided with my preferred form of door; Fig. 2 is a section of the door and its casing taken on line 2, 2, of Fig. 1; Fig. 3 is a section taken on line 3, 3, of Fig. 1, and Fig. 4 is a section taken on line 4, 4, of Fig. 3, viewed in the direction of the arrow, the parts shown in dotted lines in Fig. 3 being however omitted.

1 designates a portion of a freight car of any ordinary or desired construction and 2 the door-way therefor. This door-way is closed by any desired form of door and, as it forms no part of my invention, it is not shown.

3, 3, are the jambs of the door-way, and 4 the top, these forming with the sill 5 the door-way-frame.

Mounted on the jambs of the door-way, and extending up from the sill a distance substantially equal to the height of the grain door are the Z-shaped plates 6, 6, which, with the jambs 3, form guide-ways for the extending edges 7, 7, of the grain door. This door is preferably formed from a rectangular frame 8 of angle irons, the angle irons at the side extending outwardly to form the extending edges 7, while at the top and bottom the angle irons extend inwardly as shown at 9, 9.

10, 11, are a pair of angle irons extending transversely across the door intermediate its top and bottom and parallel thereto. Over the inner face of the frame are secured plates 12, of sheet metal.

Secured to the lower side of the top 4 of the door-way are a pair of eyes 13, 13, from which depend a pair of rods 14, 14, having eyes at their upper end, and extending from their lower ends are the cables 15, 15. These cables may be formed of chains, wire or Manila rope, or any other equivalent thereof, and I desire to have it understood that the term cable as used in the following description is to include all such equivalents.

The cables 15 may be attached to the bars 14 in any desired manner, as by making the bars hollow and passing the cables through the openings which are reduced at their lower ends and the cables jammed into the openings in any desired way. The cables 15 pass down through the openings 16, 16, in the top bar 9 of the frame of the door and then through openings 17, 17, in the bar 11 alining with the openings 16. The cables then pass around the pulleys 18, 18, mounted in the brackets 19, 19, secured to the side frames 8 of the door frame and around opposite sides of a spool 20.

Extending up from the central portion of the bar 10 are a pair of ears 21 between which is pivoted, by means of the pivot 22, a yoke 23 in which the spool 20 is journaled. This yoke at its upper end is brought together and provided with a projecting tongue 24 which extends into a guide-way 25 formed by a pair of depending ears 26 on the under side of the bar 11. From this construction it will be seen that the yoke 23 is free to oscillate on its pivot 22 and to accommodate itself to any variations in the length of the cables 15, 15, or to a shortening of one cable faster than the other, due to the uneven winding of the cables upon the spool 20, 20. In order to drive the spool 20 I provide the same at one end with a gear 27 with which meshes a gear 28 fast on the shaft 29 journaled in the sides of the yoke 23, the shaft 29 being provided with a handle 30 on its outer end by means of which it may be rotated to wind and unwind the cables on the spool 20. In order to hold the cable wound I provide the shaft 29 with a ratchet wheel 31, which is engaged by a pawl 32, pivoted to the side of the yoke 23.

From this construction it will be seen that the rotation of the handle 30 in the proper direction will cause the cable 15, 15, to wind upon the spool 20 and consequently draw the door up to the top of the door-way, in which position the bars 14, 14, will have entered the alined openings 16, 17. As the door is now raised above the upper end of the guide-way formed by Z-bars 6, it is free to be swung inwardly against the roof of the car, the eye-bolts 13 acting as the pivots therefor.

33 is the upper door which is formed by securing sheet metal plates onto the lower portion of a U-shaped frame formed from the angle irons 34, the angle irons being perforated at the free ends of the U and engaged by the eye-bolts 35 by means of which the upper door is pivotally hung from the top of the car. The main door at its upper edge is provided with the projecting flange 36 which is adapted to be engaged by the projecting portion 37 of the U-shaped frame, in order to form a grain-tight joint between the upper and lower doors when they are closed.

In order to guide the main door when it is swung up against the roof of the car I provide a pair of arc-shaped guides 38 secured at one end to the roof of the car and at the other end to the door jambs, the lower ends of the guides adjacent to the jambs being cut away as shown at 39. The door is provided with a pair of notches 40 adapted to engage the inner edges of the guides 38 when the door is swung toward the roof of the car and is in its upper position. In order to hold both doors in a raised position I pivot to the top of the car a bail 41 adapted to swing beneath either the upper door alone or the lower door, in order to hold either the upper door or both doors against the roof of the car.

I realize that considerable variation is possible in the details of construction and arrangement of parts without departing from the spirit of my invention, and I therefore do not intend to limit myself to the specific form shown and described.

What I claim as new and desire to secure by Letters Patent is—

1. In a grain door the combination with the door-way-frame, of guides for the sides of the door carried by the lower portion of said frame, a door mounted to engage the guides, said door being provided with openings extending vertically therein, a pair of rods pivoted at the top of said frame, cables extending from the lower ends of the rods through the openings in the door and winding means for the cables mounted on the door.

2. In a grain door the combination with the door-way-frame, of a door slidably mounted on the frame, cables connected to the upper part of the frame and a drum to which the cables are connected, a yoke in which the drum is mounted, said yoke being pivoted to the door whereby inequalities in the length of the cables are compensated.

3. In a grain door, the combination with the door-way-frame, of a door slidably mounted on the frame, said door being provided with openings extending vertically therethrough, a pair of guide pulleys mounted on the door in line with the openings, a pair of cables connected to the upper part of the frame and extending through the openings in the door and around the guide pulleys, a frame pivoted to the door between the guide pulleys, and a drum rotatably mounted in the frame on which the cables are adapted to be wound.

4. In a grain door the combination with the door-way-frame, of a door slidably mounted on the frame, said door being provided with openings extending vertically therein, a pair of rods pivoted at the top of the frame, cables extending from the lower ends of the rods through the openings in the door, guiding means mounted on the door in line with the openings and around which the cables are adapted to pass and a movable winding means for the cables located between the guiding means.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS J. CAMPBELL.

Witnesses:
T. G. KLEPPAR, JR.,
JOE T. DOHERTY.