

No. 894,075.

PATENTED JULY 21, 1908.

N. S. STALKER.
GRAIN CAR DOOR.

APPLICATION FILED OCT. 17, 1907.

2 SHEETS—SHEET 1.

Fig. 2.

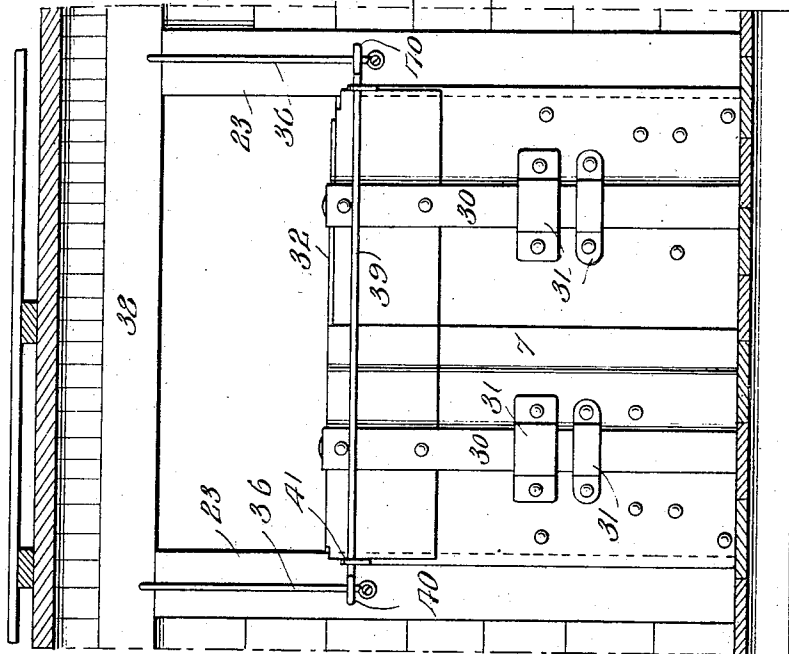


Fig. 3.

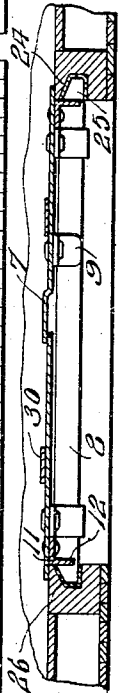
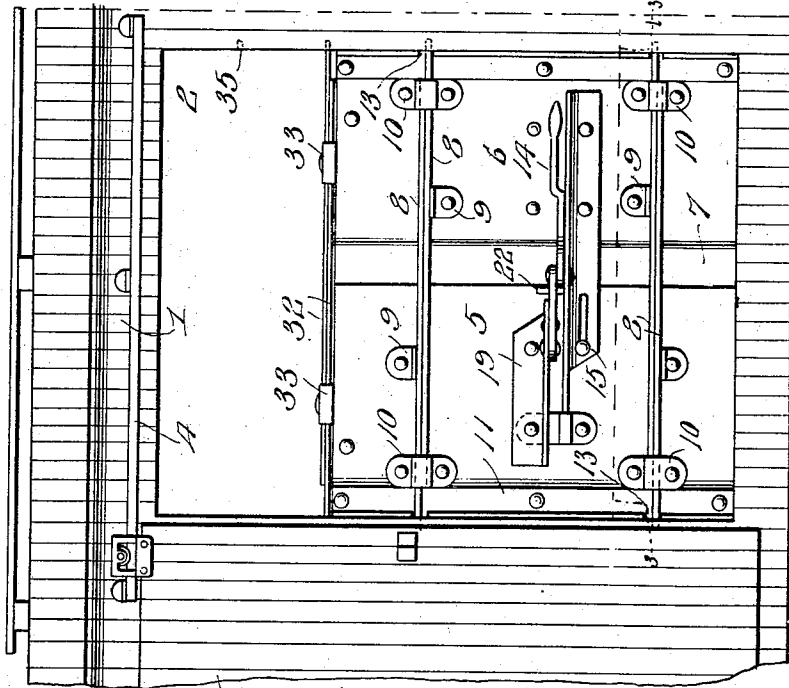


Fig. 1.



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Witnesses

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C. Marceron

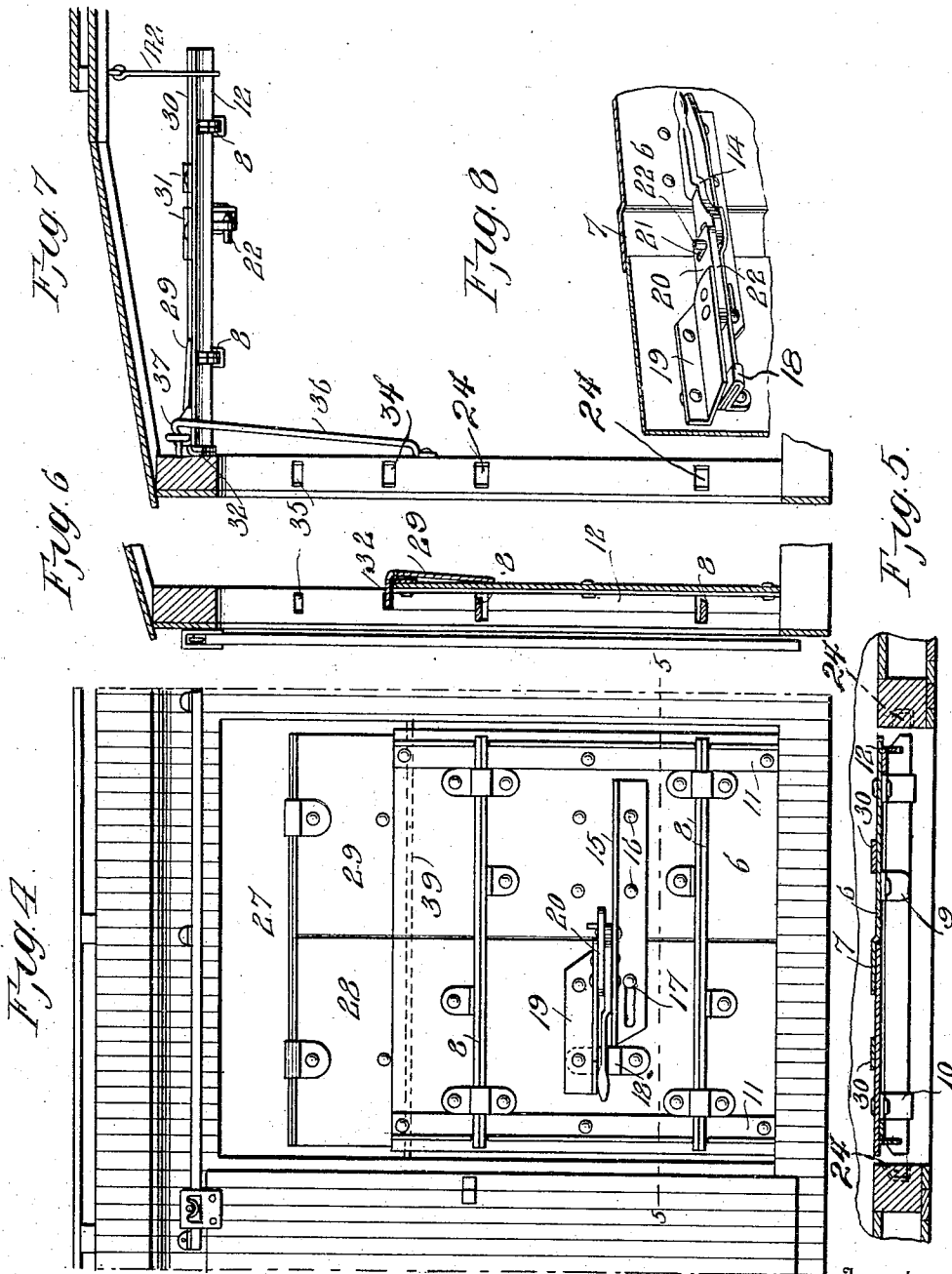
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

NEIL S. STALKER, OF DULUTH, MINNESOTA, ASSIGNOR OF ONE-HALF TO FRANK CRASSWELLER.

GRAIN-CAR DOOR.

No. 894,075.

Specification of Letters Patent.

Patented July 21, 1908.

Application filed October 17, 1907. Serial No. 397,882.

To all whom it may concern:

Be it known that I, NEIL S. STALKER, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented new and useful Improvements in Grain-Car Doors, of which the following is a specification.

The invention relates generally to an improvement in car doors and particularly to a car door designed for use with grain cars and applied as usual to the inner side of the door opening to prevent the escape of the grain beyond the edges of the ordinary car door.

The main object of the present invention is the provision of a grain car door made up in sections so connected and operated as to extend the same to tightly fit the door jamb or withdraw the same to afford a space between the sections and jamb for the initial escape of the grain.

A further object of the invention is the provision of means for locking the door in place when in closed position, the locking means being simultaneously operated with the extension of the sections, means being also provided to permit the vertical movement of the door with relation to the door opening, whereby said opening may be entirely cleared of obstruction.

A further object of the invention is the provision of an extension member, slidably connected with the door and adapted to be manually operated to adjust the height of the door with respect to the particular grain transported, means being provided for automatically locking the sections of the extensible member in place in the locking operation of the door proper.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a broken elevation of a car, showing a front elevation of the grain door of my invention, the door being shown in locked position. Fig. 2 is a longitudinal section through the car, showing an inner or rear elevation of the improved door, with the same in locked position. Fig. 3 is a section on line 3—3 of Fig. 1. Fig. 4 is a view similar to Fig. 1 with the parts of the door in unlocked positions, and the extension member elevated. Fig. 5 is a section on line 5—5 of Fig. 4. Fig. 6 is a vertical section, partly broken away through the car and improved

door. Fig. 7 is a similar view with the door in elevated position. Fig. 8 is a detail perspective of the operating means for the door sections.

Referring particularly to the accompanying drawings 1 represents a car of any desired construction, formed with a door opening 2, arranged to be closed by the ordinary car door 3, mounted for sliding movement on a track 4, all of which parts are intended to represent any ordinary or preferred construction which may be desired.

The present improvement is directed particularly to an auxiliary door, adapted to operate in the usual door opening but within the ordinary door, said auxiliary doors being particularly used in grain cars and being primarily adapted to close the door opening against the egress of the grain more effectively than is possible with the ordinary door.

The grain door of the present invention is made up of two metallic sections 5 and 6, each of somewhat greater width than one-half the width of the door opening and of somewhat less length than the height of the door opening. One of the sections, as 6, is formed on the edge adjacent the section 5 with an offset portion 7, extending throughout the length of the section and receiving the inner or proximate edge of the section 5, the offset portion serving to maintain the respective sections 5 and 6 in the same plane while permitting the relatively inner or proximate edges of said section to overlap in all positions of the sections.

The respective sections are slidably connected and guided in operation through the medium of what may be hereinafter termed locking bars 8, said bars being arranged in pairs on the outer surfaces of and adjacent the upper and lower edges of the sections. Each bar of each pair is secured to one of the sections through a bracket member 9, and each pair of bars is guided in movement through guide brackets 10 secured to the respective sections adjacent their outer or remote vertical edges. Each section is thus provided with an upper and a lower bar fixedly secured to the section and arranged in sliding coöperation with a similar bar fixed to the remaining section.

Secured on the outer surface of each section in alinement with and immediately adjacent the outer or remote edge of said section is a bearing plate 11, preferably of right

angle form in cross section, one flange 12 of which projects at right angles to the plane of the section, as clearly shown in Fig. 3. The bearing plates 11 are practically coextensive in length with the length of the section, the flanges 12 thereof being recessed at 13 to permit passage therethrough of the locking bars 8.

The sections are operated by means of a hand lever 14 pivotally mounted upon a bracket 15 of right angle form in cross section, said bracket being arranged upon the outer surface of both sections. The bracket is permanently secured to one section, as 6, as at 16, and slidably connected to the other section through the medium of a pin and slot connection 17, the vertical portion of the bracket beyond the pin and slot connection being cutaway, and the horizontal portion thereof passed through a guide bracket 18 to further guide the parts. A supporting plate 19, preferably of right angle shape in cross section is secured to the section 5 of the door, the horizontal portion of said plate being arranged in spaced parallel relation with the horizontal portion of the bracket 15. On the relatively inner end of the plate 19 there is secured an operating plate 20 formed adjacent one end with an elongated slot 21. The slot 21 is arranged transverse the plate 20, that is at right angles to the plane of the door sections, being in position at all times to receive a pin 22 projecting from the end of the lever 14. From this construction it will be obvious that as the lever is moved on its pivot to force the pin 22 toward the inner end of the slot, the sections 5 and 6 will be spaced apart, such movement continuing until the free end of the lever has reached the position shown in Fig. 1, whereupon the sections will be spaced to their limit. The opposite movement of the lever will, of course, draw the sections toward one another, thus narrowing the door, the limit of movement in this operation being obtained when the lever is in position shown in Fig. 4. As the slot 21 is disposed at right angles to the plane of the sections, and the free end of the lever, the pivot therefor, and the pin 22 are in alignment, it is obvious that when the lever is in section opening or closing position the pressure of the sections against the pin is directly in line with the pivot of the lever, and hence there is no tendency of the sections or lever to accidental movement in the jar of the car incident to travel.

The bearing plates 11 are so arranged with relation to the remote edges of the sections that when said sections are fully extended the projecting flanges 12 of said plates will snugly engage and bear against the inner surfaces of the uprights 23 of the frame of the door opening, those portions of the sections projecting outwardly beyond the bearing plate being adapted, when the sections are

extended to overlie and bear on the inner surfaces of said uprights, as clearly shown in Figs. 2 and 3. The uprights 23, at appropriate points in their lengths are formed with recesses 24 in which are fitted metallic sockets 25, which are particularly adapted for the reception of the ends of the locking bars 8 when said bars are projected in the spreading of the sections. The relatively inner walls of the sockets, and the cooperating rear edges of the locking bars are preferably inclined at 26, serving, as said bars are seated within the sockets, to more snugly bind the engaging portions of the sections against the inner surfaces of the uprights 23.

In connection with the door proper, I contemplate the use of an extensible member, which may be manually operated to increase the height of the door, it being understood that the loading level of a car containing oats or barley is somewhat higher than one containing wheat, and hence the necessity for a higher door in the former uses than in the latter, it being desirable for the purposes of proper ventilation to limit the height of the door as nearly as possible to the exact requirements of the load.

The extensible member 27 is made up of independent sections 28 and 29 which are slidably connected to the main sections by slide bars 30 movable in housings 31 secured upon said main sections. The respective sections 28 and 29 are adapted for movement in conjunction with the main sections, being guided in said movement by what may be termed auxiliary locking bars 32 arranged at the upper ends of the sections 28 and 29 and slidably mounted in brackets 33 carried by the sections 28 and 29, each bar 32 being secured to one of the sections through connection with the bracket carried by that section. The uprights 23 are formed with socketed openings 34 to receive the ends of the locking bars when the sections are extended with the member 27 in lowered position, as shown in Fig. 1, and are also provided with socketed recesses 35 to receive the auxiliary locking bars when the extensible member is in the elevated position, as shown in Fig. 4.

Guide rods 36 are secured on the inner surfaces of the uprights 23, extending upwardly at an outward incline relative to the uprights and terminating in an inwardly extending approximately horizontal portion 37 terminally secured in the upper cross bar 38 of the frame for the door opening. A slide rod 39 is terminally provided with eyes 40 to engage the respective guide rods, said slide rod being loosely passed through openings in brackets 41 secured to the respective main sections. When the sections are withdrawn, the door may be manually elevated on the guide rods 36 until the eyes of the slide rod rest upon the horizontal portions 37 of the guide rods, in which position the lower or free

end of the door may be elevated within the car and temporarily secured by one or more hook members 42 and thus clear the door opening.

5 The operation of my improved grain door will be fully apparent from the above description taken in connection with the drawings, it being understood that with the lever 14 in the position shown in Fig. 1 the sections of the door are extended to effectively close the door opening, the extension of the sections serving to also lock the door in such position. Reverse movement of the lever withdraws the sections until their remote or free edges are spaced from the inner edges of the uprights 23 and permit the door to swing outwardly on the slide rod 39 to discharge sufficient of the grain to afford room for the elevation and upward swinging of the door within the car.

The material of which the sections and co-operating parts is constructed is not important in the present invention, though for the purposes of strength and lightness I prefer the use of sheet metal for the main parts. The extensible member may or may not be used as preferred, as the operation and construction of the door proper is not affected thereby.

30 Having thus described the invention what is claimed as new, is:—

1. A grain car door made up in sections, means connecting the sections to permit their lateral movement to and from each other, and an extensible member carried by the sections and slidably connected thereto for endwise movement relative to the sections, said extensible member being made up in sections

adapted for movement with the sections of the car door.

2. A grain car door made up in slidably connected sections, means for operating said sections to increase or decrease the width of the door, and an extensible member slidably connected to the door sections for endwise movement relative to said sections, said member being made up in sections adapted for simultaneous and corresponding movement with the door sections.

3. A grain car door made up in sections, means for slidably connecting the sections, and means for operating the sections to increase or decrease the width of the door, said sections connecting means projecting beyond the outer edges of the respective sections to provide a locking means when said sections are operated to increase the width of the door.

4. The combination with a car formed with a door opening, of a door therefor made up of slidably connected sections, means for operating the sections to increase or decrease the width of the door, and locking bars connected to the respective sections and normally extending beyond the outer edges thereof, the uprights of the door opening being formed with recesses to receive the projecting ends of the locking bars when the sections are operated to increase the width of the door.

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

NEIL S. STALKER.

Witnesses:

ELMER F. BLU,
ALISON M. CRASSWELLER.