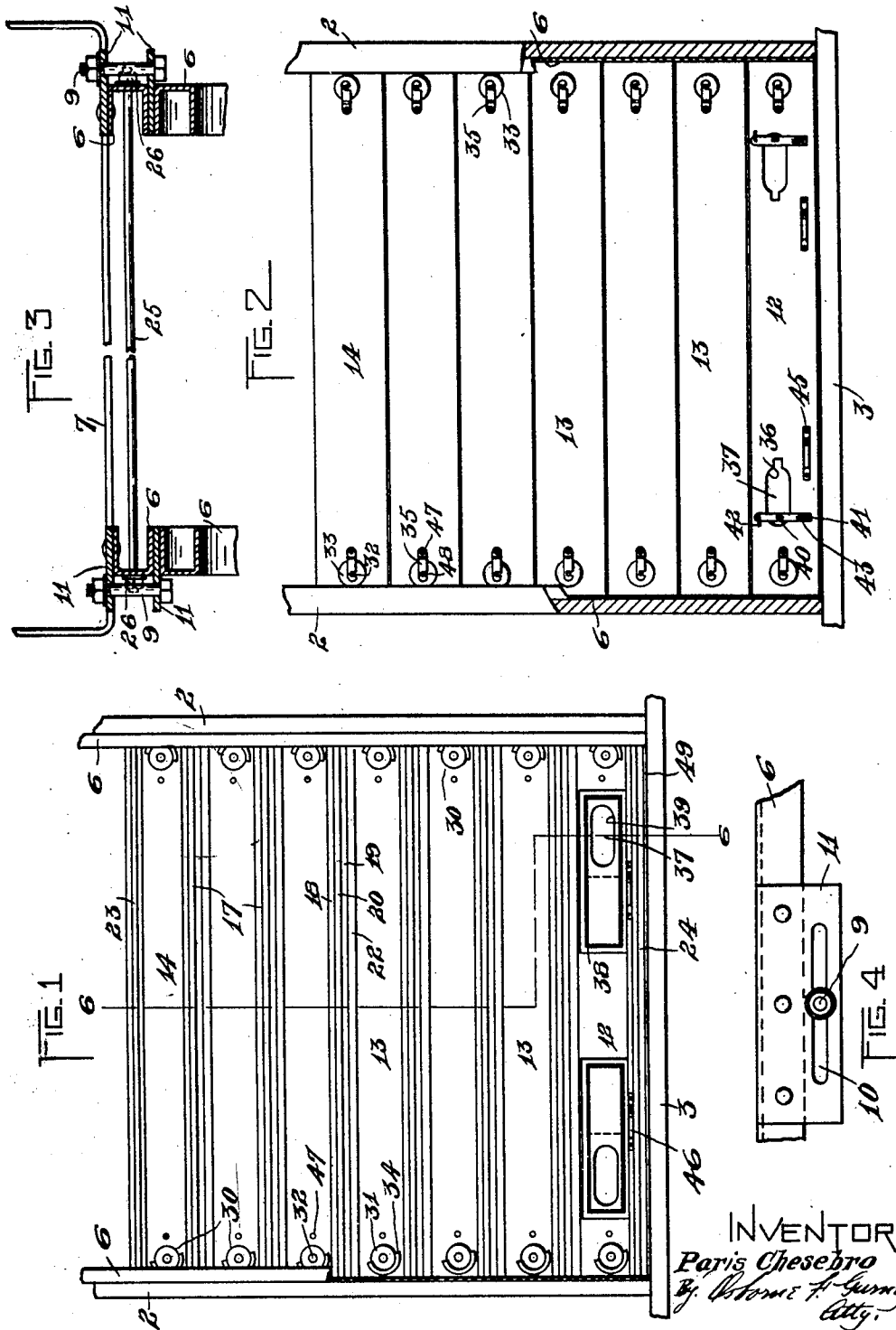


P. CHESEBRO.
GRAIN DOOR.
APPLICATION FILED SEPT. 9, 1918.

1,336,068.

Patented Apr. 6, 1920.

3 SHEETS—SHEET 1.



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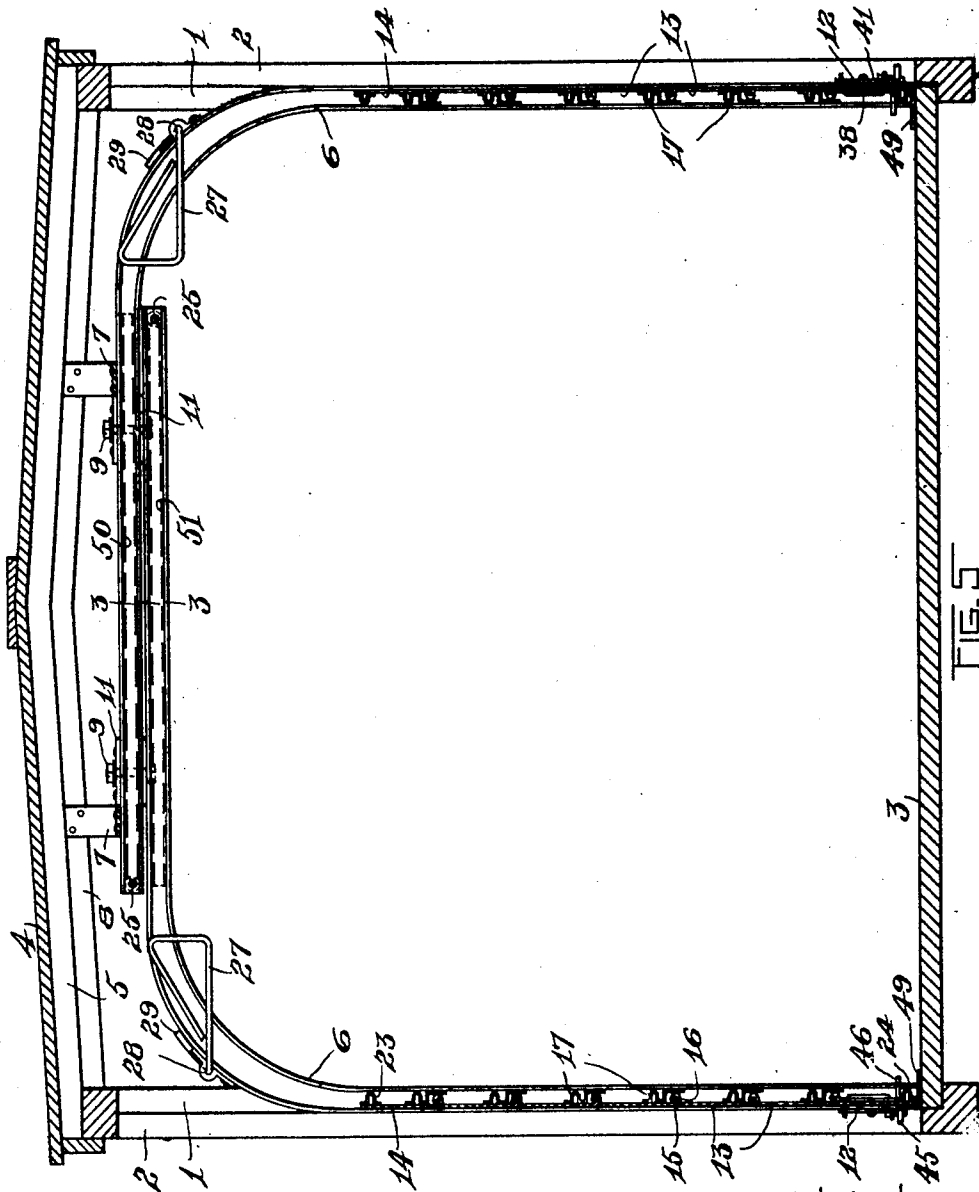


FIG. 5

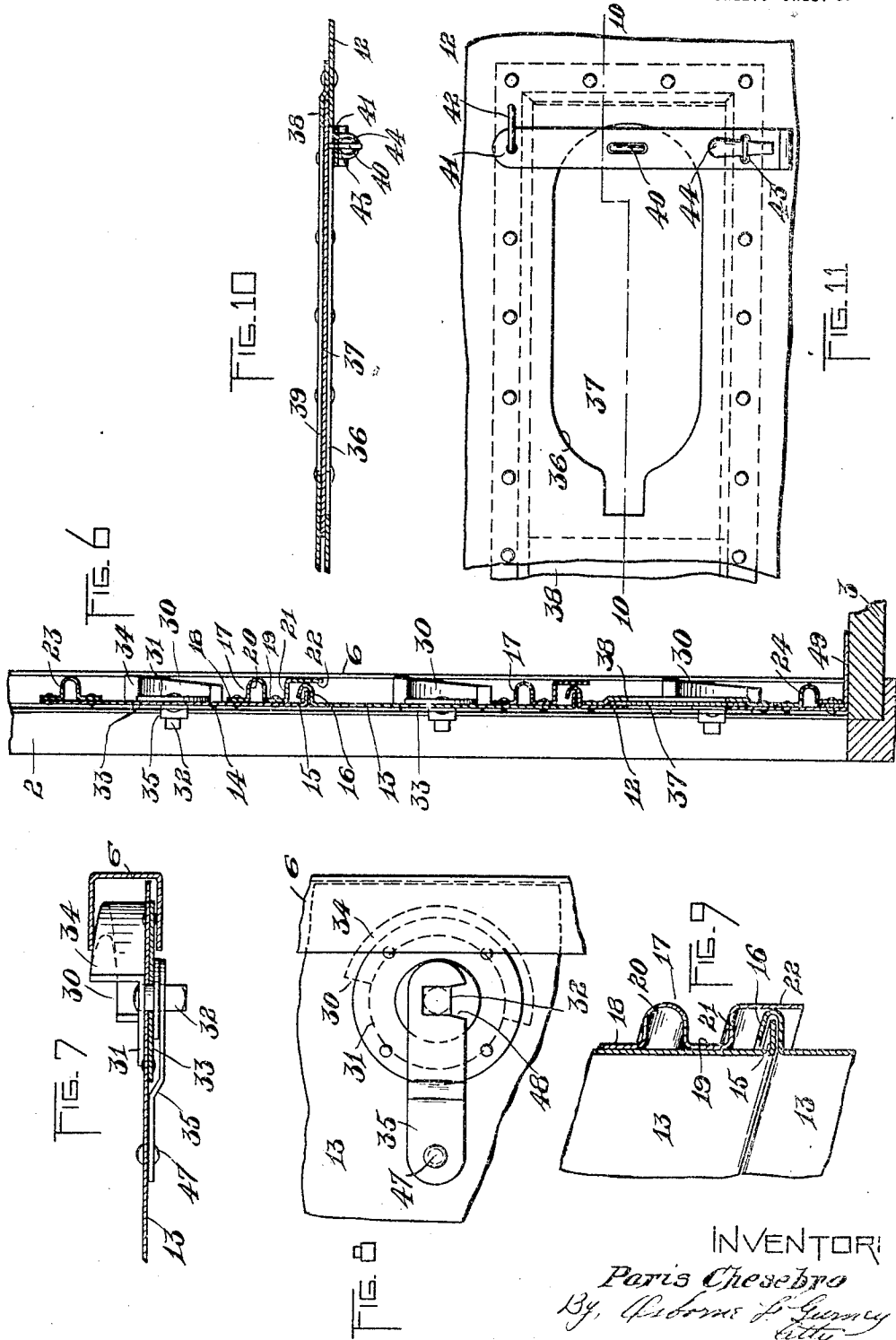
INVENTOR

Paris Chesebro
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Att.

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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

PARIS CHESEBRO, OF FAIRPORT, NEW YORK.

GRAIN-DOOR.

1,336,068.

Specification of Letters Patent.

Patented Apr. 6, 1920.

Application filed September 9, 1918. Serial No. 253,199.

To all whom it may concern:

Be it known that I, PARIS CHESEBRO, a citizen of the United States of America, residing at Fairport, in the county of Monroe and State of New York, have invented a new and Improved Grain-Door, of which the following is a specification.

This invention relates in general to doors designed for use on cars employed in carrying grain or like commodities, and has particular reference to doors of the flexible type guided along their side edges and adapted when open to lie in a horizontal position adjacent the roof of the car.

An object of the present invention is to provide a door of the character and for the purpose described that may readily be brought to open or closed position, that will occupy but a minimum amount of space, and that will effectively close the door opening against leakage of grain.

The door is slidably supported and guided along its side edges in channels and when opened is moved from its normal, vertical position to a horizontal position just beneath the roof of the car. This necessitates forming the door of flexibly connected sections, and another object of the invention is to make these connections of such a character that the sections are readily removable so that a greater or less number may be used according to the height of door required.

A further object of the invention is to construct the door of comparatively thin sheet metal reinforced by transversely extending ribs or cleats and to make use of these members as the means for hingedly connecting adjacent sections.

A still further object of the invention is to provide a simple locking means for effectively holding the door against rattling when the car is in transit.

These and other objects of the invention pertaining more especially to details of construction will be clearly brought out in the following description and particularly defined in the appended claims.

The accompanying drawings illustrating a grain door constructed in accordance with my invention and the embodiment of two such doors on a car are as follows:—

Figure 1 is a view of a door from the inside of a car, portions of the door casing being shown.

Fig. 2 is a view similar to Fig. 1 of the door as seen from the outside.

Fig. 3 is an enlarged sectional view taken on the line 3—3 of Fig. 5.

Fig. 4 is a portion of one of the guiding members showing in plan view the means for adjustably securing two such members together.

Fig. 5 is a transverse sectional view of a car taken through the centers of two opposite doors, the locking devices not being shown.

Fig. 6 is an enlarged sectional view taken on the line 6—6 of Fig. 1, but showing only the bottom, top and one intermediate section.

Figs. 7 and 8 are top and face views, respectively, of one of the locking devices, fragmentary portions of the door section to which it is attached and the adjacent guiding member also being shown.

Fig. 9 shows in perspective fragmentary portions of two adjacent door sections.

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 11.

And, Fig. 11 is a view from the outside of one of the slides in the bottom section.

Similar reference numerals refer to similar parts throughout the several views.

The numerals 1, 1 represent the two opposite door openings of a box car in which 2 are the door frame members, 3 the floor, 4 the roof and 5 the carlines.

Channel members 6 comprising guides for the doors extending upwardly from the floor to points near the top of the door openings and then are curved and extended transversely of the car close under the roof, the horizontal portions of the guides for one door overlapping those for the other door. The outer edges of the vertical portions of the channeled guides are flush with their respective frame members 2 of the door casings. Strap irons 7 connect the horizontal portions of the upper guiding members and have their ends bent upwardly and secured to plates 8 carried by the carlines 5, while the lower guiding members are secured to the upper ones by bolts 9 extending through slots 10 in plates 11 secured to the upper faces of the two such members and projecting outwardly therefrom. This connection permits a relative movement of the overlapping members, one upon the other, due to the rocking of the car when in motion, and relieves a strain which would otherwise be exerted on the guides.

Each door comprises a bottom section 12, top section 14 and one or more intermediate

sections 13. The lower edge of each section except the bottom one is turned inwardly at right angles to form a flange 15 adapted to slidably engage in a corresponding groove formed by an outwardly opening V-shaped flange 16 along the upper edge of the adjacent lower section. Secured to each section except the bottom one, and on its inner face, is a reinforcing cleat 17 adjacent the lower edge and extending parallel therewith. These cleats 17 are formed with two flat portions 18 and 19 which engage the section body and are secured thereto by rivets or other suitable means, a corrugation 20 intermediate the portions 18 and 19, and a flange portion 21 extending rearwardly and terminating in a skirt portion 22 projecting downwardly in the rear of and a short distance below the channelled flange member 16 on the adjacent section. This construction, it will readily be observed, provides a hinged connection between the several sections whereby a flexibility is secured permitting the doors to be moved from open to closed position, or vice versa, and in which open position they lie one above the other as indicated in Fig. 5 by the dotted lines 50 for the upper and 51 for the lower door.

The top section 14 differs from the intermediate ones 13 in that it has a reinforcing cleat 23 along its upper edge instead of a flange 16, and the bottom section 12 differs from the intermediate ones in that it has along its lower edge a reinforcing cleat 24 instead of a flange 15 and, also, a strip 49 of flexible material as canvas, which prevents leakage under the bottom of the door.

The open ends of the horizontal portions of opposite guiding members 6 are connected by stop rods 25 extending through such members and threaded on their ends to receive retaining nuts 26. When the doors are raised to open position their movement in one direction is limited by these rods 25 and in the other direction toward their closed position by gravity latches 27 formed preferably of wire substantially as shown. These latches are pivoted at 28 on the curved portions of the guides 6 and are limited in their downward movement by the portions 29 which engage the guides 6 as stops.

When it is desired to change the number of intermediate sections 13 in order to make one of the doors of greater or less height, the door is raised to its open position and the stop rod 25 removed. Then the door is moved forward until the top section 14 is beyond the open ends of the guides after which this section is moved longitudinally and thus disengaged from the adjacent section. Another intermediate section can then be added or, if desired, another section removed by again moving the remaining sections of the door so that the outer one will

be disengaged from the guides 6. It might be stated that the door is assembled in this manner, that is,—by placing the bottom section 12 between the guides 6 and after each succeeding section is added moving the door toward its closed position a distance equal to the width of one section. The flange members 15, it will be noticed, slidably engage in the grooves formed by the cooperating flanges 16 and are held against lateral withdrawal by the skirt portions 22 of the cleats 17. The flanges 15 and 16 and the cleats 17 besides forming hinged connections, which permit removal of the sections from each other, also serve to reinforce the sections so that they can be made of comparatively thin metal.

The depth of the doors is slightly less than the width of the channels in the guides 6 to permit freedom of movement; and to prevent a rattling of the doors when the car is in transit, and a possible leakage at the sides, suitable wedging members 30 or locking devices, as I prefer to call them, are provided which engage within the channelled guide 6 to firmly hold the several door sections against the outer side walls of the guides.

There are preferably two of these locking devices 30 for each section located on the inner side and adjacent the ends thereof, and each comprises a circular plate 31 secured to a stud 32 projecting through the section body and rotatable in a bearing plate 33, a raised segmental portion 34 being formed on the plate 31 and having a cam surface adapted, when turned to operative position, to engage the inner side wall of the adjacent guide 6 with a wedging action so as to force the outer face of the section body firmly against the outer side wall of the guide. The outer ends of the studs are squared to receive an operating key for turning the locking devices 30 to operative or inoperative position. Latches 35 pivoted at one end at 47 on the outside of the door have notches 48 in their opposite end for engaging the squared heads on the studs 32 to hold the members 30 in operative position.

When the car is loaded it is preferable to release some of the grain so as to reduce the pressure against the doors that they may be more easily opened, and to this end the bottom sections 12 are each provided with, preferably two, elongated openings 36 normally closed by sliding panels 37, such panels being interposed between the body of the section and supporting and guiding plates 38 in which there are openings 39 substantially similar to and directly back of the openings 36. Each panel is held closed by means of a staple 40 thereon engaging through an opening in a latch 41 linked at one end to a staple 42 and slotted near its

other end to engage over a staple 43 through which a tapered pin 44 or other suitable retaining means is inserted to hold the latch in place, the staples 42 and 43 being secured to the body portion of the section 12. Handles 45 and 46 are provided on the outer and inner faces, respectively of the bottom sections 12.

It is believed that from the foregoing the construction, operation and purpose of the grain door are sufficiently clear to call for no further explanation.

What I claim is:—

1. A sliding door of the character described comprising, in combination with channeled guides in which the side edges of the door engage, a plurality of separable sections, inwardly turned abutting flanges formed along adjacent edges of adjoining sections, one of said flanges being doubled upon itself to form an outwardly opening groove in which the other of said flanges slidably engages, and means carried by one section for overhanging said grooved flange on the other section, such means preventing lateral withdrawal of the engaging flanges.

2. A sliding door of the character described comprising, in combination with channeled guides in which the side edges of the door engage, a plurality of separable sections, inwardly turned abutting flanges formed along adjacent edges of adjoining sections, one of said flanges being doubled upon itself to form an outwardly opening groove in which the other of said flanges slidably engages, and a reinforcing member carried by and extending longitudinally of one section, such member having a portion in a plane parallel with the plane of the door and overhanging said grooved flange on the other section.

3. A sliding door of the character described comprising, in combination with channeled guides in which the side edges of

the door engage, a plurality of separable sections engaging the outer walls of said guides, reinforcing members carried by and extending longitudinally of said sections, such members extending inwardly and engaging the inner walls of said guides, inwardly turned abutting flanges formed along adjacent edges of adjoining sections, one of said flanges being doubled upon itself to form an outwardly opening groove in which the other of said flanges slidably engages, and a portion bent from said reinforcing member of one section so as to overhang the grooved flange on an adjoining section.

4. A sliding door of the character described comprising, in combination with channeled guides in which the side edges of the door engage, a plurality of separable sections engaging the outer walls of said guides, reinforcing members carried by and extending longitudinally of said sections, such members extending inwardly and having flanged portions engaging the inner walls of said guides and lying parallel with the plane of the door, and inwardly turned abutting flanges formed along adjacent edges of adjoining sections, one of said flanges being doubled upon itself to form an outwardly opening groove in which the other of said flanges slidably engages, said flange portion of the reinforcing member of one section overhanging the said grooved flange on an adjoining section.

5. A sliding door of the character described comprising, in combination with channeled guides in which the side edges of the door engage, a plurality of hingedly connected sections engaging the outer walls of said channeled guides, and locking devices carried by each of said sections movable to engage with a wedging action the sections and the inner walls of said channeled guides.

PARIS CHESEBRO.