

No. 869,377.

PATENTED OCT. 29, 1907.

C. E. MAPES.
GRAIN DOOR FOR CARS.
APPLICATION FILED JULY 20, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

Fig. 2.

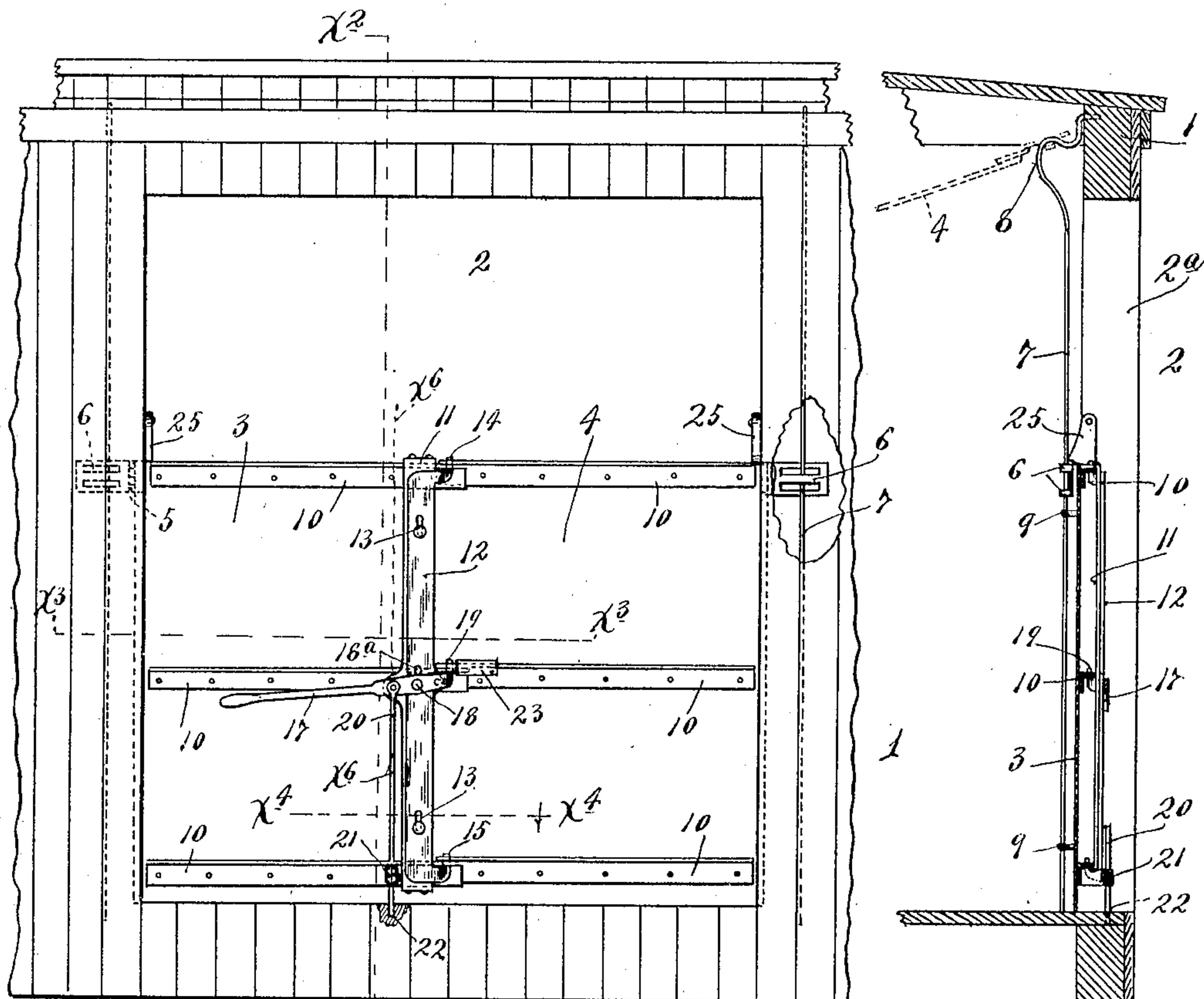
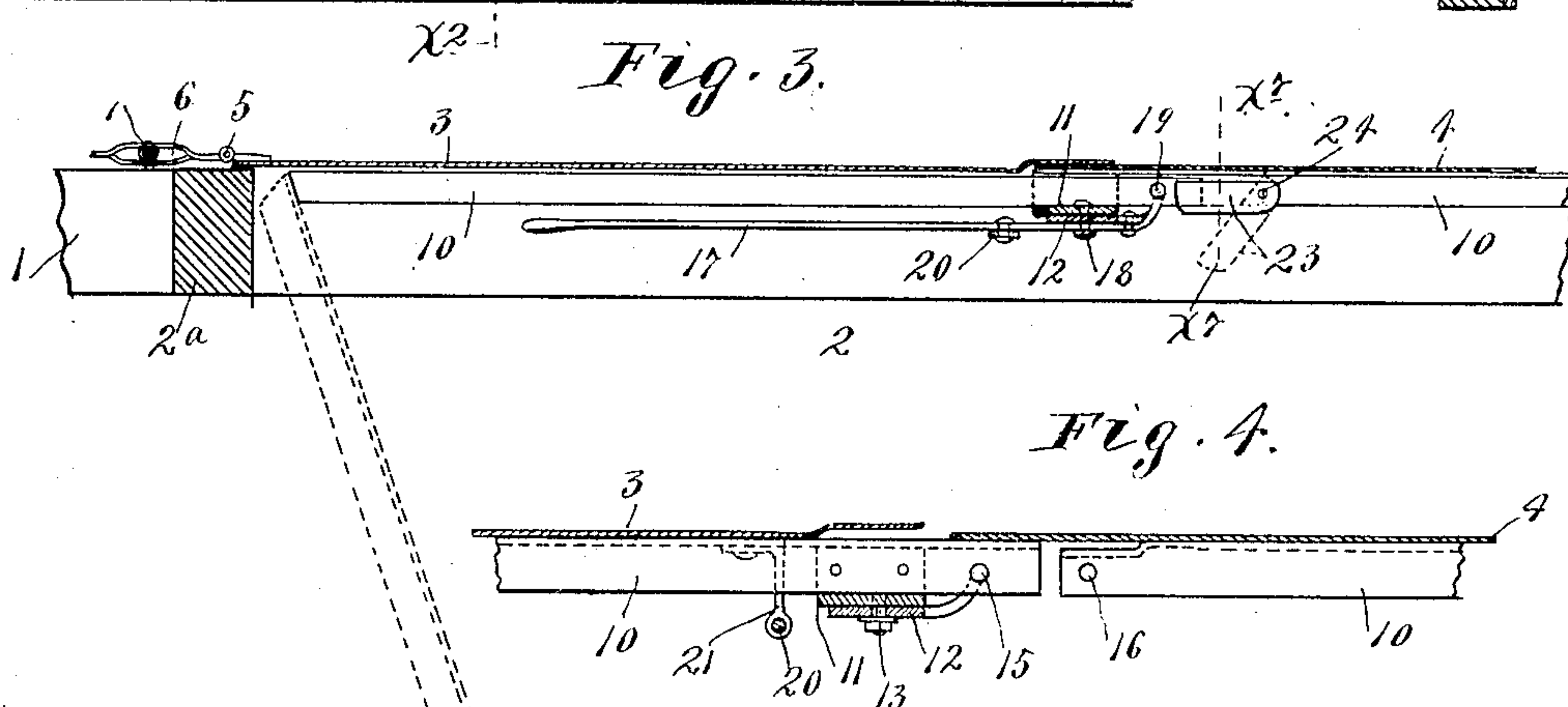


Fig. 3.

Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

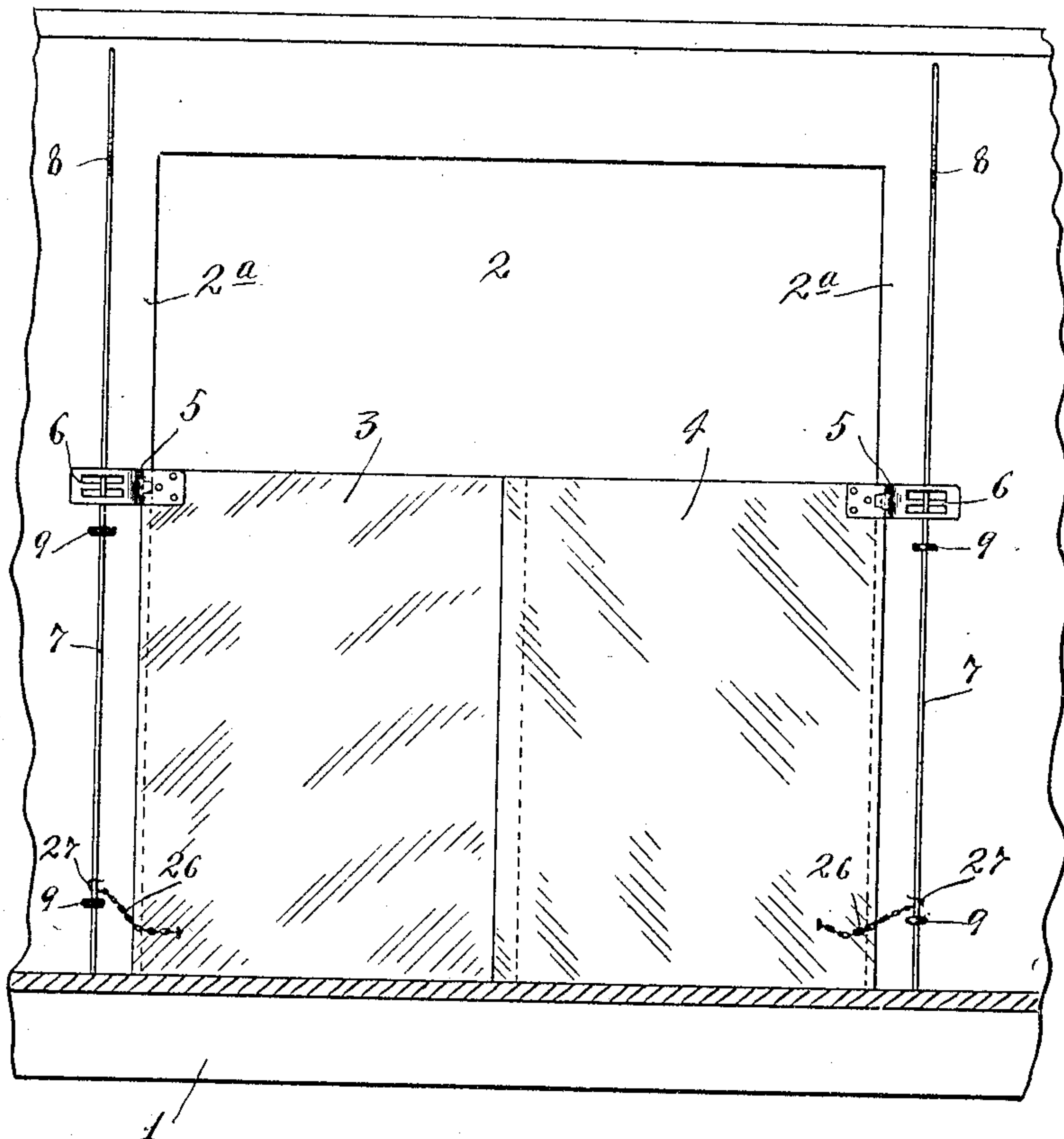


Fig. 6.

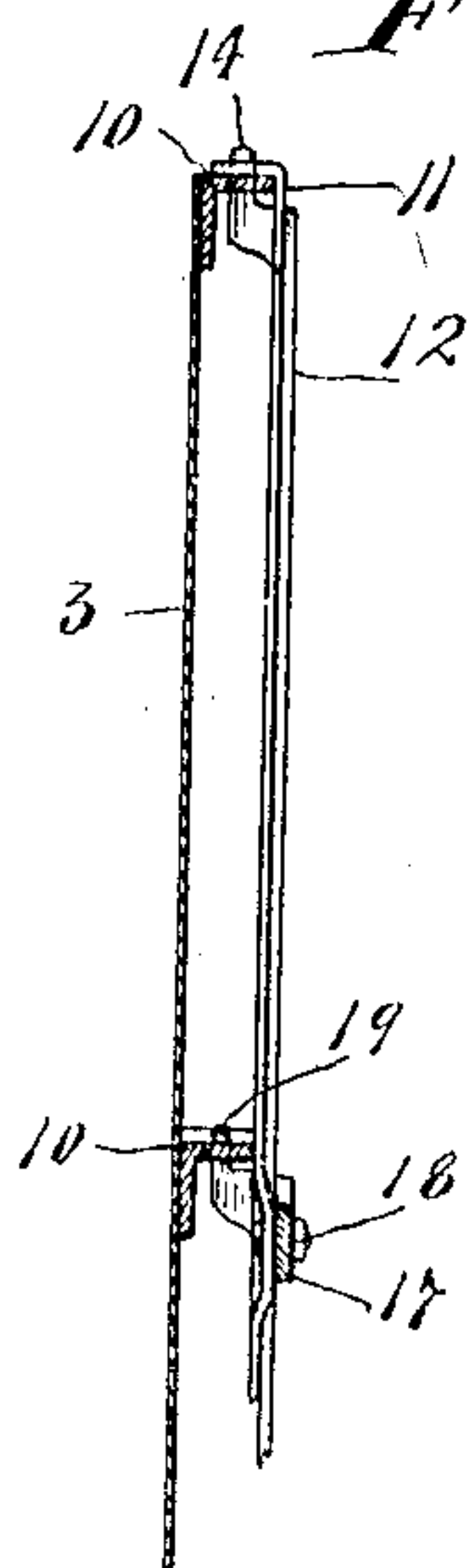
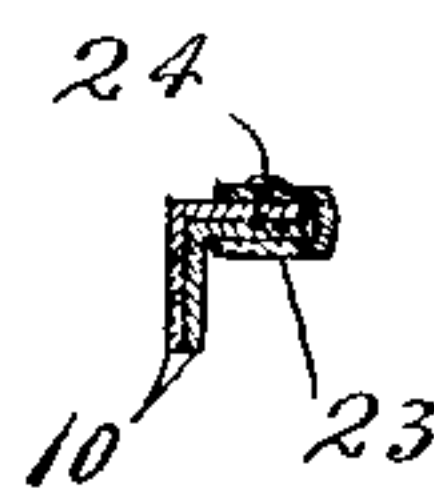


Fig. 7.



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GRAIN-DOOR FOR CARS.

No. 869,377.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed July 20, 1907. Serial No. 384,706.

To all whom it may concern:

Be it known that I, CHARLES E. MAPES, a citizen of the United States, residing at Havana, in the county of Sargent and State of North Dakota, have invented certain new and useful Improvements in Grain-Doors for Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved grain door for cars, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in outside elevation, showing the intermediate portion of a car body and illustrating my improved grain door applied thereto. Fig. 2 is a detail in vertical section, with some parts broken away, taken approximately on the line $x^2 x^2$ of Fig. 1. Fig. 3 is a horizontal section taken on the line $x^3 x^3$ of Fig. 1, some parts being broken away. Fig. 4 is a detail in section on the line $x^4 x^4$ of Fig. 1, some parts being broken away. Fig. 5 is a view in elevation, looking at the inner side of the grain door and side wall of the car body, some parts of the latter being broken away. Fig. 6 is a detail in vertical section, taken approximately on the line $x^5 x^5$ of Fig. 1, some parts being broken away; and Fig. 7 is a detail on an enlarged scale, taken on the line $x^7 x^7$ of Fig. 3.

The car body 1, which is of the usual or any suitable construction, is provided with the customary side door openings 2 to which my improved grain doors are applied. The grain door is made up of two sections 3 and 4 which at their upper outer corners are provided with hinges 5, the outer wings of which are slit and pressed laterally to form vertical seats 6. Vertically extended guide rods 7 secured at their lower ends to the car floor and at their upper ends to the upper portion of the door frame extend inward from the door posts 2^a and are provided near their upper ends with bent supporting ledges 8. The lower portions of these guide rods 7 are also shown as secured to the door posts by small brackets 9. The upper and intermediate portions of the guide rods 7 are passed through the seats 6 of the hinges 5 so that the grain door sections are free for vertical movements thereon. The outer edges of the door sections 3 and 4 overlap with the inner faces of the door posts 2^a, and the inner edges of said sections overlap each other. These door sections are preferably constructed from sheet metal plates and they are reinforced by horizontally extended bars, shown as in the form of angle irons 10. When the door sections are both placed in operative positions, as shown in Figs. 1, 2 and 5, the adjoining ends of hori-

zontally alined angle bars 10 of the two door sections lap by each other, and the projecting inner edge of the door plate 4 is engaged between the laterally bent inner edge of the door plate 3 and its cooperating rigidly secured angle bars 10. This construction is also well illustrated in Fig. 4, wherein the two door sections are separated by edgewise movements.

Rigidly secured to the angle bars 10 of the door section 3, close to the inner ends thereof, is a vertically extended tie bar 11, and to this tie bar a sliding lock bar 12 is connected for limited vertical movements by means of slot and pin connections 13. At its upper and lower ends, respectively, it is provided with laterally and upwardly projecting lock bolts or projections 14 and 15 which, when the bar 12 is moved upward, are adapted to be passed through coincident perforations 16 in the overlapped laterally projecting flanges of the horizontally alined angle bars 10, and thus lock the two door sections against horizontal edgewise separation. The lock bar 12 is adapted to be raised and lowered by means of a lever 17 which, as shown, is pivotally connected to a stud 18, which stud is supported from the tie bar 11 and projects through a slot 18^a in the lock bar 12. At its short end the lever 17 is provided with a projecting lock bolt 19 that is adapted to work through co-incidental perforations in the overlapping laterally projecting flanges of the intermediate angle bars 10, to thus assist the lock bolts 14 and 15 in holding the door sections together. To the long end of the lever 17 is pivoted the upper end of a lock plunger or rod 20, the lower end of which works through a guide 21 on the lower angle bar 10 of the door section 3 and is adapted to be forced into a suitable seat 22 formed in the door sill, as best shown in Fig. 1. Then the lock plunger or rod 20 is forced into the seat 22 it affords a stop for preventing the outward bulging of the grain door.

To prevent the two grain door sections from moving vertically, the one with respect to the other, when in working position, a lock in the form of a short channel bar section 23 is shown as pivoted at 24 to the laterally projecting flange of the intermediate angle bar 10 of the door section 4. This channel-shaped lock, when moved into the position shown by full lines in Fig. 3, is adapted to embrace the overlapped laterally projecting flange portions of the two intermediate angle bars 10 (see also Figs. 1 and 7).

By an upward movement of the free end of the lever 17, the lock bolts 14, 15 and 19, will be simultaneously withdrawn from their seats in the flanges of the angle bars 10, and the lower end of the lock bolt will be withdrawn from the lock bolt seat 22 in the door sill, thereby disconnecting the intermediate overlapping portions of the two door sections and permitting the same to be forced outward by the pressure of the grain, as indicated by dotted lines in Fig. 3. When it is desired to remove the grain door bodily into an inoperative posi-

tion, it is slid upward until the perforated wings of its hinges 5 are moved onto the ledges 8 of the guide bar 7, and when this is done the grain door may be moved pivotally against the roof of the car and there secured by any suitable means (not shown).

Gravity held lock pieces 25 are preferably pivotally supported upon the door posts into a position to normally engage the upper edge of the grain door and thereby hold the same closely engaged at its lower edge with the door sill. As shown, short chains 26 are attached to the lower portions of the door sections 3 and 4 and are provided with hooks 27 that engage with the lower portions of the guide rods 7. These chains 26 assist the hinges 5 in holding the grain door sections to the body of the car after the two door sections have been separated and forced outward by the pressure of the grain.

What I claim is:

1. The combination with a twopart grain door, the sections of which overlap at their inner edges and are provided with overlapping laterally projecting flanges, of a lock bar slidably mounted on one of said door sections, and having lock bolts engageable with co-incident perforations

in said overlapped flanges, to lock together the two door sections, substantially as described.

2. The combination with a two-part grain door having upper, lower and intermediate reinforcing angle bars, the flanges of which overlap, of a lock bar slidably mounted on one of said door sections and provided with projecting lock bolts engageable with co-incident perforations in the overlapped flanges of the upper and lower angle bars, a lever pivotally connected to the grain door section to which said bar is applied, and also pivotally connected to said lock bar, said lever having a projecting lock bolt adapted to engage co-incident perforations in the overlapping flanges of said intermediate angle bars, substantially as described.

3. The combination with a two-part grain door having overlapping flanges at their inner faces, of means for locking said two door sections against endwise separation, and a channel shaped lock piece pivoted to one of said flanges and engageable with two of the overlapping flanges to prevent vertical movement of one of the door sections with respect to the other, substantially as described.

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

CHARLES E. MAPES.

Witnesses:

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