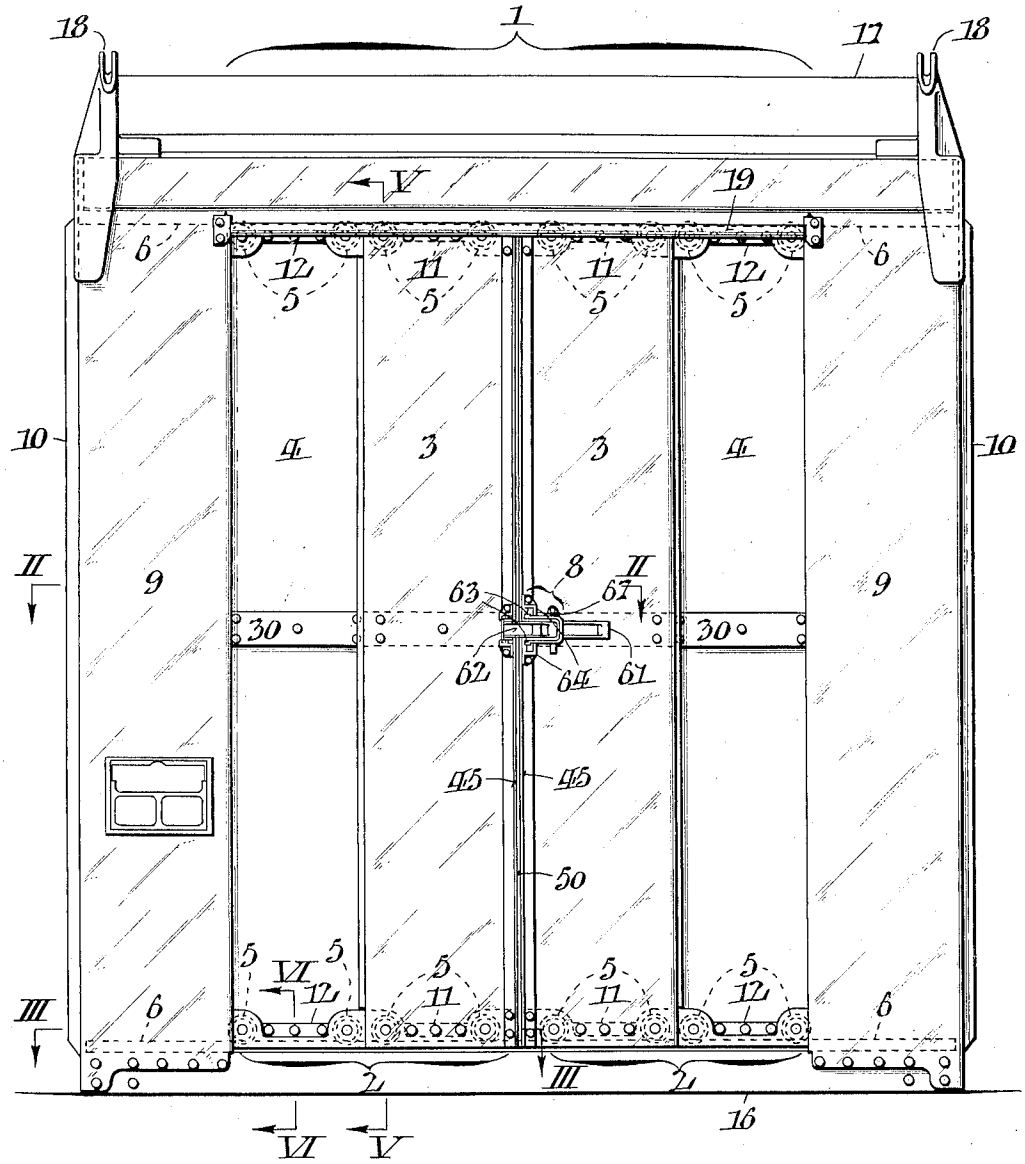
Nov. 19, 1935. I. M. CHAMBERS 2,021,290

DOOR FOR MERCHANDISE CONTAINERS

Filed May 14, 1934 6 Sheets-Sheet 1

FIG. I.



WITNESSES:
Thomas W. Kerr, Jr.
John A. Weidler

INVENTOR:
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Nov. 19, 1935. I. M. CHAMBERS 2,021,290

DOOR FOR MERCHANDISE CONTAINERS

Filed May 14, 1934 6 Sheets-Sheet 2

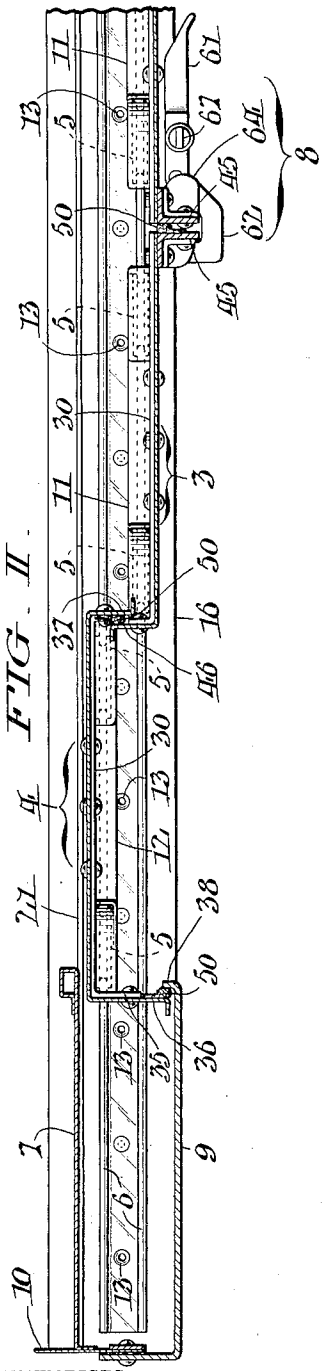


FIG. II.

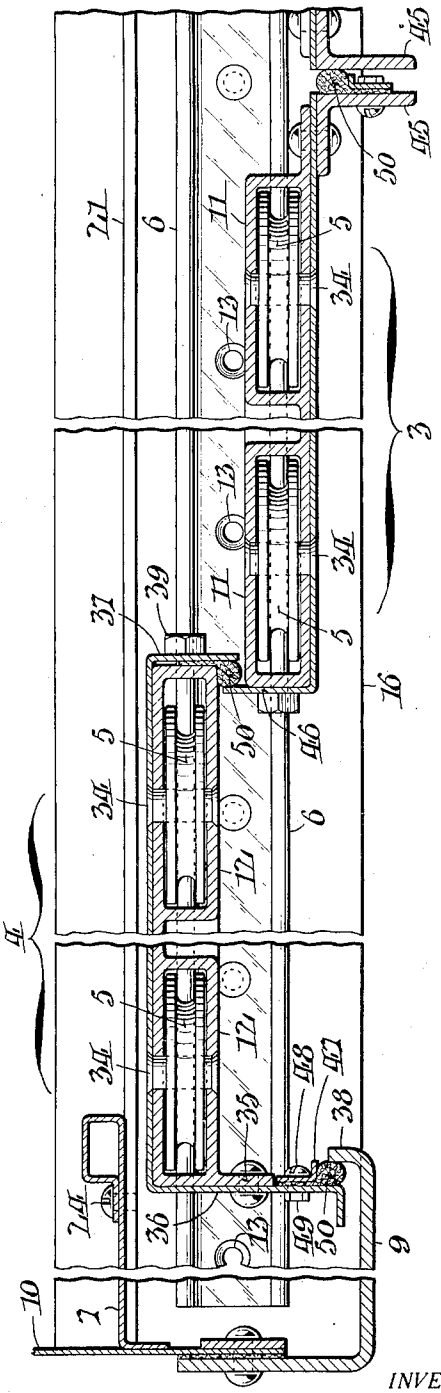


FIG. III.

WITNESSES:

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DOOR FOR MERCHANDISE CONTAINERS

Filed May 14, 1934 6 Sheets-Sheet 3

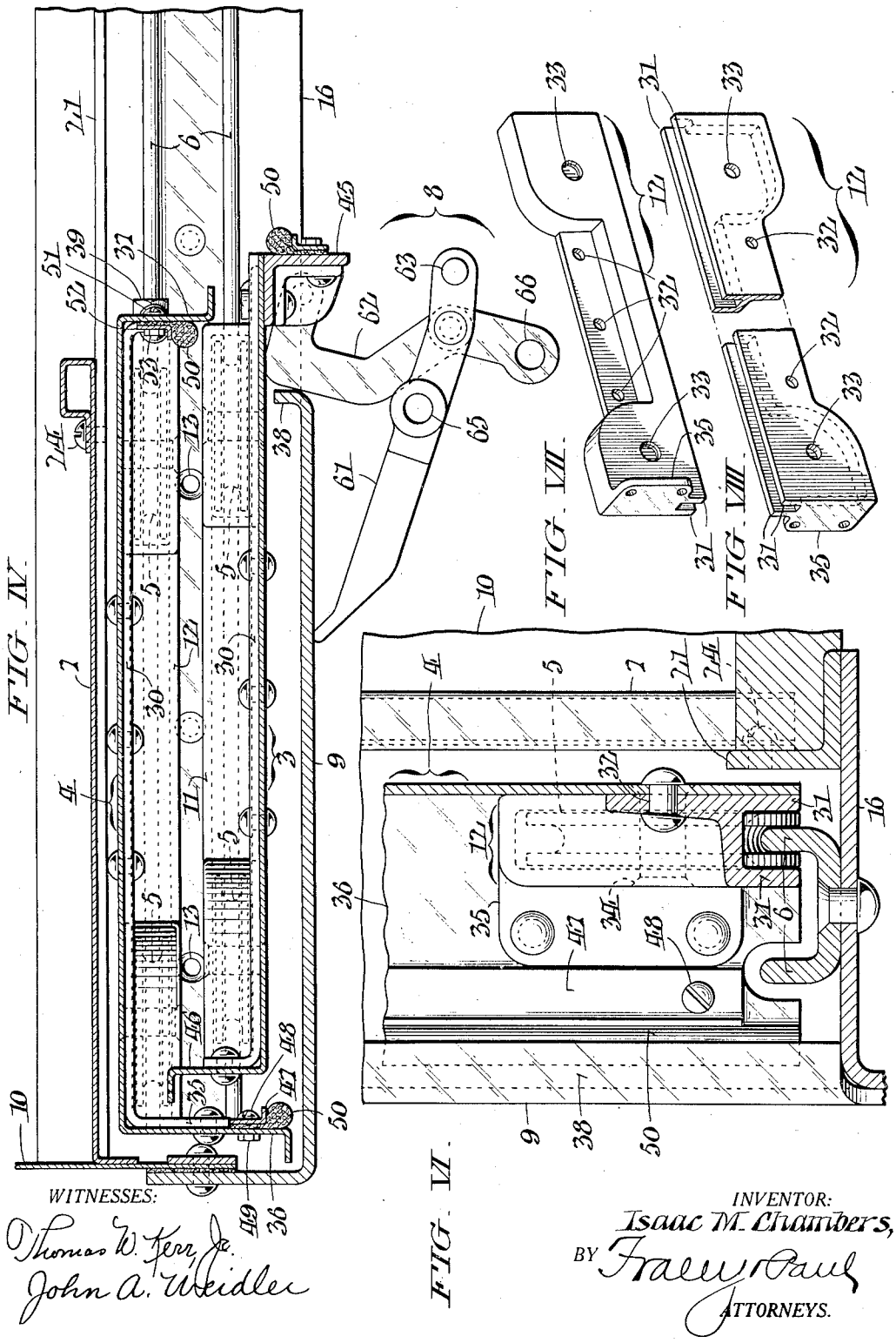


FIG. IV.

FIG. VII.

FIG. VIII.

FIG. VI.

WITNESSES:

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DOOR FOR MERCHANDISE CONTAINERS

Filed May 14, 1934 6 Sheets-Sheet 4

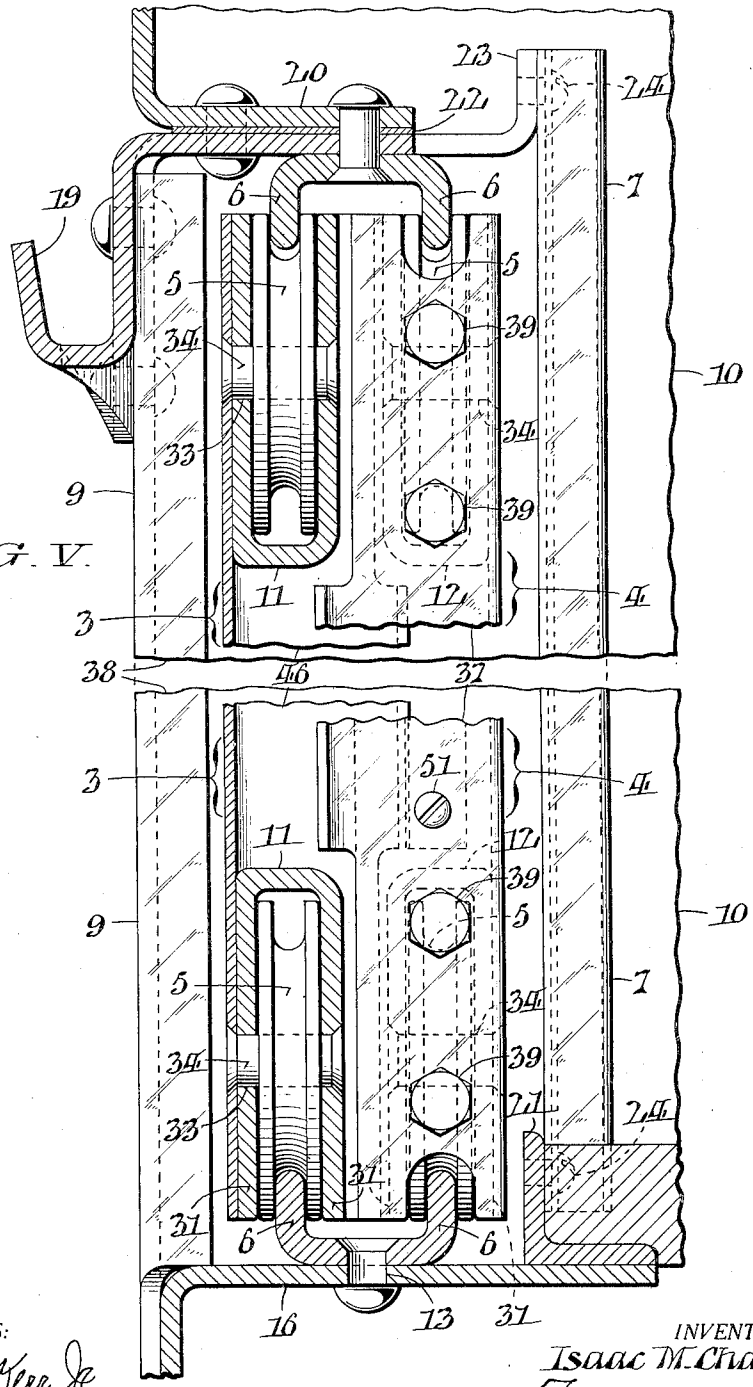


FIG. V.

WITNESSES:

Thomas W. Kerr, Jr.

John A. Wedderburn

INVENTOR:

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Nov. 19, 1935. I. M. CHAMBERS 2,021,290

DOOR FOR MERCHANDISE CONTAINERS

Filed May 14, 1934 6 Sheets-Sheet 5

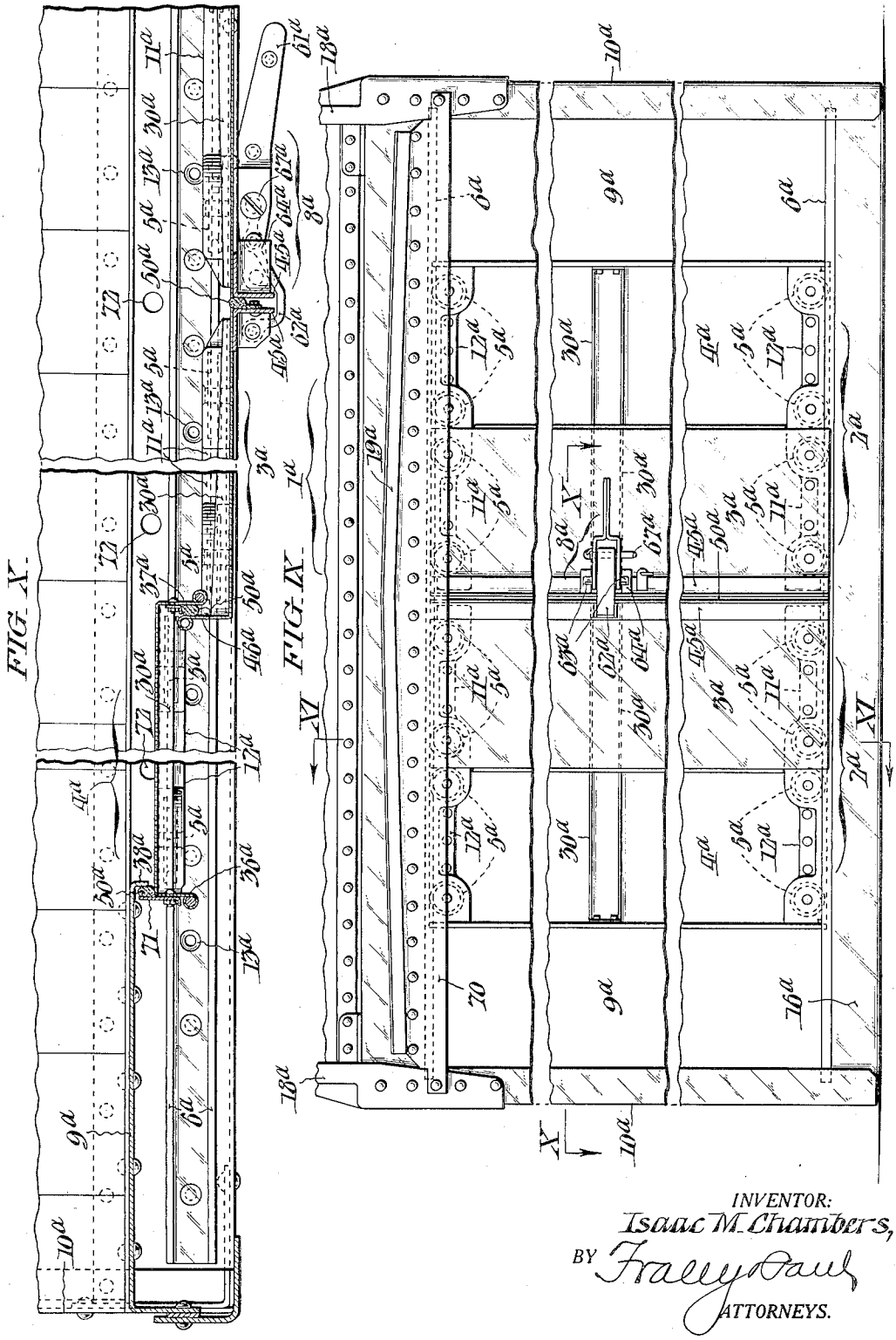


FIG. X.

FIG. IX.

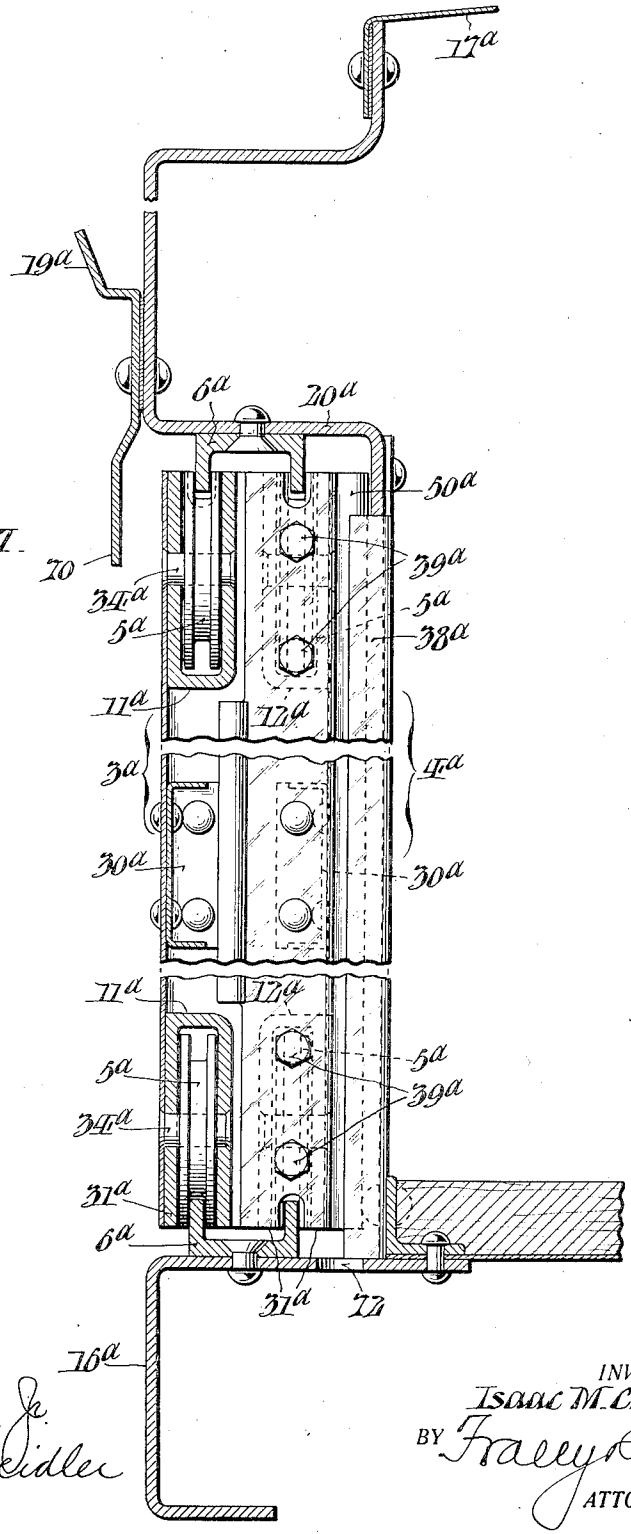
INVENTOR:
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Nov. 19, 1935. I. M. CHAMBERS 2,021,290

DOOR FOR MERCHANDISE CONTAINERS

Filed May 14, 1934 6 Sheets-Sheet 6

FIG. XI.



WITNESSES:
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Patented Nov. 19, 1935

2,021,290

UNITED STATES PATENT OFFICE

2,021,290

DOOR FOR MERCHANDISE CONTAINERS

Isaac M. Chambers, Altoona, Pa.

Application May 14, 1934, Serial No. 725,521

1 Claim. (Cl. 20—19)

This invention relates to doors for merchandise containers and more particularly to telescopic doors on railway shipping containers.

In the past, doors on railway shipping containers have been of the hinge type which requires a platform clearance for opening the door. It has been considered desirable in this art to get away from hinged doors completely. It is very difficult to load a container with the hinged door because there is no support to the contents during the loading over the large door space until the door is closed. To force a hinged door strains severely the hinges and further the contents are not easily piled up to the plane of the door opening with the door open and maintained there until the door can be swung shut. Containers having hinged doors are therefore frequently loosely loaded with vacant space that might have been filled. My invention aims to avoid hinged doors by providing a container with sliding doors which can be progressively loaded from the end walls by sliding the door out as loading progresses, thereby making a load which is more compact and more quickly accomplished than would be the case with the old hinged type door.

Accordingly the object of my invention is the provision of a railway shipping container having a sliding telescopic door instead of a hinged door.

Another object of my invention is the provision for containers of a telescopic door which will not bind.

Another object of my invention is the provision for containers of a telescopic door with an efficient weather seal between sections making up the door.

Other objects and advantages of the invention will be apparent from the detailed description of a preferred embodiment thereof which follows and which has reference to the accompanying drawings.

Of the drawings:

Fig. I represents a side view of a railway shipping container equipped with a pair of telescopic doors embodying my invention.

Fig. II represents a partial plan section taken along the lines II—II of Fig. I.

Fig. III represents a partial plan section on a lower plane, drawn to a larger scale and taken along the lines III—III of Fig. I.

Fig. IV represents a partial plan section similar to Fig. II with the doors telescoped to the open position.

Fig. V represents a vertical section taken along the lines V—V of Fig. I.

Fig. VI represents a fragmentary vertical section taken along the lines VI—VI of Fig. I.

Fig. VII represents a perspective view of the roller housing fastened to the top and bottom of the inner section of each door.

Fig. VIII represents a perspective view of the same roller housing showing the other side from that shown in Fig. VII.

Fig. IX represents a broken out fragmentary side elevation of a door construction embodying a modified form of my invention.

Fig. X represents a plan section taken along the lines X—X of Fig. IX, and

Fig. XI represents a vertical section taken along the lines XI—XI of Fig. IX.

The preferred form or embodiment of my invention shown in the drawings comprises generally a container body 1, a pair of telescopic doors 2, each made up of sections 3 and 4, roller housings 11 and 12 attached at the tops and bottoms of sections 3 and 4 respectively, rollers 5 mounted in the housings 11 and 12, tracks 6, inner sheets 7, and a break-away locking device 8. The modified form of my invention will be dealt with specifically after the primary form has been described.

The container 1 is of a conventional type aside from its doors 2, having side walls 9, end walls 10, bottom 16, top 17 and lifting hooks 18. Over the door opening is a drain strip 19 which prevents water from the container top 17 running down the doors 2 and into joints between door sections. This strip 19 is shaped in a trough-like cross section as shown in Fig. V and riveted to the side wall 9. In order to provide a top frame 20 for the door, a horizontal shelf is formed as shown in Fig. V to support the tracks 6. The drain strip 19 is riveted to the top frame 20 with the usual gasket 22 at the joint. The inner sheet 7 is fastened to a flange 23 and the angle iron 21, by screws 24 and extends from the edge of the door opening to the end wall 10 of the container 1. There is one inner sheet 7 on each side of the door opening to provide a recess between the side wall 9 and the inner sheet 7 to receive the telescoped doors 2 as shown in Fig. IV. This inner sheet 7 is secured by the screws 24 so that it may be removed.

The telescopic doors 2 each comprise two sliding sections 3 and 4 of which one is an edge section 3 and the other is an inner section 4. These sections 3 and 4 are formed from stout metal sheeting and are identical as to top and

bottom. A metal stiffening piece 30 is riveted across the central portion of each strip 3 and 4. Roller housings 11 and 12 are riveted to the top and bottom of each edge section 3 and inner section 4 respectively, but screws could be used instead of rivets in order to facilitate repairs. These roller housings 11 and 12 are cast integrally with guard flanges 31, and provided with rivet holes 32 for fastening the housings 11 and 12 to the sections 3 and 4 by rivets. The holes 33 are to receive the axles 34 of the rollers 5 and are machined accordingly. The roller housings 11 differ only slightly from the roller housings 12 by a bracing lug 35 formed integrally with the latter and whose purpose will appear later herein.

As there are two sections 3 and 4 to each door 2, the two tracks 6 are provided to receive the rollers 5 at the top and bottom of each section 3 and 4. The two adjacent tracks 6 at both the top and the bottom of the door opening are formed integrally from a U-shaped piece of metal which is riveted in one case to the top frame 20 and in the other case to the bottom 16 of the container 1. These tracks 6 extend across the door opening and back into the recess formed between the sheets 7 and the side walls 9. The grooved rollers 5 are freely engaged by the tracks 6 so that the doors roll easily on the tracks 6. The spaces between the tracks 6 are drained by drain holes 13 which are bored at proper intervals, through the bottom 16. The guard flanges 31 of the roller housings 11 and 12 are designed to cooperate with the tracks 6 and serve to retain the door should a roller 5 break, and also to exclude rain and dust from direct access to the interior of the container 1.

These sections 3 and 4 are so arranged that the edge section 3 is the outer section which allows the cargo or merchandise to be loaded tightly and compactly against the extended inner section 4 before the edge section 3 is rolled shut. The merchandise is loaded from the end walls 10 out towards the door opening and as the loading progresses the inner section 4 is first pulled out and finally the edge section 3 is rolled out. This process is called progressive loading and by it a tighter fit of merchandise is secured.

The inner sections 4 are provided with projecting flanges 36 and 37 which are formed integrally with the sections 4 by bending over the edges and they extend perpendicularly from the face thereof. One of these flanges 36 cooperates in overlapping relation with a flange 38 formed on each vertical edge of the door opening. The flange 36 is strengthened by the lug 35 of the roller housing 12 to which it is riveted as shown in the drawings, see Figs. II–IV. The other flange 37 of the inner section is similar to the flange 36 but shorter and needs no special bracing means like the lug 35 which braces flange 36. However, the flange 37 is secured to the adjacent end of the roller housing 12 by the bolt 39 which gives considerable strength. This flange 37 cooperates in overlapping relation with a similar flange 46 on the edge section 3. On the adjacent edges of the two edge sections 3 are riveted angle pieces 45 which project outwardly to form cooperating edge faces. Weather-stripping 50 of the usual type is shown between the angle pieces 45 where the two doors 2 meet and also between the other overlapping cooperating flanges 36 and 38, 37 and 46, previously described. The weather-stripping 50 between the flange 36 and the flange 38 on the edge of the door opening is secured to the flange 36 by a metal strip 47, screws 48 and nuts 49. The weather-stripping 50 between the flange 37 on the inner section 4 and the similar flange 46 on the edge door 3 is fastened between the flange 37 and a metal strip 52 by the screws 51 and nuts 53.

The locking device 8 is of the break-away type and is the subject of another patent application filed by me on the 30th day of March, 1934, under Serial No. 718,129. It consists generally of a handle piece 61 pivoted to a lever 62 which in turn is pivoted on one of the edge sections 3, as shown. On the end of the handle piece 61 opposite the handle proper are mounted lugs 63, which are engaged by a cooperating element 64 attached to the other edge section 3. When the doors 2 are locked together by the locking device 8, the hole 65 in the handle piece 61 is in registry with the hole 66 in the free end of the lever 62 and the locking pin 67 is thrust through these holes, effectively securing the locking device 8 and the doors 2. It is clear that other types of locking devices could be substituted without departing from the spirit of my invention.

The operation of these doors 2, while obvious from the above description of the structure, may be further clarified by the following description of a complete cycle of opening and closing. Assuming the doors 2 to be closed with the break-away locking device 8 locked by the locking pin 67 as shown in Fig. I, opening of the doors is accomplished by removing the locking pin 67, grasping the handle 61 and pulling it away from the face of the doors 2 which causes the doors 2 to be separated, in the usual manner of this type of break-away locking devices. The end sections 3 are rolled towards the end walls 10 of the container on the tracks 6; the flange 46 contacts with the lug 35 which forms part of the flange 36; and the inner doors 4 are then carried along with the edge doors 3. When the doors 2 are completely open, all the doors sections 3 and 4 are pushed back into the recesses between the inner sheets 7 and the outer side walls 9 of the container 1. When the container 1 is being loaded, the doors 2 are usually closed progressively as explained above, but for the purposes of this explanation, the cycle of operation mentioned above is completed by drawing the edge sections 3 along on the tracks until the flanges 46 take up against the weather-stripping 50 on the flanges 37 of the inner sections 4 and then the edge sections 3 pull the inner sections along due to the overlapping relation between the flanges 37 and 46. In this manner the edge sections 3 are brought sufficiently close together to permit the engaging of the locking device 8 by which the angle pieces 45 are tightly forced together, pressing the weather-stripping 50 between them to form a tight joint. This completes the cycle of operation showing how the flanges cooperate with each other to push and pull the inner sections 4 along with the edge sections 3 as the doors 2 are opened and closed.

Turning now to a consideration of the modified form of my invention referred to above, it will be noticed that the parts of the modified form which are the same as the corresponding parts in the preferred embodiment above are given the same numbers with the addition of a letter subscript to designate such analagous parts in the modified form.

The modified form of my invention differs from the preferred embodiment primarily in that the sections 3*a* and 4*a* of the telescoping doors 2*a* telescope completely outside of the container side wall 9*a* and there is no inner sheet

7 and consequently no recess to receive the telescoping doors 2*a*. The side wall 9*a* in the modified form occupies a position similar to the inner sheet 7 of the preferred embodiment but is formed with a flange 38*a* extending outward to cooperate with a flange strip 71 bolted to the edge of the inner door 4*a*. Weather-stripping 50*a* is provided between these flanges 38*a* and 71 in the same manner as explained above in connection with the preferred embodiment of my invention. The drain strip 19*a* is somewhat different from the drain strip 19 and has a pronounced apron 70 formed integral therewith to protect the contents of the container from direct exposure to the weather through the openings between the top of the doors 2*a* and the top frame 20*a*. The construction of the container 1*a* at this point is slightly different in the modified form from that shown in the preferred embodiment of my invention which clearly appears in the drawings. Additional drain holes 72 have been provided in the modified form which are not found in the preferred embodiment. The operation of this modified form of my invention is identical with the operation described above for the preferred embodiment. Certain advantages flow from having the doors 2*a* telescope completely without the side walls 9*a*, chief of which is the ready access for repair work and adjustments of all moving parts.

My invention thus provides a telescopic door for a merchandise container which effectively supplants the old hinged door. The rollers 5 at the tops and bottoms of the sections 3 and 4 prevent binding due to the narrowness of the sections 3 and 4, and at the same time are designed to make the sections 3 and 4 interchangeable as to top and bottom. The advantages of progressive loading are apparent and the ingenious way in which the roller housings 11 and 12 cooperate through the guard flanges 31 with the tracks 6 prevents any danger of the sections 3 and 4 falling from the containers should the rollers 5 be damaged. This feature also provides ventilation into the container without the disadvantage of rain and cinders having free ingress to the merchandise within the container. As water collects between the tracks it is of course drained off by the drains 13 provided for that purpose. This invention therefore provides a practical telescopic door specially adapted to the requirements of a shipping container. While my invention has been described in some detail with reference to a specific embodiment, various changes in the form of apparatus used are within the contemplation of the invention and such changes should not be deemed to constitute a departure from the spirit of the invention as hereinafter claimed.

Having thus described my invention, I claim:

In a merchandise container a telescopic door having two single sections, grooved supporting wheels attached to the base of each section, grooved guiding wheels attached to the top of each section, tracks for said wheels fastened to the container at the bottom and top of the door opening, guard flanges attached to the top and bottom of each said section to straddle said tracks, an inwardly projecting flange attached to the inner edge of the edge section to cooperate by a hooking action with a similar but outwardly extending flange on the outer edge of the other section as the door is extended in closing, a pair of similar cooperating flanges, one mounted on the inner edge of said inner section and the other on the edge of the door opening to cooperate as the door is telescoped in closing, and an inner sheet separating said door from the interior of the container when open.

ISAAC M. CHAMBERS.