

Nov. 5, 1935.

D. C. HUNGERFORD

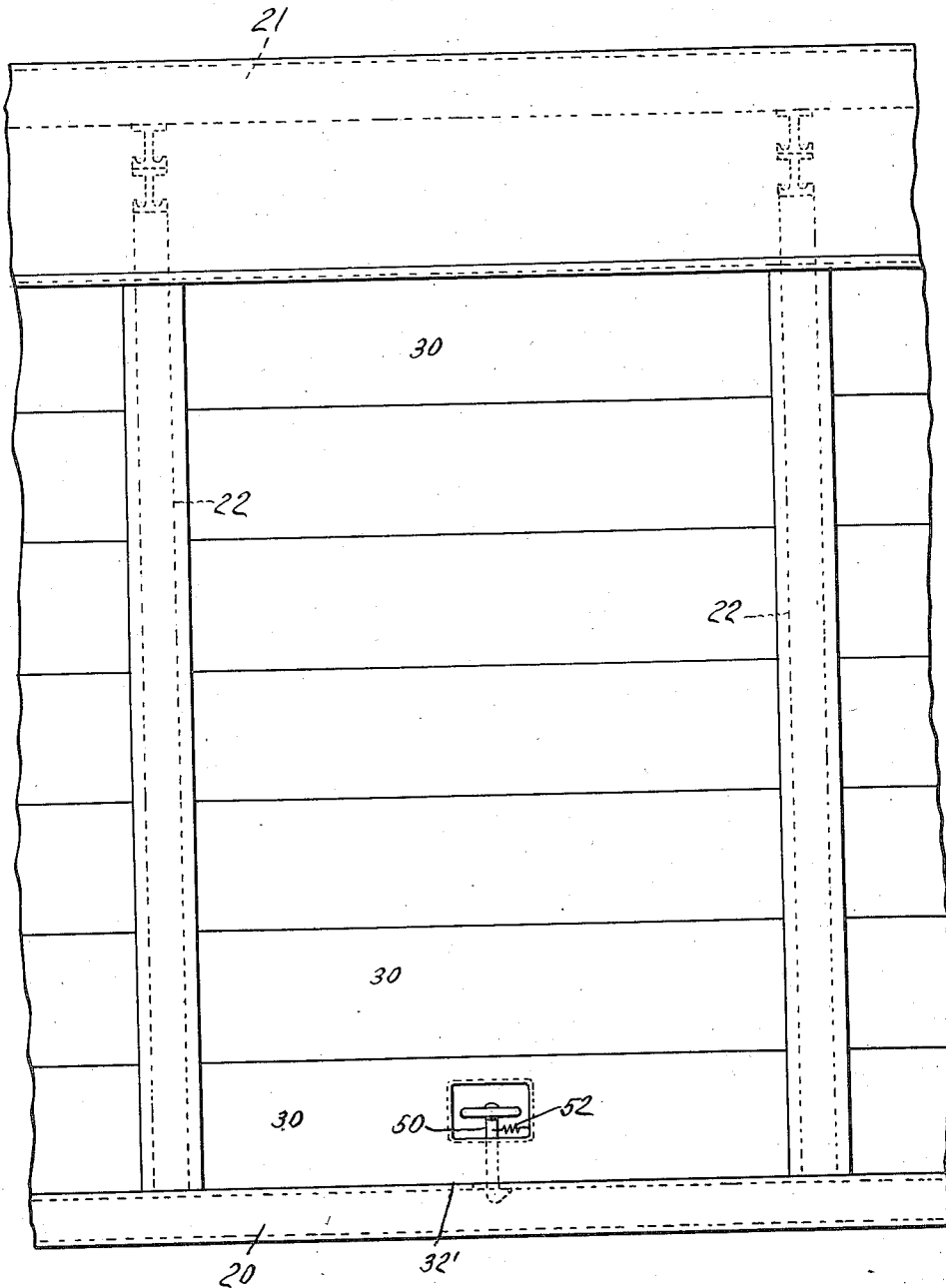
2,019,706

DOOR CLOSURE

Filed Jan. 23, 1933

5 Sheets-Sheet 1

Fig. 1.



INVENTOR

Daniel C. Hungerford

BY

Marshall & Hawley
ATTORNEYS

Nov. 5, 1935.

D. C. HUNGERFORD

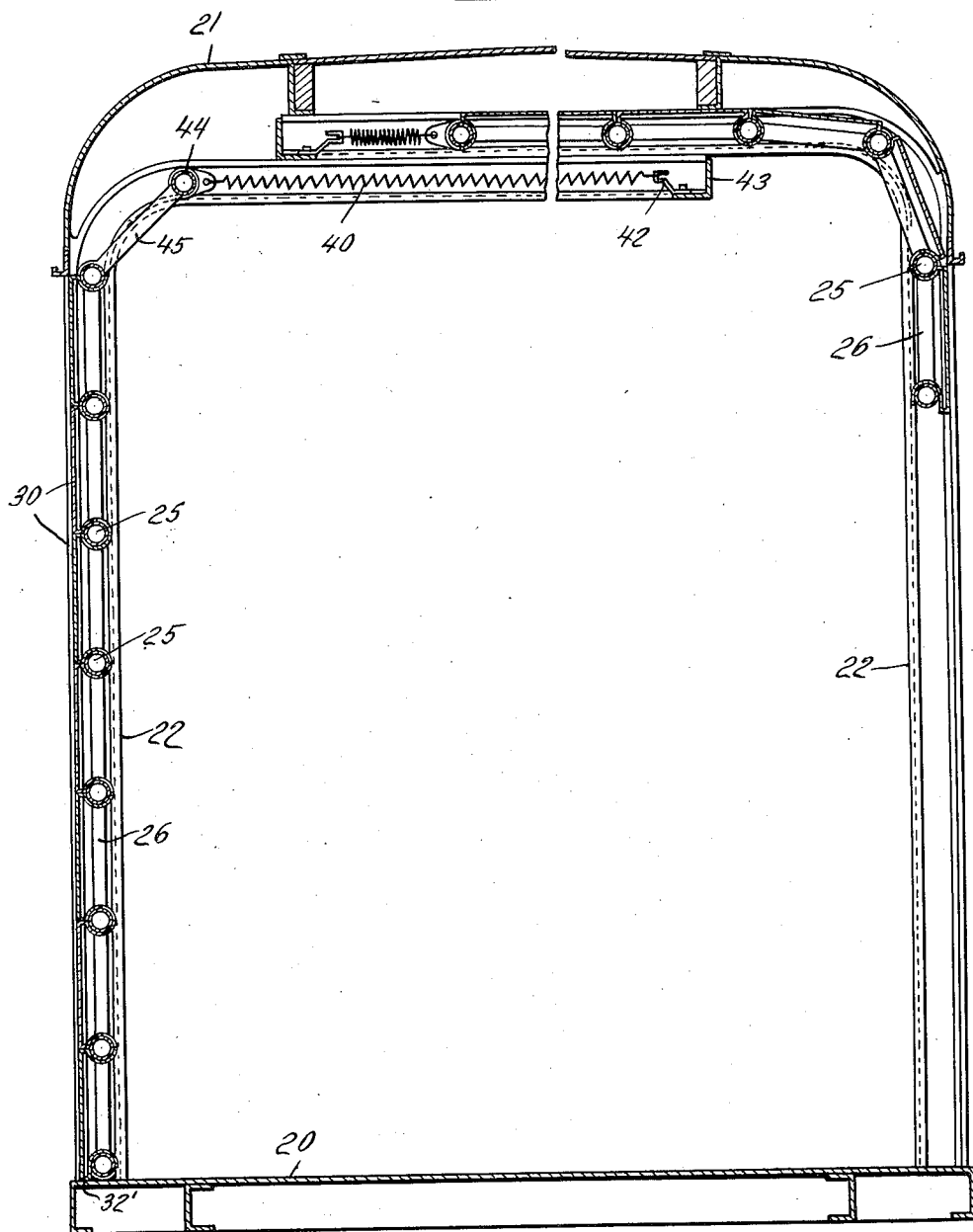
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5 Sheets-Sheet 2

Fig. 2.



INVENTOR
Daniel C. Hungerford.
BY
Marshall & Hawley.
ATTORNEYS

Nov. 5, 1935.

D. C. HUNGERFORD

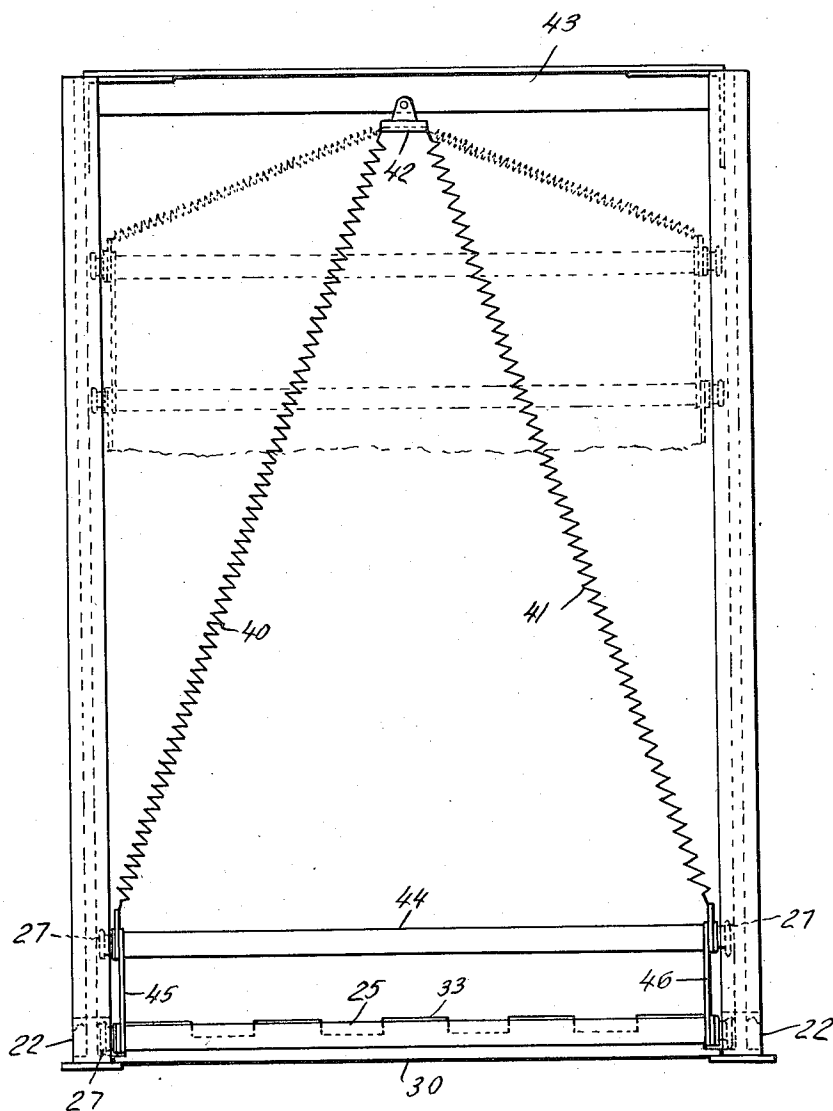
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5 Sheets-Sheet 3

Fig. 3.



INVENTOR
Daniel C. Hungerford
BY
Marshall Hawley
ATTORNEYS

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D. C. HUNGERFORD

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5 Sheets-Sheet 4

Fig. 4.

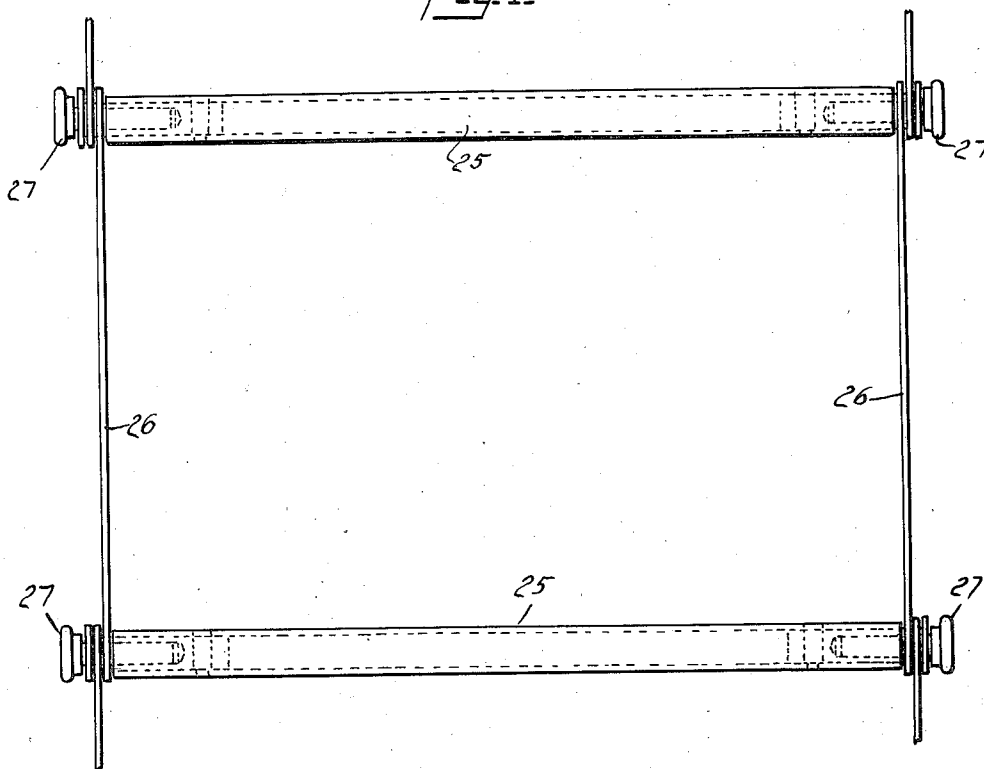
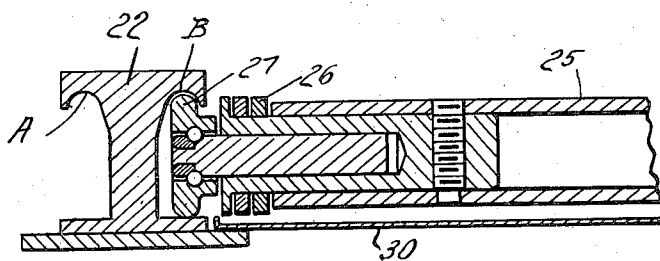


Fig. 5.



INVENTOR
Daniel C. Hungerford
BY
Marshall & Hawley
ATTORNEYS

Nov. 5, 1935.

D. C. HUNGERFORD

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5 Sheets-Sheet 5

Fig. 6.

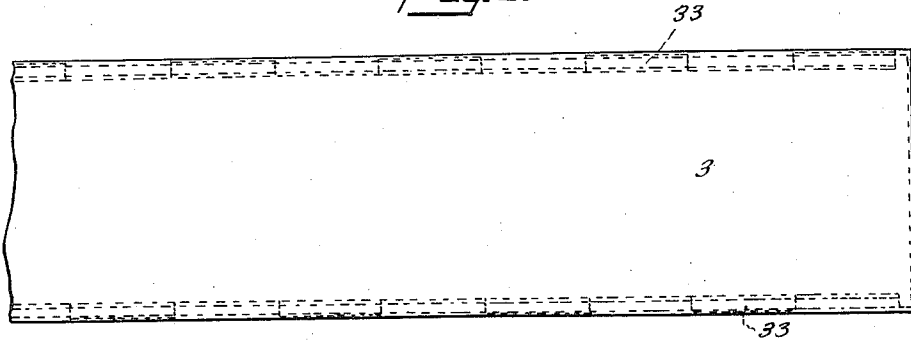


Fig. 7.

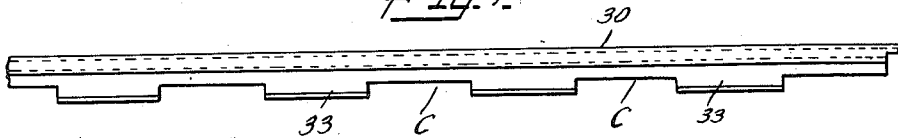


Fig. 8.

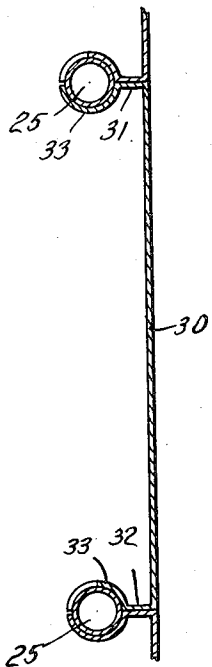


Fig. 9.

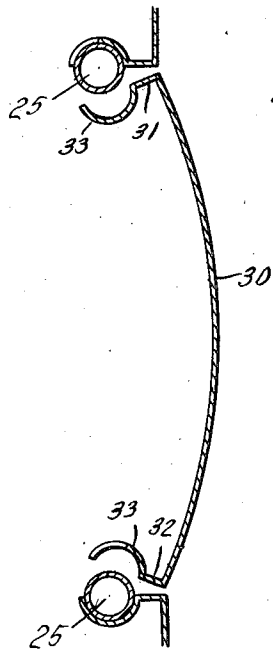


Fig. 10.

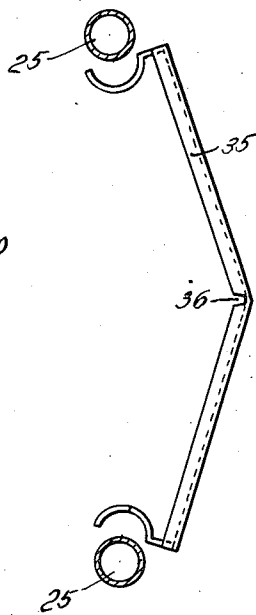
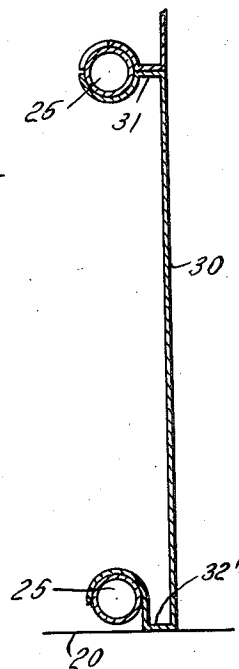


Fig. 11.



INVENTOR
Daniel C. Hungerford

BY
Marshall & Hawley
ATTORNEYS

UNITED STATES PATENT OFFICE

2,019,706

DOOR CLOSURE

Daniel C. Hungerford, Fairlawn, N. J., assignor to
Ralph E. Ogden, Mountaintown, N. Y.

Application January 23, 1933, Serial No. 653,064

13 Claims. (Cl. 20—20)

This invention relates to door closures and particularly to closures for use in closing the sides of trucks.

One of the objects of the invention is to provide a door closure so constructed and arranged as to occupy a minimum amount of space.

Another object of the invention is to provide a door closure structure so designed that when the door is opened it will not occupy any available useful storage space, nor will it form an obstruction to traffic, such as is the case with doors of the swinging type.

Another object of the invention is to provide a door closure with panels so constructed and arranged that they can be easily and quickly removed and replaced from the outside of the closure and without requiring access to the space within the closure.

Another object of the invention is to provide a door closure of the type described with operating means so designed as to operate the doors with a maximum efficiency and furthermore so designed as to occupy a minimum amount of space.

Another object of the invention is to provide a door closure of the character specified so designed that it will present a smooth and attractive appearance unmarred by screws, bolts or other fastening means.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which

Fig. 1 is an elevational view broken away and showing a plurality of closures embodying the invention;

Fig. 2 is a transverse sectional elevation of a truck having door closures constructed in accordance with the invention;

Fig. 3 is a top plan view of the horizontal portion of the door tracks or guideways and spring mechanism for opening the door;

Fig. 4 is an elevational view on an enlarged scale of the door closure frame;

Fig. 5 is a sectional elevation further enlarged showing an end portion of one of the tubular or cross frame members and the track in which it is mounted;

Fig. 6 is a front elevation of one of the panels;

Fig. 7 is an edge elevation of the panel shown in Fig. 6;

Fig. 8 is a sectional elevation showing two of the tubular door supporting members and the panels mounted thereon;

Fig. 9 is a view similar to Fig. 8 but showing

the panel sprung or bowed longitudinally to release the panel from the supporting member;

Fig. 10 is a view similar to Fig. 9 but showing end flanges on the panel; and

Fig. 11 is a view similar to Fig. 8 but showing the bottom panel of the closure.

The invention briefly described consists of a door closure comprising a plurality of tubular cross frame members or supports which are connected together by links and are mounted in tracks which engage rollers at the ends of the tubular members. The door panels are formed of bendable or resilient material, such as sheet metal, and are provided at their longitudinal edges with portions, preferably semi-cylindrical which are adapted to engage the tubular members and retain the panels thereon. The resiliency of the panels causes the semi-cylindrical portions to be held in engagement with the tubular supporting members, but when the door panel is bowed longitudinally the panel is released from engagement with the panel supports. Furthermore, the edge portions of the panels are so designed that when the door is closed or disposed in the vertical portions of the tracks the panels will abut and form a substantially continuous smooth outer surface, thus presenting an attractive appearance. When the doors are used on a truck frame the door supporting and guiding tracks are so designed that their horizontal portions will overlap, thus strengthening the top of the truck frame and permitting the doors to open to such a position that the entire door opening is available for access to the truck. Furthermore, spring balancing mechanism has been so designed as to fit between the horizontal portions of the track thus occupying a minimum amount of space and leaving substantially all of the available space in the truck for storage purposes.

Further details of the invention will appear from the following description.

Although the door closure has been illustrated particularly in connection with a truck it should be understood that it is not limited to this specific use, but is capable of use for closing door openings in buildings, such as storage warehouses, pier sheds and the like.

In Fig. 2 there is shown a truck frame having a bottom frame member 20, a top frame 21 and side frames formed by tracks 22. The track 22 is shown in section in Fig. 5 wherein it will be seen that each of the intermediate track frames between the ends of the truck body is T-shaped

in section and forms oppositely facing guideways A and B.

The door frame consists of a plurality of parallel tubular members 25 which are connected together at their ends by links 26. Each tubular member 25 has mounted on the end thereof a caster or roller 27, the rollers 27 being mounted in the guideways of the tracks or rails 22. The panel construction is illustrated in detail in Figs. 6 to 11 inclusive. Each panel is formed of resilient material, such as sheet metal, and comprises a body portion 30 which is substantially flat and has formed at its upper and lower edges flanges 31 and 32, on the ends of which are formed semi-cylindrical clamping portions 33, 33. The panels can be bowed longitudinally, as shown in Fig. 9, wherein it will be seen that as the panel is bowed the portions 33, 33 are moved toward each other thus releasing them from the tubular supporting members 25, 25.

The semi-cylindrical portions 33 at the edges of the panels are recessed, as shown at C, C in Fig. 7, the corresponding portions of adjacent panels being alternately recessed to form complementary hinge portions. This permits the panels to hinge on the supporting members as they move upwardly from the position shown at the left in Fig. 2 to the position shown at the right.

If desired, as shown in Fig. 10, the panels may be provided with flanges 35 at the ends thereof, but in this case the end flange is notched, as shown at 36, to permit the panel to be bowed or bent longitudinally, as illustrated.

The panels of the door closure with the exception of the lower panel are made in the manner illustrated in Figs. 8 and 9. The lower panel, however, is preferably constructed as shown in Fig. 11 wherein it will be seen that the flange 32' is disposed in alignment with the lower edge of the tubular supporting member on which it is mounted. This flange thus is brought flush with the floor of the truck or structure in which the closure is mounted when the door is closed.

In the embodiment of the invention illustrated there is shown a spring mechanism for counterbalancing the door in all positions of movement of the door, comprising a pair of springs 40, 41 which are connected to a central T-shaped bracket 42 secured to a frame member 43 which is disposed at the inner end of the horizontal portions of the tracks 22, 22. The springs may, if desired, be made strong enough to open the doors. The other ends of the springs 40, 41 are connected to the end of a cross frame tubular member 44 which has at its ends rollers 27 and is connected by links 45 and 46 to the ends of the upper cross frame or tubular supporting member 25. The links 45 and 46 are the same length as the links 26.

Each door closure is provided at its lower end with a latch 50 which is adapted to extend through the flange 32' and frame 20 and hold the door closed, the latch being held in latching position by a spring 52. When the latch is released the door can be raised from the closed position shown at the left in Fig. 2 to a position corresponding to the open position shown at the right. The spring balancing mechanism during this operation moves from the position shown in full lines in Fig. 3 to the position shown in dotted lines therein. During this opening movement the hinged mounting of the panels on the cross frame members or tubular supporting members will permit the panels to move around the curved por-

tions of the tracks from the vertical portions thereof to the horizontal portions thereof.

Should it be desired to remove and replace one of the panels it is merely necessary to bow or spring the panel longitudinally to the position shown in Fig. 9 whereupon it can be removed and replaced.

Although one specific embodiment of the invention has been particularly shown and described it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. Door closure mechanism comprising substantially parallel supporting members and a panel formed of bendable material and having edge portions arranged to engage said supporting members, said edge portions engaging each member being complementary and substantially encircling said member and being releasable from said members by bowing the panel longitudinally whereby the edge portions will approach each other.

2. Door closure mechanism comprising substantially parallel supporting members and a panel formed of resilient, bendable material and having hinged edge portions arranged to engage said supporting members, said edge portions engaging each member being complementary and being substantially encircling said member and being releasable from said members by bowing the panel longitudinally whereby the edge portions will approach each other.

3. Door closure mechanism comprising substantially parallel tubular, supporting members and a panel formed of bendable material and having curved edge portions arranged to engage and substantially encircle and hinge on said supporting members, said edge portions engaging each member being complementary and being releasable from said members by bowing the panel longitudinally whereby the edge portions will approach each other.

4. Door closure mechanism comprising a plurality of substantially parallel, tubular supporting members, links at the ends thereof connecting said members, and panels formed of bendable material and having curved edge portions arranged to engage and substantially encircle said tubular members, adjacent panels having complementary edge portions arranged to hinge on said tubular members.

5. Door closure mechanism comprising a plurality of substantially parallel, tubular supporting members, links at the ends thereof connecting said members, and panels formed of bendable material and having curved edge portions arranged to engage and substantially encircle said tubular members, adjacent panels having complementary edge portions arranged to hinge on said tubular members, said edge portions being releasable from said members by bowing the panel longitudinally whereby the edge portions will approach each other.

6. Door closure mechanism comprising a plurality of substantially parallel supporting members, links connecting said members, panels mounted on said members, rollers on the members, tracks receiving said rollers, said tracks having vertical and horizontal portions, links connected to the upper end supporting members and having rollers at the free ends thereof dis-

posed in said tracks, and balancing means for the closure disposed between the horizontal portions of said tracks.

5 7. Door closure mechanism comprising a plurality of substantially parallel supporting members, links connecting said members, panels mounted on said members, rollers on the members, tracks receiving said rollers, said tracks having vertical and horizontal portions, links
10 connected to the upper end supporting members and having rollers at the free ends thereof disposed in said tracks, and spring balancing means for the closure disposed between the horizontal portions of said tracks.

15 8. Door closure mechanism for parallel door openings comprising parallel tracks at the sides of said door openings, each track having vertical and horizontal portions, the horizontal portions of the tracks for one opening overlapping the corresponding horizontal portions of the tracks for
20 the other opening, a door closure for each opening comprising a plurality of link connected supporting members and door panels mounted on said members, and means connected to the upper
25 ends of said door closures for balancing the doors.

9. Door closure mechanism for parallel door openings comprising parallel tracks at the sides
30 of said door openings, each track having vertical and horizontal portions, the horizontal portions of the tracks for one opening overlapping the corresponding horizontal portions of the tracks for the other opening, a door closure for each opening comprising a plurality of link
35 connected supporting members and door panels mounted on said members, and means disposed between the horizontal portions of said tracks and connected to the upper ends of said door closures for balancing the doors.

40 10. Door closure mechanism for parallel door openings comprising parallel tracks at the sides

of said door openings, each track having vertical and horizontal portions, the horizontal portions of the tracks for one opening overlapping the corresponding horizontal portions of the tracks for the other opening, a door closure for
5 each opening comprising a plurality of link connected supporting members and door panels mounted on said members, and spring means disposed between the horizontal portions of said tracks and connected to the upper ends of said
10 door closures for opening the doors.

11. In combination, a pair of tubular supporting members, means connecting said members, and a panel formed of bendable material having
15 substantially straight front edges and curved edge portions disposed in the rear of the panel and between the edges and curving toward each other, each constructed and arranged to embrace a portion of one of said supporting members.

12. In combination, a pair of tubular supporting members, means connecting said members, and a panel formed of bendable material having
20 substantially straight front edges and semi-cylindrical edge portions disposed in the rear of the panel and between the edges and curving toward
25 each other, each constructed and arranged to embrace a portion of one of said supporting members.

13. Door closure structure comprising a plurality of tubular supporting members, means
30 connecting said members in parallel relation, a plurality of panels mounted on said members, each panel having at each edge portion clamping means arranged to embrace a portion of one
35 of the supporting members, each panel having a body portion arranged to abut the edges of the body portions of adjacent panels when the door is closed, said edge portions of adjacent panels being complementary.

DANIEL C. HUNGERFORD.