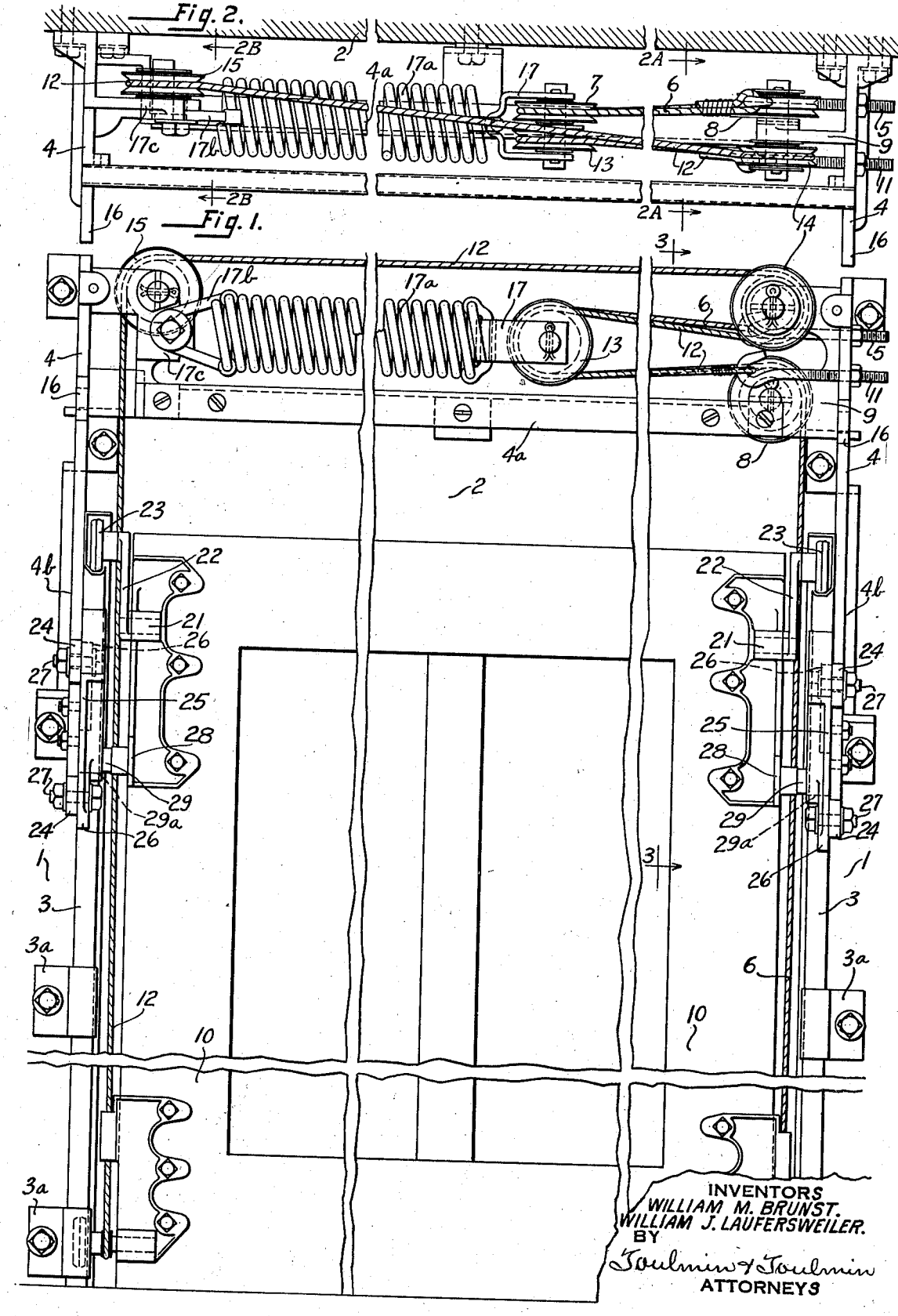
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OVERHEAD DOOR AND OPERATING MECHANISM

Filed Nov. 8, 1932 3 Sheets-Sheet 1

Fig. 2.

Fig. 1.



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Fig. 3.

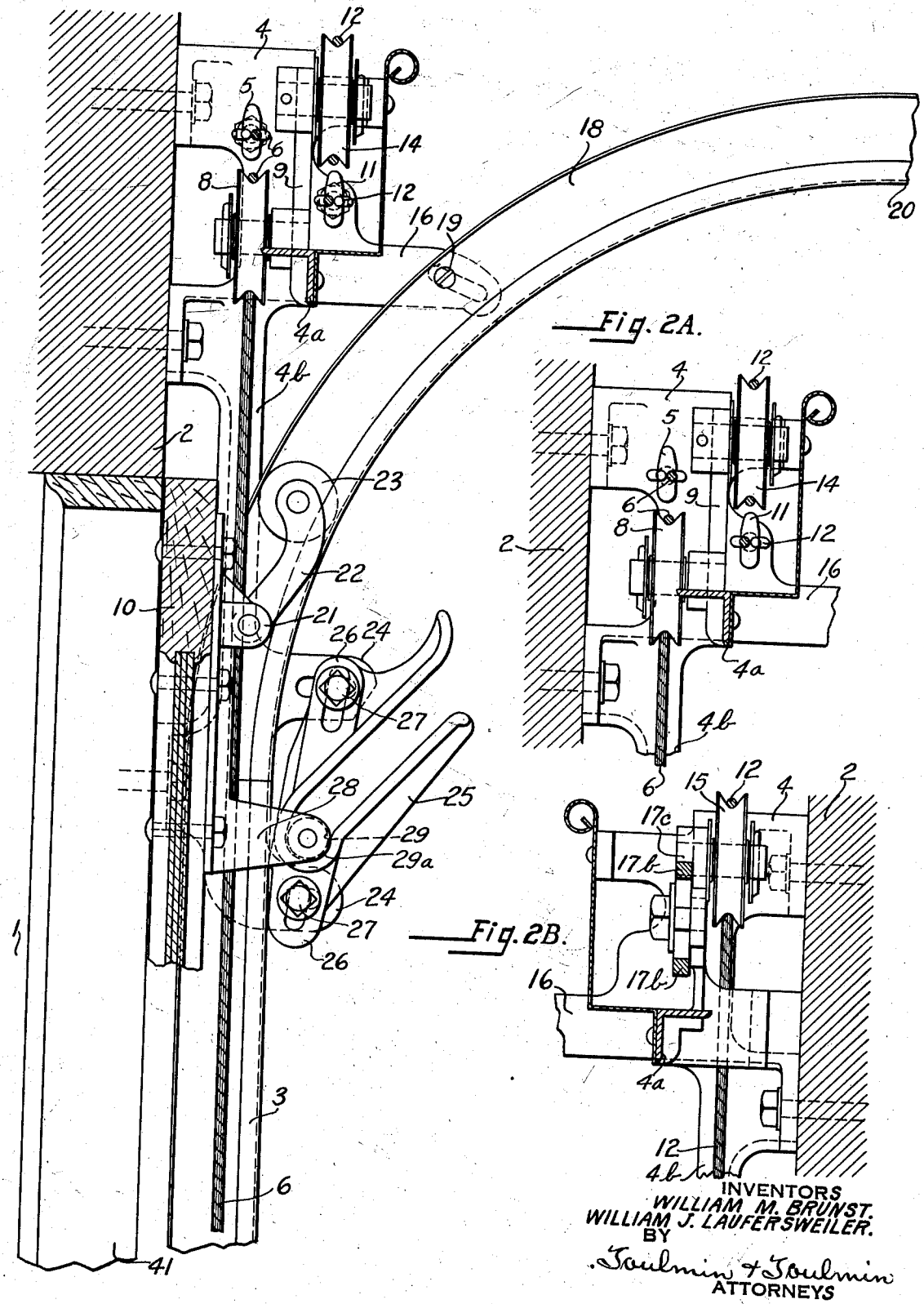


Fig. 2A.

Fig. 2B.

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Fig. 5.

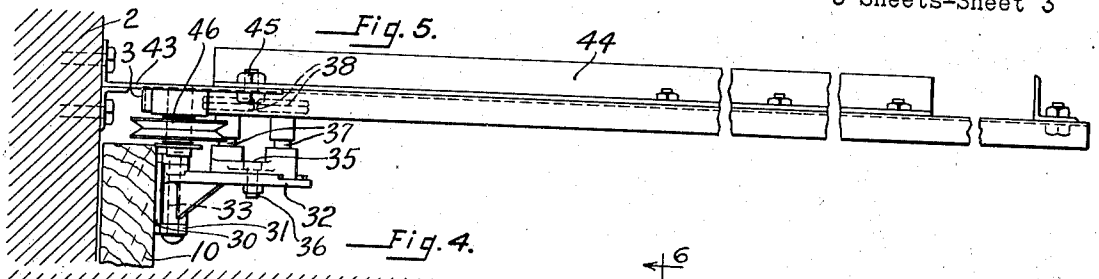


Fig. 4.

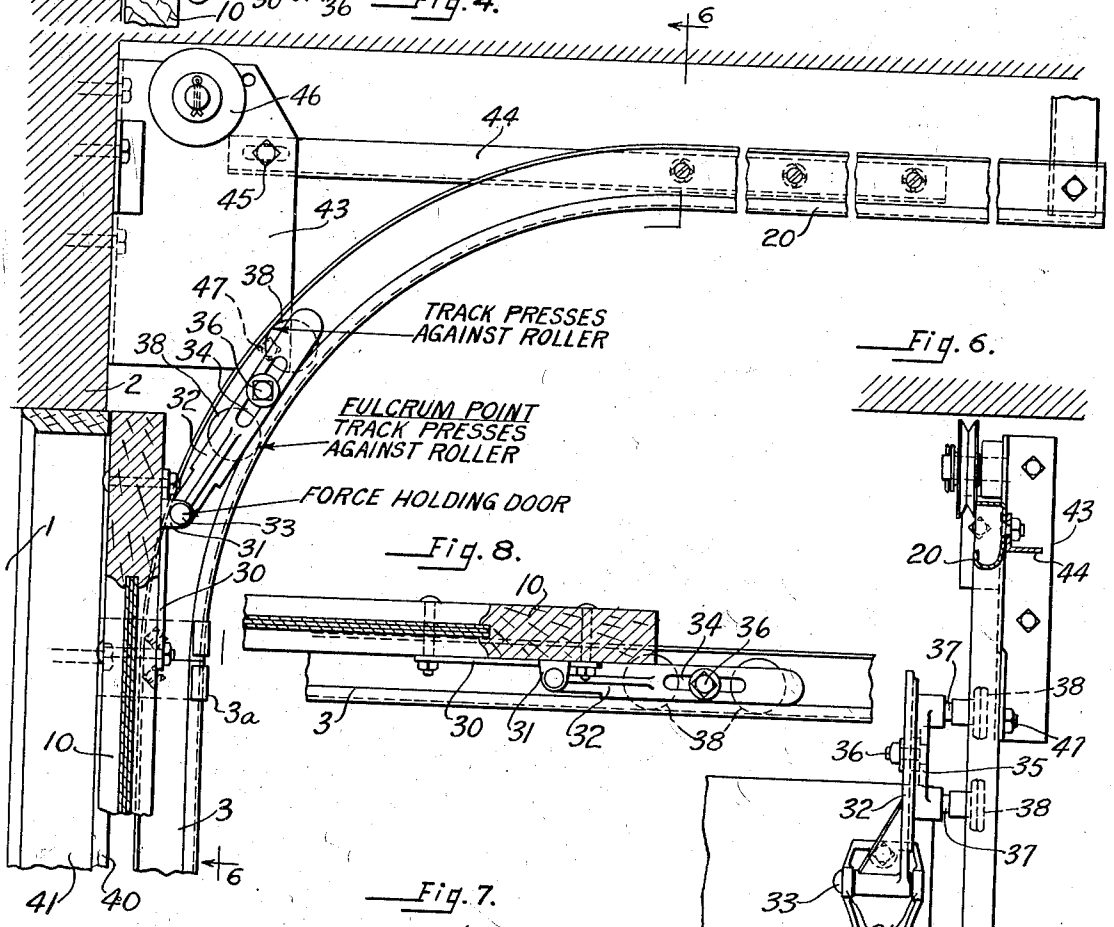
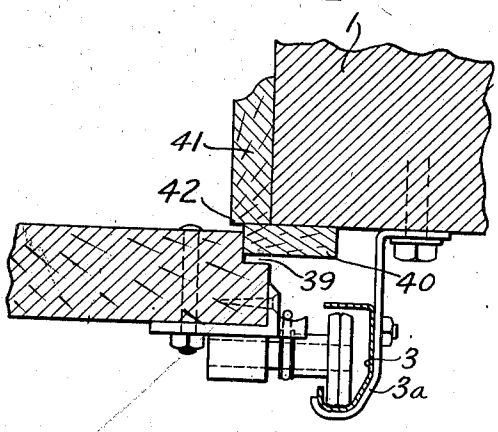


Fig. 8.

Fig. 6.

Fig. 7.



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OVERHEAD DOOR AND OPERATING MECHANISM

William M. Brunst and William Joseph Laufersweiler, Columbus, Ohio, assignors to General Door Company, Reno, Nev., a corporation of Nevada

Application November 8, 1932, Serial No. 641,746

8 Claims. (Cl. 20—20)

This invention relates to improvements in overhead doors, and has for its object to provide an improved counter-balance structure for supporting a door so that the door may be operated easily and may be closed without abrupt and sudden jars.

It is also an object of this invention to provide a bracket structure for supporting the counter-balance mechanism, and also serving to support tracks guiding a door and for adjusting the supporting means by which the door may be forced into close engagement with the wall of the building to which the door is attached.

It is also an object of this invention to provide, in connection with the door and track serving as a guide therefor, means for forcing the door into close engagement with the wall of the building to which the door is attached, said means being adjustable and so constructed that its engagement with the track will force the door against the building.

It is a further object of this invention to provide an article of hardware adapted to be used in connection with a door and a track therefor for guiding the door with relation to the track, and for forcing the door into and out of engagement with the wall, in which there is a doorway closed by the door.

These and other advantages will appear from the following description taken in connection with the drawings, which show a preferred embodiment of this invention.

Referring to the drawings:

Figure 1 is a vertical section just inside of the doorway, showing the counter-balance mechanism and the vertical part of the door tracks.

Figure 2 is a top plan view of the counter-balance mechanism and the brackets for supporting and guiding it.

Figure 2^A is a section on the line 2^A—2^A of Figure 2.

Figure 2^B is a section on the line 2^B—2^B of Figure 2.

Figure 3 is a vertical, longitudinal section on the line 3—3 of Figure 1, showing the upper edge of the door in section.

Figure 4 is a section similar to Figure 3, showing a slightly modified form of bracket and a truck mechanism engaging the door and the track for forcing the door into engagement with the wall to which it is applied.

Figure 5 is a top plan view of the mechanism shown in Figure 4.

Figure 6 is a section on the line 6—6 of Figure 4.

Figure 7 is a section through the bottom corner of the door, showing the sealing strip, the track and the bottom casting.

Figure 8 is a section through the upper end of the door, showing the relative positions of the door, the track and the guide truck when the door is supported in a horizontal position on the overhead part of the track.

The present door mechanism is adapted to be used in connection with garages, warehouses and other similar buildings, and is adapted to be applied to a doorway in the wall thereof. The jamb on each side of the doorway is indicated by the numeral 1, while the overhead lintel is indicated by the numeral 2. On each side of the doorway is a channel-shaped track 3, supported on the wall by means of clips 3*a*.

On the wall above the doorway are two brackets 4, connected by means of a horizontal brace bar 4*a*. Each bracket has an outwardly extending arm 16, the purpose of which will be later described, and a downwardly extending extension 4*b*, which has thereon a pair of brackets 24, the purpose of which will be later described. Attached to one of the brackets 4 is a hook 5, to which is attached one end of a cable 6, which passes over a pulley 7 attached to one end of a spring 17*a* by means of a clevis 17, and over a second pulley 8 supported by a bracket 9 on the bracket 4 to which the hook is attached.

The cable, after passing about these two pulleys, has its other end attached to the lower end of the door 10. Another hook 11 is attached to the bracket 4 to which the hook 5 is attached. To this hook a cable 12 is attached at one end and extends over a pulley 13, attached to the clevis 17, back about another pulley 14 supported by the bracket 9, across and above the doorway about another pulley 15, supported by the second bracket 4, to the lower corner of the door 10.

The arm 16 of each bracket 4 has a slot in one end through which a bolt 19 passes for supporting the arcuate part 18 of the track. The spring 17*a* has attached to one end the clevis which supports the pulleys 7 and 13. To the other end of the spring is attached a clevis 17*b* which is supported by means of a bracket 17*c* extending from the bracket 4 to which the pulley 15 is attached.

The horizontal part of the track is indicated by the numeral 20. On the upper edge of the door, at each side, is a bracket 21 to which one end of an arm 22 is pivoted. Each arm 22 has on its other end a roller 23 for moving in the track 3. These rollers and arms supporting them

are adapted to guide the upper edge of the door as it moves to and from closed position, and also serve to support the upper end of the door when supported in the horizontal parts of the tracks.

On the lower end of each extension 4b are two spaced outwardly extending brackets 24. Each bracket has a slot therein and supports a forked guide 25. Each guide has a slotted extension 26, one extending upwardly and the other one downwardly. These extensions are attached to the brackets 24 by means of bolts 27 passing through the slots therein. By means of these bolts and the slotted nature of the brackets the forked guide may be adjusted with relation to the bracket 4 and with relation to the track adjacent it.

Adjacent each forked guide when the door is closed there is provided on the door an arm 28, which has on the end thereof a roller 29 which engages the slotted guide for forcing the upper edge of the door into close engagement with the wall when the door is closed. These forked guides cooperating with the rollers 29 serve to immediately move the upper edge of the door away from the wall so it may be readily and easily opened.

By the adjustable nature of the slotted guides wear in the guides, the rollers 29 and the adjacent parts of the door may be cared for by properly adjusting the slotted guides on the brackets 24. This guide may be lowered or raised, or it may be moved to or from the adjacent wall. The slotted guide is provided in its lower end with a seat 29a. This seat prevents lateral movement of the door when the rollers 29 are properly seated. A slight movement of the door upwardly will move the rollers 29 out of their seats so they can guide the door easily away from the wall.

As shown in Figures 4 and 6, the slotted guide is replaced by means of an arm and truck construction. For supporting the guiding arms there is provided on each edge of the door, adjacent the top thereof, a plate 30 which has extending outwardly therefrom a pair of ears 31, between which one end of a link 32 is pivoted by means of a pin 33. In the other end of the link is a relatively long slot 34 adapted to receive a projection or bolt 36, or any suitable supporting means, located on one side of a bar 35. For the purpose of securely holding the bar on the link a nut is provided on the end of the bolt or projection. On each end of the bar on the side opposite the projection is a shaft 37, which has thereon a roller 38 for movement in one track.

As shown in Figure 4, the lower roller acts as a fulcrum engaging the part of the track remote from the wall, while the upper roller engages the part of the track adjacent the wall, tending to force the lower end of the link and the pin 33 and the door against the wall to securely close the upper part of the door. By means of this lever action the door is securely held in closed position but a slight upward movement of the door will destroy this lever action and cause the truck to travel in its track until it reaches a horizontal position, such as that shown in Figure 8, where the rollers are supported on the lower part of the track in horizontal position.

This piece of hardware, consisting of a plate, an arm pivoted at one end to the plate, and a truck adjustably pivoted to the other end of the arm, constitutes not only a guide mechanism for one end of a door but means for securely holding this end of the door against the wall when closed.

As shown in Figure 7, at each edge and on one side of the door there is a notch 39, and on the adjacent inner wall of the door or door jamb is a sealing strip 40 adapted to fit in the notch 39. This sealing strip not only fits over the jamb adjacent the doorway but extends slightly over a rabbet 41 provided on the wall in the doorway. The part of the rabbet not covered by the mold strip 42 is engaged by one side of the door adjacent the notch 39. By means of this construction a close seal is provided between the wall and the door at each side so that wind, dampness and dust may be kept out of the building when the door is closed. The tracks are supported on the walls by means of brackets 43.

In the form shown in Figures 4, 5 and 6 the horizontal part of the track is partly supported by means of an arm or beam 44 extending from the bracket supporting the counter-balance mechanism and attached thereto by means of a bolt and slot 45. The bracket shown in this form has mounted thereon a pulley 46 for supporting a cable. The bracket 43 is attached to the arcuate part of the track by means of a bolt 47.

In the form shown in Figures 1, 2 and 3 the upper edge of the door is held in close engagement with the wall of the building by means of the rollers 29 engaging the slotted guide and resting in the seat 29a. Any upward movement of the door immediately tends to move the rollers out of their seats and into engagement with the inclined parts of the slots, thereby moving the upper edge of the door away from the wall. At the same time the upper edge of the door is guided by means of the rollers 23 traveling in the tracks. These rollers 23 serve to support the upper end of the door, which is articulate in its nature.

In the form shown in Figures 4, 5 and 6 the upper edge of the door is guided by means of the links and the trucks thereon. When the door is in a closed position pressure on the upper roller forces the lower roller against one edge of the track so that the door is forced against the wall.

Immediately the door is partly opened this action is released so that the rollers travel freely in the tracks. These links and trucks not only serve to guide the door as it moves to and from a closed position, but they serve to support the upper end of the door, which is articulate in its nature, in a horizontal position, such as shown in Figure 8.

Each section of the door has mounted thereon the usual rollers for engaging the tracks for holding the door in proper position with relation to the wall, and for supporting the door sections when the door as a whole is in an elevated open position, supported by the horizontal parts of the tracks. The counter-balance structure shown in Figures 1 and 2 may be used in connection with the form shown in Figures 4, 5 and 6.

It will be understood that it is desired to comprehend within this invention such modifications as come within the scope of the claims and the invention.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a channel-shaped track having straight portions interconnected by a curved portion for guiding the door, and means on the door engaging in the track, said means including a

link pivoted at one end to the door and having on its other end a pair of rocking rollers on longitudinally spaced axes engaging the track, whereby said rollers respectively engage the opposite walls of the curved portion of said channel-shaped track when said door approaches its closing position so as to force said door against said wall.

2. In an overhead door, in combination with a wall having therein a doorway, a door for closing the doorway, a channel-shaped track having straight portions interconnected by a curved portion for guiding the door, and means on the door engaging in the track, said means including a link pivoted at one end to the door and having at its other end a truck with rollers on longitudinally spaced axes engaging the track, whereby said rollers respectively engage the opposite walls of the curved portion of said channel-shaped track when said door approaches its closing position so as to force said door against said wall.

3. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a channel-shaped track having straight portions interconnected by a curved portion for guiding the door, a link pivoted at one end to the door, a rocking member pivoted to the other end of the link, and rollers on longitudinally spaced axes on the rocking member engaging in the track to guide the door, whereby said rollers respectively engage the opposite walls of the curved portion of said channel-shaped track when said door approaches its closing position so as to force said door against said wall.

4. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a channel-shaped track having straight portions interconnected by a curved portion beside the doorway, a link pivoted at one end to the door, a member pivoted intermediate its ends to the other end of the link, and a roller on each end of the member to engage in the track to guide the door, said rollers being on longitudinally spaced axes, whereby said rollers respectively engage the opposite walls of the curved portion of said channel-shaped track when said door approaches its closing position so as to force said door against said wall.

5. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a channel-shaped track having straight portions interconnected by a curved portion at each side of the door, a plate on each side edge of the door, a link pivoted at one end to each plate, each link having in its other end a slot, a bar for each link having intermediate its ends a bolt extending through the slot, and a roller on each end of each bar to engage in the tracks to guide the door, said rollers being on longitudinally spaced axes, whereby said rollers respectively engage the opposite walls of the curved portion of said channel-shaped track when said door approaches its closing position so as to force said door against said wall.

6. As an article of hardware, a plate having on one side a pair of ears, a link pivoted at one end between the ears, the other end of said link having a slot therein, a bar, means extending from one side of the bar through the slot for adjustably attaching the bar to the link, an axle on the other side of the bar at each end, and a roller on each axle.

7. As an article of hardware, a plate, a link pivoted at one end to the plate and having in its other end a slot, a bar having on one side a projection extending through the slot for adjustably attaching the bar to the link, an axle at each end on the other side of the bar, and a roller on each axle.

8. As an article of hardware, a plate, a link pivoted at one end to the plate, the other end of said link having a slot therein, a bar, means on the bar intermediate its ends extending through the slot for adjustably attaching the bar to the link, and a roller on each end of the bar.

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