P. FRANTZ.

GARAGE DOOR CONSTRUCTION.

APPLICATION FILED APR. 23, 1920.

1,420,087.

Patented June 20, 1922.

3 SHEETS—SHEET 1.

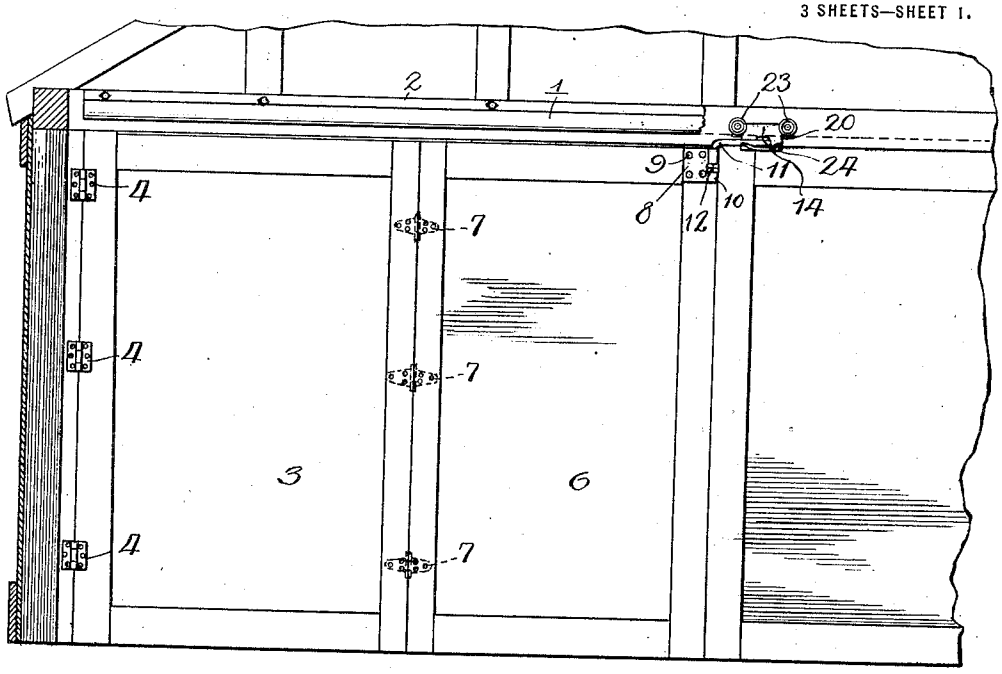


Fig. 1

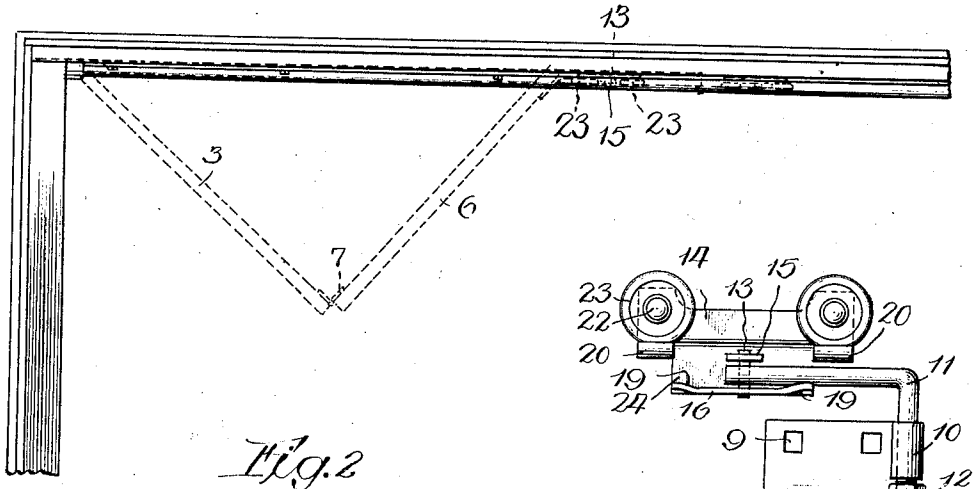


Fig. 2

Fig. 3

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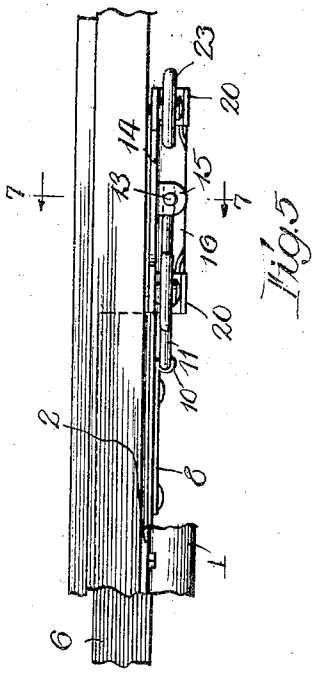


Fig. 5

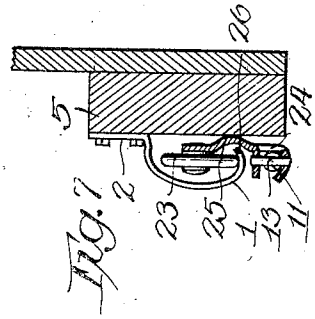


Fig. 7

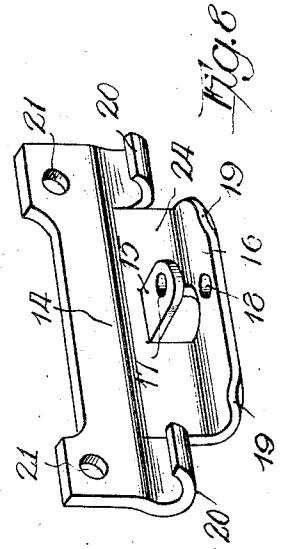


Fig. 8

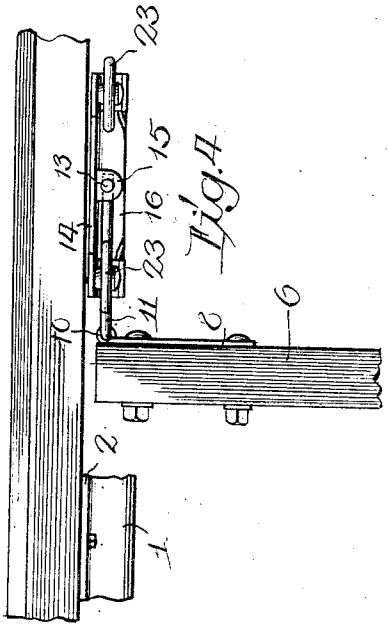


Fig. 4

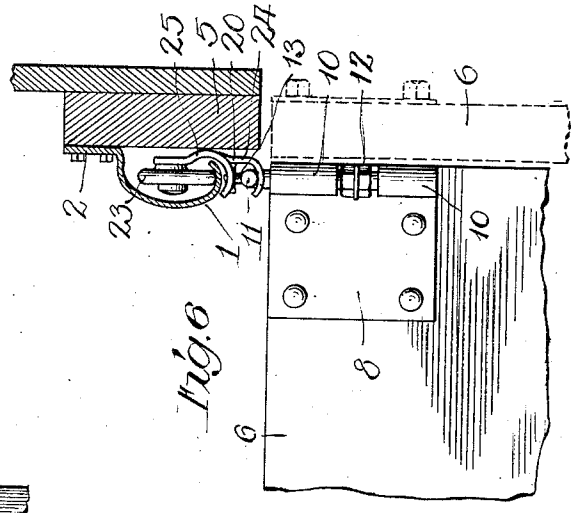


Fig. 6

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3 SHEETS—SHEET 3.

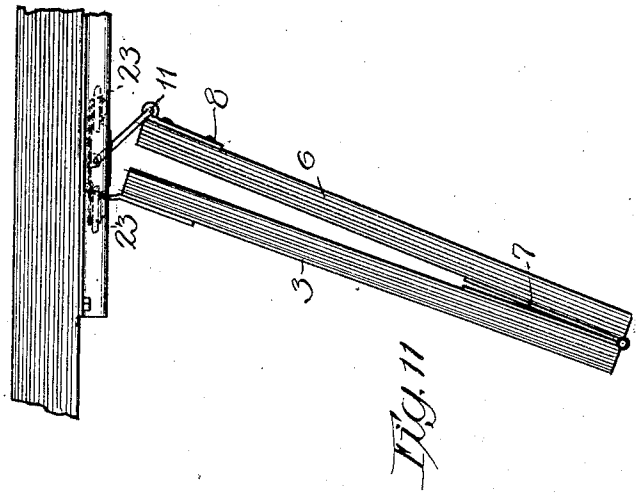


Fig. 11

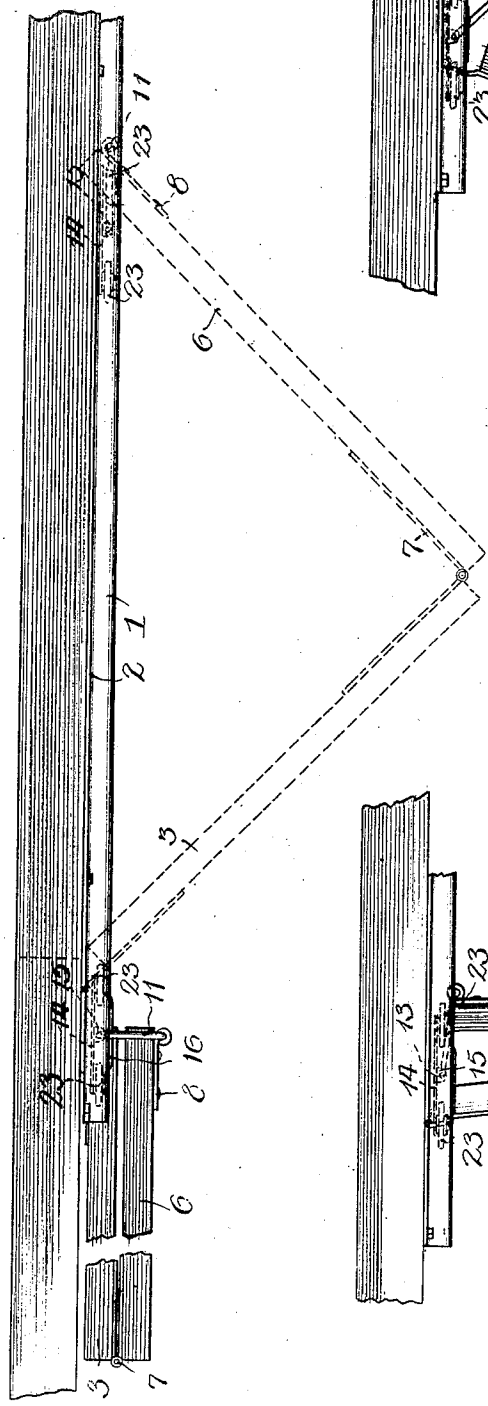


Fig. 9

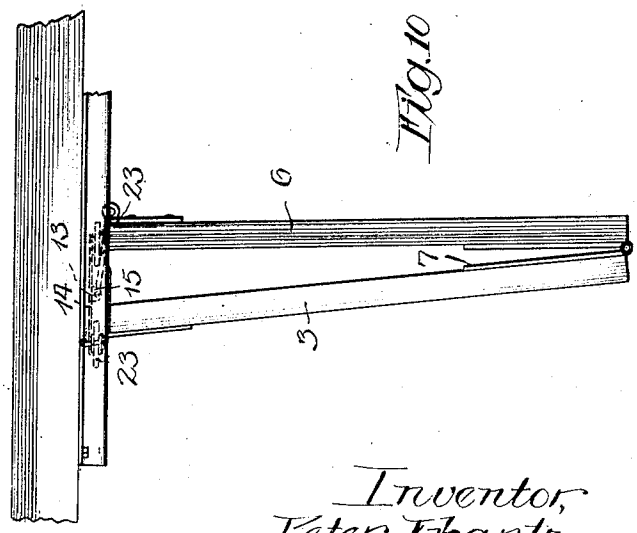


Fig. 10

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UNITED STATES PATENT OFFICE.

PETER FRANTZ, OF STERLING, ILLINOIS, ASSIGNOR TO FRANTZ MANUFACTURING CO., OF STERLING, ILLINOIS, A CORPORATION OF ILLINOIS.

GARAGE-DOOR CONSTRUCTION.

1,420,087. Specification of Letters Patent. Patented June 20, 1922.

Application filed April 23, 1920. Serial No. 375,988.

To all whom it may concern:

Be it known that I, PETER FRANTZ, a citizen of the United States of America, and a resident of Sterling, Illinois, have invented a certain new and useful Improvement in Garage-Door Constructions, of which the following is a specification.

This invention relates to garage doors, and more particularly to the devices for supporting the doors, so that the latter will open and close in the desired manner. Ordinarily, in the construction of doors of this kind, the different sections of the doors are hinged together and one door section is hinged on the building at one side of the doorway, whereby supporting means of some kind are necessary, more particularly for the door section which is supported by another door section, thereby to prevent sagging of the entire folding door. This involves the use of one or more hangers which travel on a track, and ordinarily, in a garage door construction of this particular character, the said track has been set out a distance from the inner surface of the building by supporting brackets provided for that purpose, in order to provide clearance for the doors and other movable parts.

Generally stated, therefore, the object of the invention is to provide a novel and improved construction whereby the track for the hangers may be secured directly to the inner surface of the building without the necessity of using any brackets, and whereby ample clearance is provided for the doors and other movable parts, so that the doors may be easily opened and closed, and swung into the different positions, as will hereinafter more fully appear.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and the desirability of a folding garage door construction of this particular character.

To these and other useful ends the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings, in which—

Fig. 1 is a vertical section of a garage or other building, with certain portions thereof broken away showing the inner side of a folding door construction involving the principles of the invention.

Fig. 2 is a plan of the door construction shown in Fig. 1.

Fig. 3 is an enlarged detail view of one of the door hangers.

Fig. 4 is a view looking down on the hanger shown in Fig. 3, showing the attaching portion thereof in a different position and showing the adjacent portions of the door and building.

Fig. 5 is a view similar to Fig. 4, showing the door in a different position, and showing part of the track on which the wheels of the hangers travel back and forth when the doors are opened and closed.

Fig. 6 is a vertical section looking toward the left in Fig. 4.

Fig. 7 is a vertical section on line 7—7 in Fig. 5.

Fig. 8 is a perspective of the hanger body.

Figs. 9, 10 and 11 are diagrammatic views similar to Fig. 2, showing a different method of arranging and using the hanger.

As thus illustrated, the track and housing 1 is made of sheet metal and provided with an upper flange 2 which is bolted directly to the inner surface of the building, in any suitable manner, so that said track is disposed above the doorway of the garage or other building. One door section 3 is hinged at 4 to one side of the doorway, so that it is adapted to open inwardly and swing back against the wall of the building. When closed, this door section is below the structural member 5 of the door frame, as shown in dotted lines in Fig. 6; and the other door section 6 is provided with hinges 7 on the outer side, so that the two door sections are hinged together, and are adapted to fold flatwise together when the door is opened.

The hanger for supporting the door section 6 is constructed as follows: The attaching plate 8 is secured by bolts 9 to the door section 6, to the upper corner portion thereof, as shown in Figs. 1 and 6, so that the swivel bearings 10 are at the edge of the door. An L-shaped rod 11 has its vertical portion held in said swivel bearings by nuts 12 interposed between the two bearings, the vertical portion of the rod being screw-threaded to engage said nuts, whereby said rod can be raised and lowered in said bearings. The horizontal portion of said rod is provided at its end with a vertical pivot 13, and the sheet metal body 14 of

the hanger is provided with a punched out portion 15 which extends horizontally above the lower flange 16 of said body, the punched out portion or lug 15 and the flange 16 having openings 17 and 18 for said pivot 13, whereby the latter is free to rotate about a vertical axis, thus allowing the rod 11 to swing back and forth about its said pivot. The flange 16 is provided with cam portions 19 at opposite ends thereof, which are adapted to engage the under side of the horizontal portion of the rod 11, so that the latter will be slightly raised when swung around in either direction, and held by one of said cams, as shown in Fig. 3, for a purpose which will hereinafter more fully appear. The sheet metal hanger body 14 is also provided with curved end portions 20 which engage the under side of the track 1 to keep the hanger from rising from the track. Said body 14 is also provided with holes 21 through which are inserted the axles 22 of the wheels 23, which latter travel on the trough-like track portion at the bottom of the sheet metal housing 1, as shown in the drawings, thereby to prevent the folding doors from sagging. As the horizontal portion of the rod 11 cannot pass over either cam 19 without lifting the door, it follows that some force is required to push the rod over one of these cams, and consequently when the rod is behind either cam it is retained in this position until forcibly pulled outward. As shown in Figs. 1 and 2, the doorway is close to the side wall of the garage or building, whereby it becomes desirable to turn the door hanger rod 11 to the right, so that the door sections may be folded and swung back against the side of the building, without having the hanger run off the track or bump against the side of the building. However, when the doorway is some distance from the side wall of the building, as indicated in Figs. 9, 10 and 11, then the hanger rod 11 is turned to the left, as shown in Fig. 3, thereby allowing the door sections to swing open as shown in Fig. 10, then a little farther, as shown in in Fig. 11, and finally into the position shown in full lines in Fig. 9, the latter figure showing also in dotted lines the beginning of the folding operation. Thus the hangers can be turned in either direction, according to the conditions and the construction of the building. With either method, however, one of the cams 19 will always catch and hold the rod 11 in position to hold the door sections in alinement, when the door is closed. The hanger is, therefore, reversible to suit the requirements of any particular situation, and is provided with means for catching and holding the hanger rod 11 in the position which it must occupy when the door sections are in the same vertical plane—that is to say, when the door is closed. Also, in the event that double doors are employed, so that two door sections like the section 6 meet edgewise at the center of the doorway, then the rods 11 are turned so that they extend respectively over their allotted door sections, so that the two hangers will not bump together when the two door sections meet at their vertical edges. It will be understood, however, that there are various situations in which it may become desirable to turn the hanger rod one way or the other in order to avoid interference of the hangers with each other, or with structural portions of the garage or other building. In some cases the hanger rod is turned to the left over the swinging door section 6, as shown in Figs. 3, 9, 10 and 11, as in this case there is plenty of clearance at the left of the doorway, so that the two folding door sections can come together flatwise and swing back against the front wall of the building, in the manner shown.

The hanger body has a back wall 24 that serves as a stop for the rod 11, when the latter swings over either of the cams 19, thus holding the rod parallel with the hanger body. Preferably, said hanger body has a longitudinal channel 25 just above the out-turned portion 15, the edge 26 of the track extending into this channel, and the back of the channel being close to the building. In this way the hanger is prevented from becoming displaced from the track, and supports the door in the proper manner. The horizontal portion of the rod 11 swings in under either guard 20, and may swing either way in the opening and closing of the door. However, in some cases, as explained, it will be necessary to have the rod extend one way, while in other cases it will be necessary to have the rod extend in the opposite direction; and with the construction shown and described, this is readily accomplished, and the cams 19 releasably retain the rod firmly in either position, when the door is closed. The hanger body, as shown, is made of sheet metal, and the said retaining means are connected with the guards 20, so that the entire body is made from one integral piece of sheet metal. The inverted L-shaped rod 11 is movable to a position under either wheel, being limited in its swinging movement toward the plane of said wheels and being releasably retained in either position. This keeps the door steady when closed. It will be understood, of course, that ordinary locking bolts can be provided at top and bottom of the door sections, to hold them in place when the entire door structure is closed.

What I claim as my invention is:—

1. In door construction, the combination of a track, a hanger body having wheels to travel on said track, a movable door section,

an arm pivoted to swing horizontally on said hanger body, said body having means to releasably retain the arm parallel with said track, so that said arm is held against further inward swing, when the door is closed, adapted to permit the arm to swing freely when released from said parallel portion, and a swivel to support the door on said arm.

2. A structure as specified in claim 1, said means comprising a stop to limit the movement of the arm toward the vertical plane of said wheels, and a cam spaced from said stop and formed to slightly raise the arm as it swings toward said plane and to then retain it against said stop.

3. A structure as specified in claim 1, said arm being pivoted to swing around in either direction of travel, and said means being operative to retain the arm in either position.

4. A structure as specified in claim 1, said means comprising a stop to limit the movement of the arm, and a cam to slightly lift the arm and then retain it against said stop.

5. A structure as specified in claim 1, in combination with another door section hinged to said first mentioned door section, and also hinged to the doorway so that both sections are held in closed position by said retaining means, and whereby the two sections can fold together when the door is opened.

6. A structure as specified in claim 1, said arm consisting of an inverted L-shaped rod the upper horizontal portion of which is pivoted on the hanger body and the lower vertical portion of which turns in a bearing below the upper edge of the door and thus forms said swivel.

7. A structure as specified in claim 1, said hanger body being of sheet metal and having upper and lower projecting portions between which said arm is pivoted, and having out-turned portions at the ends of the body to form guards which engage the bottom of the track, these guards being disposed above the plane of said arm, so that said arm can swing under either guard, and said retaining means being associated with said guards.

8. A structure as specified in claim 1, said retaining means being operative to maintain the arm under either wheel of the hanger, so that said arm may extend in either direction, depending upon which is necessary to prevent the hanger from interfering with other things.

9. A structure as specified in claim 1, in combination with a support to which said door section is hinged, cooperating with said retaining means to hold the door closed.

10. In door construction, the combination of a track, a hanger body having wheels to travel on said track, an arm pivoted on said body to swing in a horizontal plane, so that said arm may swing outward from said body, and means on said body to limit the backward return swing of said arm.

11. A structure as specified in claim 10, said means being disposed under each wheel, so that said arm has a limited swing to a position under either wheel.

12. A structure as specified in claim 10, in combination with means spaced from said limiting means to releasably retain said arm against outward displacement away from said body.

Signed

PETER FRANTZ.