P. FRANTZ.

GARAGE DOOR CONSTRUCTION.

APPLICATION FILED APR. 20, 1918.

1,426,170.

Patented Aug. 15, 1922.

2 SHEETS—SHEET 1.

Fig. 1

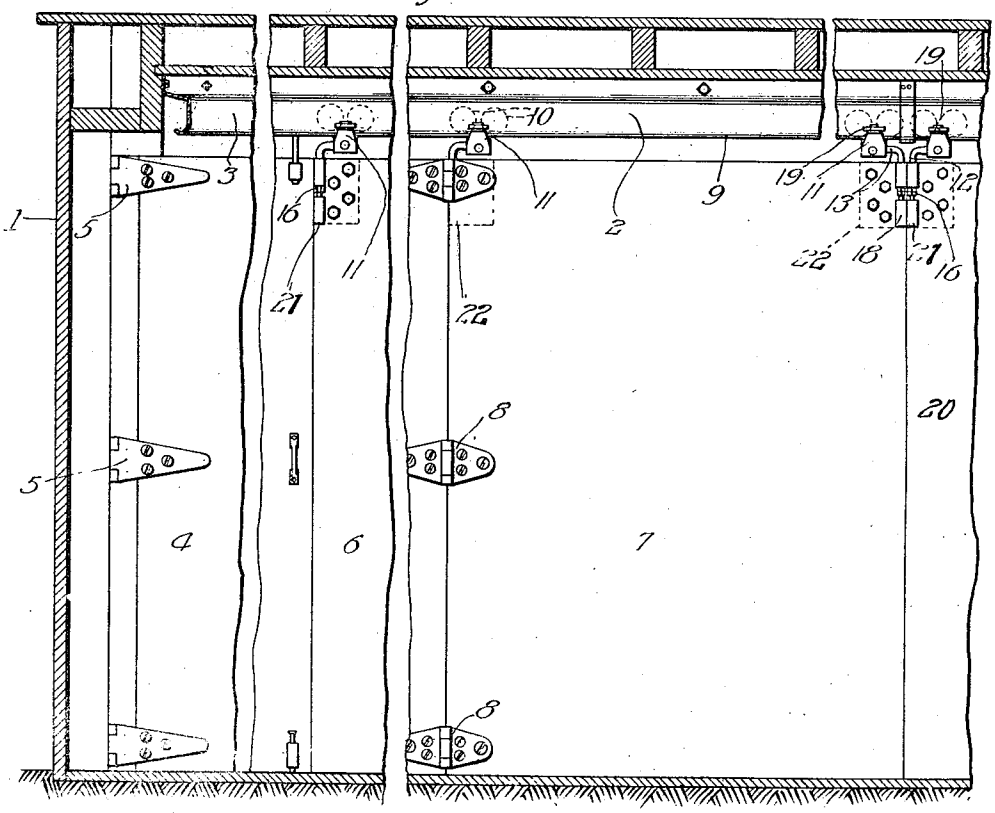
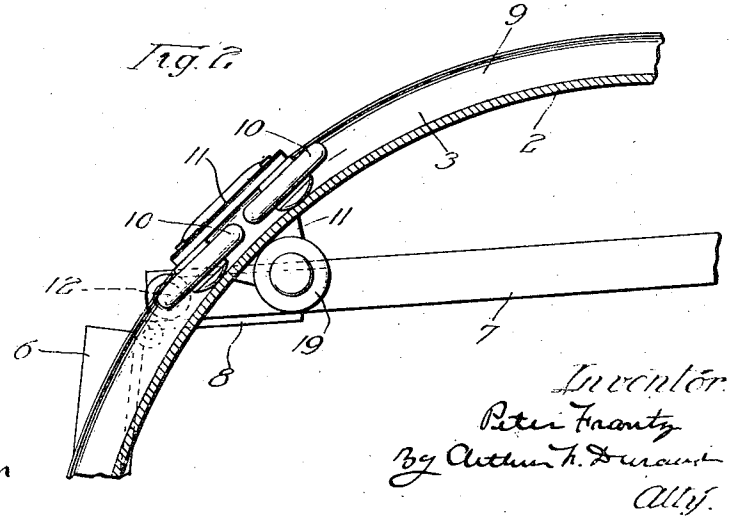



Fig. 2.




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2 SHEETS—SHEET 2.

Fig. 3

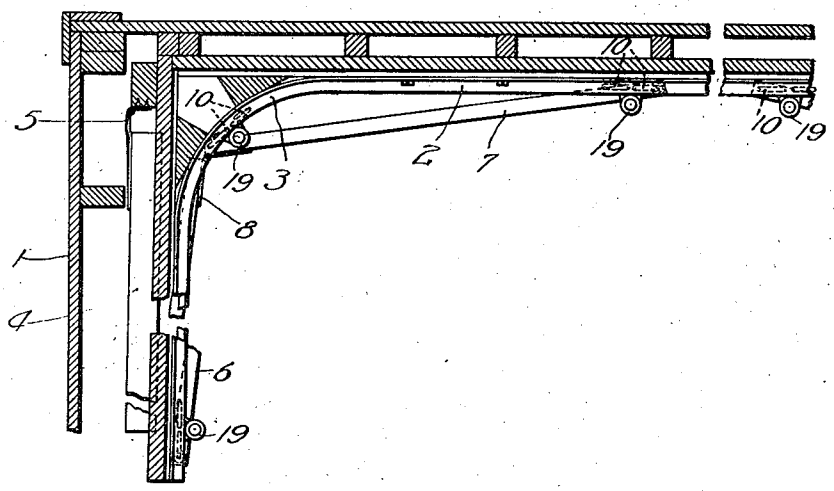
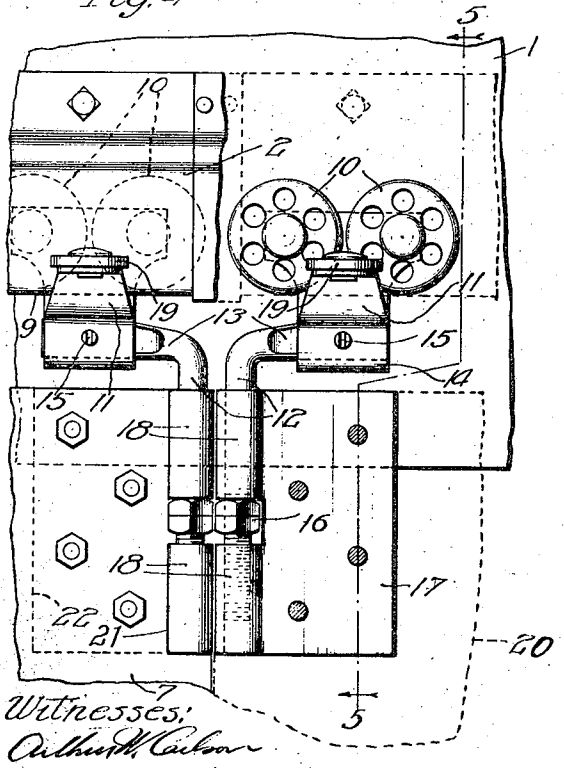
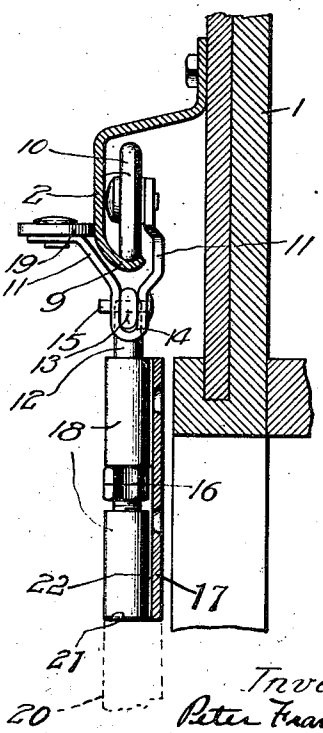



Fig. 4




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Fig. 5




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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.

1,426,170. Specification of Letters Patent. Patented Aug. 15, 1922.

Application filed April 20, 1918. Serial No. 229,851.

*To all whom it may concern:*

Be it known that I, PETER FRANTZ, a citizen of the United States of America, and 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 sliding doors in general, but more particularly to garage doors, and especially those which comprise sliding sections hinged together.

Generally stated, the object of the invention is to provide a novel and improved construction for supporting the sliding doors on tracks having curves therein, so that the doors will slide freely without striking other objects while passing the curves, and whereby two doors may be brought together tightly at their edges, as will hereinafter more fully appear.

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

Fig. 1 is an inside view of a garage or other building, showing a sliding door construction involving the principles of the invention.

Fig. 2 is an enlarged plan view of a portion of the sliding door structure, showing the curved portion of the track in horizontal section, and illustrating the action of the swivel hanger while passing around the curve.

Fig. 3 is a plan of the structure shown in Fig. 1, showing the swinging door open and the sliding doors partially open.

Fig. 4 is an enlarged inside front elevation of two of the hangers, showing the adjacent portions of the doors to which they are secured, and showing a portion of the track upon which the carriage of each hanger travels during the sliding motion of the doors, one door and a portion of the track being represented by dotted lines to show the hanger mechanism.

Fig. 5 is a vertical section on line 5—5 in Fig. 4.

As thus illustrated, the invention comprises a garage or building 1 of any suitable construction, having a doorway in the outer wall thereof, and provided with an inner track 2 secured above the doorway on the front wall of the building, and also secured to one side wall of the building, so that the track has the curved portion 3 between the two straight portions thereof, the straight portions being substantially or approximately at right angles to each other. The doorway is partially closed by a swinging door 4 which is hinged to the doorframe by hinges 5 of any suitable character, so that this door can swing inward and backward against the side wall of the building. The doorway is also closed by a sliding door construction involving the two door sections 6 and 7 connected together by hinges 8, one vertical edge of the section 6 being adapted to engage the door 4 when the entire door is closed. The track 2 is preferably of sheet metal bent into shape to provide a housing and having the inturned lower edge portion 9 which serves as the track for the wheels 10 of the carriage 11 of the hangers which support the sliding doors on the track. These hangers are each constructed as shown in Figs. 4 and 5, each hanger consisting of a vertical rod 12 having its upper end portion bent over to provide a horizontal portion 13 which rests in the saddle 14 of the hanger body or carriage, being held in place therein by a pin 15 or by any other suitable means. The inverted L-shaped rod 12 is threaded and provided with nuts 16, and the plate 17 is formed with tubular bearings 18 for the rod so that the latter turns about a vertical axis, thus providing a swivel between the door and the hanger carriage. It will be seen that this vertical axis is approximately at the vertical edge of the door, and that the portion 13 extends away from this edge, so that no portion of the traveling carriage 11 extends beyond said vertical edge of the door. The carriage 11 travels between the track 9 and the inner side of the wall of the building, and each hanger carriage is also provided, preferably, with an outer wheel 19 that bears against the outer side of the track and housing 2, thereby to keep the hangers from slipping off of the track portion 9 while the doors are in motion. By adjusting the nuts 16 the doors can be raised and lowered on the hangers.

Referring to Fig. 2, it will be seen that the location of the vertical axis of the swivel approximately at the vertical edge of the door, instead of at a point some distance back from this edge, permits the doors to travel around the curved portion 3 of the track without extending very far behind the

track, whereby the doors will not need as much clearance in order to avoid striking other objects while passing around the curve, and whereby the track can be closer to the wall of the building than would be the case with the axis of the swivel disposed some distance back from the edge of the door.

Also, as shown in Figs. 1 and 4, the other sliding section 20, which is separable from the door section 7, is supported by similar hangers, and thus two door sections can be brought tightly together without causing the hanger of one door to bump into the hanger of the other door, for the reason that the carriages of the two hangers extend away from each other, the portions 13 of these two hangers extending in opposite directions. Therefore, as stated, the two sliding doors can be brought close together and secured together in any desired manner, but the hangers of the two door sections will not collide or bump into each other. This, it will be seen, is accomplished in a structure in which the axes of the swivels are disposed at or close to the vertical edges of the doors, which arrangement has other advantages in a structure in which sliding doors are compelled to slide on a track having a curve therein, and in which the sliding doors are compelled to pass the swinging door 4 when the latter is open, in order to entirely open the doorway.

From the foregoing it will be seen that the offset position of the swivel rod 12, which is in the nature of a pintle, leaves the vertical axis of the swivel close to or at the edge of the door, and at the same time brings the entire carriage of the hanger practically to one side of said axis, so that the carriage does not overhang or extend beyond the vertical edge of the door, thus permitting two sliding doors, such as the door sections 7 and 20, to be brought together without bumping the hangers, or permitting one of such door sections to be closed tightly against one side of the door frame without causing the hanger thereof to bump against or interfere with the overhead construction of the door frame, inasmuch as no part of the hanger extends ahead of the forwardly moving front edge of the door, or beyond the vertical rear edge of the door, as the case may be. Each hanger, it will be seen, has two wheels 10, which engage the track portion 9, and the horizontal axes of these wheels are both at one and the same side of the vertical axis of the swivel rod 12, instead of having said vertical axis extend upward between said horizontal axes of the wheels, with the result that advantages are gained, such as those previously described. In applying the hangers to the doors, each door has its upper corner portion cut away to form a recess 21, and the outer side of the door is cut away to form a shallow recess 22, so that the attaching plates 17 will be flush with the outer surfaces of the doors. The tubular bearing portions 18 will occupy the recess 21, so that these bearing portions will be flush with the vertical edges of the doors or door sections, thus permitting the door sections to be hinged tightly together, as by the hinges 8, or to be brought close together when the two sliding doors moved toward each other and come together at their edges. The hangers are all alike, of course, the inverted L-shaped rod 12 being merely reversed to extend either one way or the other, and the plate 17 being merely turned upside down on the rod, when it is desired to use the hanger as a right or a left on either vertical edge of a door. The pins or pivots 15 are, as shown, removable to permit this reversal of the rod. The posts are made the same, in the form shown, for either purpose, and are simply assembled differently to make the hangers either rights or lefts, depending upon the requirements of the situation.

The combined track and housing 2 can be secured in place by any suitable or desired means, with the hangers traveling between the track and the inner side of the outer wall of the building, as shown in the drawings, and pressure from the outside cannot force the door hangers off the track.

With the provision of the nuts 16 on the threaded lower portion of the rod 12, in the manner shown, the vertical axis of each hanger is provided with adjustable means by which the doors can be raised and lowered to accurately adjust them relative to the track and the floor below. This, however, does not interfere with free and easy oscillation of the rods 12 in the bearings 18 of the attaching plates 17, as the weight of the door is supported on the upper of the two nuts 16, in each case, and the rods 12 will turn freely in their bearings.

It will be seen that the wheels 19 engage the outside of the track at the inner side of the curve 3 to prevent the wheels of the hangers from being pushed off the track while traveling around said curve. Also, the members 12, which are in the form of bent rods, are always in the vertical planes of their allotted hanger wheels 10, so that each bent rod is maintained in the vertical plane of its allotted wheeled carriage. The vertical axes provided by the members 12 are in the vertical planes of the doors, close to the edges thereof, and each axis is within the rectangular area of the door.

What I claim as my invention is:—

1. In a garage door construction, a track disposed over the doorway, a wheeled carriage to travel on said track, a rectangular door disposed in the vertical plane of the tread or wheel engaging portion of the track and cut away at one of its upper

corners to form a recess above its vertical edge, a swivel bearing disposed in said recess, so that the vertical axis of the swivel is in the plane of the door and whereby the entire swivel connection is within the rectangular area thereof and close to said vertical edge, so that two doors can come tight together at the edges thereof, fastening means to secure the bearing to the door, and a depending member separably attached to the lower end of said carriage and extending downwardly into said bearing to form the swivel, said member being an inverted L-shaped rod which extends upwardly from said bearing and then horizontally over the door to engage the lower end of said carriage, thereby to prevent the carriage from extending beyond said vertical edge of the door, and so that the hanger by reversal of said rod and by reversal of said bearing can be used as either a right or a left on either vertical edge of the door.

2. In a garage door construction, a track disposed over the doorway, a wheeled carriage to travel on said track, a rectangular door disposed in the vertical plane of the tread or wheel engaging portion of the track and cut away at one of its upper corners to form a recess above its vertical edge, a swivel bearing disposed in said recess, so that the vertical axis of the swivel is in the plane of the door and whereby the entire swivel connection is within the rectangular area thereof and close to said vertical edge, so that two doors can come tight together at the edges thereof, fastening means to secure the bearing to the door, and a depending member separably attached to the lower end of said carriage and extending downwardly into said bearing to form the swivel, with a portion of said track extending in a curve from above the doorway to the adjacent side of the building, said carriage extending downwardly between the track and the inner surface of the building, and means on said carriage to engage the outside surface of the track to prevent the carriage from being pushed off the track while traveling around said curve.

3. In a garage door construction, a track disposed over the doorway, a wheeled carriage to travel on said track, a rectangular door disposed in the vertical plane of the tread or wheel engaging portion of the track and cut away at one of its upper corners to form a recess above its vertical edge, a swivel bearing disposed in said recess, so that the vertical axis of the swivel is in the plane of the door and whereby the entire swivel connection is within the rectangular area thereof and close to said vertical edge, so that two doors can come tight together at the edges thereof, fastening means to secure the bearing to the door, and a depending member separably attached to the lower end of said carriage and extending downwardly into said bearing to form the swivel, said member being an inverted L-shaped rod which extends upwardly from said bearing and then horizontally over the door, and so that the hanger by reversal of said rod and by reversal of said bearing can be used as either a right or a left on either vertical edge of the door, said carriage having a lower portion in which the horizontal portion of the rod is held, and a transverse pivot extending through the carriage and the rod, said carriage having a plurality of wheels which are always in the vertical plane of said rod.

4. In a garage door construction, the combination of a track extending horizontally over the doorway, said track having a curved portion which extends from above the doorway to the adjacent side of the building, and having a straight portion extending in continuation of said curved portion, so that the entire track is formed by two straight portions disposed at an angle to each other and connected together by the curved portion, a sliding door provided with hangers having wheels which travel on said track, said hangers extending downwardly between the track and the inner surface of the building, a housing outside of said hangers to support the track inside of the building, and means including rollers having vertical axes on the hangers to engage the outer surface of the housing above the plane of the track to prevent the hangers from being forced off the track while traveling around the curved portion thereof.

5. In a sliding door structure, a track, door hangers having wheels to travel on said track, a rod depending from each hanger, each rod being bent to extend horizontally from the hanger and then downwardly to the door, a swivel bearing on the door for each rod, whereby each rod turns about a vertical axis relatively to the door, and means to maintain each rod in the vertical plane of its allotted hanger.

6. In a sliding door construction, a track having a curved portion to change the direction of travel of the door, hangers having portions which extend downwardly outside of the periphery of said curve to support the door, so that the track is between the axis of the curve and the depending portions of the hangers, a housing to support the track, and means including rollers having vertical axes on the hangers to engage the outer surface of the housing at the inner side of the curve above the plane of the track to prevent the hangers from being pushed off the track while traveling around said curved portion thereof.

7. In sliding door construction, the combination of a track, means for supporting said track, a wheeled hanger adapted to

travel on said track, an inverted L-shaped rod supported by said hanger, and a swivel bearing to support the door on the depending vertical portion of said rod, said hanger having a body formed with a lower portion, and the horizontal portion of said rod extending over the lower portion of this hanger body, in combination with a pivot to secure the horizontal portion of the rod to said hanger body.

8. A structure as specified in claim 7, said swivel bearing being disposed in the plane of the door and within the area thereof, so that the vertical axis of the swivel is in the plane of the door and close to the vertical edge thereof.

Signed by me at Sterling, Ill., this 12th day of April, 1918.

PETER FRANTZ.