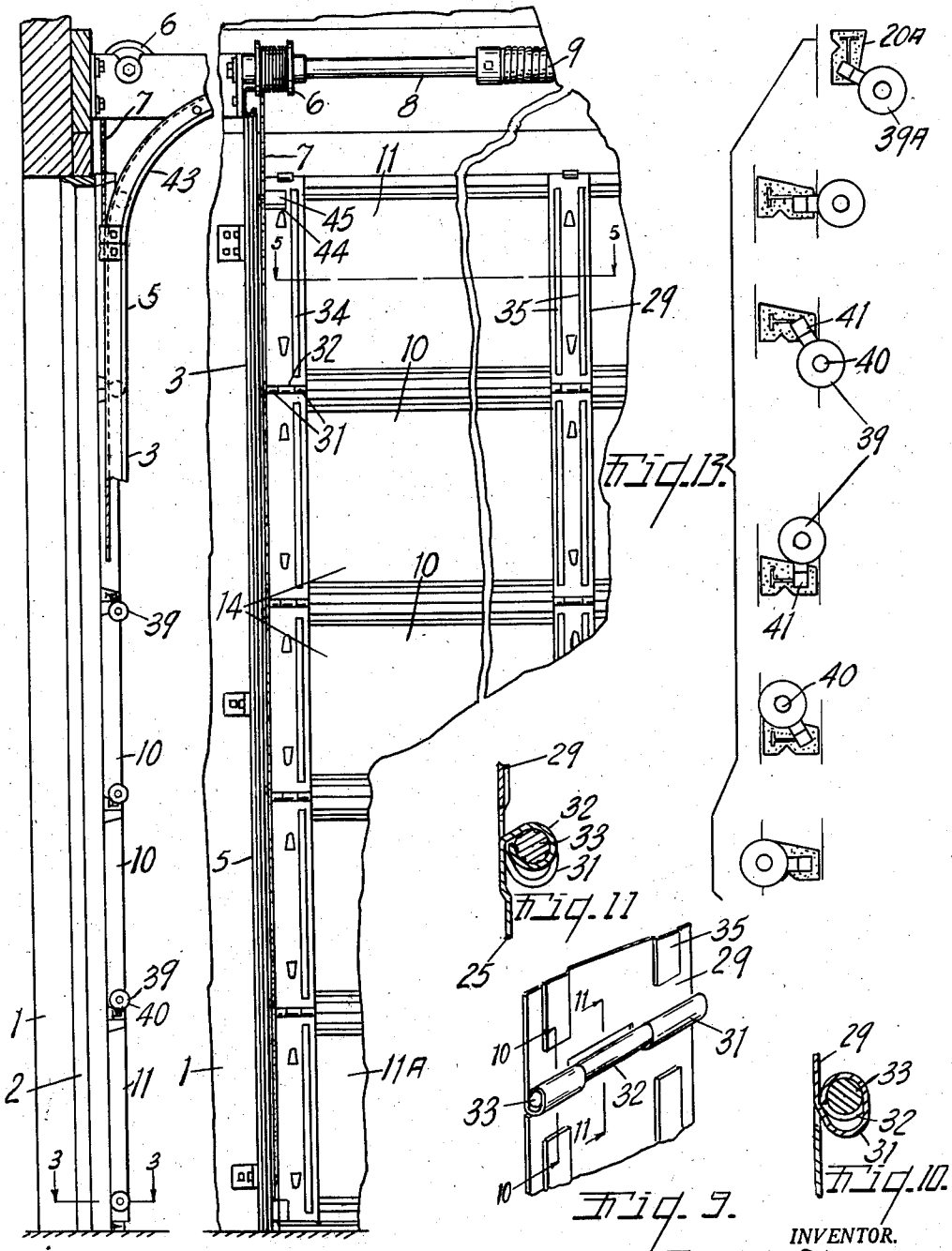
Feb. 3, 1959 E. L. STROUP 2,871,932

UPWARDLY ACTING DOORS HAVING TRACKS INCLINED RELATIVE TO THE DOOR FRAME

Filed July 18. 1957 3 Sheets-Sheet 1



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UPWARDLY ACTING DOORS HAVING TRACKS INCLINED RELATIVE TO THE DOOR FRAME

Filed July 18. 1957 3 Sheets-Sheet 2

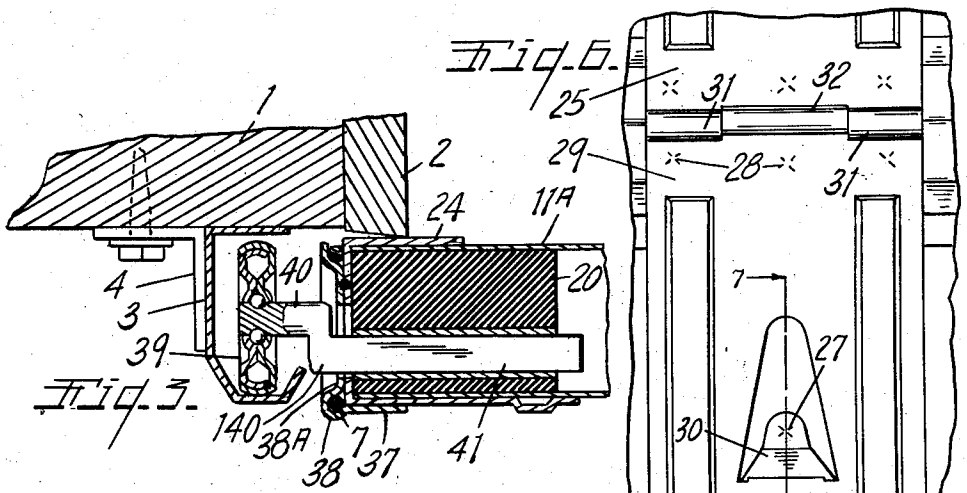


Fig. 3.

Fig. 6.

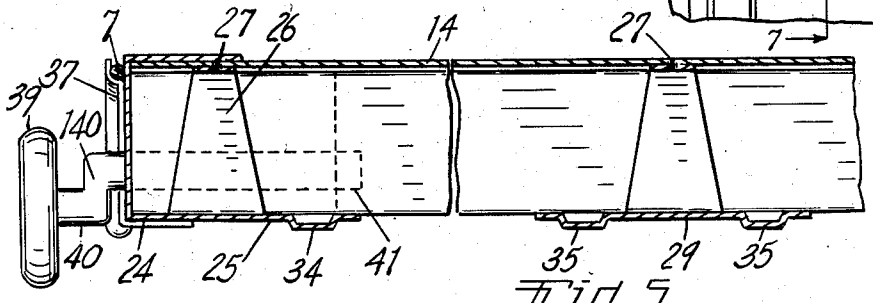


Fig. 5.

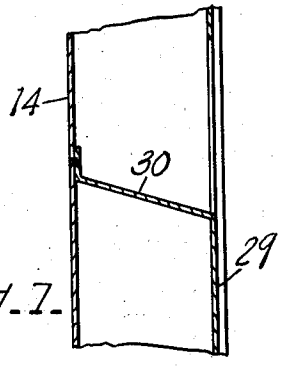


Fig. 7.

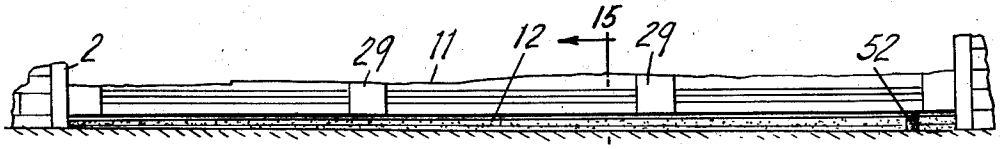


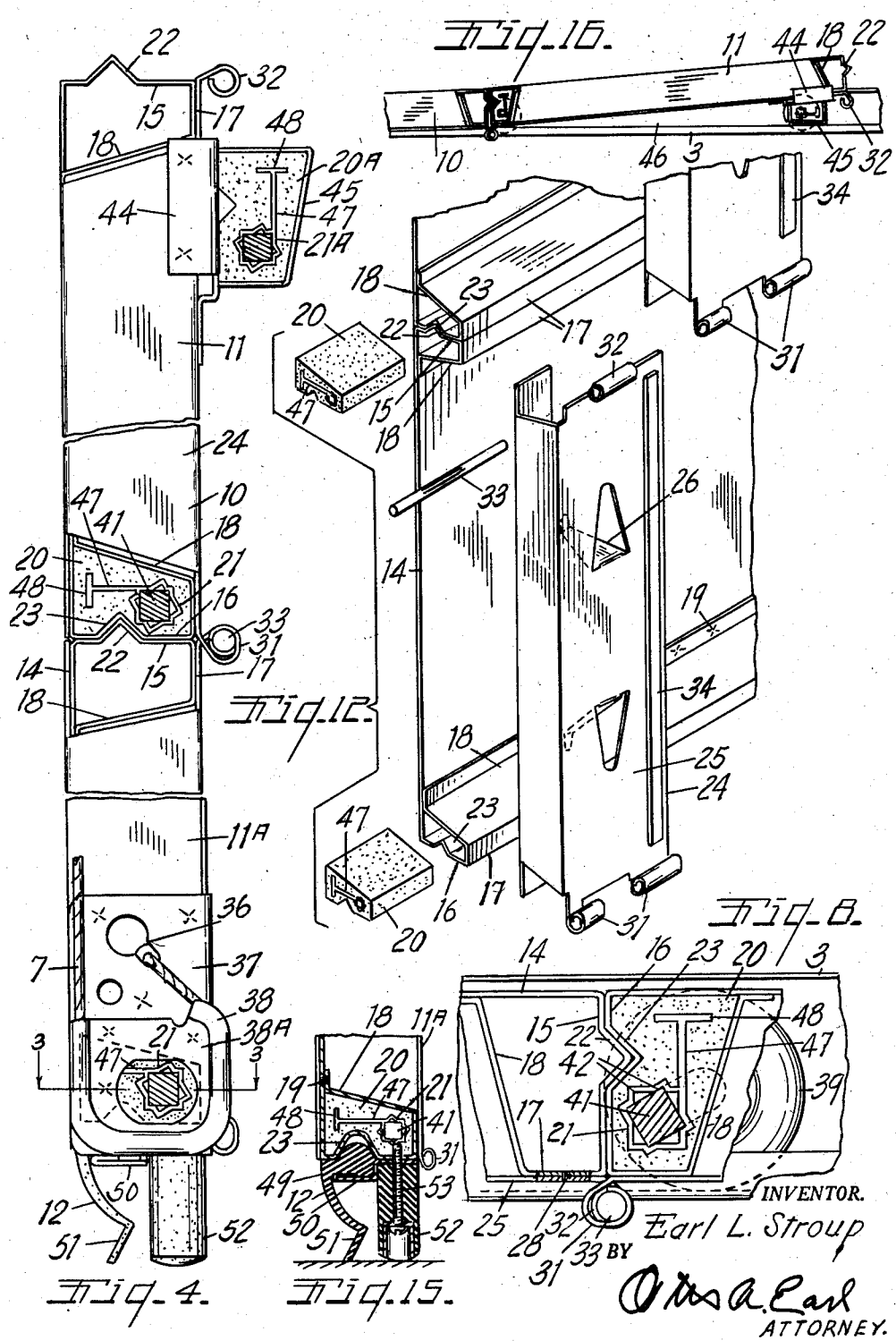
Fig. 14.

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UPWARDLY ACTING DOORS HAVING TRACKS INCLINED RELATIVE TO THE DOOR FRAME

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United States Patent Office 2,871,932 Patented Feb. 3, 1959

2,871,932

UPWARDLY ACTING DOORS HAVING TRACKS INCLINED RELATIVE TO THE DOOR FRAME

Earl L. Stroup, Hartford City, Ind., assignor to Overhead Door Corporation, Hartford City, Ind., a corporation of Indiana

Application July 18, 1957, Serial No. 672,612

19 Claims. (Cl. 160—40)

This invention relates to upwardly acting doors having tracks inclined relative to the door frame. Certain features of the invention relate to sectional doors not having tracks of that type.

The main objects of this invention are:

First, to provide a vertically acting sectional door assembly including tracks having vertical sections inclined inwardly relative to the door frame or jamb in which the door moves freely toward and from closed position and at the same time is effectively seated against the door jamb when in closed position.

Second, to provide a sectional door of this type in which the several sections are, or may be, substantial duplicates, the sections being provided with track engaging rollers provided with spindles having offset shanks and supports therefor which permit the spindle shanks to be engaged in a plurality of rotatably adjusted positions to support the rollers in compensating relation to the inclination of the tracks.

Third, to provide track engaging rollers having spindles provided with offset shanks and supports therefor provided with sockets which permits the engagement of the shanks therewith when presented thereto in a plurality of angularly adjusted positions.

Fourth, to provide a sectional door presenting a substantially smooth external surface and one which is formed of relatively few and economically fabricated parts, is light in weight and at the same time strong and rigid.

Fifth, to provide a sectional door in which the sections are hingedly connected, the hinge members being integral with structural elements of the door section.

Sixth, to provide a structure having these advantages which permits the rapid assembling of the door sections at the place of installation and the proper positioning of the rollers to compensate for inclination of the track, the sections being interchangeable with exception of the bottom section which is provided with a roller spindle support at the lower edge thereof and with a sill engaging seal member and means for attaching the lifting cable thereto.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims. A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary inside elevational view of a door assembly embodying my invention, certain parts being shown conventionally.

Fig. 2 is a fragmentary edge view of a door frame and seal, the parts being mainly conventionally illustrated.

Fig. 3 is an enlarged fragmentary view in horizontal section on a line corresponding to line 3—3 of Figs. 2 and 4.

Fig. 4 is an enlarged fragmentary vertical edge elevational view of the door with the supporting rollers and track cut away.

Fig. 5 is an enlarged fragmentary view in section on line 5—5 of Fig. 1.

Fig. 6 is an enlarged fragmentary inside view.

Fig. 7 is a fragmentary sectional view taken on a line corresponding to line 7—7 of Fig. 6.

Fig. 8 is a fragmentary enlarged edge elevational view of the joint between two sections of the door disposed horizontally as they would be when opened and supported on the horizontal upper reaches of the roller track.

Fig. 9 is a perspective view of the hinge connection between the sections of the door.

Fig. 10 is a fragmentary cross sectional view taken along the plane of the line 10—10 in Fig. 9.

Fig. 11 is a fragmentary cross sectional view taken along the plane of the line 11—11 in Fig. 9.

Fig. 12 is a fragmentary exploded perspective view of the elements of two adjacent sections of the door.

Fig. 13 is a diagrammatic view illustrating several possible adjustments of the track engaging rollers relative to the door sections.

Fig. 14 is a fragmentary outside elevational view of the bottom of the door in closed position.

Fig. 15 is a fragmentary cross sectional view taken along the plane of the line 15—15 in Fig. 14.

Fig. 16 is a fragmentary elevational view of one edge of the door in the position it will assume in full open position on the upper horizontal reach of the supporting tracks.

In the embodiment of my invention illustrated 1 represents a door frame and 2 the jamb thereof. The tracks 3 are of channel section being mounted on the door frame as by suitable brackets 4. The tracks include vertical sections 5 which are inclined inwardly relative to the door jamb. The winding drum 6 for the cable 7 is mounted on the shaft 8 provided with a torsion spring 9.

The sectional door of my invention comprises a plurality of sections designated generally by the numerals 10 and 11 and 11A which are duplicates, with the exception of the top and bottom sections 11 and 11A. The bottom section 11A is provided with a seal 12 mounted on the bottom edge thereof to coact with the floor 13. The door sections comprise the outer wall panels 14 desirably formed of sheet metal stock and having inturned upper edge portions 15 and inturned lower edge portions 16, these edge portions terminating at their inner edges in longitudinal flange-like rails 17, the inner edges of the rails being turned outwardly of the door to provide struts 18 which are fixedly secured to the panel 14, preferably by means of spot welds 19. In addition to providing effective braces and supporting means for the edge members, this arrangement serves to effectively brace or rigidify the door sections and also provide chambers in the lower corners of the sections for the resilient spindle supporting members 20 which are desirably of shock absorbing and sound deadening material, such as rubber or synthetic material having sufficient rigidity to support the spindle shank sockets 21 in their proper functioning relation. These spindle shank sockets are arranged in the same relation in all of the door sections.

The edge members 15 have longitudinally extending rib-like seal portions 22 offset from their upper edge members and coacting seal recess 23 in their lower edges, see Figs. 4 and 5. This ribbing also serves to substantially reinforce and stiffen the sections as well as to provide seals therefor.

The end stiles 24 are of channel section and embrace the ends of the sections and are fixedly secured thereto and constitute reinforcing members. The inner flanges or arms 25 of these stiles have portions 26 struck in-

wardly therefrom and constituting struts, the ends of which are fixedly secured to the wall panel as indicated at 27 in Figs. 5 and 6. The stile flange 25 is fixedly secured to the rails 17 as indicated at 28 in Figs. 6 and 8. The intermediate stile or stiles 29 are fixedly secured to the rails 17 and are provided with struts 30 corresponding to the struts 26. This arrangement permits the fabricating of the sections of the relatively light-weight stock and at the same time the sections are rigid.

The inner flanges of the end stiles 24 are provided at the lower end thereof with integral inwardly offset knuckles 31 and at their upper ends with inwardly offset knuckles 32 which coact with the pintles at the lower edge of the adjacent upper section, as is clearly shown in Figs. 4, 6, and 8–12. These hinge portions are connected by hinge pins 33. Reinforcing ribs 34 are pressed inwardly from the flanges 25 of the stiles. The intermediate stiles are provided with these same type reinforcing ribs 35 which further serve to rigidify or stiffen the sections. The cables 7 are attached to the lower corners of the lower section 11 by having their ends passed through a key hole slot 36 in a reinforcing bracket 37 welded over the end of the section (see Fig. 4). The cable is retained in a U-shaped channel formed by a flange 38 around the edge of a retaining plate 39A welded on the outside of the bracket. A lug (not illustrated) clamped on the end of the cable is passed through the enlarged portion of the key hole and engaged on the inner side of the narrow slot to prevent the cable from pulling out. The bracket 37 and retaining plate 38A have holes formed therein exposing the spindle socket 21.

The track engaging rollers 39 are rotatably mountde on the spindles 40 projecting at the end edges of the door sections, the rollers being desirably provided with ball bearings.

The spindle shanks 41 of the rollers are offset substantially from the spindles 40 on arms 140 and are desirably of rectangular section as is illustrated. The sockets 21 are shaped to receive the spindle shanks 41 in several relatively angular positions thereof, and thus support the rollers in various positions relative to the vertical plane of the door to compensate for the inclination of the track. Several of these positions of adjustment are illustrated in Fig. 8.

In this embodiment, the roller shanks 41 are of rectangular section and the sockets are provided with two sets of angular inwardly facing grooves 42 dimensioned and spaced to receive the shanks, the grooves of the sets being interspaced. This interspacing is, as is illustrated, non-symmetrical, that is, they are not spaced in 45° relation for the reason that the throw of the spindles resulting from the positioning of the shanks varies depending on the location of the arc through which the rollers swing relative to the plane of the door. This permits the spindle shank sockets being similarly positioned in all of the door sections and the ready adjustment of the rollers on the several sections to compensate for the inclination of the track so that when the door is closed it is urged against the jamb, but clears the jamb at the beginning of the opening movement thereof. Fig. 13 illustrates conventionally the positions of the several rollers of a 5 section door in closed position.

It will be noted from Fig. 2 that the upper end of the track 5 starts to curve inwardly of the door opening at 43 somewhat below the upper edges of the upper door section when the door is in closed position. This means that the upper guide roller 39A must be offset inwardly beyond the general line of the other guide rollers of the lower sections. For this purpose the upper end of the end stiles 24 of the upper section of the door are provided with brackets 44 having inwardly projecting straps 45 forming a housing for an upper resilient spindle support member 20A. Being positioned on the inner side of the door the upper spindle support members 20A and their spindle shank socket 21A are positioned substantially inwardly from the line through the lower spindle sockets. This permits the upper spindle shank and the guide roller supported thereby to be offset inwardly to engage the curved portion of the track when the door is closed.

It will be understood that the guide tracks extend inwardly from the door opening in generally horizontal overhead reaches. A portion of one of these reaches is indicated at 46 in Fig. 16. While the lower guide rollers 39 are positioned in generally alignment and thus support the door section in a plane along the overhead horizontal reaches 46 of the guide tracks, the inwardly offset character of the upper guide roller 39A causes the upper edge of the upper door section 11 to be raised upwardly above this general plane of the remainder of the door. In effect, the upper edge of the door folds slightly outwardly of the door when the door is in fully opened position. In order to accommodate this outward or upward folding of the upper door section the knuckles 31 on the lower ends of the stiles 25 are slightly distorted and oval shaped as appears most clearly in Figs. 10 and 11. The knuckles 32 are generally cylindrical and conformed to the shape of the hinge pins 33 but the oval shape of the knuckles 31 permits the upper hinge pins to move rearwardly or to the right as viewed in Fig. 16 to permit the outward or upward tilting of the upper section of the door. This oval shape of the knuckles 31 is required only on the upper door section but for the sake of uniformity and convenience in manufacture and assembly, all of the knuckles are formed in the same oval shape. The resulting lost motion or looseness in the several hinge connections does not interfere with the operation of the door because all sections of the door are urged by gravity against the lower edge of the door when the door is closed and during opening motion of the door there is no necessity for keeping the sections tightly connected.

Since the spindles 40 are offset on the arms 140 from the spindle shanks 41, the weight of the door transmitted through the arms and spindles to the rollers 39 creates a distinct twisting force on the spindle shanks 41 and in turn on the spindle shank sockets 21. In order to prevent the spindle shank sockets from twisting objectionably in the deformable socket support members 20 the spindle shank sockets are provided with laterally extending anchor plates 47 embedded in the resilient supporting members 20. The ends of the plates have flanges 48 that further resist twisting motion of the socket members and distribute the torsion loads on the socket members throughout the resilient blocks.

In order to effectively seal the lower edge of the door against the floor in the closed position of the door the lower seal 12 is secured along the lower edge of the door. As appears most clearly in Figs. 4 and 15 this seal strip 12 has an upper thickened edge 49 clamped in the V-shaped rib 23 in the bottom edge of the door by angled retaining strip 50 secured to the bottom of the door. The sealing strip 12 curves downwardly and inwardly of the door opening to a sharp bend 51 from where it extends outwardly in a short floor contacting strip. The thickness of the seal tapers downwardly throughout its length and it has been found that this cross sectional shape of the seal 12 results in the seal collapsing directly downwardly without lateral buckling as the door is closed That is, when the lower edge of the seal contacts the floor it remains stationary and any further lowering of the door is accommodated by flexing at the bend 51. In order to permit the door to coact with inclined floors and prevent crushing and tearing of the seal 12 where the floor is highest, the lower door section 11A may be provided with a rod-like rubber bumper 52 appearing in Figs. 4, 14 and 15. The bumper 52 is secured in place by a screw 53 passed upwardly into the lower edge of the door. As appears most clearly in Fig. 14 the bumper will engage the floor 54 at the low side of the door opening and thus support the lower edge of the door, which

remains level, sufficiently above the high portion of the floor to prevent crushing and tearing of the seal 12.

I have illustrated and described my invention in a highly practical embodiment thereof. I have not attempted to illustrate or describe other embodiments or adaptations of my invention as it is believed that this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described the invention, what is claimed as new and is desired to be secured by Letters Patent is:

1. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame and curving inwardly at their tops, a door comprising a plurality of horizontal articulated sections, track engaging rollers provided with spindles having laterally offset shanks of rectangular section, resilient supports for said shanks disposed within the door sections at the ends thereof and adjacent their lower edges, the upper door section having resilient supports projecting inwardly adjacent its upper edge, spindle sockets disposed in and supported by said resilient supports, laterally projecting anchor plates on said sockets imbedded in said supports, stiles of the door sections having spindle shank openings therein aligned with said sockets, said sockets having angularly offset sets of inwardly facing longitudinal spindle shank receiving grooves therein of angled section adapted to fittingly receive and non-rotatably support the spindle shanks, the grooves of the sets being interspaced thereby permitting supporting engagement of the spindle shanks therewith to variably position the rollers relative to the plane of the door and thereby compensate for the inclination of the track, the upper rollers engaging the inwardly curved tops of said rails in the closed position of the door and having their spindle shanks received in said inwardly projecting supports.

2. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame, a door comprising a plurality of horizontal articulated sections, track engaging rollers provided with spindles having laterally offset shanks of rectangular section, resilient supports for said shanks disposed within the door sections at the ends thereof and adjacent their lower edges, the upper door section also having resilient supports adjacent its upper edge, spindle sockets disposed in and supported by said resilient supports, laterally projecting anchor plates on said sockets imbedded in said supports, the end stiles of the door sections having spindle shank openings therein aligned with said sockets, said sockets having sets of inwardly facing longitudinal spindle shank receiving grooves therein of angled section adapted to fittingly receive and non-rotatably support the spindle shanks, the grooves of the sets being interspaced thereby permitting supporting engagement of the spindle shanks therewith to variably position the rollers relative to the plane of the door and thereby compensate for the inclination of the track.

3. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame and curving inwardly at their tops, a door comprising a plurality of horizontal articulated sections, track engaging rollers provided with spindles having laterally offset shanks of rectangular section, resilient supports for said shanks disposed within the door sections at the ends thereof and adjacent their lower edges, the upper door section also having resilient supports projecting inwardly adjacent its upper edge, spindle sockets disposed in and supported by said resilient supports, said sockets having sets of inwardly facing longitudinal spindle shank receiving grooves therein of angled section adapted to fittingly receive and non-rotatably support the spindle shanks, the grooves of the sets being interspaced thereby permitting supporting engagement of the spindle shanks therewith to variably position the rollers relative to the plane of the door and thereby compensate for the inclination of the track, the upper rollers engaging the inwardly curved tops of said rails in the closed position of the door and having their spindle shanks received in said inwardly projecting supports.

4. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame, a door comprising a plurality of horizontal articulated sections, track engaging rollers provided with spindles having laterally offset shanks of noncircular section, supports for said shanks disposed within the door sections at the ends thereof and adjacent their lower edges, the top door section also having supports adjacent its upper edge, spindle sockets disposed in and supported by said supports, said sockets having inwardly facing longitudinal spindle shank receiving recesses adapted to receive and non-rotatably support the spindle shanks when presented endwise thereto in a plurality of angularly varied positions to variably support the rollers and thereby compensate for the inclination of the track relative to the door frame.

5. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame, a door comprising a plurality of horizontal articulated sections, track engaging rollers provided with spindles having laterally offset shanks of non-circular section, resilient supports for said shanks disposed within the door sections at the ends thereof and adjacent their lower edges, spindle sockets disposed in and supported by said supports, said sockets having inwardly facing longitudinal spindle shank receiving recesses adapted to receive and non-rotatably support the spindle shanks when presented endwise thereto in a plurality of angularly varied positions to variably support the rollers and thereby compensate for the inclination of the track relative to the door frame, and laterally projecting anchor plates on said sockets imbedded in said resilient supports.

6. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame, a door comprising a plurality of horizontal articulated sections, track engaging rollers provided with similar spindle shafts concentric with the rollers and having laterally offset shanks of non-circular section, spindle sockets mounted on said sections and having inwardly facing longitudinal spindle shank receiving recesses cross-sectionally conformed to receive and non-rotatably support the spindle shanks when presented endwise thereto in a plurality of angularly varied positions and thereby variably support the rollers relative to the vertical plane of the door frame and thereby compensate for the inclination of the track relative to the door frame.

7. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame, a door comprising a plurality of horizontally articulated sections, track engaging rollers provided with similar spindle shafts concentric with the rollers and having laterally offset shanks of non-circular section, and supports for said shanks mounted on the door sections and provided with spindle sockets adapted to receive said spindle shanks and cross-sectionally conformed to non-rotatably support the shanks when presented thereto in a plurality of angularly varied positions and thereby support the track engaging rollers to compensate for the inclination of the track relative to the door frame.

8. In an upwardly acting door assembly including a door frame and tracks having upright sections inclined inwardly relative to the door frame, a door comprising a plurality of horizontally articulated sections, track engaging rollers provided with similar spindle shafts concentric with the rollers and having laterally offset shanks of non-circular section, supports for said shanks mounted on the door sections and adapted to receive said spindle shanks and non-rotatably support the spindles with said

shanks presented thereto in a plurality of angularly varied positions and thereby selectively position the track engaging rollers to compensate for the spacing of the tracks from the door frame at the position of the rollers when the door is in closed position.

9. A door or the like compriisng a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, an intermediate stile extending between and fixedly secured to said edge members, the inner flanges of said end stiles and said intermediate stiles having struts struck inwardly therefrom and fixedly secured to the wall panels, the lower ends of said stiles being conformed to provide laterally spaced depending knuckles, the upper ends of the stiles being conformed to provide central knuckles interfitting between the hinge knuckles of the superimposed door section, hinge pins connecting said interfitting knuckles, said spaced knuckles being flattened and elongated in cross section vertically of the door permitting outward tilting of the upper section when the sections are in assembled relation, guide rollers mounted on the ends of said sections adjacent their lower edges and aligned in lines inclined inwardly of the plane of the door, and other guide rollers mounted at the ends of the upper portion of the upper section and positioned inwardly of said lines of said rollers.

10. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, an intermediate stile extending between and fixedly secured to said edge members, the lower ends of said stiles being conformed to provide spaced hinge knuckles, the upper ends of the stiles being conformed to provide central knuckles interfitting between said spaced knuckles, hinge pins connecting said interfitting knuckles, the stiles having struts struck outwardly therefrom and secured to the inner side of said panels.

11. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels to form hollow beams along the edges of the sections, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the ends of said stiles being notched to expose the hollow ends of said beams, an intermediate stile extending between and fixedly secured to said edge members, the inner flanges of said end stiles and said intermediate stiles having struts struck outwardly therefrom and fixedly secured to the front panels, the lower ends of said stiles being conformed to provide hinge knuckles, the upper ends of the stiles being conformed to provide other knuckles interfitting with the knuckles on the superimposed stiles, hinge pins connecting said interfitting knuckles, resilient spindle support blocks received in the hollow ends of beams at the lower edges of said sections and having spindle sockets non-rotatably mounted therein, spindle shanks non-rotatably received in said sockets in selectively angularly adjusted positions, spindles on the outer ends of said shanks and eccentric to the axes of the shanks, and rollers on said spindles.

12. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the lower ends of said stiles being conformed to provide hinge knuckles, the upper ends of the stiles being conformed to provide other knuckles interfitting with the knuckles on superimposed sections, stiles having struts struck outwardly therefrom and secured to the insides of the panels, and hinge pins connecting the interfitting knuckles.

13. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels to form longitudinal beams of hollow section, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the ends of said stiles being notched to expose the hollow ends of said beams, the inner flanges of said stiles having struts struck outwardly therefrom and fixedly secured to the front panels, the ends of said stiles being conformed to provide hinge knuckles interfitting between the sections of the door, hinge pins connecting said interfitting knuckles, resilient spindle support blocks received in the hollow ends of said beams and having spindle sockets therein, and spindles having rollers thereon received in said sockets.

14. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels to form beams of hollow section along the edges of the panels, one of said edge members having a longitudinal seal rib and the other a longitudinal seal groove adapted to coact with the rib of an adjacent section, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the lower ends of said stiles being notched to expose the hollow ends of the lower beams, an intermediate stile extending between and fixedly secured to said edge members, the inner flanges of said end stiles and said intermediate stiles having struts struck inwardly therefrom and fixedly secured to the front panels, section hinges on said stiles, resilient spindle support blocks received in the ends of said lower beams and having non-circular sockets therein, identical spindles having shanks received in differently angularly rotated positions in said sockets and non-rotatably engaged therein, said spindles being eccentric to their shanks, brackets secured to the inside of the upper ends of the end stiles on the upper door section and having resilient blocks similar to said first blocks mounted therein, other spindles having offset shanks non-rotatably received in said last blocks, and rollers on said spindles.

15. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels to form beams of hollow section along the edges of the panels, one of said edge members having a longitudinal seal rib and the other a longitudinal seal groove adapted to coact with the rib of an adjacent section, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the lower ends of said stiles being notched to expose the hollow ends of the lower beams, resilient spindles support blocks received in the ends of said lower beams and having non-circular sockets therein, identical spindles having shanks received in differently

angularly rotated positions in said sockets and nonrotatably engaged therein, said spindles being eccentric to their shanks, brackets secured to the inside of the upper ends of the stiles on the upper door section and having resilient blocks mounted therein, other spindles having offset shanks non-rotatably received in said last blocks, and rollers on said spindles.

16. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels to form beams of hollow section along the edges of the sections, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the lower ends of said stiles being notched to expose the hollow ends of the lower beams, interfitting hinge knuckles formed on the ends of the inner flanges of said stiles, hinge pins connecting the interfitting knuckles on the sections of said door, part of said knuckles being flattened and elongated in cross section vertically of the door, resilient spindle support blocks received in the ends of said lower beams and having non-circular sockets therein, identical spindles having shanks received in different angularly rotated positions in said sockets and non-rotatably engaged therein, said spindles being eccentric to their shanks, brackets secured to the upper ends of the stiles on the upper section and having resilient blocks identical to said first blocks mounted therein, other spindles identical to said first spindles having their shanks non-rotatably received in said last blocks, and rollers on said spindles.

17. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels to form beams of hollow section along the edges of the sections, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the lower ends of said stiles being notched to expose the hollow ends of the lower beams, interfitting hinge knuckles formed on the ends of the inner flanges of said stiles, hinge pins connecting the interfitting knuckles on the sections of said door, part of said knuckles being flattened and elongated in cross section vertically of the door, resilient spindle support blocks received in the ends of said lower beams and having non-circular sockets therein, identical spindles having shanks received in different angularly rotated positions in said sockets and nonrotatably engaged therein, said spindles being eccentric to their shanks, brackets secured to the upper ends of the stiles on the upper section and having resilient blocks mounted therein, other spindles having their shanks non-rotatably received in said last blocks, and rollers on said spindles.

18. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, an intermediate stile extending between and fixedly secured to said edge members, the inner flanges of said end stiles and said intermediate stiles having struts struck inwardly therefrom and fixedly secured to the front panels, and section hinges on said stiles.

19. A door or the like comprising a plurality of sections, the sections comprising wall panels formed of sheet stock and having integral inwardly projecting top and bottom longitudinal edge members having flanges on their inner edges terminating in struts fixedly secured to the inner sides of the panels, the top edge member having a longitudinal seal rib and the bottom a longitudinal seal groove adapted to coact with the rib of an adjacent section, end stiles of channel section embracing the end edges of said wall panels and fixedly secured thereto and to said edge members, the inner flanges of said end stiles having struts struck inwardly therefrom and fixedly secured to the front panels, section hinges on said stiles, a resilient seal strip secured along the bottom of the bottom section, said strip having a thickened upper portion clamped in the seal groove in said bottom section with an inwardly inclined strip depending therebelow and terminating in an outwardly inclined strip.

References Cited in the file of this patent

UNITED STATES PATENTS

1,590,441	Piggot	June 29, 1926
2,015,478	Kiesling	Sept. 24, 1935
2,171,194	Smith	Aug. 29, 1939
2,244,042	Barlow	June 3, 1941
2,257,513	Pilcher	Sept. 30, 1941
2,557,753	Mitchell	June 19, 1951
2,575,255	Blodgett	Nov. 13, 1951