

UNITED STATES PATENT OFFICE.

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DOOR-HANGER STRUCTURE.

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To all whom it may concern:

Be it known that LON LIGHT and NORMAN E. WILKINS, citizens of the United States, residents of Cedar Rapids, in the county of Linn and State of Iowa, have invented new and useful Improvements in a Door-Hanger Structure, of which the following is a specification.

This invention relates to door hangers and door hanger tracks for mounting sliding doors for barns, railway cars, and other like structures.

The principal object is to provide a door hanger and track that co-operate with each other to provide an easy moving door, and, in the event the door should be tilted through inadvertence, or by reason of a severe push or pull in an upward direction, will not bind or jamb and prevent the movement of the hanger in the track. Another object of this invention is to provide a door hanger wherein the anti-friction principle with balls or rollers is utilized, and which requires little or no attention, and when operated will generate little or not friction. Other objects consist in providing a door hanger and track that is simple in construction, will not readily get out of order, is easily assembled in coactive relation with each other, and which is simple and economical to manufacture so that it may be sold to the user for a moderate price. These objects are accomplished in substantially the manner hereinafter fully described, and as more particularly pointed out in the claims.

Reference will now be had to the accompanying drawings that form a part of this specification and which illustrate a typical or preferred embodiment of the invention.

Fig. 1 is a vertical end elevation of a door showing the hanger in position upon the upper portion thereof and coacting with the track which is in transverse section.

Fig. 2 is a vertical section on line 2—2, Fig. 1, looking in the direction of the arrows.

Referring first to Fig. 1 it will be seen the track preferably comprises a tube 5 having a longitudinally extending slot 6 in its lower portion or segment and which is conveniently hung adjacent the door opening by means of the longitudinally extending strip 7 of metal that is welded or otherwise secured at its lower edge portion to the longitudinal side of tube 5 and acts as a carrier for the tubular track. This strip 7 adjacent its

upper edge is bent so as to lie flush with the wall of the barn, railway car, or other structure, upon which the device is mounted. A second longitudinal strip 8 also of metal has its upper edge placed parallel with and welded or otherwise secured to the upper longitudinal portion of strip 7 above the bend in the latter, and at a point below its upper edge is provided with a bend 9 so that the body portion of the strip extends outwardly away from strip 7 to engagement with the outer segmental edge of track tube 5 so that it acts as a brace member for the carrier member hereinbefore mentioned. This strip 8 extends partly around tube 5, as seen at 10 in the drawings, and is electrically or otherwise welded to the outer surface of the tube, and the lower portion of strip 8 extends tangentially away from the tube, as shown in Fig. 1 of the drawings, to provide a skirt 11 that acts as a guard to prevent dust, rain, snow and other natural elements entering under the track, and between the same and the door when the latter is closed. The track structure thus far described is secured by means of bolts 12 or otherwise to the wall of the structure above the doorway in the usual manner of sliding door tracks.

The hanger or carrier for the door preferably comprises a flat rectangular plate 13 that is secured to the door preferably by means of bolts 14, and is of a thickness slightly less than the width of slot 6 in the track so that the same will readily move therein when the door is being opened or closed. The upper portion of plate 13, above the upper edge of the door and within the tubular track is provided with a widened portion or embossment 15 the upper surface of which is concaved to provide a seat 16 for an anti-friction ball or roller 17 that is mounted therein; the seat preferably conforming in concavity with the surface or spherical shape of ball 17. The embossment is preferably of segmental or moon shape along its upper edges when viewed from the side, as seen at 18 in Fig. 2 of the drawings, so as to permit ball 17 to engage the sides of the tubular track in the event the door is swung outwardly or laterally of its normal line of travel.

The portion of plate 13 above the upper edge of the door is provided with a recess or opening 19 preferably of rectangular outline and permits ready access to the ball seat

above the same, and is of sufficient dimensions to allow the passage of a ball there-through to the seat. Above the recess or aperture 19 the plate is widened or embossed, 5 as at 20, in a reverse manner from embossment 15 and its under surface, facing recess 19, is concaved to provide a seat similar to seat 16 for the anti-friction ball or roller 21 that is mounted therein. This ball 21, 10 when the hanger is in position within the tubular track, will roll upon the inner surface of the track at the lower segment thereof at each side of slot 6 therein.

The pockets or seats for the ball provide 15 means for retaining a quantity of lubricant, and in the event the door is tilted or raised at one end while being opened or closed, ball 17 engages the upper segment of the track, as seen in dotted lines in Fig. 2, and pre- 20 vents the jamming or non-movement of the door, and the seats are of such dimensions as to prevent accidental displacement of the balls. It will be understood two or more of the hangers with their ball bearings are em- 25 ployed upon each door and the same are assembled with the tubular track by inserting one vertical edge of hanger plate 13 in slot 6 of the track and inserting ball 21 in recess 19 until it is seated in position in embossment 20 and the hanger is then moved in the track until the second ball 17 can be 30 placed in its respective pocket. The hanger is then slid into the track in slot 6 until the next hanger reaches the adjacent end of the track whereupon the assembly of the balls is made in this second hanger in the man- 35 ner previously described.

It is obvious from the foregoing that an effective ball bearing hanger is provided 40 which not only permits the door to be moved more easily, but also prevents jamming of the door when one end is raised, as is frequently the case, and the structure is formed in a very simple manner and may be quickly 45 and easily assembled.

What is claimed is:

1. A door hanger structure comprising a tubular track having a longitudinal slot in its lower portion, a hanger plate movable

longitudinally in said slot, oppositely facing 50 pockets in the upper portion of said plate and positioned within the track, and anti-friction balls mounted in said pockets, one of said pockets adapted to support the door 55 through its respective ball upon the lower portion of the track.

2. A door hanger comprising a suitable plate, an upwardly facing pocket in the upper portion of said plate, a downwardly fac- 60 ing pocket adjacent the first mentioned pocket, and anti-friction means disposed in said pockets for engagement with the track with which the structure co-operates.

3. A door hanger comprising a suitable plate, an embossment at one end of the up- 65 per portion of said plate having a concaved seat that faces upwardly, an embossment at the opposite end of the upper portion of said plate having a concaved seat that faces 70 downwardly; said plate provided with a recess below said last mentioned seat, and anti-friction members mounted in said seats, one of which members is inserted in its seat through said recess.

4. A door hanger comprising a rectangu- 75 lar plate having a recess adjacent one of its corners, a concave seat facing downwardly in the upper portion of said recess, a concave seat at the opposite corner of said plate and facing upwardly, and anti-friction 80 members disposed in said seats.

5. A door hanger comprising a suitable plate having an aperture therein, a concave seat facing downwardly into said aperture, 85 an anti-friction member positioned in said seat and maintained therein by the weight of the door to which said plate is secured, and an anti-friction member supported in an oppositely facing seat in said plate.

Signed at Cedar Rapids, county of Linn 90 and State of Iowa, this 19th day of July, 1922.

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Witnesses:

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