

No. 772,221.

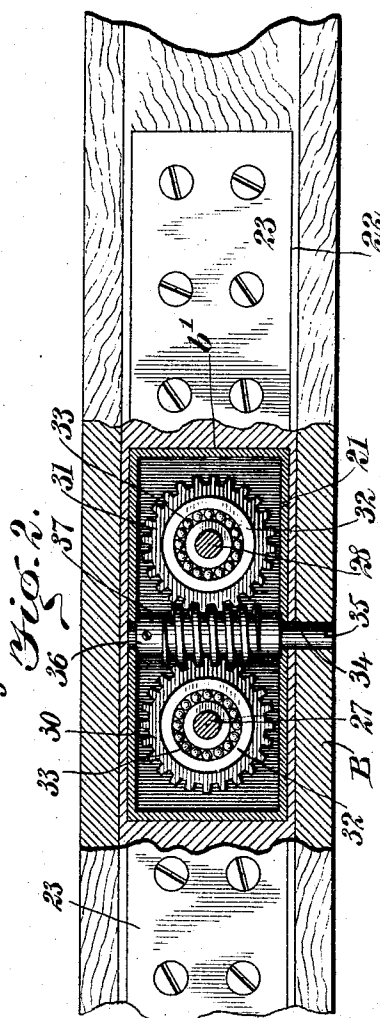
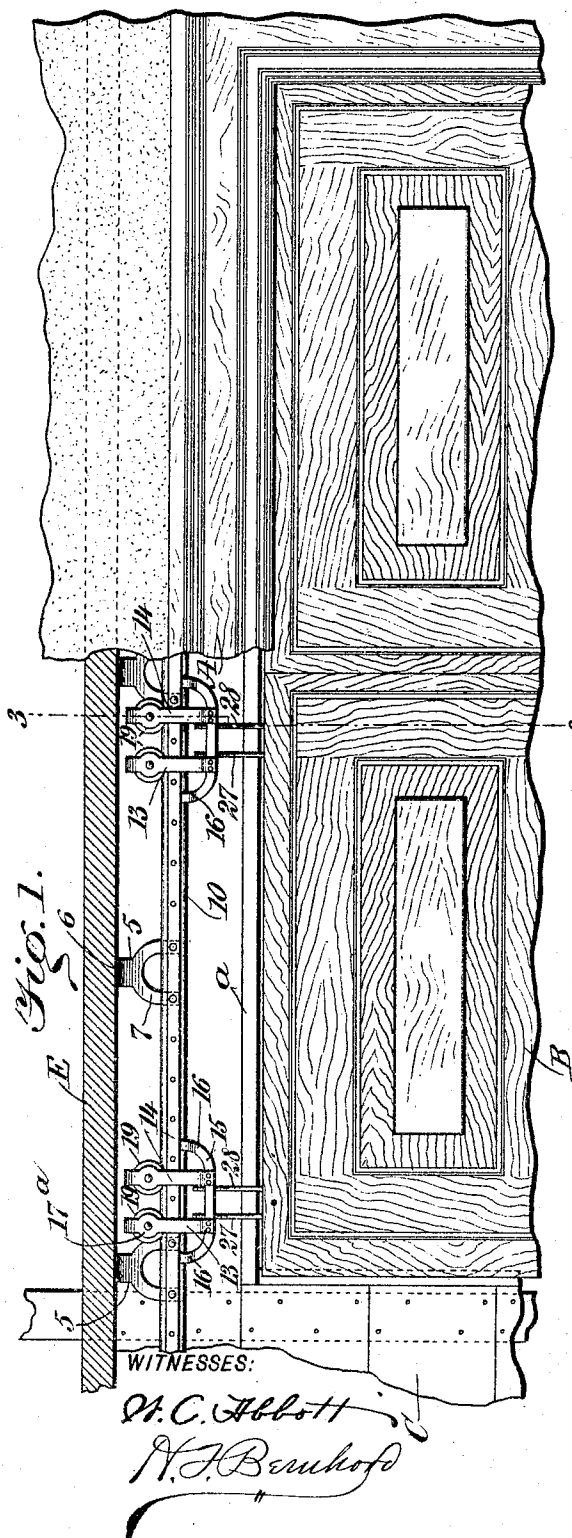
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J. CRAMER.
DOOR HANGER.

APPLICATION FILED JULY 29, 1903. RENEWED SEPT. 16, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



UNITED STATES PATENT OFFICE.

JOHN CRAMER, OF LIMA, OHIO, ASSIGNOR TO HIMSELF AND THOMAS B. JOHNS, OF LIMA, OHIO.

DOOR-HANGER.

SPECIFICATION forming part of Letters Patent No. 772,221, dated October 11, 1904.

Application filed July 29, 1903. Renewed September 16, 1904. Serial No. 224,681. (No model.)

To all whom it may concern:

Be it known that I, JOHN CRAMER, a citizen of the United States, and a resident of Lima, in the county of Allen and State of Ohio, have
 5 invented a new and Improved Door-Hanger, of which the following is a full, clear, and exact description.

This invention relates to improvements in door-hangers especially designed for use on
 10 inside doors; and among other objects my invention seeks to provide an improved construction wherein the door may be easily adjusted without tearing away the woodwork, the parts are not liable to get out of order when
 15 properly installed and adjusted, the wheels run truly and practically noiselessly on the track, the wheels cannot jump the track by a sudden jolt, sidewise movement of the door is minimized, it is not necessary to leave a wide space
 20 or opening in the head-jamb for the travel of the hanger, and the parts are simple, durable, and easily placed in position.

Further objects and advantages of the invention will appear in the course of the sub-
 25 joined description and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly in section, showing a pair of inside doors, one of which is suspended by devices embodying my invention. Fig. 2 is a sectional plan view, on
 35 an enlarged scale, the plane of the section being indicated by the dotted line 2 2 of Fig. 4. Fig. 3 is an enlarged vertical transverse section taken in the plane of the dotted line 3 3 of Fig. 1. Fig. 4 is an enlarged sectional elevation through certain parts of the improved
 40 hanger. Fig. 5 is a sectional elevation on the line 5 5 of Fig. 4, the arm and the shaft thereof being in elevation. Fig. 6 is a detail enlarged view of one of the plurality of track-carriers.

A indicates the head-jambs of an ordinary
 45 door-frame, said jambs being spaced to provide a slot *a* between their contiguous edges, said slot being very narrow and extending the

full length of the door-opening. To the head-jambs are secured the head-moldings *b*, between which is arranged to travel the upper
 50 edge of a suspended door B. The wall C around the door-opening is constructed in the usual way to provide a chamber or space D above the head-jambs A for the accommoda-
 55 tion of a track and hanger in accordance with my invention. In the upper part of this chamber D is secured a fixed bar or rail E, the same being adapted to support a plurality of track-
 60 carriers 5. These track-carriers are provided at their upper ends with angular flanges 6, adapted to be bolted or otherwise fastened to the under surface of the supporting rail or
 65 bar E, said track-carriers being spaced at proper intervals along the rail E and depending therefrom within the chamber D.

Each track-carrier is preferably cast in a single piece of metal and in the shape shown
 70 more particularly by Figs. 1 and 6, from which it will appear that the track-carrier is bifurcated or forked to produce the legs 7,
 75 having an inward bend 8 and terminating in foot-flanges 9. The series of carriers 5 support a horizontal track-rail 10, the same consisting of a length of wood of a suitable nature,
 80 such as hard maple. The upper and lower edges of this longitudinal track-rail are rounded or curved, as indicated at 11, and said wooden rail is reinforced or strengthened
 85 by the employment of metallic plates 12, the latter being applied to the respective faces of the wooden rail and lying between the upper and lower curved edges 11 thereof. The reinforcement-plates 12 extend longitudinally
 90 of the wooden rail, and they are fastened thereto by any suitable means, such as by screws or bolts.

The foot-flanges 9 of the series of carriers 5 are applied laterally against one side of the carrier-rail or one of the reinforcement-strips
 95 12, and these flanges of the carriers are secured firmly to the carrier-rail by bolts or other fasteners, whereby the track-rail is supported securely in place by the series of carriers to occupy a substantially central position within the chamber D and to extend

longitudinally thereof for the desired length, said rail serving as a support for the doors B in the opened and closed positions thereof.

Each door is supported from the track-rail 5 by a plurality of hangers, two of which are shown in connection with the door of Fig. 1. Each hanger of the series contemplates the employment of a wheeled frame adapted to travel on the track and adjustable suspension devices connected with said wheeled frame and with the door, which is to be suspended therefrom. The wheeled frame of each hanger consists of a pair of vertical yokes 13 14 and a guard member 15, the latter being arranged in a horizontal position 15 below the track-rail and the lower ends of the yokes 13 14 being fastened rigidly to said guard member, as shown more clearly by Figs. 1 and 3. The yokes 13 14 are disposed 20 at one side of the track-rail 10, so the upper ends of the yokes will overhang said rail. The guard member 15, which is disposed below the track-rail, has its end portions bent or curved upwardly at 16, the same being 25 provided at their upper ends with grooves 17, arranged to snugly receive the lower rounded edge of the track-rail 10. From this description it will be seen that the yokes and the guard member are fastened securely to 30 form a hanger-frame, and this guard member has its end portions fitted to have underrunning engagement with the track-rail in a way to minimize swaying of the hanger in a lateral direction and to limit the upward movement of the hanger-frame with relation to the track-rail, thus preventing the wheels of the hanger from becoming displaced on the upper edge of the rail 10.

The upper curved ends of the hanger-yokes 40 13 14 are enlarged or expanded, as indicated at 17^a, for the reception of transverse arbors or spindles 18, on which are adapted to travel the grooved wheels 19. These grooved wheels fit snugly to the upper curved edge of the track-rail 10, and they lie between the expanded portions 17^a of the hanger-yokes, thus making provision for the employment of ball-bearings 20 between the lateral faces of the wheels 19 and the expanded portions 17^a of 45 the hanger-yokes, whereby the side friction between the wheels and the hanger-framework is minimized.

The upper edge of the door B is provided with a cavity or chamber *b'* and with a recess 55 *b''*. In the cavity or chamber *b'* is arranged a gear casing or housing 21, having a plate or flange 22, arranged to partly occupy the recess *b''*. Over this flanged edge of the gear-casing 21 is applied a metallic hanger-plate 60 23, the latter being secured rigidly with the gear-casing to the top edge of the door B by screws or any other suitable fasteners.

The guard member 15 of the wheeled hanger-frame is provided at points between its up-

turned ends 16 with female-threaded openings 65 24 25, one of the openings being provided with a right-hand thread and the other with a left-hand thread. The hanger-plate 23 is provided with openings 26, which are in alinement vertically with the openings 24 25, and in these 70 openings are arranged the spindles 27 28, said spindles passing loosely through the openings 26 of the hanger-plate 23 and having threaded engagement with the suspended guard member 15 of the hanger-frame. One of the spin- 75 dles is provided with a right-hand thread for a part of its length, while the other spindle has a left-hand thread for a part of its length. The guard member 15 of the wheeled hanger-frame is provided with two holes, which are 80 respectively formed with right-hand threads and left-hand threads, and into these holes are screwed the respective spindles 27 28. These spindles 27 28 are provided with heads 29 at 85 their lower ends, said lower portions of the spindles being arranged within the gear-casing 21, as shown by Figs. 4 and 5. The spindles are provided with worm-gears 30 31, which are made fast therewith at points directly above the heads 29, and these worm- 90 gears are provided with extended hubs 32, having ball-races for the accommodation of bearing-balls 33, the latter being disposed for engagement with the under face of the fixed hanger-plate 23. 95

34 designates an adjusting-arbor which is arranged in a horizontal position between the two spindles 27 28, one end portion of said arbor 34 being journaled in a side of the gear-housing 21, as shown by Figs. 2 and 5, while 100 the other end of said adjusting-arbor is extended through the gear-casing 21 and to a point flush with the door B on one side thereof. The flush end of this adjusting-arbor is provided with a nick or slot 35, adapted to receive 105 a screw-driver or other implement, whereby the arbor may be conveniently turned without tearing away any of the parts of the door. This arbor carries a worm-sleeve 36, which is provided with a worm 37, the latter having 110 intermeshing engagement with the worm-gears 30 31 on the spindles 27 28, said worm 37 being disposed between and meshing equally with the worm-gears.

The weight of the door is borne by the 115 pairs of spindles 27 28 of the wheeled hangers, and the spindles of each pair have right and left threaded engagement with the wheeled frame and ball-bearing engagement with the hanger-plate 23, which is fixed to the top edge 120 of the door. The employment of the worm-gearing and the threaded engagement of the spindles with the hanger-frame are advantageous in this particular relation, because the parts act against one another, and they 125 are prevented from turning out of position accidentally on the movement of the door, said worm-gearing and the threaded engage-

ment of the several parts tending to lock them in their operative positions, so that they will not turn accidentally.

If it is desired to raise or lower the door, the operator turns the arbor 34 in one direction or the other for the purpose of turning the worm, which imparts movement to the worm-gears 30 31 and to the suspension-spindles 27 28, the latter being screwed into the guard member 15 of the wheeled frame. The several parts comprising my improved door-hanger are locked, so that they will maintain the positions in which they are adjusted so long as the walls of the building or the parts or the door do not become displaced; but if the wall or the door gets out of plumb through settling of the structure the operator is able to easily and quickly restore the door to a plumb condition by turning the adjusting-arbor 34, access to which can easily be obtained because it is flush with the door.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a door-hanger, the combination with a wheeled frame and a door-fixture, of suspension-spindles provided with threads of opposite hand and screwed individually in said wheeled frame, means for connecting said suspension-spindles with a door, worm-gears fixed individually to said spindles, and an interposed worm meshing with both gears and operable to lock the spindles against rotation and serving as a means for simultaneously rotating the spindles in opposite directions.

2. In a door-hanger, the combination with a traveling frame, of a door-fixture, spindles having threads of opposite hand and engag-

ing operatively with the frame and with the door-fixture, and an operating device geared to said spindles for simultaneously rotating them.

3. In a door-hanger, the combination with a door-fixture, and a wheeled frame, of right and left threaded spindles each screwed into said frame, worm-gears fixed individually to said spindles and having ball-bearing engagement with the door-fixture for coöperation therewith and with the spindles in sustaining the weight of the door, and a worm meshing with said worm-gears for simultaneously rotating the spindles in opposite directions.

4. In a door-hanger, a traveling frame comprising yokes, a guard member coupling said yokes, shoes at the ends of the guard member, and wheels mounted in the yokes above the guard member and the shoes, combined with a track on which the wheels are adapted to travel and with which the shoes have underrunning engagement.

5. In a door-hanger, the combination with a track, of upright yokes provided with wheels arranged to travel on said track, and a guard member uniting said yokes below the track, said guard member having offset ends forming shoes disposed for underrunning engagement with the track.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN CRAMER.

Witnesses:

WM. E. REILLY,
T. B. JOHNS.