

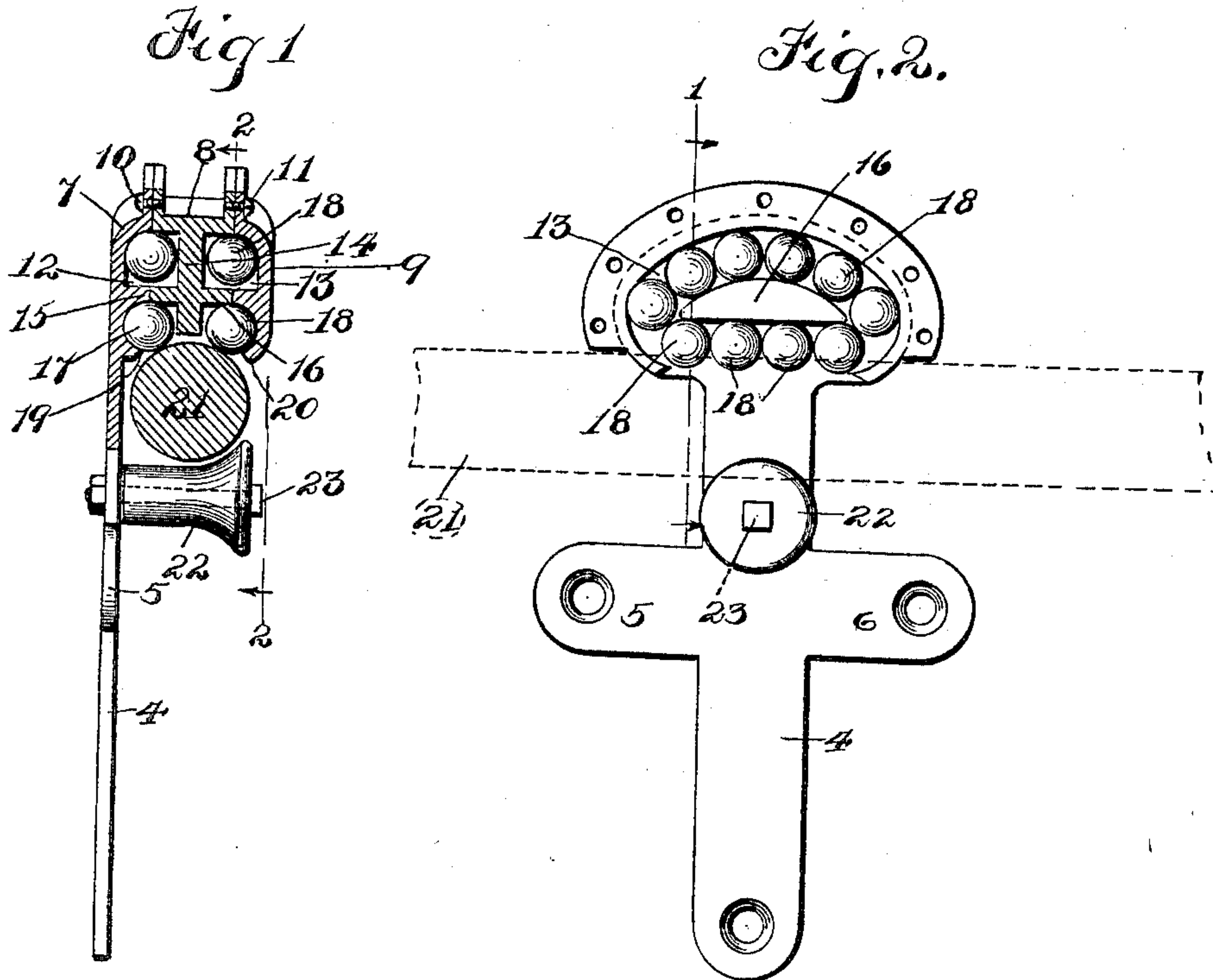
No. 697,218.

Patented Apr. 8, 1902.

J. J. REXROTH.
DOOR HANGER.

(Application filed Aug. 3, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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DOOR-HANGER.

SPECIFICATION forming part of Letters Patent No. 697,218, dated April 8, 1902.

Application filed August 3, 1901. Serial No. 70,728. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. REXROTH, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Hangers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to door-hangers, and has for its object to provide certain improvements by which friction will be reduced to the minimum and the construction of the hanger will be simplified and strengthened and at the same time the cost of manufacture will be reduced.

To this end my invention consists in providing two sets of traveling balls placed side by side in a suitable casing or frame and spaced a distance apart and in employing in connection therewith a convex track or support upon which said balls are adapted to run. Each set of balls is arranged to run in runways provided in the door-hanger, which form suitable bearings therefor. In practice the convex track or rail is formed by using a tube of suitable diameter, thereby securing the increased strength of a tubular structure. By employing the two sets of balls in connection with the convex rail the fitting of the door-hanger to the rail is insured at all times, as the balls adjust themselves to any inequalities in the rail.

My invention further involves certain improvements in details, which will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a vertical section of a door-hanger on line 1 1 of Fig. 2. Fig. 2 is a vertical section on line 2 2 of Fig. 1.

Referring to the drawings, 4 indicates the strap by which the door-hanger is secured to a door. Said strap preferably is provided with lateral arms 5 6; but said arms may be dispensed with where sufficient strength can be secured without using them. The strap 4 carries at its upper end a shell or casing which incloses the balls, said shell being composed of three parts 7 8 9, respectively. The part 7 is preferably cast integral with the

strap 4, as shown in Fig. 1, the intermediate part 8 being secured to it by bolts or rivets 10. The outer part or section 9 is similarly secured by rivets 11 to the intermediate section 8. This is the construction of the shell as illustrated in the drawings; but I wish it to be understood that it may be otherwise constructed, if desired. Within the shell are two compartments or channels 12 13, respectively, placed side by side, as shown in Fig. 1, and adapted to contain balls. Said channels are separated by a vertical partition 14, which in the construction shown is cast as a part of the intermediate section 8. The compartments 12 13 are further divided horizontally by horizontal partitions 15 16, respectively, as shown in Fig. 1. As shown in Fig. 2, the general shape of each of the compartments 12 13 is somewhat of the form of an ellipse, the horizontal partitions 15 16 being placed in the central portion thereof, so as to form somewhat elliptical channels in which the balls move.

17 18 indicate the balls, which are arranged in the compartments 12 13, respectively, as shown. The balls are prevented from escaping from their compartments by the central partition 14, the lower end of which projects down beside the balls, as shown in Fig. 1, and by inwardly-projecting lips 19 20, respectively, which project partly under the balls, as shown, leaving only a sufficient arc of each of the balls exposed to provide a bearing-surface.

21 indicates the rail or track, which, as shown, is circular in cross-section, the lowermost balls of each set resting on its upper surface, as shown.

22 indicates a guide-roller mounted on a bolt or shaft 23, secured to the strap 4 and adapted to project under the rail 21. The roller 22 is normally out of contact with the lower surface of the rail, but is near enough to the rail, so that it will engage it if the door-hanger is rocked to any considerable extent. The outer portion of the roller 22 is of greater diameter than the inner portion, giving it somewhat the appearance of a bell in order to conform to the curved surface of the rail.

In operation when the door-hanger moves upon the rail each of the balls in the lower portions of the channels rotates on an axis extending at right angles to a line drawn perpendicular to the surface of the rail at the point of contact of the ball with it. As the door-hanger continues to move the lowermost balls travel around in a somewhat elliptical path in their respective channels. By this construction friction between the balls and the rail is reduced to the minimum. By varying the shape of the channels a greater or less number of balls may be caused to bear simultaneously on the rail to vary the weight carried by single balls, but ordinarily it is sufficient to carry the weight on three or four balls.

I have illustrated and described my invention as applied to a door-hanger; but I wish it to be understood that it is not restricted to

use in door-hangers only, as it may be applied to other analogous uses as well.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. A door-hanger, composed of a suitable frame having endless channels, and two sets of traveling bearing devices mounted in said endless channels and arranged to run on a track, substantially as described.

2. The combination of a suitable frame, a plurality of sets of traveling bearing devices carried therein, said sets being arranged side by side, and a rail having a convex surface on which said bearing devices run, substantially as described.

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