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I. V. THORNTON
BALL BEARING GUIDES
Filed March 3, 1960

3,017,227

FIG. 1

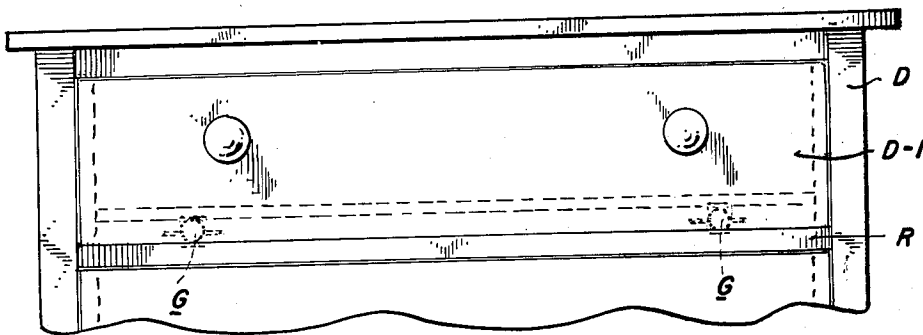


FIG. 2

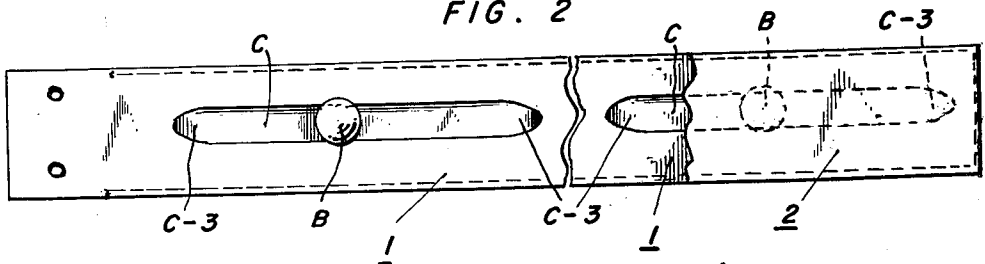


FIG. 3

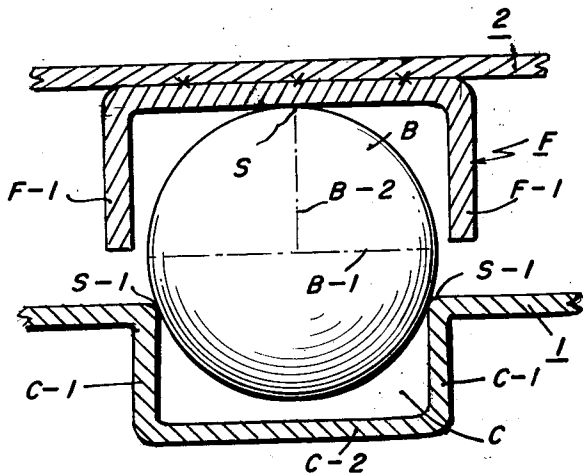
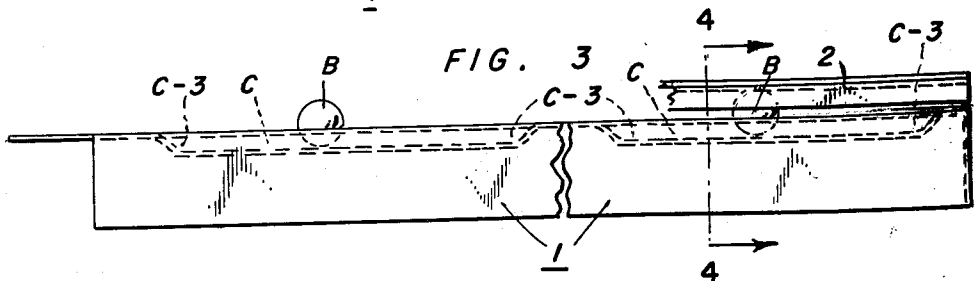


FIG. 4

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3,017,227
BALL BEARING GUIDES
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1 Claim. (Cl. 308—3.8)

My invention consists in a new and useful improvement in ball bearing guides for relatively slidable parts and is designed more particularly for drawers of desks, etc. It will appear from the drawing and description herein that the device is capable of use in any construction in which a movable part is supported by an immovable part, such as conveyors, etc. The particularly novel and useful feature of my improved device is the combination of a lower element and an upper element mounted upon the immovable and the movable parts, respectively, and a plurality of ball bearings resting upon the lower element and upon which is carried the upper element, the elements being so constructed and the bearings being so dimensioned that movement of the movable part causes rotational travel of the ball bearings relative the two elements, each bearing having a single contact point with the upper element and a pair of contact points with the lower element, the balls rotating about a horizontal axis disposed above the lower element and below the upper element.

While I have illustrated in the drawing and hereinafter describe one specific embodiment of my invention, it is to be distinctly understood that I do not consider my invention to be limited to said embodiment but refer for its scope to the claim appended hereto.

In the drawing:

FIG. 1 is a front elevation of a desk and a drawer provided with two of my improved ball bearing guides.

FIG. 2 is an enlarged top plan of one of the guides, a portion of its upper element being broken away.

FIG. 3 is a side elevation of the guide shown in FIG. 2.

FIG. 4 is an enlarged vertical section on the line 4—4 of FIG. 3, in the direction of the arrows.

As shown in the drawing, the desk D and the drawer D-1 are provided with a pair of guides G disposed symmetrically longitudinally of the drawer D-1. Since the two guides G (FIG. 1) are identical, a description of one will suffice (FIGS. 2, 3 and 4). The guide G has a lower element 1 suitably mounted on the runner R of the desk D and having a plurality of longitudinal cavities C therein. Each cavity C has a pair of vertical walls C-1 and a bottom C-2 (FIG. 4). Disposed in each cavity C, there is a ball B having a diameter B-1 greater than the width

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of the bottom C-2 of the cavity C so that the surface of the ball B rests on the upper ends of the walls C-1. The guide G has an upper element 2 suitably attached to the lower surface of the drawer D-1. The element 2 has a longitudinal U-shaped flange F, the vertical sides F-1 of which are relatively spaced at a distance greater than the diameter B-1 of the ball B and are slightly shorter than the radius B-2 of the ball B.

It is obvious (FIG. 4) that, when the parts are assembled the upper elements 2 rest upon the surface of the balls B (point S in FIG. 4) and the balls B rest on the upper ends of the walls C-1 (points S-1 and S-2 in FIG. 4), a three point suspension.

It will be noted (FIG. 2) that each cavity C has arcuate ends C-3. This effects spinning of the balls B on reaching either end C-3.

I will now describe the operation of my device.

Assume that the ball B were 1" in diameter, radius $\frac{1}{2}$ ", circumference 3.1416", that the cavity C has a width of $\frac{15}{16}$ ", the ball B would revolve on the surface $\frac{1}{32}$ " off center, that is on a $\frac{1}{16}$ " axle.

The effect of this arrangement is that point S will travel, per revolution of ball B, 3.1416" while points S-1 and S-2 travel .025" or roughly

$$\frac{130}{1}$$

This means that when the drawer D-1 is moved 18", the ball B would move approximately $\frac{3}{16}$ " in cavity C.

Having described my invention, what I claim is:

In a ball bearing guide for a construction having a fixed part and a movable part slidably supported on said fixed part, the combination of a lower element adapted to be attached to the upper side of said fixed part, and having a ball trackway having a pair of vertical walls; an upper element adapted to be attached to the lower side of said movable part, and having a flange on its lower side, said flange having a horizontal upper surface and a pair of depending vertical arms; and a ball disposed on the upper ends of said walls and on which is disposed said surface of said flange, said vertical walls being relatively spaced at a distance slightly less than the diameter of said ball, and the arms of said flange being relatively spaced at a distance slightly greater than said diameter, and have a length slightly less than the radius of said ball.

References Cited in the file of this patent

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