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DRAWER SUSPENSION

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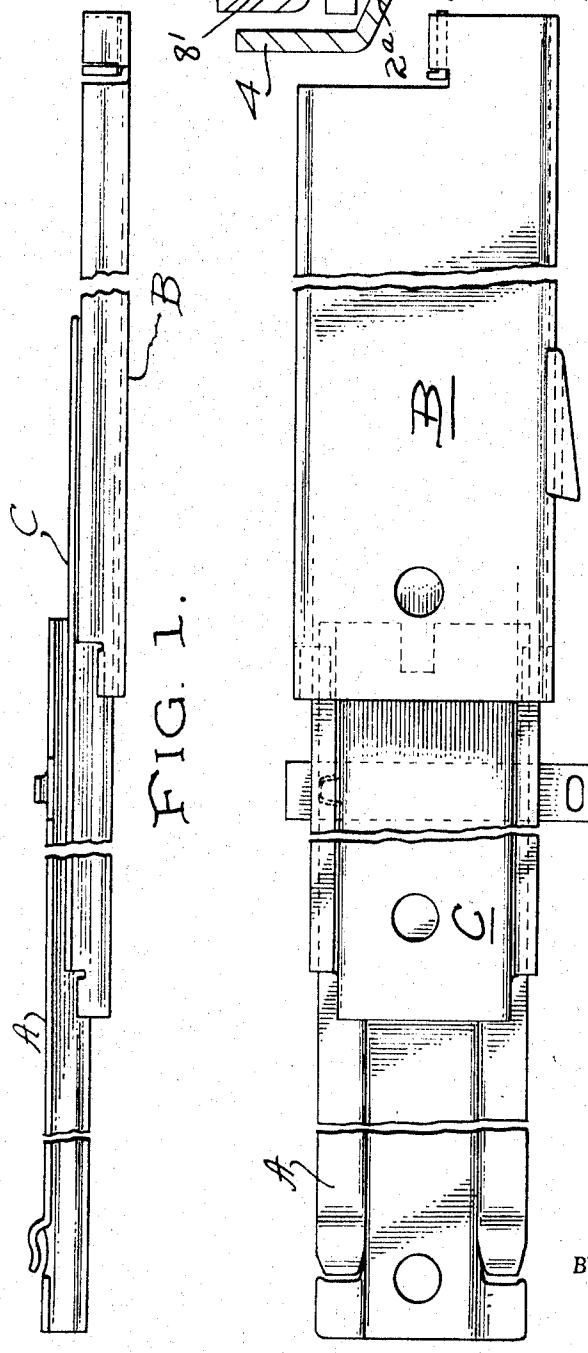


FIG. 1.

FIG. 2.

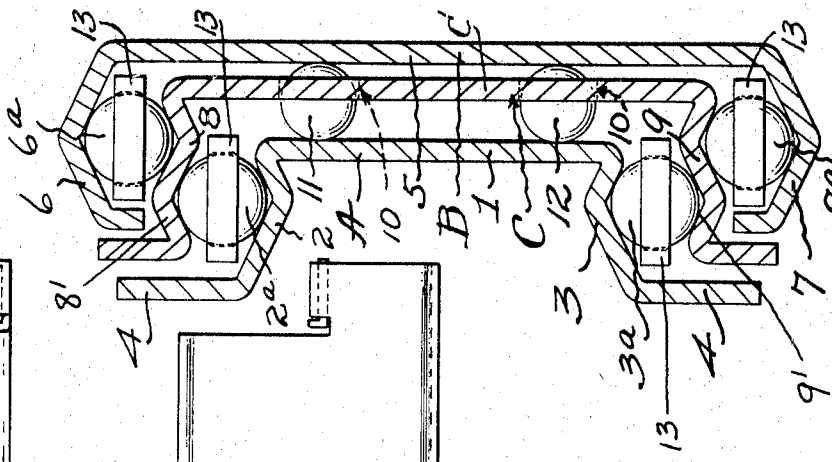


FIG. 3.

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DRAWER SUSPENSION

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ABSTRACT OF THE DISCLOSURE

A progression type file drawer suspension constructed to minimize and distribute lateral forces between the drawer and cabinet as the drawer is moved from closed to open position and vice versa.

This invention relates to file drawer suspension units of the general type disclosed, for example, in Anderson Patent No. 1,963,220, June 19, 1934.

Generally, the extension slide members of a drawer suspension support the vertical load of the drawer but little attention has been given in the past to controlling or absorbing lateral load thrusts. That is to say, in prior drawer suspensions, it has been customary to impose the full drawer load vertically on the relatively slidable members, the horizontal or lateral load being taken care of by the cupped or channel shape of the slides, conforming generally to the circumference of the ball bearings but without definite means for absorbing the lateral load thrusts. In these cases, although the ball bearings are of special steel, the effect of lateral load impulses or thrusts is to cause both the balls and the channels to wear.

Thus, after long periods of use, and under heavy loads, and when a loaded drawer is fully withdrawn from the cabinet, the drawers are likely to have an excessive amount of lateral motion which is imparted to the entire cabinet in the form of horizontal thrusts or vibrations, thereby reducing the steadiness or stability of the entire suspension as well as the cabinet itself.

Accordingly, one object of the invention is to provide a progression type drawer suspension which minimizes lateral load thrusts due to the track and slide construction and the disposition of progression ball bearing members in their operative environment.

A further object is to provide a progression type drawer suspension which includes a minimum of parts compared to known suspensions and in which the track and slide members can be fabricated of lighter gauge metal than heretofore which results in a reduction in weight with a consequent savings in material and shipping costs.

Briefly, the invention comprises inner, intermediate and outer members which have oppositely disposed upwardly and downwardly facing channels of substantially V-shape in cross section at opposite ends of and offset from a central vertical web portion. The intermediate member has a pair of side-by-side channels at its opposite ends, one channel of each pair facing upwardly and one downwardly. The aforesaid members are nested so that the downwardly facing channel of one member lies opposite an upwardly facing channel of an adjacent member and vice versa to provide raceways for a plurality of ball bearings which are placed under vertical load when in assembled operative position.

The intermediate member is a progression slide and has in its web portion, preferably two openings which receive ball bearing members of a diameter slightly greater than the space between the vertical webs of the inner and outer members with which the balls are in contact, So

that the balls are laterally loaded under compression perpendicular to said webs to assure constant contact with the facing surfaces of the webs of the inner and outer members. This affords steady, even progression of the movement of the drawer into and out of the cabinet, and, combined with the V-shaped channel arrangement, minimizes lateral thrusts and stablizes drawer operation.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully illustrated, described and claimed.

Similar reference characters designate corresponding parts throughout the several figures of the drawing, in which:

FIGURE 1 is a top plan view of the present suspension;

FIGURE 2 is a side elevation of the suspension shown in FIGURE 1;

FIGURE 3 is an enlarged vertical sectional view of the suspension.

As will appear from FIGURES 1, 2 and 3, the suspension includes a fixed track member A secured to a cabinet sidewall (not shown). The track member has a vertical medial web **1** having a top lateral projection providing an upwardly facing channel **2**, and a bottom lateral projection providing a downwardly facing channel **3**, each offset from the web **1**, and terminating in vertical flange portions **4**. The flange portions **4** are fixed to the inner face of the cabinet sidewall by appropriate means so that the outer face of the web **1** faces or projects toward the storage area of the cabinet.

The track member B is attached to the side of a drawer (not shown) and includes a vertical web portion **5** which is provided at its top and bottom edge portions respectively, with a lateral projection providing a downwardly facing channel **6** and a lateral projection providing an upwardly facing channel **7**, each offset from web **5**. These channels receive balls **6***a* and **7***a* and are subjected to the vertical load of the drawer which is transmitted to the balls **2***a* and **3***a* of the fixed track A, as will later become apparent.

The extension or progression slide C is located between the first track member B and second track member A and includes a medical vertical web portion C' with lateral projections providing offset upper and lower pairs of channels **8**, **8'** and **9**, **9'**, respectively. Channels **8** and **9'** face upwardly whereas channels **8'** and **9** face downwardly. With track members A and B and progression slide C in assembled relationship, opposed channels **8** and **6**, **8'** and **2**, **9** and **7**, and **9'** and **3** provide raceways for ball bearings **6***a*, **2***a*, **7***a* and **3***a*, respectively. It is understood that the ball bearings are retained in spaced linear relationship to each other by means of keepers **13** well known in the art, which are shown in end elevation in FIGURE 3.

Referring to FIGURE 1, it will be noted that each of the channels heretofore referred to are substantially V-shaped in cross section which provides two point opposed contact surfaces for that area of the ball resting in the channel.

In addition, the vertical web C' of progression slide C is provided with transverse openings **10** to receive progression balls **11** and **12** so that the outer surfaces thereof, disposed in a horizontal plane, engage the inner vertical faces of the webs **1** and **5** of track members A and B, respectively. The balls **11** and **12** being of slightly greater diameter than the space between webs **1** and **5** are laterally loaded under compression to assure constant contact with the surfaces of the webs.

It will, of course, be understood that the combination of the arrangement of compression balls **11** and **12** together with the V-shape of the channels in which the

ball bearings 6*a*, 2*a*, 3*a* and 7*a*, are confined produce a stable relationship between the track members A and B and slide C such that lateral thrusts during drawer operation are resisted and vertical loading of the drawer is accomplished in an efficient manner. The disposition of the compression balls **11** and **12** eliminates the necessity for the use of spring elements commonly used in the past to assure positive sliding contact between the stationary track and the progression slide. As shown, balls **11** and **12** are vertically spaced, one above the other, but they could conceivably be staggered in a horizontal direction either singly or in pairs.

The shape of the channel members is a distinct aid in achieving the desired stability of the assembly since, instead of a cup-shaped channel which can permit lateral shifting of the ball bearings as wear occurs, two opposed contact surfaces are provided in both the upper and lower regions of the balls which effectively resists lateral shifting as well as reducing the surface area of the ball which is in contact with the track with a consequent reduction of friction.

We claim:

1. A suspension unit for supporting a drawer within a cabinet comprising, a first track member including a medial vertically disposed web portion, a lateral projection providing a downwardly facing channel at the top of said web portion and a lateral projection providing an upwardly facing channel at the bottom of said web portion, a second track member including a medial vertically disposed web portion positioned within said first track member, a lateral projection providing an upwardly facing channel at the top of said second track member web portion and a lateral projection providing a downwardly facing channel at the bottom of said second track member web portion, a progression slide between said first and second track members having a medial vertically disposed web portion, a lateral projection providing firstly an upwardly facing channel and secondly an adjacent

downwardly facing channel at the top of said slide web portion, a lateral projection providing firstly a downwardly facing channel and secondly an adjacent upwardly facing channel at the bottom of said slide web portion, said first track member channels vertically opposed to said first channels of said slide to provide ball races therebetween, said second track member channels vertically opposed to said second channels of said slide to provide ball races therebetween, a plurality of vertical load supporting balls within said races, said three vertical web portions parallel to one another, said slide web portion having at least one opening from said slide channels, and a ball in said opening engaging the opposed surfaces of said first and second track member vertical web portions at opposite and horizontally disposed points on the surface of said ball such that said ball is placed under lateral compression between said first and second track member web portions.

2. A suspension unit according to claim **1** wherein each of said vertically opposed channels are V-shaped in cross section to provide laterally spaced two point contact at the top and bottom of each said vertical load supporting ball.

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