

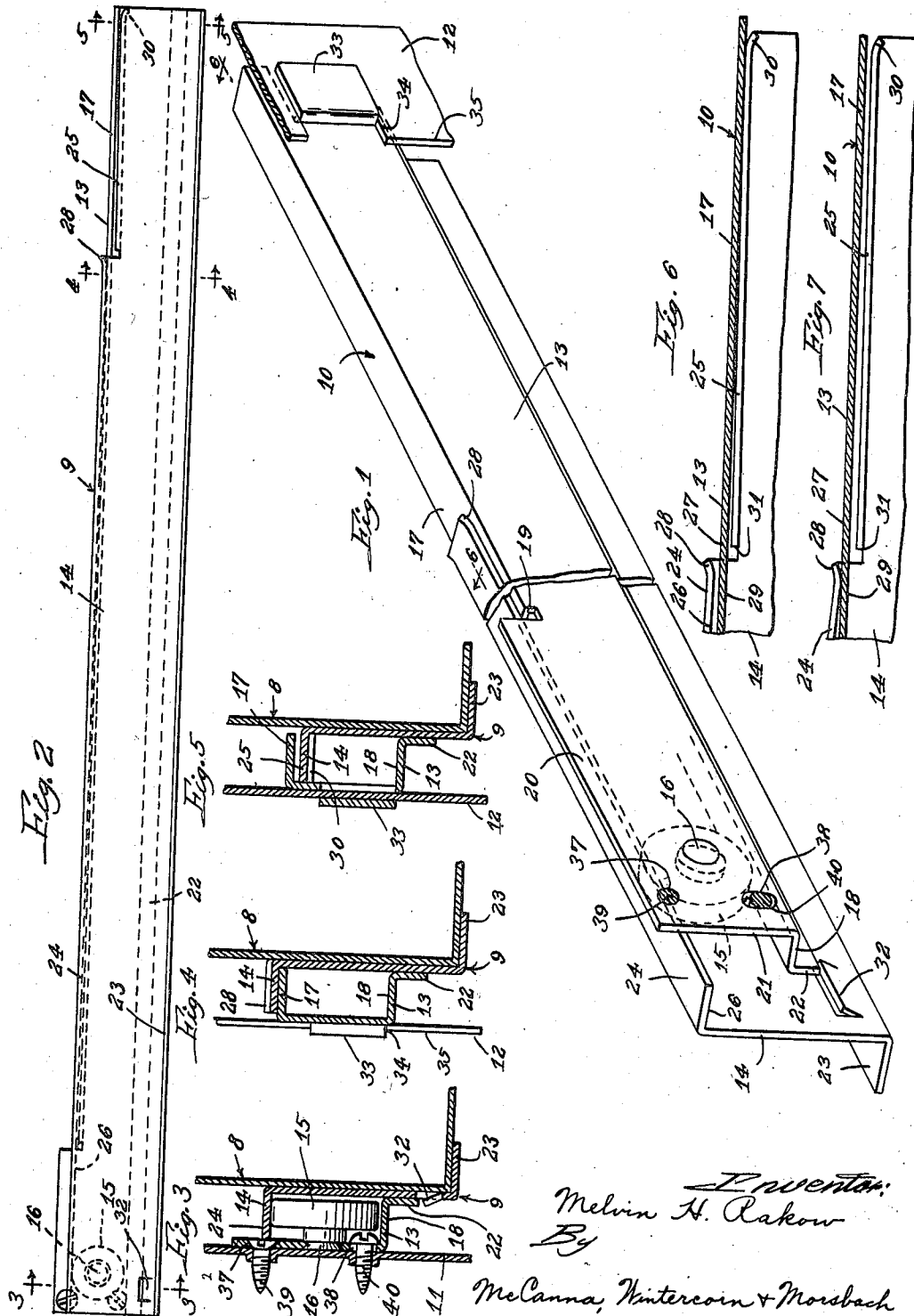
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DRAWER SLIDE

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DRAWER SLIDE

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12 Claims. (Cl. 45-77)

This invention relates to a new and improved metal drawer slide.

The principal object of my invention is to provide a drawer slide in which only a single roller or slide block is employed for reasons of economy, and in which the stationary guide member and movable slide member are formed in a novel manner to take the fullest possible advantage of the single support element for easiest possible operation, sliding friction between said members being reduced to a minimum.

Another object consists in the forming of the movable slide and stationary guide members so that the support forms a stop to limit the outward movement of the drawer, the flange on the guide member being cut away in longitudinally spaced relation to the support so that that portion of the flange on the slide member that works under the flange on the guide member and is arranged to come into abutment with the support at the limit of movement can be raised clear of the support by tilting the drawer, thus permitting easy removal and replacement of the drawer.

Another object consists in the provision on the movable slide member at the forward end of an outwardly struck projection for engagement with the bottom of a flange on the stationary guide member to prevent displacement of the drawer slide relative to the guide when the cabinet happens to be inverted in shipment.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is a perspective view of one of a pair of drawer slides made in accordance with my invention, an intermediate portion of the slide being broken away to enable showing it on a larger scale;

Fig. 2 is a side view, looking at the inner side of a companion drawer slide;

Figs. 3, 4, and 5 are vertical sections on the correspondingly numbered lines of Fig. 2, and

Figs. 6 and 7 are longitudinal sectional details in the plane of the line 6-6 of Fig. 1, showing in Fig. 6 the sliding engagement when the drawer is pulled out past the mid-point, and in Fig. 7 the sliding engagement when the drawer is less than half way out.

The same reference numerals are applied to corresponding parts throughout the views.

The reference numeral 8 in Figs. 3, 4, and 5 designates a portion of a drawer adapted to be supported at opposite sides by drawer slide structures indicated generally by the reference numerals 9 and 10 within a sheet metal or other cabinet, portions of which are indicated at 11 in

Fig. 3 and at 12 in Figs. 1, 4, and 5. The left hand drawer structure 9, shown on a smaller scale in Fig. 2, it will be understood is a companion for the right hand drawer structure 10, shown on a larger scale in Fig. 1, and therefore corresponding parts in these two views are numbered alike.

Each drawer slide structure comprises a stationary guide rail 13 and a movable slide rail 14. The guide rail 13 has a roller 15 rotatably mounted on a stud 16 on the front end thereof, this roller being preferably of an anti-friction type to insure smooth, quiet, and easy operation. The guide rail is substantially channel-shaped in cross-section, so as to provide an upper longitudinal flange 17 and a lower longitudinal flange 18, the lower flange 18 extending the full length of the rail but the upper flange 17 terminating in rearwardly longitudinally spaced relation to the roller 15, as indicated at 19, the metal 20 of the channel forwardly from the point 19 being left in the plane of the web portion 21 of the channel which carries the stud 16. The roller 15 is disposed so that there is ample clearance between it and the lower flange 18, as shown. The free edge portion of the flange 18 is bent downwardly for the full length of the rail 13, as indicated at 22, so that its outer vertical face is in substantially the same vertical plane as the edge of the flange 17. The slide rail 14 has a lower inwardly directed horizontal flange 23 for support of the drawer thereon, and has two upper outwardly directed, substantially horizontal, flanges 24 and 25. The flange 24, as indicated in Fig. 2, extends throughout the major portion of the length of the slide rail and provides a track surface 26 on the under side thereof for cooperation with the roller 15, this surface being in spaced relation to the top surface 27 of the flange 17, while the slide rail is resting on the roller 15 near one end and on the rear end portion 28 of the flange 24 near the other end. The latter portion is curved upwardly to provide a rounded surface for lower friction sliding contact between the flanges 24 and 17. In other words, the top of the roller 15 is slightly above the horizontal plane of the surface 27, so that the flange 24 while running on the roller 15 will not have full length sliding engagement with the flange 17 but will ride on the flange 17 only on the upwardly curled rear end portion 28, as indicated in Fig. 7, in which the angle between the flanges 24 and 17 is slightly exaggerated for purposes of better illustration. The flange 25, which, as shown in Fig. 2, extends for only a small portion

of the length of the slide rail 14 on the rear end portion thereof, is inclined longitudinally in acute angle relationship with respect to the substantially horizontal plane of the flange 24, so that when the drawer is pulled out past the mid-point and is supported by engagement of the flange 24 on the roller 15 and by engagement of the flange 25 with the bottom surface 29 of the flange 17, the only engagement is at the downwardly curved rear end portion 30 of the flange 25, as illustrated in Fig. 6. By downwardly curving the rear end portion 30 of the flange, a rounded surface is provided at the point of sliding engagement between the flanges for lower frictional resistance to movement. Forward movement of the drawer under these conditions is limited by engagement of the front end 31 of the flange 25 with the roller 15, and if, when that occurs, it is desired to remove the drawer, that can be accomplished by merely lifting thereon at the front end so as to cause the flange 25 to ride up over the roller.

A lug 32 is struck outwardly from the lower portion of the slide rail 14 at the front end thereof and is normally spaced below the lower edge of the downwardly bent portion 22 of the flange 18 of the guide rail 13, as indicated in Figs. 1 and 3, but is adapted to come into engagement therewith if the cabinet happens to be inverted in shipment, to prevent displacement on the slide rails 14 relative to the guide rails 13 and accordingly hold the drawer carried thereby in proper relation to the cabinet.

The guide rail 13 has a tongue 33 struck out from the vertical plane of the web portion 21, at the rear end thereof, arranged to be entered in a notch 34 provided in the front edge portion 35 of the upright member 12 in the rear of the cabinet, both guide rails 13 being thus adapted for quick and easy assembling in the cabinet at their rear ends. A screw hole 37 and slot 38 are provided in the web 21 at the front end of each guide rail to receive screws 39 and 40 to fasten the rails in place.

In operation, the two drawer slide structures 9 and 10 slidably support the drawer 8 by rolling engagement of rollers 15 under the flanges 24, so that there is anti-friction rolling action throughout the movement of the drawer to insure easy and quiet operation. The fact that there are rollers only at the front end of the drawer guide rails 13, as a matter of economy, does not seriously impede the movement of the drawer, because with the present improved construction of the rails 13 and 14, low friction sliding engagement is obtained either at 28 or 30 where the flanges 24 and 25, respectively, have their rear end portions curved, as previously described, to present rounded surfaces to insure easier sliding action. Surface to surface engagement, which invariably meant high friction and noisy operation in other drawer slide constructions, has been eliminated in the present construction to insure smooth, quiet, and easy operation despite the fact that roller support is provided only at the forward end of the guide rails. The small amount of frictional drag is if anything an advantage in the present structure, because there is less danger of drawers tending to drift open when closed.

While I have shown a metallic roller at 15 on each of the drawer slides, it should be understood that I may employ in each drawer slide one of fiber or other non-metallic material, and that I may employ a block of fiber or other non-metallic composition material having one or more flat peripheral surfaces for sliding engagement of a

slide rail thereon, as disclosed in my copending application Serial No. 359,005, filed September 30, 1940. The term "support element" or "support" as used in the claims will, therefore, be taken as referring either to a roller or a slide block.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a roller mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the roller is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the roller, said flange terminating in spaced relation to the rear end of said slide rail and resting for rolling support on the roller and for sliding support on the top surface of the guide rail flange, and a secondary longitudinally extending substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the roller.

2. A drawer slide structure as set forth in claim 1, including a lateral projection on the slide rail for abutment with the bottom of the guide rail to prevent displacement of the slide rail relative to the guide rail in an inverted position of the drawer slide structure or in the event it is attempted to raise the front end of the drawer.

3. A drawer slide structure as set forth in claim 1, including a lateral projection on the lower front end portion of the slide rail, to engage the bottom of the guide rail to prevent displacement of the main slide rail flange from the roller in an inverted position, the secondary slide rail flange under those conditions serving by engagement with the bottom of the guide rail flange to prevent displacement of the main slide rail flange from the guide rail flange.

4. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a roller mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the roller is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a driver having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the roller, said flange terminating in spaced relation to the rear end of said slide rail and resting for rolling support on the roller and for sliding support on the top surface of the guide rail flange, and a secondary, longitudinally extending, substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the roller, the rear end portion of the main flange of the slide rail being

curved upwardly, substantially as and for the purpose described.

5. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a roller mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the roller is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the roller, said flange terminating in spaced relation to the rear end of said slide rail and resting for rolling support on the roller and for sliding support on the top surface of the guide rail flange, and a secondary, longitudinally extending, substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the roller, the secondary flange of the slide rail being inclined downwardly and forwardly at a small angle in relation to the plane of the main flange of said slide rail, substantially as and for the purpose described.

6. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a roller mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the roller is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the roller, said flange terminating in spaced relation to the rear end of said slide rail and resting for rolling support on the roller and for sliding support on the top surface of the guide rail flange, and a secondary, longitudinally extending, substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the roller, the secondary flange of the slide rail being inclined downwardly and forwardly at a small angle in relation to the plane of the main flange of said slide rail, the rear end portion of the main flange being curved upwardly, and the rear end portion of the secondary flange being curved downwardly, substantially as and for the purpose described.

7. A drawer guide structure as set forth in claim 1, wherein the guide rail flange terminates far enough in rearwardly spaced relation to the roller so that the secondary flange on the slide rail is movable outwardly endwise through said opening over said roller upon tilting the drawer upwardly at its outer end when the drawer is pulled out to a point where the outward movement is otherwise limited by engagement of the end of the secondary flange with the roller.

8. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a support element mounted on the guide rail in forwardly spaced relation to the end

of said flange on a substantially horizontal axis and disposed so that the top of the support element is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the support element, said flange terminating in spaced relation to the rear end of said slide rail and resting for support on the support element and for sliding support on the top surface of the guide rail flange, and a secondary longitudinally extending substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the support element.

9. A drawer slide structure as set forth in claim 8, including a lateral projection on the lower front end portion of the slide rail, to engage the bottom of the guide rail to prevent displacement of the main slide rail flange from the support element in an inverted position, the secondary slide rail flange under those conditions serving by engagement with the bottom of the guide rail flange to prevent displacement of the main slide rail flange from the guide rail flange.

10. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a support element mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the support element is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the support element, said flange terminating in spaced relation to the rear end of said slide rail and resting for support on the support element and for sliding support on the top surface of the guide rail flange, and a secondary longitudinally extending substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the support element, the rear end portion of the main flange of the slide rail being curved upwardly, substantially as and for the purpose described.

11. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a support element mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the support element is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal flange which provides a track surface on the bottom thereof for the support element, said flange terminating in spaced relation to the rear end of said slide rail and resting for support on the support element and for sliding support on the top surface of the guide rail flange, and a secondary longitudinally extending substantially horizontal flange on the rear end portion of the slide rail

spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the support element, the secondary flange of the slide rail being inclined downwardly and forwardly at a small angle in relation to the plane of the main flange of said slide rail, substantially as and for the purpose described.

12. A drawer slide structure comprising, in combination, a guide rail for attachment to a cabinet having a substantially horizontal longitudinal flange terminating in spaced relation to the front end thereof, a support element mounted on the guide rail in forwardly spaced relation to the end of said flange on a substantially horizontal axis and disposed so that the top of the support element is slightly above the plane of the top surface of the flange, and a companion slide rail for attachment to a drawer having a main, substantially horizontal, longitudinal

flange which provides a track surface on the bottom thereof for the support element, said flange terminating in spaced relation to the rear end of said slide rail and resting for support on the support element and for sliding support on the top surface of the guide rail flange, and a secondary longitudinally extending substantially horizontal flange on the rear end portion of the slide rail spaced below the main flange for sliding engagement with the bottom surface of the guide rail flange and for movement limiting abutment with the support element, the secondary flange of the slide rail being inclined downwardly and forwardly at a small angle in relation to the plane of the main flange of said slide rail, the rear end portion of the main flange being curved upwardly, and the rear end portion of the secondary flange being curved downwardly, substantially as and for the purpose described.

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