May 30, 1944. H. HANES 2,350,228

DRAWER SUSPENSION

Filed March 8, 1941

FIG. 1.

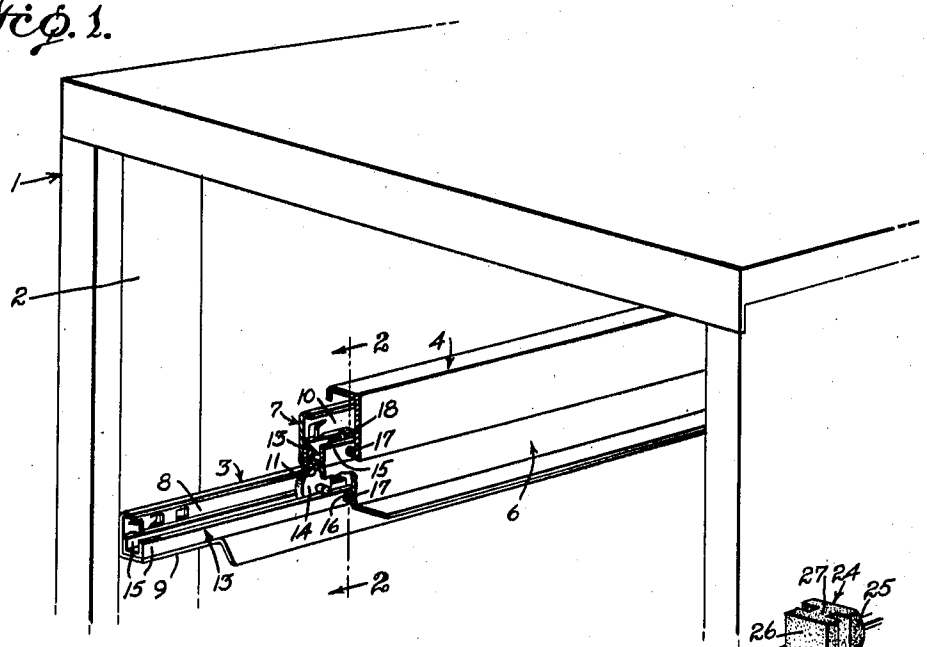


FIG. 4.

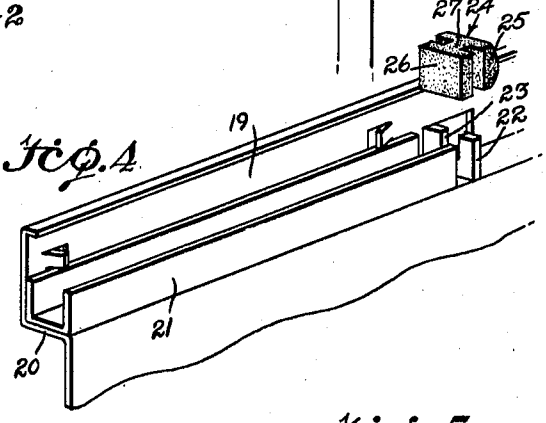


FIG. 2.

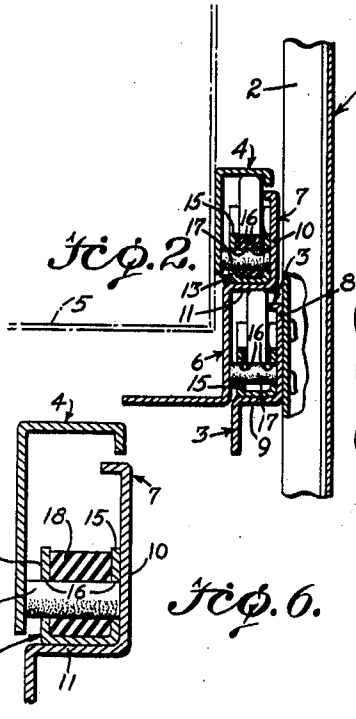
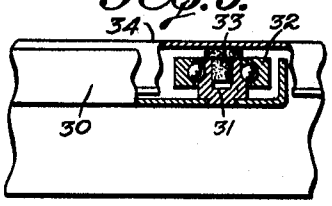


FIG. 5.



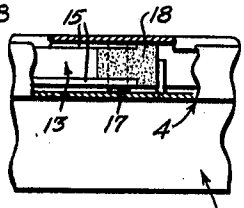


FIG. 3.

FIG. 6.

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DRAWER SUSPENSION

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Application March 8, 1941, Serial No. 382,436

9 Claims. (Cl. 45—77)

The present invention relates to a drawer suspension.

The present invention provides improvements in drawer suspensions that are adapted to increase the wearing life of the drawer suspension to a substantial extent in comparison with drawer suspension constructions now in use and well known in the art, and at the same time provide a drawer suspension that may be manufactured at a reduced cost.

The invention comprehends the position of a spacer member that may be formed from a material different than the metal used in forming the tracks for the suspension, the material being of a type that when it contacts the surface of the tracks of the drawer suspension it will have a wearing cooperation to produce less wear in the spacer member than is customary when one track engages another.

The invention further provides a combination stop and spacer member for cooperation in arresting motion of one of the track members at one limit of relative movement thereof, and at the same time has a portion projecting into engagement with an adjacent track for spacing said track and absorbing the wear between said tracks in the operation of said drawer suspension.

The invention also provides for mounting a drawer stop in interlocked relation on one of the track members by having the spaced member interengaged with said stop and track for holding said spacer member and stop member in assembled relation on said drawer suspension wherein said spacer member engages an adjacent track for retaining it in spaced relation thereto and for absorbing and reducing wear.

In the drawing:

Figure 1 shows a portion of a file cabinet or casing in perspective, illustrating the drawer suspension at one side of the cabinet with portions broken away and shown in section to show how the spacer members separate all the tracks in spaced relation laterally and absorb and reduce wear during operation of the suspension in supporting the drawer during movement into and out of the casing.

Figure 2 is a vertical cross section taken substantially on line 2—2 of Fig. 1.

Figure 3 is an enlarged detail view showing fragmentary portions of the intermediate and drawer tracks partially in cross section to illustrate how the stops operate at the outer limit of movement.

Figure 4 is an enlarged detail perspective showing a fragment of an intermediate track illustrating a modified form of construction for supporting a combined stop and wear reducing spacer member.

Figure 5 is an enlarged detail showing the rear end of a drawer track in assembled relation with an intermediate track and a bearing roller mounted on the drawer track for bearing engagement on the intermediate track in which the stud supporting said roller is formed to support a spacer member for engaging said intermediate track to retain it in spaced relation laterally relative thereto and for absorbing and reducing wear.

Figure 6 is an enlarged fragmentary detail cross section of the drawer and intermediate tracks from the showing in Fig. 2 for more clearly showing how a spacer member is mounted on one of the tracks.

A file casing is illustrated generally at 1 having a front frame member 2 for reinforcing the open front end of said cabinet in a well known manner.

The drawer suspension disclosed herein includes two sets of tracks, one being mounted at each side of the cabinet and drawer. Each set of tracks is formed in an opposite manner. A description of one set of these tracks will be sufficient to fully describe this drawer suspension for the purpose of disclosing the present invention.

The drawer suspension includes a casing track 3 mounted on the inside of said cabinet along the side wall thereof, a track 3 being provided on each side of said casing and formed in an opposite manner to the casing track on the other side. A drawer track 4 is provided for mounting on the side wall of the drawer 5 shown in dot and dash lines in Fig. 2, while an intermediate carrying means is indicated at 6 having an intermediate track 7 arranged between the drawer track 4 and casing track 3.

Casing track 3 is formed from a sheet metal strip to provide a longitudinally extending side section 8 having a lower track section 9 extending laterally from the lower edge thereof. Intermediate track 7 is constructed in a similar manner to provide a side section 10 and a lower track section extending laterally from the lower edge thereof as indicated at 11. Bearing members 13 of U shape in cross section are formed from sheet metal and hardened to give them a substantially long life in supporting bearing roller 14 for travel back and forth on the upper edges of the spaced parallel supporting flanges

15 thereof. These bearing members are mounted on the lower track sections 9 and 11 respectively, of the casing and intermediate tracks 3 and 7 respectively, adjacent to front end in the manner illustrated in Fig. 1.

The drawer suspension construction as above described is fully disclosed in the copending application filed on March 8, 1941, by Wolters and Andersen, Serial No. 382,428: Patent No. 2,331,529, Oct. 12, 1943.

The present invention provides an improvement in this drawer suspension by having the supporting flanges 15 of bearing member 13 formed with transversely aligned apertures 16 at the rear end for receiving a spacer member 17 in the manner illustrated in Figs. 1 to 3 inclusive.

Spacer member 17 is preferably formed of fiber of a suitable type having the quality of being substantially tough and wear-resistant and the further quality of producing less friction in contact with the surface of sheet metal that is produced by the contact of sheet metal with sheet metal. Spacer member 17 has a length sufficient to extend through the aligned apertures 16 in supporting flanges 15 and to engage the inside face of the side sections 8 and 10 respectively, in the manner shown in Fig. 2. The inner end of each spacer member 17 projects beyond the inner face of bearing member 13 a sufficient distance to engage the adjacent faces of intermediate track 7 or drawer track 4, as shown in Fig. 2, for holding said tracks in spaced relation relative to each other and casing track 3. This prevents contact between these tracks and eliminates the friction and wear which metal rubbing would produce.

This wear in the drawer suspension heretofore in use has been found to interfere with the efficient operation of the drawer suspension and also to shorten the life of the drawer suspension to a substantial extent. Tests have shown that fibre spacer members 17 constructed as shown in Figs. 1 and 2 and arranged at the front end portion of the cabinet in the manner illustrated, are sufficient to substantially reduce the wear on the drawer tracks through having the insert member absorb the wear. These tests have also shown that the operating life of the drawer suspension is lengthened considerably more than its useful life would be without these spacer members. In face, these insert members provide a drawer suspension with more than twice the normal life that has been heretofore obtained.

The invention further provides for the mounting of a stop member 18 in the rear end of bearing member 13 carried by intermediate track 7. This stop member is in the form of a block of rubber or other similar material preferably T-shaped in horizontal cross section. The stem portion of this block engages between the spaced supporting flanges 15 and has an aperture registering with apertures 16. The mounting of spacer member 17 in apertures 16 will also extend through the aperture in stop 18 and assemble the stop on the bearing member.

This stop on intermediate track 7 operates to cooperate with a portion of drawer track 4 for arresting the forward movement of the drawer track relative to intermediate track 7 at its forward limit of movement when the drawer suspension is operated to extend outwardly through the open front of the cabinet for supporting a drawer in the open position. It is to be understood that a similar stop 18 may be used in the rear end of bearing member 13 carried by casing track 3 for limiting the forward movement of intermediate track 7 on said casing track.

It will be understood that additional spacer members may be used at various points throughout the length of either of the tracks 3, 4 or 7, particularly near the rear ends of said tracks for keeping the rear end portions of the tracks spaced relative to one another. However, it is found that the use of the spacer members 17 in the positions illustrated in the drawing and as above described operate efficiently to maintain the tracks in spaced relation throughout their length to prevent rubbing and wear.

A modified form of construction is illustrated in Fig. 4 wherein a portion of a track is illustrated that may be either an intermediate track or a casing track having side section 19 formed with a laterally extending lower track section 20 supporting a bearing member 21 on the front end portion thereof in the same manner as in the construction described above. Side section 19 of the track is formed to provide a lateral extension 22 in spaced relation beyond the rear end of bearing member 21. Projection 22 is slotted at 23 through the upper edge.

A combined stop and spacer member 24 has a head 25 forming the stop and a block 26 forming the spacer member connected by a web 27. This combined stop and spacer member 24 engages on projection 22 in a manner that will be clear from the illustration in Fig. 4 in which the connecting section 27 extends through slot 23 and head 25 engages the rear face of projection 22, while spacer block 26 engages in the slot formed between the end of bearing member 21 and the forward face of projection 22. This member 24 may be slipped into position on projection 22 in which position it will be retained by its frictional engagement with projection 22 and between projection 22 and the rear end of bearing member 21. One end of block 26 will project inwardly beyond the inner face of bearing member 21 and the end of projection 22, a distance sufficient to contact with the adjacent face of an adjacent track for retaining said track in spaced relation to the track shown. The member 24 may be formed of suitable material to produce a satisfactory wear reducing block 26 as well as a suitable type of bumper for stop 25. Should it be found desirable to use two different materials, these may be suitably molded or otherwise connected together in producing member 24.

Another modification illustrating the application of the invention to a drawer suspension is shown in Fig. 5 having a track 30 forming the rear end portion of the drawer track shown in Fig. 1 for example. Track 30 carries a roller stud 31 rigidly mounted therein for rotatably supporting a bearing roller 32. This may be a ball bearing type of roller or any other suitable type that it may be desired to use in a drawer suspension. The stud is indicated as having an axial recess for receiving a spacer member 33 similar in all respects to spacer member 17 for engaging the adjacent face of an intermediate track 34 for holding said track 34 in spaced relation to track 30 and absorbing the wear in the movement of said tracks relative to each other. Where bearing rollers of this character are mounted both at the front and rear ends of the track, either the casing track, the intermediate track or the drawer track, the studs for support-

ing these rollers may be provided with spacer members in the manner as illustrated in Fig. 5, or in any other suitable or convenient manner. These spacer members may be provided with heads having an outer dimension larger than the portion received in either the bearing member or bearing studs in the manner disclosed in Fig. 5. This type of construction may also be used for the spacer member 17.

The invention claimed is:

1. A drawer suspension for mounting a drawer for movement into and out of its casing, comprising a track on the casing, a track on the drawer, intermediate carrying means, bearings supporting said drawer track for free movement on said intermediate carrying means and said intermediate carrying means for free movement on said casing track, said casing track comprising a sheet metal strip formed to provide a side section and a laterally extending track section from the lower edge thereof, a pair of spaced parallel supporting flanges extending upwardly from said track section at the front end portion thereof, and a spacer member extending transversely across one end of said supporting flanges and having one end engaged with the inner face of said side section for retention on said casing track with a portion projecting inwardly for engaging and retaining said intermediate carrying means in spaced relation laterally relative to said casing track and for reducing wear on said drawer suspension when engaged by said intermediate carrying means.

2. A drawer suspension for mounting a drawer for movement into and out of its casing, a track on the casing, a track on the drawer, intermediate carrying means, bearings supporting said drawer track for free movement on said intermediate carrying means and said intermediate carrying means for free movement on said casing track, said intermediate carrying means having an intermediate track formed to provide a side section and a lower track section extending laterally therefrom, a bearing member mounted on the front end portion of said intermediate track on the upper surface of said track section adjacent to said side section, said bearing member having a pair of spaced parallel supporting flanges extending upwardly from said track section, a cushioning and stop member mounted at the rear end of said bearing member with a portion extending between said supporting flanges, said flanges and stop having registering openings extending transversely therethrough, and a spacer member extending through said openings for engagement with the inner face of said side section at one end and having the opposite end projecting inwardly for engaging and retaining said drawer track in laterally spaced relation relative to said intermediate carrying means and intermediate track and for reducing wear between said drawer track and said intermediate carrying means.

3. A drawer suspension for mounting a drawer for movement into and out of its casing, comprising a track on the casing, a track on the drawer, intermediate carrying means, said intermediate carrying means having an intermediate track formed from sheet material provided with a side section having a laterally extending lower track section on the lower edge thereof, a bearing member mounted on said track section and having a pair of spaced parallel upwardly extending supporting flanges, said side section having a projection formed therein in spaced relation beyond the rear end of said bearing member and extending laterally and inwardly over said lower track section and having a slot formed therein opening through the upper edge, and a combined stop and spacer member having portions arranged to engage in the slot in said projection and overlie opposite faces of said projection in interlocking cooperation therewith, said spacer member having one end engaging the end of said bearing member for cooperation to retain said combined stop and spacer member between the ends of said bearing member and said projection, and said spacer member having a portion thereof extending laterally and inwardly beyond said intermediate track for engaging and retaining said drawer track in laterally spaced relation relative to said intermediate carrying means for absorbing and reducing wear in said drawer suspension.

4. A drawer suspension for mounting a drawer for movement into and out of its casing, comprising a track on the casing, a track on the drawer, intermediate carrying means, said intermediate carrying means having an intermediate track member cooperating with the drawer and casing track, one of said track members having a stud mounted thereon rotatably mounting a bearing roller for rolling engagement with another of said tracks, said stud being formed with a recess, and a spacer member mounted in the recess in said stud and having a portion projecting inwardly in spaced relation relative to said stud and said track for engaging one of the other tracks for retaining said other track in laterally spaced relation and for absorbing and reducing wear when engaged by said other track.

5. In a drawer suspension supporting a drawer for movement into and out of a compartment in a casing, wherein a track is mounted on each side wall of the casing in said compartment extending from front to rear thereof, a track is provided on each side of the drawer, an intermediate track is provided at each side of said drawer supported by said casing tracks to form a support for said drawer tracks, bearing rollers at the front ends on said casing tracks support said intermediate tracks, bearing rollers at the front ends of said intermediate tracks support said drawer tracks, said bearing rollers transmitting the weight of said drawer from said drawer tracks to said intermediate tracks and to said casing tracks, said drawer and intermediate tracks having a construction that provides for limited sidewise movement of each track relative to the other and said casing track until the sides of said tracks engage one another, and stop means limits the relative movement of said drawer tracks and intermediate tracks to each other and said casing tracks, the combination therewith of a spacer member mounted on the front end of each casing track in transversely extending relation adjacent the support of said tracks by said bearing rollers with one end extending inwardly beyond the inner sides of the casing tracks to engage the sides of the intermediate tracks at the front end of said casing and retain the sides thereof in spaced relation.

6. In a drawer suspension supporting a drawer for movement into and out of a compartment in a casing, wherein a track is mounted on each side wall of the casing in said compartment extending from front to rear thereof, a track is provided on each side of the drawer, an intermediate track is provided at each side of said

drawer supported by said casing tracks to form a support for said drawer tracks, bearing rollers at the front ends on said casing tracks support said intermediate tracks, bearing rollers at the front ends of said intermediate tracks support said drawer tracks, said bearing rollers transmitting the weight of said drawer from said drawer tracks to said intermediate tracks and to said casing tracks, said drawer and intermediate tracks having a construction that provides for limited sidewise movement of each track relative to the other and said casing track until the sides of said tracks engage one another, and stop means limits the relative movement of said drawer tracks and intermediate tracks to each other and said casing tracks, the combination therewith of a fiber spacer member mounted on the front end of each casing track in transversely extending relation with one end extending inwardly beyond the inner sides of the casing tracks to engage the outer sides of the intermediate tracks at the front end of said casing, and retain the sides of said tracks in spaced relation.

7. In a drawer suspension supporting a drawer for movement into and out of a compartment in a casing, wherein a track is mounted on each side wall of the casing in said compartment extending from front to rear thereof, a track is provided on each side of the drawer, an intermediate track is provided at each side of said drawer supported by said casing tracks to form a support for said drawer tracks, bearing rollers at the front ends on said casing tracks support said intermediate tracks, bearing rollers at the front ends of said intermediate tracks support said drawer tracks, said bearing rollers transmitting the weight of said drawer from said drawer tracks to said intermediate tracks and to said casing tracks, said drawer and intermediate tracks having a construction that provides for limited sidewise movement of each track relative to the other and said casing track until the sides of said tracks engage one another, and stop means limits the relative movement of said drawer tracks and intermediate tracks to each other and said casing tracks, the combination therewith of a fiber spacer member mounted on the front end of each casing track in transversely extending relation with one end extending inwardly beyond the inner sides of the casing tracks to engage the outer sides of the intermediate tracks at the front end of said casing, and retain the sides of said tracks in spaced relation, and a fiber spacer member mounted on the front end of each intermediate track adjacent the bearing roller thereon and having one end extending inwardly beyond the inner side wall of said intermediate tracks to engage and maintain the side walls of said drawer tracks in spaced relation to the sides of said intermediate tracks.

8. A drawer suspension for mounting a drawer for movement into and out of its casing, comprising a track on the casing, drawer carrying means, bearings supporting said drawer carrying means for free movement on said casing track, said casing track comprising a sheet metal strip formed to provide a side section and a laterally extending track section from the lower edge thereof, a pair of spaced parallel supporting flanges extending upwardly from said track section at the front end portion thereof, and a spacer member extending transversely across one end of said supporting flanges and having one end engaged with the inner face of said side section for retention on said casing track with a portion projecting inwardly for engaging and retaining said drawer carrying means in spaced relation laterally relative to said casing track and for reducing wear on said drawer carrying means when engaged with said spacer member.

9. In a drawer suspension supporting a drawer for movement into and out of a compartment in a casing, wherein a track is mounted on each side wall of the casing in said compartment extending from front to rear thereof, another track is provided at each side of said drawer supported by said casing tracks to form a support for said drawer, bearing rollers at the front ends of said casing tracks support said other tracks, said bearing rollers transmitting the weight of said drawer from said other tracks to said casing tracks, said tracks having a construction that provides for limited sidewise movement of said other tracks relative to said casing tracks until the sides of said tracks engage one another, and stop means limits the relative movement of said other tracks to said casing tracks, the combination therewith of a fibre spacer member mounted on the front end of each casing track in transversely extending relation with one end extending inwardly beyond the inner sides of the casing tracks to engage the outer sides of the other tracks at the front end of said casing and retain the sides of said tracks in said spaced relation.

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