

Nov. 2, 1965

A. W. JACOBS

3,215,476

CABINET ROLLER ASSEMBLY

Filed April 22, 1963

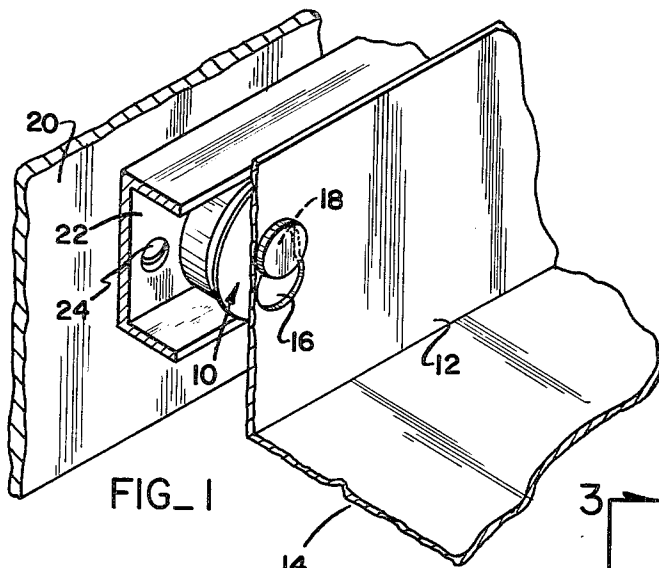


FIG. 1

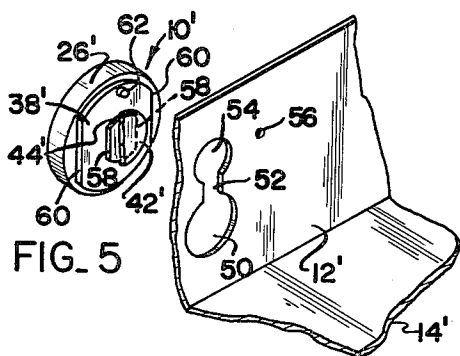


FIG. 5

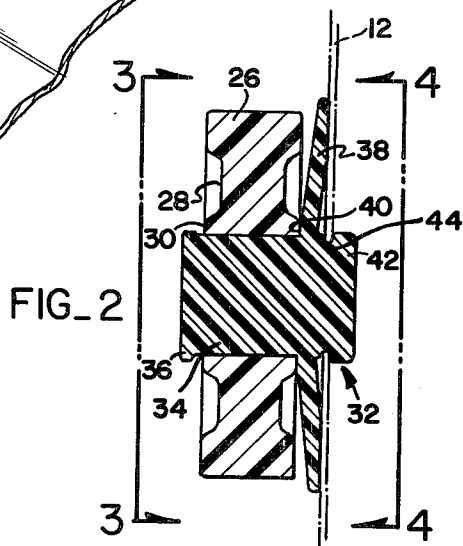


FIG. 2

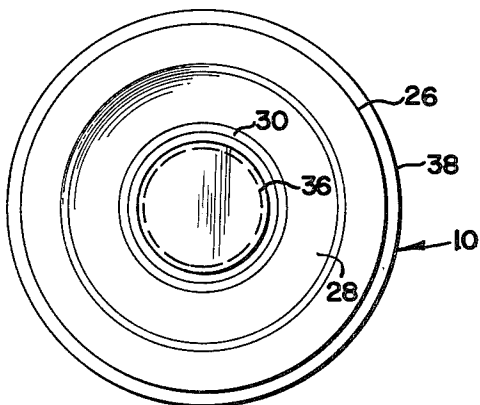


FIG. 3

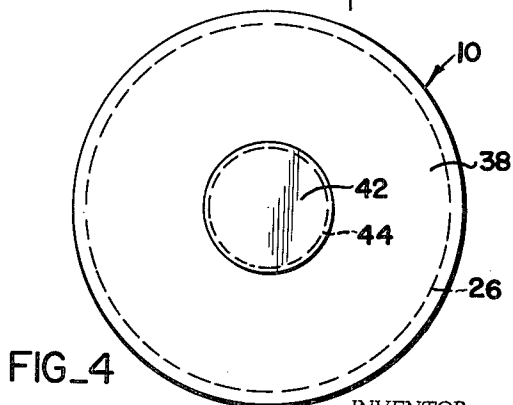


FIG. 4

INVENTOR.

ARTHUR W. JACOBS

BY

Berlin, Macky & Donnelly
ATTORNEYS

1

3,215,476
CABINET ROLLER ASSEMBLY
Arthur W. Jacobs, 5994 Columbia Road,
North Olmsted, Ohio
Filed Apr. 22, 1963, Ser. No. 274,732
6 Claims. (Cl. 308—3.8)

This invention relates as indicated to a cabinet roller assembly and more particularly to a new and improved roller assembly which can be quickly and easily mounted or removed from the cabinet drawer or like structure associated therewith.

In the past, rollers for providing smooth rolling movement of drawers relative to the fixed cabinet have generally been fixedly mounted on the drawers or cabinet thereby making original installation thereof relatively permanent and hence replacement thereof very difficult. The roller assembly of the present invention overcomes this disadvantage by being constructed for releasable mounting to greatly simplify mounting or replacement thereof.

A further object is to provide a roller assembly which is inherently self-lubricating.

Yet another object of the invention is to provide a roller assembly comprised of but few parts and which can be replaced in the field as well as installed in original equipment.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features herein-after fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

FIG. 1 is a fragmentary perspective view illustrating the roller assembly of the invention releasably mounted on a cabinet drawer for rolling engagement with fixed guide structure;

FIG. 2 is an enlarged, transverse sectional view of the roller assembly, the cabinet drawer upon which it is mounted being shown in dashed lines;

FIG. 3 is an elevational view taken on line 3—3 of FIG. 2;

FIG. 4 is an elevational view taken on line 4—4 of FIG. 2 with the cabinet drawer being removed for purposes of clarity; and

FIG. 5 is an exploded, perspective view of a roller assembly of modified form, the cabinet drawer being also modified to accommodate mounting of the roller assembly thereon.

Referring now to the drawings, wherein like parts have been indicated by like reference characters, and particularly to FIG. 1, the cabinet roller assembly in the preferred form of my invention is generally indicated at 10 and is shown therein releasably mounted on a side wall 12 of a cabinet drawer 14, the latter being shown broken adjacent the mounting for clarity. To accommodate such releasable mounting of the roller assembly 10, the side wall 12 is provided with a keyhole slot or teardrop shape opening comprising an enlarged bottom portion 16 and a reduced upper portion 18.

2

The roller assembly 10 and the drawer 14 are supported for rolling movement on the cabinet 20 by means of a channel 22 which is mounted on the cabinet 20 by any suitable means, for example mounting screws 24. As will be apparent, the channel 22 is of sufficient length to accommodate movement of the drawer 14 outwardly of the cabinet to the extent required.

It should be pointed out that FIG. 1 exemplifies only one such use of the roller assembly of the invention, and it will be readily apparent to those skilled in the art that the roller assembly could be removably mounted on structures other than that illustrated. For example, it will be seen, and, it will become more apparent herein-below, that the roller assembly 10 could be mounted equally as satisfactorily on the cabinet 20, with the drawer 14 in such instance carrying the channel 22. It will also be apparent that although only one such roller assembly has been shown in FIG. 1, any number can be employed to accommodate in the most desirable manner the rolling movement of the drawer.

Referring now to the specific construction of the roller assembly of preferred form, as shown in FIGS. 2-4, such assembly comprises a plastic guide roller 26 having annular portions 28 of reduced thickness on both sides of said roller and an axle receiving hub portion 30 defining a central opening. Although any suitable plastic possessing self-lubricating quantities can be employed for the roller 26, very satisfactory results have been obtained through the use of nylon.

The roller assembly 10 further comprises an axle member generally indicated at 32, such axle member being preferably one piece and comprising an axle shaft 34 adapted to extend through the central opening in the guide roller 26 for rotatably mounting said roller on said shaft. The axle shaft 34 is formed with an enlarged end portion 36 of greater diameter than the central opening in the guide roller for preventing the roller 26 from moving off the shaft at that end of said shaft.

The axle member 32 further comprises a annular, dish-shaped axle flange 38, such flange being slightly axially resiliently deformable and being provided with an annular central, embossed hub 40 adapted to contact the hub portion 30 of the roller 26, the hub 40 thus serving as an inner limit or stop for the guide roller 26. The opposite end 42 of the axle shaft 34 is provided with an inwardly offset, reduced diameter neck portion 44, such neck portion being received in the opening 18 formed in the cabinet drawer, in a manner to be further described below. The axle member 32 is preferably formed from self-lubricating acetal resin.

To mount the roller assembly 10 on the drawer 14, the roller assembly is disposed adjacent the cabinet drawer 14 with the end 42 of the axle member 32 being aligned with and extending through the enlarged opening 16 in the side wall 12 of the drawer. The roller assembly 10 is then moved vertically upwardly whereby the neck 44 is received within the relatively small opening 18 formed in the side wall 12, the outer end 42 being of larger diameter than such opening 18 and accordingly partially contacting the inside surface of the side wall 12 around such opening. During mounting the roller assembly 10 on the side wall of the cabinet, the annular flange 38 of the axle member 32 is slightly axially compressed or flattened whereby the same tightly contacts the outer surface of the side wall and thus firmly holds the roller assembly in place. The flange 38 further functions to maintain

the axle shaft 34 perpendicular to the side wall 12 and thus the guide roller 26 parallel to the side wall of the drawer by transmitting stress on the roller and the axle through the flange to the drawer side wall. The weight of the drawer 14 and objects contained therein of course acts downwardly thereby maintaining the neck 44 disposed within opening 18. Although the annular flange 38 is slightly flattened when the roller assembly is in a mounted position it does not contact the roller 26, except at the hub 40, thereby not interfering with the rotation thereof. Thus, the roller 26 freely rotates on the axle shaft 34 at all times thereby providing smooth rolling movement of the drawer inwardly and outwardly of the cabinet.

A modified form of roller assembly is shown in FIG. 5, such modified form varying from the preferred FIGS. 1-4 form in that the assembly and drawer mounting the same are formed so as to positively prevent inadvertent disengagement of the assembly while in its assembled, operative position. In FIG. 5, elements identical to elements illustrated in the preferred FIGS. 1-4 form have been identified by the same reference numeral with an attached prime. The side wall 12' of the cabinet drawer 14' is formed with a generally keyhole shaped slot comprising an enlarged circular bottom portion 50, an intermediate straight-sided relatively narrow portion 52 and an upper, circular portion 54 of reduced diameter relative to the circular bottom portion 50. The side wall 12' is also provided with a small circular opening 56 extending therethrough laterally offset from the circular portion 54 and preferably lying in a horizontal plane through the center of such circular portion 54. The positioning of the opening 56 and the purpose thereof will be made more apparent hereinbelow.

The roller assembly 10' of the modified form is identical to the roller assembly 10 of the preferred form with the following exceptions; the reduced diameter neck portion 44' is formed with oppositely disposed parallel flats 58, the spacing therebetween being slightly less than the width of the intermediate portion 52 of the keyhole slot in the side wall 12'; secondly, the axle flange 38' is formed with oppositely disposed parallel flats 60 for facilitating rotation thereof during the assembly process; and thirdly, the outside face of the axle flange 38' is formed with a preferably integral cylindrical stud or projection 62 adjacent the periphery thereof and preferably in a vertical plane through the center of the flange, as viewed in its FIG. 5 orientation. The projection 62 is slightly less in diameter than the opening 56 and is adapted to be radially aligned therewith and receivable therein when the roller assembly 10' is mounted on the side wall 12', as will be presently described.

To mount the roller assembly 10' on the side wall 12', the end 42 is aligned with the enlarged portion 50 of the keyhole slot and extended therethrough, as described above. When the flats 58 of the neck 44' are aligned with the side walls of the narrow intermediate portion 52 of the slot, the roller assembly is moved vertically upwardly until the arcuate periphery of the neck portion 44' contacts the wall of the upper circular opening 54. The roller assembly 10' is then rotated through approximately 90°, in a clockwise direction as viewed in FIG. 5, until the projection 62 becomes circumferentially aligned with the opening 56 at which position the flange 38', being slightly axially compressed, as above described, will force the projection 62 through such opening thereby locking the roller assembly 10' from rotation. At this 90° position of rotation, the flats 58 will, of course, have been moved to a position perpendicular to the narrow portion 52 of the keyhole slot whereby that portion of the neck 44' then adjacent the keyhole portion 52 is dimensionally greater than the width of such portion 52 thereby also preventing vertical movement of the roller assembly 10' in the keyhole slot until such assembly is

subsequently rotated 90° in a reverse direction. It will thus be seen that the roller assembly 10' will be retained in its assembled position regardless of the thrust applied thereagainst during movement of the drawer to its outer extremity. As above described, the axial flattening or compression of the flange 38' during the mounting of the roller assembly provides a firm holding of the assembly in a mounted position whereby the roller 26' is maintained parallel to the side wall 12' for optimum rolling movement of the drawer 14'. The provision of flats 60 in the flange 38' reduces somewhat the contact area between the flange 38' and the side wall 12' thereby facilitating the rotation of the assembly to its mounted and locked position.

To remove the roller assembly from the side wall 12', flange 38' is deformed or flexed sufficiently to disengage the projection 62 from the opening 56 whereupon the roller assembly 10' is rotated counterclockwise, as viewed in FIG. 5, approximately 90° thereby aligning the flats 58 with the parallel side walls of the intermediate portion 52 of the keyhole slot. The roller assembly is then moved vertically downwardly until the end 42' is disposed within the enlarged opening 50 at which time such end can be withdrawn therefrom.

The roller assemblies of the invention as described herein are highly simplified, self-lubricating, and can be firmly yet releasably mounted, for example on a cabinet drawer as shown, in a minimum of time and with a minimum of effort. It will be seen that the roller assemblies can be mounted on existing cabinet drawers by merely providing suitable shaped openings for receiving the same, as well as on original equipment.

Having thus described and disclosed a preferred embodiment of my invention what I claim as new and desire to secure by Letters Patent is:

1. A roller assembly adapted to be mounted on the wall of a supporting member, comprising an axle member, a guide roller rotatably mounted on said axle member, said axle member having an end portion adapted to be inserted into an opening in such supporting member, an axially yieldable flange rigidly connected to said axle member and adapted to contact such supporting member around such opening, and a reduced neck portion formed in said axle member between said end portion and said flange to permit shifting of said axle member in such opening, said yieldable flange during such shifting being axially deformed and tightly gripping such supporting member when mounted thereon.

2. In combination with a supporting member having a keyhole opening therein; a roller assembly releasably mounted on said supporting member, said roller assembly comprising an axle member, and a guide roller rotatably mounted on said axle member, said axle member having an end portion insertable into the wide portion of such keyhole opening, a circular, axially yieldable flange contacting one side of said supporting member around such keyhole opening, and an adjacent neck portion slightly smaller in diameter than the narrow portion of said keyhole opening, whereby shifting of said axle member to position said neck portion in said narrow portion of said keyhole opening axially deforms said flange into tight gripping contact with said one side of said supporting member.

3. The combination of claim 2 wherein said flange is dish-shaped for yieldable contact of its peripheral portion with said supporting member.

4. The combination of claim 2 further including means for locking said roller assembly in its mounted position on said supporting member.

5. A roller assembly comprising an axle member, a guide roller rotatable on said axle member, said axle member having an axially yieldable flange and an adjacent neck portion, said neck portion being releasably received in an opening in a supporting member, said

5

flange upon mounting of said roller assembly on said supporting member being axially deformed to tightly contact the latter, and means for locking said roller assembly in its mounted position on said supporting member, said locking means including a projection on said flange disposed through a second opening in said supporting member for preventing rotation of said flange relative to said supporting member.

6. The combination of claim 5 wherein said locking means further including complementary flat portions provided on said neck portion and partially forming said opening in said supporting member, alignment of said flat portions accommodating vertical movement of said assembly in said opening and subsequent disalignment of said flatted portions preventing vertical movement of said

6

roller assembly thereby locking the latter in its mounted position.

References Cited by the Examiner

UNITED STATES PATENTS

2,487,803	11/49	Heimann	85—8.5
2,594,571	4/52	Lundberg	312—350
2,724,867	11/55	Smith	308—15
2,897,533	8/59	Bull	16—2
2,948,773	8/60	Hawes	174—153

DON A. WAITE, *Primary Examiner.*

ROBERT C. RIORDON, FRANK SUSKO, *Examiners.*