PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

An improved Sliding Door Roller Mounting Assembly

I, ERWIN EDWARD SPORK, of 115 Bonney Avenue, Clayfield, Brisbane, in the State of Queensland, Commonwealth of Australia, a British Subject, do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an improved sliding door roller mounting assembly.

Various types of sliding door roller mounting assemblies are used at the present time, all of these consisting basically of a mounting bracket adapted to be secured to the top of the door and having rotatably mounted thereon or thereabove about a horizontal axis a roller adapted to be engaged with and to move along a track fixed above the door. For this purpose, the roller may be rotatably mounted on a shaft fixed to the mounting bracket or it may have affixed thereto a separate pivot shaft adapted to be journaled in a suitable bearing aperture in the bracket. The particular designs and constructions vary according to the size and weight of the door and the use to which it is to be put, but all the current designs and constructions are such that the manufacture and assembly of the brackets, rollers and shafts require some time, skill and labour, resulting in not inconsiderable cost.

My present invention has been devised with the principal object of providing a sliding door roller mounting assembly having componponents of such improved construction that they may be manufactured more easily and inexpensively than the components of current assemblies; may be assembled in a very small fraction of the time presently taken, and will not require any degree of skilled labour in their assembly.

The invention aims also to provide a roller mounting assembly of the aforedescribed character which is eminently suitable for cupboard doors, and which may be quickly fitted at any position along the top of such doors, the assembly proving strong, durable, trouble-free and otherwise efficient in operation.

With the foregoing and other objects in view, the invention resides broadly in a sliding door roller mounting assembly including a mounting bracket and a roller, the latter consisting of a pair of spaced end roller portions adapted to engage respective rails of a pair of spaced parallel horizontal rails of a door track secured above a door, and interconnected by an integral, ~~coaxial~~ coaxial, reduced-diameter pivot shaft adapted to be disposed horizontally when the end roller portions are engaged with the track, the bracket having a pair of spaced base members adapted to be secured to the top of the door and interconnected by an upstanding supporting member adapted to pass between the rails of the door track and between the end portions of the roller and having in its upper end a bearing aperture to accommodate the pivot shaft for rotation about a horizontal axis, the bracket having a shaft-insertion opening leading upwardly from between the base members to the bearing aperture and being made at least in part of a flexible or resilient material to enable the base members to be drawn apart to permit insertion of the roller shaft into the bearing aperture through the shaft-insertion opening. Other features of the invention will become apparent from the following description.

In order that the invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings, wherein:—

Fig. 1 is a perspective view of a mounting bracket and roller, shown in separated relationship, constituting one form of sliding door roller mounting assembly in accordance with the invention;

Fig. 2 is a perspective view of the mounting assembly of Fig. 1, shown attached to the top of a door and illustrated in its relationship to a door track;

Fig. 3 is a sectional elevation along the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of an alternative form of mounting bracket to that shown in Figs. 1 to 3, and

Fig. 5 is a perspective view of a further

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alternative form of mounting bracket in accordance with the invention.

Referring initially to Figs. 1 to 3 of the drawings, the roller mounting assembly includes a mounting bracket 10 and a roller 11, the former being adapted to be secured to the upper horizontal surface 12 of the top of a door 13, while the roller 11 is adapted to be engaged with a door track 14.

The door track 14, in this instance, includes a pair of spaced, parallel, horizontal rails 15, converging slightly upwards, each having a vertical web 16 interconnected by a horizontal top plate 17. The latter may have two or more lateral slots, such as that indicated by the numeral 18, being of well-known type, for adjustment purposes in the initial over-head-mounting of the track 14, while a series of plain holes, such as that indicated by the numeral 19, may be provided along the top plate 17 for final fixing in position.

The roller 11 is formed from a substantially cylindrical piece of metal and has intermediate its ends at its middle portion an annular groove 20 defining a pair of spaced end roller portions 21 interconnected by an integral, coaxial, reduced-diameter pivot shaft 22. It will be seen that the end portions 21 of the roller 11 are of equal length and are turned to frustro-conical form, each increasing uniformly in diameter towards its outer end, so that they may engage on the upper surfaces of the upwardly-converging track rails 15.

The mounting bracket 10, as shown in Figs. 1 and 2, has a pair of rectangular coplanar base plates 23, slightly bevelled at either side in this instance to minimize binding, and having counter-sunk attachment holes 24 in order that they may be secured by screws 24*a* to the top of the door 13. The mounting bracket 10 is made in a single piece from nylon or other suitable synthetic plastic, flexible and resilient material, the base plates 23 being spaced, as illustrated, and interconnected by an upstanding supporting member 25 which is of uniform thickness and uniform length, being disposed centrally in relation to the width of the base plates 23 and being of considerably lesser length in order that it may pass upwardly between the spaced rails 15 of the track 14.

The supporting member 25 consists of a substantially cylindrical upper portion having a bearing aperture 26 therein with a horizontal axis, while a pair of arms 27 diverge downwards and are integral with the inner edges of the respective base plates 23. Extending inwards towards each other from the respective base plates 23 are two stabilising lugs 28 adapted to prevent the bracket from being distorted so that the angle between the arms 27 is reduced, but it will be apparent that the angle between the arms 27 may be increased by bending the base plates 23 upwards towards each other, so that it will then be possible to insert the shaft 22 of the roller 11 into the bearing aperture 26 through an expanded shaft-insertion opening 29 at the position where the arms 27 meet the upper cylindrical portion of the supporting member 25.

It will be seen that the length of the supporting member 25 is slightly less than the length of the roller shaft 22 so that the latter will be rotatably accommodated in the bearing aperture 26 with the ends of the member 25 bearing against the inner edges of the roller end portions 21.

When the roller shaft 22 has been inserted in the bearing aperture 26 as previously mentioned, the base plates 23 may be secured by the screws 24*a* to the top 12 of the door 13 so that the diameter of the aperture 26 will become fixed, and there will be no likelihood of the roller 11 becoming dislodged from the mounting bracket 10. The operation of the assembly will be clear from consideration of Figs. 2 and 3 of the drawings.

In the alternative form of the invention shown in Fig. 4, the mounting bracket 10*a*—also formed of nylon or the like—has two base plates 23*a* interconnected by a supporting member 25*a* of solid form with a base portion 30 directly inter-connecting the plates 23*a*. The member 25*a* then has a plain cylindrical bearing aperture 26*a* formed in its upper end, while a central vertical cut 29*a* through the base portion 30 serves as a shaft-insertion opening into the bearing aperture 26*a*.

The further alternative form of the invention shown in Fig. 5 is identical with the mounting bracket of Fig. 1 except that, of the two base plates 23*b* and 23*c*, the latter is bent at right angles to the former so that the bracket may be attached to the top of the door, one base plate being attached to the upper horizontal surface 12 of the door and the other to the vertical edge.

In a further alternative form of the invention, not illustrated, the mounting bracket 10 may be made of sheet metal of uniform thickness, the base plates being integral with the upstanding supporting member, while the latter is formed at its upper end into a loop to define the bearing aperture. The general appearance will be similar to that shown in Fig. 1, as will be obvious.

While roller mounting assemblies as described and illustrated will be found very effective in achieving the objects for which the invention has been devised, it will be apparent that the invention is in no way restricted to the particular exemplary embodiments hereinbefore described but may be subject to considerable modifications which will be readily apparent and are deemed to reside within the scope of my invention, as defined by the appended claims.

WHAT I CLAIM IS:—

1. A sliding door roller mounting assembly including a mounting bracket and a roller, the latter consisting of a pair of spaced end roller portions adapted to engage respective rails of a pair of spaced parallel horizontal rails of a door track secured above a door, and interconnected by an integral, co-axial, reduced-diameter pivot shaft adapted to be disposed horizontally when the end roller portions are engaged with the track, the bracket having a pair of spaced base members adapted to be secured to the top of the door and interconnected by an upstanding supporting member adapted to pass between the rails of the door track and between the end portions of the roller and having in its upper end a bearing aperture to accommodate the pivot shaft for rotation about a horizontal axis, the bracket having a shaft-insertion opening leading upwardly from between the base members to the bearing aperture and being made at least in part of a flexible or resilient material to enable the base members to be drawn apart to permit insertion of the roller shaft into the bearing aperture through the shaft-insertion opening.

2. A sliding door roller mounting assembly according to Claim 1, wherein the roller is of substantially cylindrical form having an intermediate annular groove defining the integral pivot shaft with substantially cylindrical end portions at either end.

3. A sliding door roller mounting assembly according to either of the preceding claims, wherein the end portions of the roller are of equal length and frusto-conical form, each increasing uniformly in diameter towards its outer end, for engagement with door track rails having their upper surfaces converging upwardly.

4. A sliding door roller mounting assembly according to any one of the preceding claims, wherein the base members of the mounting bracket are substantially coplanar and parallel to the axis of the bearing aperture and have screw-attachment holes whereby they may be secured to the upper horizontal surface of the door.

5. A sliding door roller mounting assembly according to any one of Claims 1 to 3, wherein the base members of the mounting bracket are disposed at right angles to one another, lying in planes parallel to the axis of the bearing aperture and having screw-attachment holes whereby they may be secured to an upper corner of the door on the upper horizontal surface and vertical edge surface thereof respectively.

6. A sliding door roller mounting assembly according to any one of the preceding claims wherein the base members of the mounting bracket are substantially rectangular and of greater width than the upstanding supporting member.

7. A sliding door roller mounting assembly according to any one of the preceding claims, wherein the upstanding supporting member is of uniform width and of uniform thickness, having an upper, substantially cylindrical bearing portion and two lower downwardly-diverging planar arms connected at their lower ends to the respective base members.

8. A sliding door roller mounting assembly according to any one of the preceding claims, wherein the mounting bracket is formed wholly of nylon or other flexible and resilient synthetic plastic material.

9. A sliding door roller mounting assembly according to any one of Claims 1 to 7, wherein the mounting bracket is formed of sheet metal of uniform thickness.

10. A sliding door roller mounting assembly, substantially as herein described with reference to Fig. 1 of the accompanying drawings.

11. A sliding door roller mounting assembly, substantially as herein described with reference to Fig. 1 of the accompanying drawings, and modified as described with reference to Fig. 4 of the drawings.

12. A sliding door roller mounting assembly, substantially as herein described with reference to Fig. 1 of the accompanying drawings, and modified as described with reference to Fig. 5 of the accompanying drawings.

13. A mounting for a sliding door, substantially as herein described with reference to Figs. 1 to 3 of the accompanying drawings.

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