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SLIDING DOOR SUPPORTING APPARATUS

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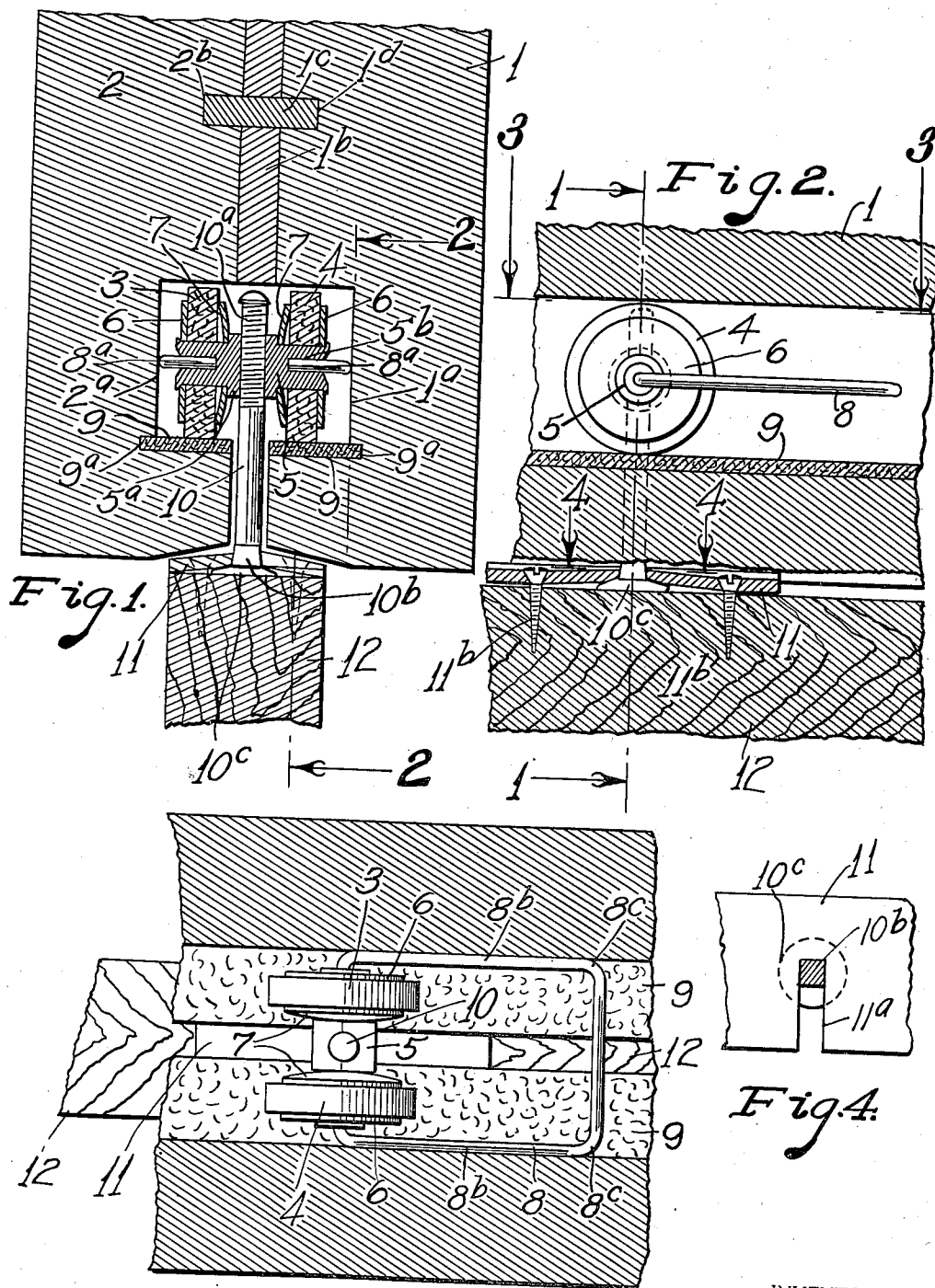


Fig. 3.

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SLIDING DOOR SUPPORTING APPARATUS

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6 Claims. (Cl. 16—104)

My invention relates to a sliding door supporting apparatus, more particularly adapted for use in suspending doors in shiftable relation with door openings in narrow walls and the objects of my invention are:

First, to provide a sliding door supporting apparatus of this class which is very free and easy to operate and which will not jam or become wedged in the door supporting frame;

Second, to provide a sliding door supporting apparatus of this class which is very smooth and quiet in operation;

Third, to provide a sliding door supporting apparatus of this class in which adjustable members provide relative adjustment between the door and the door supporting frame;

Fourth, to provide a sliding door supporting apparatus of this class in which door supporting rollers are provided with straight surfaced annular edges which have a constant radial contact surface engageable with roller supporting special track members thereof for free and easy operation;

Fifth, to provide a sliding door supporting apparatus of this class in which door supporting rollers are provided with an axial guide member which retains said rollers in parallel radial alignment with the door in connection therewith for ease of operation and prevention of wear;

Sixth, to provide a sliding door supporting apparatus of this class which is very strong and durable;

Seventh, to provide permanent lubrication means for the operating parts; and

Eighth, to provide a sliding door supporting apparatus of this class which is very simple and economical of construction, efficient in its action and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawing and to the characters of reference thereon which form a part of this application in which:

Figure 1 is a sectional view of my sliding door supporting apparatus taken from the line 1—1 of Fig. 2 showing portions fragmentarily and parts in elevation to facilitate the illustration; Fig. 2 is a fragmentary sectional view taken from the line 2—2 of Fig. 1 showing parts and portions in elevation to facilitate the illustration; Fig. 3

is a fragmentary plan sectional view taken from the line 3—3 of Fig. 2 and Fig. 4 is a fragmentary sectional view taken from the line 4—4 of Fig. 2.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawing.

The door supporting frame members 1 and 2, door supporting rollers 3 and 4, roller axle 5, washers 6, grease retainer washers 7, roller guide member 8, roller track members 9, door supporting bolt 10, bolt and door connection plate 11 and the door 12 constitute the principal parts and portions of my sliding door supporting apparatus.

The door supporting frame members 1 and 2 are secured together in parallel relation with each other with a spacer member 1b therebetween and a member 1c which is positioned in transverse relation with the spacer 1b and which is parallel with the door supporting members 1 and 2. This member 1c extends into recess portions 1d and 2b in the door supporting frame members 1 and 2 respectively at its opposite ends. The door supporting frame members 1 and 2 are provided with substantially rectangular recessed portions 1a and 2a on the lower side of which are positioned the roller track members 9, it being noted that an opening is provided between the frame members 1 and 2 below the lower side of said recess portions 1a and 2a respectively. This opening is substantially the width of the spacer member 1b and extends in parallel relation with the frame members 1 and 2.

The door supporting rollers 3 and 4 are made of fiber or other suitable composition, and are revolvably mounted on opposite ends of the roller axle 5. Positioned on this axle 5 near the outer ends thereof at the outer sides of the rollers 3 and 4 are the washers 6. The grease retainer washers 7 are arcuate in cross section, as shown in Fig. 1 of the drawing and are positioned on the roller axis 5 at the inner side of the rollers 3 and 4, it being noted that the arcuate form of these grease container washers 7 permit the insertion of grease at one side of each of the rollers 3 and 4 adjacent said washers 7 around the axle 5.

The axle 5 is peened at both ends and thereby retains the washer 6 in position. The axle 5 is provided with recess portions 5b in its opposite ends in which are fitted the opposite ends 8a of the roller guide member 8, as shown best in Figs. 1 and 2 of the drawing.

The roller track members 9 are positioned in

the lower side of the recess portions 1a and 2a of the door supporting frame members 1 and 2 and are inlaid at their edge portions 9a in the frame members 1 and 2. These roller track members 9 are preferably made of hard wearing composition, such as masonite or the like or any other suitable material as desired. These roller track members 9 are provided with a smooth upper surface and are arranged to support the door supporting rollers 3 and 4 thereon. These rollers 3 and 4 are held in parallel alignment with the track 9 by means of the side portions 8b of the roller guide member 8 in engagement with the vertical side walls of the recess portions 1a and 2a of the frame members 1 and 2 respectively, it being noted that this roller guide member 8 is substantially U shaped and is provided with round corners 8c which will not catch on the frame members 1 and 2 while moving back and forth in engagement therewith.

The door supporting bolt 10 is provided with a screw threaded portion 10a on its upper end which is screw threaded in an enlarged middle portion 5a of the roller axle 5. The shank of this bolt 10 extends downwardly from the axle 5 between the spaced frame members 1 and 2 at their lower side provided with a substantially square in cross section head portion 10b near its lower end which is positioned in the slotted portion 11a of the bolt and door connection plate 11. Positioned beneath the bolt and door connection plate 11 is the enlarged head portion 10c of the door supporting bolt 10 which overlaps the side edges of the slotted portions 11a of the bolt and door connection plate 11. This bolt and door connection plate 11 is secured on the upper side of the door 12 by means of the screws 11b, as shown best in Fig. 2 of the drawing. It will be noted that the slotted portions 11a of the bolt and door connection plate 11 is arranged so that the door 12 may be removed and disconnected from the bolt 10 when it is desired to adjust the bolt 10 in its screw threaded relation with the roller axle 5 permitting the relative spaced relation of the frame members 1 and 2 with the door 12 to be changed as desired.

The operation of my sliding door supporting apparatus is substantially as follows: The rollers 3 and 4 positioned on the roller track members 9 are guided on said track members by means of the roller guide member 8 in engagement with the inner surfaces of the frame members 1 and 2, while said rollers are rolling back and forth in connection with the sliding door 12, it being noted, of course, that two or more sets of rollers may be provided to support a door. When it is desired to adjust the spaced relation of the door 12 and the frame members 1 and 2, the door 12 is lifted upwardly then forced sideways so

that the square portion 10b of the bolt 10 slides out of the slotted portion 11a of the bolt connection plate 11. The bolt 10 is then adjusted as desired in its screw threaded connection with the axle 5 and the door 12 is replaced on the portion 10b of the bolt 10 whereby the head of the bolt 10 is positioned in a recess in the under side of the bolt connection plate 11 so that it may not be easily shifted outwardly from the slotted portion 11a.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a sliding door supporting apparatus of the class described, the combination of a pair of rollers mounted in a passageway of a frame member, an axle for said rollers and a substantially U-shaped guide member secured to opposite ends of said axle engageable with said frame member for holding said rollers in radial longitudinal alignment with said frame member.
2. In a sliding door supporting apparatus of the class described, the combination of rollers mounted in a passageway of a frame member and a substantially U-shaped guide member connected with opposite sides of said rollers.
3. In a sliding door supporting apparatus of the class described, the combination of rollers mounted in a passageway of a frame member and a substantially U-shaped guide member connected with opposite sides of said rollers, and an axle upon which said rollers are mounted.
4. In a sliding door supporting apparatus of the class described, the combination of rollers mounted in a passageway of a frame member, an axle for said rollers, and a substantially U-shaped guide member secured on said axle.
5. In a sliding door supporting apparatus of the class described, a roller mounted in a passageway of a frame member and a U-shaped guide member connected at opposite sides of said roller.
6. In a sliding door supporting apparatus of the class described, the combination of a pair of rollers mounted in a passageway of a frame member, an axle for said rollers and a substantially U-shaped guide member secured to said axle engageable with said frame member for holding said rollers in radial longitudinal alignment with said frame member.

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