

[54] **SUPPORT MEANS PROVIDING TRANSLATIONAL MOVEMENT**

[76] Inventors: **Ralph R. Julian**, 7300 Wilmington Pk., Dayton, Ohio 45459; **Larry L. Collins**, 724 Swigort Dr., Fairborn, Ohio 45324

[22] Filed: **July 10, 1972**

[21] Appl. No.: **270,271**

[52] U.S. Cl. **16/94 R, 16/97, 16/96 R**

[51] Int. Cl. **A47h 1/04**

[58] Field of Search. **16/93 R-96 R, 16/196-199; 49/404, 409-412; 5/81 R; 105/282**

[56] **References Cited**

UNITED STATES PATENTS		
3,579,672	2/1970	Koll et al. 5/81 R
1,111,661	9/1914	McCallum..... 16/95 R
2,033,141	3/1936	Kraut et al. 16/95 R
2,169,271	8/1939	Michael 16/96 R X

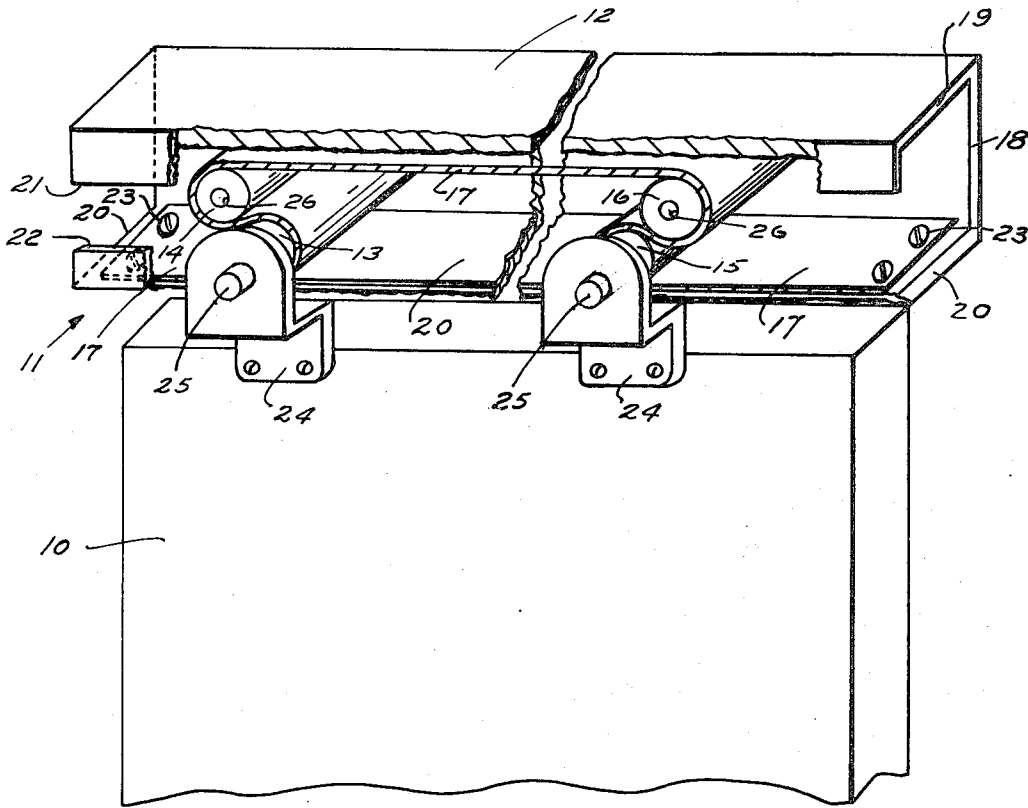
2,878,532 3/1959 Clark 16/96 R X

Primary Examiner—Bobby R. Gay
Assistant Examiner—Peter A. Aschenbrenner

[57] **ABSTRACT**

Support means providing translational movement for doors and the like comprises a support member having parallel walls spaced apart from each other a distance less than the combined diameters of one of two spaced apart pairs of roller members. A flexible band under tension is interposed between and partially encompasses adjacent roller members of each pair of roller members, and end portions of the band are connected to one of the walls with both pairs of roller members being disposed between such end connections. Such configuration permits rolling motion of the roller members in a direction parallel to the walls which support, guide and otherwise restrain the roller members.

7 Claims, 1 Drawing Figure



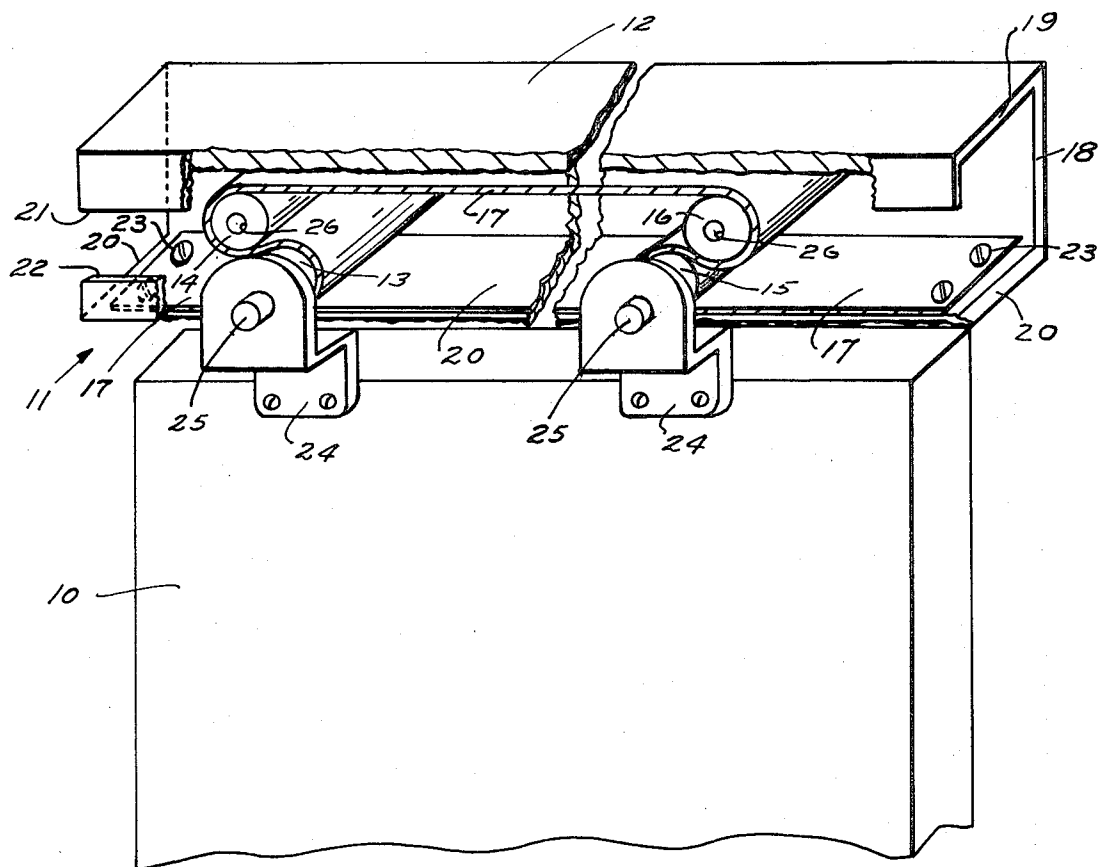


Fig. 1

SUPPORT MEANS PROVIDING TRANSLATIONAL MOVEMENT

BACKGROUND OF THE INVENTION

The present invention relates to support means and, more particularly to improved means providing support and translational movement for doors and the like.

Heretofore, various means employing roller members mounted for translational movement on a tracklike member have been utilized for supporting sliding doors and the like. Such prior art devices work reasonably well in performing their intended function but they are subject to the disadvantage of the roller members easily becoming dislodged from or jammed in the track-like support member.

SUMMARY

A principal object of the present invention is to provide means overcoming such difficulties. This is accomplished in accordance with the invention by the provision of a pair of roller members that are positively supported, guided and restrained by support walls cooperatively associated with a flexible tension band interposed between adjacent roller members and partially encompassing the same while providing rolling motion thereof relative to the band and the support walls.

DESCRIPTION

These and other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawing in which FIGURE is a perspective view, partly broken, of a support for a door and the like in accordance with the present invention.

In the drawing, a member 10 such as a door and the like is mounted for reciprocable translational movement on a support device indicated generally at 11. The support device includes a U-shaped channel member 12, a pair of roller members 13, 14, a second pair of roller members 15, 16 spaced apart from the first pair, and an elongated band member 17.

As shown in the drawing, channel member 12 has a vertically extending web portion 18 from which depend upper and lower horizontally extending leg portions 19, 20. These leg portions have depending therefrom opposed flange portions 21, 22 which restrain the movable elements of the device in a direction perpendicular to the web portion 18 without interfering with their movement along the extent of leg portions 19, 20.

For clarity in illustration, the thickness of band member 17 is exaggerated in the drawing, and it is to be understood that the actual thickness of this member may be as little as a few thousandths of an inch. Both ends of band member 17 are affixed to lower leg portion 20 by any convenient fastening means such as screws 23. Members 17 extend along the upper surface of leg portion 20 and beneath roller 13. The band is then partially wrapped around roller 13 and passes between rollers 13, 14, following which the band is partially wrapped around and extends above roller 14. The band then extends horizontally and passes over and partially around roller 16, passes between rollers 15, 16, and is then wrapped partially around and passes below roller 15 and then extends along the upper surface of the right-hand end of leg portion 20 where it is secured thereto by screws 23.

Conveniently, channel member 12 may be formed of metallic material such as steel, aluminum, magnesium and the like, all of which are commercially available, but the invention is not necessarily limited to the use of such materials. Similarly, roller members 13-16 conveniently may be formed of non-metallic material that can be readily formed and shaped into roller form such as rubber, or synthetic resin materials of the thermosetting or thermoplastic type. The roller members are not necessarily limited to the aforementioned materials and, in general, factors governing the selection of the roller material will include cost of the material itself as well as its manufacture in desired shapes and sizes, its coefficient of rolling friction, and quietness in operation during rolling contact with other materials.

When a band member is threaded between the roller members and connected to the channel member in the manner described above and placed under tension, this results in each of the respective pairs of rolls being subjected to force components which urge the upper and lower rolls toward engagement with the upper and lower leg portions, respectively, of the channel member. Thus, each pair of rolls is restrained against vertical movement by leg portions 19, 20, and each of the pairs of rolls is restrained against axial movement by web portion 18 and flange portions 21, 22. However, each of the respective pairs of rolls is free for rolling movement in either direction along the extent of channel member 12.

The door or the like member 10 is connected to the support device by brackets 24 which are supported on dowels 25, the dowels being received in central bores 26 provided in the roll members.

Thus it will be seen that the present invention provides support device that is strong and durable, is mechanically simple, easily installed, provides for free and substantially frictionless rolling movement, provides trouble-free operation, and is composed of relatively few simple elements that can be manufactured easily and inexpensively.

While a particular embodiment of the invention has been illustrated and described, it will be obvious that various changes and modifications can be made without departing from the invention and it is intended in the appended claims to cover all such changes and modifications that fall within the spirit and scope of the invention.

What is claimed is:

1. A support providing translational movement for doors and the like comprising
 - support means including a first pair of adjacent roll members and
 - a second pair of adjacent roll members spaced apart from said first pair,
 - a support member supporting said roll members and restraining movement thereof in a first horizontal direction while allowing movement thereof in a second horizontal direction,
 - said support member having a pair of walls spaced apart from each other a distance less than the sum of the diameter of said roll members of either of said pairs, and
 - flexible band means connected under tension to one of said walls at locations spaced apart from each other a distance greater than the spacing between said first and second pairs of roll members,

3

4

said band means extending between and partially encompassing adjacent roll members of said first and second pairs and maintaining parallel disposition of the axes of adjacent roll members and allowing rolling motion between the roll members and the band means.

2. A support according to claim 1 wherein said one of the roll members of said first pair is journaled mounted for rotation relative to said support means.

3. A support according to claim 1 wherein one of the roll members of each of said pairs is journaled mounted for rotation relative to said support means.

4. A support according to claim 1 wherein each of said walls includes portions at opposite ends thereof perpendicular to other portions thereof substantially preventing movement of said roll members in a direction along the axes of rotation thereof.

5. A support according to claim 1 wherein all of said roll members have substantially equal diameters.

6. A support according to claim 1 wherein said roll members are formed of a non-metallic material.

7. A support according to claim 1 wherein said walls are formed of a metallic material.

* * * * *

15

20

25

30

35

40

45

50

55

60

65