Dec. 6, 1960 I. HELLER 2,962,773

SLIDING DOOR ASSEMBLY

Filed Sept. 18, 1958 2 Sheets-Sheet 1

Fig. 1

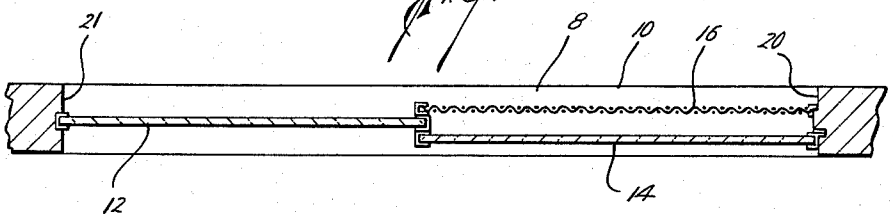


Fig. 2

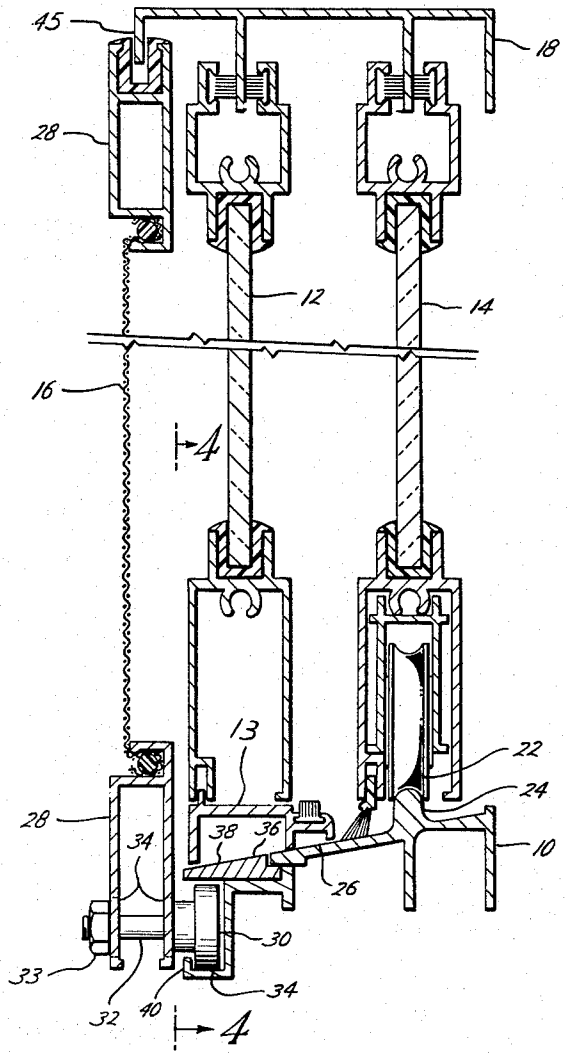
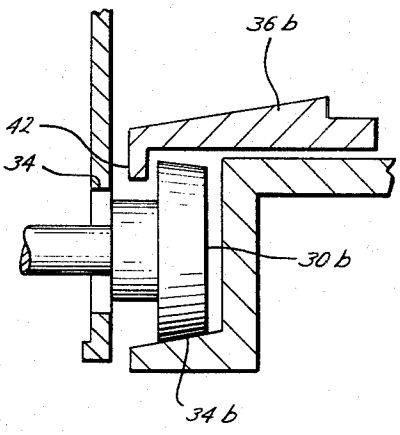


Fig. 6



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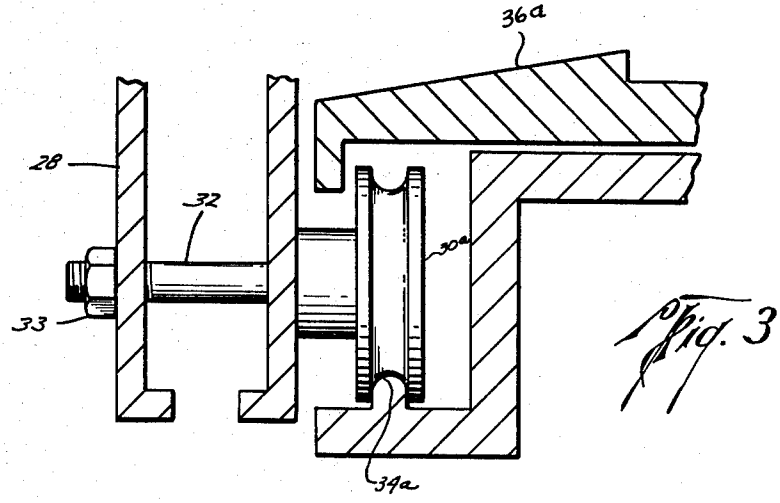
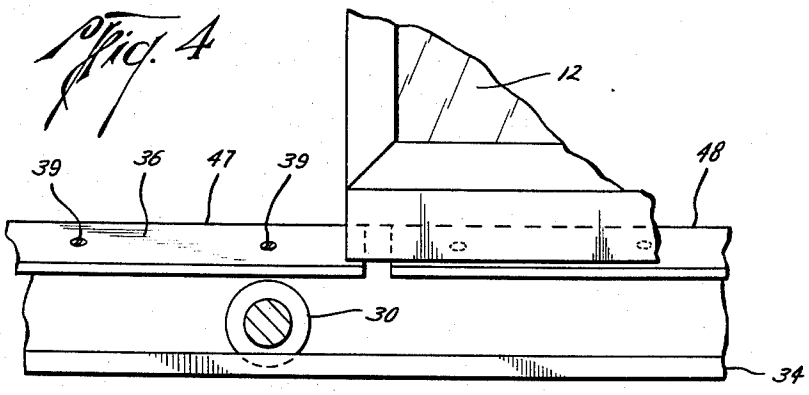


Fig. 3

Fig. 4



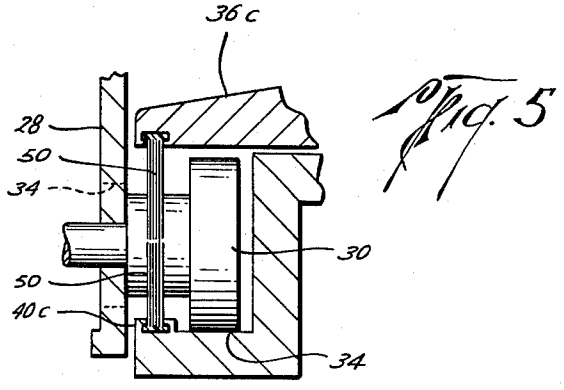


Fig. 5

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SLIDING DOOR ASSEMBLY

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4 Claims. (Cl. 20—19)

The present invention relates to a sliding door assembly, and more particularly, relates to an improvement in a sliding door assembly operating on a sill which locks the sliding mechanism in place and interlocks with the sill to present a uniform slope.

Generally, sliding glass and screen doors operate on a track which is secured to or form a part of the floor sill. The track is either of the raised fin rail type or is merely a recessed groove in the sill. When either of these types of track are used near the bottom of a sloping sill they form an undesirable water and dirt trap. Rocks, dirt or other debris can accumulate in this formed trap and bind the sliding mechanism so as to prevent the door from working. Furthermore, because of the flexible play that is inherent in a sliding door the sliding mechanism which is merely inserted on the track is subject to continual derailment or popping out. It is to overcome these disadvantages that the present invention is directed.

It is therefore a general object of the present invention to provide a sliding door assembly which is free of a sill trap.

A further object of the present invention is the provision of a track lock which releasably secures the sliding mechanism on the track and thereby prevents it from popping out or being derailed.

It is yet a further object of the present invention to provide a sliding door assembly with a track and traveling mechanism which interlocks with the sill and provides a uniform sloping sill.

It is yet a further object of the present invention to provide an improvement in a sliding door assembly in which the track and traveling mechanism is weatherproofed.

Other and further objects, features and advantages will be apparent from the following description of presently preferred embodiments of the invention, given for the purpose of disclosure, and taken in conjunction with the accompanying drawings, where like character references designate like parts throughout the several views, and where

Figure 1 is a plan view, in cross-section, illustrating a conventional sliding door arrangement in which the present invention may be used,

Figure 2 is an enlarged side elevational view, partly in cross-section, illustrating a preferred embodiment of the present invention,

Figure 3 is a fragmentary side elevational view partly in cross-section, illustrating a modified form of the present invention using a rail track,

Figure 4 is a fragmentary side elevation taken along line 4—4 of Figure 2,

Figure 5 is a fragmentary side elevational view, partly in cross-section, illustrating another modified form of the present invention in which the track is enclosed in weather stripping, and

Figure 6 is a fragmentary side elevational view partly in cross-section, illustrating another modified form of the present invention in which the track is sloped.

In general, a typical sliding door construction **8** is shown in Figure 1 and consists of a sill **10** on which is secured a fixed glass door **12**, an inside sliding glass door **14** and a sliding screen door **16**.

As best seen in Figures 1 and 2 the fixed glass door **12** is secured and supported between the sill **10** on a sill filler **13** and to the upper head **18** and to the fixed jamb **21**. The sliding door **14**, which is generally inside of the house as compared to the fixed door **12**, rides on a forked wheel **22** and fin track **24**, which is a part of sill **10**, as is conventional. It has been conventional to provide a similar forked wheel and track arrangement for the movable screen **16** or to provide a recess (not shown) for the screen supporting wheel to ride in. Either one of these arrangements provides a trap for water and dirt in the sill and does not provide a method of locking the wheel to the track.

The present invention is directed to an improvement by providing a supporting wheel **30** operating in a track **34** and secured therein by the track lock **36** which interlocks with the sill **10** to provide a uniform slope to the bottom of the sill.

The sliding door **16** is provided with a frame **28** around its periphery and is supported by the wheel **30** which is secured near the bottom edge of the frame and out of line, that is to one side, of the door **16** and may be secured to the door bolt **32** and nut **33**. It is to be noted that the bolt **32** extends through vertically cut slots **34** in the door frame **28** to provide a vertical adjustment between the door and the wheel **30**. While the sliding mechanism is here shown as a wheel **30** it may consist of any slidable mechanism capable of movement in the track **34**. For example, a nylon block has been found to be satisfactory for operation in an aluminum sill. However, the wheel **30** preferably consists of sealed ball bearing nylon rollers.

A track **34** is provided with means such as the lip **40** to maintain the wheel or sliding mechanism in its horizontal position on the track. It is noted that the track **34** is disposed beneath the sloping top **26** of the sill **10** and for ease of construction is preferably extruded as an integral part of the sill **10**.

The track lock **36** interlocks with the sill **10** and its top **38** interlocks with and has substantially the same slope as the sill **10**. It is noted that this track lock **36** when secured in place insures that the supporting wheel **30** is contained in the track and is not subject to derailment. Furthermore, the track lock **36** provides a structure protecting the track **34** from debris and provides a uniform sloping drain in conjunction with the sill **10**. As best seen in Figure 4, the track lock **36** may consist of a plurality of panels **47** and **48** and may be removably secured to the sill **10** by screws **39** so that the wheels **30** and the sliding door **16** may be inserted and removed from the track **30**.

Of course various modifications of the sliding door assembly may be made. Figures 3, 5 and 6 illustrate modifications of the structure according to the invention, the letters "*a*," "*b*" and "*c*" being applied to parts corresponding to those in Figures 2 and 4 for convenience of reference. Figure 3 is an enlarged partial view of a modified embodiment of the present invention using a raised track **34***a* and a coacting forked wheel **30***a*. Figure 5 is an enlarged partial view similar to the embodiment shown in Figure 2 utilizing two weatherproofing strips **50**, one attached to the track lip **40***c* and the other attached to the track lock **36***c*. These strips **50** are preferably wool pile weather stripping fibers which meet and keep dirt and other debris out of the track, but are flexible so as to allow movement of the hub of wheel **30** between the strips **50**.

Figure 6 illustrates an enlarged view showing the modi-

fication wherein the track 34*b* slants downwardly and outwardly. This provides a track structure which prevents pebbles and other objects which might become stuck in the track and bind the wheel 30*a* from lodging in the track. In this modification a lip 42 is provided on the track lock 36*b* to insure that the wheel 30*b* is held horizontally in place on the track 34*a*.

In operation, the head 18, the sill 10, the lock jamb 20 and the fixed jamb 21 are assembled and secured in a door opening and the doors 12 and 14 put in place as is conventional. One of the track lock sections 47 or 48 is removed from the sill 10 by screws 39 so that it may be pulled straight out. The sliding door 16 is installed by putting the door top into the fin 45 at the header 18 and swinging the bottom wheels 30 onto the track 34. The sliding door 16 is then moved in track 34 and the removed track lock section is then replaced. The sliding door 16 can then be squared parallel to the jambs by raising or lowering the adjustable wheels 30 in the screen frame 28. In the event some foreign objects do lodge in the track, the track lock 36 may be easily removed, the track cleaned, and the track lock 36 replaced.

While the sliding door assembly of the present invention is shown as applied to a sliding screen door it will be understood that this assembly may be used with other sliding doors such as glass doors and in other sliding door arrangements than that illustrated in Figure 1. In fact, this assembly may be used with any sliding door which operates on a sill so as to eliminate water and dirt traps, provide a track that is not subject to becoming inoperative due to foreign objects and to provide a track lock which securely locks the traveling mechanism in place.

The present invention, therefore, is well adapted to carry out the objects and attain the ends and advantages mentioned as well as others inherent therein. While presently preferred embodiments of the invention are given for the purpose of disclosure, numerous changes in the details of construction and arrangement of parts may be made which will readily suggest themselves to those skilled in the art which are encompassed within the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. In a sliding door assembly for a building including a door and a sloping sill adjacent the ground, the improvement comprising, a track disposed adjacent and below the sill and adjacent and above ground level, movable supporting means secured to said door and arranged to travel on said track, and a track lock removably secured to said sill above said track, said track lock overlying the track but leaving space in excess of the diameter of the movable supporting means whereby said supporting means is contained on said track, said track lock being a continuation of the sloping sill.

2. In a sliding door assembly for a building including a door and sloping sill adjacent the ground, the improvement comprising, a track disposed adjacent and below the sill and adjacent and above ground level, movable supporting means secured to said door and arranged to travel on said track, a track lock removably secured to said sill above said track, said track lock overlying said track but leaving space little in excess of the movable supporting means whereby supporting means is confined and contained on said track between the track and said track lock, said track lock being a continuation of the sloping sill, and a flexible weather stripping attached to said track and to said track lock enclosing said track, said stripping having an opening for movement of the movable supporting means along the track in said opening.

3. In a sliding door assembly for a building including a door and a sloping sill adjacent the ground, the improvement comprising, a track disposed adjacent and below the sill and adjacent and above ground level, said track slanting downwardly and outwardly from said sill whereby debris will not accumulate and block said track, a supporting wheel secured to said door and arranged to travel on said track, a track lock removably secured to said sill above said track, said track lock overlying the track leaving space little in excess of the wheel, and a lip attached to said track lock whereby the wheel is confined and contained on said track and under said track lock, said track lock being a continuation of the sloping sill.

4. In a sliding door assembly for a building including a door and a sloping sill adjacent the ground, the improvement comprising, a rib track disposed adjacent and below the sill and adjacent and above ground level, a forked wheel movable on said rib track and coacting therewith so as to travel on said track, said wheel secured to and supporting said door, and a track lock removably secured to said sill above said track, said track lock overlying the track in a spaced relationship leaving little space in excess of said wheel whereby said wheel is confined and contained on said track, said track lock being a continuation of the sloping sill.

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