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(54) **SCREEN ASSEMBLY FOR A FRAME OPENING**

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(75) Inventors: **Mike R. Jumbeck**, Chippewa Falls, WI (US); **Joseph D. Isaacs**, Rice Lake, WI (US); **Jeff V. Sawyers**, Rice Lake, WI (US)

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(57) **ABSTRACT**

Correspondence Address:  
**HOWARD & HOWARD ATTORNEYS, P.C.**  
**THE PINEHURST OFFICE CENTER, SUITE**  
**#101, 39400 WOODWARD AVENUE**  
**BLOOMFIELD HILLS, MI 48304-5151**

A screen assembly is disposed in a frame opening of a building. The screen assembly includes a first rail bounding one side of the frame opening and a second rail spaced from and fixed relative to the first rail bounding an opposite side of the frame opening. A first guide is adjustably coupled to the first rail and a second guide extends from the second rail. The screen assembly includes a screen apparatus having a screen and a slide component coupled to the screen. The slide component slides along the first and second guides for extending the screen across the frame opening. The location of the first guide may be adjusted relative to the first rail to align the first and second guides thereby allowing the slide component to freely slide along the guides.

(73) Assignee: **QUANEX CORPORATION**, Houston, TX (US)

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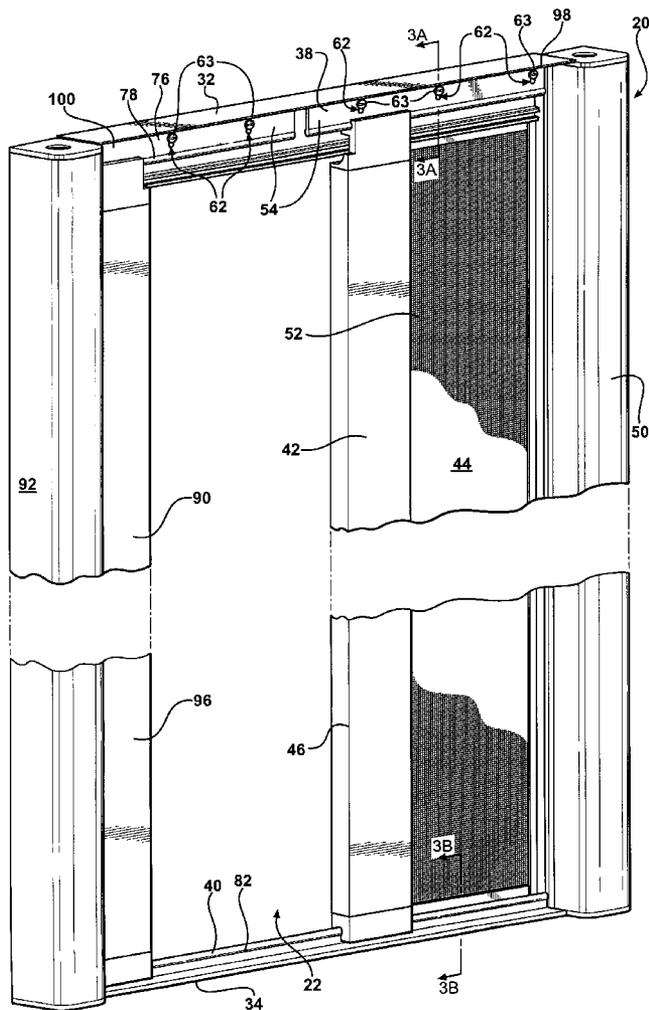
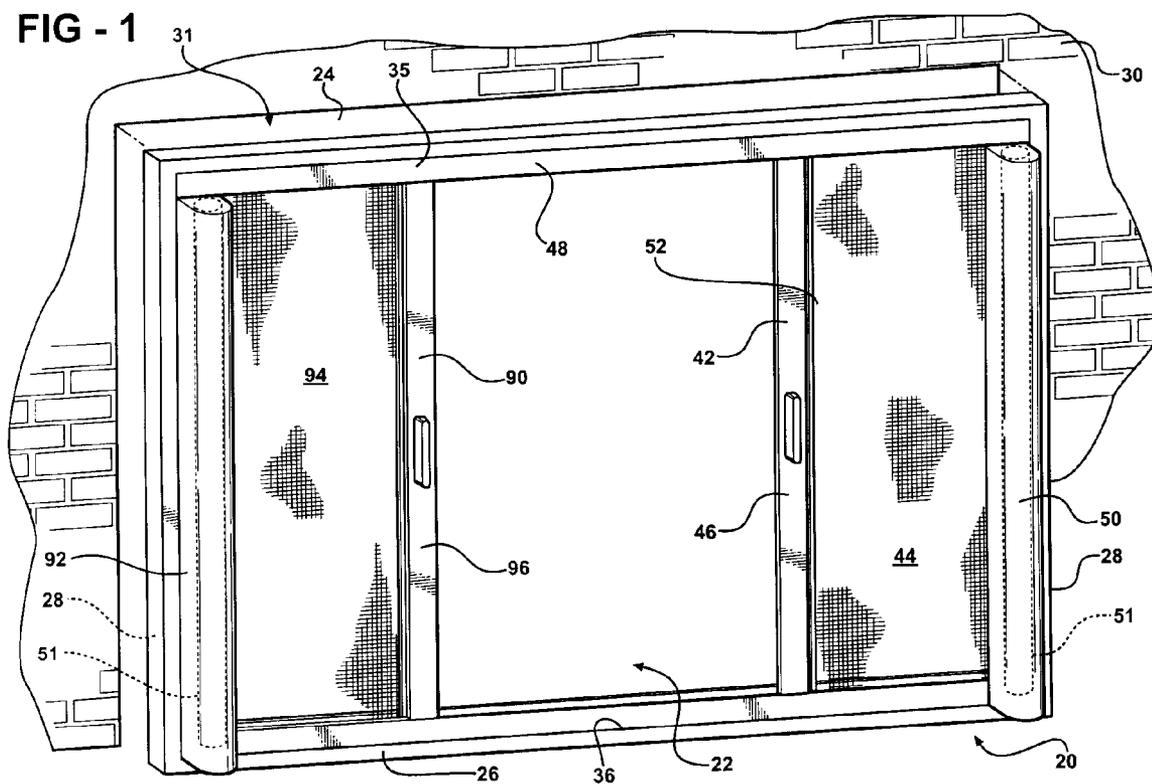


FIG - 1



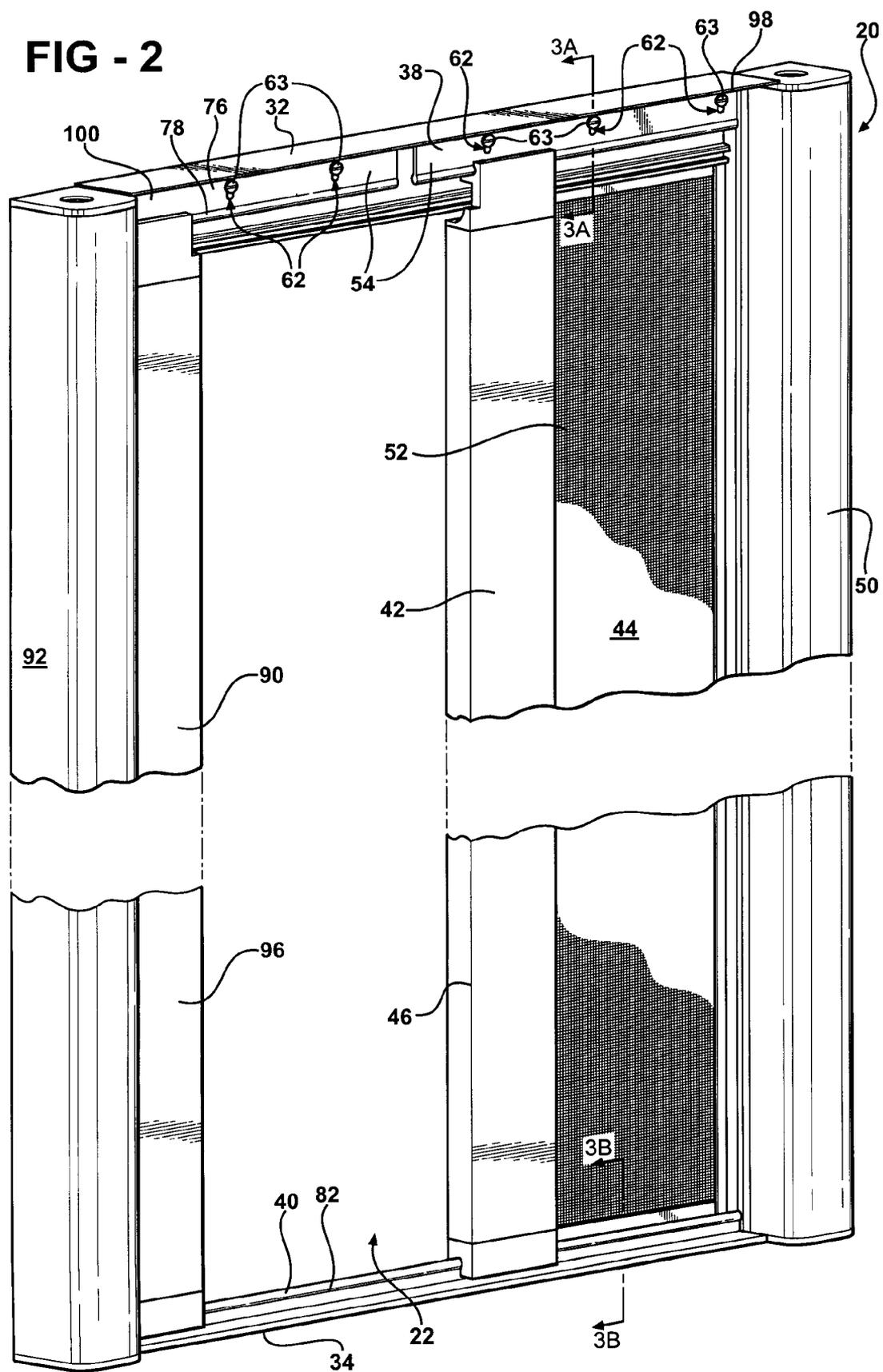


FIG - 3A

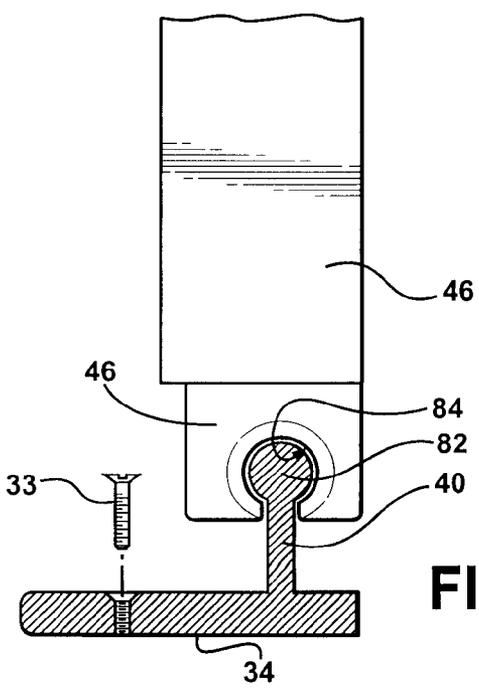
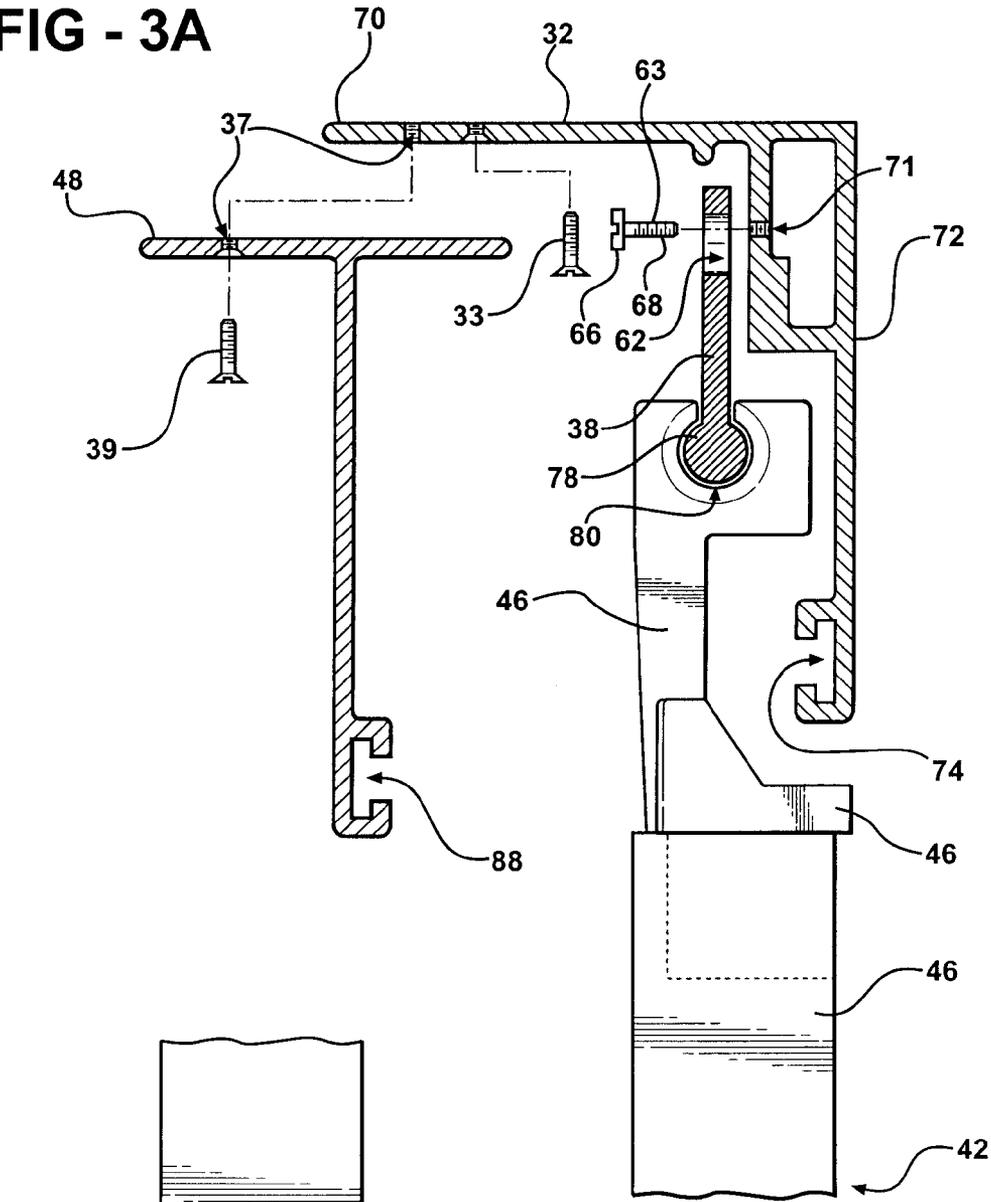
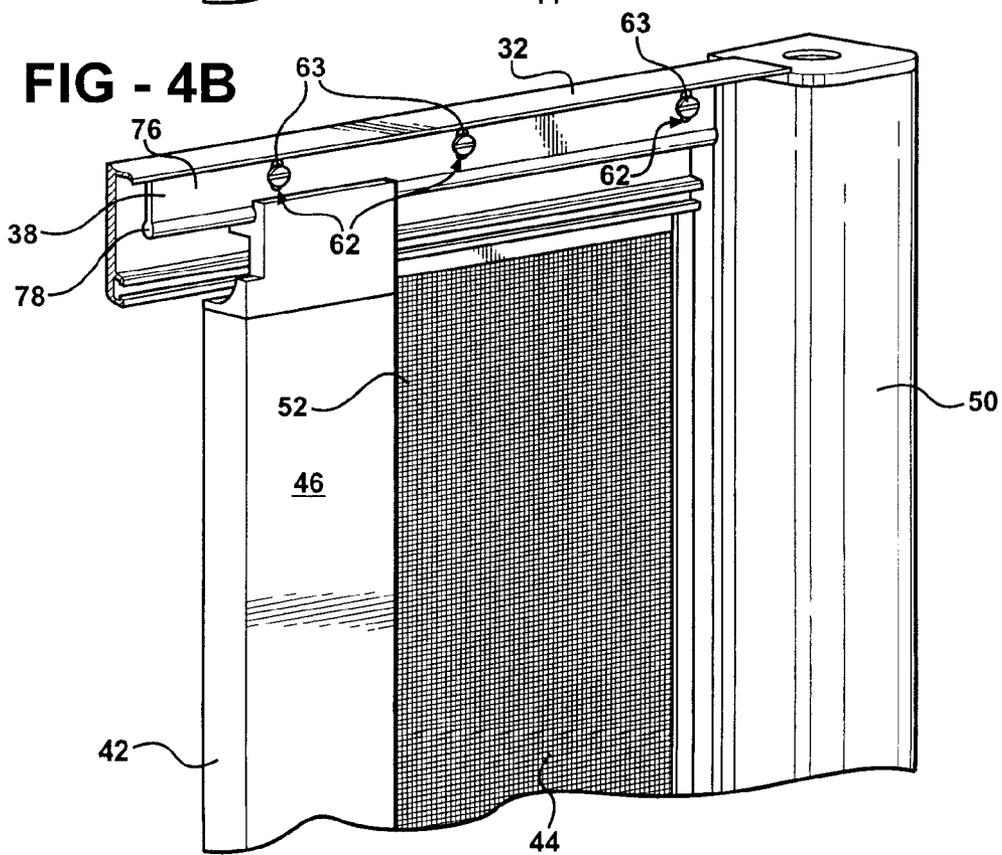
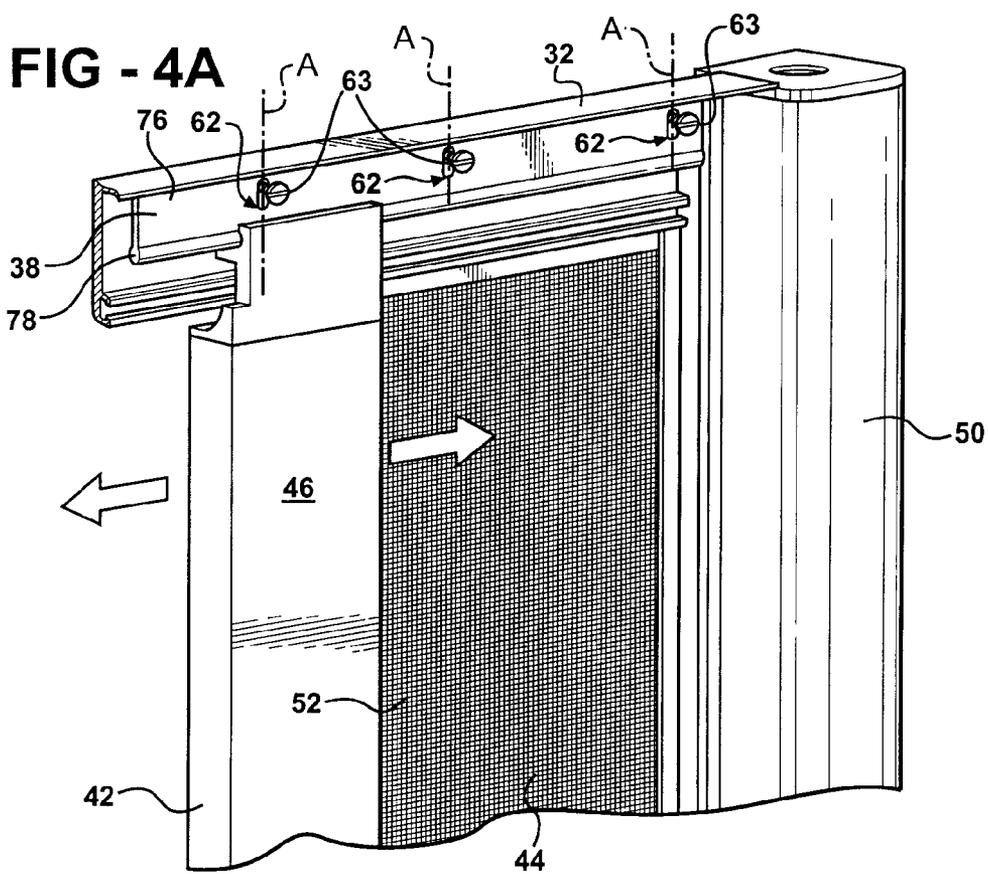
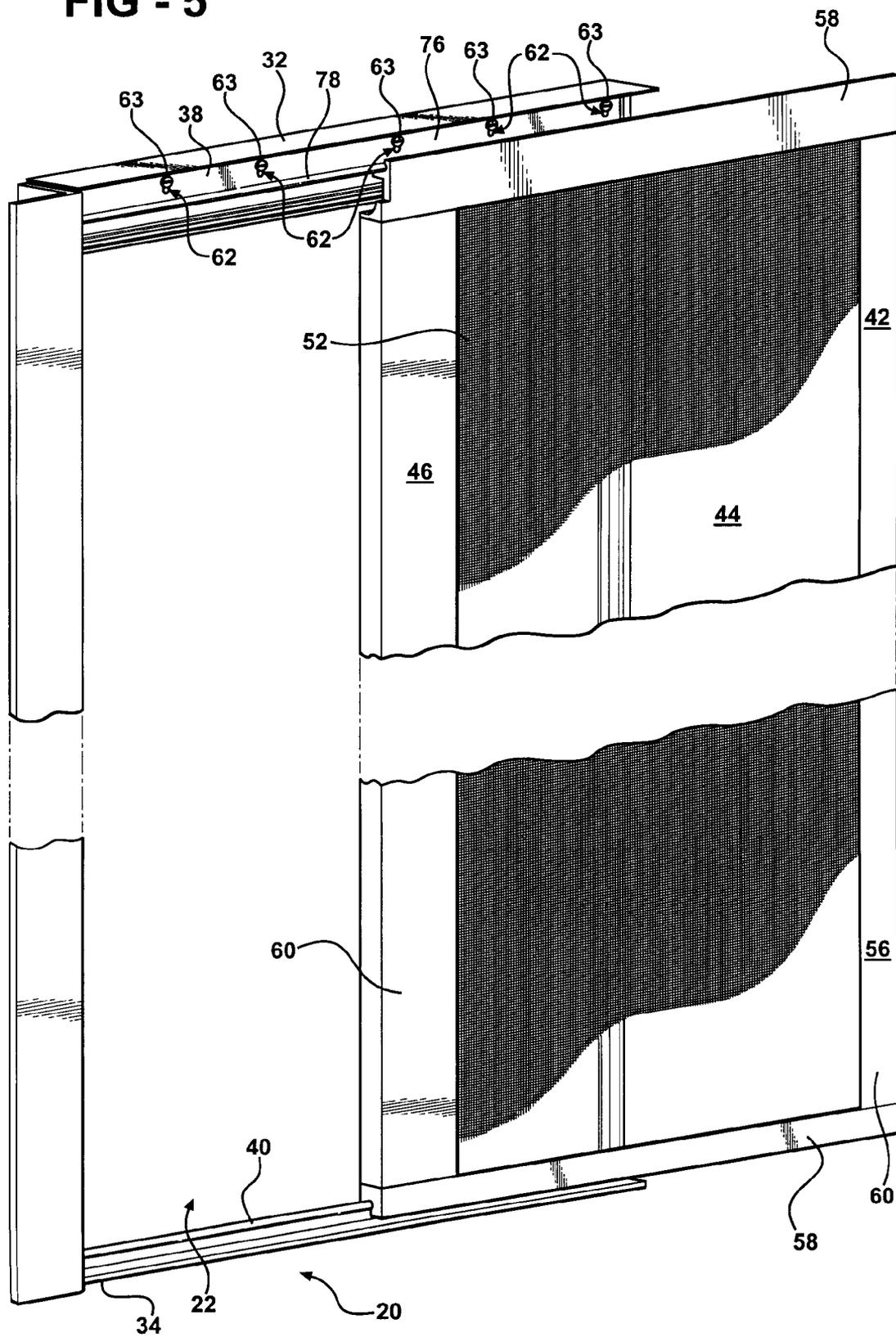


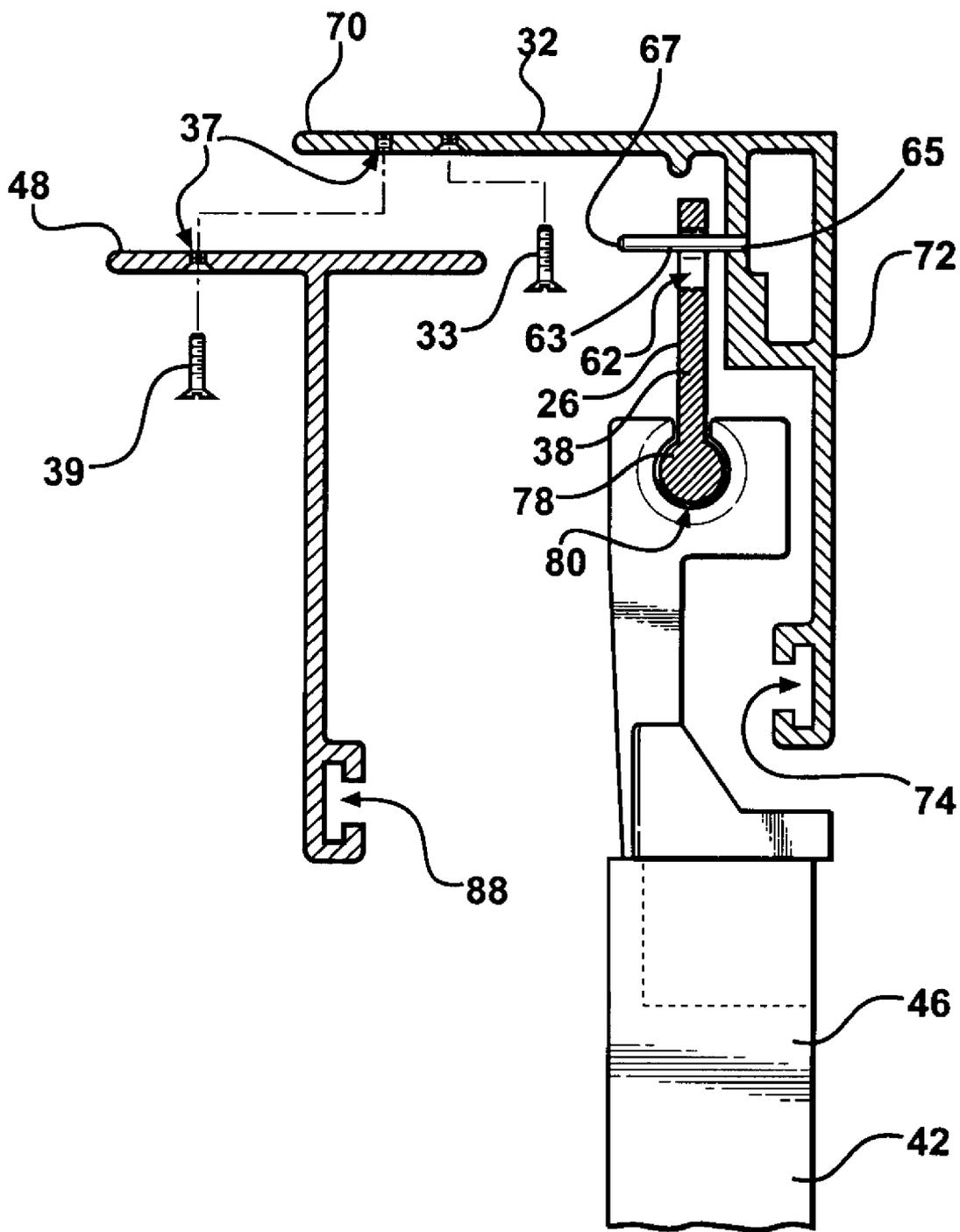
FIG - 3B



**FIG - 5**



# FIG - 6



**SCREEN ASSEMBLY FOR A FRAME OPENING**

**CROSS-REFERENCE TO RELATED APPLICATIONS**

**[0001]** The subject patent application claims priority to and all the benefits of U.S. Provisional Patent Application Ser. No. 60/777,606 which was filed on Feb. 28, 2006, the entire specification of which is expressly incorporated herein by reference.

**BACKGROUND OF THE INVENTION**

**[0002]** 1. Field of the Invention

**[0003]** The invention generally relates to a screen assembly for disposition in a frame opening.

**[0004]** 2. Description of the Related Art

**[0005]** Screen assemblies are typically disposed in a frame opening of a building such as a residential or commercial building. Generally a window or a door is mounted in the frame opening along with the screen assembly. Screen assemblies include a screen apparatus. The screen apparatus is generally fixed in the frame opening or is slideable relative to the frame opening. When the screen apparatus is slideable, generally the screen assembly is referred to as a slideable screen assembly. The screen apparatus of the slideable screen assembly includes a screen and a slide component coupled to the screen for selectively extending and retracting the screen across the frame opening, i.e., covering and uncovering the frame opening with the screen.

**[0006]** The slideable screen assembly typically includes a first rail for bounding one side of the frame opening and a second rail spaced from and fixed relative to the first rail for bounding an opposite side of the frame opening. The slideable screen assembly also includes a first guide fixed to the first rail and a second guide fixed to the second rail. The slide component extends between and slideably interacts with the first guide and the second guide.

**[0007]** The frame opening is typically defined by a header and a sill spaced from each other and extending generally horizontally and a pair of jambs spaced from each other extending generally vertically between the header and the sill. Typically, the first rail is coupled to the header and the second rail is coupled to the sill. The header may not be square with the pair of jambs and/or may not have planar surfaces, e.g., may crown or bow. In such a situation, when the first rail is mounted to the header, the first rail crowns, bows, or otherwise deforms to the shape of the header. Accordingly, the first guide also deforms in response to the deformation of the first rail. Additionally, if the sill is not parallel with the header, then the first guide may not be in parallel with the second guide when mounted to the header and the sill, respectively.

**[0008]** Typically, smooth sliding of the slide component along the first and second guide requires that the first and second guide be in parallel with each other or otherwise aligned in a predetermined alignment. When the first guide becomes deformed or becomes misaligned relative to the second guide, the slide component racks, i.e., binds, when slid along the first and second guides. In other words, the slide component does not freely slide along the first and second guide. This racking, or binding, disrupts easy and quick covering and uncovering of the frame opening with

the screen. Further, such racking, or binding, creates a sense that the screen assembly is of inferior quality.

**[0009]** Accordingly, it would be advantageous to develop a screen assembly having a screen apparatus that slides freely and does not rack regardless of any crowning, bowing, or other deformation of the header and regardless of any non-parallel relationship between the header and the sill.

**SUMMARY OF THE INVENTION AND ADVANTAGES**

**[0010]** The present invention is a screen assembly for disposition in a frame opening. The screen assembly includes a first rail for bounding one side of the frame opening and a second rail spaced from and fixed relative to the first rail for bounding an opposite side of the frame opening. A first guide is adjustably coupled to the first rail for selectively moving the first guide relative to the first rail. A second guide extends from the second rail. A screen apparatus includes a screen and a slide component coupled to the screen. The slide component extends between and slideably interacts with the first guide and the second guide for selectively extending and retracting the screen across the frame opening.

**[0011]** The present invention also includes a method of installing the screen assembly into the frame opening. The method includes the steps of installing the first rail in the frame opening and installing the second rail in the frame opening spaced from and fixed relative to the first rail. The method further includes the step of selectively aligning the first guide relative to the second guide by selectively moving the first guide relative to the first rail.

**[0012]** Accordingly, because the second guide extends from the second rail and because the first guide is adjustably coupled to the first rail, the first guide may be selectively moved into alignment with the second guide. The adjustability of the first guide relative to the second guide compensates for deformation of the first rail or for non-parallel alignment of the first and second rails. As such, the first guide may be aligned with the second guide thereby allowing the slide component to freely slide along the first and second guides.

**[0013]** In addition, the method is advantageous in that it provides for the alignment of the first and second rails such that the slide component may freely slide along the first and second rails without racking. Because the method includes installing the second rail fixed relative to the first rail and because the second guide extends from the second rail, the step of aligning the first guide with the second guide results in the slide component being freely slideable along the first and second guides. The subject invention is also advantageous to operation of the screen assembly after the screen assembly has been installed into the frame opening.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0014]** Other advantages of the present invention will be readily appreciated, as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

**[0015]** FIG. 1 is a perspective view of a screen assembly disposed in a frame opening with the screen assembly including a pair of canisters each retractably supporting one of a pair of screens;

[0016] FIG. 2 is a perspective view of the screen assembly partially exploded to show a first rail and a first guide adjustably coupled with the first rail;

[0017] FIG. 3A is a cross-sectional side view of the of the first rail and the first guide along line 3A in FIG. 2;

[0018] FIG. 3B is a cross-sectional side view of a second rail and a second guide along line 3B in FIG. 2;

[0019] FIG. 4A is a perspective view of a portion of the screen assembly with fasteners of the first guide in a disengaged position;

[0020] FIG. 4B is a perspective view of a portion of the screen assembly with fasteners of the first guide in the engaged position;

[0021] FIG. 5 is a perspective view of another embodiment of the screen assembly including a screen frame; and

[0022] FIG. 6 is a cross-sectional side view of an alternative embodiment of the first rail and the first guide illustrating, in particular, a fastener fixed to the first rail.

#### DETAILED DESCRIPTION OF THE INVENTION

[0023] Referring to the Figures, wherein like numerals indicate corresponding parts throughout the several views, a screen assembly 20 is generally shown. The screen assembly is installed in a building 30, such as a commercial or residential building. The building 30 defines an opening 31 and the opening 31 is framed by a header 24, a sill 26, and a pair of jambs 28. Specifically, as shown in FIG. 1, the header 24 and the sill 26 are spaced from each other and extend generally horizontally and a pair of jambs 28 are spaced from each other and extend generally vertically between the header 24 and the sill 26. The header 24, the sill 26, and the pair of jambs 28 define a frame opening 22 and the screen assembly 20 is disposed in the frame opening 22. For example, the header 24, the sill 26, and the pair of jambs 28 are attached to the building 30 and the screen assembly 20 is subsequently installed into the frame opening 22. Alternatively, a combination of the screen assembly 20 and the header 24, the sill 26, the pair of jambs 28 are pre-assembled together to form a pre-assembled frame unit independent of the building 30 for subsequent installation into the opening of the building 30. For example, the pre-assembled unit may be pre-assembled at a remote location and transported to the building 30 for installation in the building 30. It should be appreciated that, for example, the frame opening 22 may be further defined as a door opening or as a window opening.

[0024] As shown in FIGS. 1 and 2, the screen assembly 20 includes a first rail 32 for bounding one side 35 of the frame opening 22 and a second rail 34 spaced from and fixed relative to the first rail 32 for bounding an opposite side 36 of the frame opening 22. In other words, the opposite side 36 of the frame opening 22 that the second rail 34 bounds is opposite the one side 35 of the frame opening 22 that the first rail 32 bounds. The first and second rails 32, 34 are elongated and may extend along an entire length of the one side 35 and the opposite side 36, respectively.

[0025] The first rail 32 may extend horizontally with the second rail 34 vertically spaced below the first rail 32 and extending horizontally. In this arrangement, the first rail 32 is mounted to the header 24 and the second rail 34 is mounted to the sill 26. For example, the first rail 32 and the second rail 34 may be mounted to the header 24 and the sill 26, respectively, with threaded fasteners such as screws, e.g.,

the first screws 33 in FIGS. 3A and 3B. The first rail 32 may be any size and/or shape that allows the first rail 32 to be mounted adjacent to the header 24 or any size and/or shape that allows the first rail 32 to be mounted to an intermediate component, which is adjacent the header 24. Likewise, the second rail 34 may be any size and/or shape that allows the second rail 34 to be mounted to the sill 26 or any size and/or shape that allows the second rail 34 to be mounted to an intermediate component, which is mounted to the sill 26.

[0026] The screen assembly 20 includes a first guide 38 and a second guide 40. The first guide 38 is typically elongated and extends along the first rail 32. The second guide 40 is also typically elongated and extends along the second rail 34. The first and second rails 32, 34 couple the first and second guides 38, 40, respectively, to a substrate, for example, the header 24 and the sill 26, respectively.

[0027] As shown in FIGS. 2 and 5, the screen assembly 20 typically includes a screen apparatus 42. The screen apparatus 42 includes a screen 44 and a slide component 46 coupled to the screen 44. The slide component 46 extends between and slideably interacts with the first guide 38 and the second guide 40 for selectively extending and retracting the screen 44 across the frame opening 22. At an interface between the slide component 46 and the guides 38, 40, the slide component 46 may include additional elements commonly referred to in the art as glide blocks. If included, such glide blocks are mere extensions of the slide component 46. The slide component 46 functions as a handle to move the screen across the frame opening 22. Specifically, the slide component 46 rigidly extends between the first guide 38 and the second guide 40. The slide component 46 is slid along the first guide 38 and the second guide 40 to extend the screen 44 across the frame opening 22 and to retract the screen 44 from the frame opening 22, i.e., to cover and uncover the frame opening 22 with the screen 44.

[0028] As shown in FIG. 1, the screen apparatus 42 includes a canister 50 with the screen 44 selectively dispensable from the canister 50 for selectively extending and retracting across the frame opening 22. Such a screen apparatus 42 is commonly referred to in the art as a retractable screen assembly.

[0029] In such a configuration, the canister 50 extends between the one side 35 and the opposite side 36 of the frame opening 22. The canister 50 may, for example, be mounted on one of the pair of jambs 28. In such a configuration, the screen 44 is dispensable from the canister 50 horizontally across the frame opening 22. The screen 44 is flexible and extends between a trailing edge and a leading edge 52. It is to be understood that screen 44 can be wire mesh style, silhouette style, and the like and can be manufactured from a wide array of materials including polymers and metals. The trailing edge is supported by the canister 50, typically on a spring-loaded roller 51 within the canister 50 as discussed below, and the leading edge 52 is attached to the slide component 46. For example, the screen 44 may be splined into the slide component 46.

[0030] The slide component 46 extends across the frame opening 22 between the one side 35 and the opposite side 36 of the frame opening 22. In the embodiment shown in FIG. 1, the slide component 46 may also be referred to by one skilled in the art as a slide bar. The slide component 46 guides the leading edge 52 of the screen 44 back and forth over the opening to cover and uncover the opening with the screen 44. Specifically, the screen 44 is dispensed from the

canister 50 to cover the opening and is retracted into the canister 50 to uncover the opening. The screen 44 is automatically retracted into the canister 50 as the slide component 46 guides the leading edge 52 of the screen 44 toward the canister 50. Likewise, the screen 44 is automatically dispensed from the canister 50 as the slide component 46 guides the leading edge 52 of the screen 44 away from the canister 50.

[0031] The canister 50 includes a spring-loaded roller 51 to which the trailing edge of the screen 44 is attached. As the leading edge 52 of the screen 44 is moved toward the canister 50, the spring-loaded roller 51 tensions the screen 44 toward the canister 50, causing the screen 44 to automatically wrap around the roller 51. The tension in the screen 44 is between the trailing edge in the canister 50 and the leading edge 52 of the screen 44 at the slide component 46.

[0032] As an alternative to the embodiment shown in FIG. 1, the slide component 46 of the screen apparatus 42 may be further defined as a screen frame 56 as shown in FIG. 5. In such an embodiment, the screen 44 may be flexible and the screen frame 56 may be rigid to support the screen 44. In other words, such a screen apparatus 42 may be referred to by one skilled in the art as a screen panel.

[0033] In such a configuration, for example, the screen frame 56 may include a pair of horizontal members 58 spaced from each other and a pair of vertical members 60 spaced from each other and extending between the horizontal members 58 to define a rectangular opening. The screen 44 is attached to the vertical and horizontal members 60, 58 and extends across the rectangular opening 22. For example, the screen 44 may be splined to the vertical and horizontal members 60, 58. The pair of horizontal members 58 and/or the pair of vertical members 60 may slideably interact with the first and second guides 38, 40. The pair of horizontal members 58 may extend across the frame opening 22 between the one side 35 and the opposite side 36 of the frame opening 22. The screen frame 56 is slid along the first and second guides 38, 40 to cover and uncover the frame opening 22 with the screen 44.

[0034] It should be appreciated that the screen assembly 20 as described above and as shown in the figures is configured such that the screen apparatus 42 slides horizontally across the frame opening 22. However, one skilled in the art would appreciate that the screen assembly 20 may be configured such that the screen apparatus 42 slides vertically or at any angle between vertical and horizontal. For example, the first rail 32 may be mounted to one of the pair of jambs 28 and the second rail 34 may be mounted to another jamb 28 opposite the first rail 32. In such a configuration, the screen apparatus 42 would slide vertically along the first and second guides 38, 40. For example, in such a configuration, if the screen assembly 20 includes a canister 50, the canister 50 could be mounted to the header 24 and/or to the sill 26.

[0035] The first guide 38 is adjustably coupled to the first rail 32 for selectively moving the first guide 38 relative to the first rail 32. Specifically, a location of the first guide 38 relative to the first rail 32 may be adjusted to align the first guide 38 with the second guide 40. Maintaining the first guide 38 in alignment with the second guide 40 reduces racking of the slide component 46 as the slide component 46 is slid along the first and second guides 38, 40. Maintaining the first guide 38 in alignment with the second guide 40 in

essence creates an even rod and bearing fit, i.e., allows the slide component 46 to freely slide along the first guide 38. For example, the first and second guides 38, 40 are in alignment when the first guide 38 is parallel with the second guide 40.

[0036] Specifically, in an embodiment where the first rail 32 is mounted to the header 24, the header 24 may be crowned, bowed, or otherwise deformed and the mounting of the first rail 32 to the header 24 causes the first rail 32 to deform to the shape of the header 24. In such a configuration, the location of the first guide 38 is altered by the deformation of the first rail 32. In addition, if the sill 26 is not parallel with the header 24, then the first guide 38 may not be in parallel with the second guide 40 when the first and second rails 32, 34 are mounted to the header 24 and the sill 26, respectively. As such, it is advantageous that the first guide 38 is adjustably coupled to the first rail 32 such that the first guide 38 may be aligned relative to the second guide 40 to compensate for deformation of the first rail 32 and/or for non-parallel alignment of the first and second rails 32, 34.

[0037] As shown in FIG. 3B, the second guide 40 extends from the second rail 34. In other words, the second guide 40 is fixed and unadjustable relative to the second rail 34. The second guide 40 may be integrally formed from the second rail 34 or may be affixed, i.e., mechanically or adhesively connected, to the second rail 34. The second guide 40 and the second rail 34 may be formed as a one-piece unit. Alternatively, the second guide 40 may be secured to the second rail 34 by, for example, an adhesive, melting, and/or welding. In an embodiment where the second rail 34 and the second guide 40 are positioned along the sill 26, it is beneficial that the second guide 40 extends from the second rail 34. Being positioned along the sill 26, the second guide 40 may be stepped on or otherwise subjected to downward loads. Because the second guide 40 extends from the second rail 34, the second guide 40 is immovable relative to the second rail 34 and the second guide 40 will not move when subject to downward loads. As such, the first guide 38 may be aligned in parallel with the second guide 40 and the alignment of the first and second rail 38, 40 will not be disrupted by downward forces applied to the second guide 40.

[0038] To facilitate alignment between the first and second rails, 38, 40, the screen assembly 20 includes a fastener 63 extending from the first rail 32, and the first guide 38 defines an aperture 62 sized larger than the fastener 63. The fastener 63 can be fixed relative to the first rail 32 or can be adjustably coupled to the first rail 32. The first guide 38 receives the fastener 63 in the aperture 62. Because the aperture 62 is sized larger than the fastener 63, the fastener 63 moves along the aperture 62 to allow the first guide 38 to move relative to the first rail 32. The fastener 63 may be anything which connects or attaches the first rail 32 to the first guide 38, such as a threaded screw, as shown in FIG. 3A, an unthreaded rod or pin, as shown in FIG. 6, etc.

[0039] For example, as will be discussed below, the first rail 32 is aligned with the second rail 34 by sliding the slide component 46 along the first and second guides 38, 40. Because the second rail 34 is fixed relative to the first rail 32 and the second guide 40 extends from the second rail 34, when the slide component 46 is slid along the second guide 40, the slide component 46 exerts force on the first guide 38

such that the first guide 38 moves and becomes aligned, e.g., parallel, with the second guide 40.

[0040] As noted above, the fastener 63 may be a screw which extends through the aperture 62 and into the first rail 32. As shown in FIGS. 4A and 4B, the fastener 63 is moveable between an engaged position for preventing adjustment of the location of the first guide 38 relative to the first rail 32 and a disengaged position for allowing adjustment of the location of the first guide 38 relative to the first rail 32. Specifically, the fastener 63 is in the disengaged position in FIG. 4A and is in the engaged position in FIG. 4B. When the fastener 63 is in the disengaged position, the location of the first guide 38 relative to the first rail 32 may be actively adjusted. This means that the first guide 38 floats relative to the first rail 32 as the slide component 46 travels along the first guide 38 to prevent binding between the slide component 46 and the first and second guides 38, 40. Alternatively, the fastener is in the engaged position and the location of the first guide 38 is fixed relative to the first rail 32 as the slide component 46 travels along the first guide 38.

[0041] Referring again to FIG. 3A, the fastener 63 includes a head 66 and a threaded shaft 68, extending from the head 66. The threaded shaft 68 extends through the aperture 62 of the first guide 38 and threadably engages the first rail 32. Specifically, the first rail 32 defines a threaded hole 71 and the threaded shaft 68 of the fastener 63 threadably engages the threaded hole 71. The head 66 is sized larger than the aperture 62 and engages the first guide 38 in the engaged position. Specifically, the head 66 frictionally engages the first guide 38 in the engaged position, i.e., the first guide 38 is pinched between the head 66 and the first rail 32 in the engaged position. In the disengaged position, the head 66 is disengaged with the first guide 38 such that the location of the first guide 38 is adjustable relative to the first rail 32. In such a configuration, the fastener 63 is rotated to frictionally engage and disengage the head 66 and the first guide 38, i.e., to tighten and to loosen the fastener 63, relative to the first guide 38 and the first rail 32.

[0042] The aperture 62 is sized larger than the threaded shaft 68 along an axis A extending between the first rail 32 and the second rail 34 for allowing movement of the first guide 38 along the axis A when the fastener is in the disengaged position. The axis A typically extends in a general vertical direction. Specifically, the first guide 38 defines the aperture 62 as having a slot-shape extending along the axis A such that the threaded shaft 68 is moveable along the slot-shape. As shown in FIG. 2, the slot-shape extends along the axis A between the first rail 32 and the second rail 34. In other words, the first guide 38 is moveable relative to the first rail 32 in a generally vertical direction. It should be appreciated that the first guide 38 may define the aperture 62 as having any shape that allows the threaded shaft 68 to move in the aperture 62.

[0043] Referring again to FIG. 6, in an alternative embodiment of the fastener 63, the fastener 63 extends between a proximal end 65 and a free end 67 with the proximal end 65 affixed to the first rail 32. In such a configuration the fastener 63 may be a rod or pin extending from the first rail 32. In this embodiment, the fastener 63 is not threaded and extends fixed from the first rail 32. It should be appreciated that the fastener 63 may be integrally formed from the first rail 32 or affixed to the first rail 32.

[0044] As another alternative, the first rail 32 and the first guide 38 may be configured such that the first guide 38

moves relative to the first rail 32 when subjected to a force exceeding a threshold force. For example, the fastener 63 may be sized such that the fastener 63 has a friction fit in the aperture 62. In other words, the fastener 63 moves along the aperture 62 only when sufficient force is applied to overcome the friction between the fastener 63 and the first guide 38. Alternatively, the fastener 63 includes a pressure washer (not shown) disposed between the first rail 32 and the first guide 38. As known to one skilled in the art, the pressure washer frictionally engages the first guide 32 and the first rail 38. When subjected to sufficient force, the pressure washer relieves the friction between the first guide 32 and the first rail 38 to allow the first guide 32 to move relative to the first rail 38. It should be appreciated that any type of device or configuration may be used to frictionally engage the first rail 32 and the first guide 38.

[0045] As shown in FIG. 2, the first guide 38 typically defines a plurality of apertures 62 and may include a plurality of fasteners 63 with each of the apertures 62 respectively receiving one of the plurality of fasteners 63. When each of the plurality of fasteners 63 are in the disengaged position, or when the fastener 63 is unthreaded such as with a rod or pin, the first guide 38 moves along the axis A, relative to the first rail 32.

[0046] As shown in FIG. 3A, the first rail 32 includes an elongated base portion 70 and an elongated flange portion 72 extending from the elongated base portion 70. The elongated base portion 70 and the elongated flange portion 72 are configured to define the first rail 32 as having an L-shape. It should be appreciated, however, that other shaped rails 32 may be used so long as the first guide 38 is adjustable with respect to the first rail 32. The first rail 32 may be attached to the header 24 along the elongated base portion 70. In such a configuration, the elongated flange portion 72 extends downwardly from the elongated base portion 70. The first rail 32 may be coupled to the elongated flange portion 72. Additionally, the elongated flange portion 72 may define a flange cavity 74 for receiving a strip of mohair (not shown) or other suitable material.

[0047] The first guide 38 includes an elongated attachment portion 76 and an elongated bead portion 78 extending along the elongated attachment portion 76. The slide component 46, or even a glide block extending therefrom, defines a first channel 80 complimentary in configuration to the elongated bead portion 78 and receives the elongated bead portion 78 such that the slide component 46 is slideable along the first guide 38 on the elongated bead portion 78. The first guide 38 may be coated with polyester paint and the slide component 46 may be made of siliconized acetal or nylon at the first channel 80 such that there is reduced friction and the slide component 46 freely slides along the first rail 32. It should be appreciated that the first rail 32 and the slide component 46 may be formed from or coated with any material that allows for free movement between the first rail 32 and the slide component 46. It should be appreciated that the first guide 38 and the slide component 46 may have any corresponding configuration that allows the slide component 46 to slide along the first guide 38.

[0048] The second guide 40 typically includes a second bead 82 and the slide component 46 defines a second channel 84 complimentary in configuration to the second bead 82 and receiving the second bead 82 such that the slide component 46 is selectively slideable along the second guide 40 on the second bead 82. The second guide 40 may be

coated with polyester paint and the slide component **46** may be made of siliconized acetal or nylon at the second channel **84** such that the slide component **46** freely slides along the second rail **34**. It should be appreciated that the second rail **34** and the slide component **46** may be formed from or coated with any materials that allow for free movement between the second rail **34** and the slide component **46**. It should be appreciated that the second guide **40** and the slide component **46** may have any corresponding configuration that allows the slide component **46** to slide along the second guide **40**. For example, the second guide **40** may define an elongated U-shaped channel and the slide component **46** may be configured to slide along the elongated U-shaped channel.

**[0049]** As shown in FIG. 3A, the screen assembly **20** may include a cover **48** extending along the first rail **32** with the first guide **38** positioned between the cover **48** and the first rail **32** and with the cover **48** removably coupled to the first rail **32** for allowing access to the first guide **38**. The first rail **32** may be mounted to a substrate, such as the header **24**, with any type of threaded fastener that extends through the first rail **32** and into the header **24**. For example, as shown in FIG. 3A, a first threaded fastener **33** extends through the first rail **32** and into the header **24**. The cover **48** and the first rail **32** may define aligned holes **37** for receiving any type of threaded fastener, which threadably engages the header **24**. For example, as shown in FIG. 3A, a second threaded fastener **39** extends through the aligned holes **37**. The cover **48** may define a cover cavity **88** for receiving a strip of mohair (not shown) or other suitable material. It should be appreciated that the cover **48** is described herein as being a separate piece with respect to the first rail **32**. Alternatively, the cover **48** is integral with the first rail **32**.

**[0050]** As shown in FIG. 2, the screen assembly **20** may include a second screen apparatus **90** having a second canister **92** and a second screen **94** supported by the second canister **92**. The second screen **94** is selectively dispensable from the second canister **92** for extending and retracting across the frame opening **22**. The second canister **92** may mirror the canister **50** and may be otherwise identical to the canister **50**.

**[0051]** In such an embodiment, the screen assembly **20** may include a second slide component **96** coupled to the screen **44**. The slide component **46** and the second slide component **96** may slide toward one another and meet to cover the opening. In such a case, the slide component **46** and the second slide component **96** preferably include complimentary engaging features such that the slide component **46** and the second slide component **96** engage each other when slid toward each other.

**[0052]** As shown in FIG. 2, the first guide **38** may include a pair of first guides **54**. The first rail **32** may include and extend between a first end portion **98** and a second end portion **100**. One of the pair of first guides **54** may extend from the first end portion **98** of the first rail **32** toward the second end portion **100** of the first rail **32**. Another of the pair of first guide **54** may extend from the second end portion **100** toward the first end portion **98**. As such, each of the pair of first guides **54** may be independently moved relative to the first rail **32**. This independent movement allows each of the pair of first guides **54** to be aligned in parallel with the second guide **40** regardless of any deformation of the first rail **32**. For example, one of the pair of first guides **54** may slideably interact with the slide compo-

nent **46** and another of the pair of first guides **54** may slideably interact with the second slide component **96**.

**[0053]** The present invention also includes a method of installing the screen assembly **20** into the frame opening **22**. The method includes the steps of installing the first rail **32** in the frame opening **22** and installing the second rail **34** in the frame opening **22** spaced from and fixed relative to the first rail **32**. Specifically, the step of installing the first rail **32** in the frame opening **22** includes positioning the first rail **32** horizontally along the top side of the frame opening **22**. The step of installing the second rail **34** in the frame opening **22** includes positioning the second rail **34** to be vertically spaced below the first rail **32** along the bottom side of the frame opening **22**.

**[0054]** The first rail **32** may be mounted to the header **24** and the second rail **34** may be mounted to the sill **26**. In an embodiment including the canister **50**, the canister **50** may be mounted to one of the pair of jambs **28**. Likewise, in an embodiment including the second canister **92**, the second canister **92** may be mounted to one of the pair of jambs **28** opposite the first canister **50**.

**[0055]** The method further includes selectively aligning the first guide **38** relative to the second guide **40** by selectively moving the first guide **38** relative to the first rail **32**. If the fasteners **63** are not kept in the disengaged position to allow the first guide to actively adjust relative to the first rail **32** as may be desirable even after installation, then the method includes the step of adjusting the fastener **63** to the engaged position to prevent movement of the first guide **38** relative to the first rail **32**.

**[0056]** Specifically, the step of aligning the first guide **38** may be further defined as aligning the first guide **38** relative to the second guide **40** when the fastener **63** is in the disengaged position. In other words, when the fastener **63** is in the disengaged position, the first guide **38** may be moved relative to the second guide **40**. For example, the first guide **38** may be moved such that the first guide **38** is aligned in parallel with the second guide **40**. The method further includes selectively adjusting the fastener **63** to the engaged position after aligning the first guide **38** to maintain the first guide **38** in alignment with the second guide **40**. As discussed above, if the threaded shaft **68** of the fastener **63** is threaded, the fastener **63** may be rotated to frictionally engage and disengage the head **66** of the fastener **63** with the first guide **38**.

**[0057]** For example, the step of aligning the first guide **38** may be further defined as selectively sliding the slide component **46** along the first guide **38** and the second guide **40** when the fastener **63** is in the disengaged position. In other words, the slide component **46** is slid along the first guide **38** and because the second rail **34** is fixed relative to the first rail **32** and the second guide **40** extends from the second rail **34**, when the slide component **46** is slid along the second guide **40**, the slide component **46** exerts force on the first guide **38** such that the first guide **38** becomes aligned, e.g., parallel, with the second guide **40**. When the first guide **38** is properly aligned with the second rail **34**, the fastener **63** may then be adjusted to the engaged position to prevent movement of the first guide **38** relative to the first rail **32**.

**[0058]** The step of adjusting the fastener **63** may be further defined as adjusting each of the plurality of fasteners **63** from the disengaged position to the engaged position, typically in a predetermined sequence. In other words, the fasteners **63** are adjusted to the disengaged position such that

the threaded shaft 68 of each fastener 63 moves within the apertures 62 defined by the first guide 38. As the first guide 38 is vertically adjusted, the fasteners 63 are adjusted to the engaged position to retain the first guide 38 in alignment with the second guide 40.

[0059] After the first guide 38 is aligned with the second guide 40, the cover 48 is mounted to the first rail 32. The cover 48 allows for ease of installation of the screen assembly 20 into the frame opening 22. For example, the first guide 38 may be adjusted to be aligned with the second guide 40 and the fastener 63 may be adjusted to the engaged position prior to the installation of the cover 48 thereby allowing free access to the first guide 38 and the fastener 63. In addition, in the embodiment including the first and second canisters 92, when only one installer is installing the screen assembly 20 into the frame opening 22 it may be beneficial to mount the first and second canisters 92 to the pair of jacks 28 before the first rail 32 is mounted to the header 24. As such, the geometry of the first rail 32 without the cover 48 allows the installer to easily slide the first rail 32 without the cover 48 between the first and second canisters 92.

[0060] It should be appreciated that the fasteners 63 may be left in the disengaged position even after installation such that the first guide 38 continuously “floats” relative to the first rail 32. In other words, the position of the first guide 38 is adjusted relative to the first rail 32 each time the slide component 46 is slid along the first guide 38 and the second guide 40. This benefit is particularly advantageous even after the screen assembly 20 has been installed.

[0061] The invention has been described in an illustrative manner, and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation. Obviously, many modifications and variations of the present invention are possible in light of the above teachings, and the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A screen assembly for disposition in a frame opening, said screen assembly comprising:

- a first rail for bounding one side of the frame opening;
- a second rail spaced from and fixed relative to said first rail for bounding an opposite side of the frame opening,
- a first guide adjustably coupled to said first rail for selectively moving said first guide relative to said first rail;
- a second guide extending from said second rail; and
- a screen apparatus including a screen and a slide component coupled to said screen with said slide component extending between and slideably interacting with said first guide and said second guide for selectively extending and retracting the screen across the frame opening.

2. The screen assembly as set forth in claim 1 wherein said first guide defines an aperture and said screen assembly further includes a fastener engaging said first rail and extending through said aperture to enable the selective movement of said first guide relative to said first rail.

3. The screen assembly as set forth in claim 2 wherein said fastener is fixed to said first rail.

4. The screen assembly as set forth in claim 2 wherein said fastener is adjustably coupled to said first rail with said fastener moveable between an engaged position for preventing movement of said first guide relative to said first rail and a disengaged position for allowing movement of said first guide relative to said first rail.

5. The screen assembly as set forth in claim 4 wherein said fastener includes a head sized larger than said aperture engaging said first guide in said engaged position and a shaft extending from said head through said aperture of said first guide engaging said first rail.

6. The screen assembly as set forth in claim 5 wherein said aperture is sized larger than said shaft along an axis extending between the first rail and the second rail for allowing movement of said first guide along said axis when said fastener is in said disengaged position.

7. The screen assembly as set forth in claim 6 wherein said first guide defines said aperture as having a slot-shape such that said shaft is moveable along said slot-shape.

8. The screen assembly as set forth in claim 2 wherein said first guide defines a plurality of apertures and said screen assembly further includes a plurality of fasteners with each of said apertures respectively receiving one of said plurality of fasteners.

9. The screen assembly as set forth in claim 1 wherein said first rail extends horizontally with said second rail vertically spaced below the first rail and extending horizontally.

10. The screen assembly as set forth in claim 1 wherein said first rail includes an elongated base portion and an elongated flange portion extending from said elongated base portion.

11. The screen assembly as set forth in claim 1 wherein said screen includes a trailing edge and said screen apparatus includes a canister supporting said trailing edge with said screen selectively dispensable from said canister for extending and retracting across the frame opening.

12. The screen assembly as set forth in claim 11 further including a second screen apparatus having a second canister and a second screen supported by said second canister with said second screen selectively dispensable from said second canister for extending and retracting across the frame opening.

13. (canceled)

14. The screen assembly as set forth in claim 1 wherein said first guide includes a pair of first guides and said first rail includes and extends between a first end portion and a second end portion with one of said pair of first guides extending from said first end portion of said first rail toward said second end portion of said first rail and with another of said pair of first guides extending from said second end portion toward said first end portion.

15. The screen assembly as set forth in claim 1 wherein said first guide includes an elongated attachment portion and an elongated bead portion extending along said elongated attachment portion and said slide component defines a first channel complimentary in configuration to said elongated bead portion and receiving said elongated bead portion such that said slide component is slideable along said first guide on said elongated bead portion.

16. A method of installing a screen assembly into a frame opening with the screen assembly including a first and second rail, a first guide adjustably coupled to the first rail, and a second guide extending from the second rail, said method comprising:

- installing the first rail in the frame opening;
- installing the second rail in the frame opening spaced from and fixed relative to the first rail; and
- selectively aligning the first guide relative to the second guide by selectively moving the first guide relative to the first rail.

17. The method as set forth in claim 16 wherein the first guide defines an aperture and the screen assembly further includes a fastener engaging the first rail and extending through the aperture and wherein the step of selectively aligning the first guide relative to the second guide includes selectively moving the first guide relative to the fastener.

18. The method as set forth in claim 17 further including the step of adjusting the fastener between a disengaged position to allow movement of the first guide relative to the first rail and an engaged position to prevent movement of the first guide relative the first rail.

19. The method as set forth in claim 18 wherein the step of selectively aligning the first guide relative to the second guide is further defined as aligning the first guide relative to the second guide when the fastener is in the disengaged position.

20. The method as set forth in claim 19 including a slide component extending between and slideably interacting with the first guide and the second guide and wherein the step of aligning the first guide relative to the second guide is further defined as selectively sliding the slide component along the first guide and the second guide when the fastener is in the disengaged position.

21. The method as set forth in claim 19 further including the step of selectively adjusting the fastener to the engaged position after aligning the first guide to maintain the first guide in alignment with the second guide.

22. The method as set forth in claim 18 wherein the fastener is defined as a plurality of fasteners and the aperture is defined as a plurality of apertures with each aperture respectively receiving one of the plurality of fasteners and wherein the step of adjusting the fastener is further defined as adjusting each of the plurality of fasteners from the disengaged position to the engaged position.

23. The method as set forth in claim 16 wherein the frame opening includes a top side and a bottom side and wherein the step of installing the first rail in the frame opening is further defined as positioning the first rail horizontally along the top side of the frame opening and wherein the step of installing the second rail in the frame opening is further defined as positioning the second rail vertically spaced below the first rail along the bottom side of the frame opening.

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