

March 30, 1965

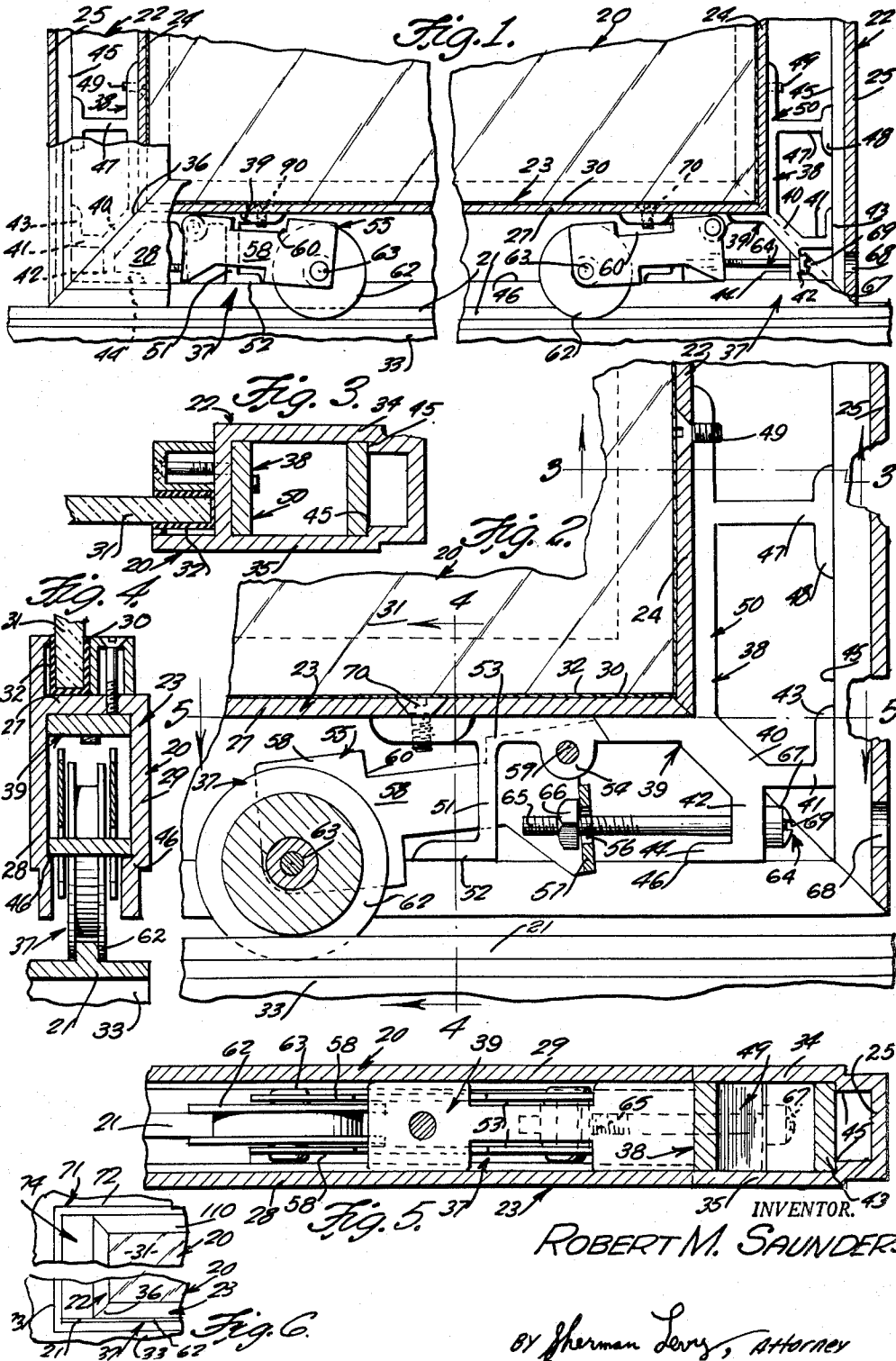
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CORNER ADJUSTABLE ROLLER ASSEMBLY

Filed Sept. 18, 1962

2 Sheets-Sheet 1



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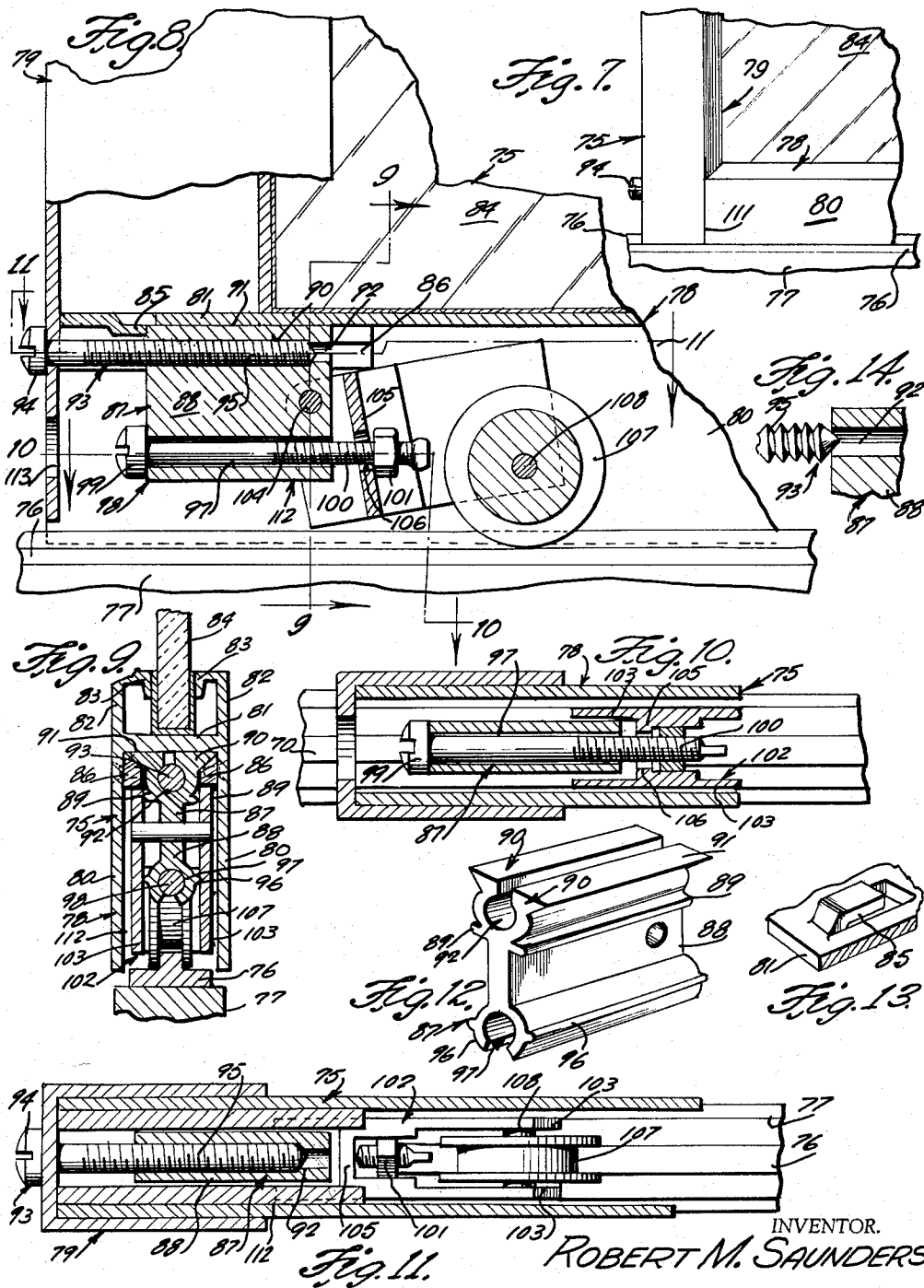
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2 Sheets-Sheet 2



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CORNER ADJUSTABLE ROLLER ASSEMBLY
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This invention relates to a slideable or movable member such as a door, and more particularly to an adjustable roller assembly for such a movable member or door.

The present invention is an improvement over the adjustable roller assembly shown and described in prior patent No. 3,040,391 and application Serial No. 18,352, filed March 29, 1960, and now abandoned.

The primary object of this invention is to provide an adjustable corner roller assembly which is adapted to be used for different types of joints such as mitered joints or butt joints, and wherein the present invention not only serves or functions to fasten the vertical and horizontal frame pieces of the door together, but in addition the present invention also serves as a mounting bracket for the roller and wherein the roller can be readily adjusted as desired or required.

A further object is to provide an adjustable roller assembly which functions as a dual purpose unit since the corner adjustable roller assembly of the present invention serves to connect the vertical and horizontal pieces of the door together and it also provides an adjustable support for the roller which engages the usual stationary track below the door.

A still further object of the present invention is to provide an adjustable roller assembly which adjusts on the principle of tension on the screw rather than compression, and wherein the present invention is constructed so that a light weight screw can be utilized and wherein maximum adjustment of the parts can be readily accomplished.

Still another object is to provide such an adjustable roller assembly which is durable in construction, economical to make and efficient in use and foolproof in operation.

These and other objects of the invention will become apparent from a reading of the following specification and claims, taken together with the accompanying drawing, wherein like parts are referred to and indicated by like reference characters and wherein:

FIG. 1 is a fragmentary elevational view, with parts broken away and in section, showing the lower portion of the door and illustrating a mitered joint illustrating the invention presently being used.

FIG. 2 is an enlarged sectional view showing the corner adjustable roller assembly of the present invention.

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2.

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 2.

FIG. 5 is a sectional view taken on the line 5—5 of FIG. 2.

FIG. 6 is a view showing how the present invention is adapted to be used for maintaining the door snugly within its frame.

FIG. 7 is a fragmentary elevational view illustrating a modification.

FIG. 8 is an enlarged fragmentary sectional view showing certain constructional details of the arrangement of FIG. 7.

FIG. 9 is a sectional view taken on the line 9—9 of FIG. 8.

FIG. 10 is a sectional view taken on the line 10—10 of FIG. 8.

FIG. 11 is a sectional view taken on the line 11—11 of FIG. 8.

FIG. 12 is a fragmentary perspective view illustrating a casting or base element for use on the assembly of FIGS. 7 through 11.

FIG. 13 is a fragmentary sectional view illustrating the struck-out portion used for providing the stop member.

FIG. 14 is a fragmentary sectional view illustrating the manner in which the screw member is adapted to be used for cutting or forming the threaded bore or opening in the smooth channel or bore in the casting.

Referring in detail to the drawings, and more particularly to FIGS. 1 through 6 of the drawings, the numeral 20 indicates a movable or slideable member or door and the numeral 21 indicates a horizontally disposed track arranged contiguous to the lower portion of the door 20, and the track 21 may be suitably supported on and affixed to a supporting surface such as a floor 33.

As shown in the drawings, the door 20 includes vertically disposed spaced apart side members 22 as well as a horizontally disposed bottom rail 23. The side members 22 include inner and outer wall portions 24 and 25, FIG. 1, and the side members 22 further include spaced parallel wall sections 34 and 35, FIG. 3.

The bottom rail 23 is generally U shaped in cross section, FIG. 4, and the bottom rail 23 includes a horizontally disposed top section 27, as well as spaced parallel depending side sections 28 and 29. The bottom rail 23 is provided with a grooved portion 30 for receiving therein a portion of a transparent member such as a glass panel or pane 31, and a protective member such as a fabric like covering 32 may surround or engage an edge portion of the panel 31.

As shown in the drawings, there is provided contiguous to the lower corners of the door 20 adjustable roller assemblies which are each indicated by the numeral 37, and since each of these has substantially the same construction, a description of one will suffice for both. The side members 22 and bottom rail 23 are provided with abutting inclined surfaces 36 which define or provide mitered corner joints. Each of the adjustable roller assemblies 37 includes a bracket which is indicated generally by the numeral 38, and the bracket 38 embodies or comprises a vertically disposed first portion 50 which is arranged contiguous to the inner wall portion 24 of a side member 22, FIG. 2, and bracket 38 further includes a horizontally disposed second portion 39 which is arranged contiguous to the lower surface of the top section 27 of the bottom rail 23, FIG. 4. A leg 40 is arranged at the junction of the first and second portions 50 and 39, and the leg 40 is secured to or formed integral with the portions 50 and 39, and there is provided horizontally disposed and vertically disposed pieces or portions 41 and 42 which are integral with the leg 40, and the portions 41 and 42 terminate in right angularly disposed flanges 43 and 44. The flange 43 is adapted to engage or abut shoulders 45 which are formed in the sides 34 and 35 of the side members 22, and the flange 44 is adapted to engage inwardly disposed shoulders 46 on the bottom rail 23. The bracket 38 further includes an integral brace or leg 47 which is horizontally disposed, and the leg 47 terminates in a flange 48 which engages the shoulders 45, FIG. 2. The numeral 49 indicates a securing element such as a screw which is adapted to be used for fastening the inner wall portion 24 to the portion 50 of the bracket 38, FIG. 2. The leg 40 generally coincides or registers with the inclined or mitered joint 36.

The numeral 51 indicates a leg which depends from the second portion 39 of the bracket 38 and which is secured thereto or formed integral therewith, and the leg 51 terminates in a horizontally disposed flange 52 which engages or abuts the shoulders 46. Portions of the bracket 38 are recessed or cut away as at 53, and the numeral 54 indicates an enlargement which depends from the por-

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tion 39 and which is integral therewith, for a purpose to be later described. The numeral 55 indicates a support member which is adjustably or pivotally connected to the bracket 38, and the support member 55 includes a web portion or connecting portion 57 which has an aperture or opening 56 therein, and the support member 55 further includes a pair of spaced parallel vertically disposed sidewalls 58. The sidewalls 58 have their upper edge portions recessed or cut away as at 60, and the lower edge portions of the sidewalls 58 are cut away or recessed as at 61 so as to provide clearance for the adjacent parts of the device. The numeral 62 indicates a roller or wheel which is journaled between the sidewalls 58, as for example by means of an axle or pin 63. The roller 62 is adapted to engage the track 21, as for example as shown in FIG. 4.

The numeral 64 indicates a screw member which is adapted to extend through a suitable opening in the portion 42, and the screw member 64 includes a threaded shank 65 which has a fastener or nut 66 arranged in threaded engagement therewith, and the screw member 64 is provided with an enlarged head 67. The side member 22 is adapted to be provided with an access opening or aperture 68 whereby a suitable tool such as a screwdriver can be inserted through the opening 68 in order to permit the screwdriver to engage the kerf or slot 69 in the head 67 of the screw member 64 in order to permit adjustment of the screw member 64 as desired or required.

The numeral 70 indicates a securing element such as a screw which is adapted to be used for fastening the portion 39 to the top section 27 of the bottom rail 23.

In FIG. 6 there is illustrated how the present invention can be adjusted in order to make sure that a door such as the door 20 snugly fits within its frame 71, and the frame 71 is adapted to be shaped to include a hollow interior 74, and the frame 71 further includes a horizontally disposed top portion 72 as well as vertically disposed sides 73.

Referring now to FIGS. 7 through 14 of the drawings, there is illustrated a modification wherein the numeral 75 indicates a sliding door and the numeral 76 indicates a horizontally disposed stationary track which may be supported on a member or surface such as the floor surface 77, FIG. 9. As shown in the drawings, the sliding door 75 includes a horizontally disposed bottom rail 78 as well as upstanding spaced apart side members 79, and the bottom rail 78 has a generally U shape and consists of spaced parallel vertically disposed sidewalls 80, as well as a horizontally disposed top portion or top wall 81, and the upper portions 82 of the sidewalls 80 are turned inwardly as at 83 so as to define or provide a grooved space for receiving therein the lower edge portion of a transparent panel or pane 84. The numeral 85 indicates a portion of the top wall 81 which is struck downwardly or offset downwardly so as to define or provide a stop member for a purpose to be later described.

The numeral 86 indicates diametrically opposed ribs which are substantially triangular in cross section, and the ribs 86 are integral with the inner surfaces of the sidewalls 80.

The numeral 87 indicates a base element or casting which is adjustably positioned between the sidewalls 80, and the base element 87 includes a main body portion 88, FIG. 12, and there is provided diametrically opposed lugs 89 on the main body portion 88, and the lugs 89 are arranged below the ribs 86. Flanges 90 are arranged on the upper portion of the base element 87, and the flanges 90 are adapted to have a smooth or flat upper surface 91 for engaging the lower surface of the top wall 81, and there is defined or provided in the upper portion of the base element 87 a rounded smooth bore 92, and the numeral 93 indicates a screw member which has an enlarged head 94 on one end thereof. The screw member 93 includes a threaded shank 95 which is adapted to engage the bore 92 as shown in FIG. 14 so that the screw

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member 95 can cut or form its own threads in the bore 92, as for example, when the screw member 93 is properly turned or rotated, for example by means of a screwdriver engaging the kerf or slot in the head 94. The lower portion of the base element 87 is provided with arcuate surfaces or portions 96 which define or provide therebetween a generally rounded passageway 97, and the numeral 98 indicates a screw element which embodies an enlarged head 99, and the screw element 98 also includes a threaded shank 100 which is adapted to have a fastener or nut 101 arranged in threaded engagement therewith.

The numeral 102 indicates a support member which includes a pair of spaced parallel vertically disposed side sections or walls 103, and the support member 102 is pivoted or hingedly connected to the base element 87 as for example by means of a pivot pin 104. The support member 102 includes a wall piece 105 which has an aperture or opening 106 therein, and the shank 100 of the screw element 98 extends through the aperture 106. The numeral 107 indicates a roller which is journaled between the side sections 103 as at 108, and the roller 107 is adapted to engage the stationary track 76.

It will therefore be seen that according to the present invention there has been provided a corner adjustable roller assembly which is an improvement over prior similar devices such as that shown and described in prior Patent No. 3,040,391 and application Serial No. 18,352, filed March 29, 1960, and now abandoned.

With particular reference to the form of the invention shown in FIGS. 1 through 6, it will be seen that a pair of the adjustable roller assemblies 37 are adapted to be mounted in the lower corner portions of each door or sliding member 20 so that the member 20 can readily move back and forth along a stationary track such as the track 21.

It is to be noted that each of the adjustable roller assemblies 37 includes the bracket 38 which consists of the upstanding portion 50 that fits snugly within the lower portion of a side member 22, and each bracket 38 further includes a horizontal portion 39 which fits in an adjacent corner portion of the bottom rail 23. Thus, when an adjustable roller assembly 37 is mounted in place as shown in FIG. 1 or 2 for example, the portion 40 coincides with the mitered corner joint 36 so that in effect the bracket or adjustable roller assembly serves to interconnect or join the side rail and side members together when such a mitered corner joint is used. In addition an assembly 37 provides an adjustable support for the roller 62 as previously stated. Thus, the roller 62 is journaled between the sides 58 of the support member 55 by means of the shaft or pin 63, and by inserting the tip of a tool such as a screwdriver in through the access opening 68 and engaging the tip of the tool with the kerf 69 of the head 67 of the screw member 64, the screw member 64 can be rotated, and by rotating the screw member 64 in the proper direction, the inner end of the screw member 64 can be moved towards or away from the leg 51 so that the adjusted or pivotal position of the support member 55 can be regulated or changed as desired or required. Thus, this adjustment of the screw member 64 provides a means for shifting the position of the support member 55 and roller 62 relative to the stationary bracket 38 and by adjusting the roller 62 to different positions as desired or required a door such as the door 20 shown in FIG. 6 can be raised or lowered slightly in order to make sure that the door snugly and properly fits within its frame 71. Thus, the door 20 can be adjusted so that its top portion 110 is snugly engaged with the top portion 72 of the door frame 71.

The recesses 53 and 60 and 61 provide sufficient clearance so as to permit the necessary or desired adjustment of the support member 55 to readily take place in the previously described fashion or manner.

The flanges such as the flanges 43, 43, 44 and 52 are

adapted to abut or engage inwardly directed shoulders such as the shoulders 45 and 46 on the frame work of the door whereby the bracket or associated parts will be properly maintained immobile in place in the corner of the door.

With further reference to the modification of FIGS. 7 through 14, the door 75 may have butt joints 111 instead of mitered joints, and the numeral 112 indicates the adjustable roller assembly which is adapted to be arranged contiguous to each lower corner of a door such as the door 75. It will be seen that by properly rotating the screw 93, as for example by inserting the tip of a screwdriver blade in the kerf of the head 94, the base element 87 can be shifted or adjusted back and forth in the bottom rail 78 so that the base element 87 and support member 102 and roller 107 can be positioned at any desired location desired or required. The screw member 93 is adapted to have its threaded shank 95 arranged in engagement with the bore 92 of the base element 87 and the threaded shank 95 is adapted to form or make its own screw threads in the smooth bore 92, as for example as shown in FIG. 14. Furthermore, by rotating the screw member 93 in one direction, the base element 87 can be moved in one direction such as to the left in FIG. 8, and by rotating the screw member 93 in the opposite direction, the base element 87 can be adjusted or moved in the opposite direction such as to the right in FIG. 8.

It will also be noted that the support member 102 can be pivoted to different positions so that the relative positions of the wheel or roller 107 can be adjusted as desired or required, and this is brought about by adjusting or turning the screw element 98. The access opening 113 in the lower outer portion of the side member 79 is adapted to be used for permitting the insertion therethrough of a screwdriver blade in order to engage the kerf or slot in the head 99 of the screw element 98 so that the screw element 98 can be turned in order to cause pivotal movement of the support member 102 on its pivot axis or pin 104. This pivotal movement of the support member 102 causes corresponding movement of the roller 107 so that for example the effective height of the door 75 can be raised or lowered or changed as desired in order for example to permit a door to be snugly and properly mounted within its frame such as in a frame similar to that frame shown in FIG. 6.

The portion 85 which is struck downwardly from the top wall 81 defines or provides a stop for limiting outward movement of the base element 87, as for example when the base element 87 is being adjusted or moved due to rotation of the screw member 93. It is to be noted that the support member 102 includes the wall piece 105 which has the aperture 106 therein for the projection therethrough of the shank of the screw element 98, and this shank 100 in cooperation with the nut or fastener 101 serves to insure that the support member 102 will properly pivot on its pin 104 as the screw element 98 is turned or rotated.

The base element 87 includes the opposed lugs 89 as well as the flanges 90 which have a configuration that snugly conforms to certain internal parts or surfaces of the bottom rail 78, as for example as shown in FIG. 9, whereby as the screw member 93 is rotated, the base element 87 will be properly guided and maintained in its proper aligned position as it is adjusted back and forth, and this adjustment of the base element permits the adjustable roller assembly to be located at the most advantageous position for supporting the sliding door so as to permit the door to properly slide back and forth on a track such as the stationary track 76.

It will be seen that according to the present invention there has been provided a fixture or device which is adapted to be used for fastening together the vertically disposed and horizontally disposed frame pieces of a unit such as a sliding door, and wherein the fixture also simultaneously serves as a mounting bracket for the roller and

wherein there is provided a means for adjusting the roller. In the form of the invention shown in FIGS. 1 through 6, a miter joint is illustrated, whereas in FIGS. 7 through 14 a butt joint is illustrated. The present invention is thus a dual purpose unit and wherein the one unit or corner adjustable roller assembly serves to connect the horizontal and vertical pieces together and also provides an adjustable supporting means for the roller which engages the stationary track.

The mitered corner adjustable roller assembly of FIGS. 1 through 6 is adapted to be used with aluminum extruded members. FIGS. 1 through 6 illustrate the mitered corner adjustable assembly, and FIGS. 7 through 14 illustrate the dove-tail fit adjustable roller assembly which requires no screws or other hardware to securely house in the bottom rail, and the dove-tail fit is an important feature of the present invention. It is also an important aspect or feature of the present invention that this adjustable roller assembly adjusts on the principle of tension on the screw rather than compression, so that there is a wedge action by a larger screw on the top and this permits use of a much lighter screw and wherein there is provided a wider range of adjustment.

Thus, according to the present invention, there is provided in combination with a movable door and a track there-below, an adjustable roller assembly that is arranged contiguous to each lower corner portion of the door, and wherein the roller assembly incorporates and provides both an adjustment and a structural corner bracket all in the same device, the roller assembly including a bracket which has a support member pivotally connected thereto, and wherein there is provided a screw means for adjusting the support member, and wherein there is provided access openings for gaining access to the screw means.

With further reference to FIG. 8 for example, the device can be staked as at 85 and this eliminates the necessity of using additional hardware or fasteners. Also, it is only necessary to stake on one side, and when the vertical member is brought into position, the one screw that holds the corner together also anchors the adjustable roller assembly in place so that the one screw does the entire job and this is an important feature or aspect of the present invention. The FIG. 8 assembly is also used as a corner unit, and the assembly of FIG. 8 can be an extrusion, stamping, or casting and is made so that the necessity of a lot of machining is eliminated.

With reference to the miter joint, this unit not only holds the corner together but also aligns the members at 90°.

With the present invention there is provided a corner bracket assembly wherein there is utilized an extrusion or casting and with the present invention it is not necessary to do a lot of machining.

As to FIG. 2, the device holds the corner together and holds the horizontally disposed and vertically disposed members in alignment.

In FIG. 12 there is a dove-tail fit, or a T-slot arrangement can be used, and the members can be of different shapes as desired or required. Instead of the dove-tail fit, a rectangular fit can be utilized.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

What is claimed is:

1. In combination with a movable door and a horizontally disposed stationary track, said door including vertically disposed spaced parallel side members and a horizontally disposed bottom rail, said side members including spaced parallel vertically disposed inner and outer wall portions and spaced parallel wall sections, said bottom rail being U-shaped in cross section and including a horizontally disposed top section and spaced parallel vertically disposed side sections, there being abutting inclined surfaces on said side members and bottom rail defining mitered joints, said side members and bottom

rail being provided with inwardly off-set shoulders, an adjustable roller assembly arranged contiguous to each said mitered joint, each of said adjustable roller assemblies comprising a substantially L-shaped bracket which includes a vertically disposed first portion arranged contiguous to the inner wall portion of a side member, and a horizontally disposed second portion arranged contiguous to the lower surface of the top section of the bottom rail, said bracket serving to hold the vertically disposed side members and horizontally disposed bottom rail together and also maintaining the vertically disposed side members and horizontally disposed bottom rail in aligned relationship at 90° relative to each other, a leg arranged at the junction of the first and second portions and integral therewith, horizontally disposed and vertically disposed pieces integral with said leg and said pieces having flanges on the ends thereof, a brace arranged at right angles with respect to the first portion of the bracket and integral therewith, a flange on said brace and said flanges engaging said shoulders, a vertically disposed leg depending from the horizontal portion of the bracket and said leg terminating in a flange for engaging the shoulders of the bottom rail, there being recesses in the sides of the horizontal portions of the bracket, an enlargement depending from the horizontal portion of the bracket, an adjustable support member including a web portion having an aperture therein, such support member further including a pair of spaced parallel vertically disposed side walls having portions pivotly connected to said enlargement, a roller journaled between said side walls for engaging said track, a screw member extending through a portion of the bracket and through the aperture in the web portion of the support member, a fastener arranged in threaded engagement with screw member, said screw member having an enlarged head provided with a kerf, there being an access opening in the lower outer portion of the side member for permitting a tool to engage the kerf in the head of the screw member.

2. In combination with a horizontally disposed sta-

tionary track and a movable door, said door including a horizontally disposed bottom rail and spaced parallel vertically disposed side members, said bottom rail including a pair of spaced parallel vertically disposed side walls and a horizontally disposed top wall, the upper portions of the side wall being turned inwardly and terminating in diametrically opposed flanges for receiving therebetween a transparent member, said top wall having a depending struck-out portion defining a stop portion, diametrically opposed pointed ribs on the inner surfaces of the side walls, a corner unit for the door including a base element adjustably positioned between said side walls, and said base element engaging said stop portion whereby the base element is anchored without requiring additional hardware and fasteners, said base element including a main body portion having flanges on the upper portions thereof, diametrically opposed lugs positioned below said ribs, said base element further including a rounded upper portion having a smooth generally cylindrical bore therein, a screw member engaging said bore, said base element further including a lower rounded portion having a generally cylindrical passageway therein; a screw element extending through said passageway, a support member including a pair of spaced parallel vertically disposed side sections straddling an end portion of said base element and pivotly connected thereto, said support member further including a wall piece having an aperture therein, said screw element extending through the aperture in said wall piece, a fastener arranged in threaded engagement with said screw element, and a roller journaled in said support member for engaging the track.

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