

Jan. 29, 1963

S. TAUBMAN

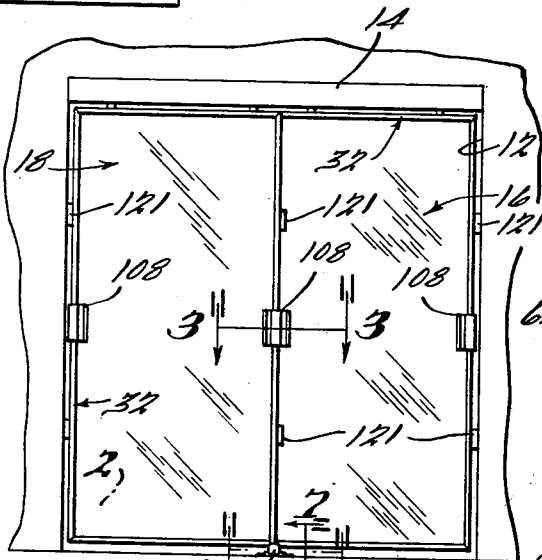
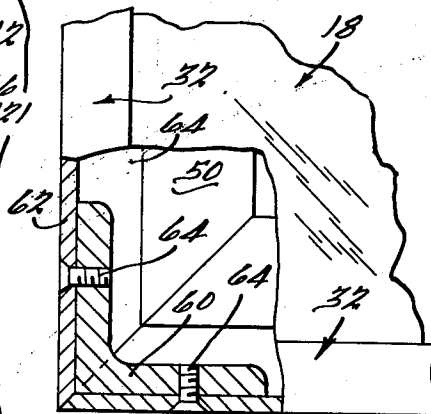
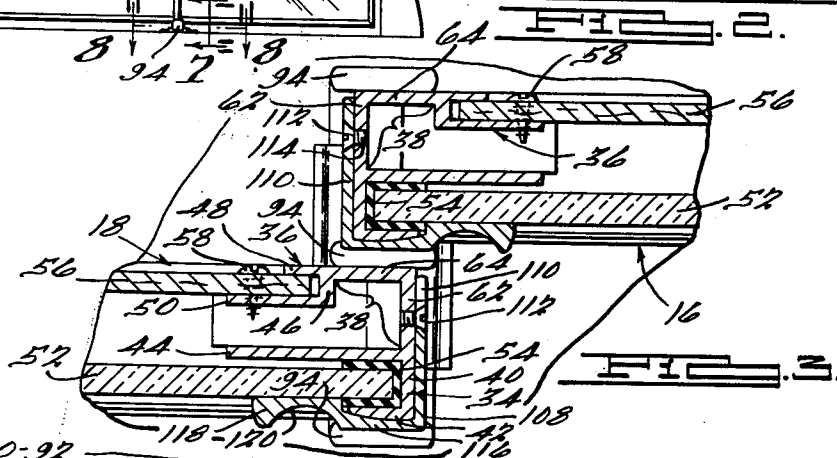
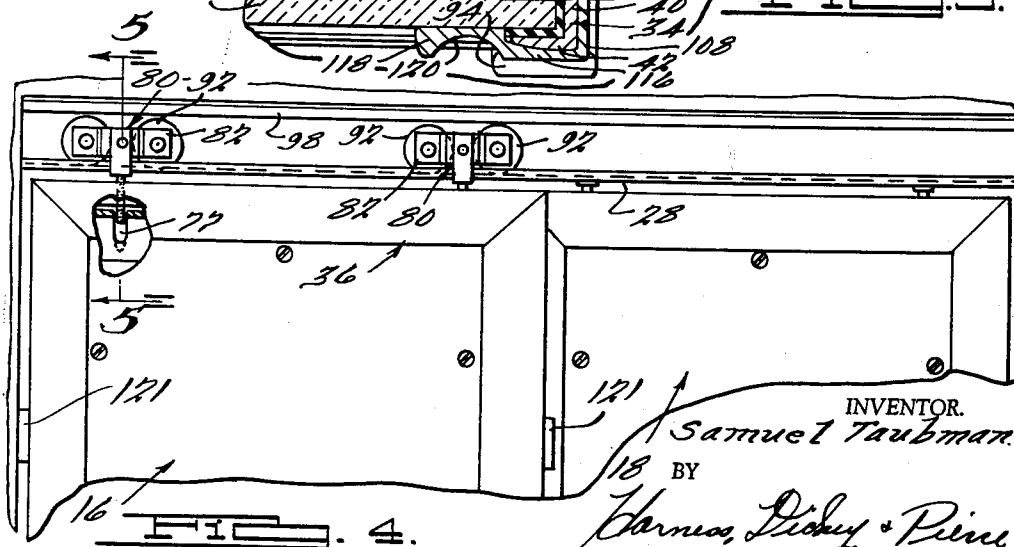
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ROLLING PANEL CLOSURE MEANS

Filed Aug. 4, 1958

2 Sheets-Sheet 1.

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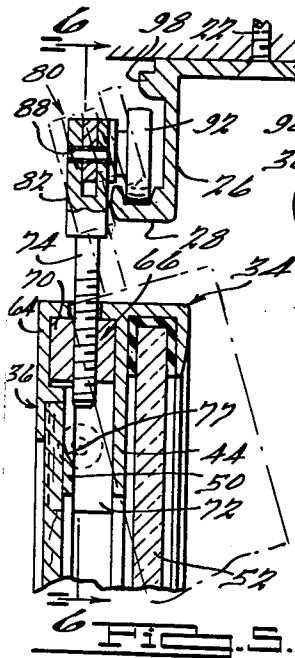
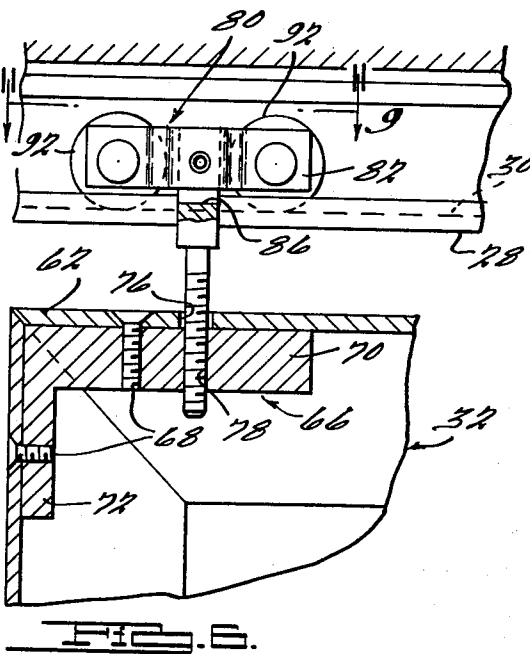
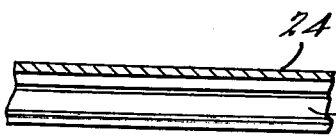
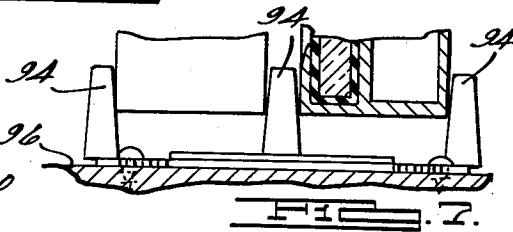
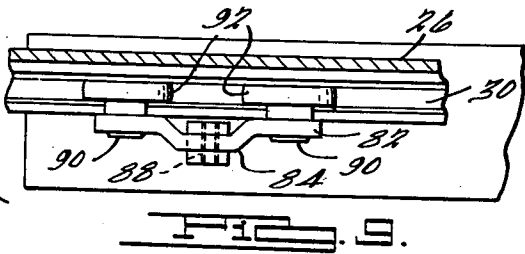
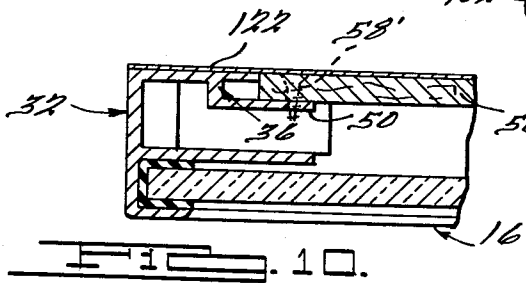
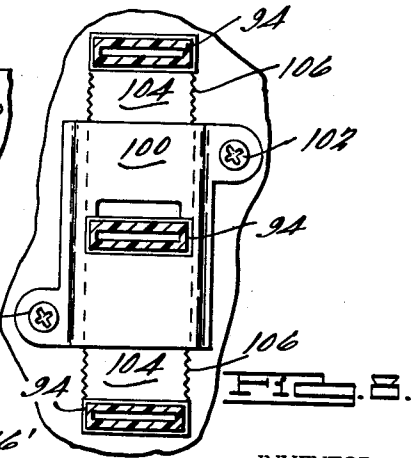
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3,075,255

ROLLING PANEL CLOSURE MEANS

Filed Aug. 4, 1958

2 Sheets-Sheet 2



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3,075,255

ROLLING PANEL CLOSURE MEANS

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Filed Aug. 4, 1958, Ser. No. 752,723

4 Claims. (Cl. 20-19)

The present invention relates to improved movably mounted panel means such, for example, as movably mounted mirrored panel means used for the closure of closet openings and the like.

It is an object of the present invention to provide an improved movably mounted panel closure means which is simple in design, economical of manufacture, durable in construction, easily installed, and easily operated for closing and opening.

More specifically, it is an object of the present invention to provide an improved closure means of the above mentioned type including improved means for mounting the panels on the header providing for easy adjustment of the panels vertically relative to the header.

It is also an object of the present invention to provide such an improved mounting means which may be readily adjusted without access to the interior of the panel by the simple expedient of dismounting the panel and rotating the truck means as hereinafter described.

It is also an object of the present invention to provide an improved closure means of the above mentioned type including improved handle means on the panels for effecting movement of the panels along the header. More specifically, it is an object of the present invention to provide such a closure means having an improved handle means which will not interfere with the full passing of the panels mounted on adjacent header tracks.

It is a further object of the present invention to provide an improved closure means including an improved panel having improved frame means for supporting two sheets of material in spaced parallel relation. More specifically, it is an object of the present invention to provide such a closure means having an improved panel, each of the frame elements of which includes a pair of spaced parallel channel-shaped portions opening in the same direction, the remote or outer flanges of which are short and the inner or adjacent flanges of which are long and which channel portions are interconnected by an angle shaped portion so that the frame element may be extruded as an open section.

Other and more detailed objects of the present invention will be apparent to those skilled in the art from a consideration of the following specification, the appended claims and the accompanying drawings wherein:

FIGURE 1 is a front elevational view of closure means embodying the present invention mounted in a closet opening;

FIGURE 2 is a broken enlarged sectional view of that portion of FIGURE 1 indicated by the circle 2;

FIGURE 3 is a broken enlarged sectional view of the structure illustrated in FIGURE 1, taken substantially along the line 3-3 thereof;

FIGURE 4 is a broken enlarged rear elevational view of the upper portion of the structure illustrated in FIGURE 1, having parts broken away to show details of construction;

FIGURE 5 is a broken enlarged sectional view of the structure illustrated in FIGURE 4, taken substantially along the line 5-5 thereof and showing in broken lines a position assumed by the panel during the mounting thereof on the header;

FIGURE 6 is a broken sectional view of the structure illustrated in FIGURE 5, taken substantially along the line 6-6 thereof;

FIGURE 7 is a broken enlarged sectional view of a

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structure illustrated in FIGURE 1, taken substantially along the line 7-7 thereof;

FIGURE 8 is a broken enlarged sectional view of the structure illustrated in FIGURE 1, taken substantially along the line 8-8 thereof;

FIGURE 9 is a sectional view of the structure illustrated in FIGURE 6, taken along the line 9-9 thereof; and

FIGURE 10 is a broken sectional view of a modified embodiment of the present invention.

The improvements of the present invention are well adapted for embodiment in movable panels employed for closing closet and other openings and having mirrors at one side thereof. In an illustrative, but not in a limiting sense, the improvements of the present invention are herein illustrated and described as embodied in movable mirror panels mounted in a closet opening.

Referring to FIGURE 1, this opening is indicated by the reference character 12 and the applicant's improved closure means comprises a header 14 extending across the top of the opening 12 and suitably supported in the wall structure and carrying a pair of panels 16 and 18 for movement along the header 14.

The header 14, as best illustrated in FIGURE 5, comprises a horizontally extending attaching portion 20 by which the header is attached to the wall structure by means of screws 22 extending through the attaching portion 20 and into the wall structure. In the preferred embodiment illustrated, the header 14 includes a pair of transversely spaced track sections 24 and 26. These track sections 24 and 26 are identical in shape and each terminate at their lower end in a laterally extending portion 28 having a track 30 formed in the upper surface thereof and extending longitudinally of the header 14. It will be noted that these laterally extending portions 28 extend inwardly of the closet door opening 12 to hide the tracks 30. It will also be appreciated that in the case of a pocket door involving only a single panel, the header 14 will have only one depending track section and similarly, that, if for example, three panels are employed to span the opening, the header may have three depending track sections. It will also be noted that the extrusion constituting the header 14, in addition to providing a pair of properly spaced track sections 24 and 26, may also be employed to provide an additional properly spaced track section by the simple expedient of cutting the depending track section 26 from a length of this extrusion flush with the under surface of the attaching section 20. This section from which the track section 26 has been removed, may then be used with the header 14 illustrated in FIGURE 5, to provide three properly spaced tracks by abutting the outer end of the attachment section 20 thereof against the right-hand end of the attachment section 20 of the header shown in FIGURE 5. It will be noted that this will provide uniform spacing of the three track sections.

The panels 16 and 18 are identical and accordingly, the same numbers will be employed for identifying corresponding parts of these two panels. Each of these panels comprises four frame elements 32 which are of an identical cross section and in the preferred embodiment illustrated, are of extruded aluminum. Each of these frame elements 32 has, as best illustrated in FIGURES 3 and 5, a front channel-shaped portion 34, a rear channel-shaped portion 36, and an interconnecting angle-shaped portion 38. The channel-shaped portions 34 and 36 are parallel and face or open in the same direction and each have a web, a short flange and a long flange. The web portion of the front channel-shaped portion 34 is indicated by the reference character 40, the short flange at the outer side thereof is indicated by the reference char-

acter 42 and the long flange at the inner side thereof, by the reference character 44.

The web of the rear channel-shaped portion 36 is indicated at 46, the short flange at the rear of the panel by the reference character 48, and the long flange at the inner side of the rear channel-shaped portion 36 by the reference character 50. The front channel 34 receives and supports the marginal edge of a mirror 52, a protective plastic channel strip 54 being fitted over the marginal portion of the mirror to protect it against direct contact with the metal frame element 32. The panel is closed at its rear side by a sheet 56 of hardboard or other suitable material, the marginal portions of which are received in the rear channel-shaped portion 36. If desired, the sheet 56 may be held against any movement relative to the frame elements 32 by screws 58 extending through the sheet 56 and into apertures provided in the long flange 50 engaging the inner surface of the sheet 56, and when so secured the sheet 56 provides lateral stability to the frame elements 32. It will be noted that the edges of the sheet 56 are concealed by the channels 36 and therefore the dimensions of the sheet 56 need not be closely held.

The side frame elements 32 are connected to the bottom frame element 32 as illustrated in FIGURE 2, by angles 60. These angles 60 are secured to a leg 62 of the angle-shaped portion 38 which leg extends transversely of the panel. This connection is effected by screws 64 which extend through countersunk apertures in this leg 62 and are threadedly received in tapped openings provided in the angles 60. As is clearly shown in the drawings, this leg 62 of the angle-shaped portion 38 is in the plane of and continuous with the web portion 40 of the front channel-shaped section 34 and the other leg 64 of the angle-shaped portion 38 is in the plane of and continuous with the short outer flange 48 of the rear channel-shaped portion 36.

At the top of the panels 16 and 18, the side frame elements 32 are connected to the top frame element 32 by an angle 66, best illustrated in FIGURES 5 and 6, and screws 68. This angle 66 includes a horizontally disposed arm 70 through which the weight of the panel is transferred to the header 14 and which accordingly, is of greater cross section than the arm 72. The arm 70, as illustrated in FIGURE 5, is of a size to have a close but sliding fit between the leg 64 of the angle-shaped section 38 at its rear side, and the long flange 44 of the front channel-shaped section 34 at its front side. Its top side is held against the inner surface of the leg 62 of the angle-shaped portion 38 by the screw 68. Each of the panels 16 and 18 is supported at the left and right-hand ends thereof, as viewed in FIGURE 1, by a stud 74, the lower threaded end of which extends downwardly through an opening 76 in the leg 62 of the angle-shaped portion 38 of the frame element and is threadedly received in a tapped opening 78 provided in the arm 70 of the angle 66. Attention is directed to the fact that, as shown in FIGURES 4 and 5, the hole 76 is larger than the threaded end of the stud 74 and that in drilling the hole 76, a portion of the long flange 50 at the inner side of the rear channel-shaped portion 36, is cut away as indicated at 77 to prevent interference with the lower end of the stud 74 which may project below the arm 70 of the angle 66. The upper end of each stud 74 carries a two-roller truck generally indicated at 80 which comprises a carriage 82 having a central offset portion 84 which is received in a slot 86 in the upper end of the stud 74 and pivotally connected to the bifurcated upper end of the stud 74 by a split tubular pin 88 one form of which is sold by Elastic Stop Nut Corporation under the trademark "Rollpin." The opposite end portions of the carriage 82 carry transversely extending laterally projecting axles 90 fixedly mounted therein, each of which carries a roller 92 preferably mounted on the axle 90 through antifriction rollers (not shown).

It will be noted that the construction and arrangement of the truck 80 is such that the upper end of the stud 74 may extend upwardly past the outer end of the laterally extending flange 28 on the track section of the header without interference therewith, while the rollers 92 are supported upon and roll along the tracks 30. It will also be noted that corner angle 66 in addition to interconnecting the frame elements 32 serves to transmit load from the side frame elements directly to the stud 74. Also the depending arm 72 of each corner angle 66 co-operates with the side frame element 72 in which it is received, to resist the tendency of the upper arm 70 to cock in the top frame element.

Each of the panels 16 and 18 is mounted on the header 14 by swinging the panel relative to the header to the position shown in broken lines in FIGURE 5, in which position it will be seen that the rollers 92 may be readily moved into engagement with the track 30. FIGURES 7 and 8 clearly show the guides 94 which are mounted on the floor 96 and which engage the bottom portions of the panels 16 and 18 to prevent swinging of the panels transversely of the header 14. It will be noted from FIGURE 5 that each of the track sections 24 and 26 includes an upper portion 98 overlying the top of the rollers 92 and disposed in close proximity thereto so that so long as the guides 94 prevent swinging of the panels to the broken line position shown in FIGURE 5, these projections 98 will prevent raising of the panels sufficiently to remove the rollers 92 from the track sections.

It will be appreciated that by virtue of the above described construction, upon installation of the panels, each end of the panel may be easily adjusted vertically relative to the header, prior to the positioning of the guides 94, by the simple expedient of dismounting the panel from the header and rotating the stud 74 one or more full turns in either direction, as required, relative to the panel. The panel may then be again easily mounted on the header 14 with the stud 74 and the truck 80 carried thereby in the newly adjusted position. When the proper adjustment has been effected, the guides 94 may then be fixed in place.

In the preferred embodiment illustrated, these guides are of conventional construction, the center guide 94 being carried by a plate 100 secured to the floor by screws 102 and the inner and outer guides 94 each having a laterally extending arm 104 projecting under one end of the plate 100 and having notches 106 co-operating with means on the underside of the plate 100 for holding the arm 104 and its guide 94 against movement relative to the plate 100 when the screws 102 are tightened. Also, in the preferred embodiment illustrated, the guides 94 are formed of nylon.

Each of the panels 16 and 18 is provided intermediate the top and bottom thereof with handles generally indicated at 108, which are secured to the side frame members 32. These handles 108, as best illustrated in FIGURE 3, include a flat attaching flange 110 extending along the edge of the side frame element 32 and secured in position by screws 112 extending through countersunk apertures provided in the attaching flanges 110 and threaded into tapped openings 114 provided in the legs 62 of the angle shaped portions 38 of the frame element 32. The handles 108 also include a generally flat portion 116, the outer surface of which is substantially flat and parallel to the mirror 52 and the inner surface of which engages and closely fits the outer surface of the short flange 42 of the outer channel-shaped portion 34. Each handle 108 also includes a portion 118 overlying and engaging the surface of the mirror 52 adjacent the flange 42 and the outer surface of which has a vertically extending arcuately shaped groove 120. One desiring to move one of the panels 16 or 18 from the position illustrated in FIGURE 1, may either insert the ends of one or more fingers into the groove 120, or may insert the portion of the

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index finger between the first and second joints thereof into the groove 120, and easily start the panel in the direction desired. Attention is directed to the fact that the portion 118 in which the groove 120 is formed does not extend outwardly beyond the outer surface of the portion 116 by which it is connected to the attaching flange 110 and that the total projection of the handle at the front of the panel beyond the outer face of the flange 42 of the frame element 32 is equal only to the thickness of the handle portion 116. The spacing between the panels 16 and 18, determined by the header 14 and the guides 94, is such that, as best illustrated in FIGURE 3, a handle 108 may be mounted on the rear panel 16 as shown, without interfering with the passage of the front panel 18 past the handle on the panel 16.

Each of the panels 16 and 18 is also provided at each edge thereof with a pair of bumpers 121 spaced from the top and bottom as best illustrated in FIGURES 1 and 4.

In the construction illustrated in FIGURES 1 through 9, inclusive, the sheet of hardboard 56 protects the rear of the mirror 52 as well as providing certain structural strength to the panel and is satisfactory where the rear of the panels is not normally exposed to view.

FIGURE 10 illustrates a modified construction which may be employed where the rear of the panel will be exposed to view and differs from the form shown in FIGURES 1 to 9, inclusive, only in that, in place of the sheet of hardboard 56, the sheet 56', which is slightly thicker than the sheet of hardboard 56, is employed. It will be noted that the sheet 56' is of a thickness such that when the sheet 56' is secured to the long flange 50 of the rear channel-shaped portion 36, by the flat headed screws indicated at 58', received in countersunk holes provided in the sheet 56', the outer surface of the sheet 56' is flush with the rear surface of the frame element 32. The continuous surface thus provided by the frame elements 32 and the sheet 56' may then be covered in any suitable manner such, for example, as by the wallpaper indicated by the reference character 122. Thus finished, the rear of the panel may provide an attractive movable wall section.

While only two specific embodiments of the invention have been illustrated and described herein, it will be readily appreciated by those skilled in the art that numerous modifications and changes may be made without departing from the spirit of the present invention.

What is claimed is:

1. Closure means comprising a horizontally disposed header having a track extending longitudinally thereof, a panel comprising rectangularly arranged frame elements, corner elements disposed within and interconnecting said frame elements, means mounting said panel on said header for horizontal movement therealong and vertical adjustment relative thereto, said last named means comprising a pair of horizontally spaced studs vertically disposed extending downwardly into the upper of said frame elements and each threadedly engaging one of said corner elements said corner elements being held by said upper frame element against rotation relative thereto about the axes of said studs, roller means mounted on the upper end of each of said studs and rollable along said track and including roller supporting means connected to said stud for rotation therewith, said panel being movable laterally relative to said header to dismount said panel from said header without removal of said header to permit rotation of said studs relative to said panel to screw said studs into or out of said corner elements for effecting vertical adjustment of said panel relative to said header.

2. Closure means comprising a horizontally disposed header having a track extending longitudinally thereof, a panel comprising rectangularly arranged frame elements, corner elements disposed within and interconnecting said

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frame elements, truck means at each end of said panel mounting said panel on said header for horizontal movement therealong and vertical adjustment relative thereto, each said truck means comprising a vertically disposed stud extending through the upper frame element and threadedly engaging one of said corner elements, roller means rollable along said track, means mounting said roller means on the upper end of said stud for rotation about a horizontal axis and in a vertical plane to one side of said stud, said panel being movable relative to said header to dismount said panel from said header to permit rotation of said truck means to screw said studs into or out of said corner elements for effecting vertical adjustment of each end of said panel relative to said header, said panel having the center of gravity thereof disposed substantially in said vertical plane.

3. Rolling panel door structure comprising a horizontally disposed header having a track extending longitudinally thereof, a panel comprising rectangularly arranged bottom side and top frame elements, means mounting said panel on said header for horizontal movement therealong and vertical adjustment relative thereto and comprising spaced roller truck means, studs individual to and connected to said roller truck means for rotation therewith, and corner elements disposed within and interconnecting said side frame elements and said top frame elements and threadedly engaging said studs, each of said corner elements having a horizontal arm received in and secured to said top frame element and threadedly engaging said stud and a vertical arm received in and secured to one of said side frame elements, said roller truck means being disposed eccentrically of said stud so that loads transmitted from said roller truck means to said stud tend to cock said horizontal arm relative to said top frame element and said vertical arm co-operating with said one of said side frame elements to resist said cocking, said means mounting said panel on said header supporting said panel for movement laterally relative to said header to dismount said panel from said header.

4. Rolling panel door structure comprising a horizontally disposed header having a track extending longitudinally thereof, a panel comprising rectangularly arranged frame elements, corner elements disposed within and interconnecting said frame elements, means securing said corner elements to said frame elements, truck means at each end of said panel mounting said panel on said header for horizontal movement therealong and vertical adjustment relative thereto, each said truck means comprising and rotatable with a vertically disposed stud extending through the upper frame element and threadedly engaging one of said corner elements, a carriage pivotally connected to the upper end of said stud, and a pair of rollers mounted on said carriage at opposite sides of said pivotal connection and rollable along said track, said panel being movable laterally relative to said header to dismount said panel from said header to permit rotation of said truck means to screw said studs into or out of said corner elements for effecting vertical adjustment of each end of said panel relative to said header.

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