Jan. 18, 1955 C. E. SMITH 2,699,828

BATHTUB SHOWER ENCLOSURE

Filed April 30, 1954 2 Sheets-Sheet 1

Fig. 1

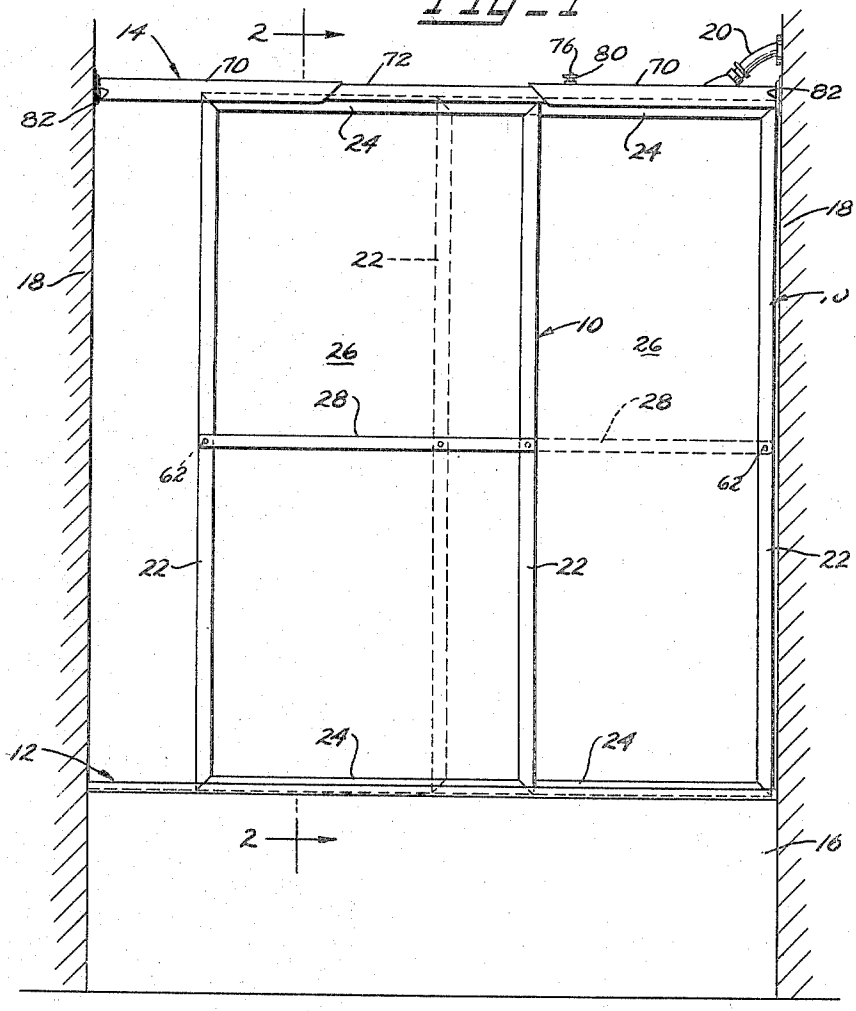
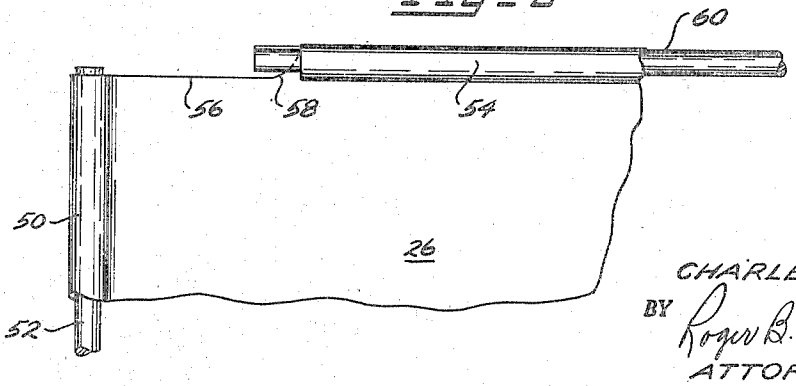



Fig. 6




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Jan. 18, 1955 C. E. SMITH 2,699,828

BATHTUB SHOWER ENCLOSURE

Filed April 30, 1954 2 Sheets-Sheet 2

Fig. 2

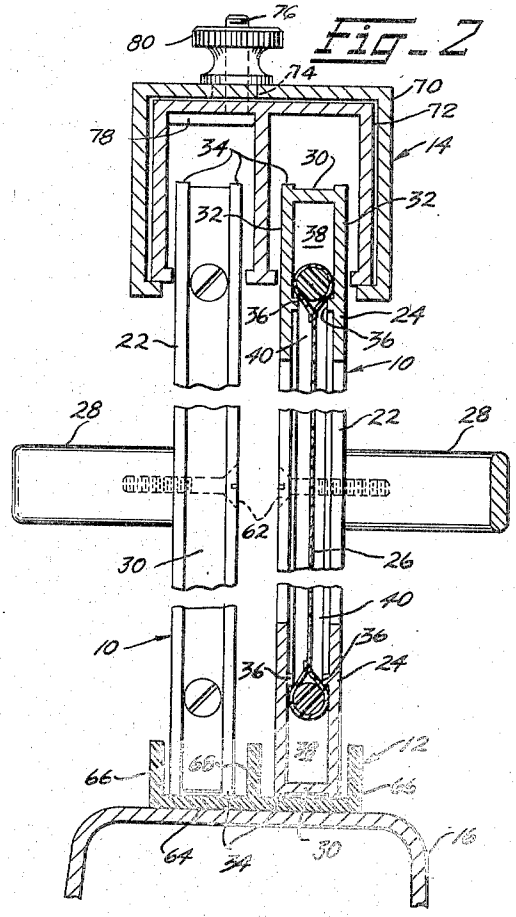



Fig. 4

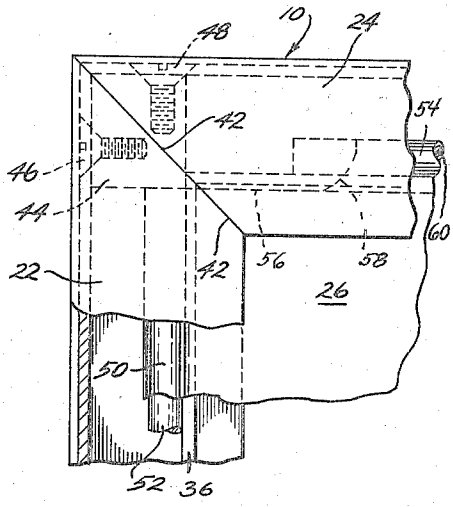



Fig. 3

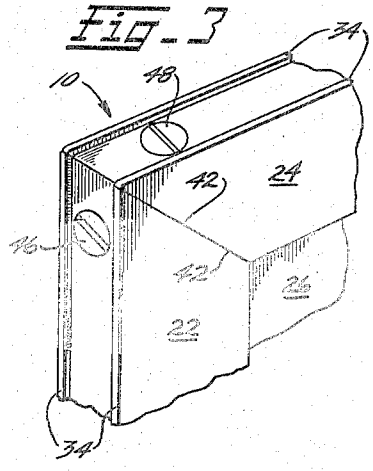
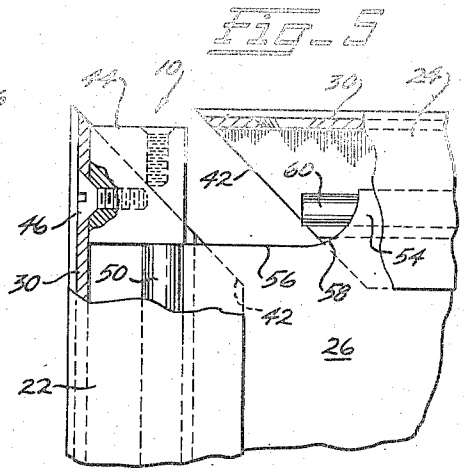



Fig. 5




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United States Patent Office 2,699,828 Patented Jan. 18, 1955



2,699,828

# BATHTUB SHOWER ENCLOSURE

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Application April 30, 1954, Serial No. 426,704

5 Claims. (Cl. 160—392)

This invention relates to improvements in means for enclosing a bathtub shower installation or the like and, more particularly, to improvements in the construction of a panel for such enclosure means.

It is the general object of the invention to provide a bathtub shower enclosure of simple and economical form and which can easily be installed by persons unskilled in the art.

Another object of the invention is to provide a lightweight but sturdy and durable panel for a shower enclosure or the like.

A further object of the invention is to provide an enclosure of the aforementioned type comprising elements which may be packaged in partly assembled condition within one compact container.

Other objects and advantages of the invention will become apparent to those skilled in the art from the following description taken in connection with the attached drawings which, by way of preferred example only, illustrate one specific embodiment of the invention and in which,

Fig. 1 is an elevational view of a bathtub shower enclosure constructed in accordance with the present invention;

Fig. 2 is an enlarged vertical cross-sectional view taken as indicated by the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a corner portion of a panel forming a part of the enclosure;

Fig. 4 is an elevational view of said corner with parts broken away to illustrate details thereof;

Fig. 5 is a view similar to Fig. 4 but showing the corner-forming frame elements separated to illustrate details; and

Fig. 6 is a view of a corner portion of the plastic sheet utilized in the panel construction.

By way of general description with reference to Fig. 1, it may be said that the enclosure of the present invention comprises a pair of similar panels **10, 10** which are slidably engaged in side-by-side relationship in a bottom track **12** and a top track **14**. It will be noted that the bottom track **12** extends along the top of the outer wall of a bathtub **16** and the top track **14** extends between the bathroom walls **18, 18** which abut the ends of the bathtub. It should also be noted that the panels **10, 10** extend upwardly so as to enclose the area well above the tub **16** to thereby prevent splashing of water emitting from a shower head **20** which projects from one wall **18** well above the said tub.

It is an important feature of the present invention that each of the panels **10, 10** is of lightweight construction so that a person can easily slide the panels within the tracks **12** and **14** and so that the said panels can easily be lifted into place or replaced as will be more specifically described hereinafter. In keeping with lightweight construction, each panel **10** has a frame comprising elongated metallic side frame members **22, 22** and similar top and bottom frame members **24, 24** which retain and hold taut a lightweight flexible and resilient sheet of plastic **26**. Each of said panels is also provided with a transversely extending bar **28** which is secured at its ends to the side frame members **22, 22** to reenforce the panel frame structure, to provide a convenient hand grip, and to also provide a bar for hanging of towels and wash cloths or the like.

In referring more particularly to the construction of a panel **10** and to the plastic sheet forming a part thereof, attention is invited to Figs. 2 to 6. Each side and top frame member **22** and **24** comprises an elongated channel of generally U-shaped cross-sectional configuration and is preferably fabricated by an extruding process. While other lightweight materials may be used, it is



preferred that aluminum be utilized in the manufacture of the frame members. All of said frame members can initially be formed in one extruded channel-like piece and then cut to the proper lengths to form the side and top frame members. In the extruding process, the stock from which the frame members are cut is provided with a back wall **30** and side walls **32, 32**. A pair of ribs **34, 34** forming an extension of the side walls **32, 32** are provided to extend rearwardly of the back wall **30**. A second pair of ribs **36, 36** are provided on the side walls **32, 32** and face inwardly therefrom. It may be said that the ribs **36, 36** define an opening **38** adjacent the back wall **30** and an opening **40** along the open side of the channel or frame member.

As best shown in Figs. 3, 4 and 5, the side and top frame members **22** and **24** are interconnected in a mitred corner. More specifically, the open ends of said frame members are cut off at substantially 45° and engaged along the 45° cut off edges of **42, 42**. The means for securing the mitred corner comprises a generally rectangular block **44** which is located within the openings **38, 38** at the adjacent ends of the frame members **22** and **24**. As shown in Figs. 4 and 5, each block **44** is inserted within the opening **38** in the side frame member **22** and secured in such position by means of a screw **46** extending through a suitable hole in the rear wall **30** of the side frame member. A portion of the block **44** extends beyond the opening **38** in the side frame member **22** and is received within the opening **38** in the top frame member **24** and secured therewithin by a screw **48** extending through a suitable hole in the back wall **30** of the top frame member **24**. It will be quite apparent that each block **44** secures the adjacent side and top frame members against relative movement in any direction and it is well known that a mitred corner construction in addition to its attractive appearance, is inherently stronger than other similarly simple corner constructions.

It is an important and novel aspect of the invention to secure the side and end frame members **22** and **24** in mitred corners with the said frame members having internal gripping means for holding taut the plastic sheet **26**. While mitred corner frame structures have been used to support sheet materials, so far as I am aware, no such frame structures have been adapted to internally grip the edges of the sheet without employing detachable securing strips or other supplemental elements. Heretofore, there has been the unsolved problem of engaging the frame members in mitred corners after the frame members have been brought into place to grip and apply tension along the respective edges of the sheet.

In accordance with the present invention, the mitred corner frame members **22** and **24** are adapted to internally grip the plastic sheet **26** and apply tension thereto without the incorporation of additional securing strips or the like and the said sheet is particularly adapted to cooperate with the gripping means.

The internal gripping means provided on each frame member comprises the internally projecting ribs **36, 36** which are provided on the side walls **32, 32**. As shown in Fig. 2, said ribs are adapted to retain within a frame member an enlarged edge of the sheet **26** such as may be provided by forming a hollow bead on the said edge. More specifically, the ribs **36, 36** prevent withdrawal of the rolled or hollow beaded edge through the side opening **40** when the said rolled edge is disposed within the longitudinally extending opening **38**.

For optimum cooperation with the ribs **36, 36** on the respective side frame members **22, 22**, the side edges of the plastic sheet **26** are rolled as shown in Fig. 6. More specifically, the side edge portions of the sheet **26** are enfolded and then heat sealed or otherwise secured to define longitudinally extending open end loops or hollow beaded edges such as indicated by the reference numeral **50**. Thereafter, a rod **52**, preferably plastic, is longitudinally inserted within each loop **50** and the rolled edge is then inserted longitudinally within the opening **38** in the associated side frame member **22** and the sheet projects from the neck defined between the ribs **36, 36**. The rod **52** fills the opening defined in the loop **50** and thereby prevents movement of the side edge through the neck when tension is applied to the sheet **26**.

In the preferred method of assembly of a panel **10**, the side frame members **22, 22** are attached to the side edge portions of the sheet **26** and then the blocks **44, 44** are secured in the open ends of the side frame members to prevent inadvertent disassembly by relative longitudinal movement of the side frame members and the side edges of the sheet.

The top and bottom edges of the sheet **26** are adapted in a generally similar manner to be secured within the top and bottom frame member **24, 24**, but said top and bottom edges are particularly adapted to permit connection of said top and bottom frame members to the side frame members in mitred corners. The top and bottom edges of the sheet are similarly adapted and, therefore, a description of the top edge adaptation as shown in Fig. 6 will be understood to cover the bottom edge adaptations also.

The rolled or hollow beaded portion **54** is formed on an extension from the top edge **56** of the sheet **26**, said extension being spaced inwardly from the side edges of the sheet as shown in Fig. 6. It is important to note that the said rolled extension **54** is connected to the top edge **56** on a curved edge **58** to avoid sharp corners which might tear when tension is applied along the rolled portion. Spacing the hollow beaded extension **54** inwardly from the side edges of the sheet **26** permits insertion of the rod **60** within the rolled extension while the side edges of the sheet are held by the side frame members and also permits insertion of the top frame member **24**. In inserting the top frame member over the rolled edge **54** and between the side frame members, considerable tension will be applied to the sheet **26** and will cause the same to stretch. However, such stretching may be accomplished without tearing the sheet because of the provision of the arcuate edge **58** as described above. After the top frame member **24** is inserted over the rolled edge extension **54** and rod **60**, the said frame member is brought into engagement with the ends of the side frame members **22, 22** along the complementary 45° edges **42, 42** and the screws **48, 48** are threaded into the respective blocks **44, 44** to secure the frame members in connected relationship.

It will be readily understood that in connecting the frame members and plastic sheet in the manner described, optimum advantage is taken of the inherent elasticity of the plastic sheet. It will also be understood that when the panel **10** is assembled, the sheet **26** is held under tension applied longitudinally as well as transversely so as to be drawn taut in all directions.

As a final step in the assembly of a panel **10**, the towel and gripping bar **28** is placed across the panel and secured at its ends to the side frame members **22, 22** by screws **62, 62** extending through the side frame members in the openings **38, 38** and adjacent the respective back walls **30, 30** thereof.

As previously mentioned, the assembled panels **10, 10** are mounted to enclose the bathtub shower installation on the bottom track **12** and top track **14**. The bottom track **12** is preferably formed of plastic material which may be painted to duplicate the color of the aluminum panel frame members. A suitable mastic is spread across the top of the outer wall of the bathtub **16** and the plastic track **12** laid therealong. As shown in Fig. 2, the track member **12** comprises a double channel having a bottom wall **64** and side walls **66, 66** and an intermediate wall **68**. One channel is provided for each panel **10** and the panels are mounted thereon so that their respective towel bars **28, 28** extend in opposite directions permitting free sliding movement of the panels in side-by-side relationship.

The upper track **14** is of three-piece construction as shown in Fig. 1. More specifically, the upper track **14** comprises two members of generally U-shaped cross-sectional configuration **70, 70** which telescopically receive a third member **72** of cross-sectional configuration generally similar to the cross-sectional configuration of the bottom track **12**. In other words, the member **72** comprises a back wall and two side walls with an intermediate wall providing two channels which receive the top edges or frame members of the panels in a side-by-side relationship. One of the members **70** is fixedly secured to the member **72** while the other member **70** is adjustable therealong to adjust the effective length of the track **14**. Said other member **70** is provided with a slot **74** adjacent its inner end and a bolt **76**, having a non-turning head **78** disposed within one of the channels defined within the member **72**, extends through said member **72** and the slot **74**. The projecting upper end of the bolt **76** receives a knurled tightening nut **80** for the purpose of clamping the adjustable member **70** in selected position in the manner shown in Fig. 8.



The aforedescribed telescoping top track **14** is particularly adapted to adjust to the length of the various size bathtubs so as to extend between the bathroom walls **18**, **18** which abut the ends of a bathtub **16**. A socket plate **82** is secured to each wall **18** and defines a generally rectangular socket for receiving the adjacent end of the track **14**. The plates **82, 82** may be secured to the walls **18, 18** by a mastic or cement and then the upper track **14** is extended therebetween to firmly engage within each socket plate and the nut **80** is tightened to secure the said track in extended position.

It is believed that all of the advantages of the aforedescribed bathtub shower enclosure will become readily apparent in the consideration of a description of the assembly of the elements in taking such elements from a suitable merchandising or shipping container. Such a container may be tubular but in any event should be elongated to receive the longest frame members and track members. In preparing the elements of the enclosure for shipment within such a container, the top and bottom frame members **24, 24** of the two panels **10** are removed from the panel and placed within the container in end-to-end relationship. The top track is placed within the container in assembled condition and its length is extended to be equal to the distance from the top of the bathtub **16** to the point on the bathroom walls **18, 18** at which the socket plates **82, 82** should be located to receive the track **14** for accommodation of the panels **10, 10**. The plastic sheets **26, 26** and the side frame members **22, 22** utilized in the two panels **10** are placed within the container in partly assembled condition. More specifically, after the sheet **26** is secured by its respective side frame members **22, 22** and with the rectangular block elements **44, 44** secured within the ends of the side frame members, the said sheet is rolled about one or both of the side frame members so as to confine the bulk thereof for packaging.

The plastic bottom channel member **12** is provided in a length in excess of that which is anticipated to be necessary for most bathtub installations and placed within the container.

The remaining enclosure elements, comprising the towel bars **28, 28** and the plastic rods **60, 60**, are laid within the package to extend generally parallel to the previously described elements and the necessary mastic for securing the bottom track **12** and the socket plates **82, 82** may be furnished in a tube which is placed within the container along with the socket plates **82, 82**.

The first step in the preferred method of installing the bathtub shower enclosure comprises removing the top track **14** from the container and holding the same in a vertical position to extend from the tub **16** along the respective tube enclosing walls **18, 18** and marking said walls along the top end of the channel **14** to indicate the position wherein the socket plates **82, 82** should be located. Then the said socket plates **82, 82** are secured in place on the respective tube enclosing walls **18, 18**. Thereafter, the top track **14** is extended along the tub to simultaneously engage the walls **18, 18** to measure the distance therebetween. With the top track secured in the adjusted extended position measuring said distance, the same is then used to measure the required length of the bottom track **12** and the excess of said bottom track **12** may be easily cut off. Then, the bottom track is cemented to the tub **16** and the top track secured between the socket plates **82, 82**. In the final steps of assembly, each panel **10** is put in place by inserting its top edge within its respective channel defined in the top track **14** and then dropping the panel into place within its respective channel in the bottom track **12**. In this connection, it is important to note that the channels defined in the top track **14** are relatively deep so that when a panel **10** is thrust upwardly therein the bottom edge of the panel will clear the bottom track **12**. When dropped into place in the bottom track **12**, the top edges of the panels will still be retained within their respective channels in the top track **14**.

Accordingly, the weight of the panels **10, 10** is supported entirely by the bottom track **12**. In this connec-

tion, it should be observed that the ribs **34, 34** extending along the bottom frame members **24, 24** provide runners which engage the bottom wall **64** of the channels defined in the bottom track **12**. Obviously, such runners reduce the friction and thereby provide means for sliding the panels **10, 10** without excessive force. Such arrangement for sliding the panels is only feasible in a lightweight construction of the type shown. In the more conventional heavy glass and plastic shower panels and doors, it is necessary to suspend the weight thereof on complex and expensive track mechanism.

Another advantage in the relatively thin lightweight plastic sheet resides in its ability to recover or return to its normal plane after it has been deflected therefrom by a blow or by the application of other forces.

A further advantage in the use of a lightweight relatively thin plastic sheet is attained from the apparent economy thereof. Because the sheets **26, 26** are relatively cheap, they can be replaced without unwarranted expense and without requiring the skill of a craftsman. It will be quite apparent that the sheets can be removed and replaced by disassembly of the frame members **22** and **24** by even the most unskilled persons. In this connection, it may be desirable to have available a supply of plastic sheets in various colors which may also be etched in figurative and decorative designs and which may be transparent, translucent, or opaque as desired.

While the construction of the panels has been described with specific reference to a preferred use thereof in a bathtub shower enclosure, it will be understood that generally similar panels falling within the scope of the invention may be used for other purposes and in other installations. Therefore, it is not my intention to limit the invention to the preferred embodiment shown and described otherwise than indicated by the claims which follow.

I claim as my invention:

1. In a panel construction for a bathtub shower enclosure, the combination comprising a generally rectangular relatively thin sheet of plastic having a portion of enlarged cross-sectional area along the top edge and along the bottom edge thereof each of which enlarged portions terminates a substantial distance inwardly from a side edge of the sheet, a pair of side frame members securing the side edges and having open mitred ends projecting beyond the top and bottom edges of the sheet, a pair of end frame members for securing the top and bottom edges of the sheet, each of which has mitred ends complementary to the mitred ends of said side frame members and each of which defines a longitudinally extending channel of generally U-shaped cross section adapted to receive the respective enlarged portion at the top and bottom of the sheet by sliding movement thereover, means in each of said channels for preventing movement of the respective enlarged portion through the open side of the channel whereby said end frame members will engage the top and bottom edges of the sheet and apply tension thereto, and a block secured within each open end of said side frame members and secured to the adjacent end of an end frame member to re-inforce the mitred corner connections between said side frame members and said end frame members.

2. In a panel construction for a bathtub shower enclosure, the combination comprising a generally rectangular relatively thin sheet of plastic having portions extending beyond its top and bottom edges which portions terminate a substantial distance from at least one of the side edges of the sheet, each of said portions being enfolded upon itself and secured in enfolded position to define an open end loop, a rod disposed within each loop, a pair of side frame members having internal gripping means engaging the side edges of the sheet and having mitred ends projecting beyond the top and bottom edges of the sheet, a pair of frame members for the top and bottom edges, respectively, of the sheet, each of said pair of frame members having mitred ends complementary to the ends of said side frame members and each having an elongated generally U-shaped channel adapted to receive a loop and rod when the frame member is thrust longitudinally thereover and each of said pair of frame members also having means for preventing movement of the associated loop and rod through the open side of the channel, whereby said pair of frame members are engaged in mitred corner connections with said side frame members and grip the sheet to draw the same taut between all of said frame members.

3. In a panel construction for a bathtub shower enclosure, the combination comprising a generally recangular relatively thin sheet of plastic having portions extending beyond its top and bottom edges which portions terminate a substantial distance from at least one of the side edges of the sheet, each of said portions being enfolded upon itself and secured in enfolded position to define an open end loop, a rod disposed within each loop, a pair of side frame members having internal gripping means engaging the side edges of said sheet and having mitred ends projecting beyond the top and bottom edges of the sheet, a pair of frame members for the top and bottom edges, respectively, of the sheet each of said pair of said frame members having mitred ends complementary to the ends of said side frame members and each having an elongated generally U-shaped channel adapted to receive a loop and rod when the frame member is thrust longitudinally thereover, each of said pair of frame members also having means defining a neck within said channel through which said sheet extends which neck prevents movement of the associated loop and rod through the open side of the channel, and means at each end of said side frame members for securing the same to the adjacent ends of said pair of frame members to re-inforce mitred corner connections therewith while said sheet is drawn taut between all of said frame members.

4. In a panel construction for a bathtub shower enclosure, the combination comprising a generally rectangular relatively thin sheet of plastic having its side edge portions secured in enfolded positions to define open end loops and having extending portions along its end edges terminating inwardly from said enfolded side edges, said extending portions also being secured in enfolded positions to define open end loops, a rod disposed in each of said loops, a pair of side frame members having mitred ends projecting beyond the end edges of said sheet and each having means for retaining the looped side edges of said sheet, and a pair of end frame members having mitred ends complementary to the mitred ends of said side frame members and having means defining longitudinally extending channels for receiving and gripping the enfolded portions at the top and bottom edges of said sheet whereby said sheet can be stretched lengthwise for engagement with said end frame members and whereby said end frame members will engage said side frame members in mitred corner connections to retain said sheet under longitudinal and transverse tension.

5. In a panel construction for a bathtub shower enclosure, the combination comprising a generally rectangular relatively thin sheet of plastic having its side edge portions secured in enfolded positions to define open end loops and having portions extending from its end edges and connected to said end edges in arcuate edges which extending portions are secured in enfolded positions to define open end loops along the top and bottom edges of said sheet which open end loops terminate a substantial distance inwardly from the enfolded side edge portions of the sheet, a rod secured in each of said loops, a pair of side frame members having mitred ends projecting beyond the top and bottom edges of said sheet and having channel means embracing and securing the enfolded side edges of said sheet, a block secured in the mitred end of each of said side frame members to prevent relative longitudinal movement of the side edge loops and rods disposed therein, and a pair of end frame members having mitred ends complementary to the mitred ends of said side frame members and having means defining channels adapted to embrace and secure the enfolded extensions along the top and bottom edges of said sheet whereby said sheet can be stretched longitudinally to receive said end frame members and whereby said end frame members may be secured to said blocks to re-inforce the mitred corner connections with said side frame members and to retain said sheet under longitudinal and transverse tension.

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