Sept. 20, 1971 R. E. MILES ET AL 3,605,851

DIVIDER SCREEN ASSEMBLY

Filed Sept. 22, 1969 2 Sheets-Sheet 1

FIG. 1

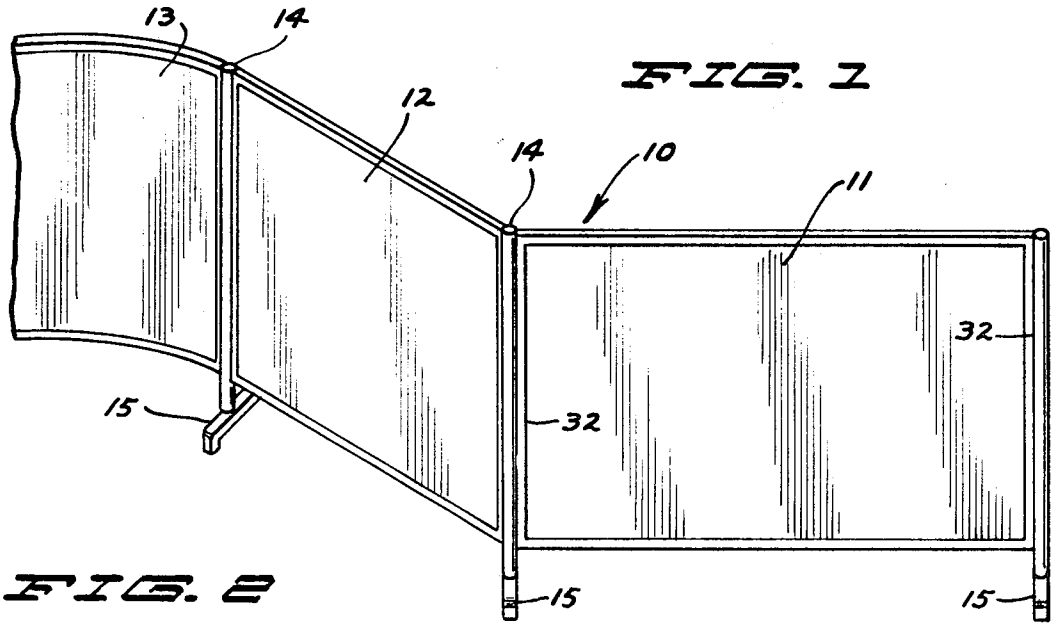


FIG. 2

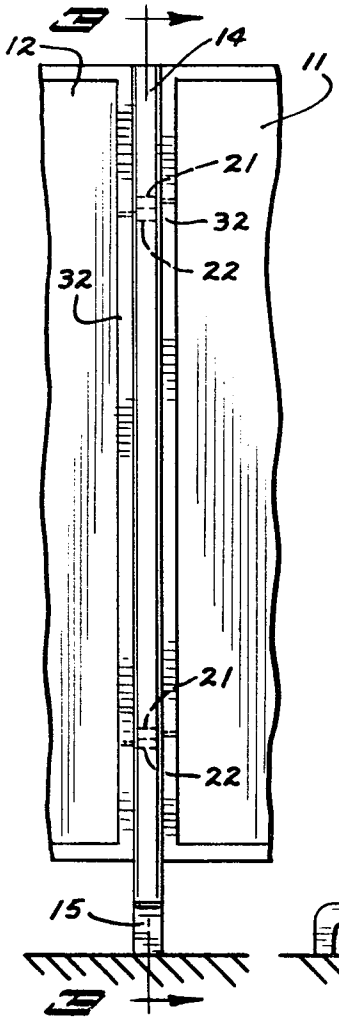
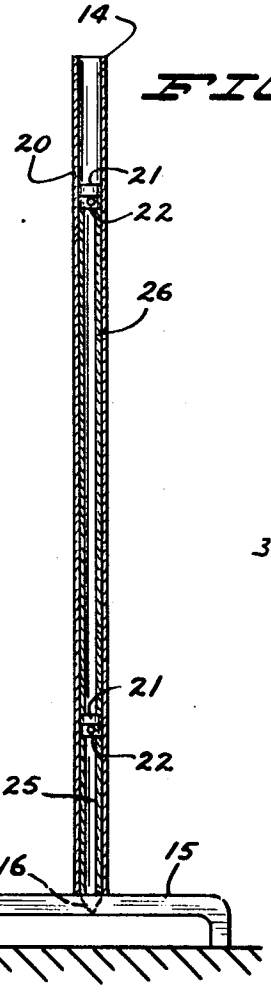


FIG. 3



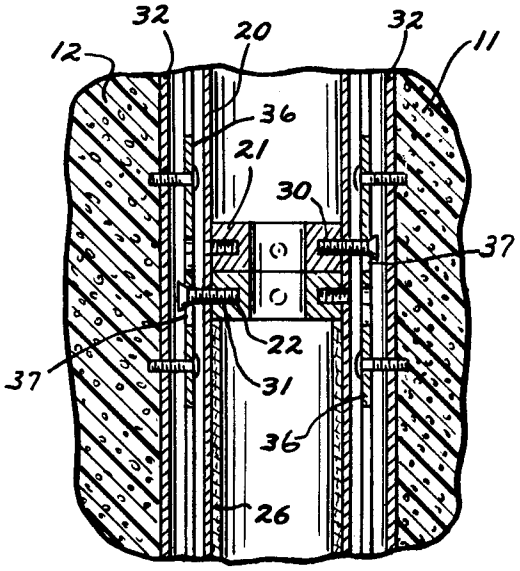


FIG. 4

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DIVIDER SCREEN ASSEMBLY

Filed Sept. 22, 1969 2 Sheets-Sheet 2

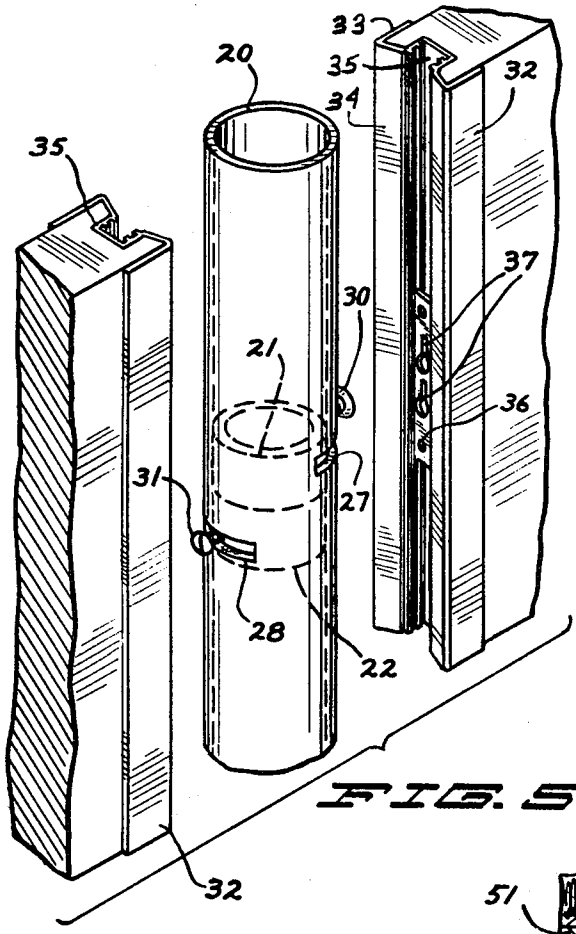


FIG. 5

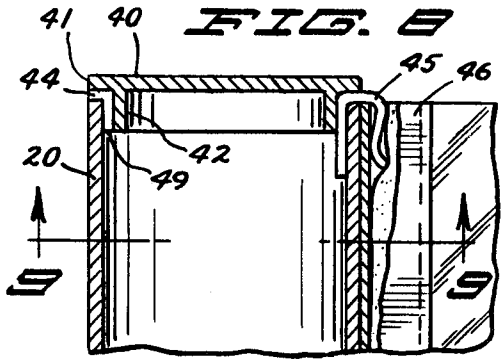


FIG. 8

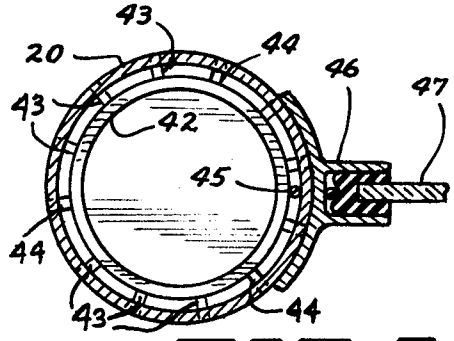


FIG. 9

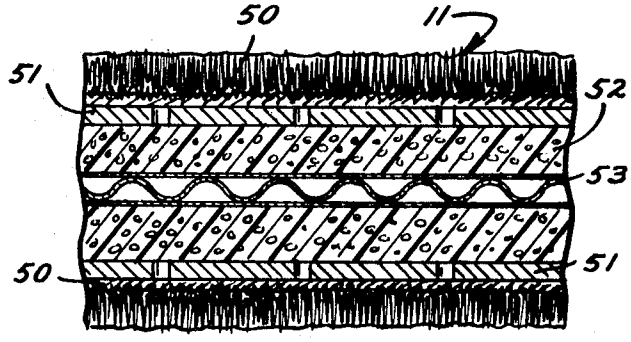


FIG. 7

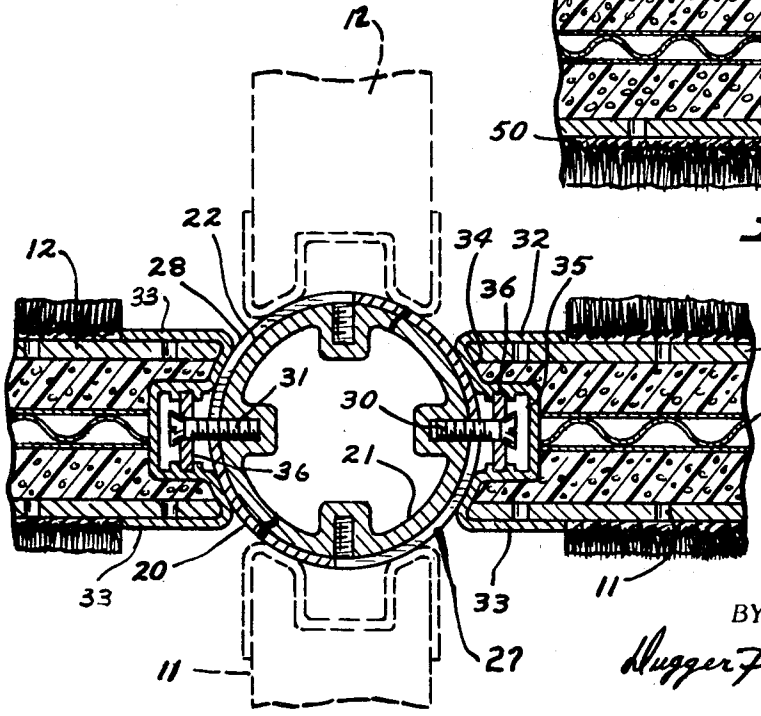


FIG. 6

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DIVIDER SCREEN ASSEMBLY

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Int. Cl. A47g 5/00
U.S. Cl. 160—135 12 Claims

ABSTRACT OF THE DISCLOSURE

A divider screen panel assembly comprising support members or columns which permit hinging of the screen panels at an infinite number of angular positions to accommodate the interior designers wishes to avoid stereotyped rectangular layouts only for interior partitions in offices and the like. The panels are made so that they will mount easily onto the support columns, and can be adjusted to the desired angular position at will. Further, the columns are made so that four panels can be supported on one column at 90° to each other. The support members permit the use of curved panels, sound proofing panels, and also have provisions for insertions of glazing strips if less than a full height of panel is desired.

BACKGROUND OF THE INVENTION

(1) Field of the invention

The present invention relates to portable divider screen assemblies for interior partitions which permit hinging of the screen panels relative to each other.

(2) Prior art

Several folding screens have been advanced, and different types of arrangements have been made so that the panels can be set at angles with respect to each other. However, these generally are very complex structures involving a good deal of mechanisms for the fastening members and also a good deal of hand labor in assembly.

For example, U.S. Pat. No. 2,855,037 shows a portable wall or screen which can be used with sections positioned at angles with respect to each other but small resilient inserts that are plugged into fixed holes are used so that only a set number of angular positions can be achieved.

U.S. Pat. No. 538,318 also shows a hinging hospital screen, but here the panels are not readily interchangeable as they are with the present invention.

SUMMARY OF THE INVENTION

The present invention relates to a simply constructed divider screen assembly for use in offices, commercial buildings of various types, hospitals and the like for forming temporary or semi-permanent interior partitions. The individual panel members can be adjusted at angles with respect to each other. The supports comprise tubes having internal collars that in turn threadably support outwardly extending screws passing through slots in the tube. The panels themselves are supported by placing the screws through keyhole shaped openings. The internal collars can be rotated inside the tube at will, thus permitting adjustment of the panels with respect to each other. The units are easy to manufacture, low in cost and are interchangeable. There are no unsightly exterior members visible because the rotating elements are completely inside the support tube.

Further objects of the invention include the formation of simply installed glazing channels which can be positioned at angles just like the panels themselves using a cap at the top of the support tube and a small U-shaped hook which holds the glazing channel at any desired angle. Additionally, extruded members only are used for forming the frames for the panels themselves, which reduces cost. Even the interior collars may be formed with extrusions. A sound absorbing panel construction is also presented for specialized uses.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a divider screen assembly having panels supported on poles or tubes according to the present invention;

FIG. 2 is a fragmentary enlarged elevational view of a support post of FIG. 1;

FIG. 3 is a sectional view taken as on line 3—3 in FIG. 2;

FIG. 4 is an enlarged sectional view showing details of the support collars for the panels;

FIG. 5 is a fragmentary exploded view showing details of the panels and support posts;

FIG. 6 is a fragmentary enlarged transverse sectional view showing the positioning of four panels on a single support post for forming right angle corners, and also showing the degree of movement of the panels individually;

FIG. 7 is a fragmentary enlarged transverse sectional view of a sound proofing panel utilized with the present invention;

FIG. 8 is a fragmentary enlarged sectional view showing a support cap and hook for holding glazing channels; and

FIG. 9 is a sectional view taken as on line 9—9 in FIG. 8.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A divider screen assembly shown generally at **10** in FIG. 1 includes a plurality of individual panel assemblies **11**, **12** and **13** which are supported on connecting posts or tubes **14**. The panel assemblies, as shown, are capable of being positioned at different angles with respect to each other, and as shown with panel **13**, the panel can assume a curved shape to enhance its appearance and make it fit into modern decor more easily. The support posts or columns **14** are each supported on a separate pedestal **15**. The pedestal **15** and the support posts are connected with a tapered fitting member shown in dotted lines at **16** that frictionally locks into a receptacle on the pedestal. The pedestals can be removed if desired and also changed in angle with respect to the support panels. This tapered fitting is a conventional fitting which provides support and stability for the panels.

The support columns **14** each comprise tubes **20** which are, as shown, hollow and circular in cross section. The tubes have panel support collars positioned therein. There are two sets of collars, an upper set and a lower set. Each set has an upper collar **21** and a lower collar **22**. These collars are identical in construction. The collars **21** and **22** of each set are positioned in the interior of the tube with a first tubular insert **25** which could be a cardboard tube or other desired insert and a second long tubular insert **26**. The inserts **25** and **26** support the sets of collars so that the centers of the collars are aligned with provided annular extending slots, for example slots **27** and **28** respectively (see FIG. 5). The slots **27** and **28** extend through the wall of the tube **20**. There are two sets of slots **27** and **28**, one adjacent the upper portions of each pole **20** for the upper set of collars, and one adjacent the lower portions of the pole for the lower set of collars. The slots are positioned so that the panels are supported at two spaced locations. The showing in FIG. 5 is a typical showing. The upper collars **21** of each set have screws **30** threaded therein and extending through the respective slots **27**. The

collars 22, which are the lower of the collars in each of the sets of collars, have screws 31 threaded thereinto and extending through the slots 28. The screws comprise panel support pegs. The collars will rotate inside the tube so that the screws can slide along the respective slots from one end of the slot to the other. As shown in FIG. 6, the screw for each of the collars can actually slide so that the axis of the screw will move through an arc of 90° at a minimum. Thus the slots themselves actually extend more than 90° of arc from end to end.

As shown, the panels 11, 12 and 13 each have a framework made up of channels on the tops, bottoms and the ends thereof. The frame members are fastened together in a known manner. The end channels 32 for each of the panels are made identically, and the top and bottom channels for each of the panels have the same cross section as that shown, but the panel 13 of course is bent into a radius so that it is curved. The end channels 32, as shown, have side legs 33, 33 and a joining web member 34. The web member has an interior recess 35. This recess 35 opens toward the post 20 and has projecting lugs extending toward each other from opposite sides of the recess to form an uprightly extending retainer groove for receiving short retainer inserts or members 36, one that will align with each set of collars and pegs. The retainer members are slid into the groove formed by the lugs, and are held in place in a suitable manner, for example by screws passing into the web. The retainer members 36 cannot slide in up and down directions and will provide support for the panels. The retainer inserts 36 are each provided with a set of inverted keyhole openings 37, typically shown in FIG. 5. The inverted keyhole openings have a wide bottom portion and a narrow neck. As shown, there are two keyholes 37 adjacent the upper portions of the panel, and there is an insert 36 having two keyholes adjacent the lower portions of the panel as well. The reason for having the two support keyholes in each member is to make the channels 32 interchangeable and usable on all panels.

Thus if the panels are being positioned on the right hand side of the post as shown in FIG. 5, the upper keyhole 37 of each insert would be utilized for supporting the panel, and when the panel is supported in the left hand side of the post as shown in FIG. 5, then the lower keyhole 37 would be used and mounted over the screw 31. The length of the screws 30 or 31 is adjusted so that the head protrudes from the post the desired amount to provide a tight clamping of the edges of web 34 against the post itself. The web is curved slightly to fit the post. The screw heads, for example the screws 31 for the upper collar in each set, are slipped through the large portions of the keyhole openings. The panels are then dropped down so that the shank of the screw slides into the narrow groove portion of the keyhole. The screw shank rests on the upper edge surface defining the upper end of the slot of the keyhole to support the panel from falling, and the screw head bears against the insert 36 to tightly hold the unit against the post. The panels can be supported in two vertically spaced locations either utilizing the upper collars 21 of each set, or the lower set of collars 22 without having right and left or special panel sections. The screw shanks are supported on the lower edge of the respective slots 27 or 28 to transfer the vertical loads to the support posts.

The slots 27 and 28, as shown in FIG. 6, provide for a sufficient amount of rotational freedom so that panels 11 or 12 can be positioned at 90° to the solid line position shown. By inserting two screws in each of the collars (the collars are made universal so they have threaded openings every 90°), four separate panels can be supported on a single post just as shown in FIG. 6. Two of the panels are shown in solid lines and two are shown in dotted lines for sake of clarity. However, all four panels can be supported in one post as shown and the slots 27 and 28 permit two screws to be mounted into each of the slots, one at each end, and thus there would be two screws in each collar and two screws in each slot.

Although these collars are shown here with tapped holes, the collars themselves can be made as extrusions with the threads merely extruded along the edges of longitudinally extending openings so that the hole for the screws is continuous from the top to the bottom of the collar, and a continuous extrusion is thus made. The collars would then be cut to the desired axial length and used without further machine work.

In some instances, panels only part of the way up the post are used. Special posts having the upper set of collars lower than that shown are used. A glass unit is used above the short panels. A unique way of fastening glazing channels or members to the posts is shown in FIGS. 8 and 9. The posts are capped with a top cap 40 which has an annular flange 41 that fits over the top end surface of the post, and an inner neck 42 that slides inside the post itself. The flange 41 is supported in the spaced relationship to the top edge of the post with a plurality of small radially extending lugs or bosses 43 which are integral with the cap flange 41 and extend outwardly from the neck 42. The cap is properly centered in the post itself with three axially extending lugs 44 that are attached to the neck and extend down inside the tube to provide the necessary support in the tube to keep the cap centered. A small U-shaped metal clip 45 (which has a spring load) is then placed so that it is hooked over the end surface of the tube and over the web of a glazing channel 46. The cap slides down so the flange 41 fits over the base portion of the U-shaped wire and holds it in place in the tube. Positioning the wire between two of the lugs 43 keeps the wire in place. Thus, very simply, a glazing channel 46 is held into place against the side of the tube it is to be supported on, and the channel can then hold a piece of glass 47 so that a glazed panel can be made.

Shown in FIG. 7 is a typical cross section of a sound proofing panel which can be used with the screen of the present invention to minimize cost. This particular construction has been found to work very well to minimize sound transmissions of both high and low frequency. The panel, for example panel 11, is a sandwich type construction and on opposite outer sides there is a layer of porous surface fabric, as shown, carpeting 50 which has a suitable backing, and a pile surface. After the carpeting comes a layer of pegboard or perforated hard board 51 which has openings therethrough spaced every so often, and then in the sandwich construction there are layers of foam 52 and finally a center member made up of corrugated cardboard 53. The center cardboard is imperforate, and prevents low frequency sounds from passing through the panel, and most of the high frequency sounds are absorbed in the carpeting. The foam also absorbs low frequency and high frequency sounds. The pegboard layers 51 give structural strength and rigidity to the panel so that it has stability. This type of construction is economical to make, very attractive because the carpeting can be made in any types of colors, and has a texture that is pleasing, and greatly minimizes any sound transmission between compartments or areas separated with the panels.

Thus the entire assembly gives a portable attractive divider assembly that can be positioned in angles, can hold four different panels in a corner construction, gives ease of hinging, and also provides for the insertion of glazing channels without modification of a support post. The panel construction minimizes sound conduction and transmission to greatly aid in objectionable noise transmission between the areas separated.

The hinge members are completely hidden from view so no unsightly members are present. The frames fit tightly against the posts to also insure maximum beauty.

It should be noted that in place of carpeting, the layers 50 can be felt or other cloth which will help to absorb sounds.

Also, the posts **14** themselves can be tapered to fit into the receptacles on supports **15**, if desired.

What is claimed:

1. A support means for a divider screen panel assembly, said assembly including a support post member having a wall and a panel having an edge member having a wall, means to support said panel by said edge member with respect to said support post member, including collar means rotatably mounted inside one of said members, a support element mounted on and extending from said rotatably mounted collar means through a wall of said one member, and co-operating means between said support element and the other member to support the two members relative to each other, and slot means in the wall of said one member through which said element extends to permit angular movement of the other member relative to said one member to the extent of said slot means.

2. A support means for a divider screen panel comprising a tubular post, means on the interior of said post comprising a collar means mounted for movement about a rotational axis with respect to said post, a part peripheral slot means defined in said post and aligned with said collar, a support peg means attached to said collar and having portions protruding through said slot, and co-operating means on said peg means and a panel to retain said panel for movement with said collar about said axis relative to said post.

3. The support means of claim **1** wherein said tubular post is circular in cross section, and said slot means extends around the periphery of the post a sufficient distance to permit said peg to move substantially 90° in said slot about the axis of said post.

4. The support means of claim **3** wherein said peg means comprises a pin, and said co-operating means on said panel and said peg means comprises a head on said pin and an inverted keyhole shaped receptacle defined in an edge portion of the panel and having a narrow slot portion which is defined by an edge resting on said pin with a panel in position, the head of said pin being wider than said slot portion and being positioned on an opposite side of a wall of the edge portion on said panel from said post to thereby retain said wall of said edge portion between the pin head and said post.

5. The support means of claim **1** wherein said post has two vertically separated sets of collars, each set of collars comprising an upper collar and a lower collar each having a support peg means, separate slot means for the support peg means of each of said collars, said slot means for each set of collars being positioned so that their centers are substantially 180° apart on the periphery of said post, and said slot means extending peripherally so that the support peg protruding from each of said slot means will move substantially 90° in its respective slot means, and co-operating means between the support peg means of each set of collars and a separate panel to retain two panels for hinging movement with respect to said post.

6. The combination as specified in claim **5** and spacer means on the interior of said post to hold said collars in proper position aligned with their respective slot means.

7. The combination as specified in claim **5** wherein a first panel is attached to the support pegs on the upper ones of the collars in each set, and a second panel is attached to the support pegs for the lower ones of the collars in each set, each panel having edge members provided with two sets of inverted keyhole slots positioned so that the panels can be interchangeably supported on the pegs of the upper collars or the lower collars of each set of collars.

8. The combination as specified in claim **1** and means for retaining a support channel on said post adjacent the top portion thereof comprising a U-shaped hook adapted to fit over the wall of said post and the back portion of said support channel, and a cap member having a flange substantially the same size and shape as the outside of said post, and boss means on said cap adapted to position the cap in the interior of said post and retain said cap in a spaced relationship to the walls of said post and said flange spaced from the top edge of said post a sufficient distance to provide clearance for said U-shaped clip on the interior of said post.

9. The combination as specified in claim **1** wherein said panel comprises a sound absorbing structure including a multi-layer wall members having a center imperforate member, a separate layer of foam material means on opposite sides of said imperforate member, perforated support structural panels on the outside of each of said layers of foam material means, and a separate outer sound absorbing face on said perforated structural panels.

10. The combination as specified in claim **1** wherein each of said collars includes means for receiving a support peg at substantially 90° intervals.

11. The support means of claim **1** wherein said post is substantially circular in cross section and said collars fit closely inside said tubular post and are rotatably mounted directly on the interior of said tubular post.

12. The combination as specified in claim **5** wherein said collars include means to retain peg means at substantially 90° intervals, and said slot means are of sufficient length to permit two peg means attached to said collar means at substantially 90° to each other about the rotation axis of said collar to extend through the same slot.

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U.S. Cl. X.R.

52—239, 495; 160—351

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,605,851 Dated September 20, 1971

Inventor(s) R. E. Miles et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, Line 12 bottoms should be--bottom--. Column 5, Line 29 (Claim 3, Line 1) Claim 1 should be--Claim 2--.
Column 5 Line 45 (Claim 5, Line 1) Claim 1 should be--Claim 2--.
Column 6 Line 11 (Claim 8, Line 1) Claim 1 should be--Claim 2--.
Column 6 Line 23 (Claim 9, Line 1) Claim 1 should be--Claim 2--.
Column 6 Line 31 (Claim 10, Line 1) Claim 1 should be--Claim 2--.
Column 6 Line 34 (Claim 11, Line 1) Claim 1 should be--Claim 2--.

The errors in dependance of the claim arose when application Claim 15 was made Patent Claim 1.

Signed and sealed this 7th day of March 1972.

(SEAL)
Attest:

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Attesting Officer

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Commissioner of Patents