# United States Patent [19]

**Stark et al.**

[11] **3,766,692**

[45] **Oct. 23, 1973**


[54] **PORTABLE WALL ASSEMBLY**


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[73] Assignee: **The General Fireproofing Company,** Youngstown, Ohio



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[52] **U.S. Cl.** ..... **52/71,** 52/65, 52/239, 52/495, 160/135, 160/351

[51] **Int. Cl.** ..... **E04f 13/08**

[58] **Field of Search** ..... 52/71, 122, 238, 52/239, 65, 70, 32, 36, 241, 495; 160/135, 351



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[57] **ABSTRACT**

A portable wall assembly includes a plurality of panel elements having edge channels adjustably engageable with vertical support posts. Each panel is secured to a post by means of a pair of hook-type mounting clips carried by the upper and lower limits of each panel channel and insertable within annular cavities provided at the top and bottom of the post after which a removable cap is applied at the top of the post to firmly clamp both clips.


**7 Claims, 10 Drawing Figures**

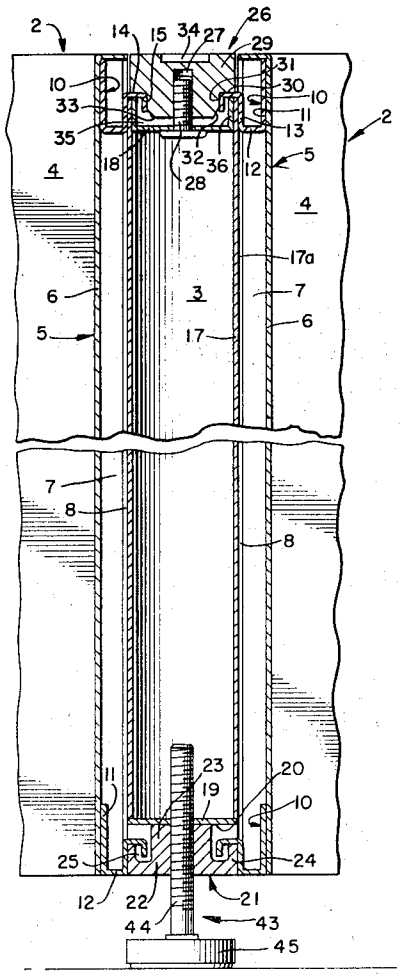


FIG. 1.

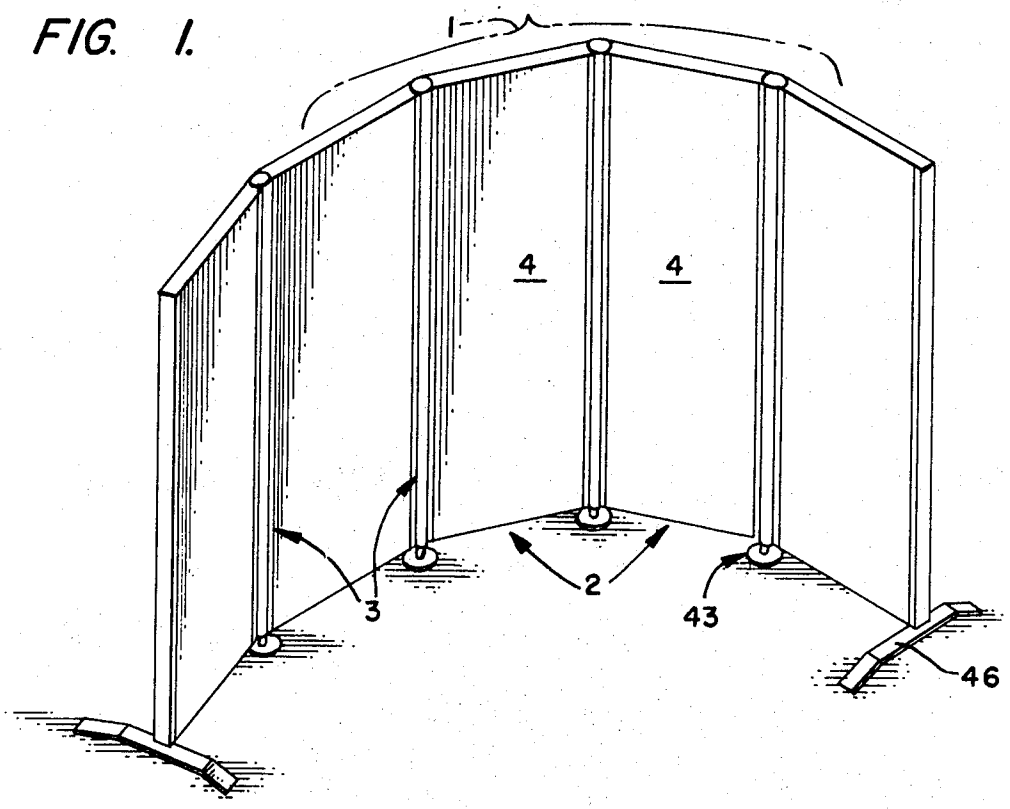



FIG. 3.

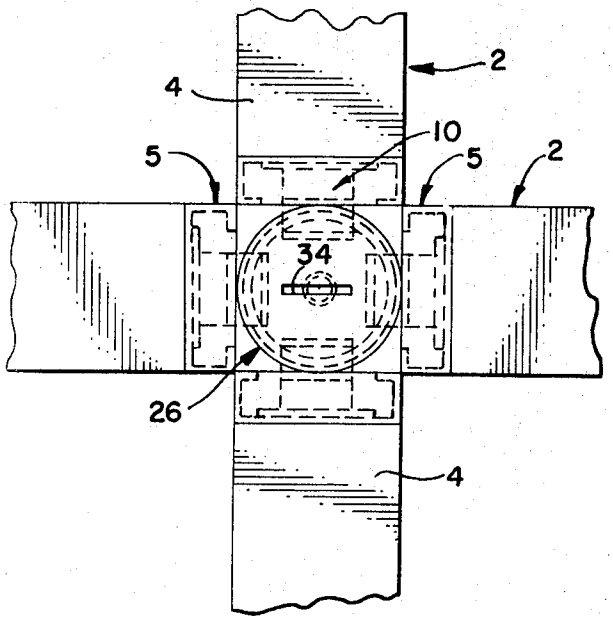



FIG. 4.

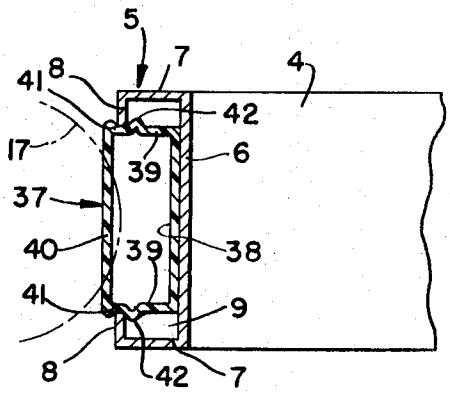


FIG. 2.

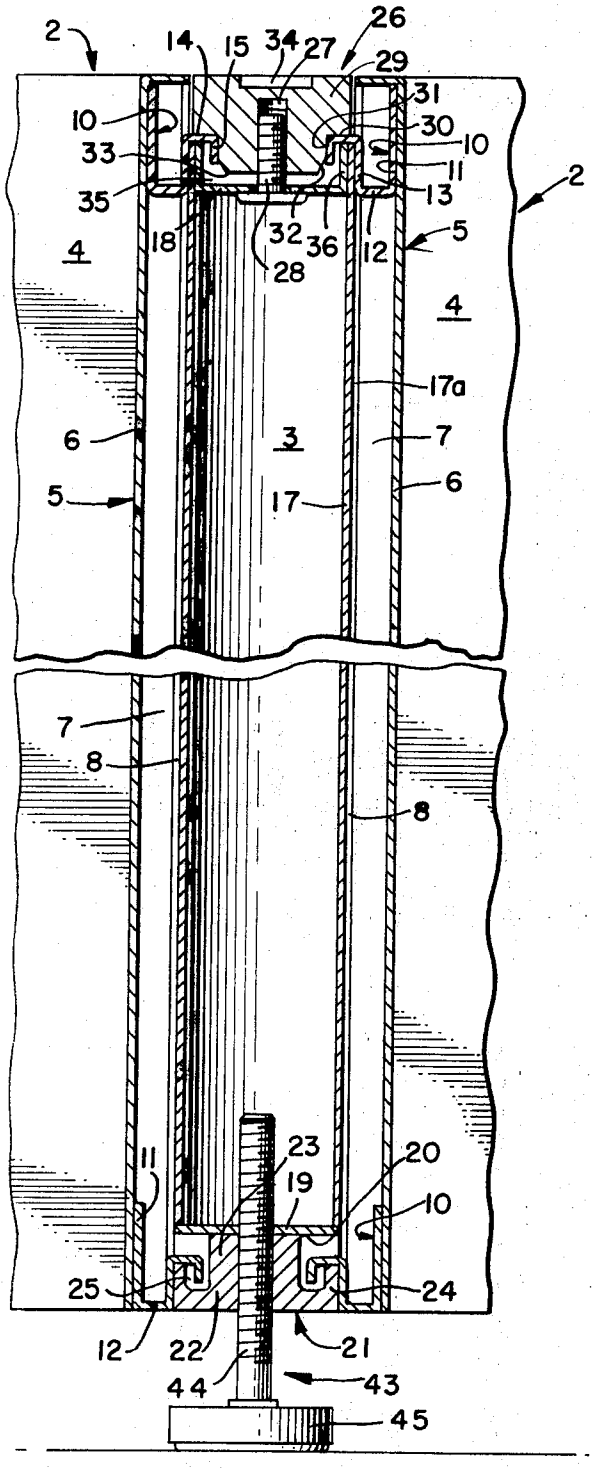



FIG. 5.

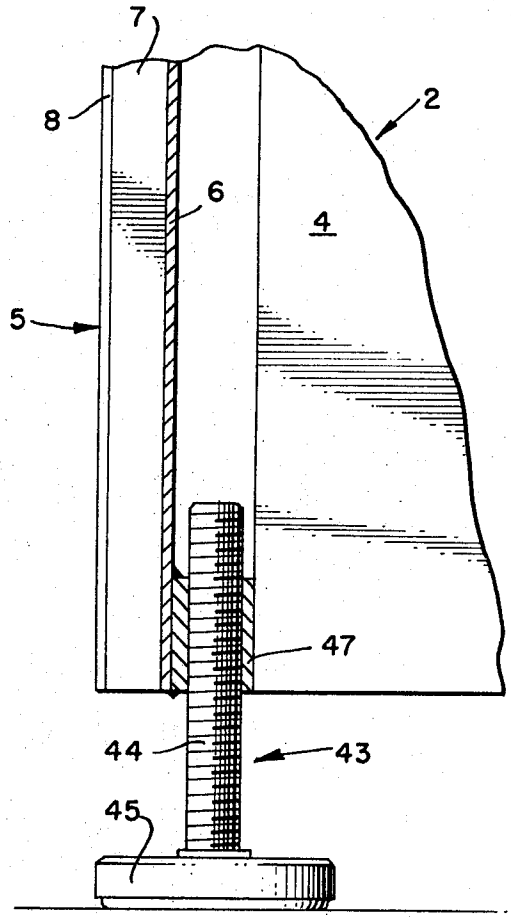



FIG. 6.

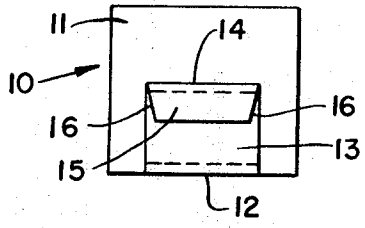


FIG. 7.

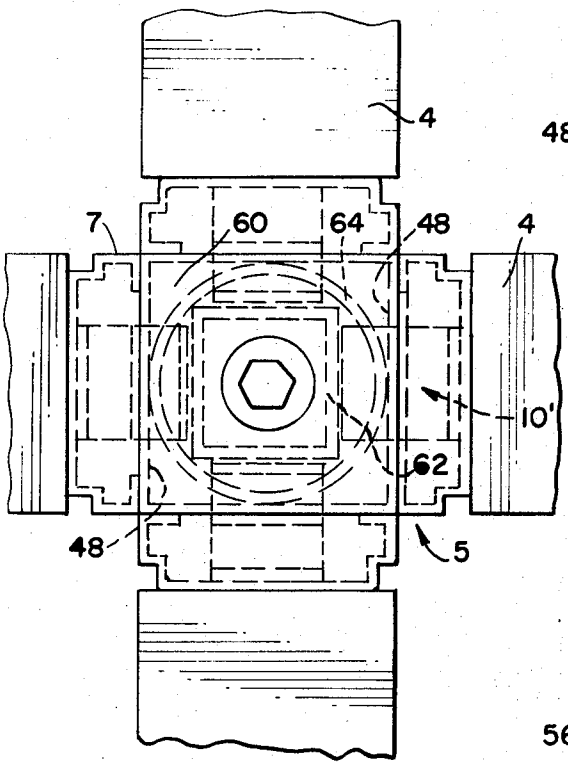



FIG. 8.

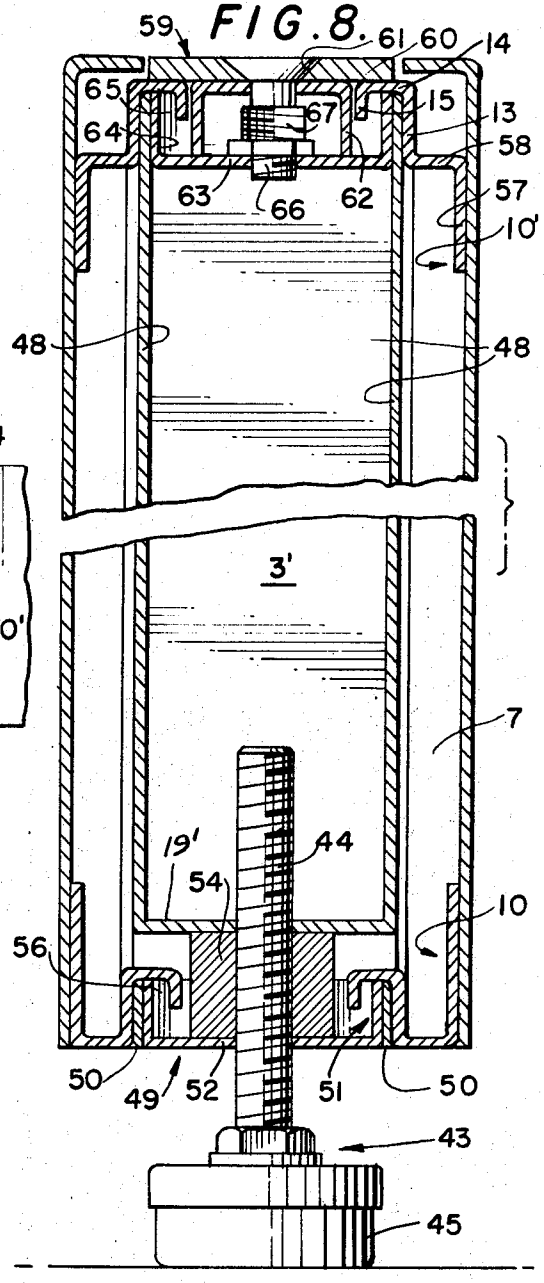



FIG. 9.

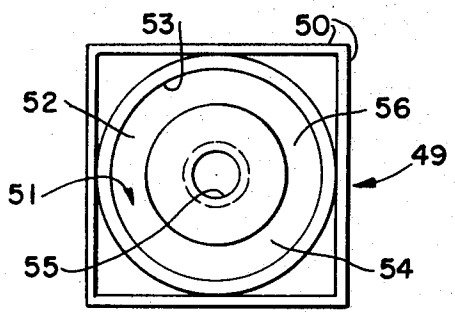
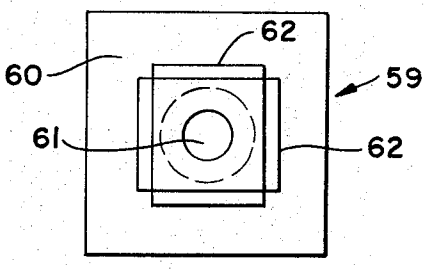



FIG. 10.



# PORTABLE WALL ASSEMBLY

This invention relates generally to a portable wall assembly, and more particularly, to a wall assembly comprising a plurality of partition or screen panel elements provided with unique connecting means adjacent their lateral edges permitting of removable attachment of one or more identical panels in various relationships.

Adjustably connected partition elements are generally well known; however, many shortcomings have been found when utilizing certain of the presently available devices. Some of the known assemblies require a multitude of intricate components, leading to a prohibitive cost factor. Others require sub-assembly of various components at the site of ultimate use and fail to produce a rattle-free assembly.

By the present arrangement, an extremely simple construction is provided wherein a central post or standard serves as the connecting means for joining together two, three or four panel elements of identical construction into a rigid assembly. The resultant connection may serve to join a plurality of panels in a straight line such that a rigid-wall type of assembly is provided while on the other hand, the very same connecting means may be employed to join the same panel elements in a selected relative angle with respect to one another such that a free-form type of wall assembly is achieved.

By the present invention, both the initial assembly of a plurality of panel elements as well as any subsequent readjustment thereof may be readily obtained without the use of any special tools. Regardless of whether the panels are disposed in a straight line arrangement or connected together to provide an angular disposition therebetween, complete privacy is assured by means of an automatically operable sealing element associated with the vertical edge of each panel element.

Accordingly, one of the primary objects of the present invention is to provide an improved wall assembly including a plurality of partition or screen panel elements, at least two of which elements are connected by means of a common standard member of permit various selected angular positioning therebetween.

Another object of the present invention is to provide an improved wall assembly including a plurality of panel elements each of which is provided with a pair of offset clips at the opposite limits of at least one lateral edge thereof for adjustably connecting the panel to a cylindrical standard member having a removable cap element for retaining the assembled panel elements in their selected position with respect to the standard member.

Another object of the present invention is to provide an improved wall assembly including a plurality of panel elements each of which is provided with a pair of offset clips at the opposite limits of at least one lateral edge thereof for adjustably connecting the panel to a square sectioned standard member provided with an upwardly facing circular cup element at its opposite ends for receiving and retaining the pair of clips and thus supporting the panel element.

Still another object of the present invention is to provide an improved wall assembly including a central mounting post for adjustably connecting a plurality of panel elements at various angles with respect to one another wherein one panel may be joined to its adjacent panel at an angle between 90° and 270°.



A further object of the present invention is to provide an improved wall assembly including a plurality of partition elements selectively connectable to a central standard member and including a resilient sealing element carried by the vertical edge of each panel to insure privacy on either side of the wall assembly throughout the vertical extent of the panel elements.

With these and other objects in view which will more readily appear as the nature of the invention is better understood, the invention consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:

FIG. 1 is a perspective view of one arrangement of a wall assembly according to the present invention.

FIG. 2 is an enlarged vertical sectional view illustrating the attachment of two panel elements to a cylindrical central standard member.

FIG. 3 is a partial top plan view and illustrates four panel elements connected to the form of central standard member as shown in FIG. 2.

FIG. 4 is a partial horizontal sectional view of the vertical edge of one panel element.

FIG. 5 is a fragmentary vertical sectional view and illustrates the lower corner of one panel element as provided with an adjustable foot member.

FIG. 6 is an end elevation of one of the clip members carried by each of the panel elements.

FIG. 7 is a partial top plan view illustrating a plurality of panel elements connected to a central standard member of square cross section.

FIG. 8 is a vertical sectional view similar to FIG. 2 but illustrates the square embodiment of vertical standard as shown in FIG. 7.

FIG. 9 is a top plan view of the square vertical standard bottom cap.

FIG. 10 is a bottom plan view of the square vertical standard top cap.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

Referring now to the drawings, particularly FIG. 1, the present invention will be seen to comprise a wall assembly, generally designated 1, comprising a plurality of partition or screen panel elements 2 connected at juxtaposed vertical side edges by means of a plurality of vertical posts or standards 3. The arrangement illustrated in this figure will be understood to be merely exemplary of one of any number of possible configurations obtainable with the present invention and reflects a selected arrangement utilizing the circular embodiment of posts.

In the free-form type of assembly shown in FIG. 1, the plurality of panel elements 2 are attached to the respective posts 3 in a slightly angularly offset relationship such that a curved wall is provided. With such an assembly, two subsequent panels are neither longitudinally aligned with respect to one another nor normal to one another. By providing for a panel width which corresponds to the diameter of the supporting post, it will be understood that the minimum possible included angle between two adjacent panels will be 90°. This structure facilitates a positive mounting of two adjacent panel elements to provide a square corner wall assembly or an intersection of three or four panel elements on one supporting post such as shown in FIG. 3. Without departing from the spirit of the instant invention,

the thickness of the panel elements could quite obviously be made less than the diameter of the supporting post 3 whereupon an included angle of less than 90° would be possible between two adjacent panel elements.

When employing the square post 3' shown in FIGS. 7–8, it will be apparent that only a 90° or 180° relationship may be achieved between any two panel elements connected to a single post yet this would not preclude varied panel arrangements wherein sequential panels are mounted in a zig-zag manner.

The body 4 of each panel element 2 may be constructed of any suitable material such as sheet metal, glass fiber, honeycomb construction, composition board, etc. The uniqueness of each panel 2 resides in the vertical edge connecting means constructed to cooperate with the novel supporting post 3 or 3'.

Each panel 2 is provided along its vertical side edges with an edge channel, generally designated 5, and which extends preferably the entire vertical extent of the panel body 4. The channel 5 includes a base wall 6 connected to the edge of the panel body 4 by any suitable means and from which extend from opposite edges thereof a pair of spaced apart side walls 7—7. Projecting inwardly from the distal portion of each side wall 7 is a flange 8 whereupon the combination of the pair of flanges, side walls, and the intermediate base walls 6 will be seen to define a channel cavity 9.

Identical mounting clips 10 are rigidly affixed within the upper and lower limits of each edge channel 5 as shown most clearly in FIG. 2. With additional reference to FIG. 6, the construction of the clip 10 will be most readily apparent. Each clip includes a rear wall 11 engageable with the base wall 6 of the edge channel 5 and secured thereto by any suitable means such as spot welding. Projecting from the lower portion of the rear wall 11 is the bottom wall 12 disposed normal thereto and which extends outwardly to a point intersecting the plane between the two channel flanges 8—8. At this point, the clip is provided with a front wall 13 extending upwardly from the bottom wall 12 to a point substantially medially of the overall height of the clip rear wall 11. An offset portion 14 projects outwardly from the top of each clip front wall 13 as shown most clearly in FIGS. 2 and 8 and includes a depending tongue 15 having inwardly tapered lateral edges 16—16 as shown in FIG. 6.

The standard or post 3 adapted to adjustably support the plurality of panel elements 2 and as disclosed in the first embodiment includes a cylindrical wall body 17 provided with an outer periphery 17*a* and having an overall vertical extent of slightly less than the height of each panel 2. The cylindrical body 17 is preferably hollow and is bounded at its upper portion by a top wall 18 which will be seen to be slightly dropped with respect to the top edge of the cylindrical body 17 and will be understood to be securely attached to this body by any suitable means. At the lower portion of the cylindrical body 17 is a bottom wall 19 likewise suitably attached with respect to the body. Permanently affixed to the bottom wall 19 of the post 3 such as by the glue 20, is a bottom cap generally designated 21. This cap 21 includes a main body portion 22 having a cylindrical configuration of the same diameter as the post body 17. The upper portion of the bottom cap 21 is formed with a cylindrical hub 23 of significantly lesser diameter than the main body portion 22 and which provides, in combination with a peripheral flange 24, an upwardly facing annular recess 25. The function of the preceding described bottom cap structure will be related hereinafter.

Removably attached at the upper portion of each post 3 is a top cap or clamping member 26 having a central tapped bore 27 releasably engageable with a threaded screw 28 fixedly attached to the post top wall 18. The bore 27 is preferably dead-ended as shown in FIG. 2 to prevent the entrance of dirt or other foreign material. The construction of the top cap 26 will be seen to be considerably different than that of the bottom cap 21 for reasons which will become obvious following a description of the assembly of the panels 2 to the post 3. The main body portion 29 of the top cap 26 comprises a cylindrical upper section having a diameter slightly less than that of the cylindrical wall body 17. This main body portion 29 terminates at its lower end at a radial shoulder 30 which connects in turn with a straight cylindrical wall 31 of substantially less diameter than the diameter of the main body portion 29. The straight cylindrical wall 31 next communicates with a tapered wall section 32 leading to the top cap bottom surface 33. To facilitate attachment and removal of the top cap 26 with respect to the permanently affixed screw 28, a slot 34 may be provided in the upper surface thereof. By this means, an ordinary screwdriver or even a coin may be used to apply and remove the top cap 26.

A description of the attachment of one panel 2 to a post 3 will be understood to encompass all of the mechanics involved in the attachment of two, three or four panels to any single vertical post 3 and without any regard to the specific relative angular relationship between the various panels. With a post 3 maintained in a relatively stationary vertical position, the panel 2 intended to be connected to the post is advanced thereto with the plane of the juxtaposed C-shaped edge channel 5 disposed substantially parallel to the longitudinal axis of the mounting post 3. The panel is progressively moved towards the post with the single depending tongue 15 of the lowermost mounting clip 10 positioned in the same horizontal plane as the lateral access to the annular recess 25 of the bottom cap 21. When this tongue 15 has been moved inwardly a sufficient distance to clear the upstanding flange 24 and the tongue 15 of the uppermost clip 10 likewise is disposed in overlying relationship to the cavity above the post top wall 18, then the panel 2 is lowered.

The function of the tapered edges 16—16 of the tongues 15 of the two mounting clips 10 may now be appreciated. The reduced transverse dimension of the lowermost portion of the mounting clip tongues 15 facilitates the lowering of the panel elements 2 as the tongues are guided into the uppermost cylindrical cavity 35 and the lowermost annular recess 25, respectively. The lateral dimension of the tongue 15 as well as the radial extent of the mounting clip offset portion 14 is selected to insure a substantially snug attachment as the panel is lowered. The lateral dimension of each tongue 15 in the area immediately adjacent its juncture with the offset portion 14 is of a width selected to insure that the edges of the tongue in this area engage specified structure of the vertical post 3 when the panel has been fully lowered. In the case of the topmost mounting clip 10, the upper portion of the tongue edges 16 engages the inner periphery of the post top

wall flange **36** while in the bottommost mounting clip **10**, the same tongue edges engage the inner periphery of the bottom cap flange **24**. It will thus be understood that a camming action is achieved upon lowering of the panels such that in the case of the bottom mounting clip **10**, its front wall **13** is drawn snugly against the outer periphery of the bottom cap main body portion **22** while in the case of the topmost mounting clip, its front wall **13** is drawn snugly against the outer periphery of the juxtaposed post cylindrical wall body **17**.

To enable use of an identical clip **10** at both the top and bottom portions of each panel **2**, it will follow that the diameter of both the uppermost cavity **35** and the annular recess **25** should be identical. This is achieved by forming the radial thickness of the bottom cap flange **24** so that it corresponds to the combined thickness of the post cylindrical wall body **17** and top wall flange **36** whereby it will be appreciated that in effect a pair of cups are provided by the flanges **24** and **36**.

When the desired number of panels **2** have been attached to a single post **3** and the proper angular relationship has been established, this positioning of the various panels is finalized and subsequently maintained by application of the cylindrical top cap **26** which is manually attached by threading the cap onto the fixedly mounted screw **26**. The application of the top cap is facilitated by means of the tapered wall section **32** which initially contacts the tongues **15** of the various mounting clips **10**; however, when the top cap is finally positioned as shown in FIG. **2**, it will be understood that the radial shoulder **30** thereof firmly engages the top of the mounting clip offset portions **14** while the straight cylindrical wall **31** of the top cap abuts the inner surface of the tongues **15**. In view of the rigid attachment of the two clips **10** to the panel edge channel **5**, it will follow that the downward clamping force applied to the uppermost clip **10** upon tightening of the top cap **26** will be transmitted and similarly applied to the lowermost clip **10**.

Positive means for insuring privacy in the area of the juncture between each panel **2** and post **3** is insured by means of a flexible sealing insert, generally designated **37**. As shown in FIG. **4**, this insert comprises a flexible tubular body of material, preferably plastic or synthetic rubber, having a rear face **38** abutting the outer surface of the panel channel base wall **6** and from which forwardly extend a pair of lateral walls **39—39**. Spanning the forward edges of the two lateral walls of a front face **40** disposed in a plane slightly forward of the channel flanges **8—8**. The juncture between the side portions of the front face **40** and the two lateral walls **39—39** includes a laterally extending edge projection **41** while each lateral wall may further include an outwardly extending rib **42**. The function of this latter mentioned structure will be readily understood upon considering the installation and use of the flexible insert **37**. When the generally rectangular insert is initially inserted into the cavity **9** of the panel channel, it will be seen that the two outwardly projecting ribs **42** will be snap-fitted behind the respective channel flanges **8** and thus will serve to retain the insert **37** in the position shown in FIG. **4**. During installation of the panel upon a post **3**, the outer peripheral surface of the post cylindrical wall body **17** will engage the front face **40** of the insert, causing it to be slightly deflected inwardly as indicated by the broken lines in FIG. **4**, whereupon a tight sealing engagement is achieved, thus insuring privacy in this area of the wall assembly.

Each post **3** may be provided with any suitable support means adapted to engage the underlying floor. A foot **43** is shown in FIG. **2** comprising a screw **44** and glide **45**. By providing a central bore through the bottom cap **21** and post bottom wall **19** and including threads on either or both of these bores, it will be seen that the foot **43** may be readily manipulated to provide vertical adjustment of the support post **3**.

The angular relationship between a plurality of panels **2** comprising any single wall assembly **1** will determine the necessary type of support means required for each post **3**. In the case of the wall assembly **1** shown in FIG. **1**, it will be seen that some form of positive lateral support must be provided for this free-form type of assembly. Accordingly, a lateral support member **46** is shown attached to the outermost ends of the panels **2** forming the wall assembly **1**. These support members **46** may be suitably attached to the panels by any desirable means. With certain wall assembly arrangements such as a T-shaped assembly or cross-shaped arrangement as shown in FIG. **3**, the outermost portions of the panels **2** involved may not necessarily require any lateral support, in which case the foot **43** may be used as shown in FIG. **5**. Since a post **3** is unnecessary in such instance, it will be seen that a suitable nut **47** is permanently affixed to the inner surface of the channel base wall **6** for the reception of the foot screw **44**.

The same basic concept is followed for obtaining the connection of the panels **2** wherein the square post **3'** is utilized in the case of the embodiment illustrated in FIGS. **7–10**. In this modification, each post **3'** comprises a vertically extending member having four side walls **48** each of which is preferably of a width corresponding to the thickness of the panel elements **2**. To carry out the square cross-sectional configuration throughout each vertical post assembly, it is obviously necessary to modify the top and bottom caps used therewith and accordingly a bottom cap **49** is provided having a plurality of vertical side walls **50** arranged to provide a cross section congruent with the cross section formed by the four side walls **48** of the post. Within the confines of the four bottom cap side walls **50** is a cylindrical cup generally designated **51** including a circular bottom wall **52** comprising a main body portion and from which extends upwardly a circular flange **53** having a vertical height corresponding to that of the side walls **50**. Centrally affixd upon the cap bottom wall **52** is an upstanding cylindrical hub **54** provided with an axial tapped bore **55**. As in the case of the first described bottom cap **21**, the top of the hub **54** is suitably attached to the undersurface of the post bottom wall **19'** so that it will be seen that an upwardly facing annular recess **56** is provided corresponding to the similar structure **25** in the bottom cap **21** and the subsequent attachment and retention of the clip **10** will be as described hereinbefore.

In the embodiment illustrated in FIG. **8**, the uppermost mounting clip **10'** is altered from the construction of the clip **10** shown in FIG. **2** by forming the rear wall **57** thereof in a downwardly extending direction from the bottom wall **58**. In this manner, the offset portion **14** and depending tongue **15** of the clip **10'** may be most readily located at the very top of the post **3'**. It will be quite obvious that the clip **10** may be substituted and attached to the panel element **2** in this same man-

ner merely by foreshortening the vertical extent of the rear wall **11.** However, it has been found that by extending the rear wall downwardly as at **57** in FIG. **8,** this portion of the clip is more readily accessible during assembly to permit attachment to the base wall **6** of the edge channel **5.**

The top cap **59** shown in FIGS. **8** and **10** is used in association with the square post **3'** and includes a top plate **60** of square configuration provided with a central aperture **61.** Projecting downwardly from the undersurface of this top plate **60** are four vertically extending wall sections **62** comprising a main body portion of the top cap and the distance between the outer periphery of each pair of oppositely disposed wall sections **62** will be understood to correspond to the diameter of the straight cylindrical wall portion **31** of the top cap **26** as used in connection with the first embodiment previously described. Likewise, the cup formed by the post top wall **63** and its cylindrical outer flange **64** will be understood to correspond to the similar structure as shown in FIG. **2** and which comprises the top wall **18** and flange **36.** With the foregoing in mind, it will follow that when the depending tongue **15** of the clip **10'** is lowered into the cylindrical cavity **65,** the lateral edges **16—16** thereof will engage the inner surface of the cylindrical flange **64** whereupon when the top cap **59** is lowered into the position of FIG. **8,** the wall sections **62** will bear against the outer face of each of the tongues **15** while the cap top plate **60** engages the upper surface of the clip offset portion **14** to retain the clip **10'** in position. The top cap is then locked or retained by means of a suitable screw fastener **66** passed through the cap top plate aperture **61** and engaging the nut **67** affixed to the post top wall **63.**

We claim:

**1.** A portable wall assembly including, at least a pair of panel elements each having a vertical side edge, an upright post disposed adjacent the side edges of said panel elements for connecting same, a channel member along said panel element side edge, said channel member having a base wall overlying said side edge, a pair of side walls projecting from said base wall and defining a cavity therebetween, a pair of vertically spaced apart mounting clips adjacent the upper and lower limits of the panel and projecting from each said side edge, said mounting clips including, a rear wall fixedly attached to said channel member base wall, a bottom wall normal to said rear wall and extending outwardly therefrom, a front wall extending upwardly from said bottom wall, an offset portion normal to said front wall and a tongue at the free end of said offset portion, and extending downwardly therefrom, said offset portion located outside the confines of said channel member cavity, said post including vertically spaced mounting means at the top and bottom thereof and providing recesses disposed radially interiorly of the post periphery, said clip offset portions overlying said recesses and said tongues positioned therein, and removable clamping means insertable into the uppermost one of said post vertically spaced mounting means to rigidly engage and retain the respective said clip offset portion disposed therein.

**2.** A portable wall assembly according to claim **1** wherein, said post and post recesses are cylindrical, whereby said panel elements may be adjustably angularly mounted to said post prior to securing said clamping means.

**3.** A portable wall assembly according to claim **1** wherein, the lowermost one of said post vertically spaced means comprises a bottom cap secured to the bottom of said post, said bottom cap including, a lower main body portion and an upper reduced diameter hub, and a peripheral flange extending upwardly from said main body portion and concentrically spaced radially outwardly from said hub to provide one said recess.

**4.** A portable wall assembly according to claim **1** wherein, said removable clamping means comprises a top cap threadedly engageable with the upper portion of said post and the external dimension of said top cap is no greater than that of said post periphery.

**5.** A portable wall assembly according to claim **1** including, a resilient insert disposed within said channel cavity and having a front face engageable by said post periphery when said mounting clips overlie said post recesses and said clamping means has been inserted whereby, a seal is provided along the juncture of said panel element and post.

**6.** A portable wall assembly according to claim **1** wherein, said post includes an adjustably mounted foot element attached to the bottom thereof.

**7.** A portable wall assembly according to claim **1** wherein, said post is rectangular in cross section and said recesses are circular.

* * * * *