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2,690,073

DOOR AND TOILET STALL CONSTRUCTION

Filed Nov. 24, 1948

3 Sheets-Sheet 1

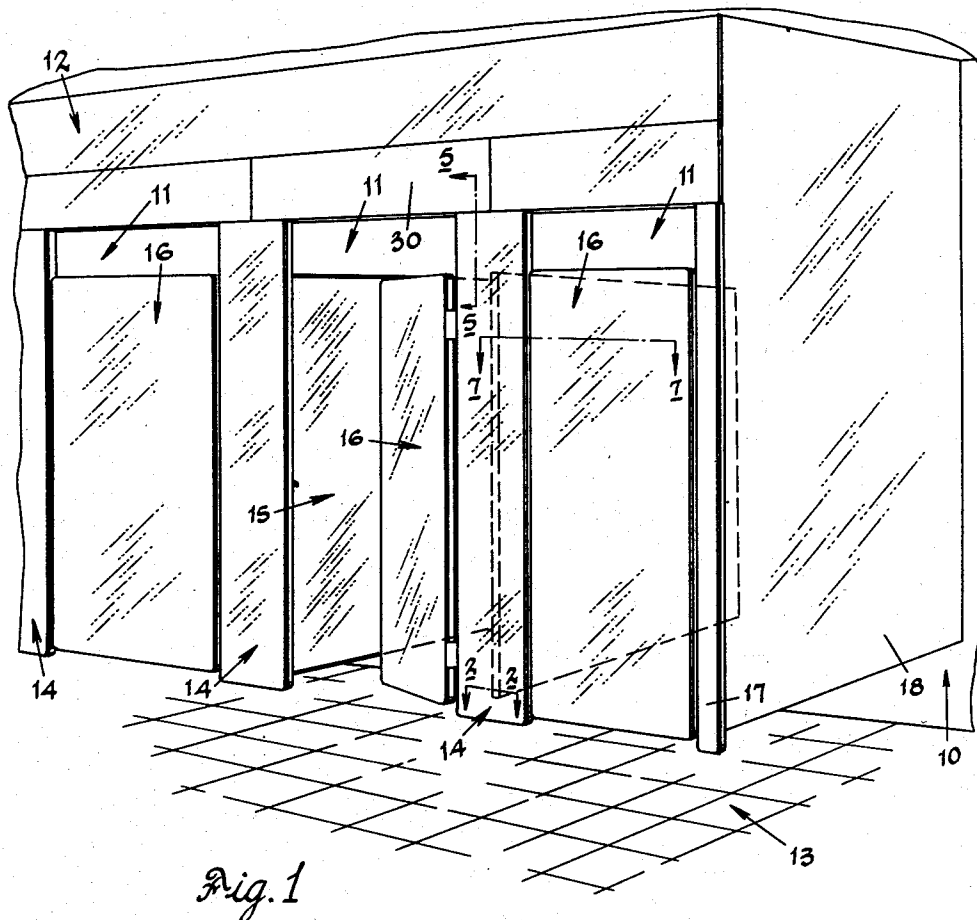


Fig. 1

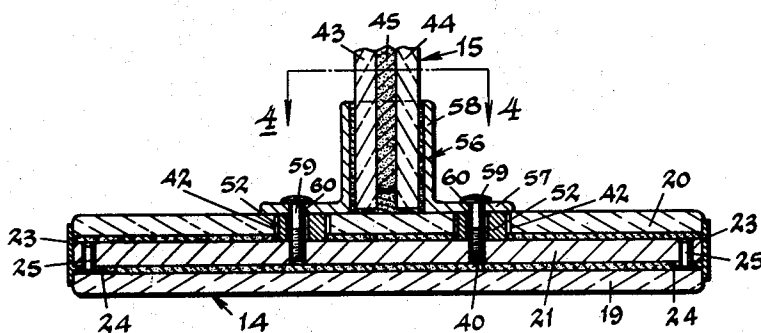


Fig. 2

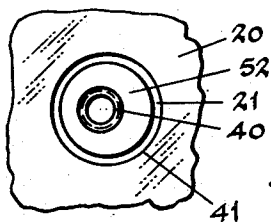


Fig. 3

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3 Sheets-Sheet 2

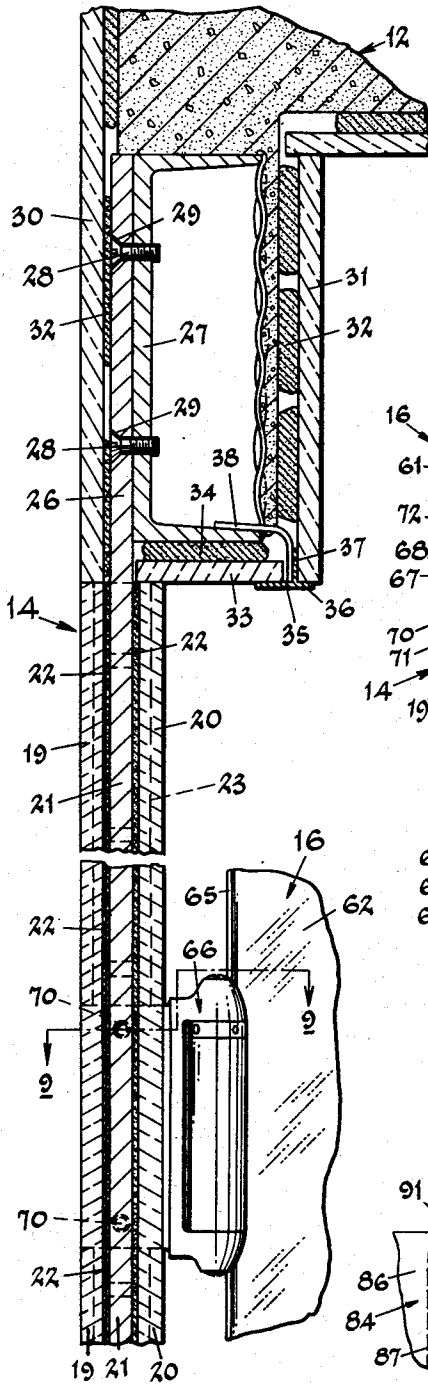


Fig. 5

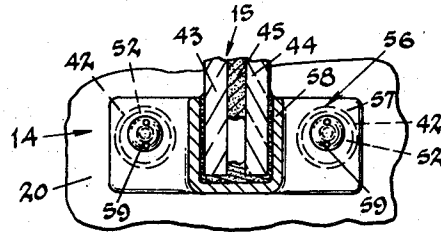


Fig. 4

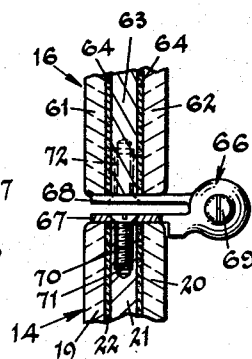


Fig. 9

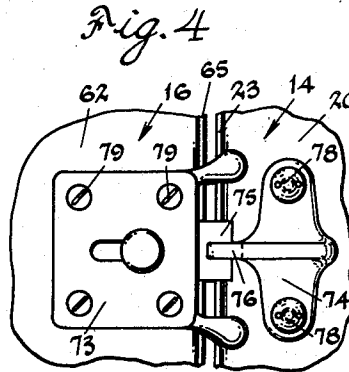


Fig. 10

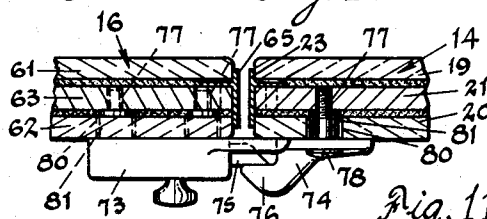


Fig. 11

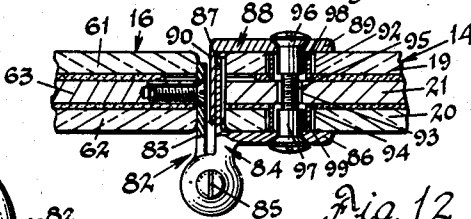


Fig. 12

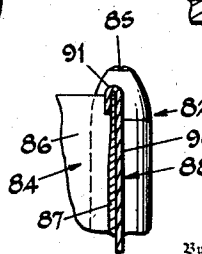


Fig. 13

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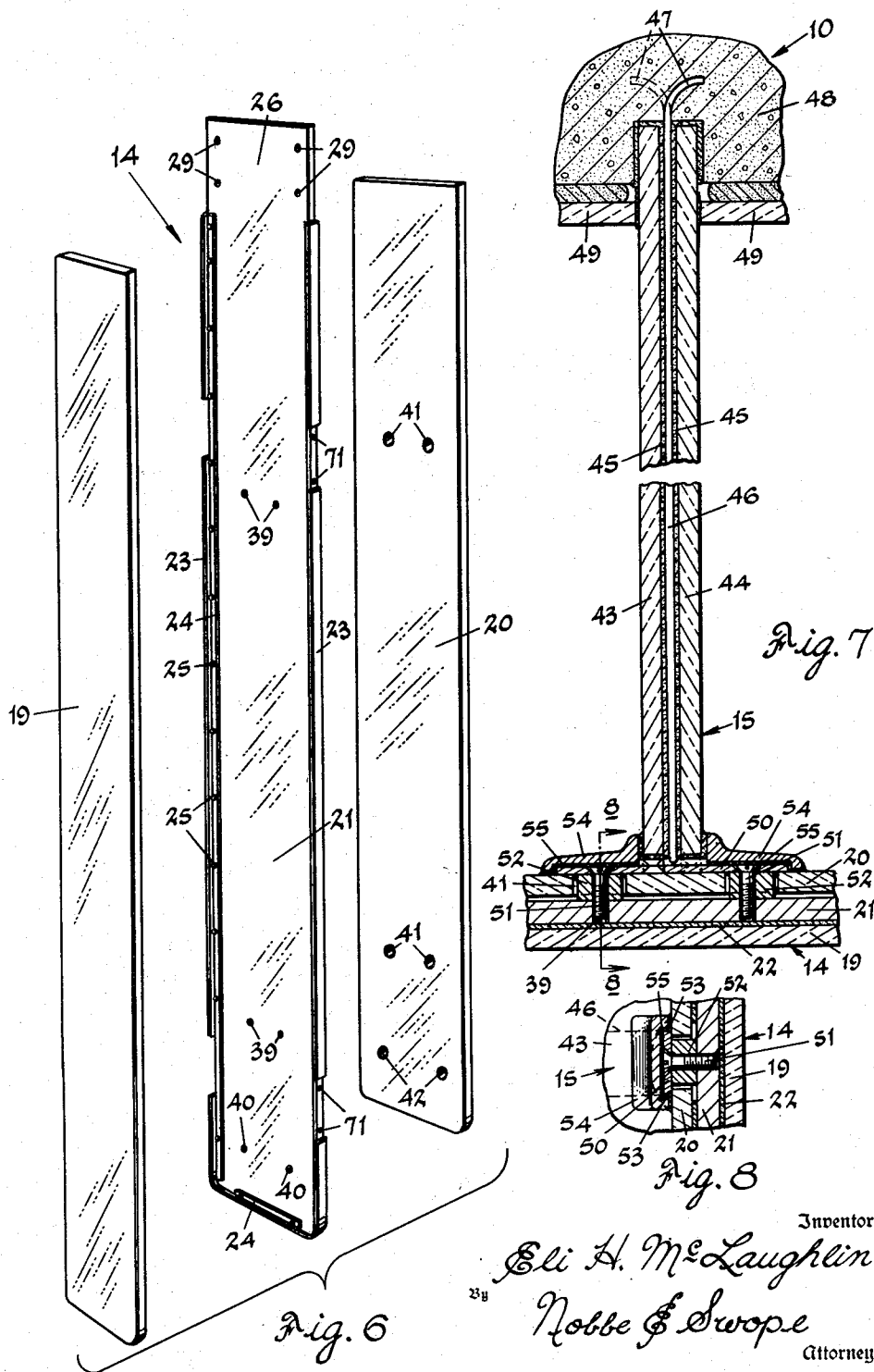
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DOOR AND TOILET STALL CONSTRUCTION

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UNITED STATES PATENT OFFICE

2,690,073

DOOR AND TOILET STALL CONSTRUCTION

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Application November 24, 1948, Serial No. 61,810

1 Claim. (Cl. 72-16)

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This invention relates to toilet or lavatory stalls, booths, and the like, and particularly to structural glass enclosures of this kind.

More especially, the present invention is directed to a so-called hanging type enclosure in which the vertical front stiles thereof are suspended from above as distinguished from those that are built up from and supported on the floor. Associated with the stiles are vertical partitions which separate the stalls from one another, and a door is hung from each stile. The advantage of the hanging type enclosure is that all of the walls of the stall, including the stiles, can be spaced above the floor to permit easier and more thorough cleaning and the maintenance of permanently clean and sanitary conditions in and around the booth.

An important object of the invention is the provision of a novel form of stile and means for supporting the same from an overhead support in a manner to give an unusually strong and rigid construction which can be easily and quickly installed.

Another object of the invention is the provision of a special type stile comprising a laminated panel including a rigid metal core and glass facing sheets secured to opposite sides thereof and in which means is provided for directly securing the core to an overhead support.

Another object of the invention is the provision of a novel construction embodying means for directly securing the vertical partitions to the cores of the stiles in such a manner that no mechanical pressure will be exerted upon the glass facing sheets.

A further object of the invention is the provision of a laminated stile and/or door of such construction that the installation thereto of hardware, such as hinges, latches, etc., may be readily and conveniently effected without pressure being applied to the glass facings, whereby danger of glass breakage is greatly reduced.

Other objects and advantages of the invention will become more apparent during the course of the following description, when taken in connection with the accompanying drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same:

Fig. 1 is a perspective view of a series of toilet stalls constructed in accordance with the invention;

Fig. 2 is a horizontal section through one of the stiles and a partition taken substantially on line 2-2 of Fig. 1;

Fig. 3 is a detail view of a portion of the fastening means between the stile and partition;

Fig. 4 is a detail section taken substantially on line 4-4 of Fig. 2;

Fig. 5 is a vertical section taken substantially on line 5-5 of Fig. 1;

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Fig. 6 is a composite view in perspective of one of the stiles, with the outer and inner glass facing sheets being removed from the metal core;

Fig. 7 is a horizontal section taken substantially on line 7-7 of Fig. 1 showing the manner in which the partition is anchored to the stile and to the supporting side wall;

Fig. 8 is a detail sectional view of the stile and partition taken substantially on line 8-8 of Fig. 7;

Fig. 9 is a horizontal sectional view through a door hinge taken substantially on line 9-9 of Fig. 5;

Fig. 10 is a front view of a door latching combination;

Fig. 11 is a horizontal sectional view showing the mounting of the door latch;

Fig. 12 is a horizontal section through a modified form of door hinge; and

Fig. 13 is a detail vertical section through the door hinge of Fig. 12.

With reference now to the drawings and particularly to Fig. 1, there is shown one wall of a room, generally designated by the numeral 10, in which one or a series of stalls or booths 11, provided by this invention, are adapted to be installed. Depending from the ceiling of the room, in forwardly spaced, substantially parallel relation to the side wall 10, is a short curtain wall 12 which cooperates with wall 10 to define the area to be occupied by the stall or stalls 11. The floor of the room is indicated at 13.

The improved stalls or booths herein provided are made up of a plurality of spaced vertical stiles 14, a series of vertical partitions 15 one of which is associated with each of the stiles, and closure doors 16 carried by said stiles. Half stiles 17 may be used at opposite ends of the structure to give a symmetrical and finished appearance, while the opposite ends of the structure may be closed by end walls 18.

Each of the stiles 14 and 17 comprises a panel of laminated or composite construction including outer and inner facings 19 and 20 secured to opposite sides of a central body portion or core 21. The facings 19 and 20 preferably consist of sheets or plates of Vitrolite, Carrara, or similar structural glass, while the body portion or core 21 embodies a sheet or plate of strong, light metal such as aluminum or the like. The glass facing sheets 19 and 20 are preferably secured to opposite sides of the core 21 by a suitable mastic or other adhesive material 22 which can either be spread uniformly over the inner faces of the glass sheets or applied at spaced points only.

The laminated stile is preferably provided with a metal framing comprising an edging or trim strip 23 which extends along the bottom and two vertical sides thereof and terminates short of the upper end of the metal core as shown in Fig. 6. The metal edging is preferably substantially T-

shaped in cross section and fits tightly against the edge of the panel, with its tongue portion 24 projecting inwardly and received between the core and adjacent glass facing sheet. Suitable rivets or the like 25 are employed to secure the tongue 24 to said core as shown in Figs. 2 and 6. The rim serves as a decorative trim and also covers the joints between the glass facing sheets and core to present a pleasing, attractive appearance.

Heretofore, various assembly fittings and/or hardware attachments have necessitated the drilling of both of the glass sheets to receive the customary securing elements, and the application of clamping pressure thereto, thereby causing said sheets to sustain all or most of the weight and structural shocks. This has caused strains to be set up in the glass facings, resulting in breakage or unsightly chipping of the glass, necessitating partial or complete reconstruction of the enclosure or booth. To reduce, if not entirely eliminate, any possibility of failure by reason of structural strain or shock, the metal body portion or core 21 herein provided constitutes a rigid member to which the required hardware and/or other fittings can be secured and also by which the stile can be hung from the curtain wall 12.

As shown particularly in Fig. 5, the core 21 has an end portion 26 extending upwardly beyond the glass facing sheets 19 and 20, said projecting end portion being disposed outwardly of and secured to a horizontal channel beam or the like 27 embedded in and forming a part of the curtain wall 12. The upper end of the core is secured to the channel beam by suitable fastening means such as machine screws 28, passing through openings 29 in the core and threaded into tapped holes provided in said channel beam.

This particular construction provides a hanging stile support that is very simple to install. Thus, to hang one of the framed stile panels from the overhead channel beam 27, it is only necessary to lift the stile to bring the openings 29 in the core into registry with the tapped openings in the channel, then slip the four machine screws 28 into position and tighten them.

After the stiles have been hung from the curtain wall 12, the outer face of this wall may be covered by glass finish plates of Vitrolite, Carrara, or the like 30 and its inner face by similar plates 31, said plates 30 and 31 being preferably secured in place by layers of mastic 32. The bottom of the channel beam 27 may be covered by horizontally disposed plates 33 secured by a layer of mastic 34. The plates 33 are herein supported along one edge upon the upper end of the stile or, more particularly, the inner glass facing sheet 20 thereof. The opposite edge of the plates 33 is carried on the horizontal flange 35 of a T-shaped metal trim strip 36, said strip being provided with a tongue 37 secured to the channel beam 27 by a bracket 38. The flange 35 of said strip may also carry the lower edges of the plates 31 and serve as a structural component of the wall assembly while affording a covering trim for the joint between the plates 31 and 33.

While the laminated stile herein provided is particularly adapted for use as a suspended stile in a so-called hanging type of enclosure, it can also be used in the construction of floor type enclosures by inverting the stile and setting the projecting portion of the core into the floor. When used in this way, it is preferred that the core project about two inches beyond the glass facing sheets.

The metal core 21 is also provided with holes 39 and 40 (Fig. 6) drilled and tapped for mounting of the partition 15 with reference thereto. Similar openings 41 and 42 are formed in the inner glass facing sheet 20.

The partitions 15 herein comprise two sheets or plates of structural glass 43 and 44 secured directly to one another in face to face relation by a suitable adhesive or mastic 45. In mounting the partitions 15 with reference to the wall 10 and stiles 14, horizontal metal bars 46 are located between the facing sheets or plates 43 and 44 and provided at their rear ends with bent portions 47 received in the rough plaster 48 of the wall 10 which may be subsequently faced with sheets or plates of glass 49, if desired. Welded or otherwise suitably secured to the forward end of each bar 46 is a transversely disposed mounting plate 50 by which the partition is attached to the stile 14.

The plate 50 is drilled to receive bolts 51 which are passed loosely through the holes 41 in the glass facing sheet 20 and threaded into the tapped holes 39 in the core. The glass facing sheet 20 is protected from excessive pressure and possible breakage, upon tightening of the bolts 51, by means of washers 52 which are of such thickness that they project slightly above the outer surface of the glass facing sheet. Thus, upon tightening of the bolts 51, the entire pressure will be taken by the metal core 21, through washers 52, thereby eliminating clamping pressure upon the glass which will minimize if not entirely prevent glass breakage.

As illustrated in Fig. 3, the opening in washer 52 is preferably drilled eccentrically to the center thereof so that said washer may be located within an opening 41 in said facing plate 20 and in registration with a tapped hole 39 when the said opening 41 is not concentric with the hole 39 in said core 21 and rotary displacement of the washer must be made to compensate therefor. The diameter of the washer 52 may be varied according to the size of the hole in the glass facing sheet.

The mounting plate 50 has beveled edges 53 for interfitting with an escutcheon 54 which, when installed, covers the said plate and provides an attractive cap when installation of the partition is complete. A quantity of mastic may be employed as a filler 55 to seal the edges of the escutcheon with reference to the facing sheet 20 of the stile 14 and the partition 15.

Also carried by the stile 14 to support the lower edge of partition 15 is a saddle 56. As shown in Figs. 2 and 4, this saddle comprises a base portion 57 and a U-shaped portion 58 for receiving the partition. The saddle is secured to the stile by bolts 59 passing through openings 60 in said base portion 57 and also through openings 42 in the inner glass facing sheet 20, being threaded in the tapped holes 40 in the core 21. Spacing washers 52, as above described, are located in the openings 42 so that, when the bolts 59 are tightened into the core, no pressure will be exerted upon the inner glass facing 20. Another advantage in drilling the opening in the washer 52 eccentrically to center is to provide a greater bearing surface for that part of the saddle 56 that presses against this washer (Fig. 4).

The door of each stall or booth 11 may also comprise outer and inner facing sheets or plates of Vitrolite or other structural glass 61 and 62 secured to a metal body portion or core 63 by layers of mastic or the like 64. The joints between the facing sheets and core are covered

by a metal trim strip 65 similar to trim strip 23 and which frames the entire perimeter of the door except where relieved for attachment of the necessary hinges 66 by which the door is hung from the stile.

Any suitable arrangement of doors may be employed, although it is preferred that each stile carry a single door and latch hardware. As shown in Figs. 5 and 9, conventional butt type hinges 66 may be used, comprising the hinge plates 67 and 68 hinged as at 69. The hinge plate 67 is placed in abutting relation to the edge of the stile 14 and secured thereto by bolts 70 received in tapped holes 71 in the edge of the core 21. The other hinge plate 68 is similarly secured to the core 63 of the door 16 by bolts 72. As is clearly shown in Fig. 9, the plates 67 and 68 lie along and against the edges of the outer and inner facings of glass, but are actually secured in each instance to the metal core. Thus, any strain or shock upon the glass facings occasioned by slamming or bumping of the door is obviated and a permanent assembly produced without support of the door in or directly on the glass facings. As shown in Fig. 6, the metal trim strip 23 is cut away to receive the hinge plate 67, while the trim strip 65 of door 16 is similarly relieved to receive hinge plate 68.

The latch 73 and latch plate 74, illustrated in Figs. 10 and 11, as typical of such member (hangers, strike plates, and the like) are attached respectively to the door 16 and stile 14. The latch 73 is provided with the customary knob-actuated bolt 75 which engages behind the hook 76 of the plate 74 when the door has been moved to its closed position. The cores 21 and 63 of the stile 14 and door 16 respectively are tapped, as at 77, to receive bolts 78 and 79 which extend through registering openings 80 in the inner facings 20 and 62 of the said stile and door. Also arranged within the openings 80 are sleeves 81 which space the latch and latch plate slightly from the inner glass facings to absorb whatever pressure is set up by the bolts 78 and 79 when turned in sufficiently to establish a solid connection. Other and like hardware fittings may be similarly attached to the parts of the stall or booth without exposing the glass sheets or plates to any structural strain.

An alternative type of hinge 82 is illustrated in Figs. 12 and 13, said hinge comprising a butt plate 83 bolted to the edge of the door 16 as in Fig. 9, and an angle member 84 associated with the stile 14 and hinged to butt plate 83 as at 85. The angle member 84 includes the two legs 86 and 87 arranged at right angles to one another, the leg 86 being disposed opposite the inner glass facing 20 and the leg 87 opposite the edge of the stile. Cooperating with angle member 84 is a second angle member 88 also comprising two legs 89 and 90 arranged at right angles to one another. The leg 89 is disposed opposite the glass facing 19, while leg 90 is disposed opposite the edge of the stile and is provided at its upper and lower edges with turned over flanges 91 forming guideways for slidably receiving the leg 87 of angle member 84. This arrangement permits the angle members 84 and 88 to be moved toward or away from one another to accommodate panels of different thicknesses.

In this construction, the outer and inner glass facings 19 and 20 and metal core 21 of the stile are provided with aligned openings 92, 93 and 94 through which extends a bolt 95 having nuts 96 and 97 threaded upon the opposite ends

thereof, said nuts passing through aligned openings in the legs 86 and 89 of angle members 84 and 88 respectively. Upon tightening of the nuts 96 and 97 upon bolt 95, the two angle members 84 and 88 will be firmly clamped to the stile. However, in order to prevent this clamping pressure from being transmitted to the glass facing sheets, there are arranged within the openings 92 and 94, sleeves 98 and 99 respectively. Since the opening 93 through the core 21 is relatively smaller than the openings 92 and 94 through the glass facings, the sleeves 98 and 99 bear at their inner ends against the core 21. These sleeves are also of slightly greater length than the thickness of the glass facing sheets so that they project beyond the outer surfaces thereof and thus maintain the legs 86 and 89 of angle members 84 and 88 in slightly spaced relation to the glass facings so that none of the clamping pressure will be taken by the glass.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

I claim:

In a toilet stall, the combination of a vertical stile arranged at the front of the stall, a door carried by the stile, said stile and door each including a central core of a metallic material and outer and inner facing sheets of structural glass secured to the opposite sides thereof, a hinge including a hinge plate disposed opposite the inner edge of the door and angle members having clamping portions disposed at opposite sides of the stile, said angle members being movable inwardly and outwardly from one another to accommodate stiles of different thicknesses, means securing the hinge plate to the core of the door, the core and facing sheets of the stile having a plurality of registering openings formed therein, means securing the clamping portions of the hinge to said stile comprising bolts extending through registering openings in said clamping portions, the registering openings in said outer and inner facing sheets and core and nuts threaded upon the outer ends of the bolts, and tubular elements located in the openings in the facing sheets and bearing against the core and clamping portions of the hinge to maintain the latter spaced from said outer and inner facing sheets to prevent clamping pressure being exerted thereupon.

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