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HARDWARE ATTACHMENT

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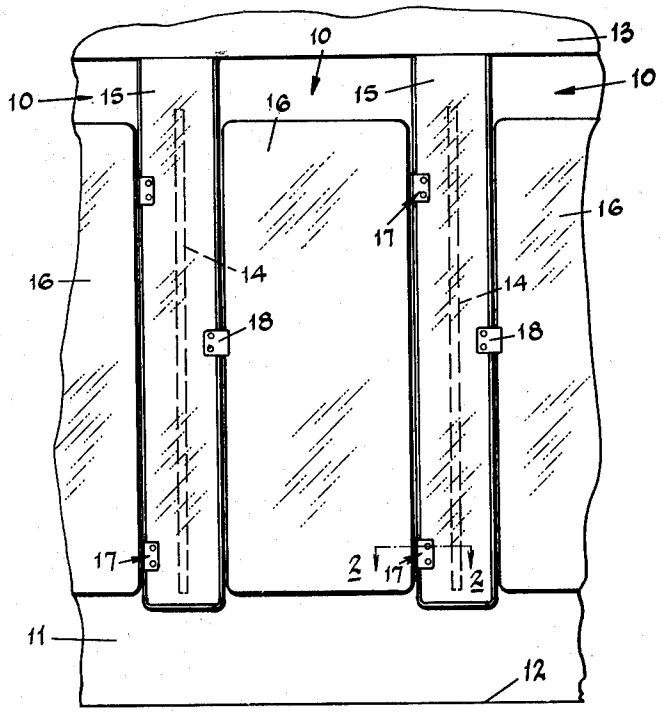


Fig. 1

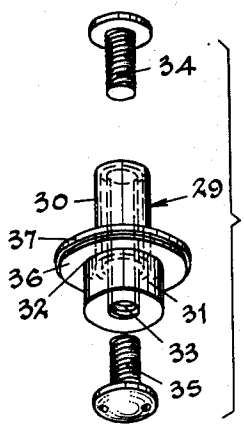


Fig. 3

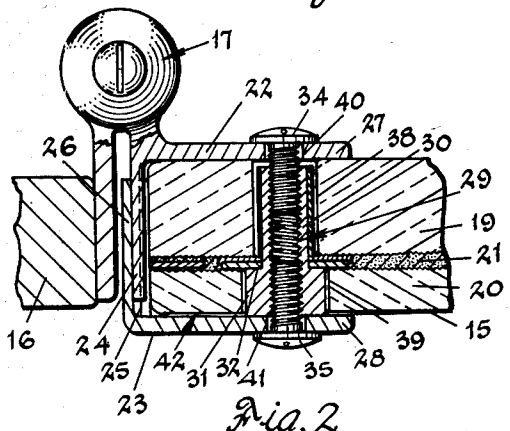


Fig. 2

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HARDWARE ATTACHMENT

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3 Claims. (Cl. 189—36)

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The present invention relates to hardware attachments, and more particularly to an improved apparatus for attaching hardware to toilet stall enclosures.

As is well known, the usual toilet stall structures are made up of partition walls and stiles; the partition walls dividing the stalls from one another and the stiles being mounted against the forward edges of the partition walls, with suitable doors being hung between adjacent stiles.

It is customary to use structural glass, marble or similar frangible material for the stiles and partition walls of these toilet stalls and the hardware which connects the stall elements and by which the doors are hung, stopped or locked are usually mounted at least in part on the stiles.

These pieces of hardware are of necessity rather rigidly associated with the marginal areas of the stiles. Holes are drilled in the stiles to receive the attaching elements and screws are used to clamp the hardware against the frangible surface of the stiles. Because of this, considerable difficulty has been experienced due to the fact that the frangible material absorbs the major portion of such pressure and stresses thus developed therein. Consequently, continual slamming of the doors, inadvertent bumping of the hardware, and the weight of the door almost inevitably results in fracture or chipping of the frangible stile material adjacent the drilled holes. In fact, it not uncommonly results in complete breaking of the stile which creates an unsightly condition or necessitates complete replacement.

Now it is an aim of this invention to provide a special type of hardware attaching means and a novel way of attaching hardware which will practically eliminate the spalling, chipping, or breaking of the frangible stile surface around the drill holes.

Another object is to provide an attaching means of the above character which is of relatively simple and inexpensive construction but which at the same time is remarkably efficient, easy to install and can be used with either concealed or exposed hardware.

Still another object is the provision of such an attaching means which is adapted for use with laminated stiles in which one of the laminations is heavier than the other and whereby the weight, for example, of the stall door, will be carried by the heavier lamination.

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.

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

Fig. 1 is a front elevation of a series of toilet stalls;

Fig. 2 is a horizontal sectional view, taken substantially on the line 2—2 in Fig. 1; and

Fig. 3 is an exploded, perspective view of a hardware fitting constructed in accordance with my invention.

Referring now more particularly to the drawings, the toilet stalls 10 shown in Fig. 1 are arranged in an area of a room defined by a back wall 11, floor 12, ceiling (not shown) and a curtain wall 13 depending from the ceiling. The stalls 10 are made up of partition walls 14 and stiles 15, with the spaces between adjacent stiles being closed by doors 16. Suitable hardware for mounting the various elements of the stalls, such as hinges 17, strikes 18, and keepers and saddles (not shown) are secured to the stiles 15.

As best shown in Fig. 2, the type of stile panel for which my improved hardware attaching means is particularly adapted preferably comprises two sheets of structural glass 19 and 20 secured together, in face to face relation by a layer of mastic or other bonding means 21. In this particular type of panel the inner glass sheet 19 is made considerably thicker than the outer or facing glass sheet 20 although, obviously, the panel may be turned around where it is desired to have the thicker sheet to the outside.

Also in Fig. 2, there is shown a hardware mounting for a door hinge which is typical of the hinges shown at 17 in Fig. 1 and also of the door strikes 18. The particular hinge, as shown in detail, is commonly known as the saddle type and is made up of a pair of angle members 22 and 23 which are adapted to be spread so as to accommodate any thickness of partition or stile. Thus, the ends of the inner leg 24 of the angle member 22 are received in channels formed by the inwardly bent ends 25 of the leg 26 of the angle member 23. This permits a sliding relation to be effected without separation of the cooperating parts or departure from a smooth external appearance. The opposite legs 27 and 28 of the members 22 and 23, respectively, are thus disposed along the surfaces of the glass facing sheet or sheets, and any clamping pressure developed is naturally distributed throughout the body of the glass.

Where the stile is composited from two facing sheets as shown here, I have found it advantageous to carry the hardware attachment by one sheet and to relieve the clamping pressure

from the second. As is commonly known, especially in the glass art, structural glasses are made having a fine finish on one side while the opposite side is rough from the surface of the casting table or roll. Where one sheet is employed to construct the stile, one or both sides thereof must be polished with a resultant increase in manufacturing expenses. The stile, which is shown in detail in Fig. 2, however, is constructed from two sheets, one being considerably thicker than the other. The associated sheets, interrelated by the adhesive layer, provide a substantial panel wherein the weight, as of a door, may be carried by the thicker sheet by means of the hardware accessory made in accordance with my invention.

Preferably the cylindrical member, best shown in Fig. 3 and generally indicated by the numeral 29, has two annular portions 30 and 31, each having a different diameter. A shoulder 32 thus formed at their juncture is located a predetermined distance from the end of the portion 31 which has the larger diameter. The tubular member is tapped through, as at 33, to receive screws 34 and 35 at each end. A washer 36 is located against the shoulder 32 and a lead, or other soft metal washer 37 is placed next to the washer 36. If desired, the soft metal may be added as a facing to the washer 36 and rolled so as to overlap its periphery.

Since the leg portions 27 and 28 are ordinarily provided with two or more openings for insertion of the attaching screws, similarly disposed openings are made in both the outer and inner facing sheets preliminary to assembly. The annular portion 30 of the member 29 is then placed in an opening 38 in the inner sheet 19, while the larger portion 31 is located in the opening 39 in the outer sheet 20. When the sheets are arranged in their assembled relation, the washers 36 and 37 will be interposed between said sheets. The angle members of the hardware, as the door hinge 17, during the mounting thereof on the stiles, are spread apart so that the leg portions 27 and 28 may be conveniently located with respect to the outer surfaces of the stile. A screw is then inserted through each of the registering openings 40 of the leg 27 and threaded into the tapped opening 33 of the cylindrical member 29. As the screw is turned in, the face of the leg portion will be brought against the surface of the inner facing 19 and further tightening to establish the desired rigid connection will urge the lead washer 37 against the inner surface of said facing until the soft metal assumes an interlocking relation with the ridged surface. An anchoring connection is thus effected whereby the member 29 is restrained from partial rotation or vibration while, and at the same time, the characteristics of the soft metal washer, when compressed, react to hold the screw against backing outwardly from the tapped opening.

As a protective measure, the annular portion 30 of the member 29 may be provided with a sleeve of rubber or other soft material. The screws 35, when inserted through registering openings 41 in the leg portion 28 of the hinge and threaded into the opposite end of the tapped opening 33, secures said leg against the end of the annular portion 31. The portion 31, as previously described, has a predetermined length from the shoulder 32 and, preferably, this distance is greater than the thickness of the outer facing sheet 20. When the leg portion 28 is therefore clamped by the screws 35 against the end of the cylindrical member 29, the pressure developed is carried by the said member without contact to the facing 20. This condition, as indicated at 42, may cause a slight gap, between the adjacent surfaces, of several thousandths of an inch, as for example .031" or substantially $\frac{1}{32}$". However, this is not apparent to the casual observer of the finished stile, although it will be readily evident that a satisfactory protection is afforded to prevent any destruction of outer facing 20 by reason of stresses or inadvertent slamming of the closure door.

While exceedingly simple in construction, the advantages afforded by the hardware accessory, constructed in accordance with my invention, eliminate the necessity of depending upon the stile per se to establish a permanently rigid mounting. The hardware accessory, or tubular member 29, also admits the maintenance of low cost installation by reason of its substitution for threaded sleeves optionally used in some installations, which sleeves receive the screws but in no wise reduce the establishment of a damaging clamping pressure that is distributed over both the outer and inner facing sheets of the stile.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same, but 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 claims.

I claim:

1. In combination, a laminated panel embodying a pair of laminations secured together by an adhesive interlayer, an attachment for securing hardware thereto comprising a pair of legs receiving said panel therebetween, a cylindrical member having a enlarged portion of a length slightly greater than the thickness of one of the laminations received in an opening in said lamination and a reduced portion of a length less than the combined thickness of the other lamination and the adhesive interlayer received in an oepning in said other lamination, a washer on said reduced portion disposed between the laminations of the panel and against the shoulder formed at the juncture of said reduced and enlarged portions, a bolt having a shank passing through an opening in one of said spaced legs and threaded into the enlarged portion of said cylindrical member clamping said spaced leg against said enlarged portion, and a second bolt having a shank passing through an opening in the other spaced leg and threaded into the reduced portion of said cylindrical member clamping one of the laminations of the panel between said spaced leg and said washer.

2. In combination, a laminated panel embodying a pair of laminations of unequal thicknesses secured together by an adhesive interlayer, an attachment for securing hardware thereto comprising a pair of angle members each having one leg in sliding engagement with the corresponding leg on the other angle member and another leg arranged in face to face relation to the corresponding leg on the other angle member receiving said panel therebetween, a cylindrical member having an enlarged portion of slightly greater length than the thickness of the relatively thin lamination and received within an opening in said lamination and a reduced portion of a length less than the combined thickness of the relatively thick lamination and the adhesive interlayer received within an opening in said thinner lamination, a washer on said reduced portion disposed

within the adhesive interlayer between the laminations of the panel and against the shoulder formed at the juncture of said reduced and enlarged portions of the cylindrical member, a bolt having a shank passing through an opening in the spaced leg of the angle member adjacent said relatively thin lamination and threaded into the enlarged portion of said cylindrical member clamping said leg against said enlarged portion, and a second bolt having a shank passing through an opening in the spaced leg of the angle member that is adjacent said thick lamination and threaded into the reduced portion of said cylindrical member clamping said thick lamination between said spaced leg and said washer.

3. In combination, a laminated panel embodying a pair of laminations of unequal thicknesses secured together by an adhesive interlayer, an attachment for securing hardware thereto comprising a pair of angle members each having one leg in interlocking sliding engagement with the corresponding leg on the other angle member and another leg arranged in face to face relation to the corresponding leg on the other angle member receiving said panel therebetween, a cylindrical member having an enlarged portion of slightly greater length than the thickness of said relatively thin lamination and received within an opening in said lamination and a reduced portion of a length less than the combined thickness of the thick lamination and the adhesive interlayer received within an opening in said thinner lamination, a hard metal washer on said reduced portion disposed within the adhesive interlayer between the laminations of said panel and against the shoulder formed at the juncture of said reduced and enlarged portions of the cylindrical member, a soft metal facing on said washer, a sleeve of relatively soft material surrounding said reduced portion, a bolt having a shank passing through an opening in the spaced leg of the angle member adjacent said relatively thin lamination and threaded into the enlarged portion of said cylindrical member clamping said leg against said enlarged portion, and a second bolt having a shank passing through an opening in the spaced leg of the angle member that is adjacent said thick lamination and threaded into the reduced portion of said cylindrical member clamping said thick lamination between said spaced leg and said washer.

ELI H. McLAUGHLIN.

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