

July 9, 1963

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3,096,861

PREFABRICATED PARTITION WITH INTERLOCKED RAILS AND STUDS

Filed Aug. 28, 1959

3 Sheets-Sheet 1

FIG. 1.

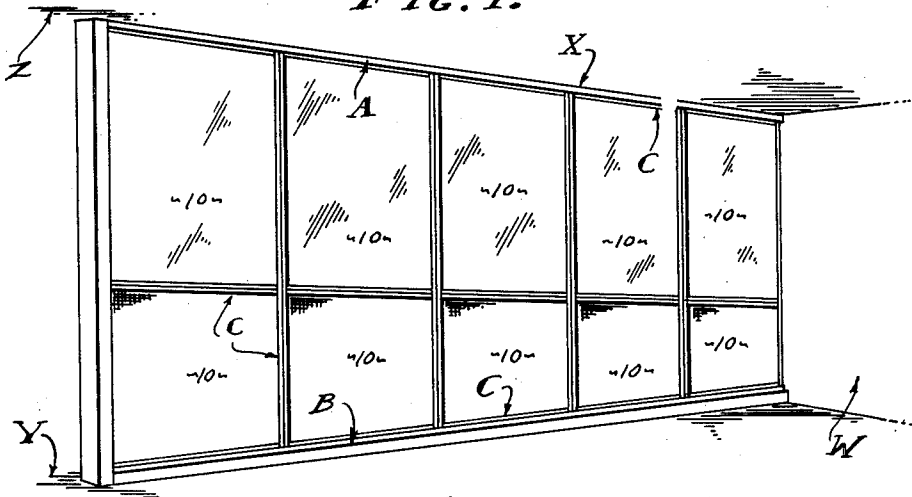


FIG. 2.

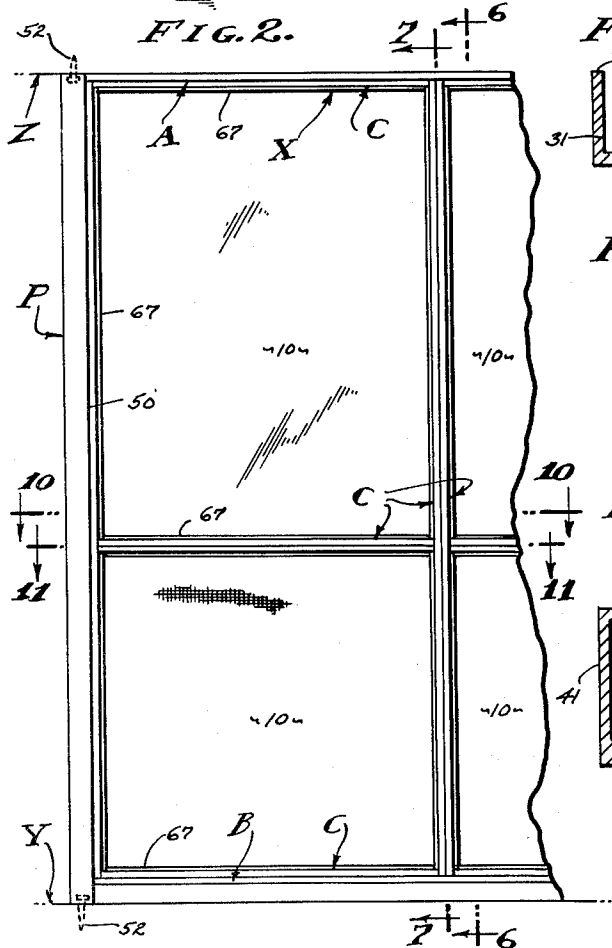


FIG. 3.

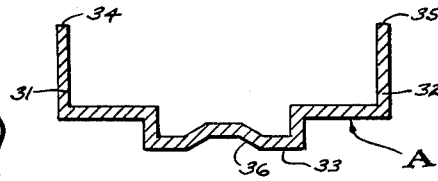


FIG. 4.

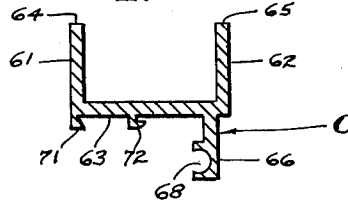
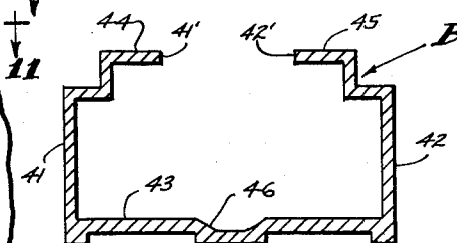


FIG. 5.



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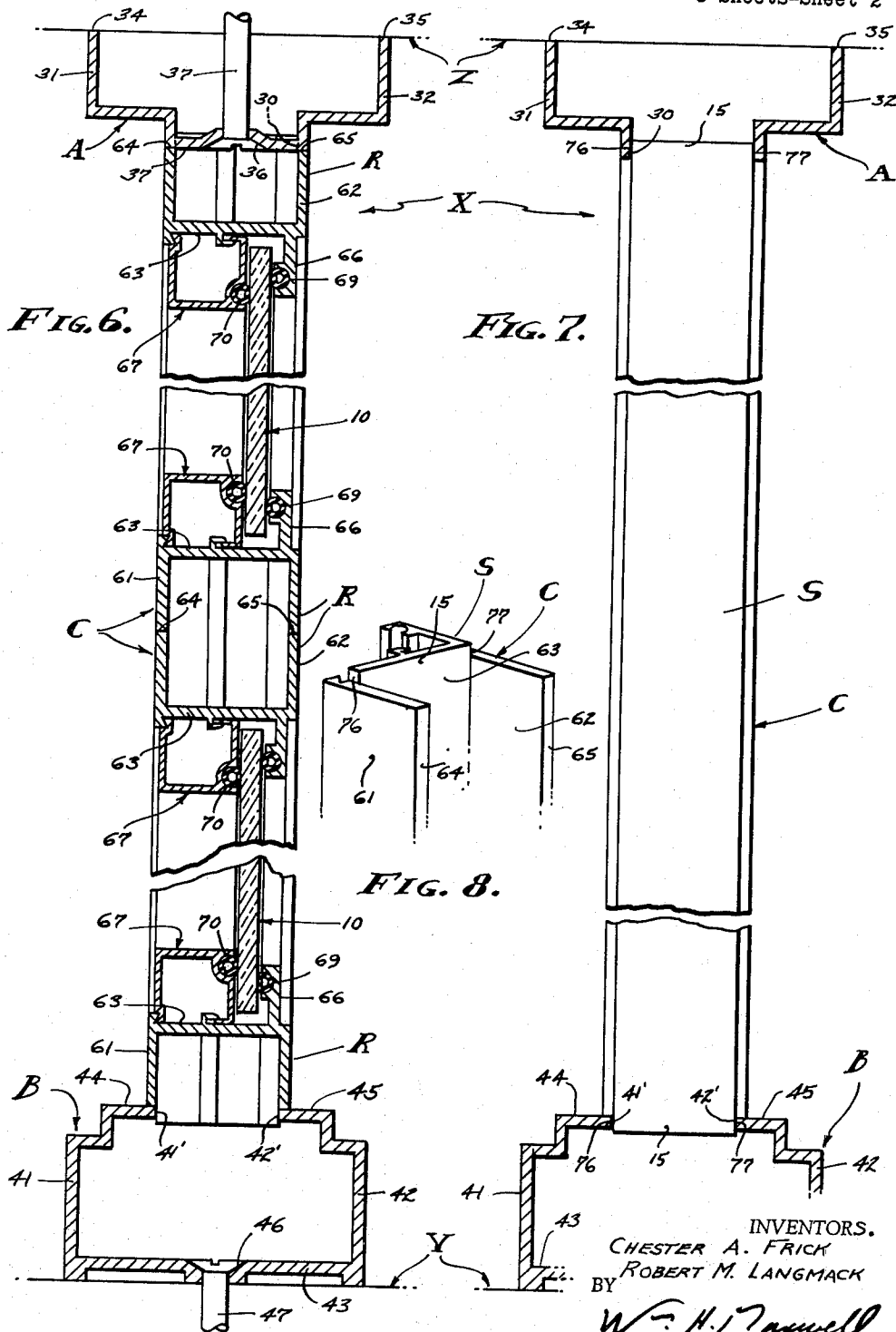
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PREFABRICATED PARTITION WITH INTERLOCKED RAILS AND STUDS

Filed Aug. 28, 1959

3 Sheets-Sheet 2



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PREFABRICATED PARTITION WITH INTERLOCKED RAILS AND STUDS

Filed Aug. 28, 1959

3 Sheets-Sheet 3

FIG. 9.

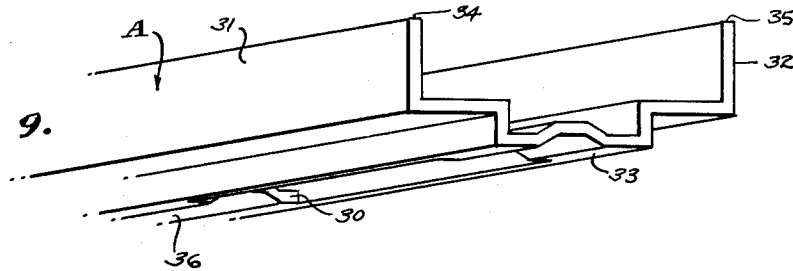


FIG. 10.

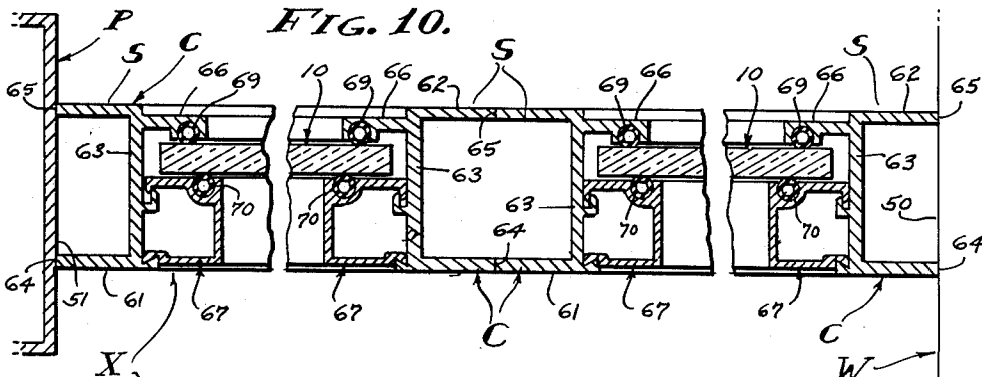


FIG. 11.

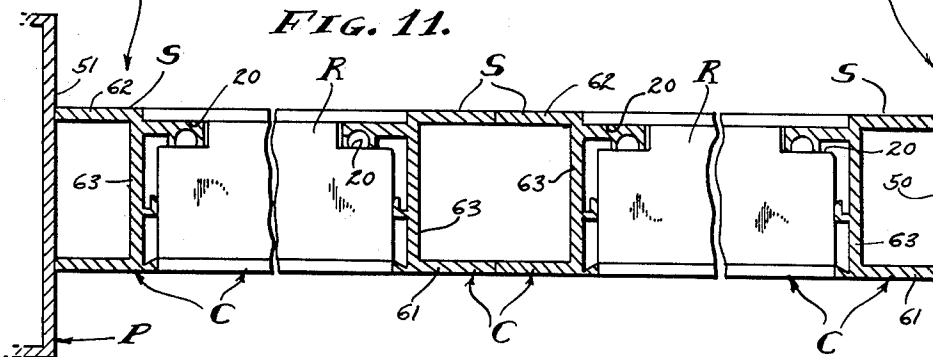
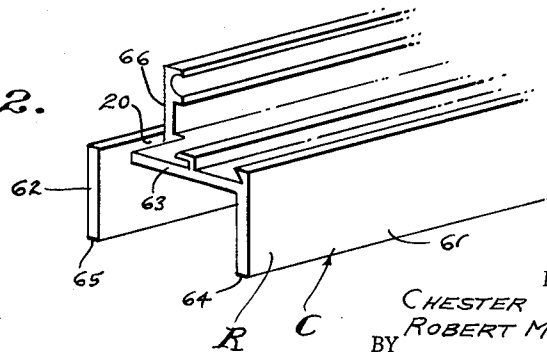


FIG. 12.



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PREFABRICATED PARTITION WITH INTER-LOCKED RAILS AND STUDS

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Filed Aug. 28, 1959, Ser. No. 836,718
8 Claims. (Cl. 189—34)

This invention relates to prefabricated partitioning and is concerned particularly with the fabrication and erection of partition walls for use in, for example, office buildings and the like, it being a general object of this invention to provide a prebuilt wall structure that is relatively inexpensive of manufacture and which is easily erected and which is also reusable so as to be disassembled and re-erected.

This application for Letters Patent is compending with our application entitled "Prefabricated Partition With Interlocked Frames," filed on even date herewith, Serial No. 336,642, now Patent No. 2,754,276.

Partition wall constructions are widely employed for dividing floor areas into smaller usable areas, for example, individual offices and the like. With each particular kind of business there are particular requirements as to office division and arrangement and also there is the subjection to changes in these requirements. Further, tenancy in buildings is continuously changing with the ever present necessity of replanning and repartitioning floor spaces. In any case, the usual partitions that are installed are permanent in nature and must be destroyed in order to effect their removal, and they are therefore not reusable. In other words, the ordinary partitioning is custom made and is not basically expandable so as to have flexibility of installation.

An object of this invention is to provide a prefabricated combination of elements that are readily erected into partitioning that is permanent in nature and which is also adapted to be disassembled and re-erected, all as circumstances require.

It is an object of this invention to provide a prefabricated combination of elements that can be modularly formed so as to be employed when necessary to expand, rebuild, or modify said partitioning employing the same.

Another object of this invention is to provide a prefabricated combination of elements that involves a rigid frame that is easily and quickly erected out of a minimum number of parts and which is adapted to receive any desired type of panel.

It is also an object of this invention to provide a partitioning construction of the type thus far referred to and that has pleasing esthetics and which is devoid of exposed fastenings and unsightly constructions. In the structure that we provide, all fasteners are hidden from view and the elements of the combination are tenoned and keyed together forming a rigid and permanent wall.

It is still another object of this invention to provide a relatively simple and practical partitioning structure that involves but few simple easily formed parts and which involves a minimum of labor for erection thereof.

The various objects and features of our invention will be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view of the combination of elements provided by the present invention and showing said elements erected and forming a partition. FIG. 2 is an enlarged elevation of a portion of the structure shown in FIG. 1. FIGS. 3, 4 and 5 are enlarged detailed sectional views of the three separate elements that we

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employ in the fabrication of the frame that is involved in the partitioning of the present invention, FIGS. 3 and 5 showing rail components and FIG. 4 showing a component that is formed into both rails and studs. FIGS. 6 and 7 are enlarged detailed sectional views taken as indicated by lines 6—6 and 7—7 on FIG. 2. FIG. 8 is a perspective view of the end portion of the component illustrated in FIG. 4 and showing the manner in which it is treated to form a tenon thereon. FIG. 9 is a perspective view of the component that is shown in FIG. 3 and showing the manner in which it is treated in order to receive the tenon of the component shown in FIG. 8. FIGS. 10 and 11 are enlarged detailed sectional views taken as indicated by lines 10—10 and 11—11 on FIG. 2, and FIG. 12 is a perspective view of the end portion of the component shown in FIG. 4 and shows the treatment that adapts said component to interlocking engagement with said components used as studs.

The concept herein disclosed is in the form of partitioning made up of modular rigid and sized elements that are readily erected and adapted to be taken down to be used and reused any time as circumstances require. Thus, it is contemplated that the partitioning involve a framework that is erected to receive standardized shaped panels of material having the properties desired. That is, the panels can be opaque, translucent or transparent, and they can be of any suitable color or texture in order to fit in with the decor specified. For example, the panels can be of glass of any type color and texture, or they can be of laminated or pressed wood or fibre material, or any other substance or material that is made up and supplied in sheet form. The only practical requirement is that said panels be reasonably flat and preferably rectangular in shape.

In FIG. 1 of the drawings we have illustrated a partition erected in accordance with the present invention and which involves, generally, a frame X and a plurality of panels 10 carried by the frame X, and for installation between a floor Y and a ceiling Z. As is indicated, the usual installation will require erection of a partition between a floor Y and a ceiling Z, however, it is to be understood that there will be instances where the partition will be free-standing and not engaged with a ceiling, or where the partition will be spaced from the floor, or even instances where the panel engages neither floor nor ceiling. Further, as is indicated, the usual installation will require erection between vertical confining elements such as walls W and/or posts P. However, it is to be understood that there will be instances where a post or wall is not engaged and in which case a post element P, or the like, can be supplied.

In FIGS. 3, 4 and 5 of the drawings we have shown the three basic elements that are involved: a top rail A, a bottom rail B, and an element C that is used as both a stud S and as an intermediate rail R. These three elements are combined and erected to form the frame X, and are simple, elongate parts that are employed exactly as shown without change or modification to the cross section thereof. In accordance with the invention the only part requiring special treatment is the part C, which is simply machined at the end portions thereof (see FIG. 8) to have tenons 15 and forming the studs S, and which is simply slotted at 20 (see FIG. 12) and forming the intermediate rails R to have keyed engagement with the studs S. The three elements A and B and the specially treated elements C forming the studs S and intermediate rails R are preferably extruded sections of material, such as aluminum or the like, in which case the cross sectional configuration of each part remains uniform throughout its length, it being readily apparent that modular lengths can be easily established.

In FIGS. 3 and 5 and also in FIGS. 6, 7 and 9 of the

drawings, we have illustrated two types of rails A and B, the rail A being used at the upper margin of the structure and the rail B at the lower margin. It will be observed that the rail A presents a closed inwardly facing side that requires a cut-out 30, as illustrated in FIG. 9, while the rail B presents an open inwardly facing side that requires no machining or such treatment. It will be apparent that these two rails can be substituted one for the other, and either rail used as desired, or as is shown. Further, a tubular rail (not shown) can be used if desired employing a cut-out as in the rail A, in order to receive the tenons of the studs S.

The element or rail A, as it is best shown in FIGS. 3 and 9, is a straight elongate part with spaced side walls 31 and 32 that are parallel and adapted to be vertically disposed. However, said walls 31 and 32 can have any desired contour or design, as required for decoration. A flat horizontally disposed inner face 33 extends between the walls 31 and 32, said face being engageable with the outside face of the rails R later described. In the particular case illustrated the element A is formed as by the process of extrusion, the walls 31 and 32 and the face 33 being integrally formed with coplanar edges 34 and 35 at the opposite side walls 31 and 32, said edges facing outwardly for engagement with any frame surface, such as with a ceiling Z. Further, the element or rail A, being formed by extrusion, is provided with a fastener channel 36 that extends centrally of the face 33 and which opens inwardly and is shaped to accommodate the flat heads of fasteners 37 (see FIG. 6).

The element or rail B, as it is best shown in FIG. 5, is a straight elongated part with spaced side walls 41 and 42 that are parallel and adapted to be vertically disposed. Like the rail A, however, the said walls 41 and 42 can have any desired contour or design, as required for decoration. A flat horizontally disposed outer face 43 extends between the walls 41 and 42, said face being engageable with any flat surface, such as with a floor Y. In the particular case illustrated, the element B is formed as by the process of extrusion, the walls 41 and 42 and face 43 being integrally formed with coplanar edges 44 and 45 at the opposite side walls 41 and 42, said edges facing inwardly for engagement with the outside face of the rail R later described. Further, the element or rail B being formed as by extrusion is provided with a fastener channel 46 that extends centrally of the face 43 and which opens downwardly and is shaped to accommodate the flat heads of fasteners 47 (see FIG. 6).

The particular rails A and B that are illustrated throughout the drawings are substantially wider than the element C forming the intermediate rails R and studs S. In the case of the rail A the opposite sides thereof are simply stepped, as shown, leaving a central embossment the same width as the said rails R and studs S. In the case of the rail B the coplanar edges 44 and 45 present spaced and separate supporting lips that terminate at opposed and parallel faces 41' and 42' spaced substantially closer together than the width of the said rails R and studs S. In this way, the latter rail B has edges 44 and 45 that establish supporting lips that carry the rails R and studs S.

In accordance with the invention, the frame X involves upper and lower rails that are installed in fixed parallel relationship with each other. In the case illustrated, the upper rail A is installed and secured to the ceiling Z and the rail B is installed and secured to the floor Y. It is to be understood that both top and bottom rails can be alike, that is, both rails can be a rail A or a rail B, said rails being interchangeable with each other. As shown, the upper and lower rails are secured in working position by the fasteners 37 and 47, respectively, said rails in the usual installation are coextensive with each other, said rails being installed in a common vertical plane.

In carrying out the invention the rails A and/or B terminate one above or below the other at their opposite

ends and in a vertical plane normal to the plane of the frame X, this being a usual situation as illustrated in FIG. 1. For example, we have illustrated one end of the frame as being engaged with a flat wall W extending from the floor Y to the ceiling Z, and the other end as being engaged with a perpendicular post P extending from the floor Y to the ceiling Z. Thus, the wall W and post P present opposed faces 50 and 51 that are normally disposed with respect to the faces 33 of the rail A and/or to the coplanar edges 44 and 45 of the rail B. The post P can be anchored in position in any suitable manner as by lag-screws 52 (see FIG. 2).

The element C that is employed to form the intermediate rails R and studs S is best illustrated in FIG. 4 and is a straight elongate part with spaced side walls 61 and 62 that are parallel and adapted to be disposed in vertical planes. More particularly, the walls 61 and 62 are spaced apart the same as the width of the central embossment of the rail A, or such as to overlie the spaced coplanar edges 44 and 45 of the rail B, as the case may be. In the particular case illustrated, the element C is formed as by the process of extrusion, with a web 63 extending between the walls 61 and 62, said walls and web being integrally formed with spaced coplanar edges 64 and 65 at the side walls 61 and 62. Thus, the element C is a channel-shaped part and it is adapted to lie against and abut with the face 33 of the rail A (see FIG. 6), with the face 50 of the wall W (see FIG. 10), with the face 51 of the post P (see FIG. 10), and they are also adapted to be arranged to abut back to back (see FIGS. 6 and 10). Where the elements C are arranged to abut back to back it is contemplated that they be integrally formed as a single element, if so desired.

The element C is provided to carry the flat sheet-like panels 10 and has means provided for the reception and retention of said panels 10. It is to be understood that the panels 10 can be secured in position by any suitable means, such as by ordinary glazing means, however, we have shown a mechanical securement (see FIGS. 6 and 10) wherein there is a flange 66 to position the panel 10 and a snap-on bead 67 that anchors the panel 10 against the flange 66. As shown in FIG. 4, there is a recess 68 in the flange for carrying a compressible seal 69 (see FIGS. 6 and 10), and there is an opposite and complementary seal 70 carried in a like channel in the bead 67. In the case illustrated, there are spaced parallel hook-shaped parts 71 and 72 formed at the inner face of the wall 63 and which engage with lips on the bead 67 (as shown) when the said bead is in operating position. It will be apparent that the placement of the flange 66, to one side of the wall 63, and placement of the bead 67 will depend upon the thickness of the panel 10 that is employed.

In order to erect the partitioning of the present invention the element C is formed into studs S of predetermined modular length by machining the opposite ends of said studs S to have tenons 15 as shown in FIG. 8. Said tenon is easily formed by a single machining operation wherein the ends of the walls 61 and 62 are milled or planed back so that the tenon 15 projects from the end of the element C. This treatment results in a tenon 15 having opposite sides 76 and 77 spaced to be slidably engaged in the opening 30 between the walls 31 and 32 of the rail A, or between the faces 41' and 42' of the rail B (see FIG. 7). The said tenons are of any suitable length, as shown, and it is a simple matter to enter the studs S, by disposing them angularly, between the rails A and B and to then move them into vertical position whereupon the tenons 15 project into the rails A and B to locate the studs S relative to the rails and against lateral displacement.

As an alternate, or equivalent, of the tenon 15 and at the upper end of the studs S, a locating element (not shown) can depend from the upper rail A (or B) to project into the upper end portion of the element C forming

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the stud S. The said locating element can be secured to the upper rail as by a screw fastener or the like and shaped to slidably engage between the walls 61 and 62 of the element C.

With the studs S in place as above described, the frame X is completed by forming the inner rails R, of predetermined modular length, by machining the opposite ends of said rails R to have slots 20 as shown in FIG. 12. Said slot 20 is easily formed by a single machining operation wherein the end portion of the wall 63, and of the flange 66, is milled or punched out to receive the flange 66 of adjacently related elements C or studs S (see FIG. 11). This treatment results in a slot 20 that accommodates the flange 66 of the studs S and provides guided interlocked engagement of the rails R with the studs S so that the rails are located relative to the studs and are held against lateral displacement. The said rails are easily positioned, as shown, by entering them between the studs, when they are angularly disposed thereto, and by then moving them into their final horizontal positions.

As shown throughout the drawings, there are four elements C at or for each panel 10. Therefore, where there are vertically disposed panels 10 side by side there are adjacent studs S abutted back to back (see FIGS. 1, 2, 10 and 11). It is significant that the studs S are continuous and uninterrupted as they extend between the rails A and B thus giving substantial strength to the frame X (see FIG. 7). Also, therefore, when there are horizontally disposed adjacently related panels 10, there are adjacent intermediate rails R abutted back to back (see FIGS. 1, 2 and 6). It is significant that the rails R are guided by the studs S to be properly aligned and so as to avoid interruption of the continuously extending studs. Further, it will be observed that entry of the panels 10 into position and application of the beads 67 completes the partitioning, said panels 10 and/or the beads 67 acting to support one panel 10 above the other and to locate the intermediate rails R by supporting them. In other words, the uppermost rails R, that is, the rails R at the top of the panels 10, are located and positioned by the vertical extent of the panels or alternately by the extent of the vertically disposed beads 67.

With the three basic elements A, B and C treated and assembled as hereinabove described a partitioning of permanent character is provided and which can be economically manufactured and easily and quickly assembled. Further, said partitioning can be readily dismantled, altered or changed from time to time and the parts and elements thereof completely salvaged and reused for like partitioning. It will be apparent, therefore, that it is a simple matter to erect, disassemble and re-erect, or augment, the partitioning formed of the combination of the two or three basic elements herein disclosed.

Having described only a typical preferred form and application of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described our invention, we claim:

1. A partition frame of the character described and adapted to receive a panel and including, fixedly spaced and parallel upper and lower rails and each with spaced side walls having coplanar edges and forming a channel therebetween, and spaced and parallel studs for erection between the rails with flat opposite ends engaged with the coplanar edges of the rails, said studs having tenons projecting from the ends thereof and with flat faces slidably engaged between the walls of the rails.

2. A partition frame of the character described and adapted to receive a panel and including, fixedly spaced and parallel upper and lower rails and each with spaced side walls having coplanar edges and forming a channel therebetween, and spaced and parallel studs for erection between the rails with flat opposite ends engaged with the

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coplanar edges of the rails, said studs having tenons projecting from the ends thereof and with flat opposite sides of the tenons slidably engaged with the walls of the rails.

3. A partition frame of the character described and adapted to receive a panel and including, fixedly spaced and parallel upper and lower rails and each with an inwardly disposed face and with elongate openings formed in and disposed longitudinally of said faces, spaced and parallel studs to be erected between the faces of the rails and with laterally disposed flanges to receive and position the panel, said studs having ends to engage the rails and tenons projecting from the ends and engaged in the openings in the faces of the rail, and spaced and parallel intermediate rails extending between the studs and with laterally disposed flanges to receive and position the panel, said intermediate rails having slots formed in the end portions thereof to engage over the flanges of the studs.

4. A partition frame of the character described and adapted to receive a panel and including, fixedly spaced and parallel upper and lower rails and each with an inwardly disposed face and with elongate openings disposed longitudinally of said rails and having opposed walls formed in said faces thereof, spaced and parallel studs to be erected between the faces of the rails and with their ends engaged with said faces and with laterally disposed flanges to receive and position the panel, said studs having ends to engage the faces of the rails and tenons projecting from the ends thereof and with opposite sides to engage with the walls of the openings in the faces of the rails, and spaced and parallel intermediate rails extending between the studs with laterally disposed flanges to receive and position the panel, said intermediate rails having slots formed in the end portions thereof to engage over the flanges of the studs.

5. A partition frame of the character described and adapted to receive a panel and including, fixedly spaced and parallel upper and lower rails and each with spaced side walls having coplanar edges and forming a channel therebetween, spaced and parallel studs to be erected between the rails with their opposite ends engaged with the coplanar edges of the rails and with laterally disposed flanges to receive and position the panel, said studs having tenons projecting from the ends thereof and engaged between the walls of the rails, and spaced and parallel intermediate rails extending between the studs and with laterally disposed flanges to receive and position the panel, said intermediate rails having slots formed in the end portions thereof to engage over the flanges of the studs.

6. A partition frame of the character described and adapted to receive a panel and including, fixedly spaced and parallel upper and lower rails and each with spaced side walls having coplanar edges and forming a channel therebetween, spaced and parallel studs to be erected between the rails with their opposite ends engaged with the coplanar edges of the rails and with laterally disposed flanges to receive and position the panel, said studs having tenons projecting from the ends thereof and with opposite sides of the tenons engaged with the walls of the rails, and spaced and parallel intermediate rails extending between the studs and with laterally disposed flanges to receive and position the panel, said intermediate rails having slots formed in the end portions thereof to engage over the flanges of the studs.

7. A partition of the character described and including in combination, two cross sectional elements, one element having an inwardly disposed face and with elongate longitudinally disposed openings formed in said faces, and the other an element having a laterally projecting flange to receive and position a panel, said first mentioned element being fixedly installed in pairs as upper and lower rails, said second mentioned element being disposed in pairs as studs to be erected between said rails and having ends to engage the rails and tenons formed

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at the ends thereof to project into and engage in the openings in the rails, and said second mentioned element also being disposed in pairs as intermediate rails to extend between the said elements disposed as studs and having slots formed in the opposite end portions thereof to engage over the flanges of the stud elements.

8. A partition of the character described and including in combination, two cross sectional elements, one an element having spaced side walls forming a channel therebetween, and the other an element having a laterally projecting flange to receive and position a panel, said first mentioned element being fixedly installed in pairs as upper and lower rails, said second mentioned element being disposed in pairs as studs to be erected between the said rails and having ends to engage the rails and tenons formed at the ends thereof to project into and engage in the channels in the rails, and said second

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mentioned element also being disposed in pairs as intermediate rails to extend between the said elements disposed as studs and having slots formed in the opposite end portions thereof to engage over the flanges of the stud elements.

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