April 1, 1941. H. E. GIESEKING 2,237,098.

METAL WALL PARTITION

Filed May 26, 1938 2 Sheets-Sheet 1

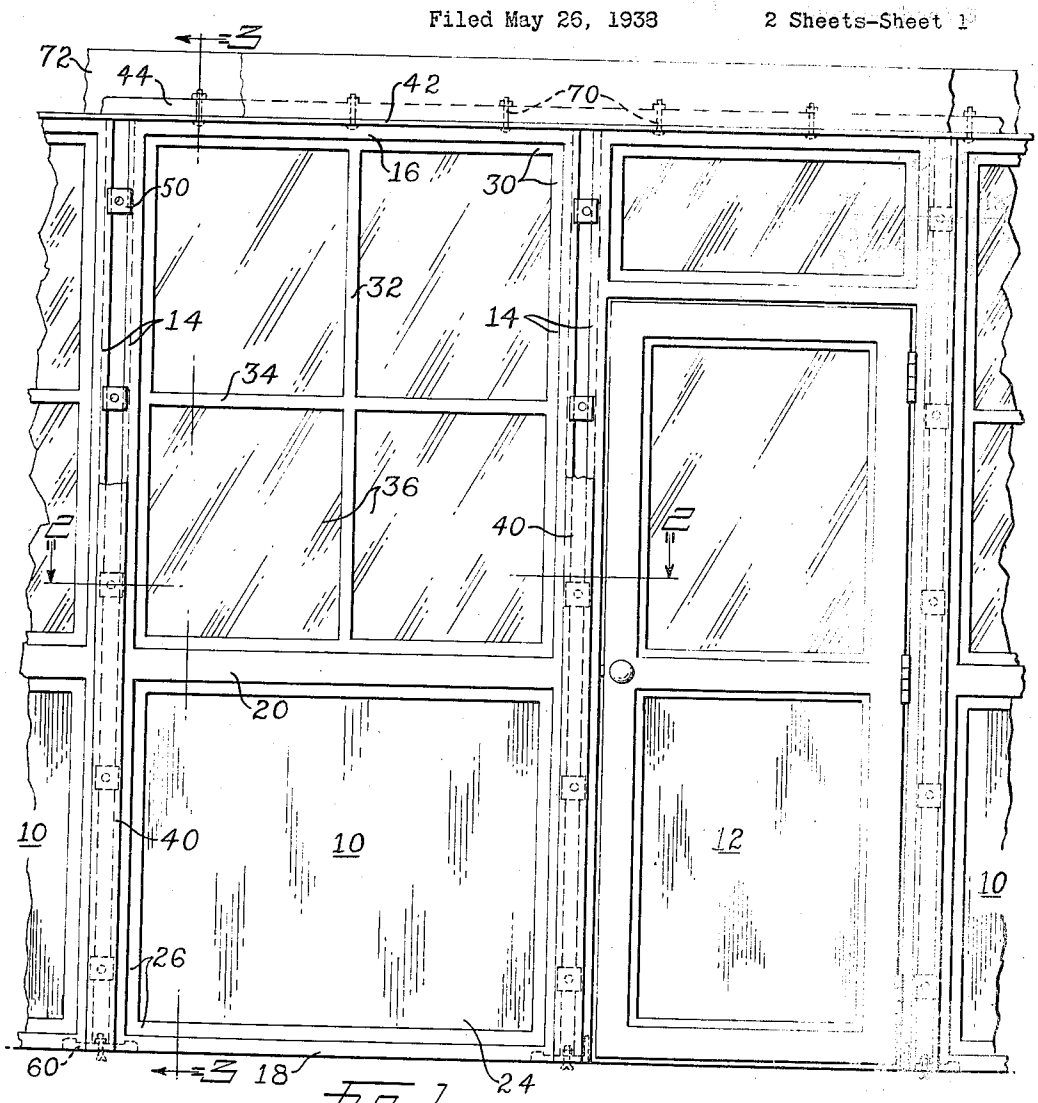

Fig. 1

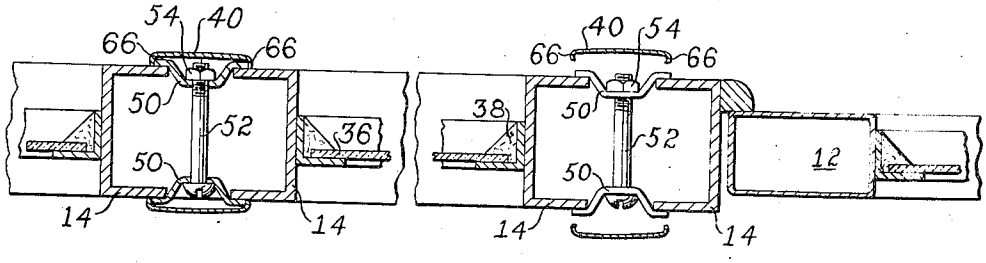

Fig. 2

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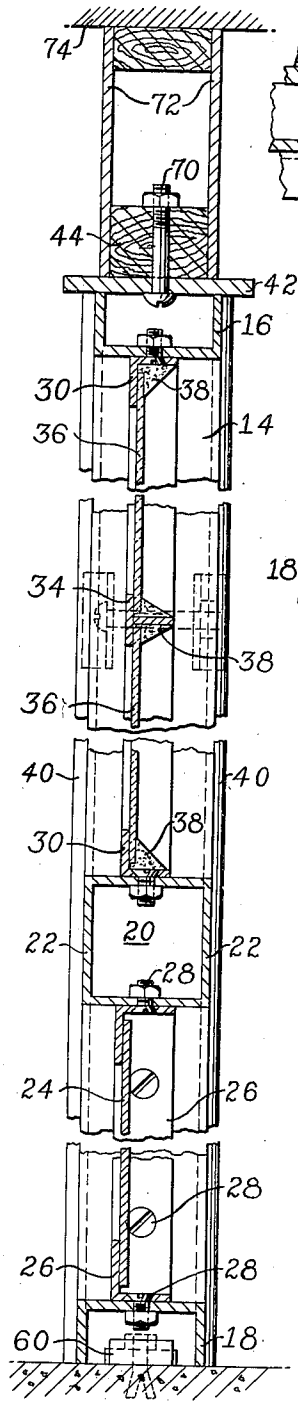


Fig. 3

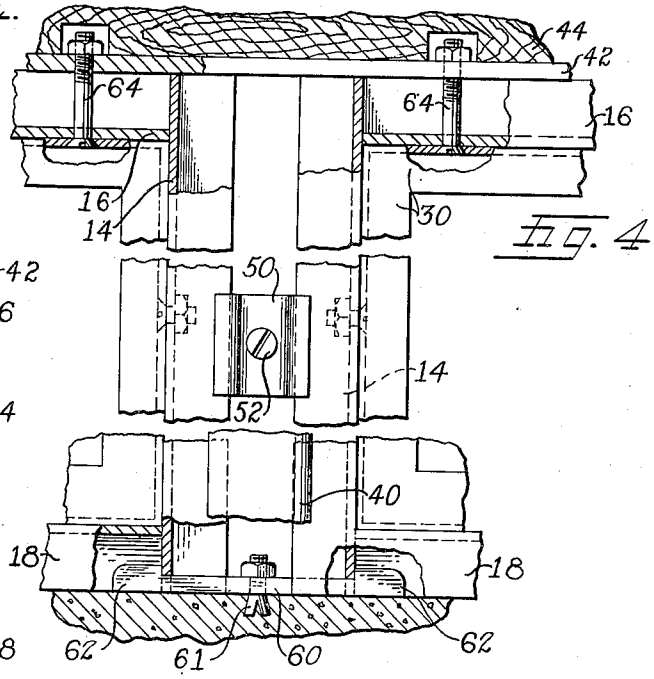
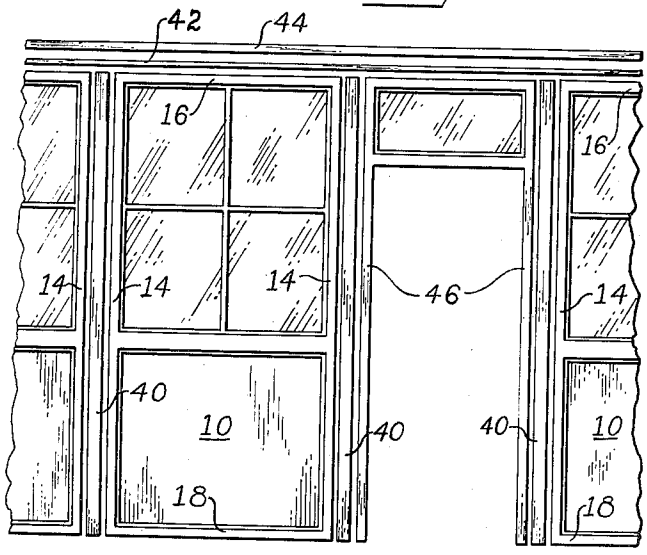


Fig. 4

Fig. 5



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UNITED STATES PATENT OFFICE

2,237,098

METAL WALL PARTITION

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4 Claims. (Cl. 189—34)

This invention relates to improvements in wall structures and more particularly to metal and glass partitions for use in the interior of buildings and to a method of fabricating and erecting the same.

An important object of this invention is to provide a novel metal wall partition comprising a plurality of unitary frame structures assembled side by side and provided with novel fastening devices for removably securing the frame structures together and to the floor.

An important feature of this invention is the possibility of using inexpensive easily obtained metal parts for the manufacture of the frame structures and the fastening devices therefor. These parts are arranged in a novel relationship so that a sturdy wall structure results.

Another important object of this invention is to provide novel fastening devices for securing the frame structures together and for supporting the frame structures in upright position on a floor. These novel devices enable the frame structures to be erected quickly and with a minimum amount of labor. When it is desired to dismantle a wall formed of such structures or to remove one or more of such structures from the remainder, the novel fastening devices enable this operation to be performed without destroying or disassembling the structures themselves.

More particularly, an important object of this invention is to provide a wall partition structure which is composed of a plurality of individual frame units capable of being erected and dismantled with ease and without altering the structure of the frames themselves. An important feature of the invention is the formation of hollow columns between each frame unit which are accessible to the outside at any time after the partition has been erected so that electric cables or other forms of conduits can be strung in these columns without tearing down the partition. Another important feature of the invention is the provision of devices which have the dual function of securing the frame units to one another and molding strips to the frames to conceal the joints between each pair of frame units. The frame units and their securing devices are so simply constructed and operated that skillful labor is not necessary for erecting or dismantling a wall partition of this invention.

Various other objects, advantages, and meritorious features of this invention will become more apparent from the following specification, appended claims, and accompanying drawings, wherein:

Figure 1 is a vertical elevation of a part of a wall structure erected in accordance with this invention,

Fig. 2 is an enlarged fragmentary cross-sectional view of the wall structure along line 2—2 of Fig. 1,

Fig. 3 is an enlarged fragmentary cross-sectional view of the wall structure along line 3—3 of Fig. 1,

Fig. 4 is a fragmentary side elevation of the wall structure along the adjoining edges of two frame units showing the manner of attaching the frame units to one another across their tops, showing one of the clamping devices utilized intermediate the top and bottom of the frame units to secure the same together in slightly spaced relationship, and showing the tie plate on the floor for limiting the separation of the frame units from one another, and

Fig. 5 is an exploded view illustrating the unitary character of the frames, the attaching member for use across their tops of the frame units, and the molding strips.

Referring to the drawings in detail, a wall partition erected in accordance with this invention is illustrated in Fig. 1. It is formed of a plurality of unitary rectangular frame units generally indicated at 10. When a door or other opening is desired, a special frame structure is assembled and erected in the opening. This is illustrated in the right in Fig. 1 wherein a door generally indicated at 12 is provided.

Each rectangular structure 10 is formed of a plurality of channel shaped members assembled at right angles to one another and joined together to form a rectangular frame. All the channel members, of which this frame consists, open outwardly in the plane of the frame. This is clearly shown in Figs. 2 and 4 wherein the projecting edges of the channel members of each frame project laterally therefrom in the plane of the frame. The channel members constituting the sides of each frame are indicated at 14—14. The top channel member of each frame is indicated at 16; the bottom channel member is indicated at 18. The top, side and bottom channel members of each frame are secured together at the corners of the frame such as by welding and form a unitary, self-supporting structure.

Extending across each frame unit 10 and joining the opposite side of channel members 14—14 is a supporting brace generally indicated at 20

which divides the frame into top and bottom sections. This brace is formed of two channel shaped members 22—22 which are brought into edged abutting relationship to form a hollow support. This is shown in the middle of the cross-sectional view in Fig. 3. The abutting edges of the two channel members 22—22 forming this hollow supporting brace have their abutting edges joined together one above the other so that the line of juncture is concealed when the frame is viewed from the opposite sides. These abutting edges may be welded together to permanently form the brace.

The bottom section of each frame unit 10 is preferably closed by a metallic panel 24. This panel is permanently secured in position by novel fastening means surrounding the opening in which the panel is seated. The novel fastening means preferably comprises angle iron supports of right angle cross section. Such a fastening element is illustrated cross-sectionally at 26 in Fig. 3. As is apparent in Fig. 1 these angle irons extend around the opening in which the panel 24 is positioned. They are fastened to the bottoms of the side channel members 14—14 and the floor engaging channel member 18 and to the hollow brace 20 by screws 28 or by welding. These screws are threaded through the abutting edges of the channel members forming the brace 20. The metal panel 24 is preferably spot welded to the inwardly projecting portions of the angle irons 26 as is clearly apparent from Fig. 3 but may be riveted or otherwise secured to the angle irons. An alternate type of metallic panel may be used if desired. This panel is of pan-shape formation having turned up marginal edges all around the panel which may be spot welded or otherwise secured to the four sides of the opening in the frame in which the panel is mounted. This construction will eliminate the need of angle irons 26.

Similar shaped fastening supports 30 of right angle cross section surround the opening in the upper section of each frame unit 10. The upper section of the rectangular frame may be crossed vertically and horizontally by window pane supporting members 32 and 34 respectively. Window panes 36 may be positioned in the openings as shown. The cross members 32 and 34 are T-shaped in cross section as shown in Fig. 3 and the glass panes are cut to size so that they overlap upon the lateral extending flanges of the supports 32 and 34 and upon the angle irons 30 surrounding the window opening. Putty or other window securing means 38 is provided along the margins of the window panes as shown in Figs. 2 and 3 to secure the same in position.

A number of rectangular frames are constructed as described above and assembled in edge-to-edge relationship upon a floor to form a wall partition. The unitary character of these frames and the manner of assembling them together is illustrated in the exploded view in Fig. 5. When the frames are brought together in properly assembled relationship the side channel members 14—14 of the frames form hollow vertical columns or posts between each pair of frames. The top and bottom channel members 16 and 18 of each frame form hollow joists interconnecting with one another and with the hollow vertical columns.

When the frame fastening means described hereinafter is used the frames are erected side-by-side in slightly spaced relationship. A molding strip 40 may be employed for each vertical hollow column to overlap upon the side edges of adjoining frames and conceal the joint therebetween. A long flat member or bar 42 is placed across the top of the frames. This bar is attached to the frames as will be described hereinafter. When it is desired to extend the height of the partition, a wall of fabricated board may be erected upon the partition. First, there is secured to the top of the partition a wooden beam 44 which serves as a support for the extension wall. Where a door is desired, a frame 46 of the type shown in Fig. 5 may be used to support the door. A section of a completely assembled partition constructed in accordance with this invention is shown in Fig. 1.

Novel fastening devices are provided for removably securing the side channel members of the frames together. Devices constructed in accordance with this invention are illustrated in Figs. 2 and 4. Each device acts not only to secure or clamp the adjoining frame units together but also acts as a support to which the molding strips 40 can be removably secured. In addition, the devices are constructed so that they act as spacers between the frames acting to spread the frames a given distance apart. Each fastening device comprises a pair of elements 50—50 having aligned holes extending therethrough through which a bolt 52 is capable of extending as shown. The middle section of each element 50 is offset relative to the ends thereof so that it may enter the joint between adjoining frames as shown in Fig. 2. The elements 50 are preferably deformed into this formation at the time they are made. The elements of each device are arranged on opposite sides of two adjoining frames with the ends of the elements in engagement with the side margins of the adjoining frames and when the elements are tensioned toward one another by tightening a nut 54 on the threaded extremity of bolt 52, these elements act to clamp the frames together. The head of the bolt on one side of the frames and the nut on the other side of the frames lie within the recesses provided by the deformed central portion of the elements 50 as is apparent in Fig. 2.

Novel means is provided for positioning the frame units in alignment with one another and in properly spaced relationship as they are erected. This means comprises a plurality of specially formed members secured to the floor at spaced intervals and when properly laid acting as guides for determining the position of the frame and for limiting the spaces between adjoining frames. These tie members cooperate with the clamping devices in defining the width of the joint separating the sides of adjoining frames.

The position of the tie members on the floor below the partition is shown in dotted outline at 60. They are formed of metal and extend a length greater than the distance between the bottoms of two adjoining channel members 14—14 so that they may be interlocked or connected to the edges of the frames. Referring in detail to Fig. 4, each tie member or plate 60 is flat on the bottom so that they may rest on the floor. An expansion bolt 61 of the type shown in Fig. 4 may be used to secure the tie plate to the floor. The top of each tie plate adjacent the opposite ends has a riser or projecting part 62 which engages with the back side of the adjacent channel member 14.

As shown in Fig. 4 these risers abut the back side of the side channel members 14—14 of each adjacent pair of frames relative to one another.

The tie plates **60** and the clamping elements **50** are so constructed that the spacing of the frames is restricted to a predetermined distance and cannot shift out of their respective positions after they have been erected. As is clearly apparent the inclined character of the central offset portions of the clamping elements tends to wedge the frames apart from each other against the risers **62** on the tie plates. In addition, the bar **42** extends across the tops of frame units and is secured at spaced intervals thereto by bolts **64** as indicated in Fig. 4. The form of securement provided by the bar **42**, the clamping elements **50** and the tie plates **60** integrally secures the frames together into a strong rugged partition, and yet one which can be erected and dismantled with ease.

The spaced character of the frames leaves relatively wide joints between the frames. To conceal these joints and the clamping elements therein the molding strips **40** heretofore mentioned are provided. These molding strips are especially constructed for removable attachment to the partition after it has been erected. To accomplish this, each molding strip has its side edges **66—66** curled or bent inwardly as shown in Fig. 2. The side edges of each molding strip are so formed that they are spaced apart from one another a distance a little less than the distance between the outer extremities of the clamping element **50**. By this construction, it is possible to snap or spring the molding strips to the clamping elements after the latter have been secured in place on the partition. The action of securing the molding strips to the clamping elements is readily understood by comparing the unsecured molding strips at the right in Fig. 2 with the secured strips at the left. When attached, the molding strips conceal the joint between the frames and the clamping element therewithin from view.

At any time, the molding strips can be easily removed by working an instrument such as a screw driver under the side edges of the strips and springing the same from the clamping elements. In this way, the access may be had to the hollow interior of the joints between the frames through which at any time may be strung electric cables or other conduits if desired.

Usually the frame structures are of less height than the room in which they are intended to be used. It is sometimes desirable to apply a wall extension upon the top of the frame structures to reach the ceiling. Novel means is provided for supporting such a wall extension. The flat bar **42** previously described will serve as a support for such an extension. This bar extends across two or more frame units and is of a width to rest on the upwardly extending edges of the top channel members **16** as shown in Fig. 3. Secured to the top side of the strip **42** is the wooden member **44** having recesses cut therein at spaced points to enclose the nuts threaded to the bolts **64** as illustrated in Fig. 4. The wooden member or members **44** are secured to the strip **42** by bolts **70** as is clearly apparent in Fig. 3. Bolts **70** are preferably welded to the metal strip **42** before the wooden members **44** are secured thereto. The wooden members **44** extend horizontally along the top of the frame structures and form wooden railings to the opposite sides of which two parallel wooden panels **72** of natural or artificial composition may be secured. These last panels are cut so as to fit into the space between the top of the frame structures and the ceiling **74** thereabove.

When a wall partition is erected in accordance with this invention a very strong rugged structure results. It is composed of elements which are easily manufactured or obtained. No peculiar or oddly shaped elements are necessary at any point in the partition. When the partition is to be dismantled it is easy to remove the partition by unfastening the frame structure **10** one by one. The character of the molding strips and the accessibility of the bolts **52** associated with the clamping elements materially assist in this dismantling operation.

What I claim is:

1. A metal wall partition comprising, in combination, a plurality of similarly formed rectangular metal frames supported in edge abutting relationship upon a floor of a room, the top sections of each of said frames consisting of channel members opening upwardly from their respective frames, a metal strip of wider width than said channel members and of a length longer than the width of rectangular frame, said strip secured to the edges of the top channel members of at least two of the frames, an element of wood of less width than said metal strip secured to the top surface thereof, and vertical wall sections secured to said wooden element and having their bottom edges supported upon said metal strip.

2. A metal wall partition comprising, in combination, a plurality of similarly formed rectangular metal frames arranged edge to edge upon a floor, the top element of each frame consisting of an upwardly open channel, a metal strip extending across the top elements of at least two frames superimposing said open channel, said strip having a greater width than the width of said top elements and secured to the top elements of said two frames connecting them together, an element of less width than the strip extending along the top thereof and secured thereto, and a vertical panel secured to said last mentioned element and supported upon said metal strip.

3. A metal wall partition comprising, in combination, a plurality of similarly formed rectangular metal frames arranged edge to edge upon a floor, the top, bottom, and side elements of each frame being each channel shaped in cross section with the channel opening outwardly, fastening means including a pair of complementary clamping devices arranged on opposite sides of the wall partition and overlapping the opposing edges of the side elements of two adjacent frames, each clamping device having a part extending between the opposed edges of the side elements of said two adjacent frames holding said frames in spaced apart relationship, a floor attachment secured to the floor underneath the space between said two adjacent frames and having upturned end portions, the bottom web portions of the side elements of said two adjacent frames being seated at their lower ends upon said floor attachment between the upturned portions thereof holding said adjacent frames together.

4. A metal wall partition comprising, in combination, a plurality of similarly shaped rectangular frames erected upon a floor in side-by-side slightly spaced apart relationship, clamping means extending through the spaces between said frames from one side of the partition to the other and engaging the opposite outer sides of the side elements of each adjacent pair of frames to clamp them together, said means so shaped that they act as spacers separating each frame from

the other, means extending across the top of said frames connecting the same together, means attached to the floor upon which the frames are erected and including a part having its opposite ends provided with upward projections, the bottom web portions of the two side elements of each pair of adjacent frames engaged by said clamping means having their lower ends extending across said part between its upward end projections and being restrained by the projections from spreading movement whereby the two adjacent frames are held together.

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