

March 23, 1948.

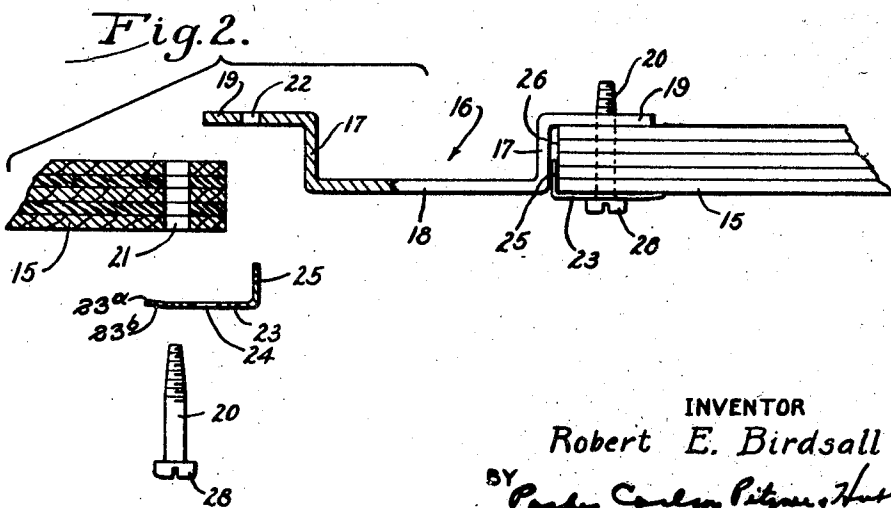
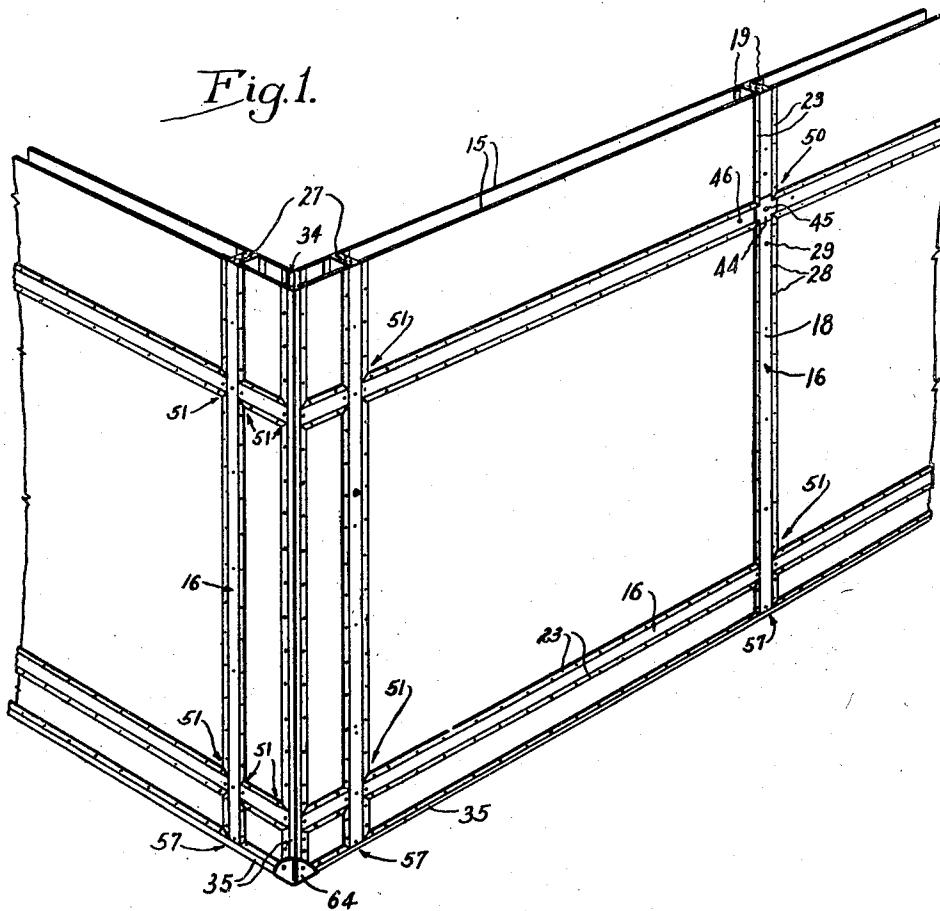
R. E. BIRDSALL

2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 1



INVENTOR
Robert E. Birdsall
BY *Parker, Carlson, Pitman & Huston*
ATTORNEYS

March 23, 1948.

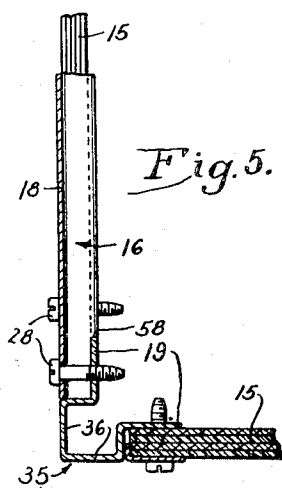
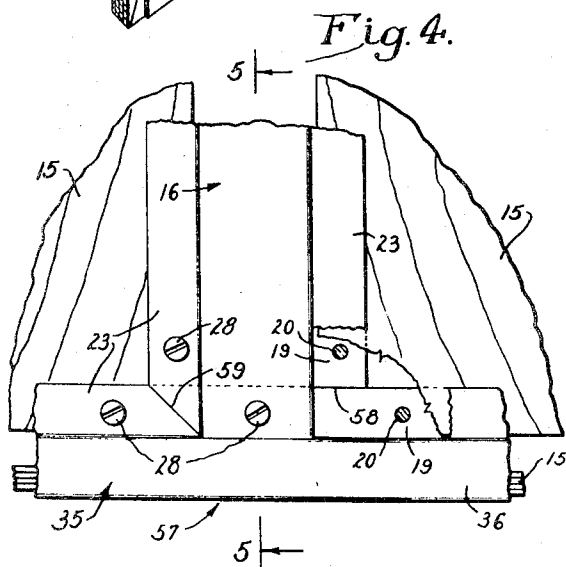
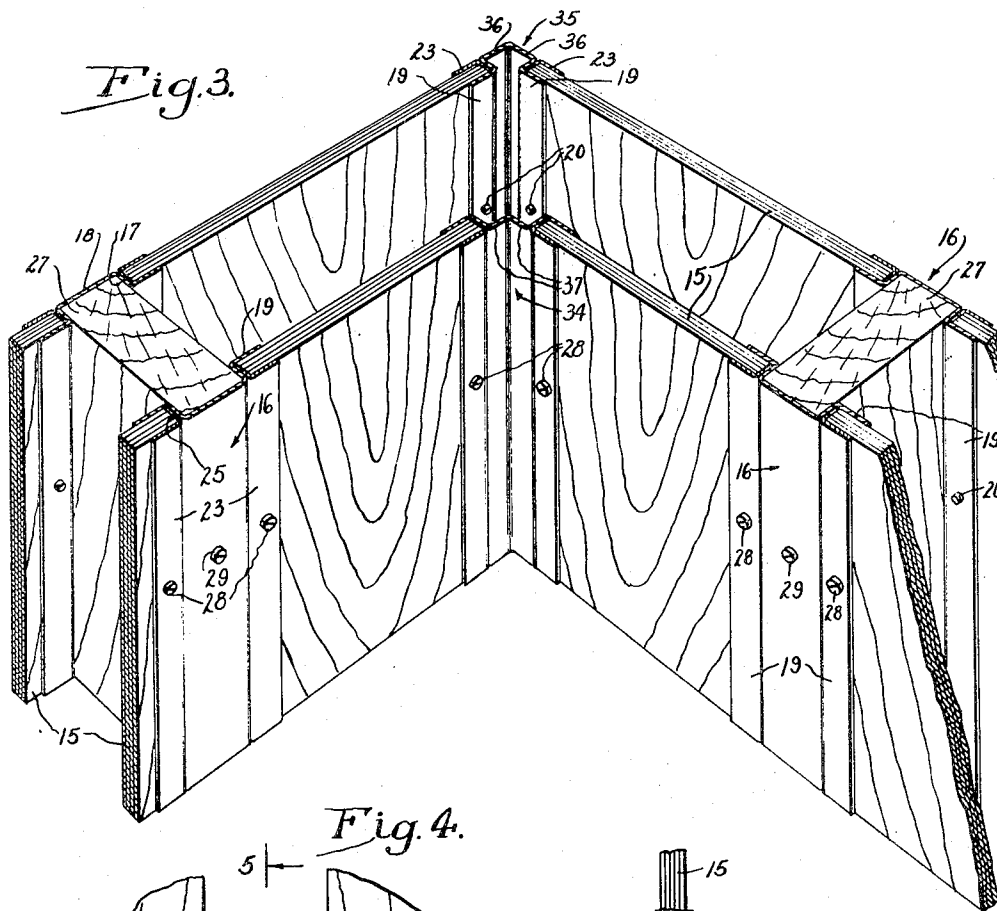
R. E. BIRDSALL

2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 2



INVENTOR

Robert E. Birdsall

BY *Parker, Carlson, Pitzner & Hubbard*
ATTORNEYS

March 23, 1948.

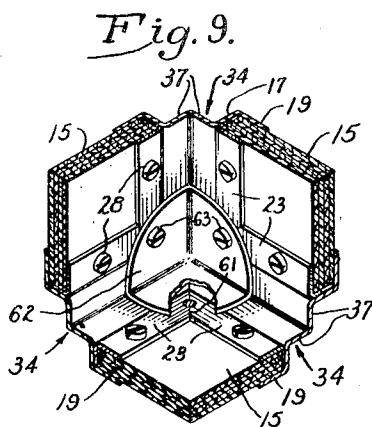
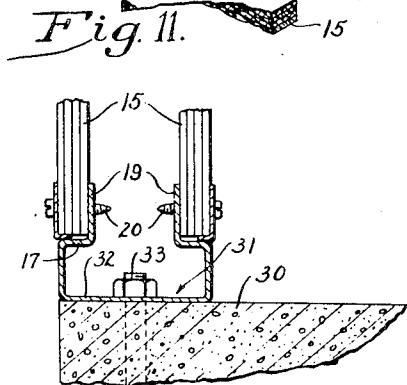
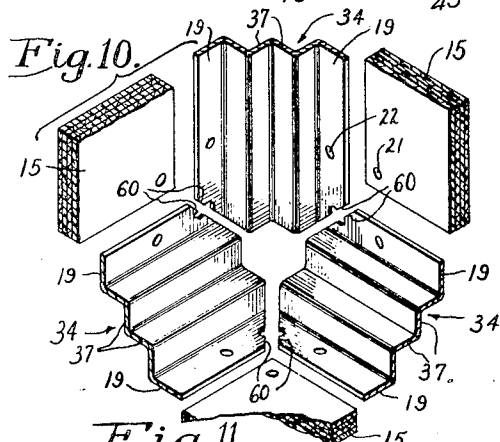
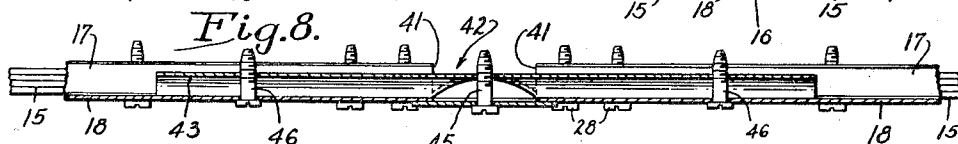
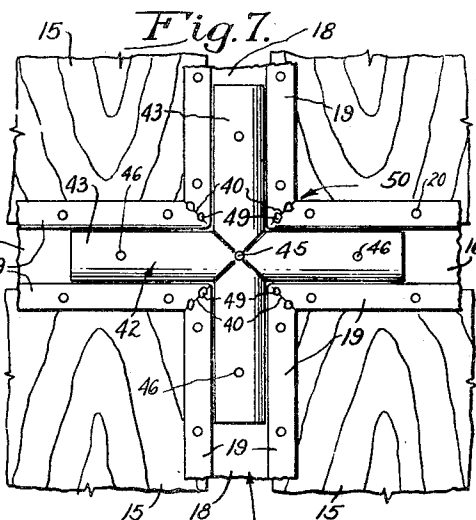
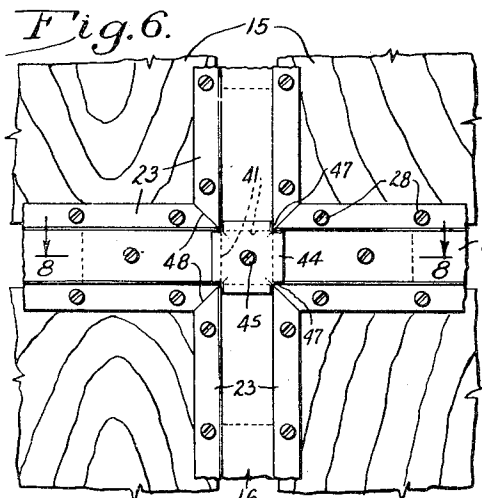
R. E. BIRDSALL

2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 3



INVENTOR,
Robert E. Birdsall
BY
Parker, Carlson, Pilgrimage & Huston
ATTORNEYS

March 23, 1948.

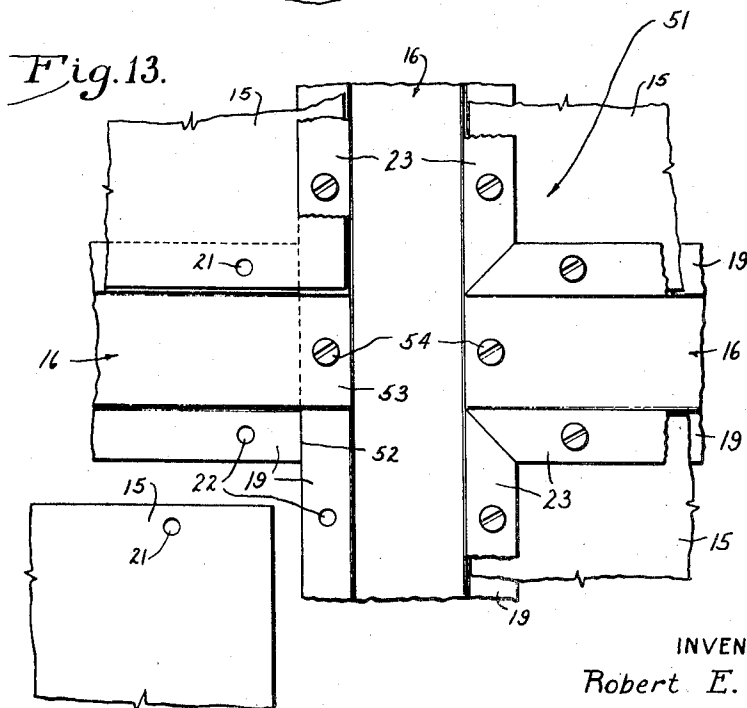
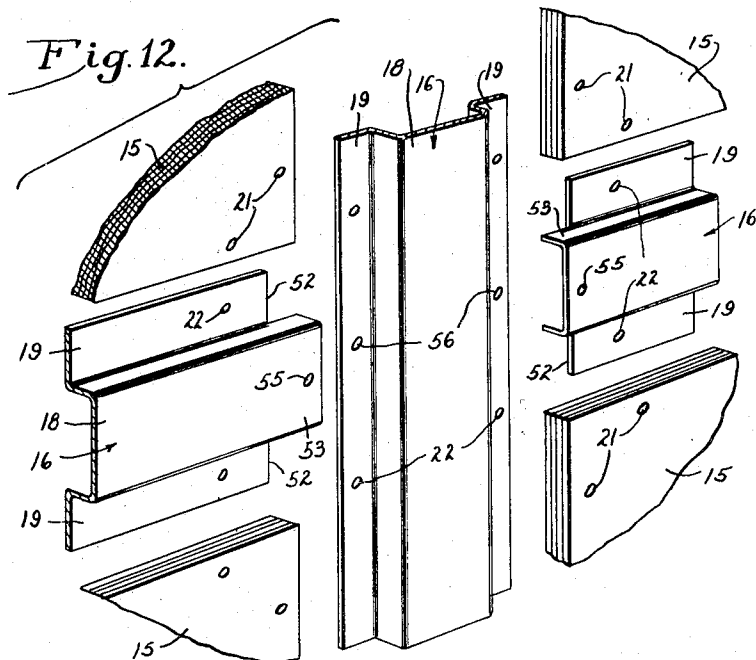
R. E. BIRDSALL

2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 4



INVENTOR

Robert E. Birdsall

BY *Parker, Carlson, Pittman & Hunsman*
ATTORNEYS

March 23, 1948.

R. E. BIRDSALL

2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 5

Fig. 14.

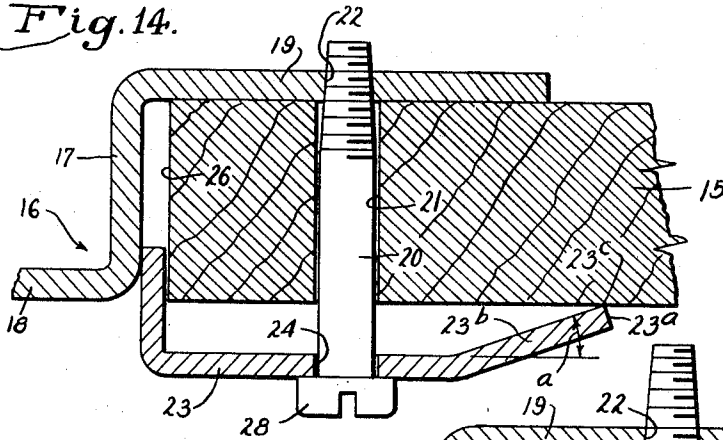


Fig. 15.

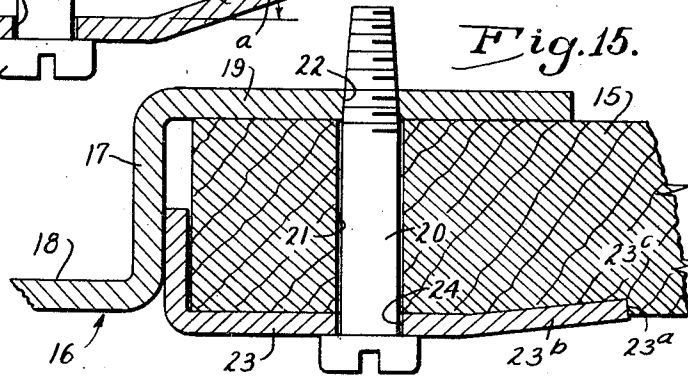


Fig. 16.

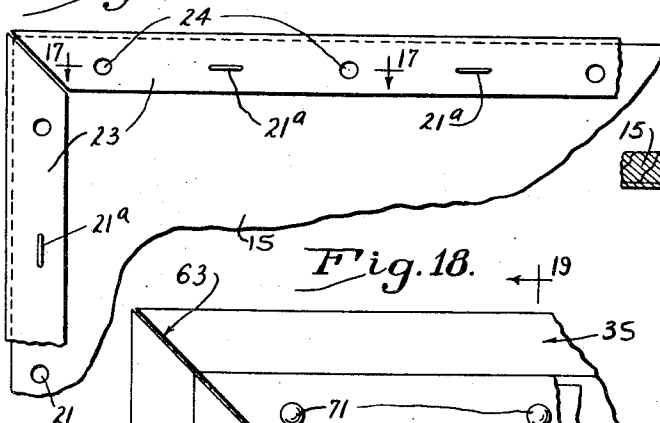


Fig. 17.

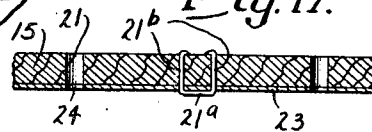


Fig. 18.

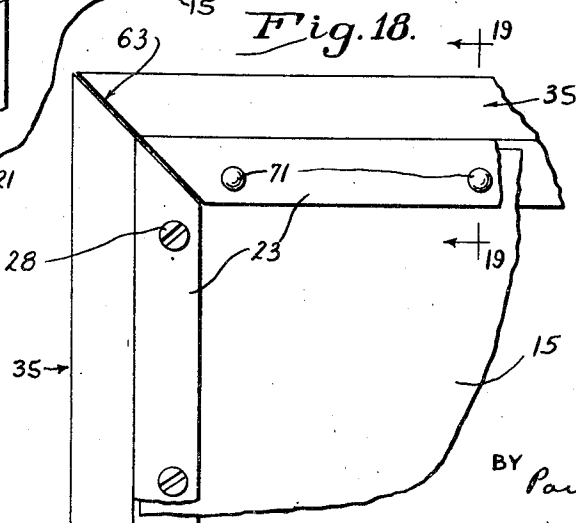
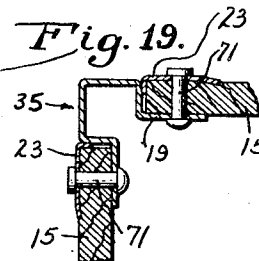


Fig. 19.



INVENTOR

Robert E. Birdsall

BY *Parker, Carlson, Pitzner, & Hunsicker*
ATTORNEYS

March 23, 1948.

R. E. BIRDSALL

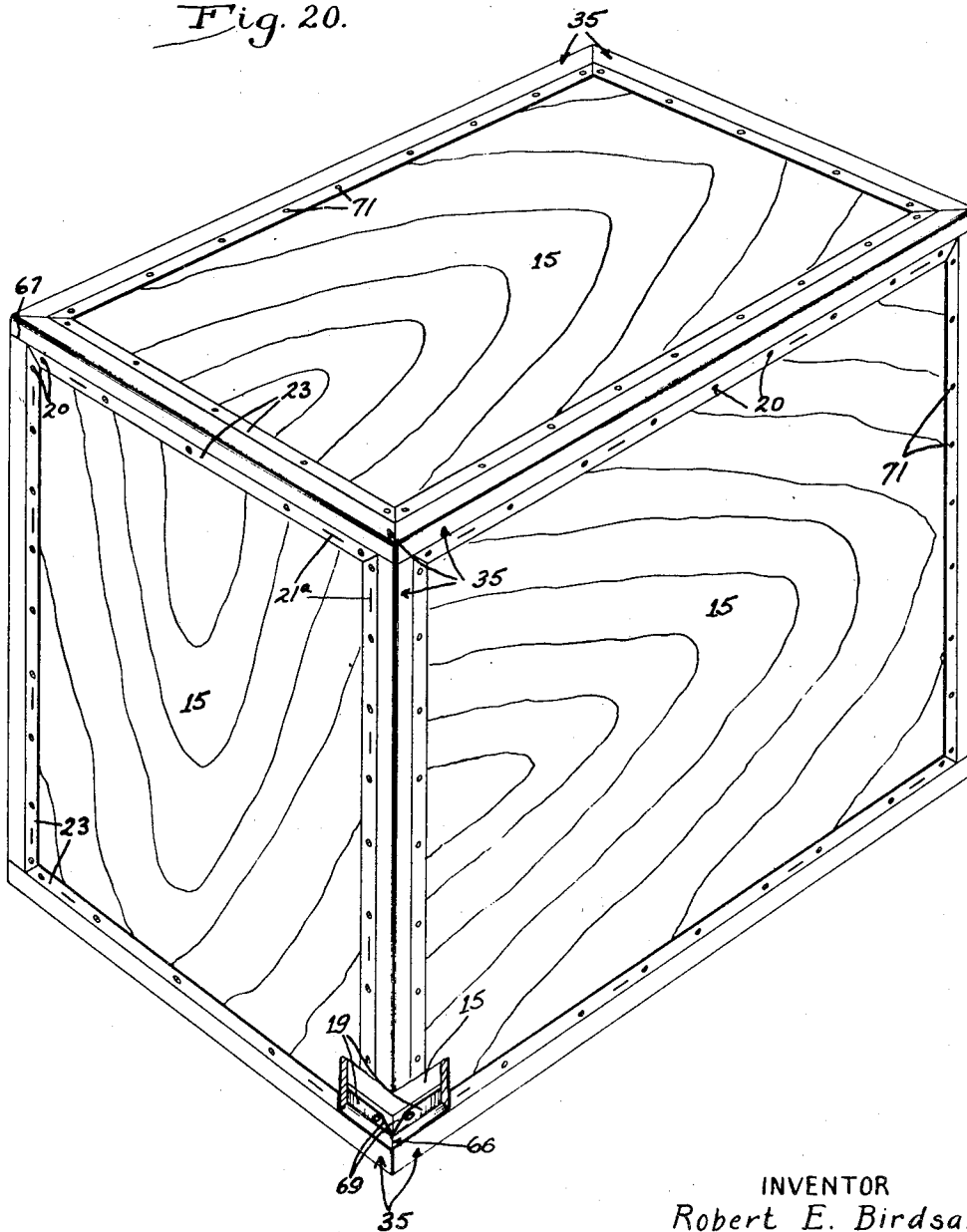
2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 6

Fig. 20.



INVENTOR
Robert E. Birdsall
BY *Parke, Carlson, Pitman & Thibault*
ATTORNEYS

March 23, 1948.

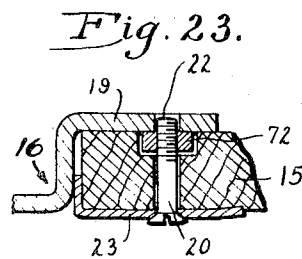
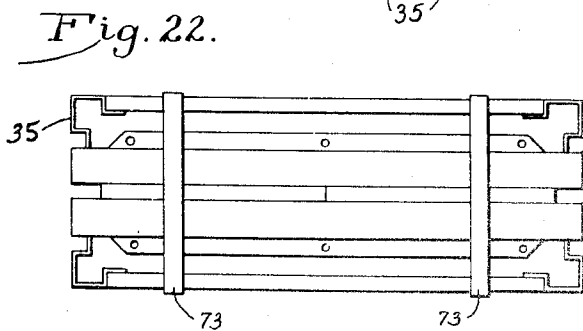
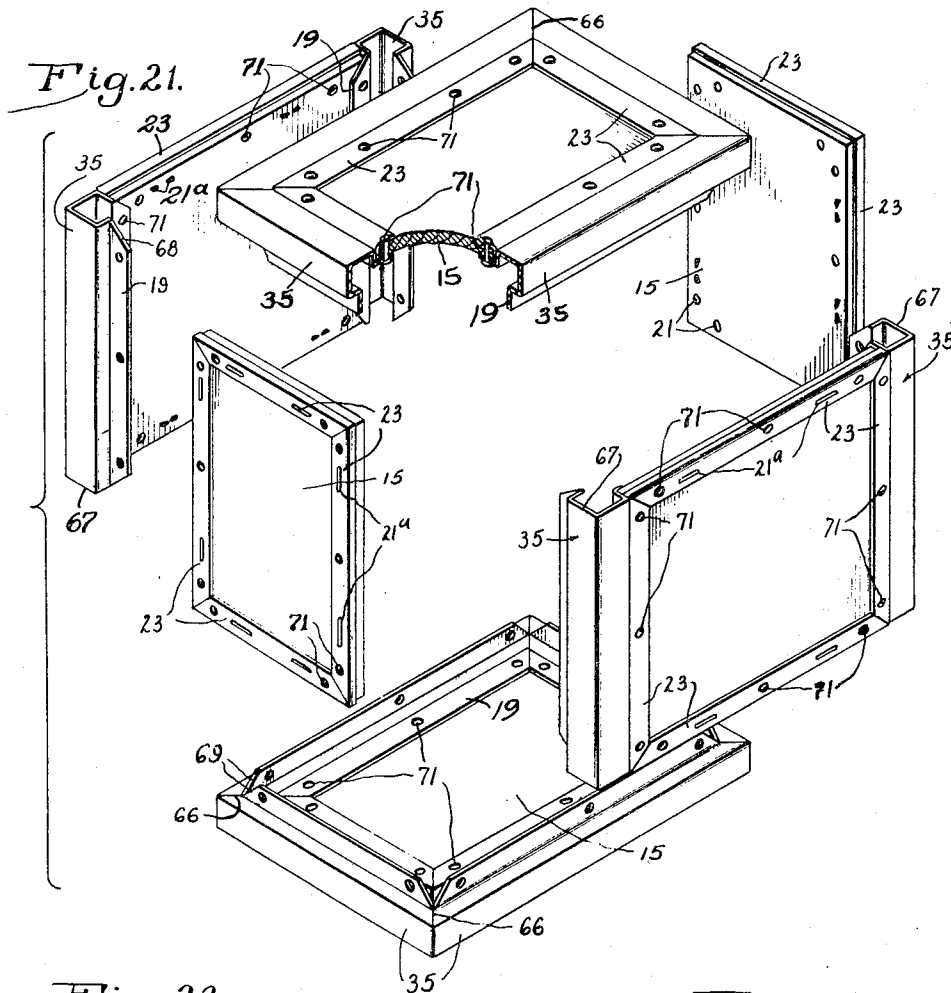
R. E. BIRDSALL

2,438,428

WALL CONSTRUCTION

Filed May 13, 1943

7 Sheets-Sheet 7



INVENTOR
Robert E. Birdsall
BY *Parker, Carlson, Pitzer & Hutton*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,438,428

WALL CONSTRUCTION

Robert E. Birdsall, Detroit, Mich., assignor of
twenty-four per cent to George R. Hotton,
Williams Bay, and one-eighth to J. Arthur
Moran, Delavan, Wis.

Application May 13, 1943, Serial No. 486,796

10 Claims. (Cl. 20—4)

1

This invention relates to the construction of walls from panels of plywood or the like.

The general object is to fasten the margins of adjacent panels together by butt and corner joints which are of simple and inexpensive construction, which are easy to fabricate as a unitary framework before attachment of the panels, and which facilitate assembly and fastening of the panels in place, and which impart substantial strength and rigidity to the final wall assembly.

Another object is to provide a novel metal joint construction which is not appreciably thicker than the panels which it connects, and which is adapted to receive and support a spacer element in the case of double panel walls.

A further object is to construct the metallic parts in a novel manner to minimize the possibility of bending in service use.

Still another object is to connect a plurality of the panels in a novel manner to form an enclosure which utilizes to an optimum degree the advantageous physical properties of plywood.

Another object is to provide permanent connections between the plywood panels and certain of the metal parts so as to facilitate dismantling and reassembly of structures embodying the improved wall construction and to protect the edges of the panels during handling and shipment.

The invention also resides in the novel character of the various corner joint constructions.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which

Figure 1 is a fragmentary perspective view of a portion of a double wall construction embodying the novel features of the present invention.

Fig. 2 is a cross-section through one of the butt joints with the parts of one side separated.

Fig. 3 is a fragmentary perspective view of the corner construction shown in Fig. 1.

Fig. 4 is a fragmentary elevational view of a corner T-joint.

Fig. 5 is a section taken along the line 5—5 of Fig. 4.

Figs. 6 and 7 are fragmentary external and internal face views of a cross joint.

Fig. 8 is a section taken along the line 8—8 of Fig. 6.

Fig. 9 is a perspective view showing the interior of a combined corner and bottom joint.

Fig. 10 is an exploded perspective view of the parts shown in Fig. 9.

2

Fig. 11 is a cross section of a modified form of bottom joint.

Fig. 12 is an exploded perspective view of the frame elements of a double T-joint.

Fig. 13 is an outer face view of the joint shown in Fig. 12.

Fig. 14 is an enlarged fragmentary sectional view of the parts of one of the joints in the course of assembly.

Fig. 15 is a similar view of the assembled joint.

Fig. 16 is a fragmentary view of one of the panels.

Fig. 17 is a section taken along the line 17—17 of Fig. 16.

Fig. 18 is a fragmentary view of a corner construction.

Fig. 19 is a section taken along the line 19—19 of Fig. 18.

Fig. 20 is a perspective view partially broken away showing a six-sided enclosure embodying joint constructions of the character shown in Figs. 18 and 19.

Fig. 21 is a perspective view showing the disassembled parts of the closure shown in Fig. 19.

Fig. 22 is an elevational view showing the parts of the enclosure stacked and assembled for shipping.

Fig. 23 is a view similar to Fig. 15 showing a modified form of fastening device.

While the invention is susceptible of various modifications and may be practiced in various ways, I have illustrated in the drawings and will describe here in detail the preferred embodiment and method. It is to be understood, however, that I do not intend to limit the invention by such specific disclosure but aim to cover all modifications and alternative constructions and methods falling within the spirit and scope of the invention as expressed in the appended claims.

The construction of paneled walls and enclosures therefrom in accordance with the present invention involves the use of various types of metallic members connecting the margins of adjacent panels, the kind of joint in each case being determined by the number and angular arrangement of the panel edges to be connected. To join two plywood panels 15 in a common plane a construction of the character shown in Figs. 2, 3, 14 and 15 is employed. In this, the main connecting member is a channel 16 having flat parallel sides 17, a flat intermediate section 18 perpendicular to and connecting the sides and two flanges 19 projecting outwardly from the ends of the sides 17 perpendicular to the latter. The

3

length of the sides 17 corresponds to the thickness of the panels 15 to be connected and is such that when one face of the panel is placed against a flange 19, the opposite panel face is substantially flush with the outer surface of the channel section 18.

The panels and flanges may be fastened together detachably by headed screw elements herein shown as so-called sheet metal screws 20 spaced along and extending through holes 21 in the panel margin and threading into holes 22 at the longitudinal centers of the flanges 19. The clamping pressure derived from the screws is distributed through the use of a strip 23 which may be of thinner stock than the channel and about the same width as the flanges 19. This extends along each panel margin 26 and on the side opposite a flange and is apertured at 24 to receive the screw with the head 28 of the latter seating against the outer surface of the strip.

To impart a neat external appearance, materially increase the strength and rigidity of the joint, and to provide a protective covering for the edges 26 of the plywood panel the strips 23 are formed with right angular flanges 25 narrower, in this instance, than the depth of the channel and disposed between one side 17 and the panel edge 26. The latter edge is spaced from the channel only enough to receive the flange 25 so that full abutting engagement between the channel, the flange, and the panel edge serves to resist relative bending of the connected panels. For the construction of the walls of buildings, truck bodies, heavy shipping containers, etc., one half inch plywood panels would ordinarily be used with the channel 16 formed from stock $\frac{3}{4}$ of an inch in thickness.

The strips 23 are constructed in a novel manner to minimize the danger of their free edge 23^a becoming bent up away from the panel surface in service use. For this purpose, the edge portion 23^b of the strip is initially bent at a substantial angle α relative to the remainder of the strip so that the corner 23^c will first come against the plywood as shown in Fig. 14 in the assembly. Then, as the strip is pressed into full contact with the panels, the corner will dig into the wood as shown in Fig. 15 for a substantial portion of the metal thickness. This minimizes the edge area exposed for engagement by articles moved across the panel surface and in addition, the plywood locks the edge 23^a against outward bending. Such digging of the edge 23^a into the plywood and effectual holding of the edge may be increased by cutting the edge by means of a rotary shearing tool so as to leave the edge somewhat beveled.

For certain applications, it is desirable to fasten the facing strips 23 permanently to the plywood panels 15 with all of the holes 22 and 24 aligned. This may be accomplished by staples 21^a (Figs. 16 and 17) driven through the strips 23 into the plywood at spaced intervals. Preferably the staples are longer than the panel thickness so that their ends 21^b may be clenched against the opposite panel surface. Such permanent fastening is effected while the strips and panels are held with the holes 22 and 24 in accurate register.

For other applications later to be described, the channels 18 as well as the strips 23 may be secured permanently to one or more of the panel margins. Preferably, this is accomplished by rivets 71 (Figs. 18 and 19) having one head engaging the strip 23 and the other the channel flange 19 and securely clamping the panel between the two.

4

Under certain conditions, such as in certain shipping containers, it is undesirable to leave the screw ends projecting beyond the channel flanges 19. To avoid this, buttons 72 (Fig. 23) may be welded to the inner surface of the flanges around the holes 22 so as to provide for an ample length of engagement with the screw 20. The button is disposed in a counter-bored end of the panel recess 21. Also, the strips 23 may be counter-sunk as shown in Fig. 23 to minimize the projection of the screw heads.

To permit of the rigid connection of the panels in double wall constructions such as are used for buildings, refrigerator compartments and the like, the channel sides 17 are spaced apart a distance just equal to the thickness of a standard stud member 27 which usually is referred to as being two inches thick by four, six, eight, etc., inches wide but actually, these dimensions are somewhat less in practice. Thus, a standard two-by-four is approximately $1\frac{1}{2}$ inches thick and $3\frac{1}{2}$ inches wide. In such a double wall (see Fig. 3), the channels 16 of the outer and inner panels are disposed with their open sides facing each other and in register so that opposite side edges of the stud 27 will be received snugly therein. By this arrangement, the ends of the screws 20 will project into the interior of the double wall so that both the inner and outer walls present a smooth artistic external appearance.

The two walls are fastened to the studs 27 by wood screws 29 entered through holes in the channel sections 18 and threading into the studs which serve as spacers. Thus, the panels, the metallic joints and the studs form box-like sections which are extremely rigid and resistant to bending. The air space between the panels and studs is cellular and imparts good insulating qualities to the wall. If desired, the cells may be filled with insulating material to further improve the insulating qualities.

Where the inner and outer walls are to be fastened to a support such as a concrete floor 30 (Fig. 11), a special channel 31 may be employed. This has flanges 19 parallel to each other and two sides 17 disposed in a single plane for attachment of the panel margins as described above. The intermediate section 32 of this channel is U-shaped with the wide portion clamped against the floor by the usual bolt 33. The panels of the two walls are thus held in the proper spaced relation.

The channel 16 modified by bending may be utilized to form inner and outer corner channels 34 and 35 for uniting panels which are disposed at right angles to each other. Thus, by bending central section 18 of the butt joint panel 16 outwardly and the sides 17 toward each other, the channel is formed to a generally square cross-section with portions 36 disposed perpendicular to each other to form an outside corner. The inner corner channel 34 is formed by bending the channel section 18 previously described reversely to the bending of the outside corner channel 35 so that the outer surfaces of the perpendicular sections 37 define a V-shaped groove.

The panel margins are connected to the corner members in the same manner as in the butt joint previously described, and the screws 20 are entered from the same sides. The outer surfaces of the sections 36 are flush with the outer panel faces as are the inner surfaces of the inner corner sections 37, and the strips 23 are secured along the panel edges the same as in the butt joint previously described. A corner thus constructed

5

as shown in Fig. 3 presents a smooth appearance both internally and externally in spite of the fact that the screw ends project a substantial distance through the channel flanges 19. It is extremely rigid owing to the increase in bending resistance of the channels resulting from their angular deformation as a result of which no spacers are required ordinarily in the corner joints of a double wall construction.

The four corners of panels lying in a common plane may be joined in several ways. One illustrated in Figs. 6 to 8 may be referred to as a cross joint 50 and involves mitering the flanges 19 of four channels 16 as indicated at 40 (Fig. 7) and cutting off the sections 18 flush with the outer ends of the miter joints, as shown at 41 (Fig. 6). The four ends are then held in right angular relation by a rigid cross 42 having arms 43 of curved cross-section snugly seated in the different channels. A flat cross 44 lies against the outer faces of the channels which are clamped between the two crosses by a screw 45 entered through the cross 44 and threading into the center of the cross 42. The arms 42 are fastened to the individual channels by screws 46. The notched corners 47 of the cross 44 receive the corners of miter joints 48 between the strips 23 with which the cross is substantially flush. If the joint is in a permanent wall construction, the channels may be held together by tack welds 49 thereby facilitating assembly of the joint members.

A somewhat more rigid connection may be formed with a T-type joint 51 as shown in Figs. 12 and 13. In this, one channel 16 is extended through the joint and its flanges 19 are secured to one edge of all four panels 15. The ends of the flanges 19 of the cross-channels are cut away as indicated at 52 for a distance corresponding to their width, so as to abut the edges of the flanges 19 on the continuous channel when the projecting channel ends 53 abut the sides 17 of the latter channel. The strips 23 extend continuously along the continuous channel and these abut the ends of the strips of the cross channels. The parts thus assembled are connected in this double T arrangement by screws 54 entered through holes 55 and threading into holes 56 in the continuous flanges 19. For certain applications later to be described, it is desirable to avoid connecting the abutting channels rigidly which may be accomplished by omitting the screws 54. In the joint thus constructed, one margin of each panel lies against the continuous flange 19 and the other lies against the flanges 19 of the cut-off channels. They are clamped in place by the strips 23 as previously described.

A single T-type joint 57 (Figs. 4 and 5) may be employed in connecting two panels lying in a common plane to a perpendicular panel which may, for example, be the top or bottom of a box constructed in accordance with the present invention. In such a case, an angular corner channel 35 would be used at the corner and abutted on one side by the end of a plain channel 16 whose flanges 19 are cut away as shown at 58 to abut the flange 19 of the channel 35. The joint thus formed receives the corners of the coplanar panels and the margin of the perpendicular panel. The strips 23 are mitered as shown at 59.

Where three panels all disposed in different planes are to be united to form a smooth inner corner, the flanges 19 of three joined channels 34 are mitered at 60 as shown in Fig. 10 and the intermediate channel sections may be cut off

6

square with the ends of the miters. The strips 23 are also mitered at 61. In the case of an inside corner, the hole resulting from such cutting is covered by a corner shoe 62 fastened by sheet metal screws 63 entering the strips 23 at the miter joints 61. For an outside corner such as would be provided on the outside of a box or the like, the channels 35 are similarly cut with the flanges 19 and the strips 23 mitered. The corner hole is covered by a cap 64. (Fig. 1.)

The various joint constructions above described make possible a novel method of assembling a wall or box structure whether this be single or double. Assume, for example, that it is desired to fabricate a double wall box-like enclosure of the character shown in Fig. 1, the size and shape of the enclosure determining the number and character of the various kinds of channel members that are used. After cutting of the channels to length and according to the kind of joints to be formed, the first step is to arrange the side and corner channels 16, 34, and 35 vertically in inner and outer pairs and connect these by the horizontal plain channels and the bottom corner channel using the cross double T, single T, and corner joint connections described above, whereby to form a rigid frame structure as shown at the right of Fig. 1. Next, the inner and outer frames are connected by inserting studs 27 between their registering channels 16 and securing these channels to the studs. The sides 17 and the flanges 19 of each rectangular group of channels will form outwardly facing recesses each adapted to receive one panel 15 which may be of different size as shown according to the size of the box and the rigidity desired at the corners. After the panels have been placed in the different frame recesses, the strips 23 are placed against the outer panel faces with their flanges 25 disposed between the panel edges and the adjacent channel, after which the panel edges are clamped in place by the screws 20. Finally the corner pieces 62 and 64 are attached to complete the structure. In addition to facilitating assembly of the walls, the various metallic connecting members described above may be standardized and therefore manufactured at low cost. The channels 16, 34, and 35 are formed from metal strips of the same widths and each has right angular sides and flanges 17 and 19 of the same construction so that the angular channels are formed simply by bending the plain channels longitudinally. Cutting of the channels to miter the ends and to provide for the screw fastening are simple operations which further add to the cheapness of the construction and the rapidity with which it may be constructed and assembled.

By employing detachable fastening elements to connect at least certain ones of the metal parts and panels, the wall may be disassembled easily and quickly and the same parts used in different locations. As a result, the invention has a wide range of utility being useful for refrigeration compartments, house walls, concrete forms, barracks, shipping containers, truck bodies, etc.

A laminated plywood panel is capable of withstanding to a remarkable degree many times greater than a solid wood panel of equal thickness stresses which are applied generally edge-wise of the panel, this property apparently being due to the resiliency of the panel in this direction which enables the panel to absorb shocks. I have discovered that by arranging the

ends of the metal connecting members above described in a novel manner so as to transmit the shocks incident to handling directly to the panels and in an edgewise direction, advantage may be taken of this property to produce a six-sided box or complete enclosure which possesses substantially greater strength for its weight than wooden boxes heretofore produced.

Based on this discovery, I avoid the use of any rigid connections between the metallic channels and utilize these parts, not as a rigid framework, but merely to connect the adjacent plywood panels and permit such relative flexing between the channels and between the connected panels as to insure transmission of the external stresses to the panels in an edgewise direction. A box constructed in this manner is shown in Fig. 20 and parts thereof are shown in exploded relation in Fig. 21, the sizes of the metal parts being exaggerated for clarity. The channels 35 around the peripheries of two of the walls, in this instance the top and bottom, are fully mitered together at joints 66 while two side channels are formed with squared ends 67 which abut against the sides of the top and bottom channels with their flanges 19 beveled as indicated at 68 to form a miter joint with the bevel portions 69 of the top and bottom channels. The cap strips 23 on all of the panels are similarly mitered. Neither the channels nor the cap strips need be disposed in full abutment at the miter joints, but instead, may be separated as shown in Fig. 18, so as to allow for dimensional variations in manufacture. Or, where it is desirable to cover the corners externally with a cap 64 as illustrated in Fig. 1, the holes for receiving the screws that hold the cap in place may be formed at the miter as shown in Fig. 10 so that the halves may separate, if necessary, a rigid connection of any two adjacent channels thus being avoided.

As a result of such corner constructions, the adjacent channels, even though they may abut each other at the miter joints, are free to flex or bend relative to each other and therefore do not form a rigid frame structure. Thus, when the box so constructed is dropped on one corner, the applied forces are transmitted to the three connected panels in directions edgewise of the latter so that the resulting shock is absorbed by these panels instead of being resisted by the metal parts which, if rigidly connected, would become bent under severe stresses. As a result, the metal channels are not called upon to sustain the shocks which are absorbed by the panels due to their resiliency in edgewise directions.

The channels themselves also contribute to the flexibility and shock absorbing ability of the box as a whole. This is because the sides of the angle of the individual channels are free to bend relative to each other along with the panels to which they are connected.

As a result, it is possible to construct a box of given strength by utilizing plywood panels and metal channels of substantially lesser thickness than would be possible if the channels were connected rigidly at the corners.

Shipping containers constructed in accordance with the present invention as above described may be knocked down and the parts arranged in compact form for shipment to a place of initial use or of reuse. To facilitate disassembly and reassembly and minimize the labor involved, the channels 35 are secured permanently as by rivets 71 around all four margins of two of the panels, in this instance the top and bottom. Two of the

side panels are similarly secured along two opposite margins to the channels having the squared ends 67. Cap strips are also fastened to the other margins of these panels by staples 21. No channels are secured to the remaining two panels which have cap strips stapled to all four margins. Thus, all of the metal parts of the box are secured permanently to the panels and such arrangement not only reduces labor in assembly and disassembly but also affords effectual mechanical protection to all of the panel edges during handling and shipment.

The panels constructed as described above may be assembled in a compact package as shown in Fig. 22. In this, the two panels which carry only the cap strips are disposed between the channels on the other two side walls which are arranged side by side and disposed between the top and bottom panels. The panels thus stacked are held together by encircling straps 73.

This application is a continuation-in-part of my co-pending application Serial No. 432,957, filed March 2, 1942, which has become abandoned.

I claim as my invention:

1. A double wall joint comprising two U-shaped channels spaced apart with their open sides facing each other, said channels having widths corresponding to a stud member of standard size, a stud member having its opposite margins snugly received in said channels, pairs of panels forming a double wall with the edges of each pair substantially in abutment with the opposite sides of one channel and with their external surfaces flush with the outer surface of the closed end of the channel, flanges on the channel legs overlapping the panel edges on the inner sides thereof, members overlapping the margins of said panels and the outer surfaces thereof and having flanges disposed between the panel edges and the adjacent channel side, and fastening elements extending through said members and said channel flanges and clamping the panel between the two.

2. A double wall joint comprising two U-shaped channels spaced apart with their open sides facing each other and in register, a stud member with its opposite margins snugly received in said channels, pairs of panels forming a double wall with the edges of each pair substantially in abutment with the sides of one channel and with their external surfaces flush with the outer surface of the intermediate closed portion of the channel, flanges on the channel sides overlapping the panel edges on the inner sides thereof, members overlapping the margins of said panels and the outer surfaces thereof and having flanges disposed between the panel edges and the adjacent channel side, and fastening elements extending through said members and said channel flanges and clamping the panel between the two.

3. A double wall joint comprising two U-shaped channels spaced apart with their open sides facing each other, a stud member having its opposite margins received in said channels, a pair of panels forming a double wall with the edges of each pair substantially in abutment with the opposite sides of one channel, flanges on the channel edges overlapping the panel edges on one side thereof, strips lying against the other side of each panel adjacent the margins thereof, and fastening elements extending through said strips and said channel flanges and clamping the panel between the two.

4. A double wall joint comprising two U-shaped channels spaced apart with their open sides facing each other, said channels having widths cor-

9

responding to a stud member of standard size, a stud member of such size having its opposite margins received in said channels, a pair of panels forming a double wall with the edges of each pair substantially in abutment with the opposite sides of one channel, flanges on the channel edges overlapping the panel edges on one side thereof, members lying against the other sides of said panels adjacent the margins thereof, and fastening elements extending through said last mentioned members and said channel flanges and clamping the panel between the two.

5. In a paneled wall construction, the combination of three channels extending at right angles to each other and each having spaced sides perpendicular to each other and perpendicular flanges projecting outwardly from the edges of said sides, each of said flanges having one end lying in the same plane as and abutting one end of the adjacent channel flange at a miter joint, panels having corners lying against said flanges and the sides of two of said channels, a shoe having three surfaces perpendicular to each other and covering the panel corners on the sides thereof of opposite said flanges, and means extending through said shoe and said flanges and clamping said panels therebetween.

6. The method of building a double paneled wall from rectangular panels and channels having right angular flanges at their open sides, said method comprising mounting said channels in parallel pairs spaced according to the width of said panels with the open sides of the channels of each pair facing each other, connecting adjacent pairs of channels with pairs of similar cross channels spaced according to the length of said panels whereby to form rigid inner and outer frame structures each having outwardly facing rectangular recesses each adapted to receive one of said panels, rigidly connecting the inner and outer frames by studs each having opposite edges seated in the channels of one of said pairs, placing panels in the respective recesses against said flanges, and clamping the margins of said panels against said flanges.

7. A double wall construction comprising a panel, a channel of U-shaped cross section with its opening facing toward said panel, a stud member having one margin rigidly secured to said panel and the opposite margin received in said channel and secured thereto, a pair of panels disposed on opposite sides of said channel with their adjacent margins substantially in abutment with the sides of the channel, flanges integral with and turned outwardly from said channel sides and providing a backing for said panel margins, separately formed clamping members lying against said panel margins on the sides thereof opposite said flanges, and fastening elements extending through said panel margins, said members, and said channel flanges and clamping the same rigidly together.

8. A double wall construction comprising a U-shaped channel, a stud member having one margin received in the groove of said channel, means extending through said channel and anchored in said stud member to secure the two rigidly together, a pair of panels having their adjacent margins disposed substantially in abutment with opposite sides of the channel and their outer surfaces substantially flush with the outer surface of the bottom of the channel, a panel spaced from said panels and rigidly secured to the opposite margin of said stud member, integral flanges on

10

opposite sides of said channel disposed between the spaced panels and providing a backing for said margins, and fastening elements extending through said panel margins and said channel flanges to clamp the two rigidly together.

9. In a wall construction, the combination of two panels with their edges disposed parallel and adjacent to each other, a channel having legs extending at right angles to at least a portion of the intermediate channel section and disposed substantially in abutment with the edges of said panel, flanges integral with and turned outwardly from the channel legs and providing a backing for the panel edges, separately formed clamping members extending along the edges of said panels on the sides thereof opposite said flanges, said members having right angular flanges disposed between the channel and the abutting panel edge, and fastening elements extending through said clamping members, said panels, and the opposite channel flanges to clamp the same firmly together.

10. In a wall construction, the combination of two panels lying in a plane with the edges of their margins disposed adjacent to each other, a channel having spaced legs disposed adjacent and substantially in abutment with said edges of the respective panels, flanges integral with the ends of said channel legs and extending at right angles thereto along one side of said panels so as to provide a backing for the panel margin, members lying against and extending along the sides of said panel margins opposite said flanges, fastening elements at spaced intervals along said panel margins extending through said members and said panel margins and anchored in said backing flanges so as to draw the members and flanges together and clamp the panel margins rigidly to said channel, and a supporting framework for the wall on the side of said panels opposite said clamping members and including frame members projecting into said channel between the legs thereof and rigidly secured to the channel.

ROBERT E. BIRDSALL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
906,208	Dewey	Dec. 8, 1908
985,367	Pitney	Feb. 28, 1911
1,089,538	Davidson	Mar. 10, 1914
1,129,658	Foy	Feb. 23, 1915
1,171,762	Wilkinson	Feb. 15, 1916
1,230,586	Lister	June 19, 1917
1,235,948	Wheary	Aug. 7, 1917
1,417,102	Nyman et al.	May 23, 1922
1,542,481	Spiro	June 16, 1925
1,612,644	Nicholay	Dec. 28, 1926
1,800,609	Drake	Apr. 14, 1931
1,857,490	Barrett	May 10, 1932
2,110,841	Maier	Mar. 8, 1938
2,121,213	Small	June 21, 1938
2,138,470	Bischof	Nov. 29, 1938
2,183,065	Feykert	Dec. 12, 1939
2,205,826	Small	June 25, 1940
2,280,094	Madsen	Apr. 21, 1942
2,307,560	Apel	Jan. 5, 1943

FOREIGN PATENTS

Number	Country	Date
500,884	Great Britain	Feb. 17, 1939