J. P. COPLAND.

METAL DOOR AND PARTITION.

APPLICATION FILED OCT. 17, 1917.

1,366,060.

Patented Jan. 18, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

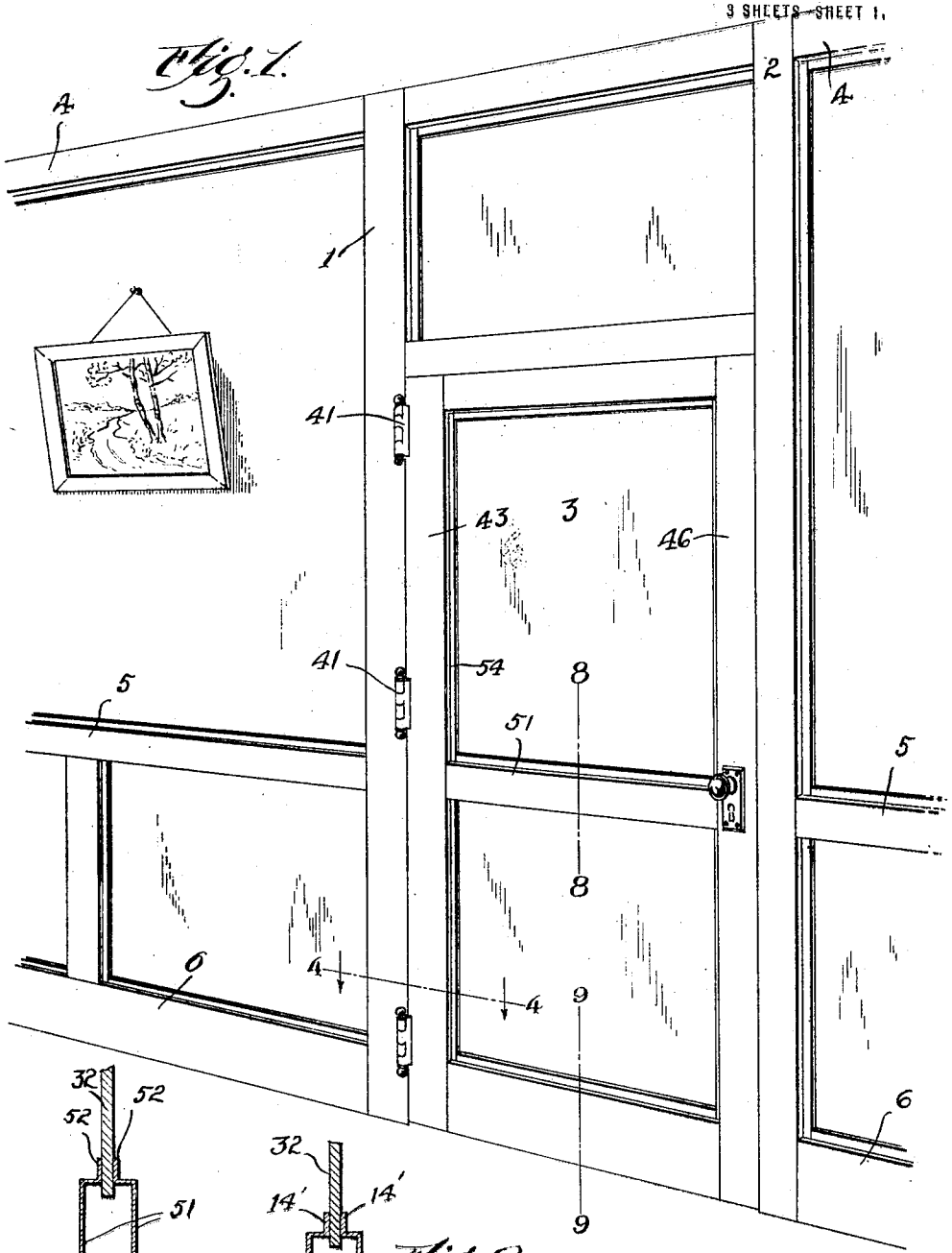






Fig. 8.

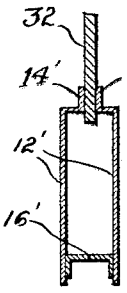



Fig. 9.

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3 SHEETS—SHEET 2.

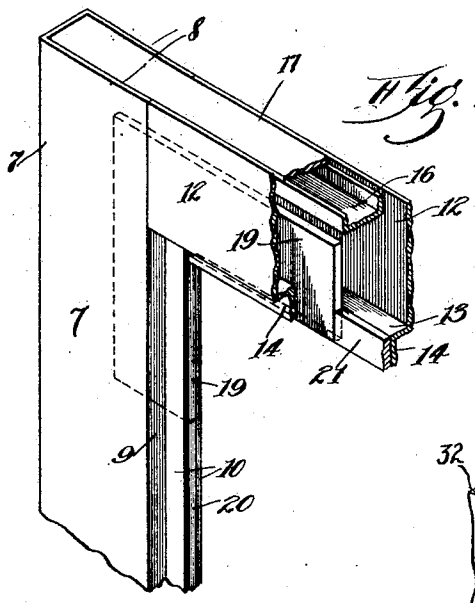



Fig. 2.

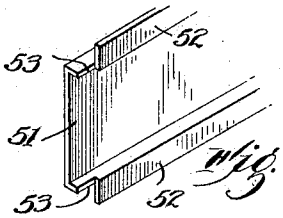



Fig. 13.

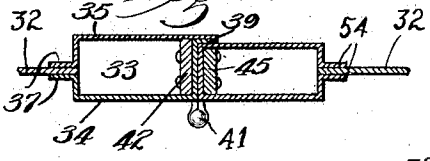



Fig. 4.

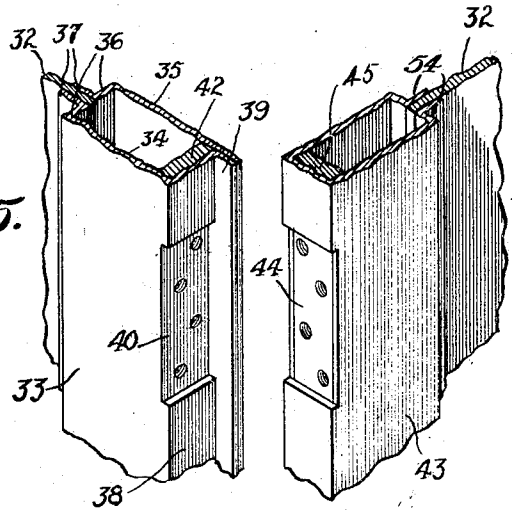



Fig. 5.

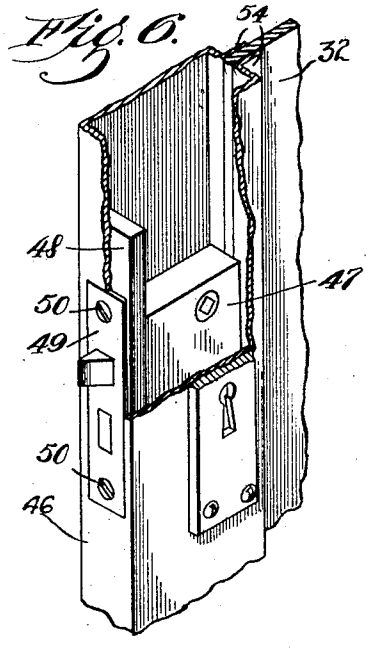



Fig. 6.

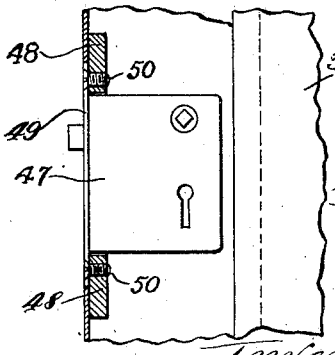



Fig. 7.

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3 SHEETS—SHEET 3.

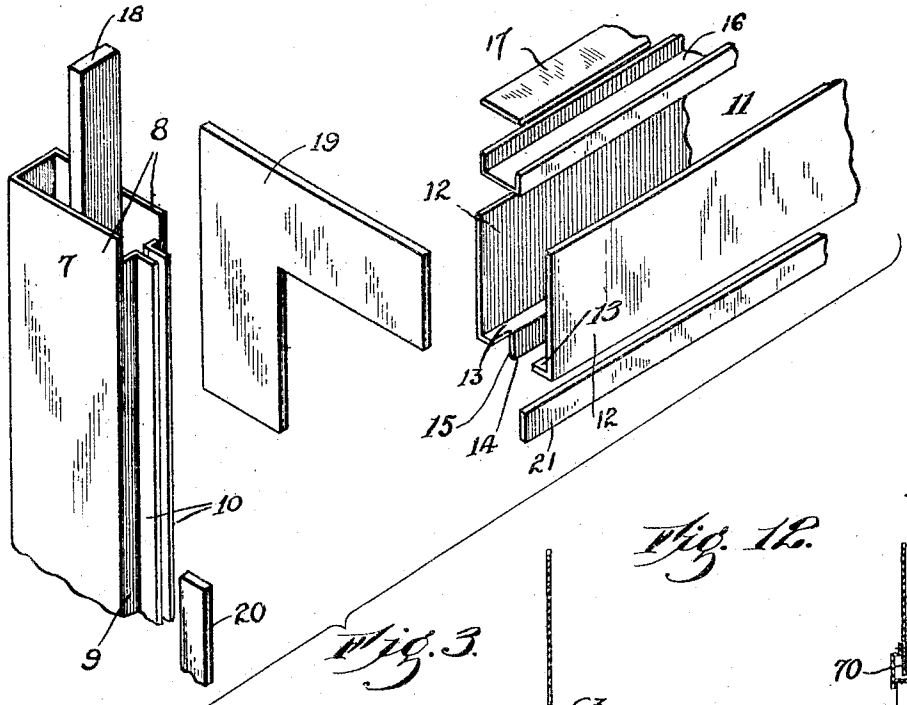



Fig. 3.

Fig. 12.

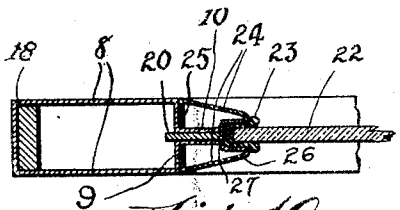



Fig. 10.

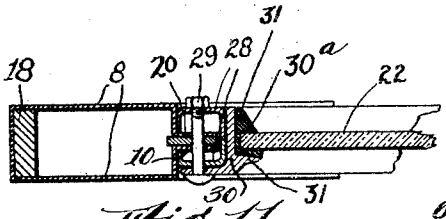
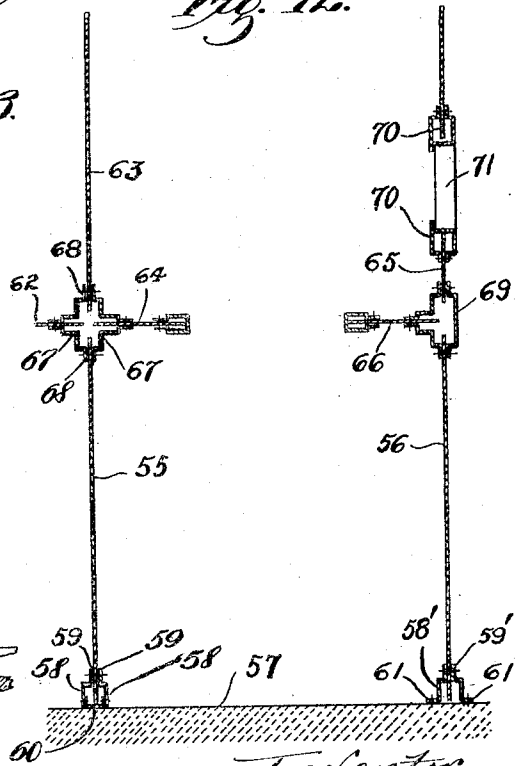



Fig. 11.




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# UNITED STATES PATENT OFFICE.

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## METAL DOOR AND PARTITION.

1,366,060. Specification of Letters Patent. Patented Jan. 18, 1921.

Application filed October 17, 1917. Serial No. 197,003.

*To all whom it may concern:*

Be it known that I, JAMES P. COPLAND, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Metal Doors and Partitions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to building constructions and especially to constructions to be employed in the erecting of doors and partitions. Generally stated, the object of the invention is a door particularly adapted for coöperation with partition work as parts of partitions between rooms, or a door and partition which may be standardized and shipped from one portion of the country to the other wherever partition work is desired. By means of my invention I am enabled to standardize the construction of the parts of the door and partition whereby the same may be economically manufactured and the assembled articles or parts thereof sold at competitive prices. The number of parts are reduced to a minimum and are of the simplest construction whereby the assembling of the door and the partition is rendered a simple and easy matter either at the manufacturing plant or at the place of installation, not necessitating the employment of expert mechanics for the assembly work.

The partition frame work is made of sheet metal, and the uprights and transverse members are preferably formed into hollow members either by means of single pieces of sheet metal whose edges are bent around and closed upon themselves or by two or more complementary pieces shaped to give the desired form. This provides a very light weight construction the rigidity of construction whereof is not impaired thereby. Briefly the construction embodies a frame work consisting of top, bottom, side and transverse members, and bridging plates which may be "kick" plates of various materials as sheet metal, steel, Beaver wood, Upson wood, or may be of special panes or standard panes of glass as for instance Fenestra sash and Lupton sash. The frame work is so constructed that it may accommodate plates of the various standard constructions and lengths.

For a better understanding of the above noted features of the invention and others which will hereinafter appear, reference may be had to the drawings accompanying this application and illustrating certain of the forms which this invention is capable of assuming wherein Figure 1 is a perspective view of a partition with a door opening therein and containing a door. Fig. 2 is a perspective view of the corner construction of the frame work. Fig. 3 is a view similar to Fig. 2 showing the corner construction in disassembled view corresponding to the line 4—4 of Fig. 1. Fig. 4 is a sectional view through the door jamb and one of the door stiles. Fig. 5 is a perspective view of a portion of the door jamb and door stile illustrating a mode of securing the hinges thereto. Fig. 6 is a perspective view of the other stile of the door with parts broken away and showing the lock assembled therein. Fig. 7 is a view similar to Fig. 6 showing a means of securing the lock to the edge of the door. Fig. 8 is a section corresponding to the line 8—8 of Fig. 1 through the transverse member or central rail of the door. Fig. 9 is a sectional view corresponding to the line 9—9 of Fig. 1 through the bottom rail of the door. Fig. 10 is a section through one of the members of the frame work illustrated in Fig. 2 illustrating a mode of attachment of the glass pane thereto. Fig. 11 is a view similar to Fig. 10 showing a different method of attaching the pane of glass. Fig. 12 is a diagrammatic view of a system of partitioning. Fig. 13 is a perspective view of the end of a cross piece disposed intermediate the ends of the longitudinal frame members.

Referring to the drawings where like numerals refere to like parts throughout, a partition frame work is illustrated which embodies the upright members 1 and 2 (Fig. 1) for the reception of a door 3 thereinbetween and the horizontal transverse members 4, 5, and 6. All of these members are of sheet metal and are preferably formed hollow in order to secure rigidity of construction together with lightness in construction. The upright side and top members may be formed in the manner indicated in Figs. 2 and 3. These views illustrate the corner construction wherein the upright 7 (which may be either an upright for a door or one of the uprights for the partition) is formed from a single piece of sheet metal bent into

U shape form with side members 8. The edges of the side members 8 are bent inwardly to form web sections 9 at right angles thereto and the webs 9 are then bent at right angles thereto to form the laterally projecting flanges 10, the flanges 10 being spaced apart to receive either filling strips or kick plates as hereinafter set forth. This upright member 7 has the upper parts of its flanges 10 and web portions 9 cut away for the reception of the end of the transverse section 11. This transverse section is conveniently formed of two similarly shaped elongated pieces of sheet metal which comprise vertically disposed webs 12 having their lower edges bent at right angles thereto to form shoulders 13 and vertically disposed flanges 14 depending from the edges of the shoulders 13. In the assembling, the two web members 12 are brought together with their flanges 14 juxtaposed and spaced apart a distance equal to the distance of the flanges 10 of the member 7 from each other and are positioned with the ends of their shoulders 13 resting on the ends of these flanges 10, the flanges 14 being cut away at 15 to clear the flanges 10. Either before the upright 7 and the transverse member 11 are brought together or thereafter, as is more convenient, the upper edges of the two webs 12 are bridged by a channel 16 arranged longitudinally thereof and positioned therebetween near their upper edges. This channel 16 serves as a spacer and also as a bracer for the two webs 12 and may be secured thereto in any convenient manner as by riveting or spot welding. When this channel 16 is a part of a top transverse member it is convenient to seal the interior portion thereof against the entry of dirt and other foreign matter by positioning thereover and thereupon an elongated cover plate 17, which may also be secured to the edges of the side flanges of the channel in any suitable manner as by welding. It is noted that the channel 16 and its cover plate 17 extend beyond the ends of the webs 12 and project into the hollow upright 7, where they are secured to the upper end thereof in the same manner in which this channel is secured to the webs 12. In this construction I propose to use sheet metal of a very thin construction and therefore it may be desirable to provide a reinforcing, bracing or stiffening means, as for instance the upright reinforcing bar or post 18 which extends upwardly through the hollow upright 7 and bridges the side members 8 thereof. In the construction illustrated in Figs. 2 and 3, the frame work is adapted to receive glass panes of standard construction, such for instance as "Fenestra sash" and "Lupton sash," and in order to strengthen the joint between the upright 7 and the transverse member 11, I may employ a reinforcing member in the shape of an L 19 which is adapted to fit snugly into each corner construction. As illustrated this member 19 fits into and between the flanges 10 and 14 and may be anchored thereto in any suitable or convenient manner as by riveting or spot welding. In this construction I prefer to employ also the filler strips 20 and 21, these strips being disposed between the flanges 10 and 14 respectively as indicated in Fig. 2.

I have above set forth a complete and preferred corner construction of frame work adapted to receive panels of pane glass and in Figs. 10 and 11 I have illustrated two different methods of anchoring the glass plates in the openings. In Fig. 10 the plate glass is indicated at 22 which is adapted to abut against the edges of the flanges 10 and the fillerstrip 20 with a yielding gasket as of rubber 23 and a pair of elongated spring securing members 24 disposed therebetween. These securing members 24 are preferably made of spring metal, each being preferably formed of a single piece of sheet metal and embodying a foot portion 25 abutting against a web 9 of the upright and the humps 26 for embracing the sides of the plate glass 22. These humps 26 are provided and merge with a flange 27 parallel to the feet 25 which flanges engage the outer edges of the flanges 10 of the upright member 7, the rubber gasket 23 and edge of plate 22 serving to securely clamp this flange 27 against the flanges 10 and the feet 25 against the web portions 9. The foot portion 25 and flange 27 may be sprung toward each other and the spring member 24 may then be squeezed in between the plate 22 and webs 9.. In Fig. 11 a somewhat different arrangement is shown which embodies a pair of U shaped members 28 juxtaposed and facing each other and each having one of its side members engaging a flange 10 and having the other side member abutting against the corresponding side members of the other around the edges of the flanges. These members 28 are provided with apertures through their webs for the reception of a bolt 29 which also passes through the flanges 10 of the upright and the filler 20 and securely fixes the members in position. This bolt 29 also secures to these members a plate receiving member 30 which is in the form of an L and fits snugly thereabout as indicated. This member or bar 30 is rabbeted or grooved to form a flange 31 projecting inwardly, and the plate glass 22 is received in this groove and is secured thereto by some convenient sealing material as putty 30a. In assembling, the frame work embodying the uprights 1 and 2 and transverse members 4, 5, and 6 are first erected and thereafter the plate glass 22 may be mounted in position in accordance

with either of the methods illustrated in Figs. 10 and 11.

Figs. 2, 3, 10 and 11 illustrate the construction and assembly with the employment of intermediate plates of glass. When however, the bridging plates are of sheet steel or of wall board as Beaver wood, or Upson wood, that may be similar to the construction and assembly illustrated in Figs. 1, 8, and 9. In this case the bracing and filling members 19, 20, and 21 (Figs. 2 and 3) may be eliminated and the kick plates 32 (Figs. 8 and 9) may be fitted in between the flanges to take their place. In this case the kick or bridging plates are secured directly to these flanges 52 and 14′ (Figs. 8 and 9) instead of by the indirect methods illustrated in Figs. 10 and 11 where the bridging plates are of glass. The plates 32 may be secured thereto in any suitable manner as by riveting and in the case of steel plates they may be spot welded to the flanges 52 and 14′. In Fig. 9, the bottom transverse frame member embodies the channel 16′ for spacing and bracing the two side members 12′, but the cover strip or plate 17 of Figs. 2 and 3 is omitted since in the bottom member the channel 16′ would have no tendency to collect foreign matter therein. It is understood that a corner construction of the frame work illustrated in Figs. 1, 8, and 9 is similar to the construction of Figs. 2 and 3 except for the omission of the bracing L 19 and the filling and bracing strips 20 and 21 and also the omission of cover plate 17. The reinforcing or stiffening post or bar 18 illustrated in Figs. 2, 3, 10 and 11 may be used in the construction illustrated in Figs. 1, 8, and 9, if desired.

In Figs. 4, and 5, is illustrated a convenient construction of upright members for door jambs and doors, posts or stiles. According to this construction the upright designated generally at 33 is formed of two sheets of sheet metal, 34 and 35, having one edge of each thereof bent at right angles to the sheet to form webs 36 and then bent at right angles again to form flanges 37 for receiving therebetween the kick plates 32 in a manner similar to the formation of the flanges 10 and 14 in Figs. 2 and 3. The opposite edge of the side member 34 is in like manner bent inwardly to form a right angle web 38 and the extreme edge thereof is bent outwardly at right angles to the web 38, forming a flange 39. This web 38 and flange 39, serve as a jamb for the door 3 illustrated in Fig. 1. The opposite and cooperating side member 35 is formed from a narrower piece of sheet metal and is just wide enough to overlap and reinforce the flange 39, the flange 39 and the side member 35 being secured together in any suitable manner. The flange of the web 38 is cut away at 40 for the reception of one of the members of the hinges 41 (Figs. 1 and 4) which hinge is conveniently carried by a supporting bar 42, the supporting bar being disposed between the said members 34 and 35 and preferably secured to the web 38. The supporting bar 42 may extend the full length of the upright member 33 to form a reinforcement if desirable or it may extend or be positioned simply opposite the hinges 41 to serve as a supporting member therefor. The stile 43 of the door 3 is formed similarly to the upright member 7 illustrated in Figs. 2 and 3 and the kick plate 32 is assembled therewith in the manner indicated in Figs. 8 and 9. The outer edge of this stile 43 is cut away at 44 for the reception of the part of the hinge which is complementary to the part resting in the opening 40 and a fastening bar or block 45 is provided for anchoring the hinge in position.

Figs. 6 and 7 illustrate the method of constructing the stile 46 of the door for the reception of a lock 47. This stile 46 is formed similarly to the stile 43 and receives the kick plate 32 also in a manner similar thereto. A base plate 48 fits up against the outer web of the stile 46 and is provided with a rectangular opening therethrough for the reception of the lock 47. The lock is provided with a front plate 49 which extends beyond the edges of the lock 47 and overlaps the bar 48 for the reception of attaching screws 50 which are screwed home into the supporting bar 48. A rectangular opening is conveniently formed in the outer web of the stile for the reception of this lock plate 49. The bar 48 may be secured to the stile by welding or in any other suitable manner.

The corner construction for the door 3 at the top and bottom thereof is similar to the construction illustrated in Figs. 2 and 3. This door has a central transverse member or rail which is formed by two complementary sheet metal members 51, these members being channel shaped and having flanges 52 projecting outwardly from the side flange. These complementary flanges 52 are adapted to receive therebetween the kick plates 32 and at the ends of these central transverse members these flanges 52 are cut away at 53 (Fig. 13) for the clearance of the flanges 54 illustrated in Fig. 4. This cross rail may be moved up and down to accommodate plates 32 of different lengths.

In Fig. 12 is illustrated a diagrammatic view of a system of partitions for forming any number of rooms on a floor. In this construction the end partition walls 55 and 56 may be secured to and anchored in position with respect to the building wall 57 in the manner indicated. The partition 55 is received between a pair of complementary sheet metal members 58, these being formed

with flanges 59 to which the edge of the partition 55 may be fixed in any suitable manner and also with side web members receiving the channel member 60 therebetween. The channel member 60 preferably extends from the bottom of the partition to the top thereof and conveniently serves as a spacer for the members 58 and also as a bracer or reinforcing means therefor. The plate 55 may abut against this channel 60 if desired. The partition 56 is secured to the wall 57 by means of a modified construction embodying a pair of complementary sheet metal members 58′, these members being formed as illustrated, and having flanges 59′ for engaging the plate 56, and also the flanges 61 on the opposite edges thereof and at right angles thereto for engagement with the wall 57.

These upright members may be fixed to the wall 57 in any convenient manner as by expansion bolts. Fig. 12 also shows a construction embodying partitions at right angles to each other, the partition wall 62 being at right angles to the wall 55 and the partition wall 63 being an extension of the latter. In like manner the partition 65 forms an extension of the partition 56 and the partition 66 is a partition at right angles thereto. Partitions 55, 62, 63, and 64 are conveniently joined together and anchored in position by means of the four complementary sheet metal members 67, these members being formed with flanges 68 at their edges to receive the partitions therebetween in the manner hereinbefore set forth. The partitions 56, 65, and 66 are joined in a similar manner, but in this case since there are only three sides to be joined together, a single channel beam 69 is provided with lateral flanges and takes the place of two of the sheet metal members 67. There are also formed in the partition 65, jambs and door stops 70 for the reception of a door 71 therein, these jambs and stops being formed in a manner similar to the manner illustrated in Figs. 4 and 5. In a similar manner, the partition 64 and 66 may be provided with a door in the opening therebetween if desired.

It is thus clear that I have devised a very simple and rigid construction of partition or door of light weight which may be quickly and easily assembled for installation in any building structure. The doors may be assembled and sold as a unit, or the parts thereof may be shipped and assembled at the place of installation at the will of the buyer. In like manner the partitions may be made in sections and sold as units, or the parts thereof may be shipped and assembled at the place of use.

I have set forth my invention in the specific manner required by the patent statutes and as embodied in concrete modifications but it is understood that the claims hereto annexed are not to be limited to the specific devices illustrated except as is specifically recited therein but are to be construed in the light of the merits of the invention together with a consideration of the prior art.

Having thus described my invention, what I claim is:—

1. In a wall construction, the combination of spaced hollow upright members of sheet metal each having a pair of longitudinally extending and laterally projecting flanges, said hollow uprights each having disposed therein a longitudinally extending reinforcing bar, a transverse member of sheet metal also formed hollow and extending in the direction of said laterally projecting flanges, said transverse member having a pair of longitudinally extending flanges complementary to and resting in the plane of said first named flanges, and a bridging plate adapted to be secured to said flanges.

2. In a wall construction, the combination of spaced hollow upright members of sheet metal, each member having a pair of integrally formed spaced longitudinally extending and laterally projecting parallel flanges facing the pair on the other member, a transverse member of sheet metal also formed hollow and extending in the direction of said laterally projecting flanges, said second member having a pair of integrally formed spaced longitudinally extending parallel flanges complementary to and disposed in the plane of the first named flanges, said flanges having disposed therebetween filling bars, and means for attaching a bridging plate to said flanges and between said filling bars.

3. In a wall construction, the combination of spaced hollow upright members of sheet metal, each member having a pair of integrally formed spaced longitudinally extending and laterally projecting parallel flanges, said flanges stopping short of an end of each upright, a hollow transverse member of sheet metal, said transverse member extending in the direction of said laterally projecting flanges, said transverse member also having a pair of integrally formed spaced longitudinally extending parallel flanges which stop slightly short of the end of the transverse member, the ends of the second pair of flanges engaging the edges of the first named flanges and forming therewith a pair of flanges continuous around the corner constructions, a solid L shaped filling member disposed between the spaced flanges at each corner, filling strips extending longitudinally of and interposed between each individual pair of flanges, and means for attaching a bridging plate therebetween.

4. In a wall construction, the combination of two spaced hollow upright members of

sheet metal, each member having a pair of spaced longitudinally extending and laterally projecting flanges, each of the pairs of flanges facing the other pair, said flanges stopping short of an end of each upright, a hollow transverse member of sheet metal, having its ends resting upon said upright members, said transverse member also having a pair of spaced longitudinally extending flanges which stop slightly short of the ends thereof, the ends of the flanges of the transverse member engaging the edges of the flanges of the upright members and forming therewith a pair of flanges continuous around the corner construction, an L shaped bracing and filling member disposed between the spaced flanges at each corner, filling and bracing strips extending longitudinally of and interposed between each individual pair of flanges, and means for attaching a bridging plate therebetween.

5. In a wall construction, the combination of spaced hollow upright members of sheet metal, each member having a pair of spaced longitudinally extending and laterally projecting flanges, said flanges stopping short of an end of each upright, a hollow transverse member of sheet metal, said transverse member having a pair of spaced longitudinally extending flanges which stop slightly short of the end of the transverse member, the ends of the flanges of the transverse member engaging the edges of the flanges on the upright members and forming therewith a pair of flanges continuous around the corner connections, an L shaped bracing and filling member disposed between the spaced flanges at the corners, filling and bracing strips extending longitudinally of and interposed between each individual pairs of flanges, and means for attaching a bridging plate therebetween, said means comprising a pair of sheet metal spring members extending longitudinally of said flanges, said spring members having portions adapted to engage the upright and transverse members and also portions to engage the edges of the plate.

6. In a wall construction, the combination of spaced hollow upright members of sheet metal, each member having a pair of spaced longitudinally extending and laterally projecting flanges, said flanges stopping short of the upper end of the uprights, a hollow transverse member of sheet metal, said transverse member extending in the direction of said laterally projecting flanges and having one end resting thereupon, said transverse member also having a pair of spaced longitudinally extending flanges which stop slightly short of the end of the transverse member, the ends of the second pair of flanges engaging the edges of the first named flanges and forming therewith a pair of flanges continuous around the corner connections, an L shaped bracing and filling member disposed between the spaced flanges at the corners, filling and bracing strips extending longitudinally of and interposed between each individual set of flanges, and means for attaching a bridging plate therebetween, said means comprising a pair of spring metal members extending longitudinally of said flanges, said spring members having portions adapted to engage the upright and transverse members and also portions adapted to engage the edges of the plate, said spring members being adapted to be squeezed in between the edges of the plate and the frame members.

7. In a wall construction, the combination of a pair of hollow upright members of sheet metal, said members having parallel side webs, said webs being bent at their edges to form webs at right angles thereto, and the edges of said right angle webs being turned outwardly to form a pair of flanges arranged parallel with respect to said side webs, a transverse member disposed at the top of said upright members, said transverse member being formed with parallel side webs having one edge thereof bent inwardly to form right angle webs and the edges of the right angle webs being bent outwardly to form flanges parallel to the main webs, said upright and transverse members being arranged with their flanges forming a continuation of each other, a bridging plate fitting in between said frame members and in alinement with said flanges, and means for securing said plates to said flanges comprising spring metal members extending longitudinally thereof having feet in engagement with said right angle webs, and having portions adapted to be wedged in between the edges of said flanges and the edge of said plate.

8. In a wall construction, the combination of a pair of hollow upright members of sheet metal, said members having parallel side webs, said webs being bent at their edges to form webs at right angles thereto, and the edges of said right angle webs being turned outwardly to form a pair of flanges arranged parallel with respect to said side webs, a pair of transverse members disposed respectively at the top and bottom of said upright members, each of said transverse members being formed with parallel side flanges having one edge thereof bent inwardly to form right angle webs and the edges of the right angle webs being bent outwardly to form flanges parallel to the main webs, said upright and transverse members being arranged with their flanges forming a continuation of each other, a bridging plate fitting in between said frame members and in alinement with said flanges, and means for securing said plate to said flanges comprising spring metal members

extending longitudinally thereof having feet in engagement with said right angle webs and having portions adapted to be wedged in between the edges of said flanges and the edge of said plate, said spring members also having humps or shoulders overlapping the edges of said plates and a gasket interposed between the edge of said plate and the edges of said flanges.

9. In a door and partition construction, the combination of an upright member formed hollow and of sheet metal, said member comprising two pieces or webs of sheet metal arranged parallel to each other having one edge of each thereof formed to receive a bridging plate therebetween, one of said sheet metal webs having its opposite edge bent inwardly at right angles thereto and the right angled portion thereof having an outwardly projecting flange in engagement with the opposite side web thereby forming a door jamb, with a door comprising a hollow stile adapted to fit into and against said jamb, the adjacent webs of said jamb and said stile being cut away for a portion of their length for the reception of hinge members, and supporting bars disposed within said jamb and stile for carrying said hinge members.

10. In a wall construction, the combination of a hollow upright member of sheet metal having parallel flanges, a member extending transversely of the first mentioned member and also having parallel flanges complementary to the flanges on the upright member, and a solid L-shaped filling member interposed between the flanges of the upright and transverse members at the corner formed between said members.

In testimony whereof, I hereunto affix my signature.

JAMES P. COPLAND.