Feb. 27, 1934. M. J. TRACY 1,948,602

DOORFRAME

Filed April 6, 1931 3 Sheets-Sheet 1

Fig. 1.

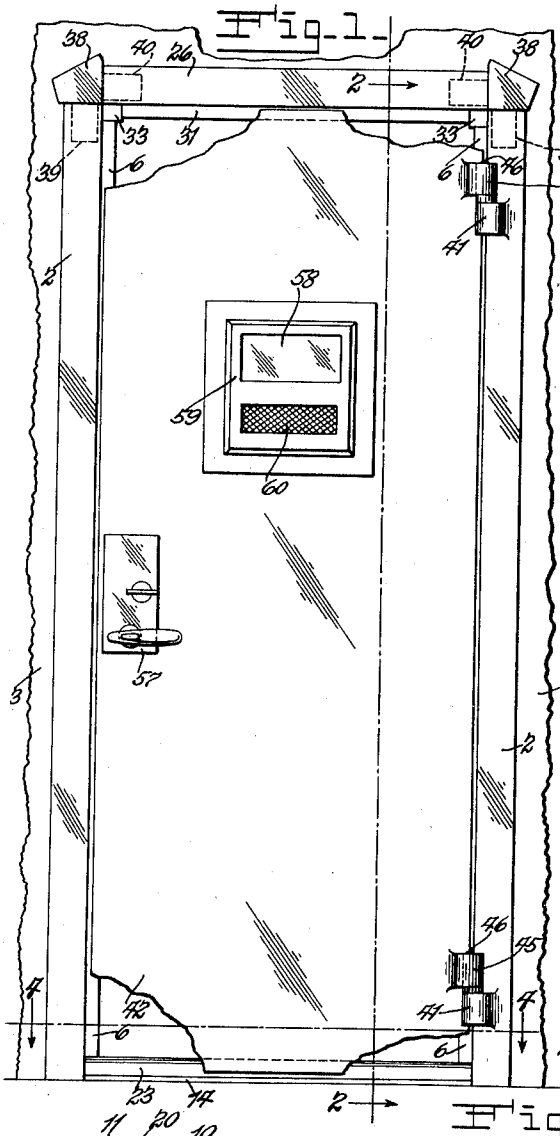


Fig. 2.

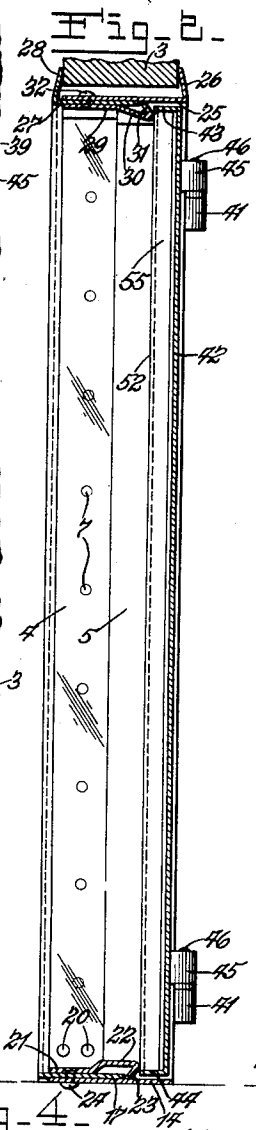


Fig. 3.

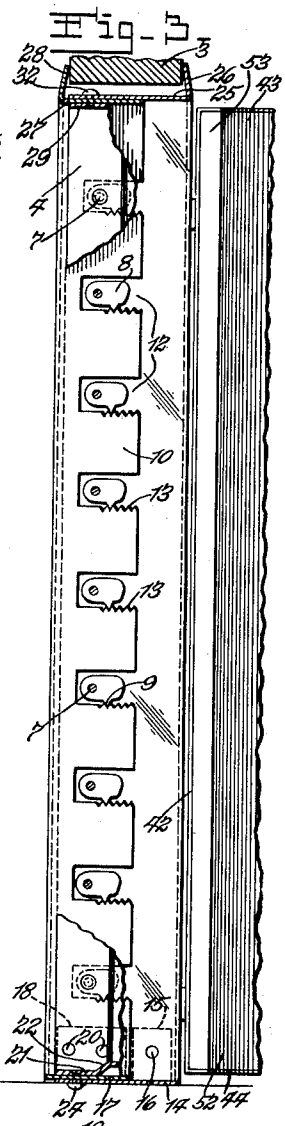
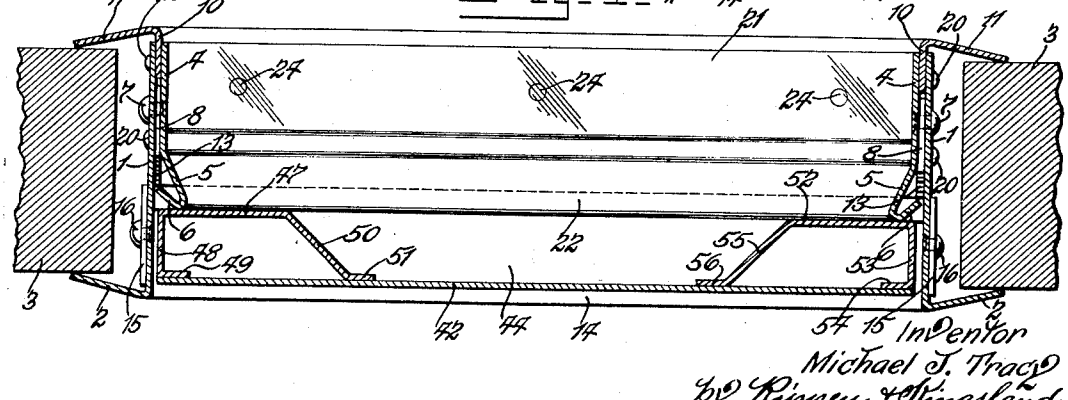


Fig. 4.



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Feb. 27, 1934. M. J. TRACY 1,948,602

DOORFRAME

Filed April 6, 1931 3 Sheets-Sheet 2

Fig. 5.

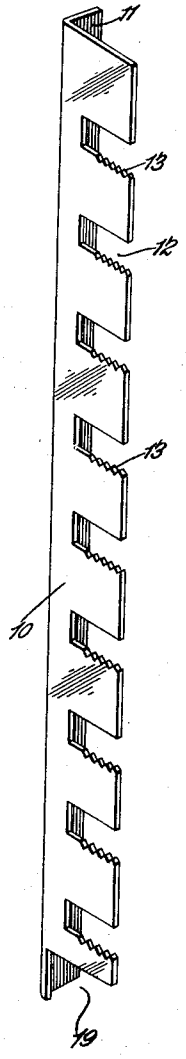


Fig. 6.

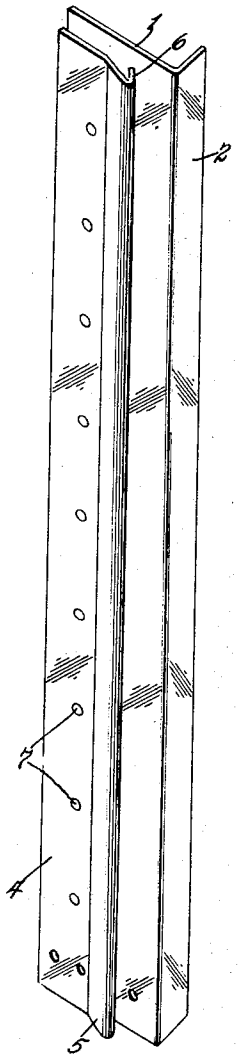


Fig. 7.

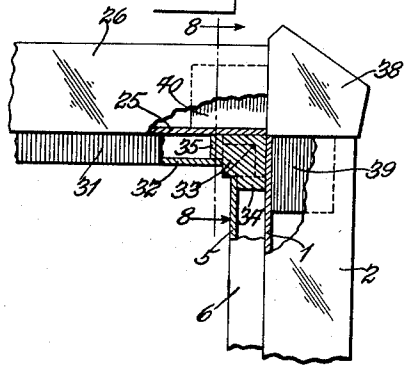


Fig. 8.

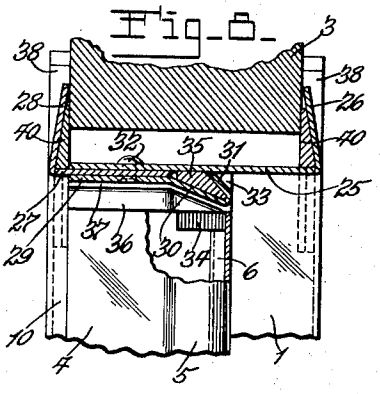


Fig. 9.

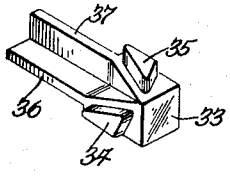


Fig. 10.

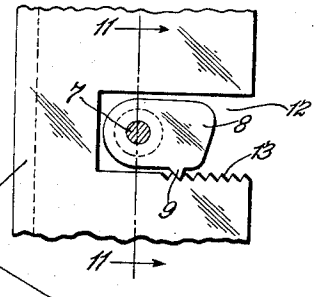


Fig. 11.

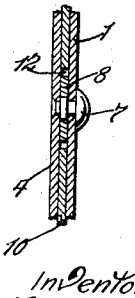


Fig. 12.

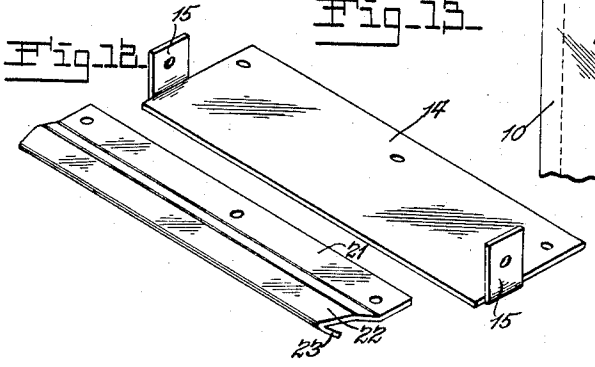


Fig. 13.

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Feb. 27, 1934. M. J. TRACY 1,948,602

DOORFRAME

Filed April 6, 1931 3 Sheets-Sheet 3

Fig. 14.

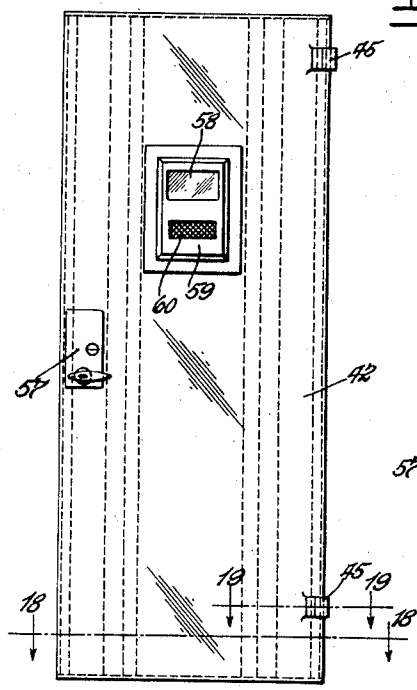


Fig. 15.

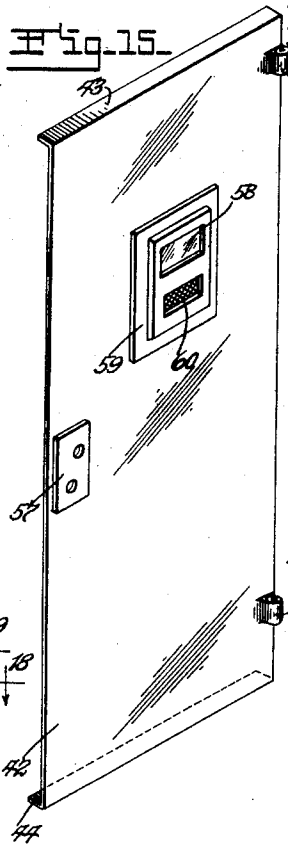


Fig. 16.

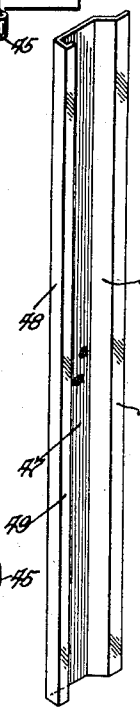


Fig. 17.

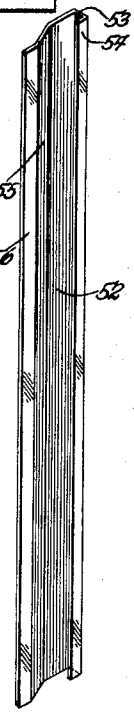


Fig. 18.

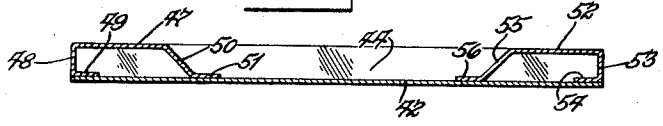
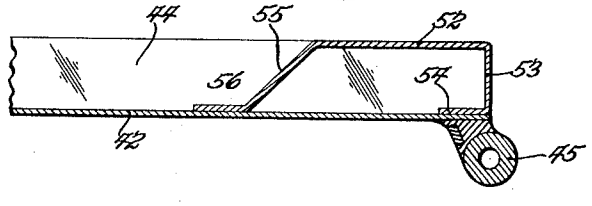


Fig. 19.



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UNITED STATES PATENT OFFICE

1,948,602

DOORFRAME

Michael J. Tracy, St. Louis County, Mo., assignor to Pauly Jail Building Company, St. Louis, Mo., a corporation of Missouri

Application April 6, 1931. Serial No. 528,011

15 Claims. (Cl. 189—46)

This invention relates to door frames; and has special reference to door frames of metallic construction embodying the novel features of construction contributing to utility and durability that characterize the frame herein disclosed.

An object of the invention is to provide a metallic door frame composed of metallic elements united and adjusted to form the frame proper, in combination with metallic elements attached to the sides of the frame proper forming abutments for the marginal portions of a door and arranged so it is impossible to pass solids or liquids between the door and the frame. The entire device is of extremely strong and durable construction and cannot possibly be broken or damaged by use of ordinary cutting or prying implements or tools. By this invention, a construction is obtained that is designed and adapted to withstand and resist attempts made by use of ordinary cutting and prying implements to damage the door or to break through, or to pass liquids or solids between the door and the frame from one side of the door to the other.

Another object of the invention is to provide a metallic door frame composed of resilient metallic frame members arranged to obtain clamping engagement with opposite sides of the wall around a door opening, and means for holding the metallic elements in clamping engagement with the wall.

Various other objects and advantages of the invention will be apparent from the following description, reference being made to the accompanying drawings, in which—

Fig. 1 is a front side elevation of my improved door frame and door, parts of the door being broken away to show abutting portions of the frame.

Fig. 2 is a vertical cross sectional view approximately on the line 2—2 of Fig. 1.

Fig. 3 is a detail view showing the devices by which the cooperative portions of the metallic frame are held in clamping engagement with a wall.

Fig. 4 is an enlarged cross sectional view on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of one of the frame side members.

Fig. 6 is a perspective view of the cooperating frame side member.

Fig. 7 is a detail view showing the manner in which the frame corner members are attached to the frame top and side members.

Fig. 8 is an enlarged sectional view of the top frame member on the line 8—8 of Fig. 7.

Fig. 9 is a perspective view of an element used at the upper corners of the door frame to provide an impassable joint.

Fig. 10 is an enlarged view of one of the retaining devices whereby the frame side members are held in cooperative relationship.

Fig. 11 is a sectional view on the line 11—11 of Fig. 10.

Fig. 12 is a perspective view of the abutting member at the bottom of the door frame.

Fig. 13 is a perspective view of the main frame bottom member.

Fig. 14 is an outer side elevation of the door detached from the frame.

Fig. 15 is a perspective view of a main panel of the door.

Figs. 16 and 17 are perspective views of the two elements attached to the vertical edges of the main panel of the door.

Fig. 18 is an enlarged cross sectional view of the door on the line 18—18 of Fig. 14.

Fig. 19 is an enlarged cross sectional view of a portion of the door on the line 19—19 of Fig. 14.

Each side of my improved door frame comprises a frame side member composed of sheet metal possessing a degree of resiliency and shaped to provide an inner portion 1 and a portion 2 extended laterally from the portion 1, preferably at an acute angle. The part 1 extends vertically in the opening in the wall 3 in which the door frame is mounted while the marginal edge of the part 2 engages against one side of the wall 3. By the construction of the frame, the portion 2 is resiliently clamped against the wall so as to provide an impassable joint, preventing the passage of solids or liquids therethrough. There is one of these frame members at each side of the door frame.

To the part 1 of each of these frame side members a metallic abutment for the adjacent vertical marginal portion of the door is secured. Each of these abutments comprises a plate shaped to provide a portion 4 that extends vertically parallel with and spaced from the frame portion 2; a portion 5 extending obliquely inwardly and outwardly and having a rebent marginal portion 6 extending laterally and obliquely inwardly to engagement with the frame portion 1. Fasteners 7 (Figs. 6 and 11) are rigidly attached to each frame portion 1 and to each frame portion 4 and secure these two members rigidly in the relationship shown and described. These fasteners 7 are arranged in a vertical

series and each fastener pivotally supports a pawl 8 having on its under edge a pointed tooth 9.

The cooperating frame side member at each side of the frame comprises a sheet metal member shaped to provide an inwardly extended portion 10 and a portion 11 extending therefrom at an acute angle so as to clamp against the opposite side of the wall 3 from the side against which the side portion 2 is clamped. The frame portion 10 has therein slots 12 of sufficient vertical width to receive the pawls 8. A the lower side of each slot 12 a series of teeth 13 are formed and these teeth are designed and adapted to be engaged by the teeth 9 of the pawls 8 so as to secure the two cooperating side frame members together in clamping engagement with the opposite sides of the wall. The frame portion 10 is extended between the frame portions 1 and 4 and the two frame members are forced together, causing the frame portions 2 and 11 to clamp securely against the opposite sides of the wall 3 so as to form an impassable joint. The walls of the teeth 9 and 13 are sloped and inclined so as to permit the frame portion 12 to be forced freely into the space between the frame portions 1 and 4 and to resist and prevent separation of the frame side members, so that it is impossible to pry or to force the frame members apart.

The lower end of the frame comprises a plate 14 (Figs. 2, 3 and 13) having its ends engaged under the lower ends of the side frame members. The plate 14 has on its ends upwardly extended ears 15 engaging against the outer sides of the frame portions and rigidly attached thereto by fasteners 16 (Figs. 3 and 4). This frame plate 14 forms an impassable joint with the lower end of the door opening through the wall 3, so that it is impossible to pass liquids or solids through said joint. The plate 14 has its outer edge in alinement with the corners formed at the unions of the portions 1 and 2 of the frame side members and is rigidly secured in such relationship by the fasteners 16. A plate 17 of less width than the plate 14 is seated on said plate 14 and has its inner edge extending beyond the inner edge of the plate 14 to alinement with the corners formed by the unions of the frame portions 10 and 11 (Figs. 2 and 3). This plate 17 extends under the lower ends of the frame portions 4 and has on its ends upwardly extended ears 18. The ears 18 extend into the spaces between the frame portions 1 and 2 at opposite sides of the frame, the lower ends of the frame portions 10 being cut away or removed as indicated at 19 (Fig. 5) to provide room and space for these ears 18. The ears 18 are rigidly attached to the frame portions 4 by fasteners 20 (Figs. 2 and 4). Thus, the ears 18 constitute means cooperating with the fasteners 7 to hold the lower ends of the frame portions 1 and 4 in spaced relationship.

An abutment plate for the lower end of the door is provided, the same comprising a sheet metal plate shaped to form a flat portion 21 seated upon the plate 17, an upwardly and outwardly extended portion 22, and a downwardly and rebent portion 23 having its lower edge seated upon the plate 14 along the outer edge of the plate 17 and forming an impassable joint through which it is impossible to pass liquids or solids. The plates 14, 17 and 21 are rigidly attached together by fasteners 24. The plate portion 21 extends the full width of the door frame and has its ends abutting the frame portions 4 while the abutment portion 22—23 is appropriately shaped and jointed with the abutment portions 5—6 and is formed in alinement therewith.

The upper end of the frame comprises a plate 25 having a marginal portion 26 extended upwardly therefrom at an acute angle similar to the manner in which the frame portions 2 are extended laterally at an acute angle from the frame portions 1. A plate 27 having its outer edge in alinement with the outer edge of the plate 17 has an upturned inner edge 28 extending obliquely therefrom in the manner that the frame portions 11 extend obliquely from the frame portions 10. These resilient upward extensions 26 and 28 are resiliently clamped against the inner and outer sides of the wall 3 and from impassable joints through which it is impossible to pass liquids or solids. An abutment plate comprising a portion 29, a downwardly and outwardly inclined portion 30 and an upwardly and inwardly inclined portion 31 has the portion 29 seated against the under side of the plate 27 and the edge of the abutment portion 31 abutting against the edge of said plate 27. These plates 25, 27 and 29 are rigidly fastened together by fasteners 32. The outer edge of the abutment portion 30, 31 is in alinement with the remaining abutment portions at the sides and lower end of the door frame.

A fitting is interlocked at each upper corner of the frame in order to obtain an impassable joint at the upper ends of the abutment frame members 4—5. Each fitting comprises a head 33 that seats upon and is supported by the upper end of the door abutment 5—6 and abuts laterally against the adjacent end of the abutment 30—31 for the upper end of the door. Each head is provided with an integral lug 34 that extends into the space formed by the door abutment construction 5—6 and is also provided with a lug 35 that extends into the space formed by the door abutment construction 30—31. Thus this joint member is rigidly interlocked in the frame in a relationship in which the end of the head 33 is in alinement or flush with the edges of the abutments 4 and 30. The head 33 is formed with inwardly extended flanges 36 and 37. The flange 36 bears against the frame portion 1 and seats upon the frame portion 4. The flange 37 bears against the plate 35 and abuts against the ends of the plates 27 and 29. In this way, an impassable joint is formed at each corner of the frame. These corner joint members perform the double function of rigidly uniting the side and upper ends of the frame and also making it impossible to pass liquids or solids through these joints.

The sides and upper end of the frame are additionally connected so as to obtain a construction that is extremely strong and rigid. The connection at each upper corner of the frame comprises a block 38 having one side arranged to seat upon the adjacent frame portion 2 and another side abutting against the adjacent end of the frame portion 26. Arms 39 and 40 are formed integral with the block 38 and extend against the inner sides of the frame portions 2 and 26, respectively, and are rigidly secured thereto by welding or other appropriate fastening means. These blocks arranged and attached in this way provide impassable joints at the outer corners of the frame, so that it is impossible to pass solids or liquids therethrough.

The frame portions 2 constitute supports for the hinge members 41. These hinge members

are rigidly secured to the frame portions 2 by welding or other appropriate fastening means.

My improved door is designed and adapted specially for cooperation with the frame of the construction described so as to provide impassable joints through which it is entirely impossible to pass solids or liquids. The door is composed principally of sheet metal and comprises a section of sheet metal shaped and formed to provide a main panel 42 having its upper end extended inwardly to provide a flange 43 and its lower end extended inwardly to provide a flange 44. Hinge members 45 are attached to the panel 42 by welding or other fastening means and are arranged to cooperate with the hinge members 41 to support the door by use of hinge pins 46.

Along the free edge of the panel 42 a sheet metal frame member is secured, the same comprising a body portion 47 having its outer edge bent laterally to provide an edge portion 48 for the door. The edge 49 of the portion 48 is extended inwardly and seats against the marginal portion of the panel 42 and is secured thereto by welding or otherwise. The outer surface of the part 48 is in alinement with the edge of the panel 42. The inner edge of the body 47 has a deflected portion provided with a marginal portion 51 that seats against and is attached to the panel 42 by welding or other appropriate fastening means. The enclosed space thus provided between the panel 42 and this marginal reenforcement therefor is closed at its upper and lower ends by the flanges 43 and 44, respectively, the inner edges of which are in alinement with the inner surface of the part 44.

The opposite or hinged marginal edge of the panel 42 had attached thereto a reenforcing member composed of sheet metal and including a body portion 52, an edge forming portion 53 that is flush with the edge of the panel 42, an inwardly extended portion 54 seated against and welded or otherwise attached to the panel 42, and deflected portions 55 and 56 extending toward and attached to the panel 42. The enclosed space thus formed is closed at its upper and lower ends by the flanges 43 and 44, respectively. The members 47 and 52 are designed and adapted to abut closely against the door abutments 5, the flange 43 is designed and adapted to abut against the door abutment 30 at the bottom of the frame, and the flange 44 is arranged to abut against the abutment 52 at the lower end of the door. Thus, when the door is closed, it is entirely impossible to pass solids or liquids across the edges of the door because any attempt to do so will lodge the solids or liquids in the spaces formed by the deflected flanges 6 at the sides of the door, or under the deflected flange at the lower end of the door or above the deflected flange 31 at the upper end of the door.

The door may be held and locked in closed position by an appropriate lock device 57 of any approved construction, with the details of which the present invention is not concerned.

An infrangible glass panel 58 is attached in an open frame 59 secured around an opening through the door panel 42, so that a person on one side of the door may observe and clearly see a person on the other side of the door. A speaking panel 60 is enclosed in the frame 59 and is constructed and arranged in a known manner, so that the voice of individuals on opposite sides of the door will pass and carry freely through this speaking panel. However, the speaking panel is arranged so that it is impossible to pass solids or liquids therethrough from one side of the door to the other. Speaking panels of this type are known. Accordingly, by this arrangement it is possible for persons on opposite sides of the door to converse with each other freely and to observe each other while conversing. And it is entirely impossible for either person to pass to the other any solids or liquids.

It is now clear that my invention obtains all of its intended objects and purposes in a most efficient and satisfactory manner. This invention meets an existing need for doors and door frames of this construction for use in institutions in which inmates must be confined and protected.

The construction and arrangements of the parts comprising the invention may be varied within the scope of equivalent limits without departure from the nature and principle of the invention. I do not restrict myself in any unessential respects, but what I claim and desire to secure by Letters Patent is:

1. A door frame comprising a metallic frame, means for securing said frame in an opening in a wall, angular metallic abutments for the vertical and upper marginal portions of a door secured to said frame and extending angularly therefrom toward the door and having their abutting portions spaced from said frame and engaging the door only at a distance from the marginal portions of said door, and metallic sealing blocks in the upper corners of said frame having interlocking engagement with said abutments.

2. A door frame comprising a resilient frame side member, a plate attached to and spaced from said side member, an abutment in connection with one margin of said plate, a cooperating resilient frame side member extending between said first side member and said plate, and devices holding said frame members in clamping engagement with a wall.

3. A door frame comprising an angular resilient frame side member, an abutment for the marginal portion of a door attached to and spaced from said side member, a cooperating resilient side member extending between said first side member and said abutment, and elements mounted between said first side member and said abutment engaging and holding said second side member in connection therewith.

4. A door frame comprising a pair of opposite frame side members, abutments attached to and spaced from said side members respectively, resilient clamping portions extending angularly from said side members for engaging a wall, cooperating resilient frame side members extending between said first side members and said abutments, means for holding said cooperating side members in connection with said first side members and said abutments, and extensions from said cooperating side members for engaging the opposite side of a wall from said clamping portions of said first side members.

5. A door frame comprising a pair of opposite frame side members, abutments for opposite marginal portions of a door attached to and spaced from said side members respectively, cooperating frame side members, a resilient clamping portion extending angularly from each of said side members for engaging adjacent surfaces of a wall, and means mounted between said abutments and said first side members for engaging and holding said second side members in cooperative relation to said first side members.

6. A door frame comprising a pair of opposite resilient frame members, a pair of cooperating

resilient frame members corresponding respectively to said first frame members and having portions overlapping said first frame members, devices pivotally supported by one of said frame members for engaging the overlapping portion of the cooperating frame member, and means attached to one of said frame members concealing and rendering said devices inaccessible.

7. A door frame comprising at each side a pair of cooperating frame members having overlapping portions, resilient clamping portions extending angularly from said frame members for engaging opposite sides of a wall, devices pivotally supported by one of said frame members at each side for engaging and holding the other frame member in cooperative connection therewith, and angular abutment plates attached to one of said frame members covering and concealing said devices.

8. A door frame comprising at each side a pair of cooperating frame members having overlapping portions, resilient clamping portions extending angularly from said frame members for engaging opposite sides of a wall, devices pivotally supported by one of said frame members at each side for engaging and holding the other frame member in cooperative connection therewith, angular abutment plates supported by one of said frame members covering and concealing said devices, and abutment plates attached to the upper and lower ends of said frame members holding said frame members in rigid relationship.

9. A door frame comprising a pair of frame side members, cooperating frame side members overlapping said first side members, resilent wall clamping extensions extending from said side members respectively for engaging opposite sides of a wall, devices supported by said first side members for engaging and holding said cooperating side members in connection therewith, plates covering and concealing said devices, and angular abutments extending from said plates for engaging the marginal portions of a door.

10. A door frame comprising a pair of frame side members, cooperating frame side members overlapping said first side members, resilient wall clamping extensions extending from said side members respectively for engaging opposite sides of a wall, devices supported by said first side members for engaging and holding said cooperating side members in connection therewith, plates covering and concealing said devices, angular abutments extending from said plates for engaging the marginal portions of a door, abutments for the upper and lower ends of the door, and means in connection with said last named abutments for holding said frame side members in rigid spaced relationship.

11. A door frame comprising two vertical overlapping members at each side of the frame, resilient wall clamping extensions from said members respectively for engaging opposite sides of a wall and supporting the frame in connection with the wall, devices supported by the overlapping portions of said members holding said members in overlapping relationship in position in which said extensions are clamped against the wall, top and bottom frame members holding said vertical members in rigid relationship, and abutments for marginal portions of a door supported by said vertical and said top and bottom frame members.

12. A door frame comprising a metallic frame, means for securing said frame in an opening in a wall, angular metallic abutments for the vertical and upper marginal portions of a door secured to said frame and extending angularly therefrom toward the door and having their abutting portions spaced from said frame and engaging the door only at a distance from the marginal portions of said door, metallic sealing blocks in the upper corners of said frame, and interlocking extensions from said sealing blocks having interlocking engagement with all of said abutments.

13. A door frame comprising a metallic frame, means for securing said frame in an opening in a wall, angular metallic abutments for the vertical and upper marginal portions of a door secured to said frame and extending angularly therefrom toward the door and having their abutting portions spaced from said frame and engaging the door only at a distance from the marginal portions of said door, metallic sealing blocks in the upper corners of said frame having interlocking engagement with all of said abutments, and connections between the upper and lateral portions of said frame forming impassable joints at the upper corners of said frame and holding the upper and vertical portions of said frame in rigid relationship.

14. A door comprising a metallic frame, angular metallic abutments for the vertical and upper marginal portions of a door secured to said frame and extending angularly therefrom toward the door and having their abutting portions spaced from said frame and engaging the door only at a distance from the marginal portions of said door, means securing said abutments to said frame and spaced therefrom, and resilient members extending between said abutments and said frame and cooperating with said frame to secure said frame in an opening in a wall.

15. A door frame comprising a pair of metallic members, metallic abutments for the vertical marginal portions of a door secured to said members and extending angularly therefrom toward the door and having their abutting portions spaced from said members and engaging the door only at a distance from the marginal portions of said door, means for supporting said abutments spaced from said members, cooperating members extending between said first members and said abutments, means for holding said cooperating members in said positions, and resilient clamping portions extending from said first members and said cooperating members for engaging opposite sides of a wall.

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