May 22, 1928. 1,670,372

F. J. MATCHETTE

SERVICE DOOR

Filed Nov. 30, 1923 3 Sheets-Sheet 1

Fig. 1.

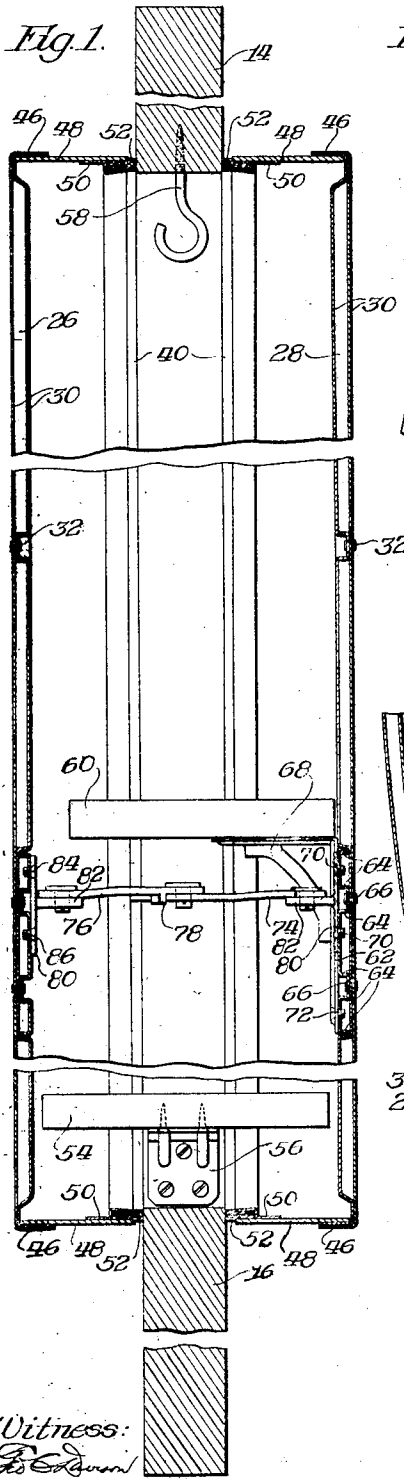


Fig. 2.

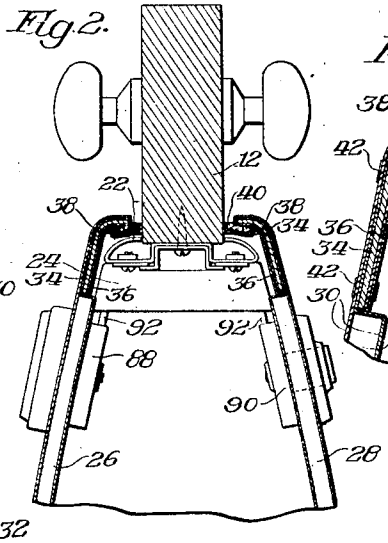
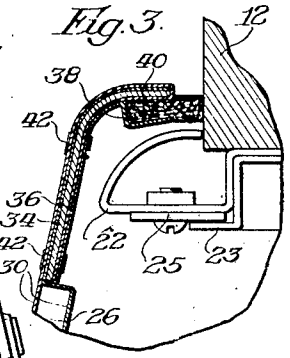


Fig. 3.



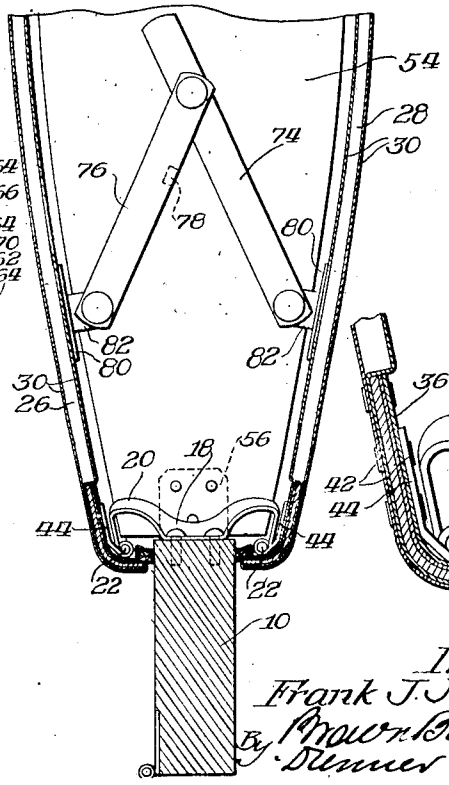
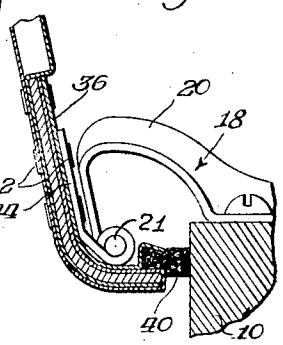


Fig. 4.



Witness:

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Fig. 5.

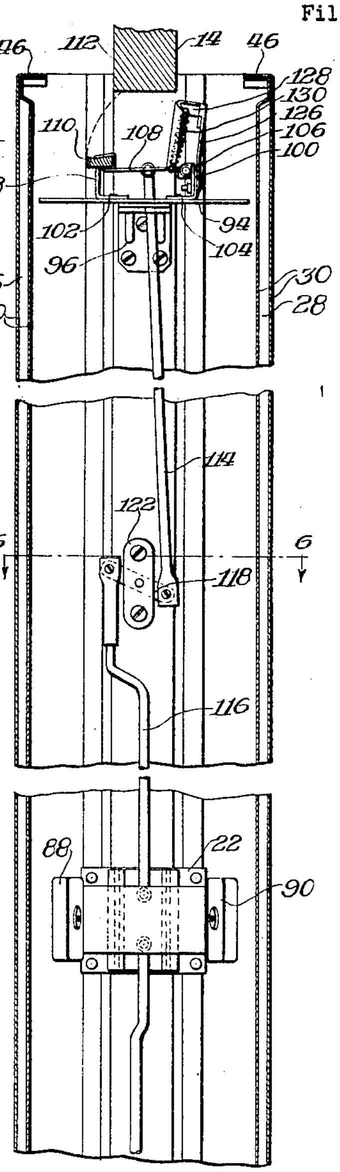

Fig. 6.

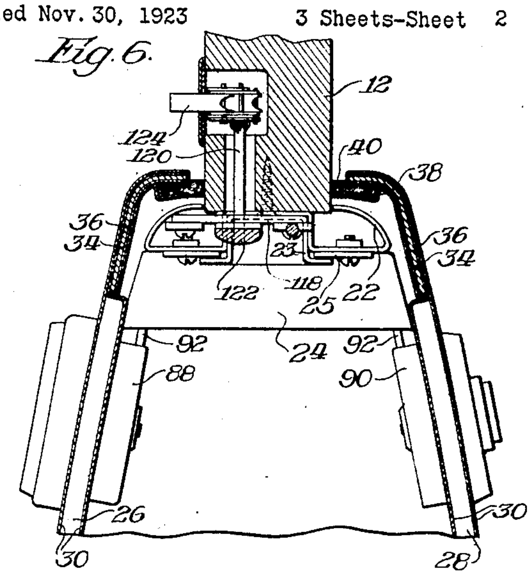

Fig. 7.

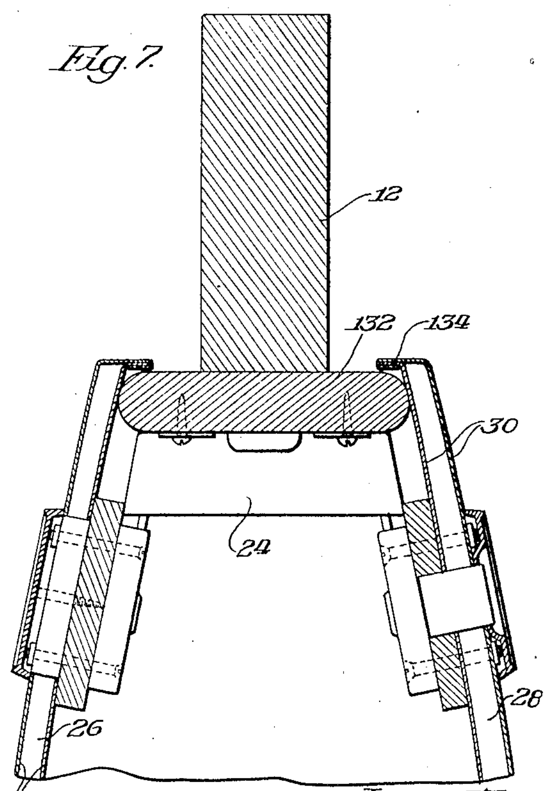

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Fig. 8.

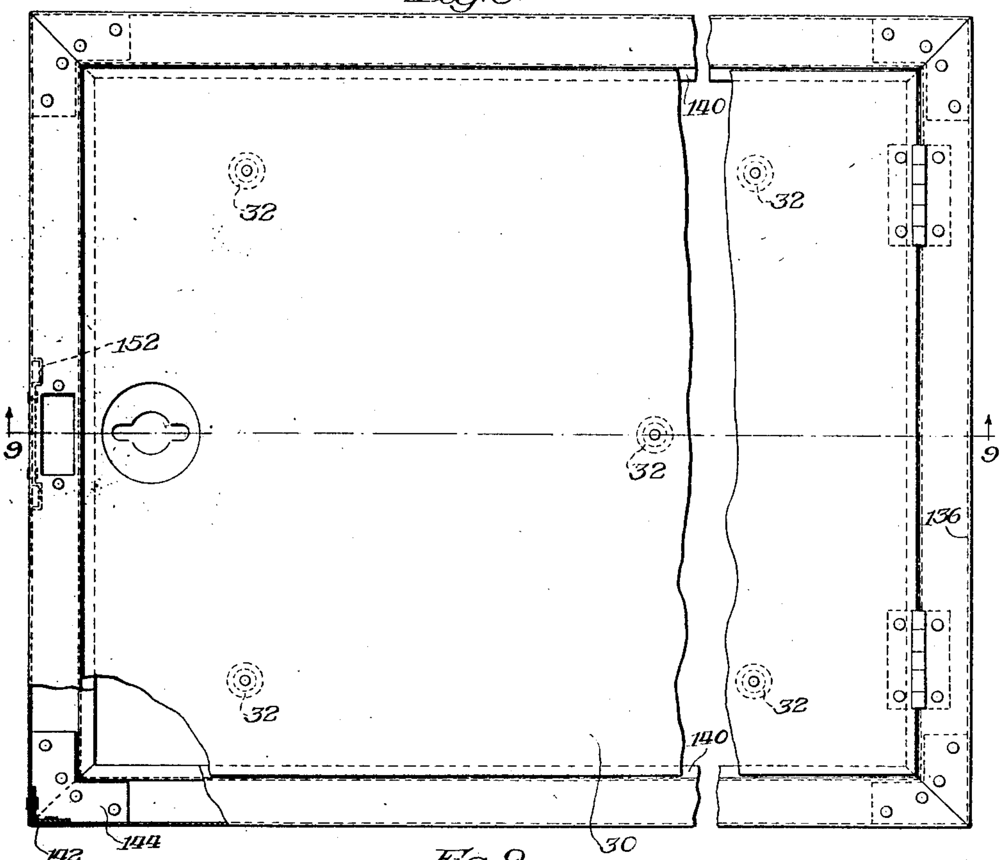


Fig. 9.

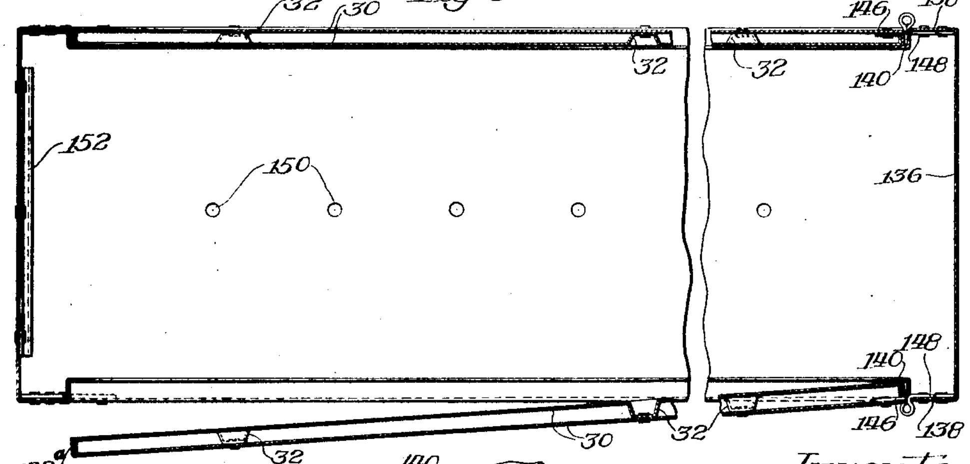
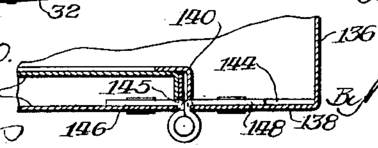


Fig. 10.



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Patented May 22, 1928. 1,670,372

UNITED STATES PATENT OFFICE.

FRANK J. MATCHETTE, OF NEW YORK, N. Y., ASSIGNOR TO THE SERVIDOR CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SERVICE DOOR.

Application filed November 30, 1923. Serial No. 677,901.

My invention relates to improvements in service doors of the general type exemplified by my prior Patents No. 1,403,559, Jan. 17, 1922, and No. 1,447,803, March 6, 1923.

The object of the invention includes the simplification and elimination of unnecessary parts in such service doors; the provision of a construction such that the parts can be packed for shipping in very small space; and the lightening of the finished structure so that with the service door in use, the load on the hinges of the main door is not greater than without the service door. This lightening arises in two ways, first by the omission of a separate frame for the service door, and second by lightening the door panel itself.

In the accompanying drawings:

Figure 1 is a vertical and Fig. 2 a horizontal section of one type of service door according to the invention;

Figures 3 and 4 are detail sections of the hinge and lock margin of the service door panel;

Fig. 5 is a vertical section similar to Fig. 1 indicating the application of ventilators to the improved door;

Fig. 6 is a detail section of the lock stile on line 6—6 of Fig. 5;

Fig. 7 is a similar section of a modified construction;

Fig. 8 is a side elevation of the same type of construction embodied in a service cabinet for residence use;

Fig. 9 is a section on line 9—9 of Fig. 8; and

Fig. 10 is an enlarged detail of the hinge construction in Fig. 9.

In the embodiment of the invention selected for illustration, the customary parts of the main door retained in the new construction are the usual hinge or hanging stile 10, the lock stile 12, the top rail 14 and the bottom rail 16. As in my prior patents herein above referred to, the lock rail, montants and panels are replaced by the service compartment or cabinet, but no separate stiles and rails are employed for the auxiliary or secondary doors defining the compartments, which doors are hinged directly to the edges of the stiles and rails of the main door. This accomplishes a remarkable saving in weight, and also a material improvement in shipping facilities, as the individual door panels for the compartments can be telescoped and shipped in a small fraction of the space required for shipping a completely assembled cabinet according to the prior patents.

Referring now to Figures 1 to 4 inclusive, the hanging stile 10 supports fixed hinge members 18 having elbow arms 20 to support the pintles 21 for the compartment doors. Similarly, the lock stile 12 carries a supporting bracket 22 on which the interlock 24 is mounted. Burglar guard 23 grips lugs 25 of the interlock casing between itself and the bracket 22.

The door panels 26 and 28 each comprise parallel plates 30 of very light sheet metal, reinforced and stiffened by each other, by reason of offset portions in the inner plate extending into contact with the outer plate and spot welded thereto. There may be any desired number of individual circular bosses 32 suitably spaced over the surface of the panel for this purpose.

As clearly indicated in Figure 2, the compartment door panels are of the curved configuration discussed in detail in my prior Patent 1,391,133, of Sept. 20, 1921. While this is not essential to this type of construction, it will be apparent that the continuous curvature involved very materially strengthens each plate 30, and the cumulative stiffening effect of the unions between the plates make it possible to employ exceptionally thin metal, resulting in a correspondingly light weight construction. In fact, the strength necessary to insure against local dents becomes a material factor in determining the thickness of metal employed in a panel of such construction.

Along the vertical edges of the panels stiffening strips 34 of somewhat greater thickness are employed. Both plates 30 are wrapped around the outer convex surface of the strip, and the outer plate margin is then continued around the extreme edges of the strip and the inner plate and back along the concave inner face of the strip. Over this on the inside is laid an additional strip 36 offset at 38 to define a groove for receiving and gripping the sealing strip 40 of felt, rubber or any other suitable material.

Along the lock margin of the panel this

completes the edge structure, and the parts are all welded together into a rigid unitary structure as by means of spot welding at points 42. For the hinge edge, movable hinge butt members 44 are first laid in contact with the strip 36 and spot welded therewith to unite the whole into a substantially integral and very rigid unit.

It will be apparent that the elbow arm 20 permits the hinge sealing strip 40 to move in a counterclockwise direction around pintle 21 as seen in Figure 4 and provides the necessary clearance for a full opening of the door panel.

At the top and bottom margins, the plates are crimped together and then turned over as at 46 to form horizontal ledges prolonged by end cover plates 48 spot welded thereto, which plates carry relatively narrow holding strips 50 to grip and retain the top and bottom sealing strips 52. At the top, this structure constitutes the top of the cabinet itself, but at the bottom it is desirable to have a fixed surface on which articles can be laid when the cabinet is open. I accordingly provide a horizontal shelf 54 supported at its ends on stiles 10 and 12 by means of suitable brackets 56.

At the top, it is customary to provide means for hanging coat hangers and the like when a suit of clothes is to be placed in the cabinet. For this purpose, however, nothing more is required than a simple screw hook 58 entered directly in the lower edge of the upper rail 14.

As in my prior patents the compartment is subdivided into an upper and a lower portion by a shelf 60 carried by one of the doors. Just below the shelf I prefer to provide a continuous belt of reinforcement entirely across the door. At this level plates 30 are in contact, and further reinforced by an additional plate 62 bent back and forth to have, in this instance, six different portions 64 perpendicular to the plane of the door panel to stiffen the same. Both plates 30 and plate 62 are united into a single rigid and substantially integral structure as by spot welds at 66. The brackets 68 for supporting shelf 60 are attached at 70 and 72 to vertical portions of plate 62.

A door stop comprising pivoted links 74 and 76 interconnects the two doors to limit the opening movement of either one. It will be understood that the interlock 24 automatically prevents simultaneous opening of both doors. Link 74 projects beyond its point of pivotal connection with link 76 to make contact with a suitable lug 78 and prevent the links from moving quite into alignment. Brackets each comprising a plate portion 80 and a horizontal ear 82 are employed for the pivotal mounting and support of the door stop, and these brackets may be fastened to vertical portions of plates 62 as at 84 and 86. This locates the door stop under shelf 60 where it will be out of the way.

The doors carry the usual individual door locks 88 and 90 having the locking bolts 92 to cooperate with the interlock. Lock 88 is preferably a handle lock and lock 90 a key lock.

Figures 5 and 6 illustrate the application to the structure of Figures 1 to 4 of ventilator means according to my prior Patent 1,403,559 herein above referred to. For this purpose, plates 48 at the top are omitted, and a plate 94 is mounted on stiles 10 and 12 by brackets 96 similar to brackets 56. The plate is stiffened by angles 98 and 100 spot welded thereto at 102 and 104. Angle 100 carries clip 106 for the pivotal support of the damper plate 108 carrying the sealing edge strip 110 positioned to move up and contact the top rail 14 at 112. When the damper plate is down, angle 98 makes contact with the side of strip 110 close to the edge of plate 108 to form a rest and support for the plate and at the same time secure quiet operation by engaging only the sealing strip. Suitable operating rods 114 and 116 are provided, actuated precisely as in my earlier patent by rocker 118 rotated by shaft 120 pivoted at one end in supporting clip 122 and at its other end actuated by push buttons 124.

Automatic closure means operable in case of fire are provided substantially identical with those in my prior Patent 1,403,559. These comprise supports 126 and the movable standard 128 actuated by spring 130. As the details of this structure have been fully set forth in my earlier patent, it is not thought necesasry to encumber the present description with a repetition thereof. Similarly, the lower damper, pivoted to bottom piece 54 and moving down against the bottom rail 16, being in all material respect entirely identical with that in my prior patent, has not been illustrated and described in detail.

The space between plate 30 may be filled with any suitable sound absorbing or fire protecting composition. One of the most satisfactory fillings, both from the point of view of expense, and serviceability, is the air with which the spaces will naturally fill themselves during the process of manufacture.

The places where sound can pass most easily through the door illustrated, are the marginal reinforced portions of the cabinet door panels. Here, sound may pass into the cabinet through what amounts to a single metal wall, and out of the cabinet again through a similar wall. A somewhat more sound proof type of construction, which also has a slightly more finished appearance when the cabinet doors are open, may be obtained by employing one cabinet stile member only

132 as shown in Figure 7, to carry the interlock 24. The lock edges of the doors are then formed with plates 30 remaining spaced apart past the edges of stile 132, beyond which the outer plate is wrapped around a projection 134 on the inner plate to partly encircle the adjacent edge of stile 132.

Referring now to Figures 8, 9 and 10, I have illustrated an all metal construction, more especially adapted for residence use, where the service cabinet is often built into a wall, rather than a door.

A single strip of sheet metal is rolled to house the construction, comprising the main end wall 136, the reinforcing side wall margins 138 and the rabbet 140 for housing the door. V-shaped notches are then cut in parts 138 and 140 and the strip forming wall 136 bent at right angles, so that the top, bottom, and both edge walls of the cabinet are formed of a single strip united by spot welding to an angle 142, and at the corner by braces 144 also spot welded in place. The edges of plates 30 are clinched over each other as at 142a. At the hinge edge, slots are formed at 145 to permit insertion of the movable hinge leaf 146 inside the door structure, where it is spot welded in place before the inner plate is added. Similar slots in rabbets 140 permit a fixed leaf 148 to be similarly mounted on margin 138.

Holes 150 may be provided, if desired, for use in fastening the structure in place, and a suitable special fitting 152 is spot welded in place to support the interlock.

Without further elaboration, the foregoing will so fully explain the gist of my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service, without eliminating certain features which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured to me by the following claims.

I claim:

1. In combination, a main door having stiles and rails, and two smaller doors mounted on said same stiles and rails to form an enclosure carried as a whole by said main door.

2. In combination, a main door having stiles and rails, and cabinet doors each hinged to one of the stiles and overlapping the edges of both stiles and both rails to form a seal when closed.

3. In combination, a main door having stiles and rails, and cabinet doors hinged to one of the stiles and overlapping the edges of both stiles and both rails to form a seal when closed.

4. In a service door, in combination, cabinet doors, and an edge frame uniting said doors to form a complete cabinet, said edge frame projecting in all directions beyond said cabinet, and hinge butts carried by said frame to suspend the frame and cabinet for pivotal movement to operate as a main door.

5. In a service door, in combination, a main door frame comprising stiles and rails, and a compartment door having, when closed, edge contact with the faces of said stiles and rails to form a closure, the body of said door lying outside the plane of contact to give depth to the compartment.

6. In a service door, in combination, a main door frame comprising stiles and rails, and a compartment door having, when closed, edge contact with the faces of said stiles and rails to form a closure, the body of said door being curved continuously out away from the plane of contact to give depth to the compartment, said compartment door being hingedly mounted directly upon one of the stiles of the main door.

7. In a compartment door, in combination, a panel comprising parallel sheet metal plates slightly spaced, one plate having bosses reaching through to the other plate and spot welded thereto, and a stiffening strip along the margins of said plates, the margins of said plates being wrapped around said stiffening strip and spot welded therewith into a rigid unitary structure, one plate margin being wrapped over one side of said stiffening strip and the other plate margin being wrapped over said first plate margin, around the edges of said first margin and stiffening strip and back across the other face of said strip.

8. In a compartment door, in combination, a panel comprising parallel sheet metal plates slightly spaced, one plate having bosses reaching through to the other plate and spot welded thereto, a stiffening strip along the margins of said plates, the margins of said plates being wrapped around said stiffening strip and spot welded therewith into a rigid unitary structure, and another strip spot welded to said structure and offset therefrom at its extreme outer edge to define a groove for holding a strip of felt.

9. In a compartment door, in combination, a panel comprising parallel sheet metal plates slightly spaced, one plate having bosses reaching through to the other plate and spot welded thereto, a stiffening strip along the margins of said plates, the margins of said plates being wrapped around said stiffening strip and spot welded therewith into a rigid unitary structure, another strip spot welded to said structure and offset therefrom at its extreme outer edge to define a groove for holding a strip of felt, and hinge butts laid over said last mentioned strip and spot welded thereto to form part of the structure.

10. In a compartment door, in combination, a panel comprising parallel sheet metal plates, a strip spot welded along the margin

of one plate and offset therefrom to define a groove, and a resilient sealing strip in said groove.

11. In combination, a main door frame, sheet metal auxiliary doors defining a cabinet carried as a whole by said frame, a reinforcing member on said door having a flange portion lying perpendicular to the door, and a door stop fastened to said reinforcing member.

12. In combination, a main door frame, sheet metal auxiliary doors defining a cabinet carried as a whole by said frame, reinforcing members on said doors having flange portions lying perpendicular to the doors, and a door stop interconnecting said doors and fastened at its ends to said reinforcing members.

13. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, movable hinge butt members on said doors, and fixed members on said frame having elbow arms and constituting hinge butt members, the hinge pintles lying beside the frame, said doors extending past the pintles into sealing contact with the side face of the frame, and said fixed members leaving clearance for the movement of the extending portions of said doors.

14. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, movable hinge butt members on said doors, and fixed members on said frame having elbow arms and constituting hinge butt members, the hinge pintles lying beside the frame, said doors extending past the pintles into sealing contact with the side face of the frame, and said fixed members leaving clearance for the movement of the extending portions of said doors, the extreme edges of said doors being formed by resilient sealing strips to secure quiet contact.

15. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, a reinforcing plate set into the inner face of each door, and a door stop attached at its ends to said plates to interconnect said doors and limit their relative angular displacements.

16. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, a shelf carried by one of said doors, and brackets for supporting said shelf attached to the door at one of the welded portions thereof.

17. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, and a door stop connected to each door at one of the welded portions thereof.

18. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, said plates being further united by welding at a plurality of closely adjacent points constituting a belt of such welding across each door, a shelf carried by one door just above the belt of welding, and shelf supporting brackets attached to the door at the belt of welding.

19. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, said plates being further united by welding at a plurality of closely adjacent points constituting a belt of such welding across each door, a shelf carried by one door just above the belt of welding, shelf supporting brackets attached to the door at the belt of welding, and a door stop just below the shelf connected to each door at the belt level.

20. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, each door being provided with a groove, a reinforcing plate set into the groove, a shelf carried by one door just above said plate, shelf supporting brackets attached to said plate, and a door stop just below said shelf having its ends fastened to said plates.

21. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, a fixed bottom piece for said cabinet carried by said frame, projections on the tops of said doors extending inwardly to engage the frame when the doors are closed and form the top of the cabinet, and similar projections on the bottoms of said doors extending inwardly under said bottom piece to engage the frame and form a seal.

22. In combination, a main door frame comprising stiles and rails, doors hinged directly to the hinge stile and cooperating with said frame to form a cabinet supported thereby, male locking elements carried by said doors, and female locking means mounted directly on the lock stile.

23. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, each door being

provided with a groove, a reinforcing plate set into the groove, a shelf carried by one door just above said plate, and shelf supporting brackets attached to said plate.

24. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, each door being provided with a groove, a reinforcing plate set into the groove, and a door stop having its ends fastened to said plates.

25. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, said doors comprising parallel spaced plates united by offsetting one plate into contact with the other at intervals and spot welding, each door provided with a groove, and reinforcing plates set into the grooves.

26. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, a fixed bottom piece for said cabinet carried by said frame, and projections on the tops of said doors extending inwardly to engage the frame when the doors are closed and form the top of the cabinet.

27. In combination, a main door frame, doors cooperating therewith to define a cabinet carried thereby, a fixed bottom piece for said cabinet carried by said frame, and projections on the bottoms of said doors extending inwardly under said bottom piece to engage the frame and form a seal.

28. In combination, a main door frame comprising stiles and rails, doors cooperating therewith to define a cabinet carried thereby, a fixed bottom piece for said cabinet mounted on said stiles, and projections on the bottoms of said doors extending inwardly under said bottom piece to engage the frame and form a seal.

29. In combination, a main door frame having stiles and rails, doors hinged to the hinge stile of said frame and cooperating with said frame to define a cabinet carried thereby, and cooperating locking means carried by the lock stile of said frame and the door margins adjacent thereto.

30. In combination, a cabinet door smaller than an ordinary room door and bent in at its vertical edges to contact directly with the faces of the stiles of an ordinary door, and hinge and lock fittings for mounting said cabinet door directly on the stiles of an ordinary door, whereby a plurality of said doors may be telescoped together and shipment of complete cabinets ready for installation made in small space.

31. In combination, a main door frame comprising stiles and rails defining an opening, and two doors hingedly mounted directly on one of the stiles of the frame at opposite sides thereof and covering said openings when closed, the distance between the inner faces of said doors being greater than the thickness of the stiles of the main door frame.

32. In combination, a main door frame comprising stiles and rails defining an opening, and two doors hingedly mounted directly on one of the stiles at opposite sides thereof and covering the opening when closed, the inner face of each door being concaved to provide a space between the doors of greater depth than the thickness of the frame stiles.

In witness whereof, I hereunto subscribe my name this 23rd day of November, 1923.

FRANK J. MATCHETTE.