109. SAFES, BANK PROTECTION
AND RELATED DEVICES.
84

March 4, 1924.

C. BARTELS ET AL

1,485,360

METALLIC STRUCTURE

Filed July 7, 1921

2 Sheets-Sheet 1

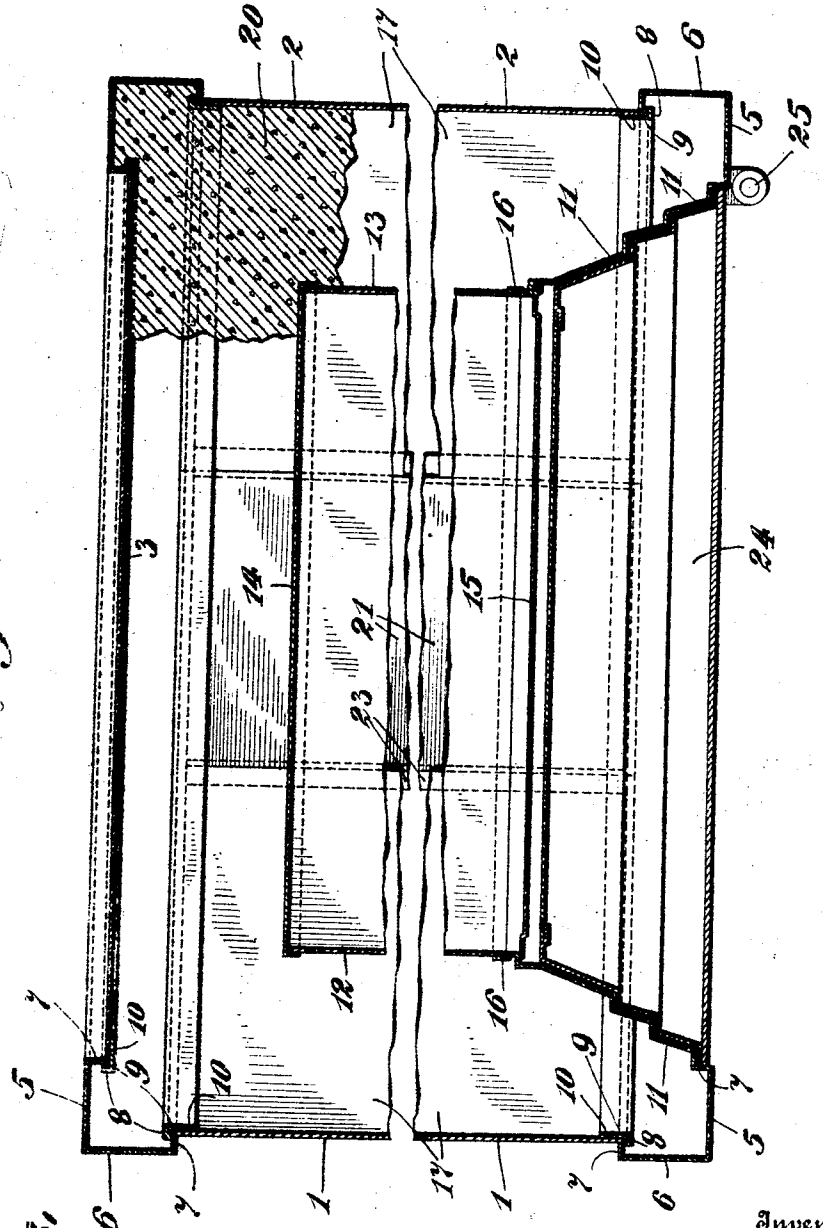


Fig. 1.

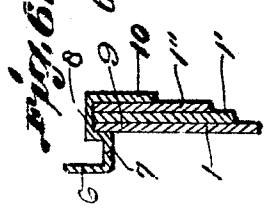


Fig. 6.

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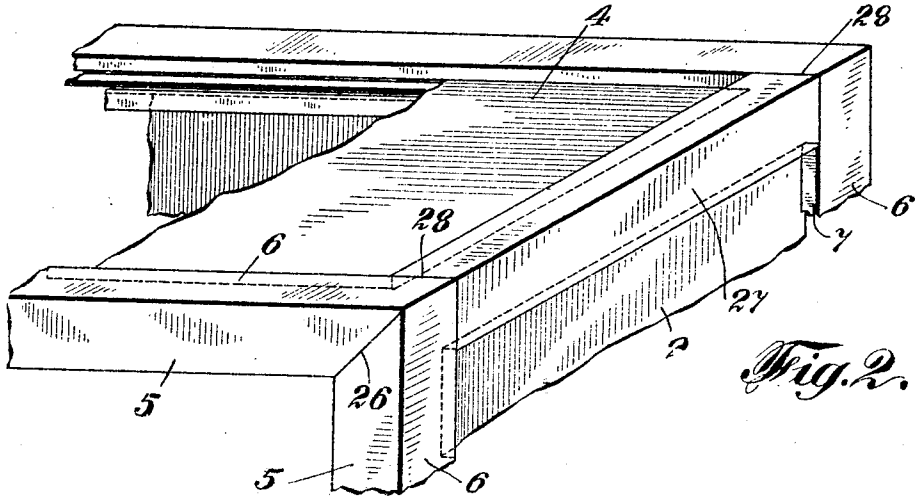


Fig. 2.

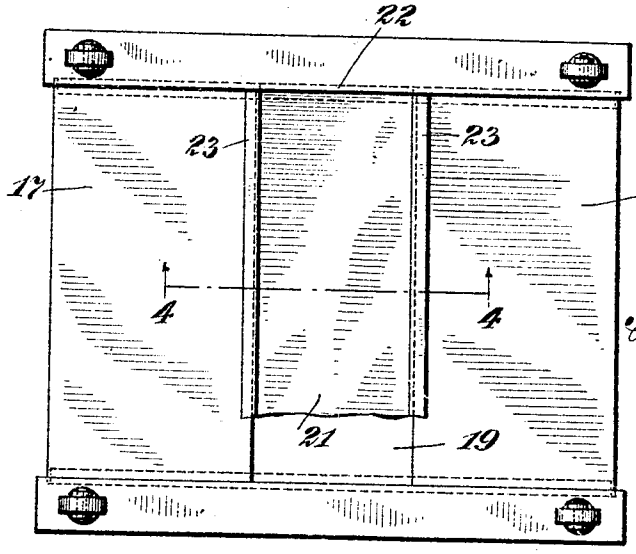


Fig. 3.

Fig. 4.

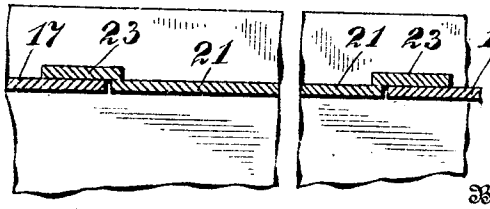
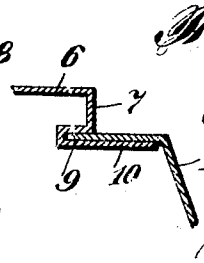


Fig. 5.



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AND RELATED DEVICES.

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Patented Mar. 4, 1924. 1,485,360

UNITED STATES PATENT OFFICE.

CARL BARTELS, OF HAMILTON, OHIO, AND DAVID H. BELLAMORE, OF NEW YORK, N. Y., ASSIGNORS TO THE MOSLER SAFE COMPANY, OF HAMILTON, OHIO, A CORPORATION OF NEW YORK.

METALLIC STRUCTURE.

Application filed July 7, 1921. Serial No. 482,893.

To all whom it may concern:

Be it known that we, CARL BARTELS and DAVID H. BELLAMORE, both citizens of the United States, residing, respectively, at Hamilton, in the county of Butler and State of Ohio, and in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Metallic Structures, of which the following is a specification.

Our invention relates to metallic structures, and more particularly to metallic structures adapted to serve as safes or safe cabinets.

The methods heretofore employed in constructing metallic structures adapted for use as safes or safe cabinets, have required the making of the parts separately for each construction, and the machining, or bending, or otherwise forming of these parts for the purpose of adapting them to be assembled into the structure. These constructions usually have required the use of bolts, rivets, or the like, for holding the parts together with the attendant disadvantage that the rivets or bolt heads are liable to, and frequently are, sheared out, and the joints in these constructions have the disadvantage of not being completely air, water and fire proof throughout. No method of constructing and assembling safes has heretofore been known whereby a safe can be built and assembled from parts that have no machining other than the shearing of body plates to size and the forming of framing members therefor in such a way that, when assembled, the construction will comprise practically an assembly of interchangeable and standard sized units, and it is one of the aims of our invention to provide a metallic structure adapted for use as a safe or safe cabinet, having the above characteristics and to provide a method for producing the same. Another object of our invention is to provide a metallic structure of the character described which has great holding strength and one which may be readily and inexpensively manufactured and assembled. Another object of our invention is to provide a strong metallic structure having walls comprising metal plates which may be unmachined, and novel and improved binding and locking means whereby these plates and other parts are maintained and locked in assembled position without utilizing bolts, rivets or the like. Further objects of our invention include the provision of a metallic structure of the character described, and one which may be built and assembled from parts that require a minimum of machining, one in which the joints are continuous, and are air, water and fire proof throughout wherever the parts meet the angles, and a construction in which the parts may not be torn away or bulged by either outward pressure or inward pressure. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the following claims.

In accordance with our invention we form the outer walls of the structure of properly squared flat plates of metal or sheet metal, and provide along each edge of the safe a framing member presenting two longitudinally extending grooves disposed at right angles to each other, each groove being adapted to receive an edge of one of the plates forming a wall and to hold the plates firmly and securely in the desired position. These framing members may comprise solid pieces with the grooves or recesses pressed in, or may comprise sheet steel, or other metal, suitably formed by a rolling or pressing operation. We either mount door-jamb portions in the grooves of the marginal framing members at the front of the structure or we form the jamb portions integrally on these members. We provide a suitable inner cabinet having its walls spaced from the outer walls, and to permit of the introduction of filling material, such as cement, into the space between the inner and outer walls we provide an aperture in one of the outer walls, preferably the bottom, by mounting in the marginal framing members two pieces of sheet metal spaced apart so as to leave an open strip across the bottom of the safe. Then, after the filling material has been poured through this space until the cavity has been sufficiently filled, we provide a sheet of metal substantially the size of the open strip and spring two of its opposite edges into the vacant portion of the grooves of the framing members. This last

mentioned plate also may be secured to the abutting bottom plates by welding. The body plates and framing members and joint portions may be locked and welded together to form a continuous air, water and fire proof joint throughout, wherever the body plates meet the angles.

In order that a clearer understanding of our invention may be had attention is hereby directed to the accompanying drawings illustrating one possible embodiment of our invention. In the drawings, Fig. 1 is a horizontal section of a safe cabinet embodying our invention; Fig. 2 is a fragmentary view showing one edge of the safe cabinet; Fig. 3 is a plan view of the bottom of the safe with a part broken away; Fig. 4 is an enlarged horizontal section of a portion of the bottom of the safe taken on the line 4—4 of Fig. 3; Fig. 5 shows in fragmentary section a modified form of the mounting of the door-jamb; and Fig. 6 is a fragmentary sectional view showing the edge of a wall made up of a plurality of superimposed plates associated with a framing member.

Referring to the drawings, reference characters 1 and 2 represent, respectively, two side walls of the outer wall of the safe, 3 the back wall, 4 the top wall. The bottom wall is formed in three sections as will be described hereinafter.

To bind adjacent walls together and to hold them firmly and securely in position we provide framing members having two longitudinally-extending grooves at right angles to each other, each groove opening outwardly, that is, toward the unturned edge of a wall plate, and is adapted to receive substantially the entire adjacent unturned edge of the wall plate. As shown, these framing members comprise a central web portion consisting of two flanges 5 and 6, respectively, at right angles to each other, and the outer extremities 7 of each of these flanges extends inwardly a slight distance, then is jogged as at 8 to provide a groove 9 into which the adjacent edge of the wall plate is adapted to fit, the portion forming the inner side of the groove 9 being extended to provide a flange 10 adapted to abut against the inner surface of the adjacent wall plate to more firmly and securely hold the plate in position in its groove. The framing members at the front of the safe may be shaped to provide integral door-jamb portions 11, or these framing members may be similar to the ones previously described and have separate door-jamb portions 11′ mounted and positioned, as by welding, in the grooves 9 as shown in Fig. 5.

An inner cabinet is provided, of any suitable construction, the side walls of which are shown in the drawings at 12 and 13, respectively, the back wall at 14 and the door at 15. The jamb portions 11, above mentioned, may be continued inwardly as at 16 to abut against and be welded to the top, bottom and side walls of the inner safe so as to hold the inner cabinet in position, or the inner cabinet may be otherwise suitably supported to provide the desired space for a filler intermediate its walls and the outer walls of the safe.

To permit of the easy insertion of a filling medium into this space the bottom wall of the outer safe may be formed in such a way that an aperture may temporarily be present, as by positioning two portions of the latter as 17 and 18, respectively, in position in the grooves of the marginal binding strips so as to leave an open strip or aperture between them, extending preferably entirely across the bottom of the safe, as at 19. After the filling material, a fragment of which is shown at 20, has been poured through the aperture 19 so as to suitably fill the space between the inner and the outer walls of the safe, to cover the space or aperture 19, a strip or piece of sheet metal 21, substantially the shape of the space, is provided, and two of its opposite edges sprung into the vacant portions of the grooves of the framing members, at 22. The other two edges, extending between the two framing members, may be provided with flanges 23 adapted to fit closely over and be spot welded to portions 17 and 18 along the adjacent edges. The construction of the safe may be completed by the provision of a suitable door 24, which may be hinged to one of the marginal framing members at the front of the safe, as at 25.

The marginal framing members may be solid or may be manufactured in long strips by a rolling or pressing operation, from which strips the desired pieces may be cut to the length desired. When two framing members come together, as at the corners of the safe, they may be mitred as at 26 and welded together to form a firm joint. Other strips, such as 27, may be cut across at right angles so that their ends will abut other strips, as at 28, and to which they may be joined by welding to more securely hold the parts in place.

It is obvious that in accordance with the above invention a light safe cabinet may be constructed without the inner cabinet or the filling material. In this case, if a single piece of sheet metal does not give the desired thickness or rigidity to the wall, two or more superimposed sheets may be used, and in this event the grooves 9 may be made wide enough to accommodate and include the adjacent edges of all superimposed plates. Spot welding or other means for further securing the parts together may obviously be employed wherever it is desired and expedient.

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The sheet metal construction of the walls permits a plurality of walls being formed from a single integral sheet of metal suitably shaped to form the walls desired. For instance, a single integral piece of sheet metal may be bent so that its middle portion will constitute the top wall of the safe, its portions at each side of the middle portion to constitute the two opposite side walls of the safe, and the portions beyond these last mentioned portions bent at right angles thereto to provide the bottom of the safe, as shown in Fig. 3 of the drawings. In this modification connecting framing members between the back and front frames may be omitted. The bottom portions may be designed to meet at their edges so that they may be welded together, or they may be designed not to meet, as shown in Fig. 3, so as to leave a space through which the filler may be inserted into the safe. In the latter case an additional plate, such as plate 21, may be used to fill this space, as before described.

Many various methods for inserting the filling properly into the structure may be employed without departing from the scope of our invention. For instance, an optional method may comprise, assembling the back of the safe with its marginal framing members into one unit and the other parts of the structure as another unit, inserting the filling in the body of the safe, as well as in the pocket formed by the frame members and the back, and then fitting the back and attached framing members to the walls of the structure and welding up after assembly. A further modification of this feature of our invention might consist in leaving the back plate 3 out of the back of the safe and later swinging this plate into the grooves of the framing members substantially in the manner described and illustrated in regard to Fig. 3, or by cutting the plate a little smaller than the height and width of the space between the actual grooves of the framing members and wedging the plate in with strips, and welding the whole into one homogeneous mass.

As many other changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

It is readily understood that in a structure built in accordance with the above disclosure, flat plates may be used to form the walls without any machining process other than shearing to size, without utilizing any mechanical means of bending or forming them for the purpose of adapting them in the assembly of the structure, the parts are securely locked and maintained together by members which may be manufactured of rolled or pressed steel and cut to the desired lengths and without utilizing bolts or rivets, the joints at the angles wherever the body plates meet the angles are continuous and are air, water and fire proof throughout, the whole construction as well as the individual parts have great holding strength, and the body plates act as a natural reinforcement to the structure through the continuous bearing brought into effect by the plates interlocking in the grooves or channels of the frame members. After assembling, the plates, by reason of this method of fastening, cannot bulge in or bulge out in the event of heavy weights falling on the structure, and thus obviates the possibility of the body plate being torn away from the angles by either outward pressure or inward pressure.

What we claim is:

1. In safe construction, a metallic framing member having a central web portion providing two flanges angularly disposed one to the other, an inwardly extending flange along the outer extremity of each of said flanges, and a groove open outwardly along the inner edge of each of said inwardly extending flanges, said grooves being adapted to receive unturned edges of flat wall plates, and the inner side of each of said grooves being extended and abutting against the inner surface of a plate when its edge is in the groove.

2. A structure of the character described, comprising, in combination, a plurality of rectangular frames, each having grooves along its four edges, and a plurality of wall plates having unturned edges seated in said grooves.

3. A structure of the character described, comprising, in combination, two rectangular frames, each having grooves along its four edges, and a plurality of wall plates having unturned edges seated in grooves of both of said framing members.

4. A structure of the character described, comprising, in combination, flat top, bottom, and side wall plates having unturned edges, and a rectangular frame having grooves along its four edges adapted to receive separately unturned edges of said wall plates, said frame having a portion constituting both a front wall portion and inwardly extending jamb walls of the structure.

5. A structure of the character described, comprising, in combination, flat top, bottom,

and side wall plates having unturned edges, and a rectangular frame having grooves along its four edges adapted to receive separately unturned edges of said wall plates, said frame having a portion constituting both a front wall portion and inwardly extending jamb walls of the structure, and an inner cabinet abutting and secured to said jamb walls.

6. A metallic structure of the character described, comprising, in combination, two spaced rectangular frames, each providing grooves open toward the other frame, wall members extending between said frames and having unturned edges seated in said grooves, other grooves on one of said frames opening toward the center thereof, another wall member extending between opposite sides of said frame and having unturned edges seated within said other grooves, a door jamb portion on the other frame, and framing strips extending between said two frames at the corners thereof and having grooves open outwardly, unturned edges of said wall members which extend between said frames being seated in the grooves of said strips.

7. In a metallic structure of the character described, a single sheet of metal shaped to form the two sides and the top wall of the structure, said sheet having unturned edges, a frame member having grooves open outwardly for the entire rear edge of said sheet and also having grooves opening toward the center of the frame for the unturned edges of a back plate, a back plate in said last mentioned grooves, a second framing member having grooves opening outwardly for the entire front edge of said sheet, and having a jamb portion, and a bottom plate having unturned edges extending between said two frames and seated in grooves thereof.

8. In a metallic structure of the character described, in combination, a wall plate having an aperture, marginal framing members one at each end of said aperture, each presenting a groove open toward the other framing member, and a closure plate having unturned ends adapted to be seated in said grooves, and having side portions engaging the wall adjacent said aperture.

This specification signed and witnessed this 13th day of June, 1921.

CARL BARTELS.
DAVID H. BELLAMORE.

Witnesses as to signature of CARL BARTELS:
F. E. LACY,
H. REIFF.

Witnesses as to signature of DAVID H. BELLAMORE:
KATHARINE TOBIN,
E. J. S. HALLENKAMP.