W. REES.

VAULT.

APPLICATION FILED MAR. 9, 1909.

1,108,105.

Patented Aug. 18, 1914.

2 SHEETS—SHEET 1.

FIG. I.

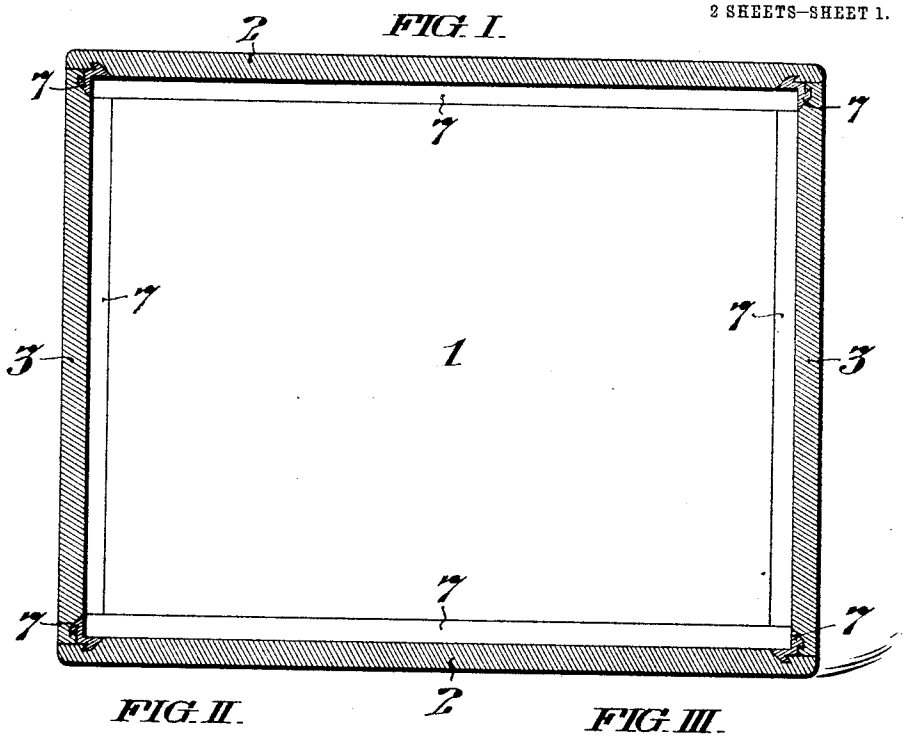


FIG. II.

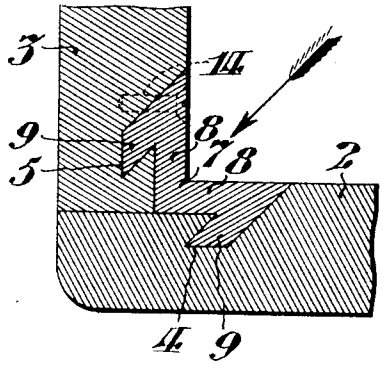


FIG. III.

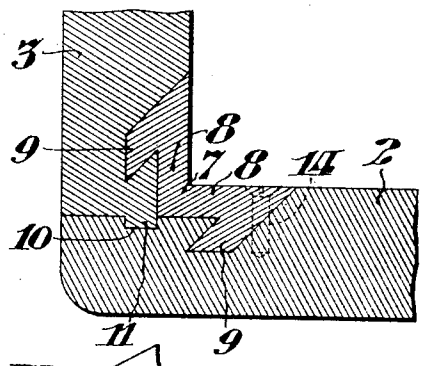
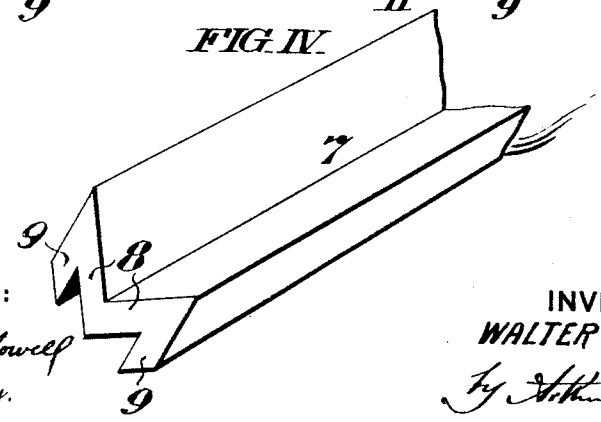


FIG. IV.



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2 SHEETS—SHEET 2.

FIG. V.

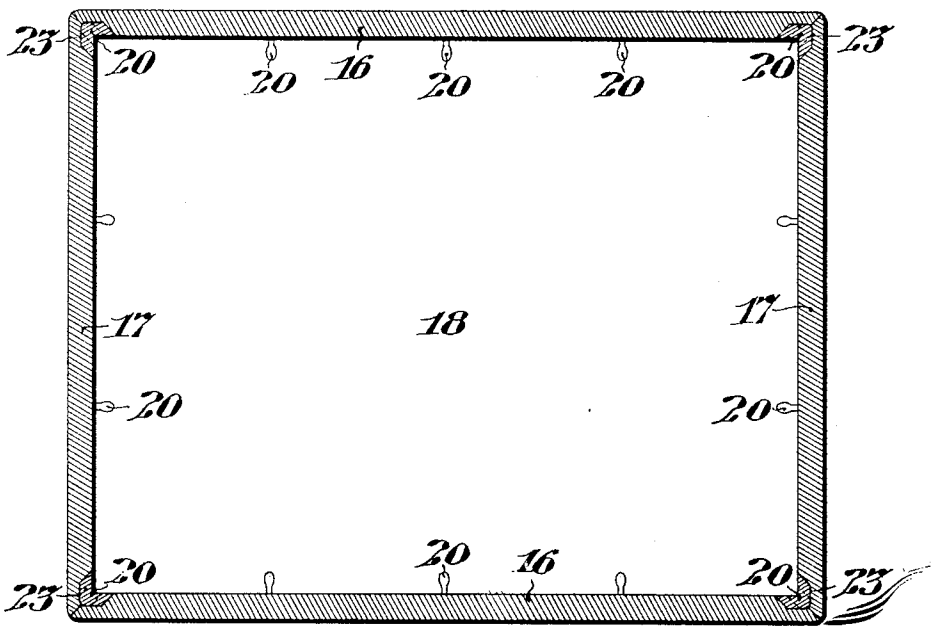


FIG. VI.

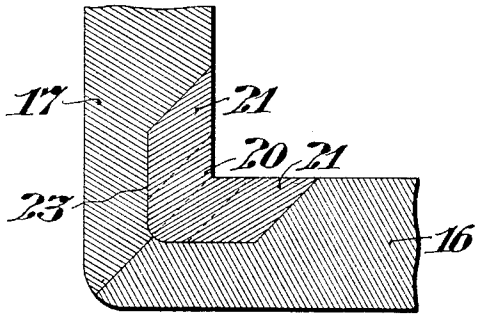
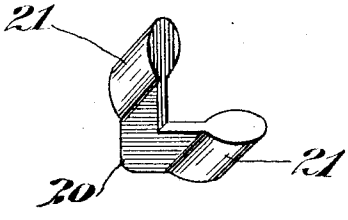


FIG. VII.



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VAULT.

1,108,105. Specification of Letters Patent. Patented Aug. 18, 1914.

Application filed March 9, 1909. Serial No. 482,209.

To all whom it may concern:

Be it known that I, WALTER REES, of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Vaults, whereof the following is a specification, reference being had to the accompanying drawings.

My invention may be advantageously employed in constructing vaults having walls formed of armor plates or other massive metal slabs which are primarily separate, and relates particularly to means for interlocking such slabs at their junctions.

As hereinafter described, my improved interlocking means includes removable bars having projecting members extending in parallel relation with each other and fitted to corresponding parallel recesses in the adjacent slabs. Said parallel projecting members are inserted in said recesses in such oblique relation to the planes of said slabs that the latter cannot be separated while thus interlocked by said members; the latter members may also be connected to the slabs by removable attaching means which normally prevent their withdrawal.

My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings; Figure I is a vertical sectional view of a vault embodying my invention. Fig. II is a fragmentary sectional view showing the lower left hand corner of Fig. I on a larger scale. Fig. III is a fragmentary sectional view similar to Fig. II, but showing a modified form of the invention. Fig. IV is a perspective view of a fragment of a locking bar of the type shown in Figs. I to III. Fig. V is a vertical sectional view of a vault showing a modified form of my invention. Fig. VI is a fragmentary sectional view showing the lower left hand corner of Fig. V on a larger scale. Fig. VII is an edge view of a locking bar of the type shown in Figs. V and VI.

Referring to the form of my invention shown in Figs. I to IV inclusive; 1 is a vault chamber inclosed by walls formed of horizontal slabs 2 and vertical slabs 3, respectively provided with undercut recesses 4 and 5, which extend in parallel relation with each other but in oblique relation to the horizontal and vertical planes of said slabs. The locking bars 7, have limbs 8, conveniently disposed in right angular relation to each other, forming a right angular web, connecting the projecting flanges 9, extending in parallel relation with each other so as to fit into said parallel recesses 4 and 5. Although as shown in Figs. I and II, said slabs 2 and 3, are not interengaged and are connected solely by the locking bars; it is to be understood that said slabs may be interengaged independently of said bars; for instance, as shown in Fig. III, where the slab 2 is provided with the mortise 10, and the slab 3 is provided with the tenon 11, engaged in said mortise. It is to be understood that said slabs 2 and 3, are assembled in the rectangular position shown in Fig. II, before the locking bars 7 are inserted, and that the latter are then inserted in the direction of the arrow, *i. e.* parallel with the direction of said projections on the bar and recesses in said slabs. Any convenient means may be employed to detachably retain said locking bars in position, for instance, the screws 14 indicated in Figs. II and III. As shown; said slabs 2 and 3 are made thinner at their contiguous margins than elsewhere, to such an extent that the locking bars 7 may be fitted therein with their limbs 8 flush with the interior faces of said slabs. However, said slabs may be made as thick at their margins as elsewhere, and the locking bars be otherwise shaped and disposed.

Referring to the form of my invention shown in Figs. V to VII inclusive; the horizontal slabs 16 and vertical slabs 17, forming the walls of the vault chamber 18, are connected by locking bars 20, having cylindriform projecting members 21, extending with their axes in parallel relation and fitted in correspondingly shaped recesses 23, undercut in the contiguous margins of said slabs. The axes of said locking bar projections extend obliquely to the horizontal and vertical planes of said slabs like the projections on the locking bars 7 above described, and may be similarly inserted and secured.

It may be observed that in the latter form of my invention, the contiguous margins of the slabs 16 and 17, are precisely alike, whereas, the slabs 2 and 3 are differently shaped so that the margins of the slabs 2 overlap the edges of the slabs 3. However, it is to be understood that slabs which are

overlapped as shown in Fig. I, may be connected by locking bars of the type shown in Fig. V, and vice versa.

I do not desire to limit myself to the precise details of construction and arrangement above described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. In a vault, the combination with adjoining metallic wall slabs extending at right angles to each other and each having a recess adjacent to the other slab; the opposite surfaces of said recesses being parallel with each other and with the junction of said slabs; of a locking bar having projections extending transversely to said bar and parallel with each other inserted in said recesses and interlocking said slabs; said bar being removable in a direction transverse with respect to the planes of said slabs; and attaching means detachably retaining said bar in operative position.

2. In a vault, the combination with adjoining metallic wall slabs extending at right angles to each other and each having a recess adjacent to the other slabs; the opposite surfaces of said recesses being parallel with each other and with the junction of said slabs; of a locking bar having projections extending transversely to said bar and parallel with each other inserted in said recesses and interlocking said slabs; said bar being removable in a direction transverse with respect to the planes of said slabs.

3. In a vault, the combination with metallic wall slabs, each having an undercut recess adjacent to the other slab; the opposite surfaces of said recesses being parallel with each other; of a locking bar having projections extending transversely to said bar and parallel with each other inserted in said recesses and interlocking said slabs; said bar being removable in a direction transverse with respect to the planes of said slabs.

4. In a vault, the combination with adjoining metal slabs having undercut recesses in their adjacent edges extending transversely with respect to the planes of said slabs; of a locking bar, wholly within and concealed by the outer surface of said vault, having projections respectively inserted in the recesses in said slabs, transversely to the planes of said slabs, and interlocking said slabs; all of the interlocking surfaces transverse to said slabs being parallel with each other; whereby said bar may be removed in a direction transverse with respect to the planes of said slabs.

5. In a vault, the combination with adjoining metal slabs having recesses in their adjacent edges extending transversely with respect to the planes of said slabs; of a locking bar, wholly within and concealed by the outer surface of said vault, having projections respectively inserted in the recesses in said slabs, transversely to the planes of said slabs, and interlocking said slabs; all of the interlocking surfaces transverse to said slabs being parallel with each other; whereby said bar may be removed in a direction transverse with respect to the planes of said slabs.

6. In a vault, the combination with metallic wall slabs, one having a unitary projection engaging a recess in the other, and each having an undercut recess adjacent to the other slab; the opposite surfaces of said recesses being parallel with each other; of a locking bar having projections extending transversely to said bar and parallel with each other inserted in said recesses and interlocking said slabs; said bar being removable in a direction transverse with respect to the planes of said slabs.

7. In a vault, the combination with adjoining metallic wall slabs extending at right angles to each other and each having a recess, adjacent to the other slab, in its inner face and not extending to the outer face thereof; said recesses respectively including undercut portions each having opposite parallel walls; said portions extending parallel with each other and with the junction of said slabs, but in oblique relation to the planes of both of said slabs; of a locking bar, embedded in the recesses in said slabs, having two projecting members with opposite parallel walls, said projecting members being parallel with each other and connected by a web; whereby said locking bar may be inserted and withdrawn in a direction oblique with respect to the planes of both of said slabs, without movement of the latter with respect to each other; said locking bar being wholly within, and concealed by, the outer surface of said vault, having its inner and outer faces respectively parallel with the inner and outer faces of said slabs, and having its inner surfaces flush with the inner surfaces of said vault.

8. In a vault, the combination with adjoining metallic wall slabs extending at right angles to each other and each having a recess, adjacent to the other slab, in its inner face and not extending to the outer face thereof; said recesses respectively including undercut portions each having opposite parallel walls; said portions extending parallel with each other but in oblique relation to the planes of both of said slabs; of a locking bar 7 embedded in the recesses in said slabs having two projecting members 9 each having opposite parallel walls, said projecting members being parallel with each other and connected by a right angular web; whereby said locking bar may be inserted and

withdrawn in a direction oblique with respect to the planes of both of said slabs, without movement of the latter with respect to each other; said locking bar being wholly within, and concealed by, the outer surface of said vault, having its inner and outer faces respectively parallel with the inner and outer faces of said slabs, and having its inner surfaces flush with the inner surfaces of said vault.

9. In a vault, the combination with adjoining metal slabs having recesses in their adjacent edges extending transversely with respect to the planes of said slabs; of a locking bar, wholly within and concealed by the outer surface of said vault, having projections respectively inserted in the recesses of said slabs, transversely to the planes of said slabs, and interlocking said slabs; all of the interlocking surfaces transverse to said slabs, being in the same spaced relation throughout their extent; whereby said bar may be removed in a direction transverse with respect to the planes of said slabs.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania this twentieth day of February 1909.

WALTER REES.

Witnesses:
AL DOHERTY,
JOHN STAPLETON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."