L. H. BOWMAN & G. L. DAMON.

VAULT OR SAFE.

APPLICATION FILED AUG. 19, 1908.

918,953.

Patented Apr. 20, 1909.

2 SHEETS—SHEET 1.

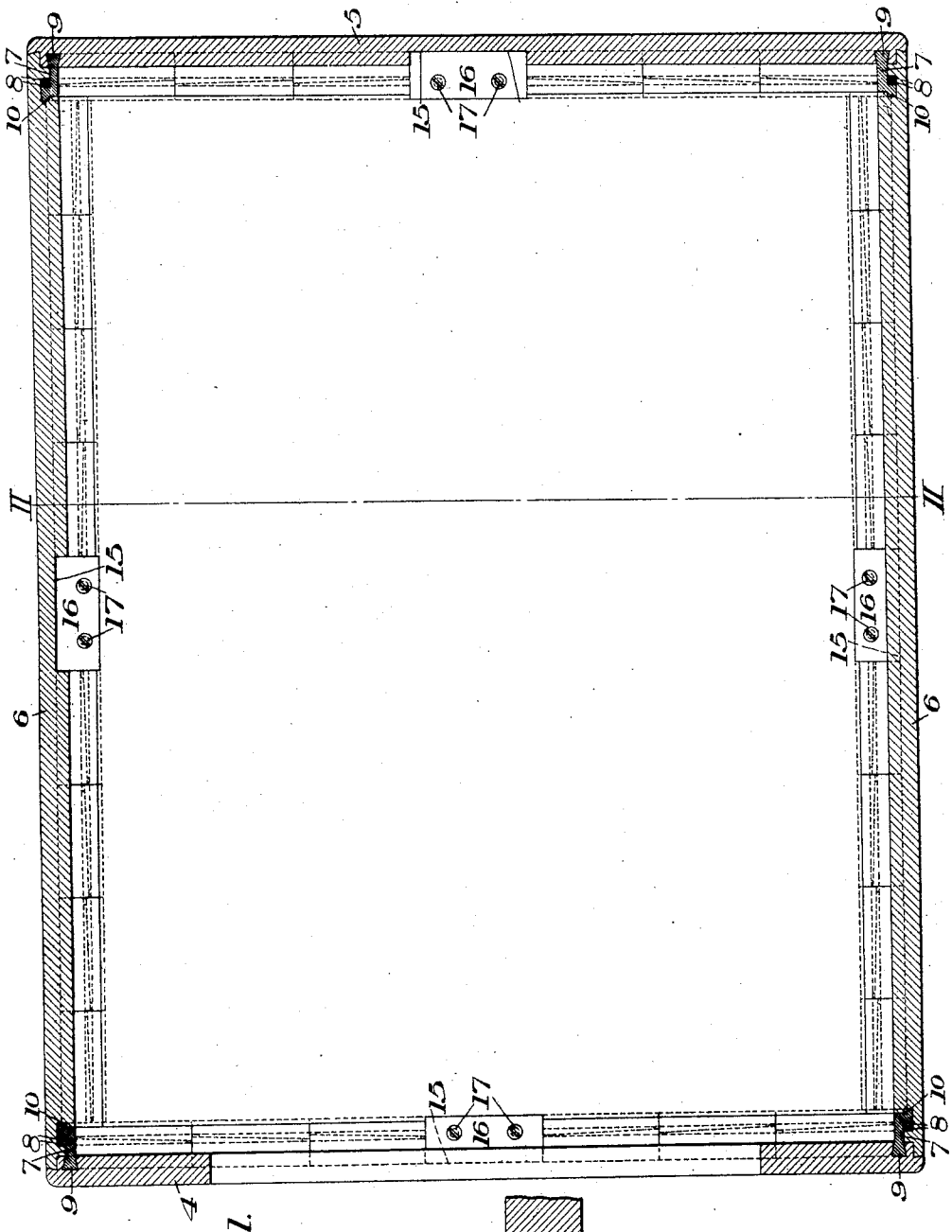


Fig. 1.

WITNESSES

W. W. Swartz

R. A. Balderson

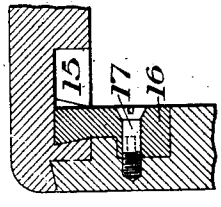


Fig. 7.

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2 SHEETS—SHEET 2.

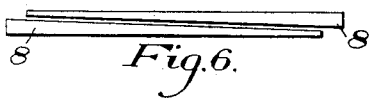


Fig. 6.

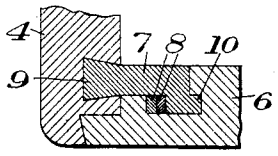


Fig. 3.

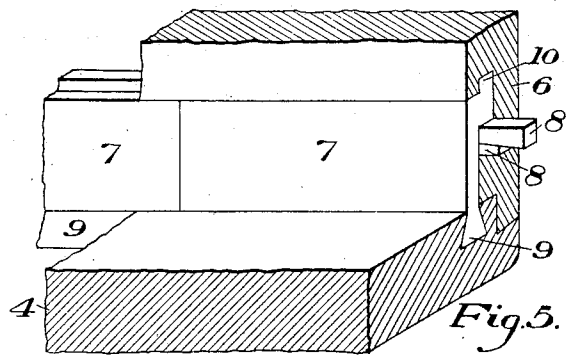


Fig. 5.

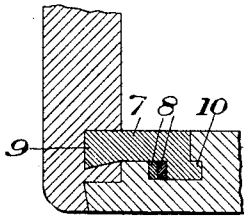


Fig. 4.

Fig. 2.

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UNITED STATES PATENT OFFICE.

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VAULT OR SAFE.

No. 918,953. Specification of Letters Patent. Patented April 20, 1909.

Application filed August 19, 1908. Serial No. 449,226.

To all whom it may concern:

Be it known that we, LEE H. BOWMAN, of Munhall, Allegheny county, Pennsylvania, and GEORGE L. DAMON, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Vaults or Safes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional plan view of a vault or safe constructed in accordance with our invention; Fig. 2 is a sectional end elevation of the same on the line II—II of Fig. 1; Fig. 3 is a detail sectional view on a larger scale showing the construction of the joints between the top, bottom or end plates and the side walls forming the vault; Fig. 4 is a detail view similar to Fig. 3 showing a modified construction of the interlocking means at the joints; Fig. 5 is a detail perspective view on a larger scale showing one of the interlocking bars and its wedging keys employed in connecting the plates together; Fig. 6 is an enlarged detail view in side elevation of a pair of the coacting wedges used in tightening the interlocking bars in place; Fig. 7 is a detail sectional view showing the recesses provided to permit the interlocking bars being placed in their slots and grooves and showing the filler block bolted in place in this recess so as to hold the interlocking bars and wedges.

Our invention relates to the construction of burglar proof vaults and it particularly relates to the type of vaults which are known as armor plate vaults in which hardened steel plates which have been treated by the Harvey or other cementation process are used in constructing the walls of such vaults.

The object of our invention is to provide improved means for securing together the meeting edges of the vault and the invention consists in the novel arrangement of the grooves and slots in such plates and in the interlocking means employed in connection with such slots in securing the plates together.

The invention also consists in the novel means employed by which the interlocking bars are secured in place.

It further consists in providing means for securing the plates together which are inaccessible from the outside of the vault and by means of which movement of the interlocking bars is prevented after they have been placed in position in their slots which are located in the inner face of the plates forming the vault.

In the drawings, 2 and 3 represent the top and bottom plates, 4 and 5 the end plates and 6 the side plates forming the vault. The edges of the plates are rabbeted so as to form overlapping joints and the plates are connected together at the joints by means of interlocking bars 7 and oppositely facing tapering wedging keys 8 which are inserted in the longitudinal grooves or slots in the inner surface of the plates and running parallel to the rabbet in the edges of these plates. The sides of the longitudinal grooves or slots are parallel, part of the slots forming dove tails, into which the corresponding dove-tailed portions 9 of the interlocking bars are inserted, the balance of the slots having square faces at right angles to one another instead of being dove-tailed and the inner edges of such slots are undercut so as to form recessed grooves into which the tongues 10 on the interlocking bars 7 project, when these bars are in position. Pairs of oppositely tapering wedging keys 8 are preferably made of such length that after the keys have been driven into place so as to draw the meeting edges of the plates tightly together and key these interlocking bars in place that the keys will be approximately flush with the end of the interlocking bar. Should the keys extend slightly beyond the end of the interlocking bar they can be easily and quickly cut off flush with the end of this bar.

In order to permit the introduction of the interlocking bars 7 into the dove-tail and recessed slots provided in the plates, a recess 15 is provided in each plate intermediate the length of the slot or groove and after each of the short bars 7 with their respective wedging keys 8 have been driven home, the filler blocks 16 are placed in each of the recesses 15 and are secured in place by means of suitable bolts 17 as shown in Fig. 7.

In the modification shown in Fig. 4, it will be noted that instead of having a double tapering dove-tail groove and corresponding dove-tail on the end of the interlocking bar 7, the one side of the groove is straight with the outer face of the interlocking bar 7 correspondingly straight.

In the erection of the vaults or safes, the plates which have been machined to the desired size and shape and which have been

provided with the grooves and slots are assembled in place and are preferably held in position temporarily by any suitable clamping means. The short interlocking bars 7 are then successively inserted in the recess 15 and are moved in the grooves away from the recess toward one end or the other of the slot or groove in the plates until the ends of the adjoining bars are in contact with each other. When each interlocking bar 7 is moved into position its pair of oppositely tapering wedging keys 8 are forced into position to tightly clamp the edges of the plates into engagement with the intermediate bars. After all of the interlocking bars 7 have been wedged into position, the recess 15 is provided with a filler block 16, which is held in position by means of suitable tap bolts 17. The ends of the follower blocks 16 contact with the ends of the bars 7 and with the end of the wedging keys and prevent any possible endwise movement of the bars and keys.

While but one plate to each side of the vault is shown in the drawings, it is to be understood that the number of plates in any one side may be varied as desired, the size of the vault being constructed determining the size and number of such plates.

While we have described the construction of a vault the invention is equally applicable to the construction of small safes when desired.

The advantages of our invention are many and will be apparent to those skilled in the art. By employing slots in the inner edges of the plates having parallel edges, the slots are easily and cheaply made and the difficulty experienced in making long tapering slots is avoided. By providing short interlocking bars having parallel opposing faces, the cost of making such bars is reduced. The use of pairs of oppositely tapering wedging keys for securing the interlocking bars in place permits the use of plain wedges which are easily and cheaply made and which do not have to be accurately machined to any exact size as one wedge may be slightly less in thickness than its opposing wedge, the two wedges making up the necessary thickness for wedging the interlocking bars in place. The filler blocks as shown and described, securely hold the interlocking bars and wedging keys in place and prevent any possibility of movement or displacement of these bars. The interlocking bars and their securing wedges are all inserted in place from the interior of the vault and are inaccessible except from the inside of the vault.

Modifications in the construction and arrangement of the parts may be made without departing from our invention. Instead of employing interlocking bars having opposing parallel faces with a pair of oppositely tapering wedging keys for drawing and holding the edges of the plates together, one edge of said interlocking bars may be tapered and a single tapering wedging key be employed for securing the bars in place in the parallel sided slots located in the plates.

We claim:—

1. A vault or safe composed of plates fitted together at the corners and separate securing bars at the corners, each having interlocking engagement with each of its adjacent plates and means for tightening the securing bars in place; substantially as described.

2. A vault or safe composed of plates fitted together at the corners, separate securing members at the corners, each having an interlocking engagement with each of its adjacent plates and means for tightening the securing members in place, said tightening means being seated from the interior of the structure; substantially as described.

3. A vault or safe composed of plates fitted together at the corners, separate securing members at the corners, each having an interlocking engagement with each of its adjacent plates and wedging means for tightening and securing its interlocking members; substantially as described.

4. A vault or safe comprising plates abutting at the corners of the structure, each having a groove at its inner face adjacent to each of its edges, interlocking members engaging said grooves and forming interlocks for the plates at the corners and wedging members engaging with said interlocking members and locking said plates in position; substantially as described.

5. A vault or safe having plates fitted together at adjoining faces with their inner edges disposed at an angle to each other and inwardly exposed slots in the inner faces of the plates located adjacent to the adjoining edges thereof, and locking members adapted to be inserted in place after the plates are in position engaging the adjacent slots of the adjoining plates to secure such plates together; substantially as described.

6. A vault or safe comprising plates fitted together at adjoining edges and having grooves or slots on their inner faces, at least one of said slots being recessed by undercutting its side wall, an interlocking member engaging adjacent slots on adjoining plates and having a tongue portion extending into the undercut portion of the recessed slot and wedging means arranged to secure said interlocking member in place; substantially as described.

7. A vault or safe comprising plates abutting at the corners of a structure, each plate having a key-seating groove on its inner face adjacent to each of its edges and at least one of said grooves being recessed by undercutting its side wall, interlocking members engaged by and secured in said grooves and forming interlocks for the plates and wedging keys engaging with said interlocking mem-

bers and tightening said plates in position; substantially as described.

8. A vault or safe comprising plates fitted together at the corners, the inner surface of said plates having inwardly extending recesses exposed on the interior of the structure, and interlocking members adapted to be inserted in said recesses and secure said plates together; substantially as described.

9. A vault or safe comprising plates abutted at the corners, each plate having a groove or slot on its inner face, at least one of said slots being recessed by undercutting its side wall, an interlocking bar engaging adjacent slots on adjoining plates having a tongue portion extending into the undercut portion of the recessed slot and oppositely facing wedging keys contacting with the interlocking bar and the side wall of the slot for securing said interlocking bars in place; substantially as described.

10. A vault or safe composed of plates fitted together at the corners and having slots on their inner faces, an interlocking bar engaging adjacent slots on adjoining plates and oppositely facing tapering wedging keys in said slots arranged to tighten the interlocking bars in place in said slots; substantially as described.

11. A vault or safe comprising plates fitted together at adjoining edges and having parallel sided slots on their inner faces, a plurality of interlocking bars located in the adjacent slots of the adjoining plates, and a plurality of tapering wedging keys arranged to contact with and secure said interlocking bars in said slots; substantially as described.

12. A vault or safe comprising plates fitted together at adjoining edges and having parallel sided slots on their inner faces, a plurality of interlocking bars movably secured in the slots of adjoining plates, a plurality of wedging keys coacting with said interlocking bars to secure the bars in place, said keys having contacting wedging faces for tightening the interlocking bars in place, and a filler block adapted to prevent movement of said interlocking bars in said slots; substantially as described.

In testimony whereof, we have hereunto set our hands.

LEE H. BOWMAN.
GEORGE L. DAMON.

Witnesses as to L. H. Bowman:
R. D. LITTLE,
D. L. ZACHARIAS.

Witnesses as to G. L. Damon:
J. C. BILY,
R. T. MCKEE.