

B. F. TEAL & E. J. GROSS.
SAFETY DEPOSIT BOX.

No. 423,095.

Patented Mar. 11, 1890.

Fig. 1.

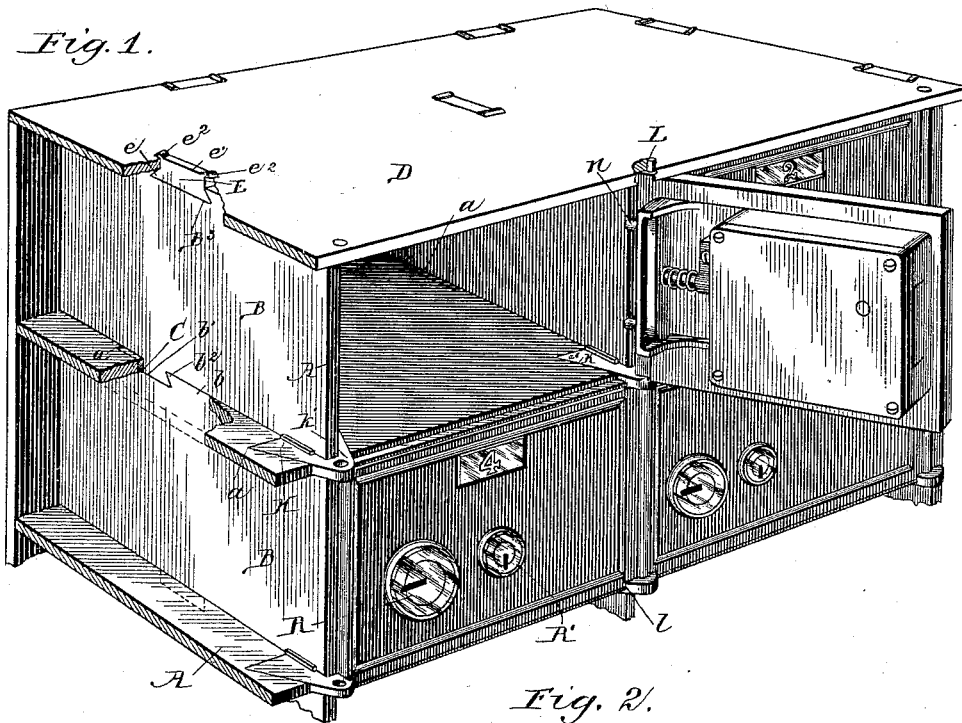


Fig. 2.

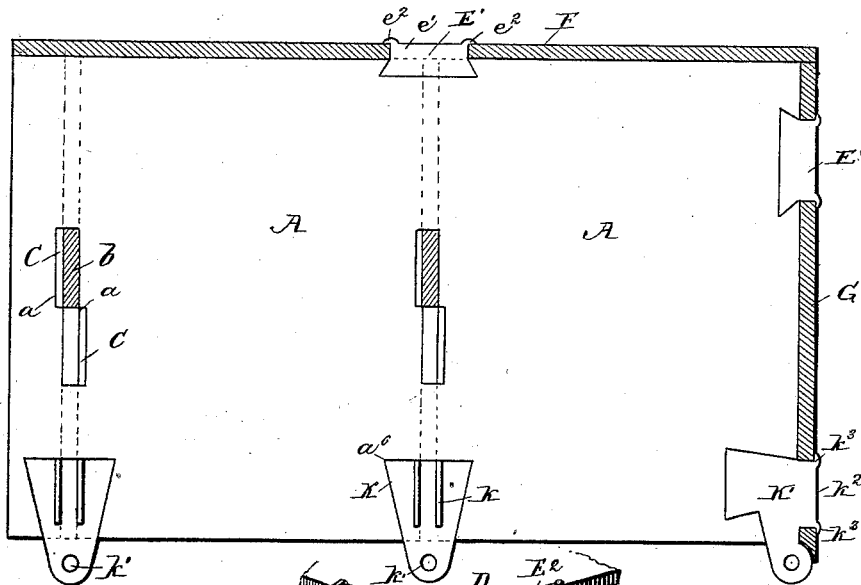
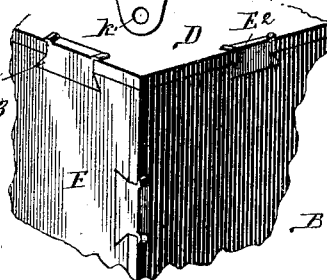


Fig. 3.



Witnesses.

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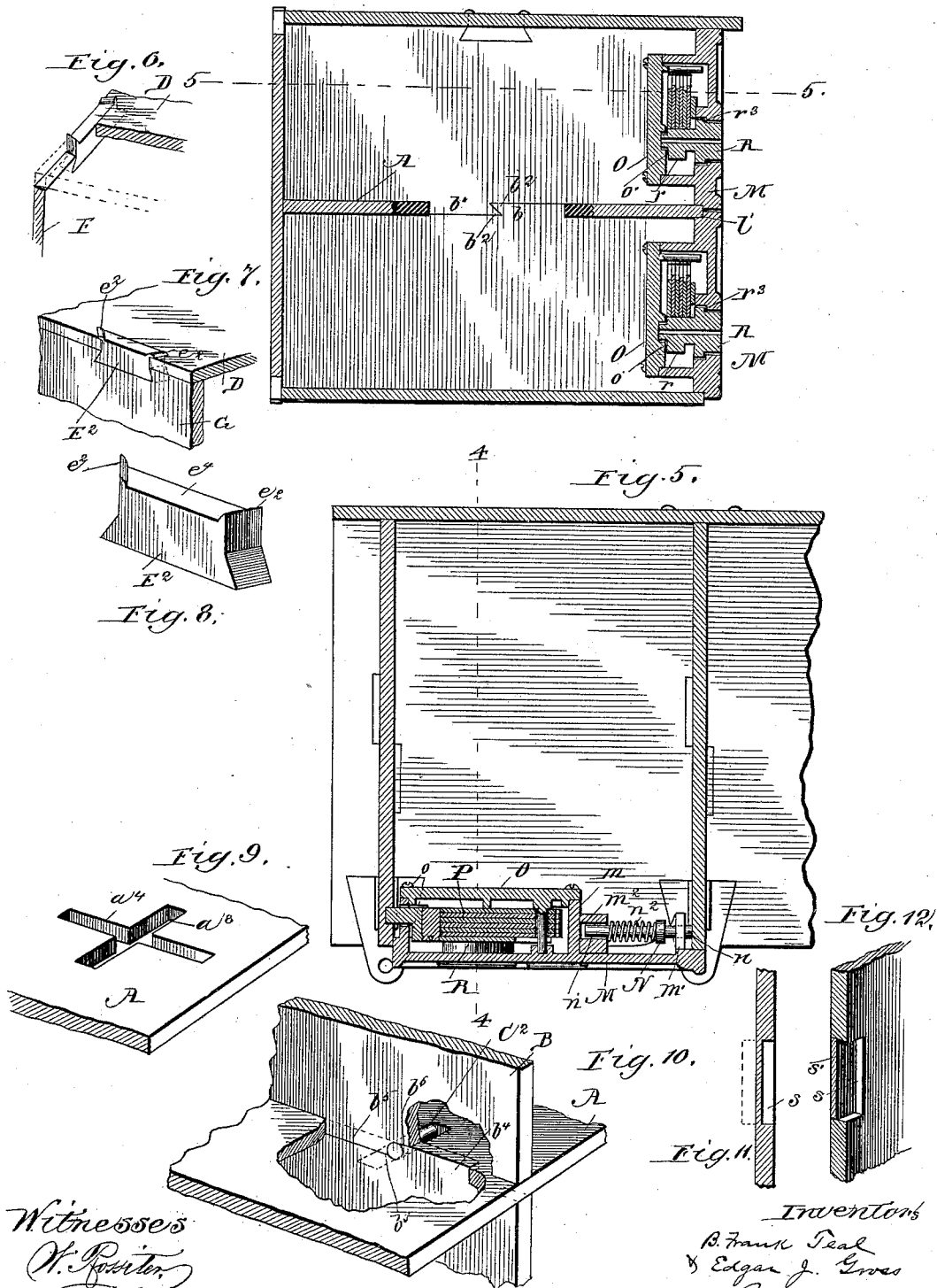
(No Model.)

2 Sheets—Sheet 2.

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Fig. 4. Patented Mar. 11, 1890.



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UNITED STATES PATENT OFFICE.

BENJAMIN FRANK TEAL AND EDGAR J. GROSS, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE CHICAGO SAFE AND LOCK COMPANY, OF SAME PLACE.

SAFETY DEPOSIT BOX.

SPECIFICATION forming part of Letters Patent No. 423,095, dated March 11, 1890.

Application filed October 13, 1888. Serial No. 288,029. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN FRANK TEAL and EDGAR J. GROSS, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Construction of Safety Deposit and Similar Boxes, of which we do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our present invention has relation especially to that class of safety deposit boxes or similar structures that are formed in great part by means of two series of plates, one series running in horizontal direction and constituting the horizontal partition-plates, and the other series running in vertical direction and constituting the vertical partition-plates, these horizontal and vertical partition-plates, together with suitable outer or wall plates, forming the bodies of the boxes, the fronts of which are closed by doors of suitable construction. An example of this type of safety deposit boxes is illustrated in Letters Patent No. 361,408, granted to the Chicago Safe and Lock Company as the assignee of Henry Gross April 19, 1887.

Our present invention has for its object, first, to provide improved means for connecting the plates of the frame-work whereof the bodies of the boxes are composed; secondly, to provide a novel means whereby the doors may be connected with the frame-work of the boxes, and, thirdly, to improve the construction of the door.

To this end our invention consists in the various novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a perspective view of a series of safety deposit boxes embodying our invention. Fig. 2 is a view in horizontal section above one of the horizontal partition-plates of the system. Fig. 3 is a fractional perspective view of the outer walls adjacent the back corner of the system. Fig. 4 is a view in ver-

tical section on line 4 4 of Fig. 5. Fig. 5 is a view in horizontal section on line 5 5 of Fig. 4. Fig. 6 is a fractional view in perspective showing a portion of the top plate and back plate with the tie-plate for uniting the two. Fig. 7 is a fractional view in perspective of the parts shown in Fig. 6, but from a different point. Fig. 8 is an enlarged perspective view of the tie-plate illustrated more particularly in Figs. 6 and 7. Fig. 9 is a fractional view of a horizontal partition-plate having a modified form of mortise. Fig. 10 is a fractional view of one horizontal and two vertical partition-plates, showing a modified means for uniting these plates. Fig. 11 is a detail view showing one way of forming the sockets in the vertical partition-walls for the bolts of the lock mechanism. Fig. 12 is a view similar to Fig. 11, showing the modified way of forming the sockets for the bolts.

A designates the main horizontal plates of the frame-work, and B denotes the vertical partition-plates, which serve to divide the horizontal plates at suitable distances to form the boxes of proper size. In the horizontal plates are the mortises *a*, adapted to receive the tenons *b* and *b'* upon the top and bottom edges, respectively, of the vertical partition-plates B. The preferred form for the mortises of the horizontal partition-plates is more particularly shown in Fig. 2 of the drawings—that is to say, each mortise is in effect two mortises set out of alignment, but communicating, and each section of each mortise is by preference somewhat wider than the thickness of the tenon that is to be inserted therein. Hence it will be seen that when it is desired to interlock the partition-plates B upon opposite sides of a horizontal plate A the tenon *b'* of the upper partition-plate will be inserted in its appropriate section of the mortise *a*, and the tenon *b* of the lower partition-plate will be inserted in the other section of the mortise *a*, and the tenons will then be moved toward each other until the plates are in vertical alignment and their dovetailed shoulders *b²* interlock, after which suitable keys C will be inserted—one on either side of the partition-plates—to fill up the spaces between the tenons of the vertical partition-

plates and the walls of the mortise. It is plain, therefore, that when the tenons of the vertical partition-plates have been thus set and interlocked within the mortise of the horizontal plates, and the keys C have been inserted in place, it becomes impossible to separate the vertical partition-plates from the horizontal plates, except by the removal of both keys C, and as these keys are on opposite sides of the vertical partition-plates, and consequently in different safety deposit boxes, all possibility of the plates being separated, except by the owner of the system, is avoided.

It will be readily understood that the horizontal plates A and the vertical partition-plates B will be provided with as many mortises and tenons as may be necessary, the number employed depending on the depth of the boxes.

In order to securely unite the vertical plates B to the top plate D of the frame-work, each of the vertical partition-plates is by preference formed with a seat B³, preferably of dovetailed shape, (see Fig. 1,) that receives the correspondingly-shaped end of a tie-plate E, that is provided not only with the shoulders e, that engage with the plates B, but is formed also with the tenon e', adapted to enter a suitable mortise formed in the top plate. We prefer, also, to form the tenons e' of the tie-plates with lugs e², adapted to be flattened down, in order to facilitate riveting the tenon to the top plate D. In like manner, also, the horizontal plates A will be provided with suitable seats, preferably of dovetailed shape, adapted to receive the tie-plates E', that have tenons e' and lugs e², that serve to unite these horizontal plates with the back plates F and the end plates G of the frame-work.

The preferred manner of uniting the top plate D and the back and end plates F and G, and as well, also, the preferred manner of uniting the bottom plate with the back and end plates F and G, is by means of the tie-plates E², the precise construction of which is more particularly shown in Figs. 3, 6, 7, and 8 of the drawings. It will be observed that the back plate F is provided with a suitable dovetail seat to receive the correspondingly-dovetailed portion of the tie-plate E², and so also the top plate D is provided with a mortise to receive the tenon e⁴ of the tie-plate E²; but as this tie-plate E², that unites the back and top plates F and D, is to hold these plates against movement, both in vertical and lateral direction, we prefer to form the tenon e⁴ of the tie-plate E² of dovetailed shape from front to rear, and adapted to enter a correspondingly dovetailed mortise or seat in the top plate D. This tenon e⁴ will also be provided with suitable lugs e², adapted to be flattened down, so that it is plain that when the back plate F and the top plate D are thus united by means of the tie-plates E² these tie-plates will not only serve, by reason of the lugs e² on the tenons e⁴, to prevent the vertical displacement of the top

plate, but also, by reason of the dovetailed shape of the plates E² and their corresponding dovetailed seats in the top plate, all lateral movement of the top plate D with respect to the back plate F is securely guarded against. Tie-plates E², similar to those last described, will in like manner be employed for uniting the top plate D to the end plates G of the frame-work. By thus uniting the partition-plates of the structure to the outer wall-plates by means of suitable tie-plates, and in like manner uniting the top, back, and end plates together, it will be seen that not only is a very secure connection between these plates effected, but all waste of metal incident to the common practice of forming the tenons in piece with the plates is avoided.

In the form of our invention illustrated in Figs. 9 and 10 of the drawings the horizontal plates A are shown as provided with mortises a⁴, adapted to receive the tenons b⁴ and b⁵, formed upon the top and bottom edges of the partition-plates B, respectively; but in this construction, instead of employing keys at the side of the vertical partition-plates B for the purpose of holding the tenons of these plates within the mortises of the horizontal plates, we employ suitable keys C², that rest within the slot a³ of the horizontal plate and pass through corresponding spaces formed between the shoulders b⁶ of the tenons b⁴ and b⁵. As the key C² in this form of our invention is of circular shape, the shoulders b⁶ of the tenons b⁴ and b⁵ will be cut away, so that when the tenons have been properly set within the mortise of the horizontal plate the key will fill the space between the shoulder b⁶ of the tenons, and thus prevent the withdrawal of the tenons from the mortise of the horizontal plate.

In the construction of safety deposit boxes it is very desirable that the doors shall overlap the partition-plates of the frame-work, so that all danger of forcing inward the doors may be guarded against. It is also desirable that the pintle or bearing blocks or plates should be formed separate from the main horizontal plates, in order to avoid the waste of metal that would occur if such blocks or plates were formed in piece with and projecting from the main plates, and as well, also, to permit the front edges of the horizontal plates to be more perfectly finished than would be possible if the pintle-plates were formed thereon.

A further object of our invention is to provide pintle or bearing blocks formed independently of the main plates, and whereon the doors may be hung, and whereby the doors may be brought to bear against the outer edges of the partition-plates. In carrying into practice this feature of our invention the horizontal plates A are provided at their front edges with seats a⁶, preferably of dovetailed shape, adapted to receive the correspondingly-shaped ends of the pintle or bear-

ing plates K, these seats a^6 being located in alignment with the mortises a , so that when the vertical partition-plates B have been set in position they will serve to guard the pintle-plates against possibility of displacement. If desired, also, these pintle-plates may be provided with ribs k , adapted to bear upon each side of the adjacent vertical plates B and more securely hold the vertical partition-plates B in position. Each of the pintle-plates K will be provided with a socket k' , adapted to receive the pintles L, that sustain the door M, although, if desired, suitable pintles or pivot-pins for the door might be formed as projections from the pintle-plates.

The vertical partition-plates of the framework are each provided, adjacent its front edge, with the sockets s to receive the outer end of the bolt of the lock mechanism that is carried by the door. The preferred manner of forming the socket s is illustrated in Figs. 11 and 12 of the drawings. As shown in Fig. 11, the sockets are formed by partially punching through the vertical partition-plate B, which is usually of metal about one-quarter of an inch in thickness, until a core corresponding to the size of the punch is forced into the position shown by dotted lines in this figure. The part shown by dotted lines and projecting beyond the face of the partition-plate is then ground off. When forming the sockets in the partition-plates in the manner shown in Fig. 12, there is placed upon the surface of the partition-plates a sheet of metal—say one-eighth of an inch in thickness—and the sheet of metal and partition-plate are both punched at one stroke of the punch. The stroke of the punch is, however, so restricted that the core from the partition-plate will be forced entirely out, and at the same time the cores s' from the one-eighth-inch metal will be forced to the bottom of the hole in the partition-plate, and will thus serve to close the socket in the partition-plate, so as to prevent the exposure of the end of the lock-bolt.

The outer portion of each of the bearing or pintle blocks K is preferably rounded off, as shown, and the corners of the door adjacent these bearing-blocks are cut away, as at l , in order to permit the edges of the door to overlap the front edges of the main horizontal plates A when the doors are in closed position, and for this purpose, also, the inner edges of the doors are rabbeted, as at l' . Hence it will be seen that when the doors are in closed position they will overlap the edges of the horizontal plates, and thus be guarded against all danger of being forced inward.

The pintle-blocks K', that sustain the doors adjacent the end wall G of the series of boxes, are preferably of the shape more particularly shown in Fig. 2 of the drawings—that is to say, these pintle-blocks K' are provided not merely with a dovetailed or interlocking portion to engage with the horizontal plates A, but are provided also each with a tenon k^2 ,

adapted to enter a mortise in the end plate G and to be held in firm engagement with such end plate by means of the lugs k^3 .

If desired, the opposite faces of each of the tie-plates E, E', and E² and the pintle-plates K and K' may be provided with suitable lugs adapted to be upset to prevent the removal of the tie-plates and pintle-plates from the partition or wall plates of the structure.

Our improved construction of door consists of a single casting M, having at its rear corners, and preferably cast in piece therewith, the pintles L, that enter suitable seats or sockets k' in the pintle-plates K and K'. Upon the inner face of this door is formed a casting m , that constitutes a part of the casing of the lock mechanism, and so, also, upon the inner side of the door is formed a rib m' , that is perforated to receive the bolts n , that project from the bolt-plate N, the shank n' of which bolt-plate has its rear end fitted within a recessed portion m^2 of the casting m and sustains the coil-spring n^2 , that serves to press the bolts normally outward, as seen in Fig. 1. Upon the casting m is held the back plate O of the lock-casing, suitable screws o being employed for this purpose. The main purpose of these bolts n is to throw the door open when it is unlocked, although, if desired, shallow sockets may be formed in the vertical plates A to receive the ends of these bolts, in which case they will have the additional function of locking-bolts. Within the casing thus formed by the casting m on the door and by the back plate O is held the lock mechanism P, the novel features of which are set forth and claimed in an application filed by us of even date herewith. This mechanism is preferably of that type in which there is employed an arbor R for the depositor's key and an arbor R' for the master-key of the person in charge of the system. The arbors R and R' are journaled in suitable seats in the door M and in the back plate O of the lock-casing; but instead of forming the rear portion of the arbor R of small size and extending this arbor through the back plate O, as has heretofore been the practice, the rear end of the arbor is simply journaled in a suitable seat in the back plate, and adjacent this seat is provided with a broad bearing-shoulder r , that abuts against the rib or block o' , wherein the reduced inner end of the arbor is journaled. Our object in thus providing the arbor R with an enlarged portion r is to afford a broad bearing for this arbor upon the back plate, so that in case it should become necessary, by reason of the loss of the individual key, to knock off the lock mechanism this can be done by forcing in the arbor R, as the enlarged portion r of this arbor will afford a firm and broad bearing against the back plate O and enable this plate to be knocked off without destroying the mechanism of the lock. In order to permit the back plate R to be removed without injury, we prefer to use a blank screw at that corner of the back plate nearest the arbor R;

but in any event when the arbor is forced inward it will simply result in breaking the screws, which can be readily replaced. In practice it has been found that when the arbor R is journaled in a hole in the back plate and is of small diameter any attempt to force inward the arbor results in bulging and breaking the back plate and forcing the arbor through this plate before the casing of the lock can be removed from the door. Our construction, however, while affording full security while the lock mechanism is in place, permits this lock mechanism to be removed when necessary without destroying the casing or the mechanism contained therein. In applying the lock mechanism to the doors of safes and vaults it has also been the common practice to provide the box-shaped lock-casing with a face-plate that was screwed to the casing and abutted against the inner face of the door, and this face-plate was provided with hubs that passed through suitable holes in the door and served as bearings wherein the outer ends of the key-arbors turned. In our present construction we avoid the necessity for employment of the face-plate by forming the arbors R and R' each with a shoulder r^3 , that rests within a seat formed upon the inner side of the door, while the outer ends of the arbors extend through suitable holes in the door cut for this purpose. These shoulders upon the arbors serve to prevent the withdrawal of the arbors, and as well, also, to prevent the introduction of any implements for the purpose of breaking the locks.

It will be readily understood that variations in the details of construction above set out may be made without departing from the spirit of the invention. Thus, for example, instead of employing the precise form of dovetail joints hereinbefore described, other equivalent forms of interlocking joints may be used, and we do not wish to be understood as restricting the invention to any particular form of dovetail or interlocking joint.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A frame-work for safety deposit and similar boxes, having its main horizontal plates and its vertical partition-plates connected at their points of intersection by tenon-and-mortise joints, the mortises being wider than the tenons to permit their lateral movement, substantially as described.

2. A frame-work for safety deposit and like boxes, having its main horizontal plates and its vertical partition-plates connected at their points of intersection by tenon-and-mortise joints and keys, substantially as described.

3. A frame-work for safety deposit and like boxes, having its main horizontal plates and its vertical partition-plates connected at their points of intersection by dovetailed and interlocking tenon-and-mortise joints and keys, substantially as described.

4. A frame-work for safety deposit and like boxes, having its main horizontal plates provided with mortises formed of sections arranged out of alignment and broader than the tenons that they are to receive, and having its vertical partition-plates provided with dovetailed or interlocking tenons adapted to enter said mortises, and suitable keys to enter each section of said mortises, substantially as described.

5. A frame-work for safety deposit and like boxes, having its partition-plates provided with mortises, and having its outer or wall plates provided with mortises also, and tie-plates entering the mortises of the partition-plates and the outer or wall plates and serving to unite these plates, substantially as described.

6. A frame-work for safety deposit and like boxes, having its partition-plates provided with dovetailed mortises, and having its outer or wall plates also provided with mortises, and tie-plates having dovetailed portions to enter the mortises of the partition-plates, and having tenons to enter the mortises of the outer or wall plates, substantially as described.

7. A frame-work for safety deposit and like boxes, having its main partition-plates provided with mortises, and having its outer or wall plates provided with mortises, and tie-plates adapted to enter the mortises of the partition and outer or wall plates, the tenons of said tie-plates being provided with lugs adapted to be upset, substantially as described.

8. A frame-work for safety deposit and like boxes, having its horizontal plates provided at their front edges with mortises, and having pintle or bearing blocks for the doors in said mortises, substantially as described.

9. A frame-work for safety deposit and like boxes, having its horizontal plates provided at their front edges with dovetailed mortises, and dovetailed pintle or bearing blocks for the doors within said mortises, substantially as described.

10. A frame-work for safety deposit and like boxes, having its horizontal plates provided with mortises, and pintle or bearing blocks within said mortises, said blocks having lugs or ribs to engage with the vertical partition-plates, substantially as described.

11. A frame-work for safety deposit and like boxes, having its horizontal partition-plates provided with mortises, and having its end plates also provided with mortises, and pintle or bearing blocks for the doors located within the mortises of the horizontal plates, and having tenons to enter the mortises of the end plate, substantially as described.

12. A frame-work for safety deposit and like boxes, having its outer or wall plates provided at their abutting edges with dovetailed mortises, and tie-plates within said mortises, substantially as described.

13. A frame-work for safety deposit and

like boxes, having its outer or wall plates provided with dovetailed mortises, and tie-plates having double dovetailed sections, substantially as described.

- 5 14. In a system of safety deposit or like boxes, the combination, with the horizontal and vertical partition-plates and suitable pintle or bearing blocks projecting from the horizontal plates, of doors having pintles
10 mounted in said pintle or bearing blocks, and having their back edges overlapping the front edges of the vertical partition-plates, substantially as described.

15 15. A frame-work for safety deposit and like boxes, having its vertical partition-walls provided with the sockets for the ends of the bolts, said sockets being closed upon one side by metal punched from the opposite side of the plate, substantially as described.

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