

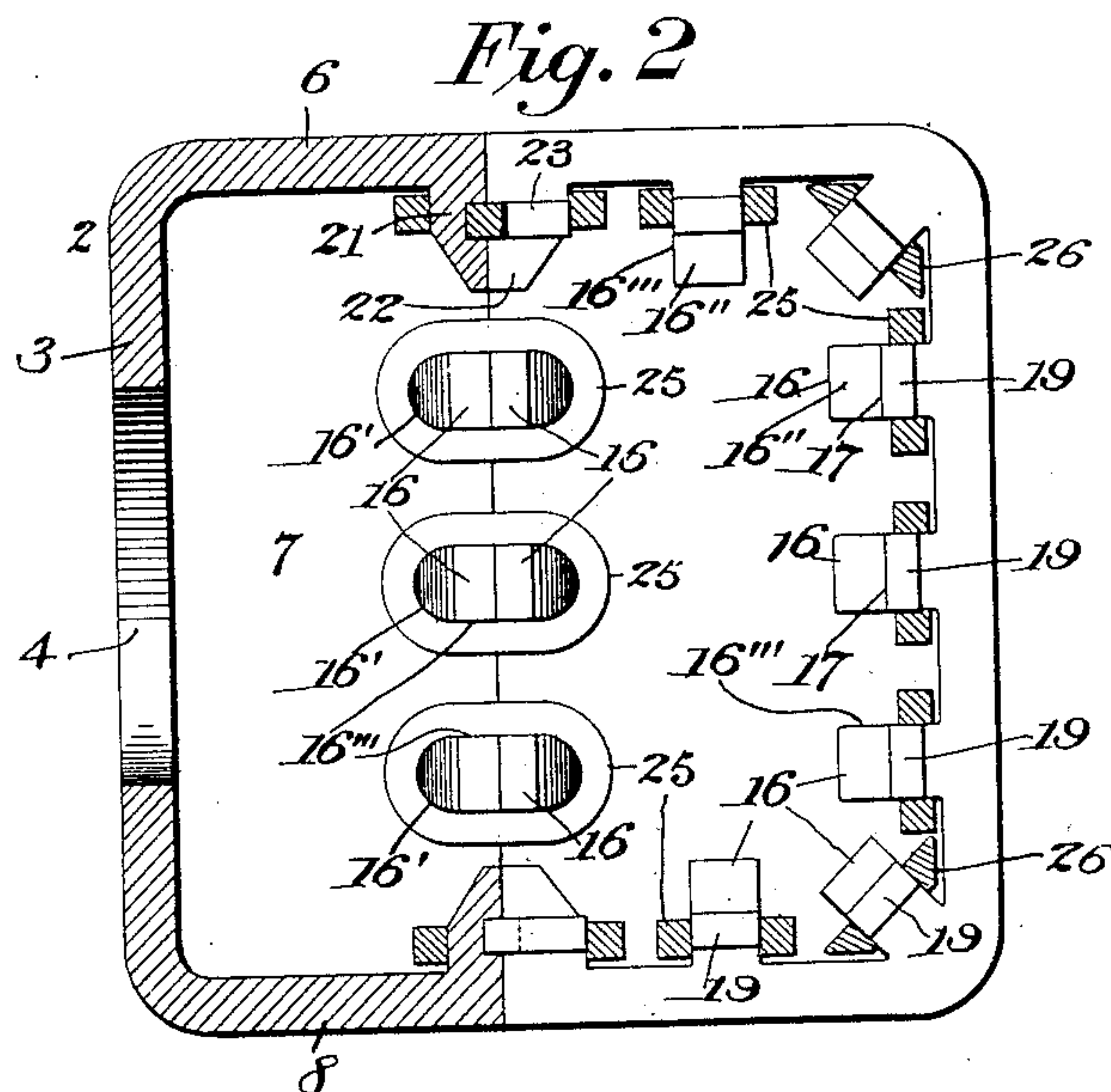
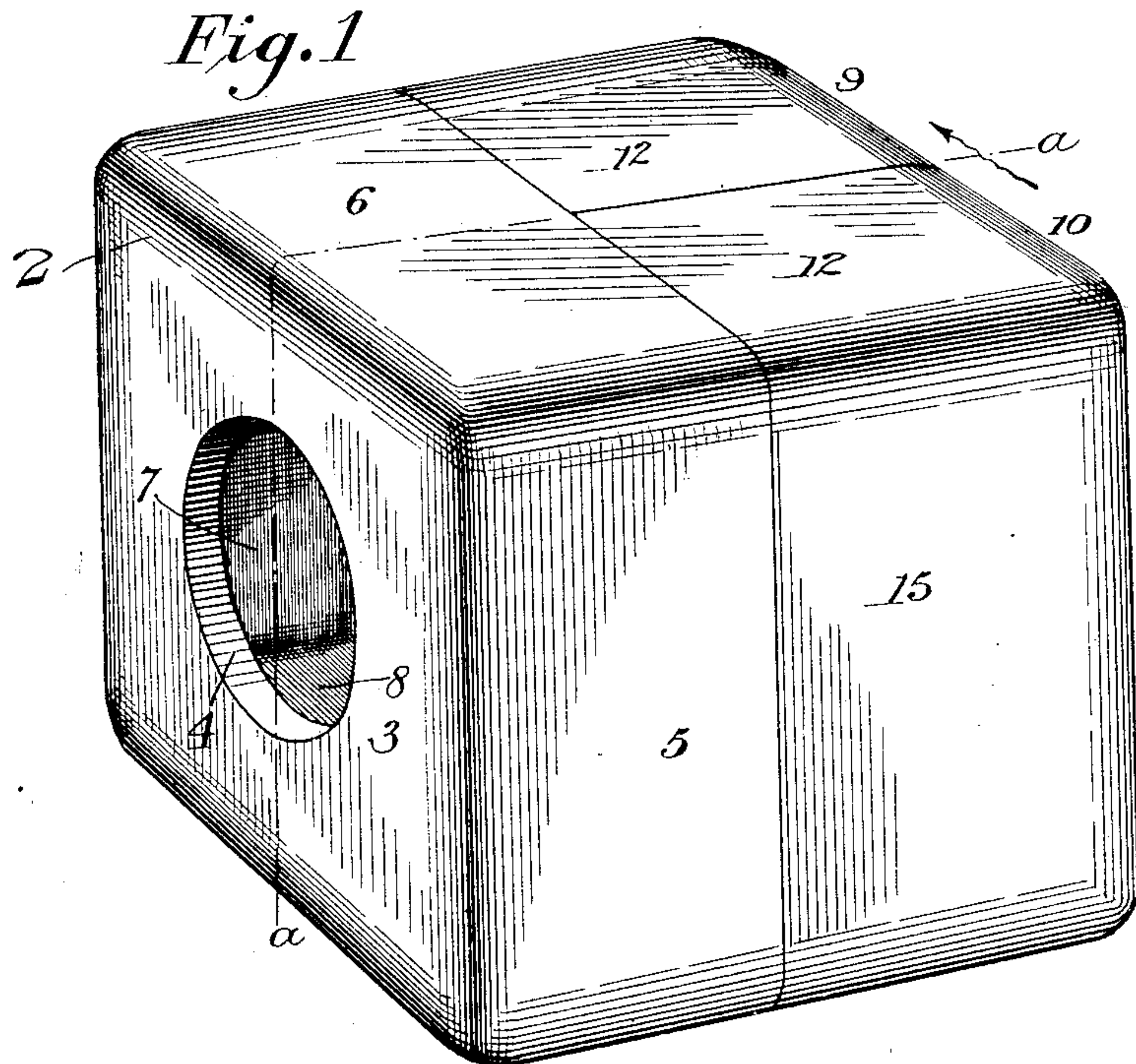
H. D. HIBBARD.

SAFE.

(Application filed Mar. 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

F. W. Haviland

R. W. Pittman

Inventor;
Henry D. Hibbard

By his Attorney

F. A. Richards.

H. D. HIBBARD.
SAFE.

(Application filed Mar. 9, 1900.)

2 Sheets—Sheet 2.

(No Model.)

Fig. 3.

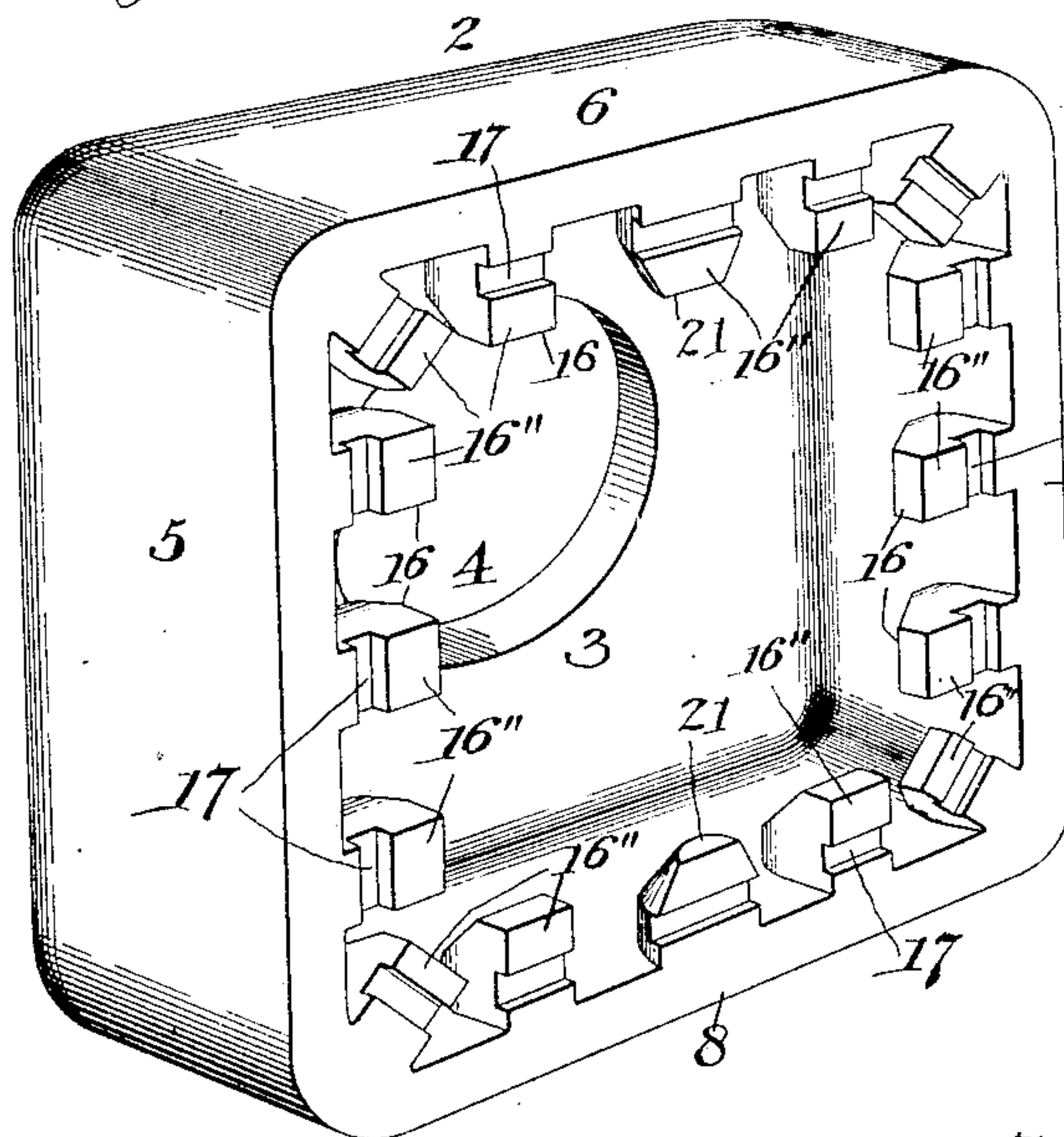


Fig. 4.

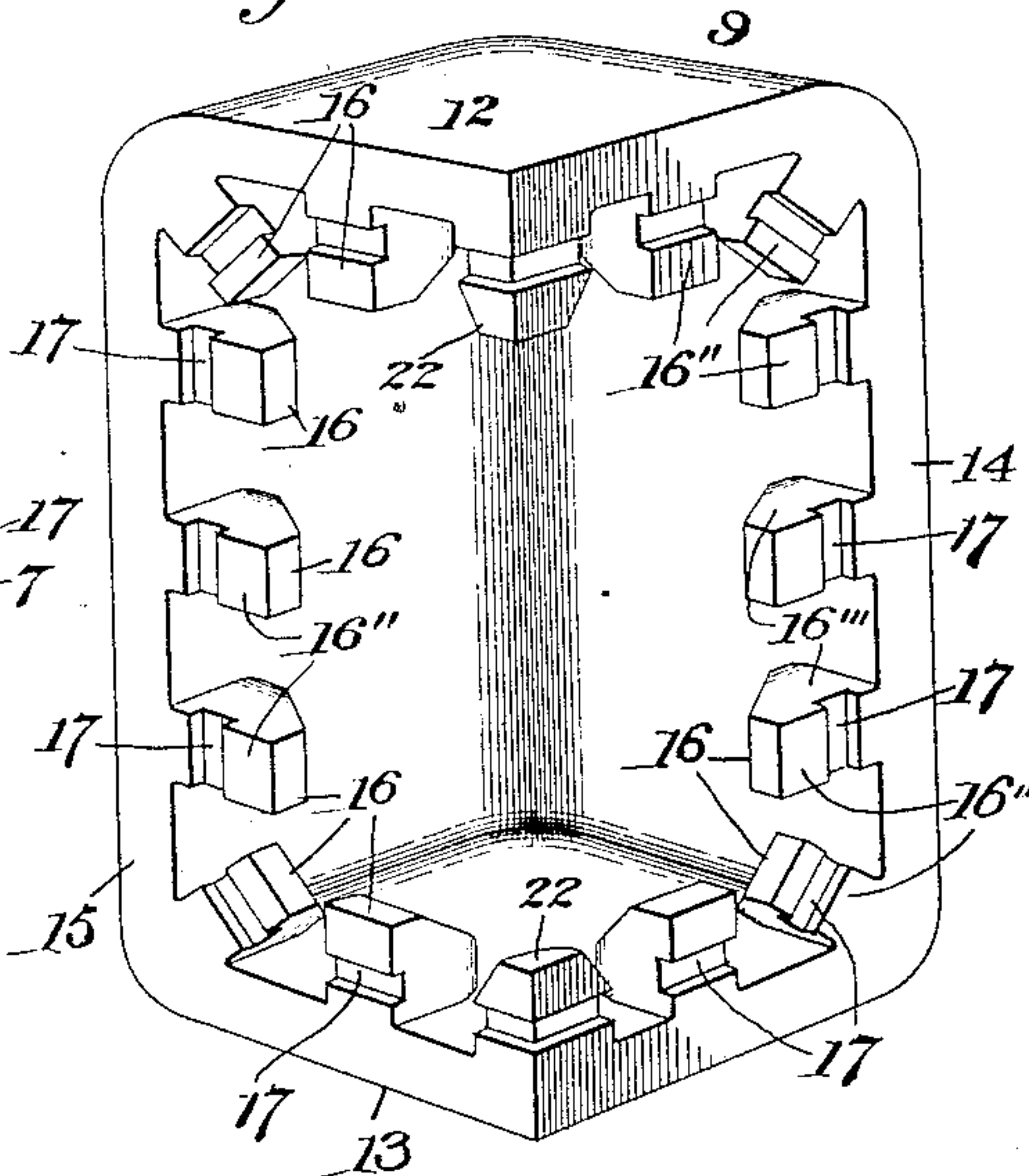


Fig. 5.

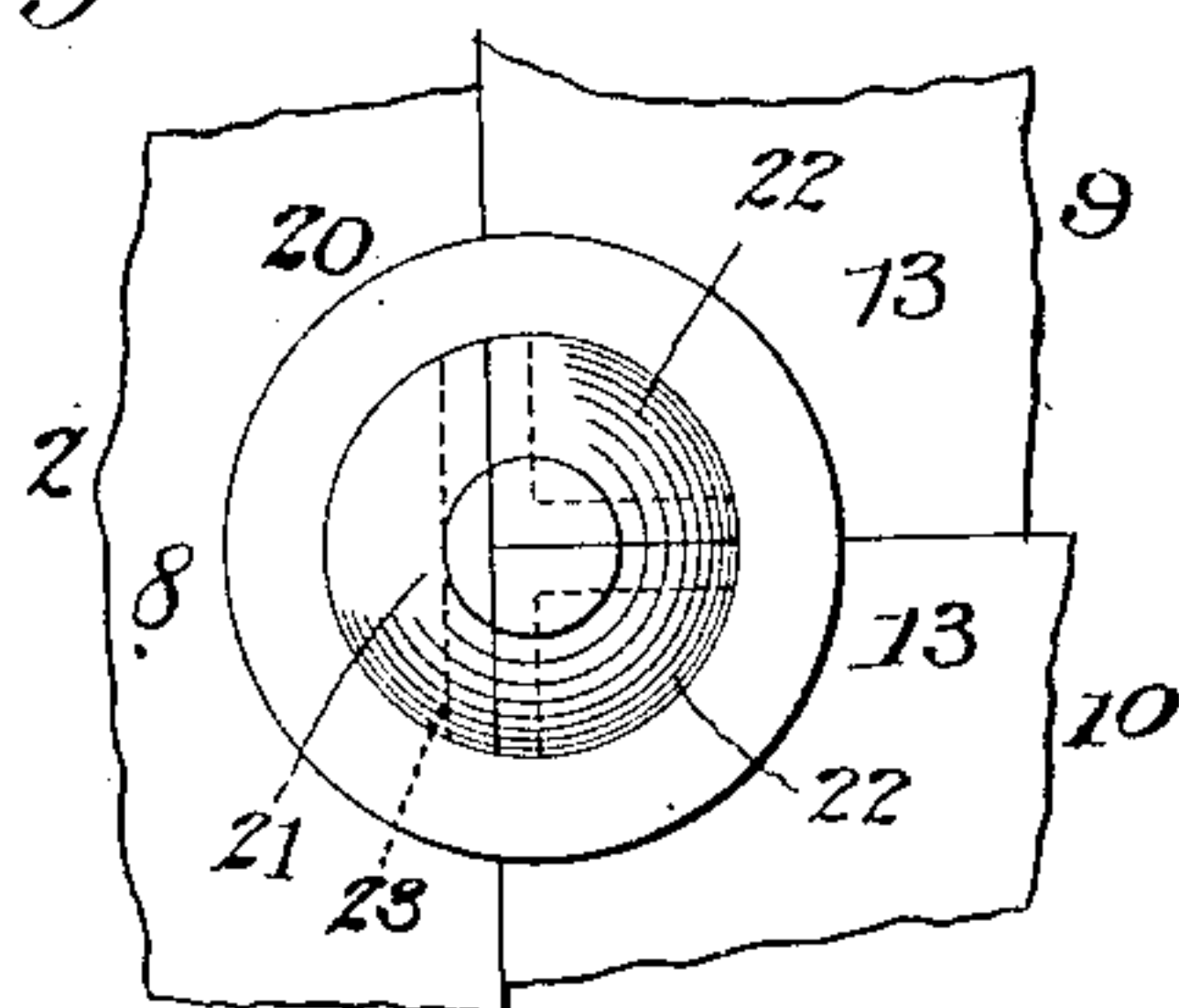


Fig. 7.

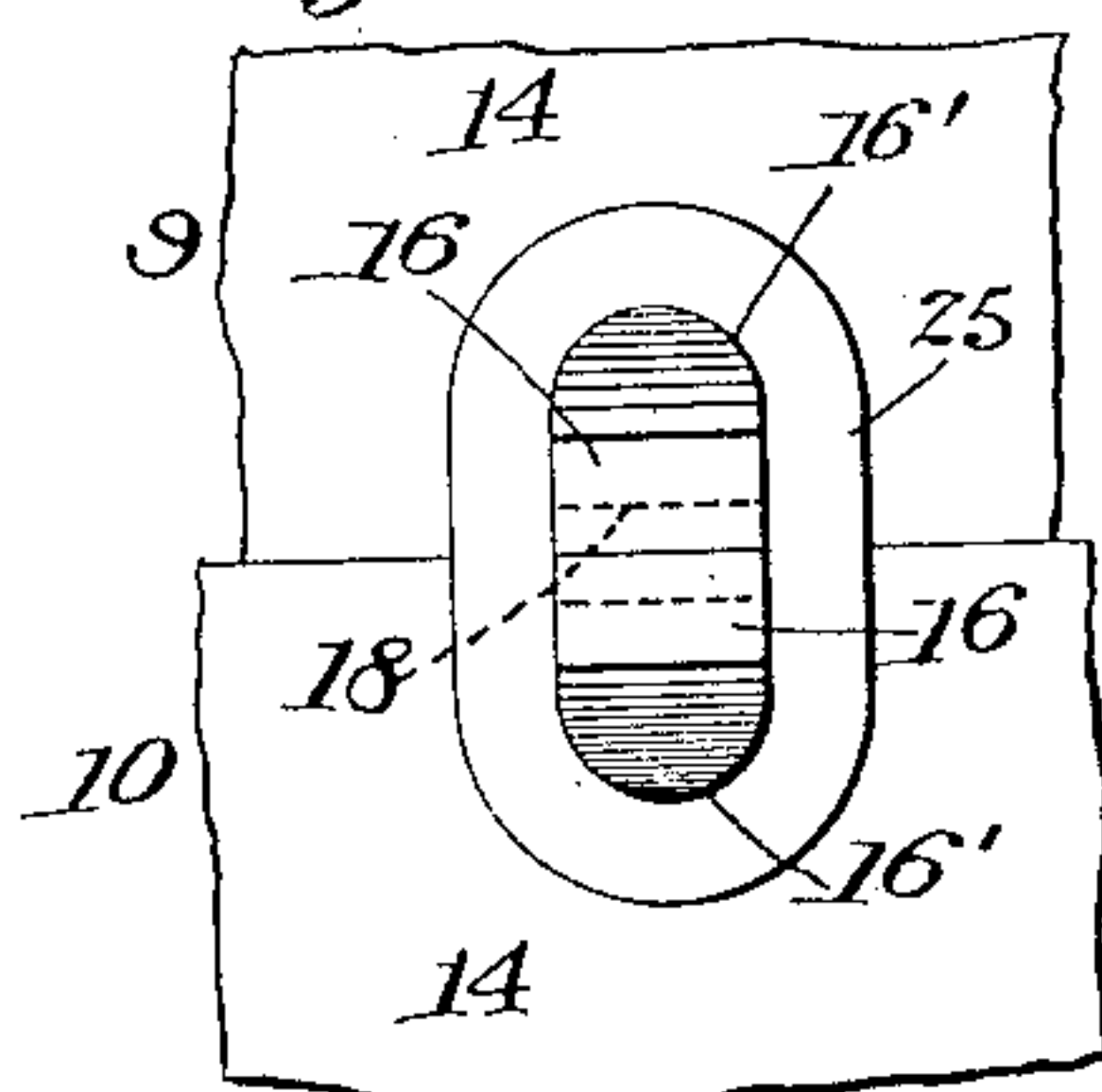


Fig. 9.

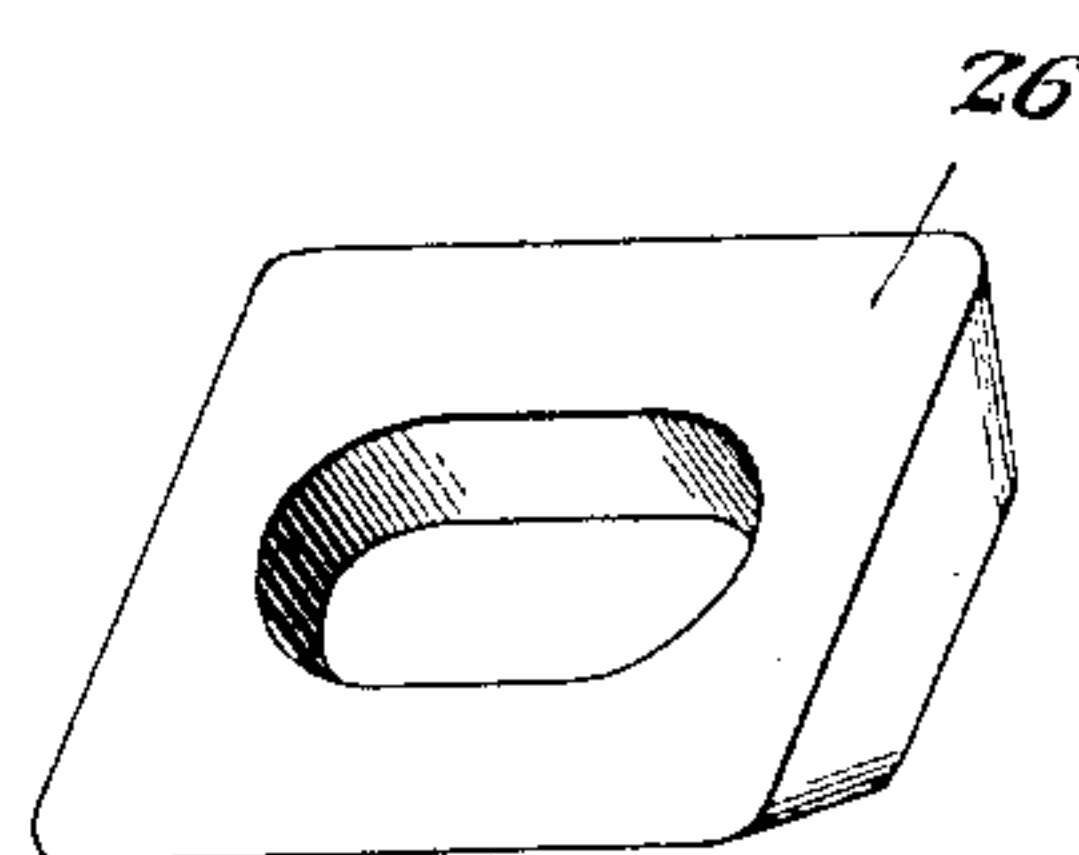


Fig. 6.

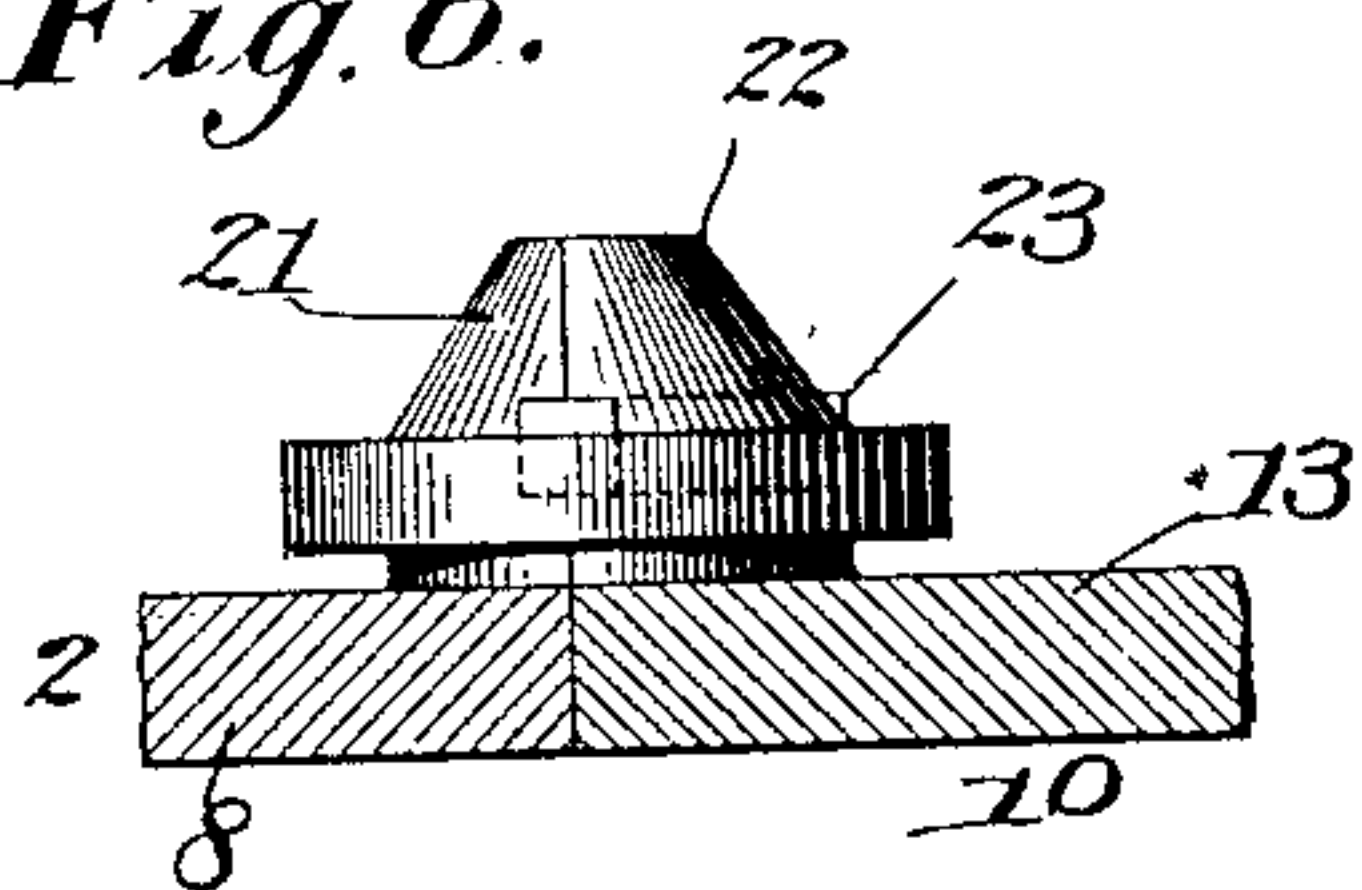


Fig. 8.

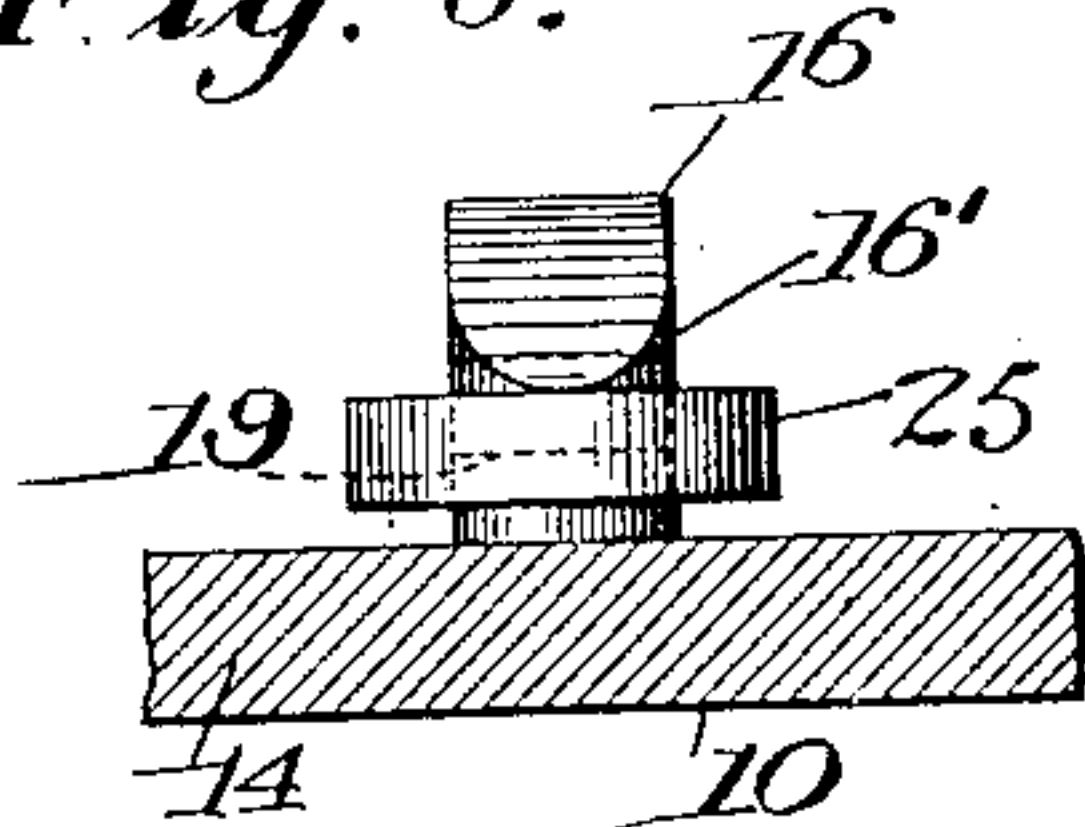


Fig. 10.

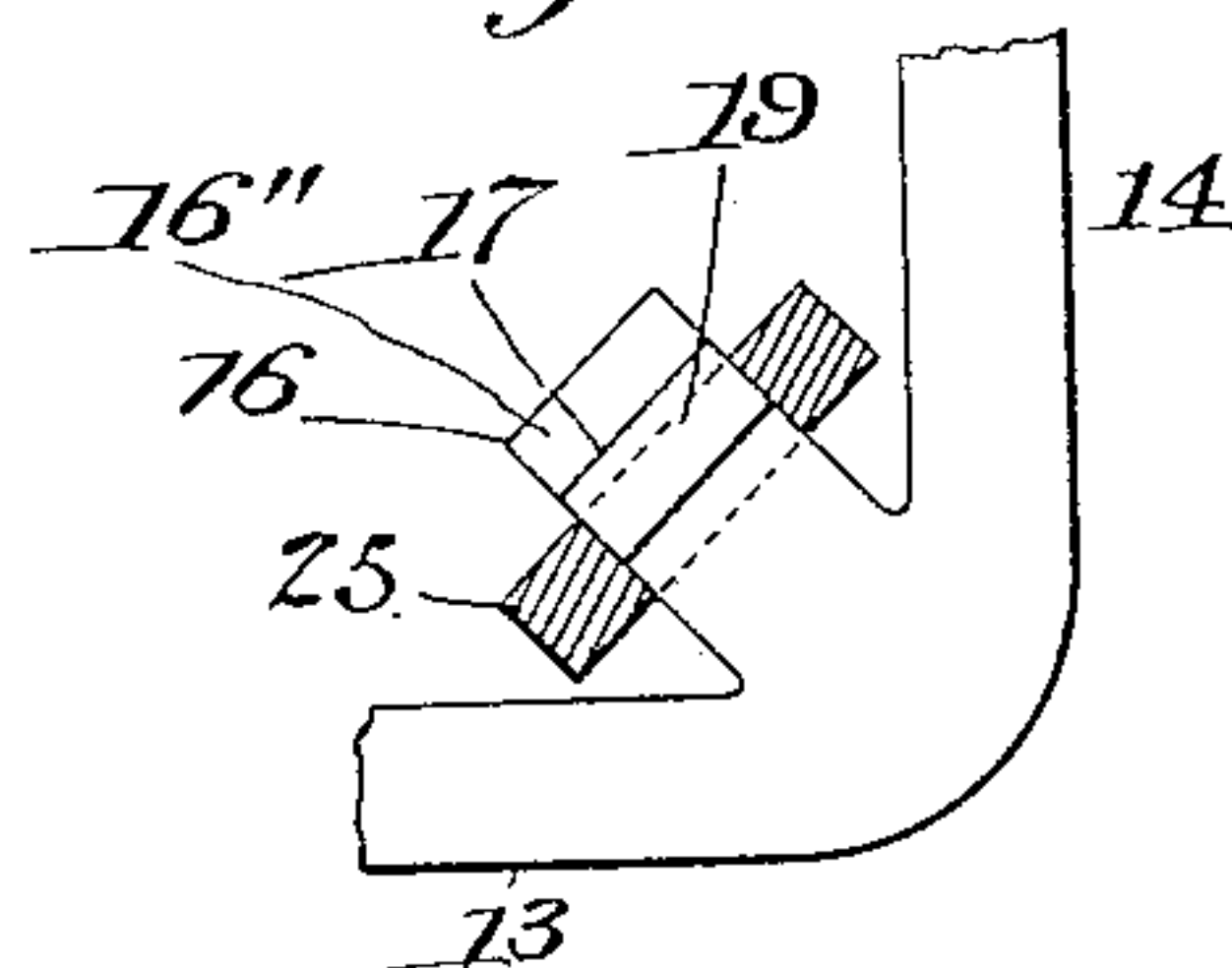
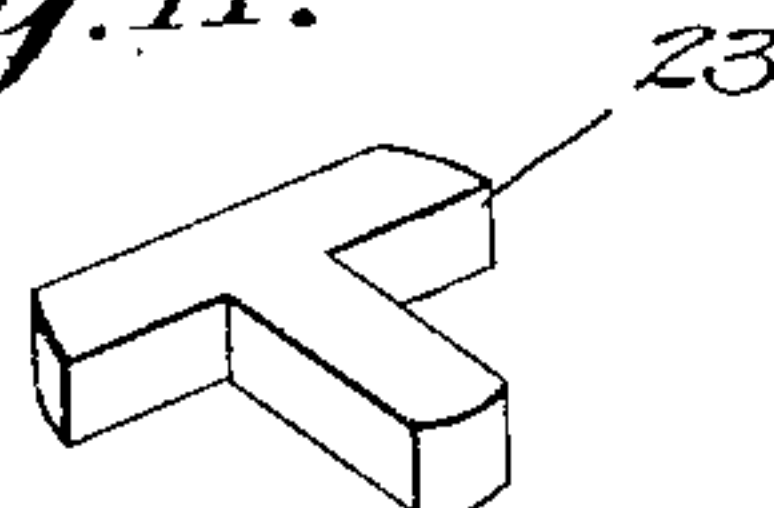


Fig. 11.



Witnesses

A. B. Mattingly
R. W. Pittman

Inventor.

Henry D. Hibbard.

By his Attorney

F. A. Richards.

UNITED STATES PATENT OFFICE.

HENRY D. HIBBARD, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO THE
HIBBARD-RODMAN-ELY SAFE COMPANY, OF NEW YORK, N. Y.

SAFE.

SPECIFICATION forming part of Letters Patent No. 662,432, dated November 27, 1900.

Application filed March 9, 1900. Serial No. 7,969. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. HIBBARD, a citizen of the United States, residing in Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Safes or Vaults, of which the following is a specification.

This invention relates to safes, vaults, or analogous structures, the object of the invention being to provide an improved burglar-proof safe or vault the body of which may be composed of a plurality of wall members or components so united one to another that the structure presents, in so far as its ability to resist attack is concerned, an integral one.

A further object of the invention is to provide an improved safe or vault body composed of a plurality of wall members or components formed of manganese steel or unmachinable metal united in a firm and rigid manner without requiring tool treatment other than a grinding one of the components to effect such union, and which tool treatment is not practicable with manganese or unmachinable steel.

A further object of the invention is to provide a structure of the character specified in which the wall components or plates forming the body thereof may be united without affecting the integrity of such components or plates.

A further object of the invention is to provide a structure of the character specified in which the wall components or plates of any suitable shape or construction forming the body thereof are united by means shrunk on parts of or projections rigid with said plates, whereby a joint is formed under high pressure—that is to say, the faces of contiguous plates forming a joint are brought or clamped together with great force, thereby giving a high initial resistance, which must be overcome before the components can be separated.

A further object of the invention is to provide a structure the body of which is formed of a plurality of wall members or components united by the improved means herein set forth and each of which is so constructed that the corners or edges of the structure are free of

any joint or opening lengthwise of such edges or corners, so that the safe is capable of resisting in the most effective manner any attack that may be made upon it.

A still further object of the invention is to provide a safe or vault wall plate or component having improved means located at one side thereof along its edges to permit the assemblage of said plate with its companion plates.

In the drawings accompanying and forming part of this specification, Figure 1 represents a perspective view of the body of this improved structure when constructed in accordance with one organization of the present invention. Fig. 2 is a vertical sectional view taken in line *a a*, Fig. 1. Fig. 3 is a perspective view of the front component or member of the body, showing the interior thereof. Fig. 4 is a view of one of the corner components or members, likewise showing the interior thereof. Fig. 5 is a view illustrating the manner of uniting the corners of two components with the edge of a third component. Fig. 6 is a side view of Fig. 5. Fig. 7 is a view illustrating the manner of fastening a pair of wall components or members together. Fig. 8 is an end view of Fig. 7. Fig. 9 is a view of one form of link that may be used at certain points in the construction of this improved safe. Fig. 10 is a view illustrating the mode in which the corners of a pair of components may be united, and Fig. 11 is a view of one form of key that may be used with the present improvement.

Similar characters of reference designate like parts in all the figures of the drawings.

The object of the present improvement is to provide a safe, vault, or other structure the body of which is composed of a plurality of parts of any desired shape or form, each wall member or component of which may be constructed or formed of such a high-class material—as, for instance, manganese steel—that it will withstand burglarious attacks and riots. Since, however, it is not only impracticable, but impossible, to drill or work with cutting or boring tools upon material of this character, it is necessary to provide means that will unite the components without affecting the

integrity or require the removal of any part or parts of such components other than that which may be done by grinding after the same are cast and which uniting means will not require, in one form thereof herein shown, the use of bolts or threads, but will be of such a character that it will when assembled practically form an integral part of the structure itself.

It is also a further object of the invention to so form the wall components or plates that they may be united at points other than the corners or edges of the structure, which usually invite attack. Within the scope of this invention is therefore considered any safe, vault, or analogous structure the body of which is composed of a plurality of wall members or components united by means shrunk on parts of said plates or by means inclosing or encircling a plurality of inwardly-extending projections for clamping them under high tension.

This improved safe or vault comprises a body of any desired number of parts or wall components each of any suitable form or construction. For instance, in some organizations the body may comprise the construction and assemblage of plates shown in my contemporaneously-pending application, Serial No. 7,967, filed on the same date as the present case—to wit, March 9, 1900—or such body may be composed of the construction of plates shown in my contemporaneously-pending application, Serial No. 7,968, also filed on the same date as the present case—to wit, March 9, 1900. In the form shown in the drawings this body is formed of three wall members or components, comprising a front member or component 2 and a pair of corner members or components 9 and 10. The front member is shown comprising a front plate 3, having an opening 4 for the door, and four side plates 5, 6, 7, and 8, formed at an angle to and integral with such front plate 3. Each corner member 9 and 10 may comprise top and bottom plates 12 and 13 and a pair of side plates 14 and 15 integral with one another to form a quarter-section of the body. By this construction it will be seen that the components when assembled have no joint whatever at the corners or edges of the safe lengthwise of such corners or edges, the joints running midway of the structure. Each of these wall components is provided along its free edges with inwardly-extending rigid or integral projections 16, each of which is in a position to engage or register with a similar projection of a companion component.

For the purpose of locating the components in position relatively to one another each projection 16 is provided on its inner side or face with a slot or recess 17, forming, with a similar recess in its companion projection, a keyway 18 for the reception of a key 19, whereby the plates are located in proper alinement.

In the form shown herein the corners of

two components are in juxtaposition with the middle of another component—as, for instance, the front member 2—so that each corner-plate is shown provided at its top and bottom corners with a projection of such construction that it will, together with the projection of its companion corner, register with a projection carried on the front component midway of its sides and constitute a circular member 20. For this purpose the front component is shown provided with a substantially semicircular projection 21, while the corner projections 22 are each shown as quarter-sections. Each of the quarter-sections is provided with a key slot or recess on two of its sides, one of which registers with the key-slot of its companion quarter-section and the other with the key-slot in the semicircular section, thereby forming a substantially T-shaped keyway for the reception of a T-shaped key 23, although it is to be understood that independent keys may be used, if found desirable. The projections may be located at any desired distance apart, but are disposed along the entire edge of a plate, obliquely-extending ones being provided at the juncture-points of two plates. These projections are formed with curved exterior faces 16' and flat inner faces 16'', whereby each pair may be drawn tightly and firmly together, the sides 16''' of all the projections, except those shown in Fig. 5, being preferably straight.

For the purpose of uniting the projections of one component with those of another suitable means is provided. In the form shown this means comprises coupling members in the form of links 25, adapted to be shrunk onto such projections, the keys being first inserted in the keyways. In practice these links 25 are located midway of the length of the projections, considering the outer face of the components as a part thereof, such links only partially overlapping the ends of the keys. By this assemblage the keyways will not appreciably impair the strength of the projections, while also permitting the ends of the keys to be in sight should this be necessary for any purpose.

From the above it will be seen that when the links, usually of steel, have been shrunk onto the projections, which are formed as part of the components, such projections constitute levers whose projecting ends form a fulcrum, so that an effective means is obtained for reducing the tendency of any force applied on the outer joint to turn the levers within the links and so permit the joints to open. These links act as retaining devices or instrumentalities applied under high tension or under sufficient tension to resist the opening of the joint and form for all practical purposes an integral structure with the projections.

From the foregoing it will be seen that in the present organization the corners of the

safe-body are made free of any joint or opening and capable of resisting in the most effective manner any attack that may be made upon it. Similarly along the edges of the safe the usual longitudinal seam or joint is avoided by having the wall component or member extend around the edge and the corner and to a considerable distance therefrom.

In practice a bevel-sided link 26, substantially similar to that shown in Fig. 9, may be used to maintain assembled the projections located at the corners of the components, but, if preferred, the ordinary link may be used, as shown in Fig. 10. If desired, the structure may be provided with a lining, thereby completely to inclose the projections, or shelves may be located intermediate such projections, if desired, and thus increase the capacity of the safe, which, however, is not seriously decreased by the projections, although they are of such size and resisting quality that they will resist attack by the use of nitroglycerin or other high explosives.

In conclusion, it has been thoroughly proven by tests that manganese steel—that is, the steel produced and treated in accordance with the Hadfield patented processes—will withstand burglarious or riotous attack. Consequently it follows that the wall components of the character shown will resist all attacks of this character. It therefore remains only necessary so to unite the various components when it is desirable to form the safe-body other than as an integral structure by means that will practically form an integral structure and will present a joint not penetrable by nitroglycerin or other high explosives. This is accomplished by the provision of a joint such as above set forth, since it is practically impossible to insert nitroglycerin in appreciable quantities sufficient to be effective on the joint, since by shrinking the links on the projections the edges of the wall components are so brought together that so far as penetration is concerned the contiguous plates are integral, and it is not possible to drill an opening in or at the side of the joint when the safe is constructed of manganese steel, nor is it believed possible in this construction by the use of high explosives to force the edge of one component inwardly away from the other component, this being prevented not only by the coupling means, but also by the keys.

From the foregoing it will be seen that in the present improvement by using the shrunk-on links the joints are formed under high pressure—that is to say, the faces of the components forming a joint are drawn together with great force, thereby giving a high initial resistance, which must be overcome before the components can be separated in the slightest degree in any attempt to force an entrance into said joint.

The term "safe" as used herein and in the claims is intended to include within its scope a strong box, room, vault, or analogous struc-

ture capable of being constructed in the manner herein set forth.

Having described my invention, I claim—

1. A safe or vault body composed of a plurality of wall components each having a plurality of inwardly-extending projections located adjacent to its edges, each separate from, and free of juncture with, its companion projections of the same component, the projections of one component registering with the projections of other components, and each plurality of registering projections having keyways located therein, and keys located in said keyways for locating said components in fixed alinement relatively to one another.

2. A safe or vault body comprised of a plurality of wall components, each of said components having a plurality of inwardly-extending projections located along each of its free edges and adapted to register with similar projections carried by its companion components; and means for locating said components in fixed alinement relatively to one another.

3. A safe or vault body comprised of a plurality of wall components, each of said components having a plurality of separated inwardly-extending projections located along each of its free edges and adapted to register with similar projections carried by its companion components, each plurality of registering projections having a keyway, and a key disposed in said keyway for locating said components in fixed alinement relatively to one another.

4. A safe or vault body comprised of a plurality of wall components each having a plurality of inwardly-extending projections located adjacent to its free edges, each separate from, and free of juncture with, its companion projections of the same component, and means uniting under tension the projection of one component with the projection of another component.

5. A safe or vault body comprised of a plurality of wall components each having along each of its free edges a plurality of inwardly-extending projections, and means connecting under tension a projection of one component with a projection of another component.

6. A safe or vault body comprised of a plurality of wall components having inwardly-extending projections, and a device located around a plurality of projections of a plurality of components for clamping or holding such components together.

7. A safe or vault, the body of which consists of a plurality of members, and means shrunk on to parts of said members for connecting them under tension.

8. A safe or vault body comprised of a plurality of wall components each having along each free edge thereof a plurality of projections, and a link shrunk on each plurality of contiguous projections of a plurality of components.

9. A safe or vault body comprised of a plu-

ality of wall components each provided along each of its free edges with a plurality of inwardly-extending projections, and means shrunk on a plurality of contiguous projections at a point substantially midway between the ends thereof and the outer faces of said components.

10. A safe or vault body comprising a plurality of wall components each of which consists of an angularly-formed member having a plurality of inwardly-extending projections located adjacent to its free edges, each separated from, and free of juncture with, its companion projections of the same component, and means inclosing or encircling a plurality of projections of a plurality of components for connecting said components.

11. A safe or vault body comprising a three-part structure, each of said parts having inwardly-extending projections, and means inclosing or encircling a plurality of projections of a plurality of said parts for uniting such parts.

12. A safe or vault body comprised of a plurality of wall components or plates disposed edge to edge, the joints between each of the plates being located away from the corners and edges of the structure, and means shrunk on to parts of said plates for securing them together under tension.

13. A safe or vault body comprised of a plurality of wall components having inwardly-extending projections; means for fixing the location of the components in proper alignment; and a device located around a plurality of projections of a plurality of components for clamping or holding said components together.

14. A safe or vault body comprised of a plurality of wall components having a plurality of inwardly-extending projections; means for locating the components in fixed alinement relatively to one another; and means shrunk on a plurality of projections of a plurality of components for connecting said components under tension.

15. A safe or vault body comprised of a plurality of wall components each having along each of its free edges a plurality of inwardly-extending projections each provided with a slot; a key located in each plurality of communicating slots of a plurality of components; and means encircling or inclosing each plurality of contiguous projections of a plurality of components for uniting said components.

16. A safe or vault body comprised of a plurality of wall components each having along each of its free edges a plurality of inwardly-extending projections, each of said components having one or more slots; a key located in each plurality of communicating slots of a plurality of components; and a link shrunk on each plurality of contiguous projections of said components.

17. A safe or vault body comprising a plurality of wall components assembled with the corners of a pair of said components inter-

mediate the edges of another component, and means shrunk on parts of said components for uniting them under tension.

18. A safe or vault body comprising a plurality of wall members assembled so that the corners of a pair of members are located intermediate the edges of a companion member, each of said members having a projection; means for locating said members in fixed alinement relatively to each other; and means for securing said projections together.

19. A safe or vault body comprising a plurality of wall members, each of a pair of said members having its corner located intermediate the edges of a companion member, and each of said members having an inwardly-extending projection, the projections at the corners of said pair of members being contiguous to a projection of said companion member, and means for uniting said contiguous projections.

20. A safe or vault body comprising a plurality of wall members each of a pair of said members having a corner located intermediate the edges of a companion member, and each of said members having an inwardly-extending projection, the projections at the corners of said pair of members being contiguous to a projection of said companion member, and means shrunk on said contiguous projections for securing the components together.

21. A safe or vault body comprising a wall member having a projection located intermediate its edges; a pair of companion wall members each having its corner located intermediate the edges of said first member and provided with a projection contiguous to the projection of said first member, said series of contiguous projections forming a circular member; and means inclosing or encircling said projections for uniting said components.

22. A safe or vault body comprising a wall member having along each of its edges a series of projections each having a slot or groove therein; a plurality of wall components each also having along each of its free edges a plurality of projections each provided with a slot or groove, and each also having a projection located at the corner thereof and provided with a pair of slots running at right angles to each other; a key located in the slots of each set of contiguous projections for maintaining the components in fixed relation relatively to each other; and means for uniting said components.

23. A safe or vault body comprising a member having along its edges a series of projections each having a slot or groove therein; a plurality of wall components each also having along its free edges a plurality of projections each having a slot and each also having a projection located at the corner thereof and provided with a pair of slots running at right angles to each other; a key located in the slots of each set of contiguous projections for maintaining the components in fixed position

relatively to each other; and means shrunk on said contiguous projections for uniting said components.

24. A safe or vault front having along each free edge thereof a plurality of integral projections extending inwardly therefrom.

25. A safe or vault front having along each free edge thereof a plurality of inwardly-extending integral projections each having a slot or groove therein.

26. A safe or vault wall component comprising a four-sided integral structure having a plurality of inwardly-extending integral projections along each free edge thereof.

27. A safe or vault wall component comprising a plate having four side plates integral therewith, each of said side plates having along each of its free edges a plurality of integral projections.

28. A safe or vault wall component comprising a four-sided integral structure having projections extending along the free edges thereof, each of said projections having a slot or groove, and one or more of said projections having a pair of slots or grooves.

29. A safe or vault the body of which comprises a plurality of wall components or plates constructed and assembled so that the corners and edges of said body are free of any joints or openings lengthwise of such corners or edges, each of said components having one or more inwardly-extending projections; the projection or projections of one component registering with the projection or projections of another component, and each set of registering projections having a keyway; a key located therein; and links shrunk onto said registering projections for maintaining the components in position.

30. A safe or vault plate or component adapted to be assembled with others of its kind to form a safe or vault, and having at one side at each edge thereof a projection extending at an angle to said plate, and each separated from, and free of juncture with, its companion projections, whereby each can be encircled by a clamping device or link,

each of said projections being adapted to register with similar projections of companion plates.

31. A safe or vault plate or component adapted to be assembled with others of its kind to form a safe or vault, and having at one side at each edge thereof a projection extending at an angle to said plate, and each separated from, and free of juncture with, its companion projections, whereby each can be encircled by a clamping device or link, each of said projections having a slot or recess and adapted to register with similar projections of companion plates.

32. A safe or vault plate or component adapted to be assembled with others of its kind to form a safe or vault, and having at one side thereof along each of its edges a plurality of projections extending at an angle to said plate, each of said projections being adapted to register with similar projections of companion plates.

33. A safe or vault plate or component adapted to be assembled with others of its kind to form a safe or vault, and having at one side thereof along each of its edges a plurality of projections extending at an angle to said plate, each of said projections having a slot or recess adapted to register with similar projections of companion plates.

34. A safe or vault wall component comprising an angularly-formed integral plate having along each of its edges a plurality of inwardly-extending integral projections for the reception on the interior of said component of encircling clamping devices or links.

35. A safe or vault wall component comprising an angularly-formed integral plate having along each of its edges a plurality of inwardly-extending projections for the reception on the interior of said component of encircling clamping devices or links, each of said projections having a slot or groove therein.

HENRY D. HIBBARD.

Witnesses:

C. A. WEED,

CHAS. FINKLER.