

H. D. HIBBARD.
SAFE OR VAULT DOOR.

APPLICATION FILED MAY 25, 1903.

916,444.

Patented Mar. 30, 1909.

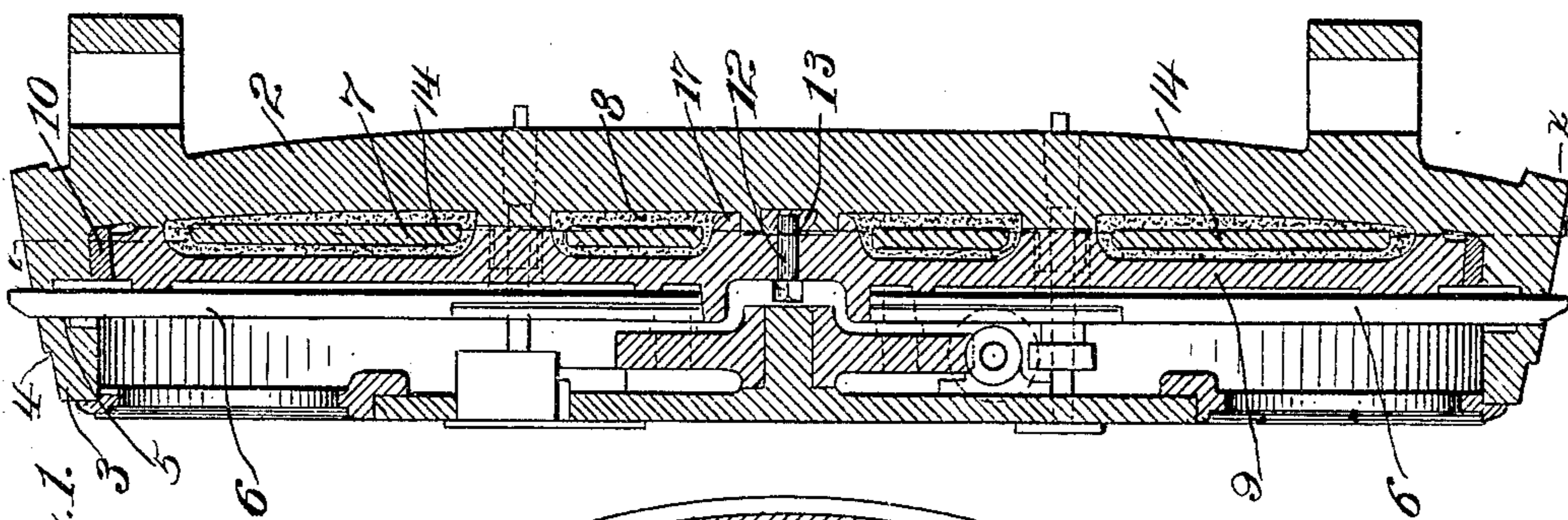


Fig. 1.

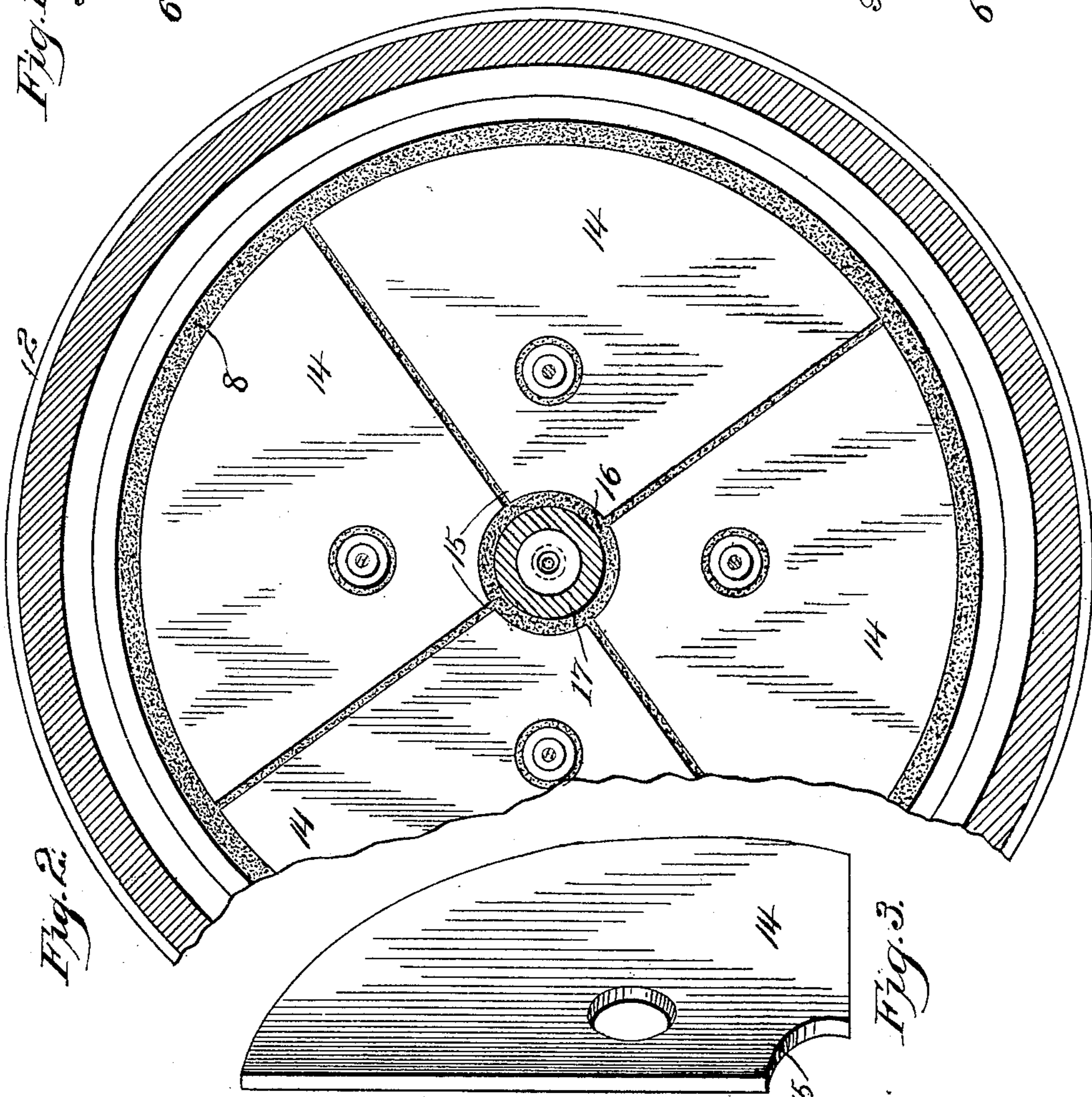


Fig. 2.

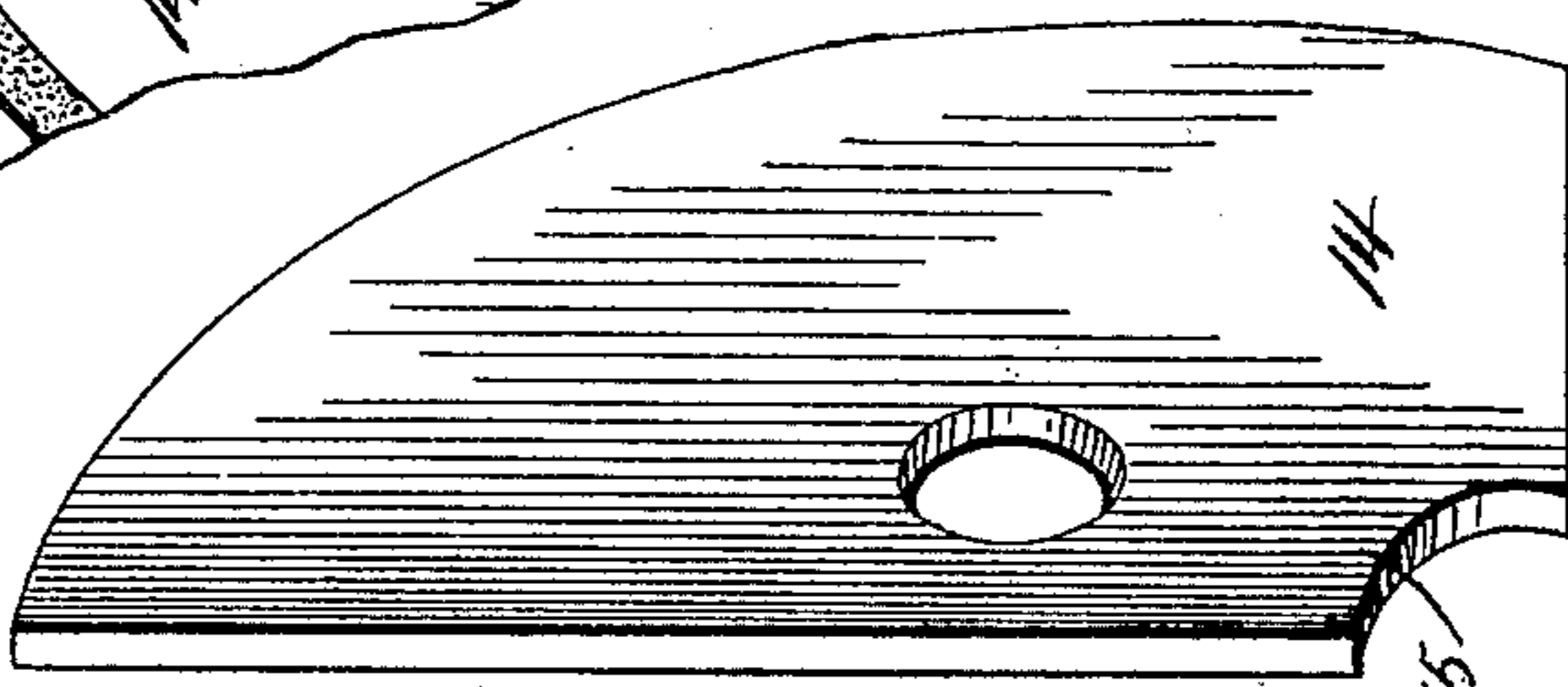


Fig. 3.

Witnesses:
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By his Attorney,
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UNITED STATES PATENT OFFICE.

HENRY D. HIBBARD, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO MANGANESE STEEL SAFE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

SAFE OR VAULT DOOR.

No. 916,444.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed May 25, 1903. Serial No. 158,612.

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 Safe or Vault Doors, of which the following is a specification.

This invention relates to safes or vaults more particularly to the doors of such structures.

The object of the invention is the provision of an improved door, so constructed that it is practically impossible to reach the bolt work or other locking mechanism by the use of electrical apparatus.

In the drawings accompanying and forming part of this specification, Figure 1 is a transverse sectional view of one form of vault door. Fig. 2 is a sectional view partly broken away taken in line $x-x$, Fig. 1 looking toward the right, and Fig. 3 is a perspective view of one of the sections or members constituting a part of the means for protecting the bolt work.

Similar characters of reference indicate corresponding parts in the different figures of the drawings.

This improved door in the form thereof shown and described may be similar, if desired, to any of those heretofore patented by me, in which case it would comprise a body portion 2 having a rearwardly extending flange 3 provided with the usual offset or step 4, and bolt openings 5 for the bolts 6 which are shown as radially located, the door being of circular formation. Any suitable means may be used for throwing the bolts into and out of their locking position.

In practice the body of the door and its flange will preferably be made or cast of un-machineable metal such for instance as manganese steel, which, as is well known, it is not possible to drill or cut, consequently when this metal is used it has not been found practicable to drill or cut into the door for the purpose of reaching the bolt work by any of the usual means known to the burglar. It has however been suggested that by means of an electric arc an opening might be drilled through the door, and through this opening the bolt work manipulated.

So far as I am aware the electric arc has not yet been successfully used by the burglar, and in my opinion could not be

so used except under the most favorable and exceptional circumstances owing to the difficulties which the burglar would find it impossible to overcome. The object of the present invention, however is to provide means which will render such an attack impracticable even under the most favorable circumstances, and to make such an attack impossible within the time which the burglar usually has to devote to the operation of opening a safe or vault, and for this purpose I provide means which will prevent the use of the electric arc for the purpose of drilling a hole through the door sufficient to permit the boltwork to be reached. This means in the present instance comprises a sectionally formed protecting layer 7 preferably corresponding in shape and material to that of the door and therefore shown of circular formation, embedded in suitable non-conducting material 8, such for instance as cement and sand, although other material, might be used. I have found, however, that cement and sand is preferable. The non-conducting material is disposed in a chamber at or in the rear of the door, such material and protecting layer forming a shield for the bolting mechanism and is held in position by any suitable means, in the present instance by means of a plate or member 9 maintained in position in any desired manner. This shield might be used in some cases without being located in a chamber since the cement on hardening would leave the structure in the form of a plate or coherent mass. When, however, the chamber is used it may be formed in any desired way by the coöperation with the door or other wall of the structure in connection with which the protecting shield may be used of a suitable member or plate 9 or of several members or plates.

Should the burglar be successful in drilling by means of the electric arc through the body of the door or other wall in connection with which the shield may be used the non-conducting material will interrupt such arc, and if further attempt is then made to reach the bolt work by drills the manganese steel sections embedded in the non-conducting material will prevent this. Consequently the difficulties which would have to be overcome in any attempt to reach the bolt work would require so much time and

labor that even under the most favorable circumstances a burglar would find it impossible to accomplish his object. In the present instance the plate 9 which constitutes one wall of the chamber is maintained in position by suitable wedges 10 at the circumference thereof, and by a suitable bolt 12 located centrally thereof, that part of the bolt which projects into the body of the door being located in a soft metal insert 13 cast into a recess in the door.

In vaults of large dimensions which usually have doors many feet in diameter it is not always practicable to use a single plate for the purpose of floating or embedding it in non-conducting material, and therefore it is necessary to form such plate in sections, such sections 14 when assembled constituting a single metallic protecting layer conforming substantially to the area of the chamber. Each of these plates is shown as sector-shaped the inner end thereof being curved or recessed to form with its companion plates an opening 16 through which a boss or projection 17 of the plate 9 or of the door body may extend. The spindles for manipulating the combination lock when such are used project through this floating protecting layer, and for this purpose those sections through which such spindles project are provided with openings for this purpose.

In practice it is preferable to slightly separate the sections from each other by non-conducting material. By forming the floating protecting layer in the manner shown and described I find it possible, no matter what the size of the vault door may be, to in a practical manner, embed the sections in the non-conducting material so that when assembled they will form substantially a single plate.

Having described my invention, I claim—

1. A safe or vault door comprising a pair of members forming a chamber, and a metallic protecting layer supported in said chamber and embedded in non-conducting material and comprising a plurality of plates set edge to edge, each of the same dimensions as its companion plate or plates.

2. A safe or vault member comprising an outer member and an inner member constructed to form between them a chamber, and a protecting layer supported in said chamber and embedded in non-conducting material and comprising a plurality of sector-shaped members.

3. A safe or vault member having a chamber, and a protecting layer supported in said chamber and embedded in non-conducting material and comprising a plurality of sector-shaped plates set edge to edge.

4. In a safe or vault the combination with a supporting structure having a circular chamber, of a protecting shield located with-

in said chamber, comprising a mass of electrical resistance material, such, for instance, as cement and sand and a circular, drill-resisting, metallic protecting layer formed of a plurality of embedded, sector-shaped manganese steel plates, the organization being such that four of such plates are sufficient to cover substantially the entire area of a relatively large circular chamber.

5. A safe or vault member comprising an outer member and an inner member constructed to form between them a chamber, and a protecting layer supported in said chamber and embedded in non-conducting material and comprising a plurality of members, each having its inner end cut away to form with its companion section an opening.

6. A circular safe or vault door comprising a pair of members forming a circular chamber, non-conducting material located in said chamber, and a plurality of sector-shaped members embedded in said non-conducting material, each having its inner end cut away to form with its companion section an opening.

7. In a safe or vault, the combination with a supporting structure having a chamber, of a protecting shield located within said chamber, comprising a mass of electrical resistance material and a drill-resisting metallic protecting layer formed of a plurality of embedded plates, so constructed and assembled that a comparatively small number of said plates are sufficient to cover substantially the entire area of a relatively large chamber.

8. In a safe or vault, the combination with a supporting structure comprising inner and outer metallic plates, of a mass of electrical resistance material between said plates, and a plurality of metallic plate-formed members in said mass and located to form a protecting layer substantially of the same area as said mass.

9. In a safe or vault, the combination with a supporting structure comprising inner and outer metallic plates, of a mass of electrical resistance material comprising cement and sand between said plates, and a plurality of metallic plates located in said mass and set edge to edge to form a protecting layer of a single thickness of metal of substantially the same area as said mass.

10. A safe or vault having supported interiorly thereof a protecting shield comprising a mass of electrical resistance material, and a plurality of plates each of relatively large area located in such material.

11. A safe or vault having supported interiorly thereof a protecting shield comprising a mass of electrical resistance material, and a plurality of sector-shaped plates located therein, the whole forming a substantially integral shield.

12. A safe or vault having supported interiorly thereof a protecting shield compris-

ing a mass of electrical resistance material,
and reinforcing metallic members located
therein and comprising a plurality of plates
set edge to edge thereby to form a metallic
5 wall of substantially the same thickness
throughout and of approximately the area of
said mass.

13. A safe or vault door having a chamber,
and relatively large metallic members em-

bedded in non-conducting material located 10
in said chamber.

Signed at Nos. 9-15 Murray street, New
York, N. Y., this 22nd day of May, 1903.

HENRY D. HIBBARD.

Witnesses:

C. P. WEED,

CHAS. H. ROLLINGS.