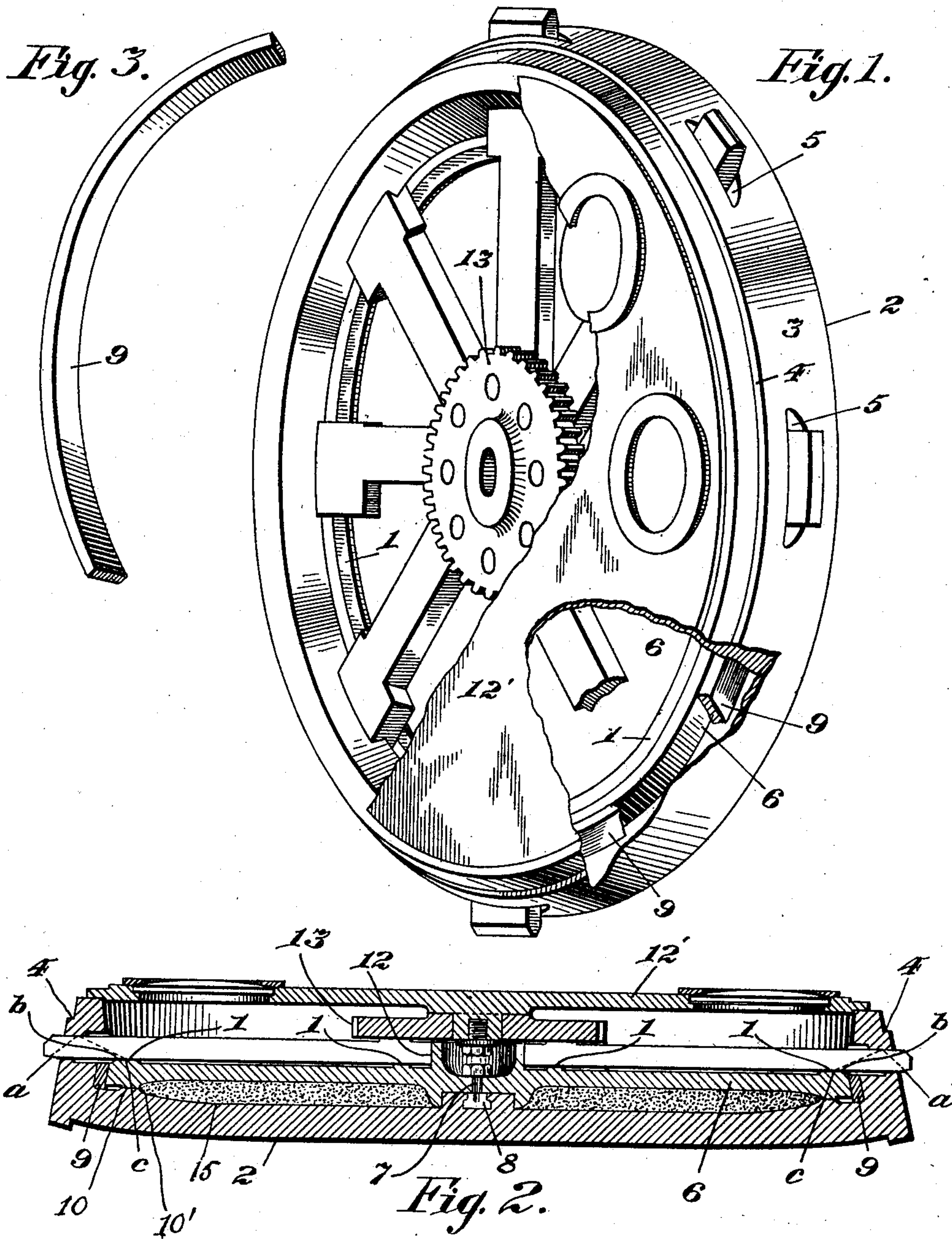


No. 708,041.

Patented Sept. 2, 1902.

H. D. HIBBARD.
SAFE OR VAULT DOOR.
(Application filed Mar. 11, 1902.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

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SAFE OR VAULT DOOR.

SPECIFICATION forming part of Letters Patent No. 708,041, dated September 2, 1902.

Application filed March 11, 1902. Serial No. 97,688. (No model.)

To all whom it may concern:

Be it known that I, HENRY DEMING 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 safe or vault doors, the object of the invention being to provide an improved door constructed to afford protection to the boltwork against electrical attacks and also to more completely protect the interior of the safe against the action of fire, while at the same time insuring a firmer wedging of the door in its jamb.

It is sometimes desirable to provide the body of a safe or vault door with increased thickness in cross-section without increasing the thickness of the casting, whereby additional security and protection are afforded to the boltwork and to the interior of the safe or vault, and for this and other purposes I have provided an improved organization of door in which the means for reinforcing the door coöperates with the boltwork in such manner that while the latter assists in maintaining the reinforcing means in position the reinforcing means in turn is effective to cause the bolts more tightly to wedge the door in the doorway.

In the drawings accompanying and forming part of this specification, Figure 1 is a perspective view of the rear side of a door with a part thereof broken away more clearly to show the structure. Fig. 2 is a cross-sectional view of such door, and Fig. 3 is a perspective view of one of the wedges for wedging one of the parts in position.

This improved door comprises a body or outer plate 2, having rigid or formed integral therewith a rearwardly-extending flange 3, provided with the usual offset or step 4 and openings 5 for the passage of the bolts. This door so far as described may be similar in construction to those shown and described in my prior patents and is usually formed of unmachinable metal—such, for instance, as manganese steel, which, as is well known, it is not practicable to drill or cut.

Located on the interior of the door between

the boltwork and the body of such door is a reinforcing member or filling-plate 6, preferably corresponding in shape to that of the door. This plate is shown connected or bolted centrally thereof to the door by a suitable bolt 7, which extends into an insert 8, of soft metal, cast in the door. It is shown maintained in position at its periphery by the wedging thereof, and for this purpose I prefer to use a plurality of wedges 9, which when the door is of circular formation will form a ring-shaped wedge. Heretofore the body of the door has been provided with surfaces for supporting the bolts; but as the body was made of manganese steel considerable time and labor were necessary to grind such surfaces to provide proper bearings for these bolts. In the present instance these bearing-surfaces are carried by the plate 6, which may be of ordinary steel, and therefore such bearing-surfaces may be readily formed in any well-known manner. This plate 6 is also provided with a rearwardly-extending centrally-located boss 12 to engage the inner ends of the bolts when they are protracted, whereby the retraction of the bolts is not possible except by the proper operation thereof. These bolts may be actuated in any suitable manner—as, for instance, by suitable gearing, one member 13 of which is pivoted to the rear ends of the bolts and is carried by a suitable stud of a back plate 12', secured to the flange of the door.

The door is provided with bearing-surfaces 10 to engage similar surfaces 10' of the filling-plate, whereby strains transmitted to the filling-plate are received directly by the door. This plate forms, with the door-body, a chamber 15, in which is placed a filling of suitable non-conducting material, such as cement and sand, which not only assists in rendering the safe or vault more nearly fire-proof, but also assists in resisting electrical attacks, since should the body of the door be penetrated by a burglar working under extremely favorable circumstances by using the electrical arc, which has not as yet, so far as I am aware, been successfully tried in a burglarious manner, it would still be necessary to dispose of a substantial portion of the

non-conducting material before he could proceed further, all of which would require so much time that it could not be done within the time which a burglar would ordinarily have to devote to this purpose. By the provision of this reinforcing-plate 6 and also of the filling material the door is rendered very massive, and this without the necessity of casting such door in one thick piece, which could not be so readily subjected to the subsequent heat treatment, so that the shocks of an explosion will be distributed over a much larger area and mass of metal and material, and consequently be of less effect to disturb the bolt mechanism or jar the actuating means out of its proper operating position, and so interfere with the proper operation of the door. In the present organization it will also be seen that the bolts resting on the plate 6 tend to hold such plate in position when such bolts are in their protracted positions, since the strain thereof will be received by the plate—that is to say, the load being at the points *a* and the fulcrum at the points *b* the power will be applied at the points *c* to the plate 6, and so assist in holding it in intimate relation with the bearing-surface of the door-body, the bolts forcing the plate toward the body of the door while simultaneously forcing the door inwardly into the jamb, this resulting in causing the bolts to more tightly wedge the door in its doorway. From this it will be seen that while the plate 6 receives the strain of the bolts it also constitutes means other forms of which could be used for resisting the movement of the bolts, and so cause the bolt-heads during their rotatable or swinging movement to move with considerable grinding action over the bolt-surfaces of the safe or vault body, thereby insuring a most powerful binding of the bolts upon such body-surfaces, and this with a minimum amount of power applied to the bolt-actuating means.

At the point where the lock-spindle projects through the door suitable apertured bearings or surfaces are provided, one on the filling-plate and the other on the door-body, the ends of which engage each other, and so prevent sand from coming in contact with the spindle.

Having described my invention, I claim—

1. A safe or vault door comprising a body having a rearwardly-extending flange integral therewith provided with bolt-openings for the passage of bolts; bolt mechanism carried by such door; and a filling-plate located between the bolt mechanism and said body and receiving the strain of said bolts when in their protracted positions, whereby such bolts assist in maintaining said plate in position.

2. A safe or vault door comprising a body having a rearwardly-extending integral flange provided with bolt-openings; bolts working in such openings; a filling-plate located between such bolts and said body and having bearing-surfaces for the bolts and receiving the strain of such bolts when in their

protracted positions whereby such bolts assist in maintaining it in position, said plate also having a centrally-located boss for the engagement of the inner ends of the bolts therewith.

3. A safe or vault door comprising a body having a rearwardly-extending integral flange provided with bolt-openings; bolts working in such openings; a filling-plate located between such bolts and said body and having bearing-surfaces for the bolts and receiving the strain of such bolts when in their protracted positions whereby such bolts assist in maintaining it in position, said plate also having a centrally-located boss for the engagement of the inner ends of the bolts therewith, said filling-plate and body constructed to form with the door-body a chamber for the reception of non-conducting material.

4. A safe or vault door comprising a body having a rearwardly-extending flange provided with bolt-openings; bolts working therein; and a filling-plate located between said bolts and said body and having a centrally-located boss cooperating with the inner ends of the bolts when in their protracted positions to prevent the withdrawal thereof except in the proper manner.

5. A safe or vault door comprising a body having a rearwardly-extending flange formed of unmachinable metal and a filling-plate wedged in position in the rear of said body.

6. A safe or vault door comprising a body having a rearwardly-extending flange formed of unmachinable metal and a filling-plate wedged in position in the rear of said body and constructed to form a chamber for the reception of non-conducting material.

7. A safe or vault door comprising a body having a rearwardly-extending flange; a filling member located in the rear of said body and interiorly of said flange; and a sectional wedge securing said member in position.

8. A safe or vault door comprising a body having a rearwardly-extending flange; a filling-plate bolted centrally thereof to said door-body and wedged at its periphery interiorly of said flange.

9. A safe or vault door comprising a body having a rearwardly-extending flange; a filling-plate connected centrally thereof to said door-body and wedged at its periphery interiorly of said flange, and constructed to form with the door-body a chamber for the reception of non-conducting material.

10. A safe or vault door comprising a body having an integral flange; a filling-plate located in the rear of such body and interiorly of said flange and connected centrally thereof to the door-body; and a sectional wedge located at the periphery of said plate to assist in securing it in position.

11. A safe or vault door comprising a body having an integral flange; a filling-plate located in the rear of such body and interiorly of said flange and connected centrally thereof to the door-body; a sectional wedge located at the periphery of said plate to assist in se-

curing it in position relatively to the door, and bolts located in position to also assist in maintaining the plate in position when such bolts are protracted.

5 12. A safe or vault door comprising a body having an integral flange; a filling-plate located in the rear of such body and interiorly of said flange and connected centrally thereof to the door; a sectional wedge located at the
10 periphery of said plate to assist in securing it in position relatively to the door; and bolts located in position to assist in maintaining said plate in position when such bolts are protracted, said plate having a centrally-located
15 boss for the engagement of the inner ends of the bolts therewith to prevent the withdrawal thereof except in the proper manner.

13. A safe or vault door comprising a body having a rearwardly-extending integral flange
20 provided with bolt-openings; a filling-plate located in the rear of said body and interiorly of said flange and secured to said door centrally thereof; sectional wedges located at the periphery of said plate to assist in maintain-
25 ing it in position, the strain of the bolts when in their protracted position being received by said plate, thereby to assist in maintaining the same in position, said plate having a centrally-located boss coöperating with the in-
30 ner ends of the bolts and constructed to form with the door-body a chamber for the reception of non-conducting material, and means for swinging said bolts during their longitudinal movement.

35 14. A safe or vault door comprising a body having a rearwardly - extending tapered flange, provided with bolt-openings; bolts working in said openings; and a plate located

interiorly of said flange and between the bolts and the door-body; the organization being
40 such that as the door is forced into the door-opening of the safe or vault body by the bolts, the strain of such bolts is received by the plate, whereby the same is forced into more intimate engagement with the door-body. 45

15. A safe or vault door comprising a body having a rearwardly-extending tapered flange provided with bolt-openings, bolts working in said openings, and means free of integral connection with the door and located inte-
50 riorly of said flange and between the bolts and the door-body to receive the strain of the bolts as they force the door into the door-opening of the safe or vault body, whereby such strain-receiving means is forced toward
55 the body of the door, the bolts thus being more firmly wedged in their bolting position.

16. A safe or vault member comprising an outer member and an inner member secured to each other centrally thereof and construct-
60 ed one with a flange to form an intermediate chamber.

17. A safe or vault member comprising an outer member and an inner member in en-
65 gagement with each other centrally thereof and constructed one with a flange to form an intermediate chamber.

18. A safe or vault door comprising a body having a rearwardly-extending flange, and a filling-plate in engagement with said body
70 centrally thereof and wedged at its periphery interiorly of said flange.

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