

(No Model.)

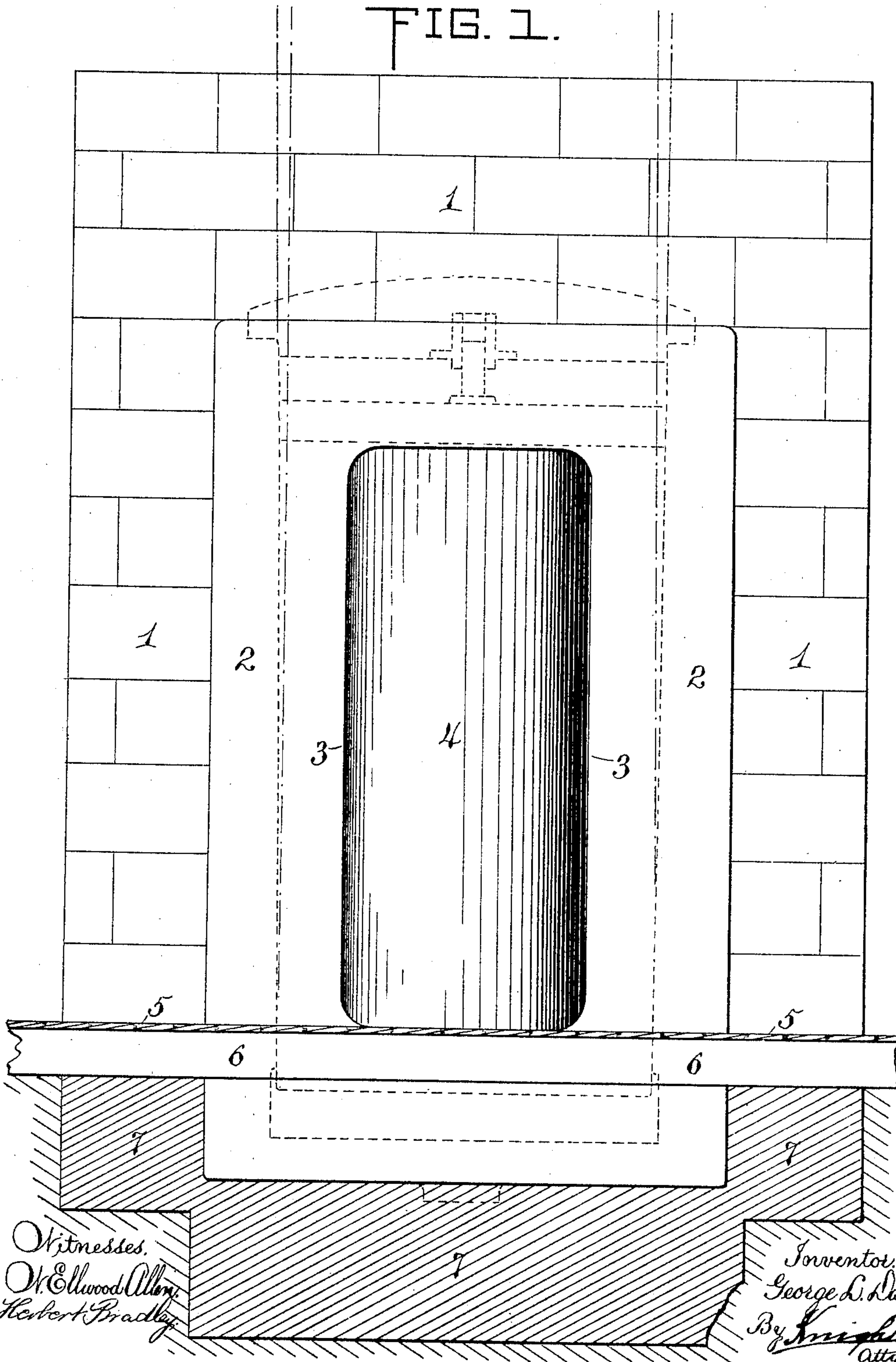
4 Sheets—Sheet 1.

G. L. DAMON.
CLOSURE FOR SAFES OR VAULTS.

No. 575,705.

Patented Jan. 26, 1897.

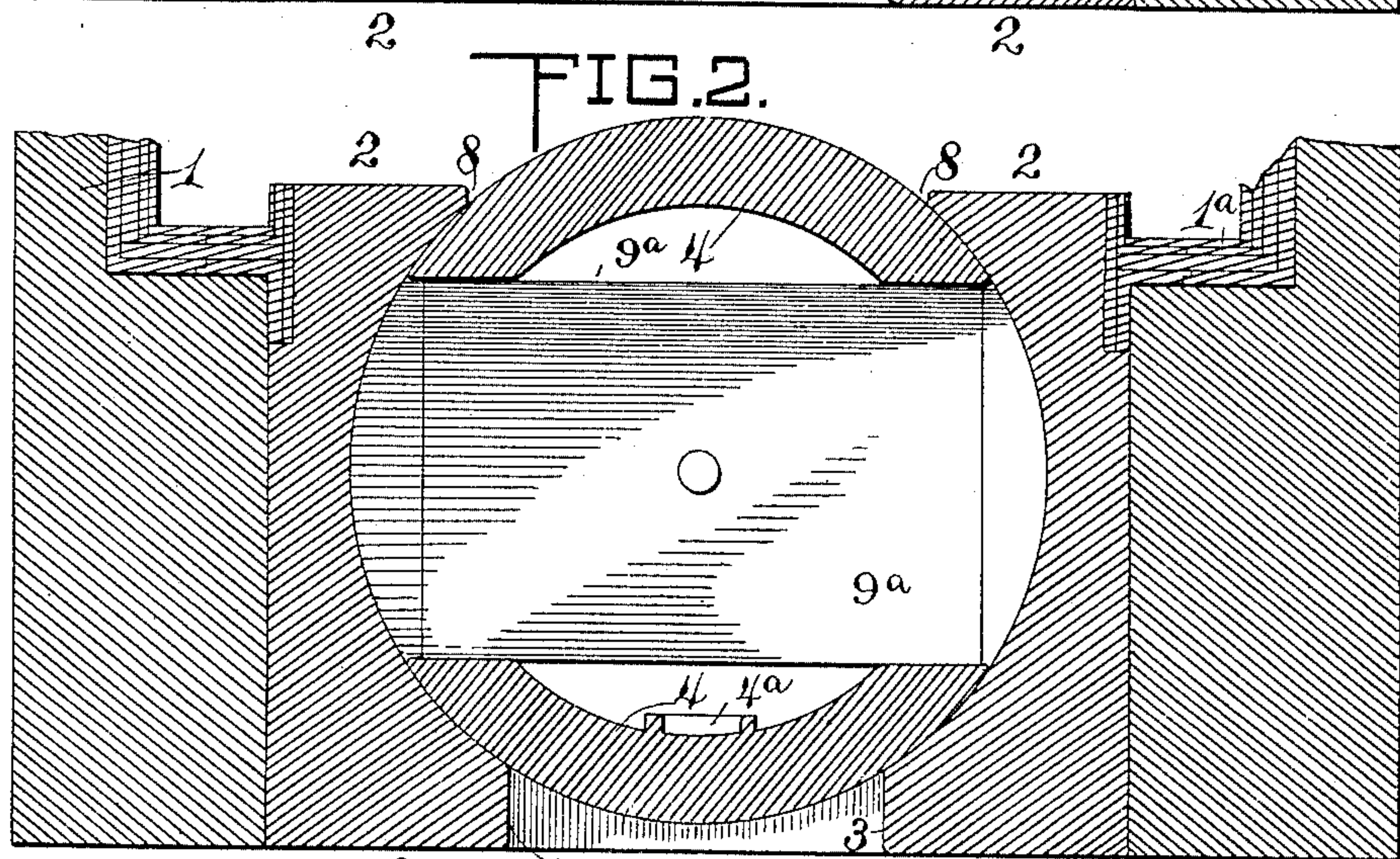
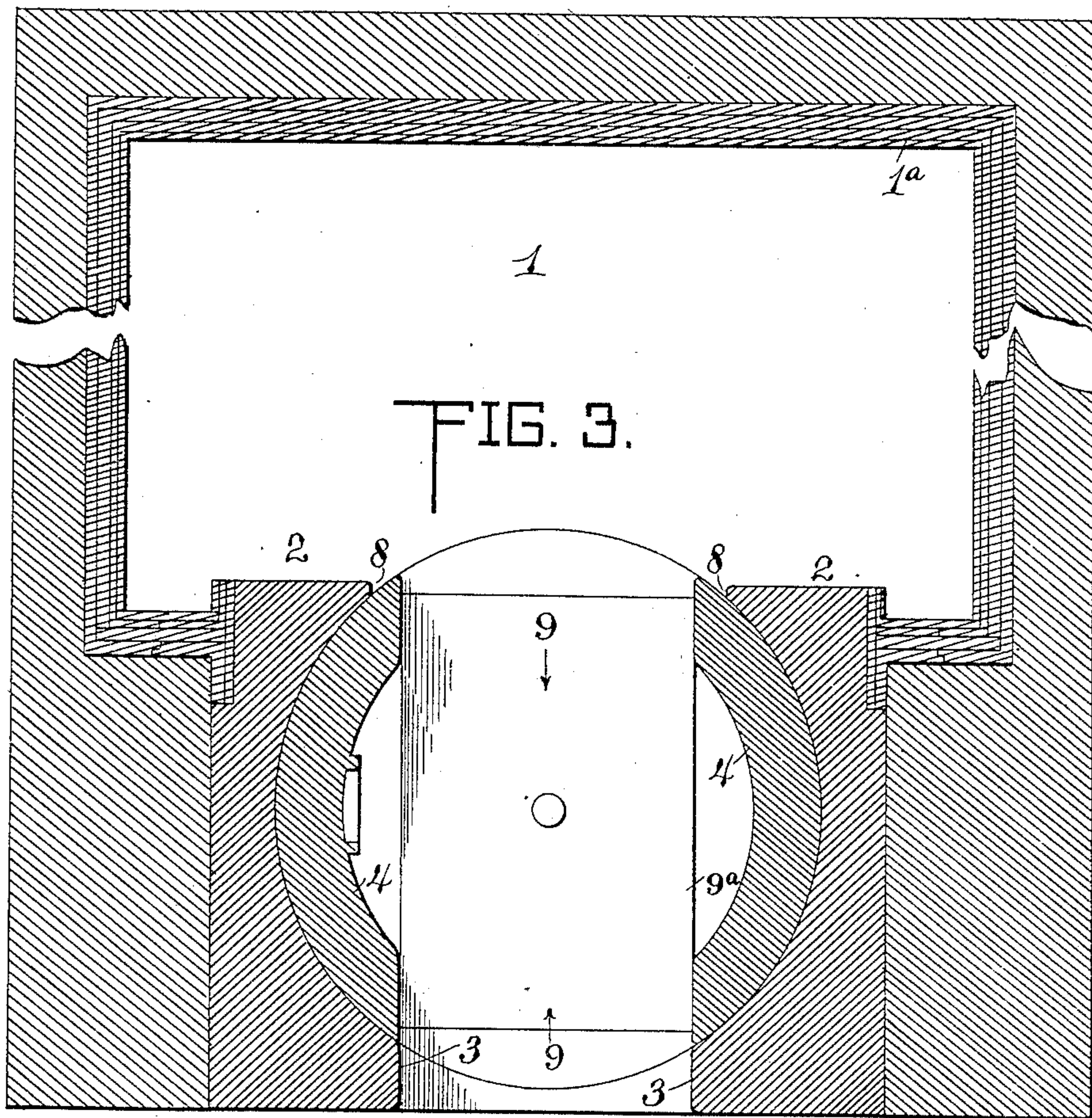
FIG. 1.



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Patented Jan. 26, 1897.



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(No Model.)

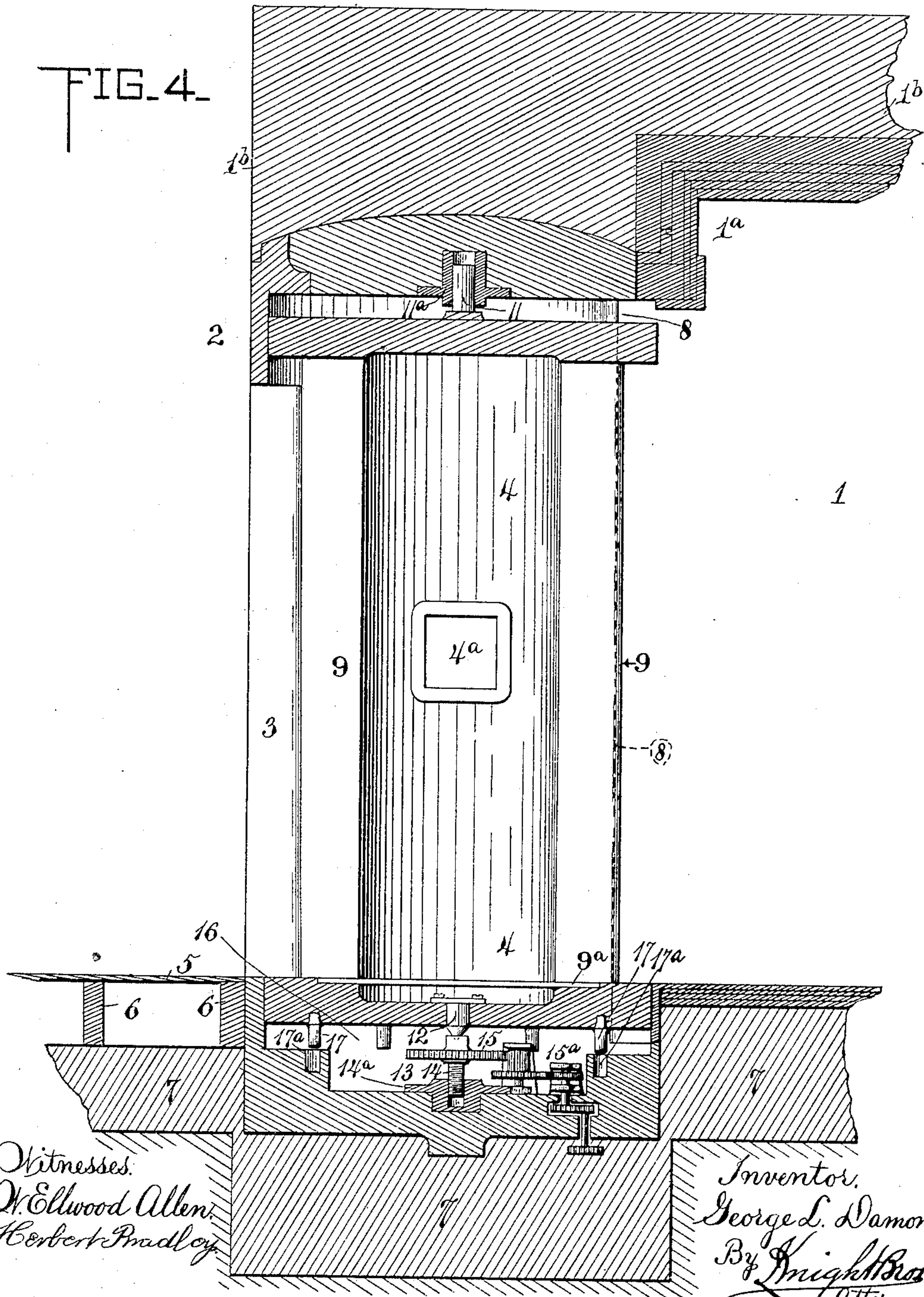
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FIG. 4.



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Fig. 5.

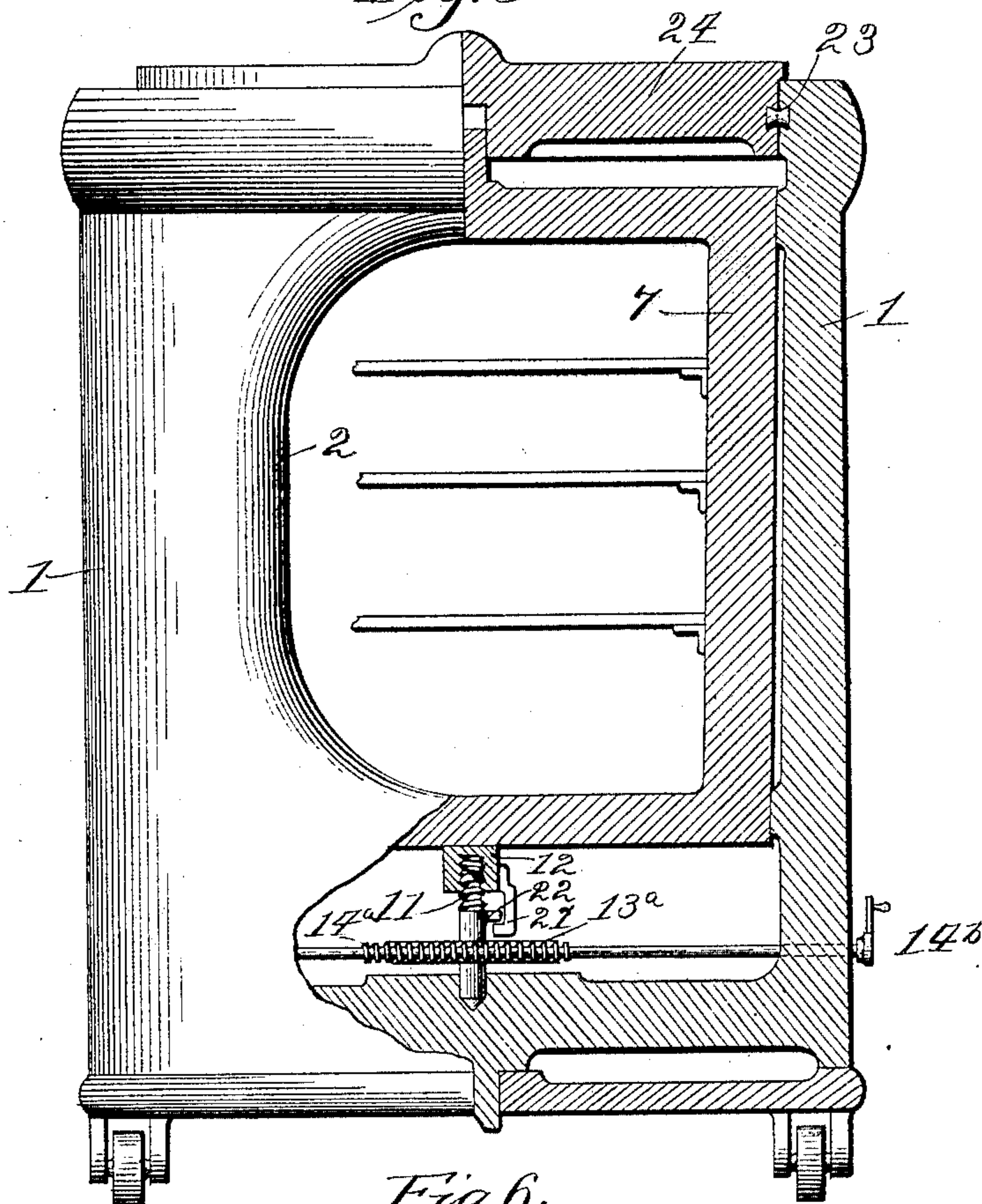
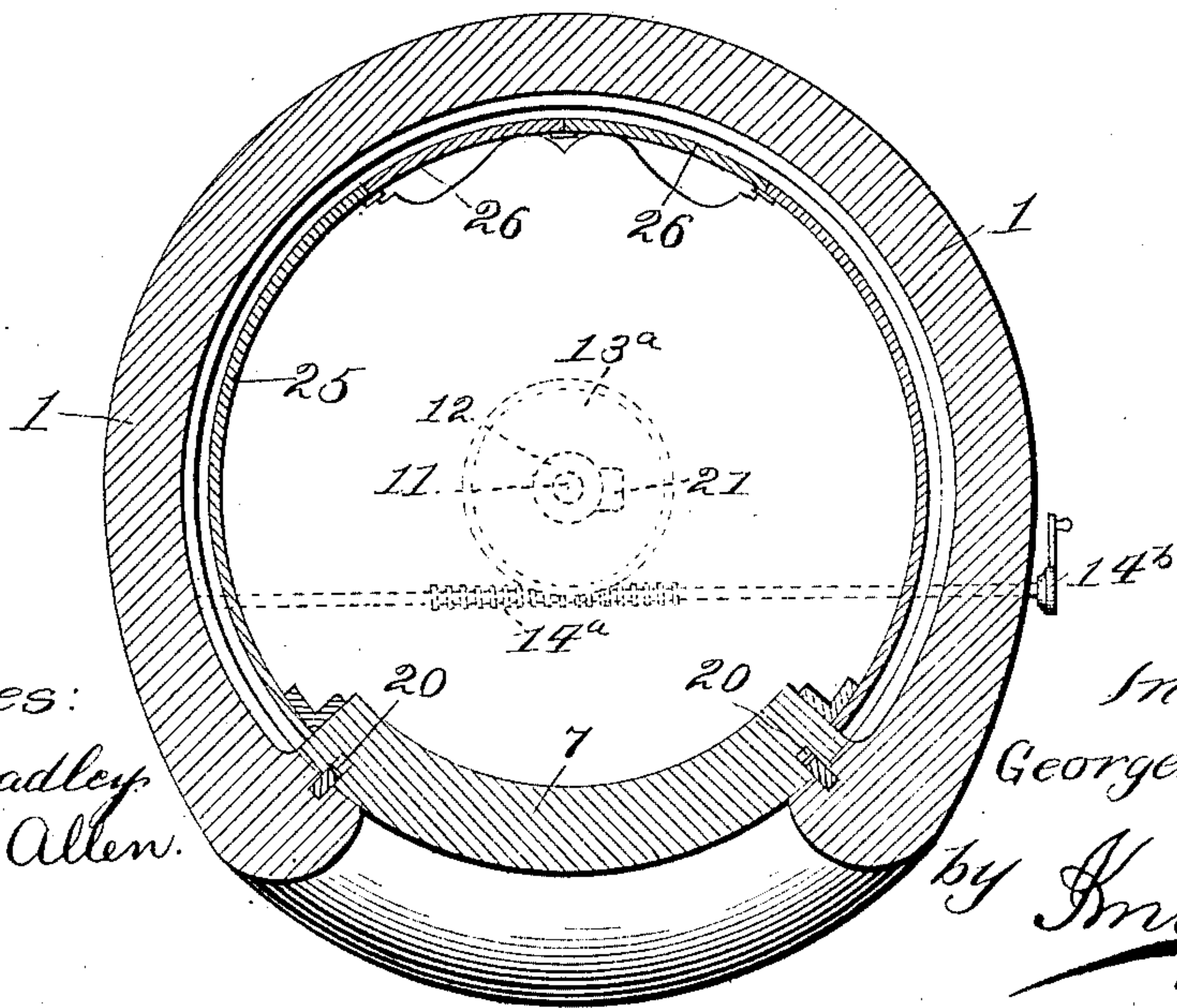


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CLOSURE FOR SAFES OR VAULTS.

SPECIFICATION forming part of Letters Patent No. 575,705, dated January 26, 1897.

Application filed July 25, 1895. Serial No. 557,121. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. DAMON, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Closures for Safes or Vaults, of which the following is a specification.

My invention relates to closures applicable to safes or vaults, whether employing vestibules with inner and outer doorways or a single doorway, and to portable safes.

It is the object of my invention to provide a construction of closure consisting, preferably, of but two relatively-moving parts, which may be produced and fitted together by machinery instead of by hand, and thus make it possible to obtain an absolutely steam-tight, gas-tight, and water-tight joint and a closure proof against attack by any tools which it would be practicable for burglars to introduce into a bank.

To these ends my invention consists, primarily, in constructing the closure of an outer housing and an inner cylindrical part fitting therein and each having an opening or openings which may be brought into coincidence to give access to the inner part, if it constitutes the receptacle, or to permit passage through said inner part if the closure is used as a vestibule protecting an inner chamber, the said inner part having an axial movement relatively to the outer in addition to the rotation and their contiguous faces being constructed in such manner that the said axial movement accomplishes a seating of the one part within the other when locking takes place and a loosening when revolution is to take place for opening.

My invention is preferably carried out by making the parts above referred to slightly tapered, so that when rotated to close the opening and the barrel is moved in an axial direction within its housing it will be seated and bound against turning and effects a joint proof against the introduction of any element or instrument which might be employed to force the opening.

My invention consists, further, in locating at one end of the barrel suitable mechanism for moving it axially in order to free it when

it is desired to open the vault or to seat it when the vault is closed and is to be sealed. This mechanism for effecting axial movement is preferably located at bottom, and the barrel is preferably allowed to descend for seating and raised for unseating; but this may be controlled by choice, and whether at top or at bottom or even if within the inner door of the vestibule this controlling mechanism is completely out of reach. This mechanism may likewise be employed to give the rotating movement.

A further object of my invention is to make the floor of the diametrical passage-way, when my invention is applied to vestibules, on a level with the floor of the banking-room when the vault is open, thus doing away with one of the greatest sources of annoyance in doors of common construction employing stepwork and avoiding the necessity of knockdown-sills or vestibule-platforms.

My invention further consists in suitable locking mechanism and in certain details of construction, all of which will hereinafter be fully described.

In the accompanying drawings, Figure 1 is a front elevation of a vault having the vestibule and the revolving barrel (in closed position) applied thereto. In this figure the taper of the revolving barrel is rendered perceptible from the divergence of the dotted lines projected from the base of said revolving part. Fig. 2 is a horizontal section through the same, showing the parts in the same position. Fig. 3 is a view similar to Fig. 2 with parts in open position. Fig. 4 is a vertical axial section, taken from front to rear, of the vestibule and closure, the parts being in open position. Fig. 5 is a view showing the application to portable safes, and Fig. 6 is a horizontal section of the same.

Referring to Fig. 1, in carrying out my invention a vault 1 or similar receptacle is constructed with a metallic vestibule 2, formed with a doorway the sides of which are represented by 3 3 and closed by a door 4.

5 represents the bank-floor, 6 the floor-beams, and 7 the submasonry foundation for the vestibule.

The parts as thus far described do not embrace any features of my present invention.

On reference to Figs. 2 and 3 it will be observed that the vestibule 2 has a rectangular exterior; but it may be of any other form which will adapt it for combination with a vault. The vestibule is formed with a cylindrical interior, into which the doorway 3 forms a diametric opening, and this cylindrical interior also has a diametric opening 8 8 on the opposite side. It will be further seen that the door 4 is incased within the cylindrical interior of the vestibule, and it is formed with a diametric passage-way 9. The cylindrical door may rest in the position shown in Figs. 1 and 2, at which time the vestibule-openings are closed by the cylindrical side walls of the door 4, or said door may be rotated within its casing so as to bring the diametric passage 9 into coincidence with the diametric openings 3 3 and 8 8 of the vestibule, as shown in Fig. 3, at which time there will be an unobstructed passage through the vestibule into the vault or other receptacle. If the door is made with a depression for lightness, a platform or false bottom 9^a may be employed to bridge the space and make a level passage-way into the vault from the banking-floor.

4^a represents a pocket or niche in which may be located time-lock mechanism. The boltwork or other locking mechanism is not shown, for the reason that ordinary boltwork can be applied in many obvious ways to prevent turning or relative axial movement of the one part within the other. The cylindrical interior of the vestibule 2 and the correspondingly-shaped door 4 are so formed that the former constitutes a bearing for the latter when in shut position.

1^a represents steel lining to the vault 1, which may be connected with the metallic vestibule 2 in any convenient manner and the whole then covered with masonry 1^b.

Referring to Fig. 4, in order that the door 4 may turn freely within its bearing it is preferable to make these parts with a tapered ground fit, so that the door, when raised in its bearing, will turn freely, but when lowered will make an absolutely tight joint. To thus raise and lower the door and to permit it to be turned, it is mounted upon an upper trunnion 11, which has turning as well as reciprocating bearing in a socket 11^a, and a lower trunnion 12, which has bearing in suitable elevating mechanism 13. This elevating mechanism may consist of any suitable means for raising and lowering the door at will, such, for instance, as a hydraulic piston or suitable levers or any other means which might be devised for the purpose. I have shown, as illustrating this portion of my invention, a screw 14, working in a nut 14^a and turned by a gear-wheel 15, which is under control of a train of gearing 15^a, which terminates at some point out of the safe-work for manipulation at will. This mechanism may be conveniently located in a well 16, formed in the vestibule beneath the door for permitting axial

movement of the latter. For additional security the door may be provided with studs 17, which drop into sockets 17^a when the door is lowered for the purpose of preventing the door being turned until it is elevated. Obviously locking mechanism would readily prevent raising the door. When the door is elevated, it may be turned by any suitable means or by hand to open position.

Obviously a portion only of the cylindrical door could be employed in case but a single doorway is to be closed.

In Fig. 5 is illustrated the application of my invention to safes, there being but one opening in each part of the closure and the rotating portion of the closure being fitted up as the receptacle for valuables. In all essential details and operations this structure may correspond to vestibule-closures.

In addition to the features shown in common in the vestibule construction described with reference to Figs. 1, 2, and 3 and the portable-safe construction shown in Figs. 5 and 6 I may employ other features in either of these constructions. Some of these I have shown applied to the portable safe. In this construction instead of using the form of elevating mechanism shown in Fig. 2 I may employ the worm-wheel 13^a for rotating the screw 11 and a worm 14^a, engaging the said worm-wheel and extending through the wall of the safe, to be operated by a crank 14^b. I may also employ a projection 21 on the rotating part of the safe and a projection 22 on the elevating-screw, so related that after the inner portion of the safe has been raised a proper distance to unseat it said projections will come into engagement and further movement of the screw 11 will carry the inner portion of the safe around with it. This permits the operation of unseating or unlocking and opening to be effected through the medium of a single continuous movement of the operating mechanism.

I may also employ in either construction lock devices 20, so mounted in either the inner or outer parts that when the seating takes place these locking devices will be forced into engagement in such a way so as to lock the parts against turning and when unseating takes place will be withdrawn to permit turning.

I may also employ an improved form of union, as shown at 23, for holding the top or bottom of the safe, whichever is made in a separate part, in place. This dovetailed union consists in a dovetailed groove formed in each part to be connected, and molten metal, such as steel, poured in said parts so as to take shape therefrom. A special advantage arises from the fact that on cooling, after the uniting part has taken shape, contraction, which necessarily results, leaves this part under strain of tension and draws tightly together the parts to be connected.

The movable inner receptacle need only have that portion of its wall 7 made solid

which closes the opening 2 when the safe is shut. The interior of the inner wall may simply be of a thin steel lining 25, the opening at the rear, which is brought around to opening 2 to open the safe, being, if desired, closed by a pair of doors 26 of similar structure.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

10 1. A closure for safes or vaults consisting of a housing having a conical bore and a rotatable plug having a conical periphery; said housing and plug having diametric openings to be brought into and out of coincidence for
15 opening or closing the safe or vault; and means for moving the plug axially within the housing for binding one within the other by their conical surfaces, as explained.

20 2. A vestibule-closure for safes or vaults consisting of a housing having a conical bore, and a rotatable plug having a conical periphery; said housing and plug having each two diametric openings to be brought into and out of coincidence for opening or closing two door-
25 ways of the safe or vault; and means for moving the plug axially within the housing for

binding one within the other by their conical surfaces, as explained.

3. In a closure for safes or vaults the combination of the outer housing having a conical bore and the conical plug fitting in said bore, said housing and plug having openings to be brought into and out of coincidence as explained, means for moving the plug axially within the housing, and means substantially as described, for preventing rotation of the plug when seated in the housing, as explained.

4. In a closure for safes or vaults, the combination of the outer housing, the inner barrel mounted to rotate, also to move axially in said housing, and locking devices consisting of pins and sockets secured respectively to the fixed and moving parts and adapted to be brought into engagement by axial movement and prevent rotary movement of the barrel as explained.

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