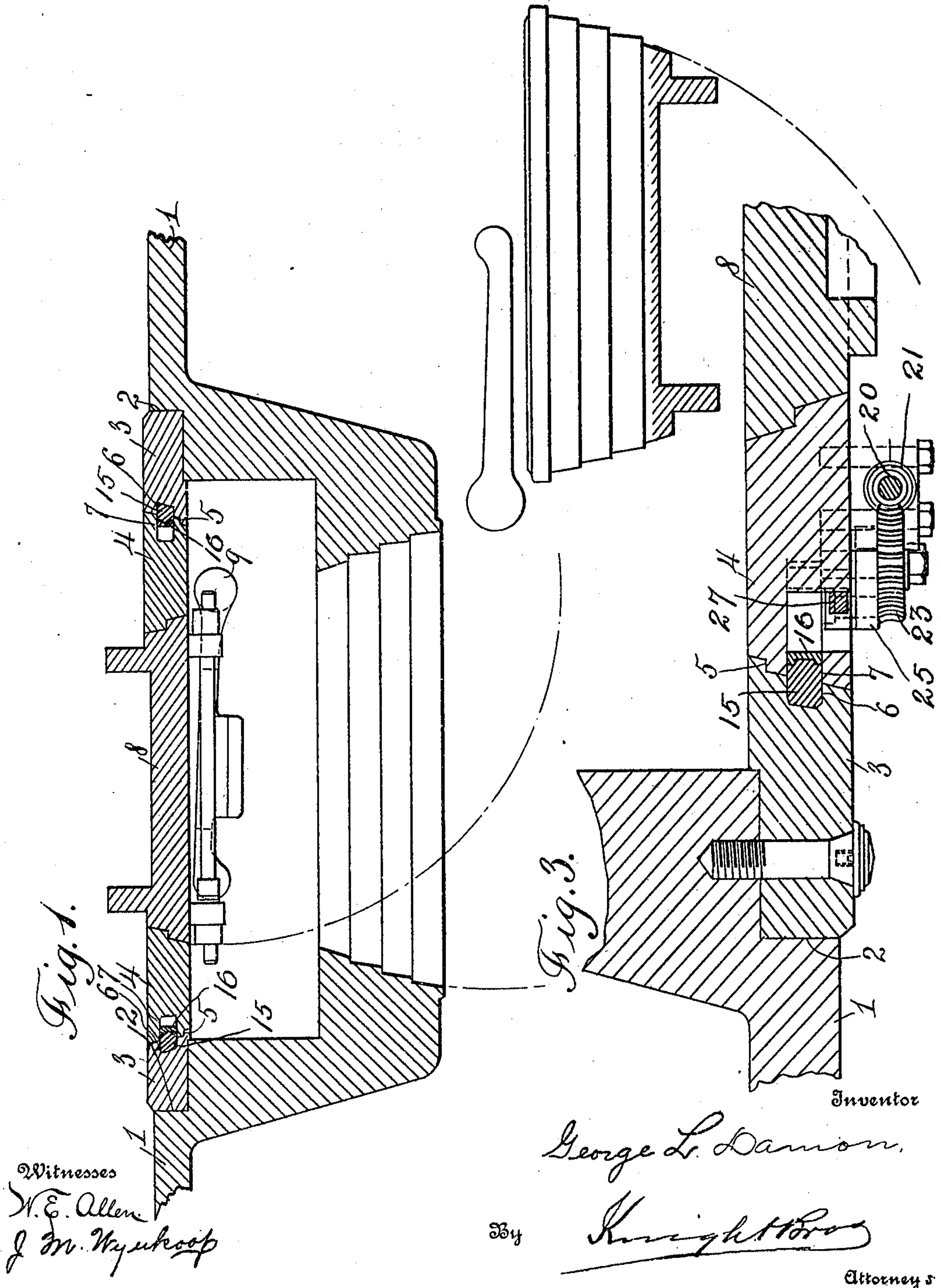


G. L. DAMON.
DOOR FOR SAFES AND VAULTS.
APPLICATION FILED AUG. 24, 1908.

952,980.

Patented Mar. 22, 1910.

3 SHEETS—SHEET 1.



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Fig. 5.

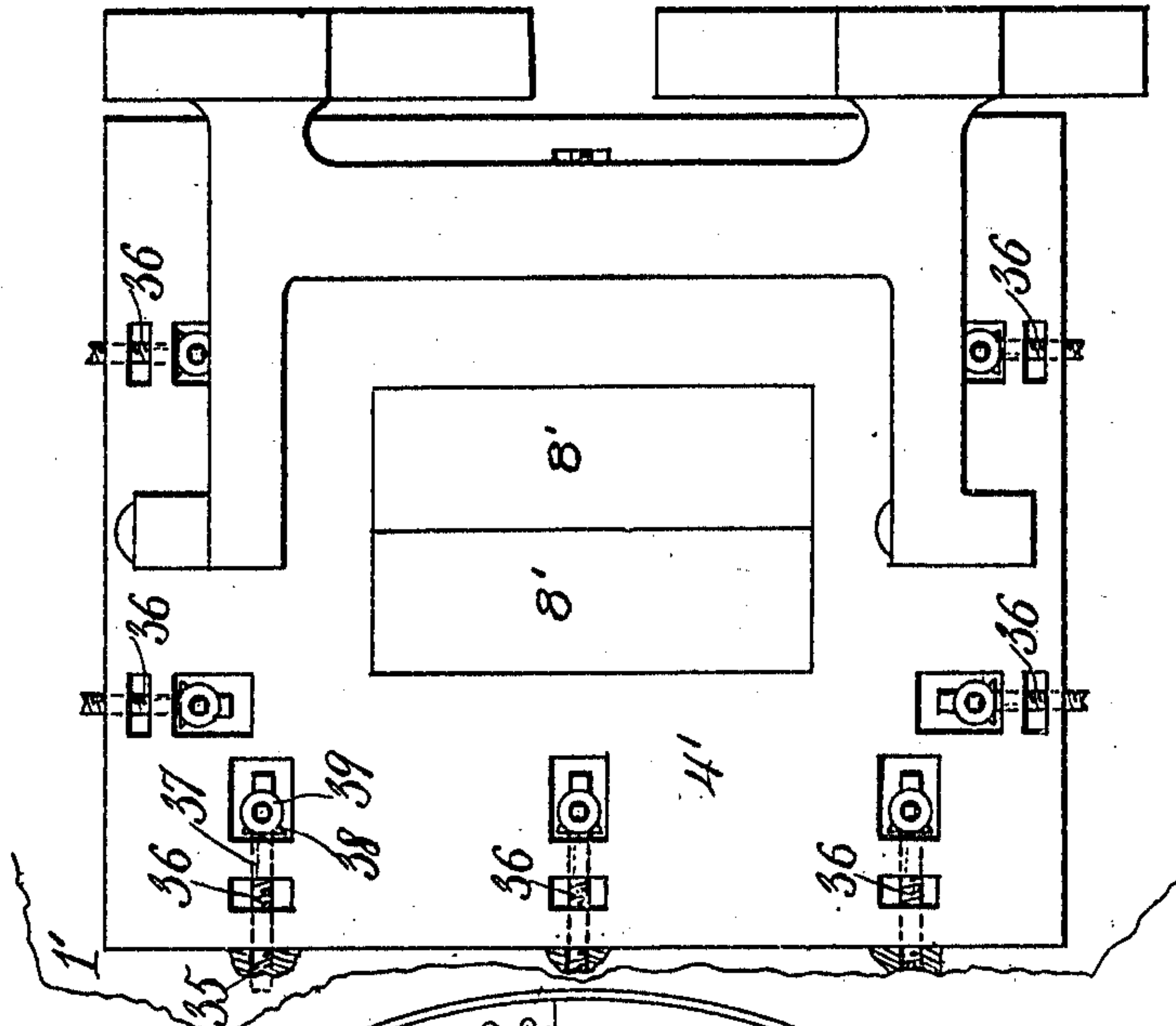
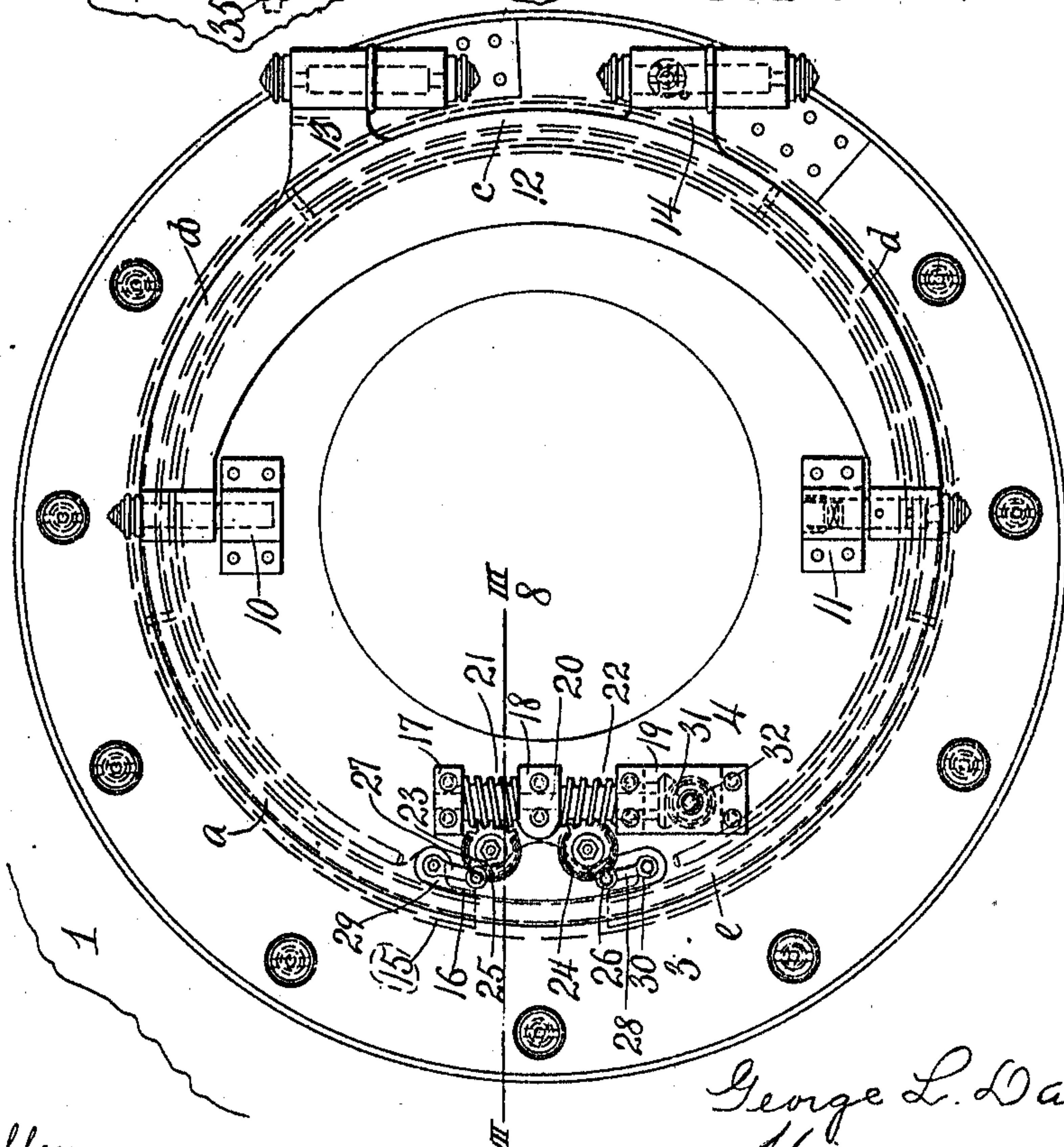


Fig. 2.



Inventor

George L. Damon.

Knight Bros

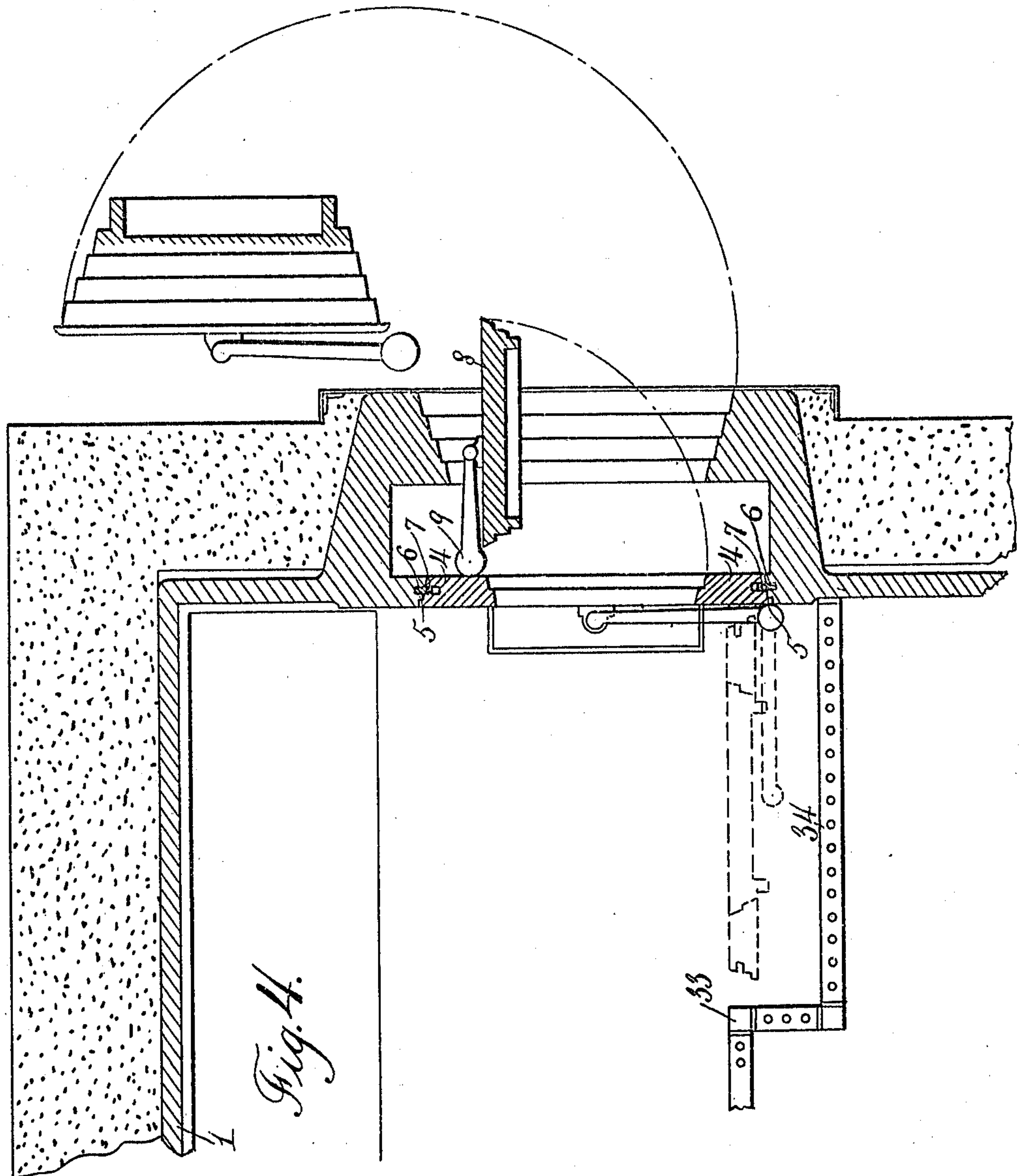
Attorneys.

Witnesses
W. E. Allen
J. M. Nynkoop

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Witnesses

W. E. Allen
J. M. Hyslop

Inventor
George L. Damon

By

Knight Bros.

Attorney

UNITED STATES PATENT OFFICE.

GEORGE L. DAMON, OF PITTSBURG, PENNSYLVANIA.

DOOR FOR SAFES AND VAULTS.

952,980.

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To all whom it may concern:

Be it known that I, GEORGE L. DAMON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Doors for Safes and Vaults, of which the following is a specification.

It is customary in bank vaults to embody in the upper rear portion of the vault structure, a special emergency door whereby access may be gained to the interior of the vault when by reason of the non-operation of the time or combination locks, or for any other cause, it becomes impossible to gain an entrance through the front door in the usual manner. By reason of the necessity of providing means for gaining access to the bolt-operating mechanism from within, at times when admission is not to be obtained through the front door, it has formerly been found necessary to construct the vestibule of such size as to enable the inner door or doors of the safe to be swung open while the outer door remained in its tight-closed position. In consequence of this construction, not only was a large additional expense involved in the manufacture of vestibuled safes but there was also considerable space that could not be utilized both within and without the vault structure.

This invention relates to the inner doors of safes, vaults or similar receptacles provided with vestibules.

The general object of this invention is to reduce the size of the vestibule to a minimum.

A more particular object of this invention is to obviate the necessity of mounting the emergency bolt-work upon the inner face of the inside door thereby making it unnecessary to occupy space within the vault while at the same time making it unnecessary to extend the vestibule structure upon the outside.

Still another object is to provide more space within which to operate upon the inside face of the outer door than can possibly be provided with known vestibule structures.

Other and further objects will appear in the specification and be more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a horizontal section of a portion of a vault embodying my invention; Fig. 2 is a view in elevation

of one embodiment of my invention as it appears from within the vault; Fig. 3 is a section on the line III—III, Fig. 2; Fig. 4 is a section of one of the rear corners of a safe or vault provided with an emergency door embodying my invention; and Fig. 5 is an elevation of the inner front wall of a vault provided with rectangular doors and embodying my invention.

Referring to Figs. 1, 2, 3 and 4 of the drawings, the front wall 1 of the vault is provided with an annular recess 2 within which is seated an annular frame 3 rigidly secured to the front wall 1 by means of bolts or other suitable fastenings. Between the adjoining edges of rings 3 and 4, an inclined stepped joint 5 is provided, having the steps thereof enlarged toward the inside to adapt the framing ring 4 to swing inwardly in a manner to be hereinafter referred to. Within the outer ring 3 and along the line of the joint 5, is an annular groove 6 while corresponding therewith in the outer edge of the door-framing ring 4, is a second groove 7, said grooves together forming an annular cavity for housing an expanding ring-bolting device to be hereinafter described. The inner circular door 8 is hinged at 9 to the framing ring 4 which in turn (see Fig. 2), is hinged upon its inner face at 10 and 11 to a crane-hinge 12 by means of which the ring and door together are adapted to be swung inwardly into the vault about the hinges 13 and 14. To hold the framing ring 4 against opening while at the same time providing means whereby it can be opened from the inside without delay in case of an emergency, an expanding ring-bolt mechanism of known construction is adapted to the joint between the framing ring and the outer ring 3. This mechanism comprises a locking ring 15 (see Figs. 2 and 3) of mild steel divided into five sections *a*, *b*, *c*, *d*, and *e* subsequently to being rigidly fastened to a hoop 16 of bar steel. A short section of the ring is taken out entirely from between sections *a* and *e* to provide a gap of sufficient extent to allow the removal of the ring 15 from the groove 6 by drawing the free ends thereof together. For thus adjusting the diameter of the expansible ring, the following known device has been adapted to the circular inner door. Rotatably mounted upon the framing ring 4 by means of bearing brackets 17, 18 and 19, is a spindle 20 provided on one end with a

right-hand worm 21 and on the other end with a left-hand worm 22. These worms intermesh respectively with worm-gears 23 and 24. Rigidly secured to said worm-gears, are crank arms 25 and 26, connecting by means of connecting rods 27 and 28 with lugs 29 and 30 integral with the ends of the hoop 16. In consequence of these connections, a suitable crank for engaging the squared end 32 of a stub drive-shaft, is adapted to expand and contract the ring-bolt 15 through the aid of bevel gears 31.

Referring now to Fig. 4, one embodiment of my invention is shown adapted to the emergency door of a safe-deposit vault. The principal modification occurring in this embodiment, is the elimination of the outer ring 3 which is more feasible in this embodiment than in the other on account of the reduced size of the door. Thus in this embodiment, the door-framing ring 4 is seated directly within the wall of the vault without the interposition of an outer fixed ring. The expanding ring-bolt mechanism is similar to the one already described. Within the vault and extending longitudinally thereof, is a fence 33 provided with an offset portion 34 to form an alcove for receiving the ring door-frame when it is in its open position (shown in dotted lines).

Fig. 5 shows an embodiment of my invention in which the same is adapted to a safe provided with rectangular inner doors 8' 8' mounted by hinges (not shown in the drawing) on the hinged door-frame 4'. In this figure, the wall 1' (or outer stationary rectangular frame seated within a recessed opening in the wall), is provided with a threaded bolt-socket 35 adapted to receive a threaded bolt 36 mounted in the door-frame 4'. Bolt 36 is threaded upon its outer end while upon the inner end thereof which is unthreaded, is provided a spline 37 whereby said bolt is adapted to be rotated by the beveled gears 38, 39, while at the same time permitting it to slide through the gear 38. Gear 39 is carried by a short stub shaft and is rotated by a suitable crank engaging the squared end of said stub shaft. The rectangular door-frame 4' is supported upon a crane-hinge in an exactly similar manner to the circular door-frame 4 of former embodiments.

While I have shown and described particular examples of the application of my invention to certain well-known types of safes or vaults, I do not wish to be limited in the scope of my disclosure inasmuch as many modifications could be introduced into the several parts without departing from the spirit of my invention. Furthermore, the inner door-frame is spaced from the outer front wall of the vestibule, a distance less than the diameter of the inner door or to be more exact, a distance approxi-

mately equal to one-half the diameter of the inner door. In this way, the inner door is adapted to swing outwardly through the open outer door-way thus enabling a great reduction in the size of the vestibule.

What I claim is:

1. The combination with a safe provided with an outer door, of a frame rigid with the wall of the safe, a second frame seated within the first frame and movable relatively to said outer door, and an inner door seated within the second frame, said frames and inner door being arranged to permit said inner door to be swung outwardly through the outer door-way.

2. The combination with a safe provided with an outer door, of an inwardly removable door frame spaced from said outer door and having an inner door swingingly mounted therein, the distance between the outer door and said removable door-frame being less than the diameter of said inner door.

3. The combination with an outer door and an inner door of a safe, of a vestibule at the front and rear ends of which said doors are respectively mounted, said vestibule being of length less than the diameter of either of said doors, and a door-frame swingingly mounted in the rear wall of said vestibule, said door-frame having the inner door mounted therein.

4. The combination with the vestibule of a safe, of an outer and an inner door, said inner door being hinged to swing open into the outer door-way, and means carrying said inner door whereby it may be swung inwardly into the safe and away from said outer door.

5. In a device for gaining access to the bolt-work of safes in an emergency the combination with a vault provided with a main door, of an inwardly opening door-frame mounted within the wall of said safe at a distance from the main door approximately equal to one-half the diameter of the inner door, and an outwardly-opening door mounted within said door-frame.

6. In combination with the wall of a safe; a ring rigidly secured thereto; a second ring hinged to the first-named ring; and a door hinged to the second-named ring.

7. In combination with the vestibule of a safe; of an outer frame rigidly attached to the inner wall of said vestibule; an inner door-frame hinged to the outer frame and provided with means for locking it rigid with said outer frame; and a door hinged to said inner door-frame.

8. The combination with the inner wall of the vestibule of a safe; of a door-frame hinged thereto and adapted to be swung inwardly from a hole in the wall; an inner safe door hinged to said door-frame in such manner as to be adapted to be swung out-

wardly into the vestibule, said door, wall, and door-frame being mounted in substantially the same plane; and an outer door in the front wall of the vestibule, said vestibule being of such length as to prevent the inner door being swung outwardly before the outer door is opened.

9. In combination an outer ring rigidly secured to the wall of a safe; an inner ring hinged to the outer ring and provided with an expanding ring mechanism; means for operating said expanding ring to lock and unlock the inner ring; and a door hinged to said inner ring and adapted to close an opening therein.

10. In combination with the outer front wall and the inner perforated wall of the vestibule of a safe; a frame seated within a recess provided within the inner wall about the edge of the perforation; and a second frame seated within the first frame and adapted to carry a door for closing the opening therethrough, the distance between said outer and inner walls being less than the least width of the inner door-way.

11. In a safe or vault structure, an outer main door-way, an inner inwardly-swinging door-frame, and an inner door swinging outwardly on said door-frame, said frame being positioned so that the inner door when open extends through the outer door-way.

12. The combination with an outwardly-opening main door, of an inner door extending when open through the main door opening, and an inner inwardly swinging door frame carrying said inner door.

13. The combination of two doors mounted in parallel walls and opening in the same direction, of a door-frame for one of said doors mounted to swing in the opposite direction, said doors being spaced at such dis-

tance as prevents one of said doors being opened until after the other door has been opened..

14. In a device for securing access to the bolt-work of a safe in an emergency, the combination with a wall provided with an opening; of a flat ring rigidly secured to the wall along the edge of the opening; an inner flat ring adapted to fit the opening in said outer ring and provided with a door for closing the opening within itself; and an expanding ring carried by the inner ring and adapted to engage the outer ring.

15. An emergency device for safes, comprising an outer flat ring secured to the wall of a safe about the edge of a circular opening therein and provided with an annular groove in the inner edge of the ring; an inner flat ring hinged to the outer ring and provided with an annular groove in the outer edge to correspond with the groove in the outer ring; an expansible ring mounted within the groove in said inner ring and adapted to expand to engage the groove in said outer ring; and means for expanding and contracting said expansible ring to lock and unlock the inner ring.

16. The combination with the vestibule of a vault, said vestibule having a door-way in its outer wall; of an inner door mounted to swing outwardly through said door-way; and a frame for said inner door, said frame being mounted to swing inwardly into the vault.

The foregoing specification signed at Pittsburgh, Pa., this 1st day of April, 1908.

GEORGE L. DAMON.

In presence of two witnesses—

R. B. COONEY,
A. O. KNIGHT.