

SAFE DOOR.

900,311.

2 SHEETS—SHEET 1.

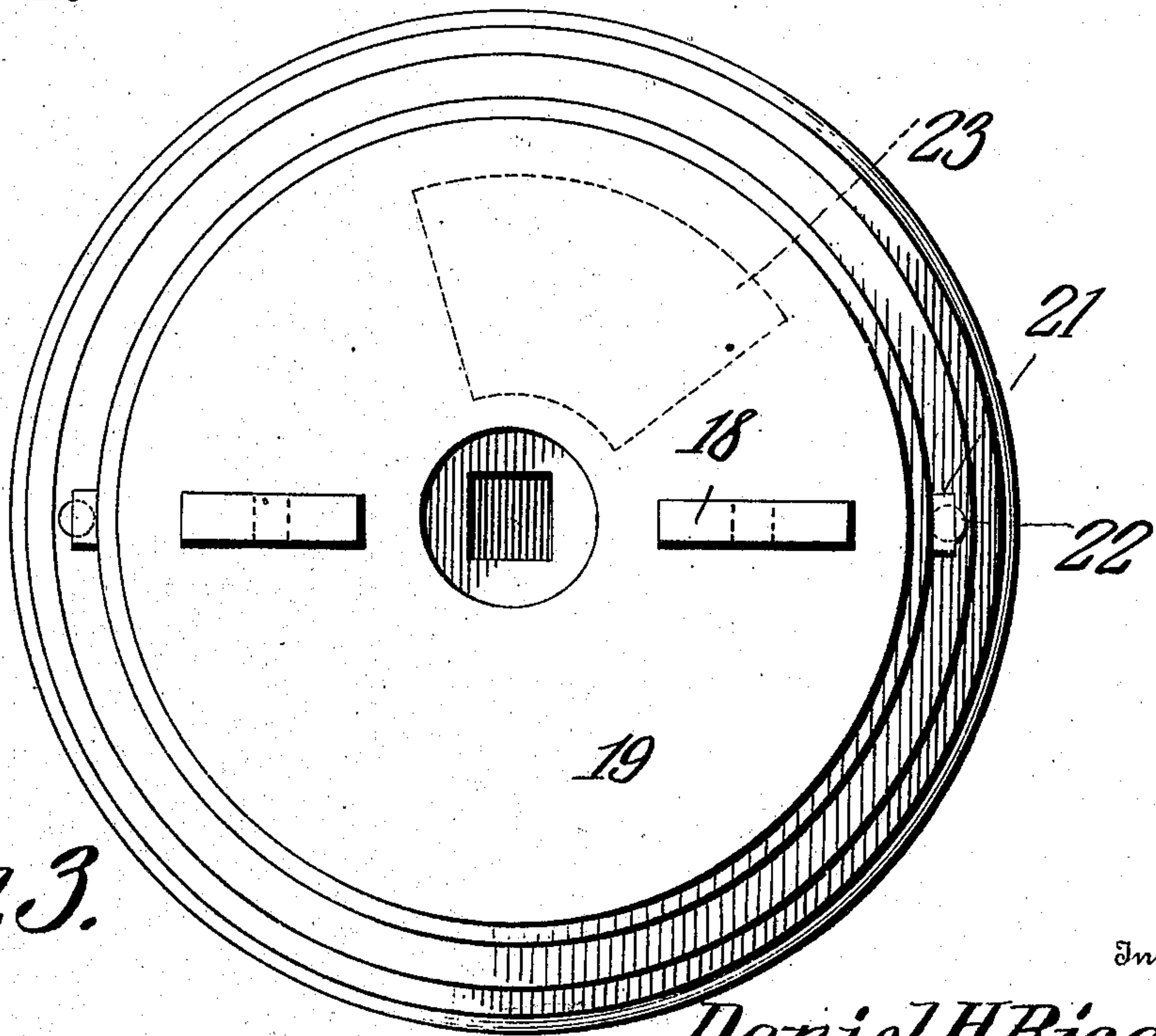


Fig. 3.

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SAFE DOOR.

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2 SHEETS--SHEET 2.

Fig. 4.

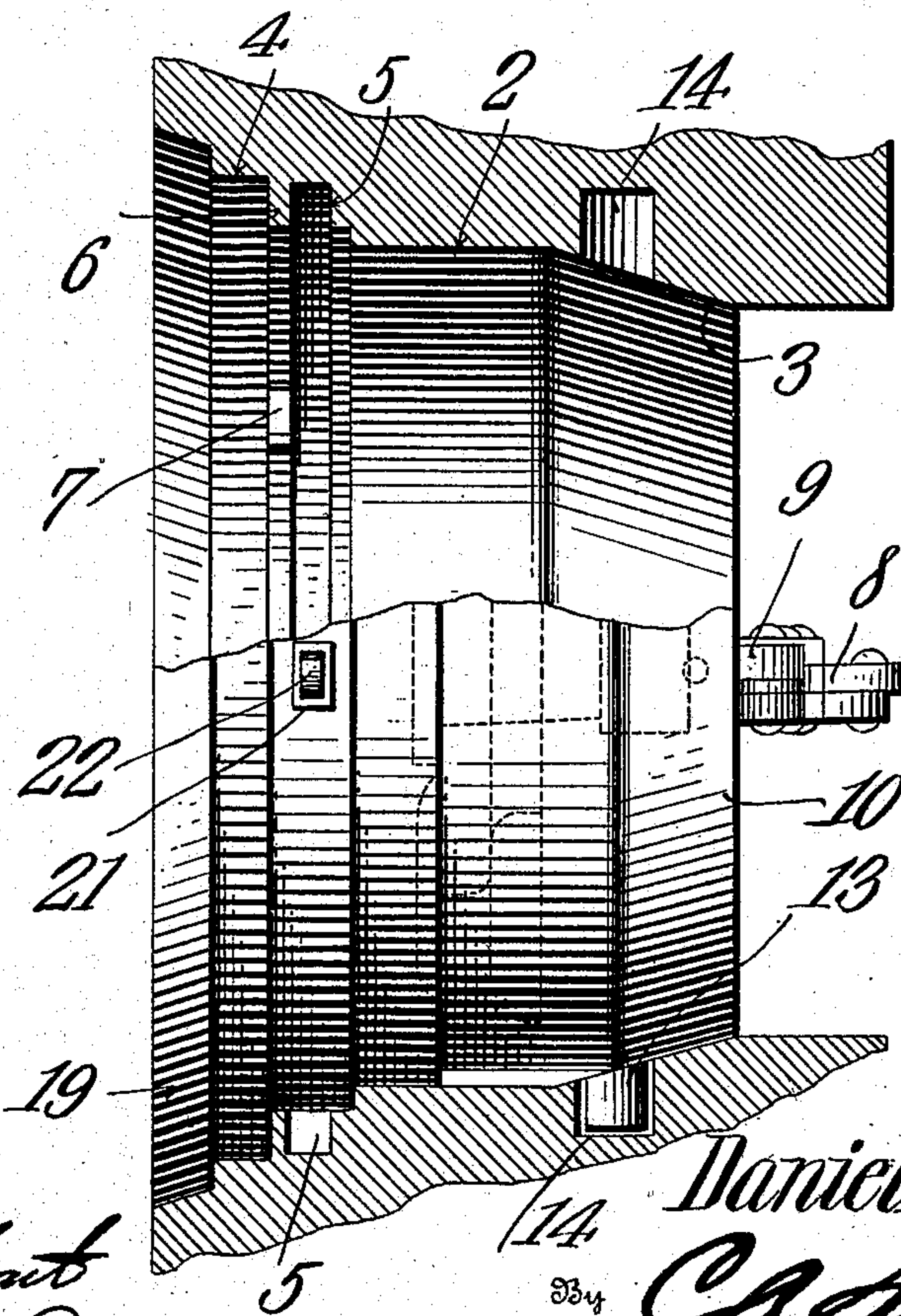
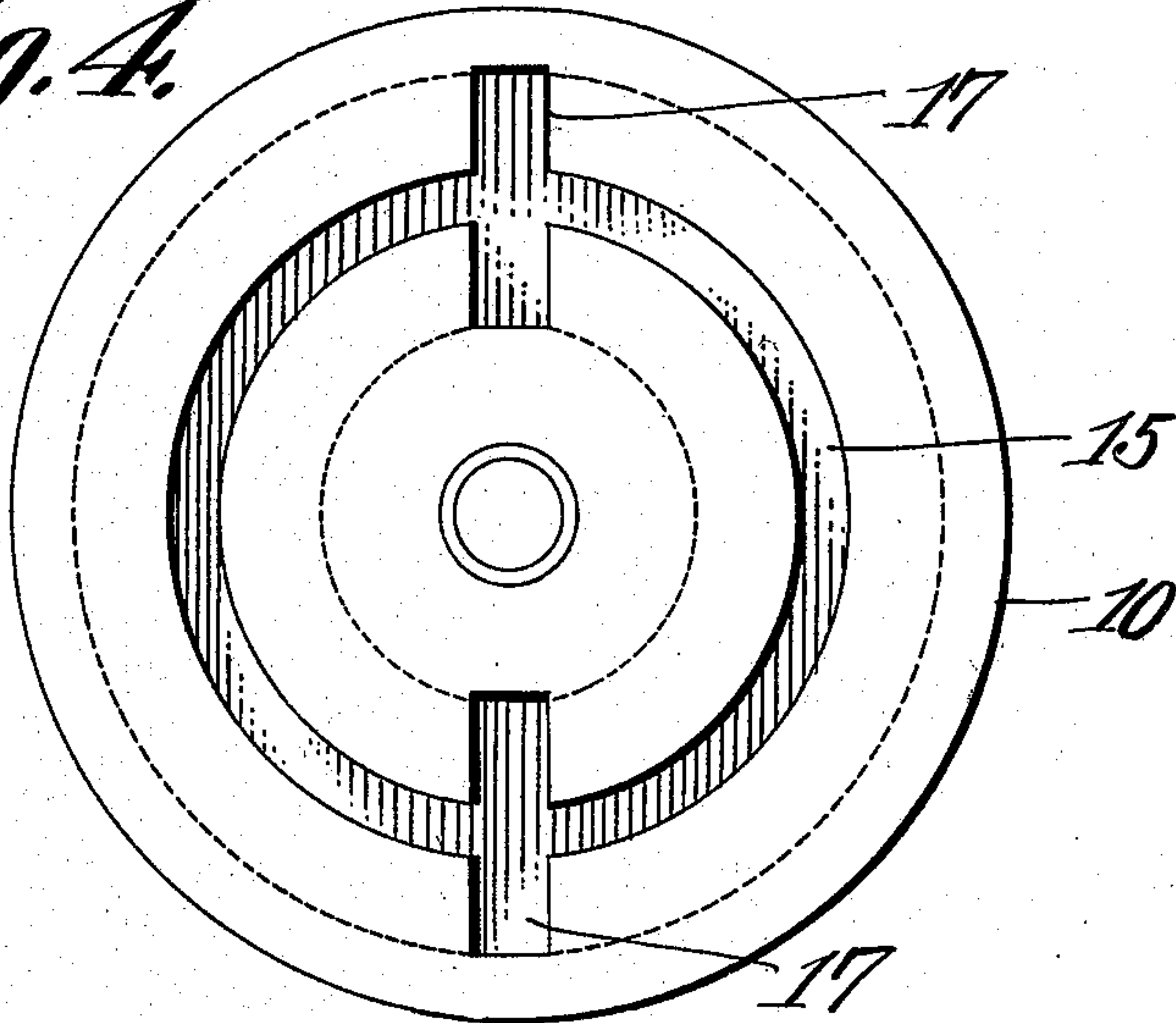


Fig. 2.

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UNITED STATES PATENT OFFICE.

DANIEL H. RIGGAN, OF WARRENTON, NORTH CAROLINA.

SAFE-DOOR.

No. 900,311.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed March 5, 1908. Serial No. 419,367.

To all whom it may concern:

Be it known that I, DANIEL H. RIGGAN, a citizen of the United States, residing at Warrenton, in the county of Warren and State of North Carolina, have invented a new and useful Safe-Door, of which the following is a specification.

This invention relates to safes of that character utilizing circular doors and its object is to provide a safe door the outer surface of which is imperforate and void of all projections so that the opening of the safe by unauthorized persons is rendered more difficult than heretofore.

A further object is to provide a circular door designed to rotate relative to the safe body so as to operate tumbler mechanism of any construction such as ordinarily utilized in connection with safe doors.

A further object is to provide a door made up of a relatively movable and a relatively fixed section, said fixed section carrying bolts designed to be actuated during the movement of the tumblers and said movable section carrying integral extensions for engagement with a safe body independently of the bolts before mentioned whereby the door is additionally secured.

Another object is to provide a door supported in a novel manner whereby the same when released can be supported beyond and at an angle to the safe body, said supporting means being foldable into the body during the closing of the door.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a horizontal section through the safe door and a portion of the safe body, the outer part of the door being shown in plan. Fig. 2 is a side elevation of a portion of the door, the adjoining portions of the safe body being shown in section. Fig. 3 is a rear elevation of the outer or movable section of the door. Fig. 4 is an elevation showing the outer face of the inner section of the door.

Referring to the figures by characters of reference, 1 designates the safe body, the same being provided with a door opening 2 circular in form. The innermost portion of this door opening is preferably tapered as in-

dicated at 3 to constitute a seat for the inner portion of the door when closed. An outer portion of the door opening is stepped annularly as indicated at 4 to form shoulders constituting abutments for the outer portion of the door. An annular groove 5 is formed within one of these steps and the outer wall 6 of the groove is provided at suitable points with slots or recesses 7 for the purpose hereinafter set forth.

Pivotally connected to the safe body and in rear of the space occupied by the door when closed is a hinge made up of a plurality of pivotally connected members 8 designed to fold together when the door is closed and the outer member of which is pivotally connected to one or more ears 9 extending inwardly from the inner face of the inner door section 10. This door section is preferably cylindrical for the greater part of its length, its inner portion, however, being tapered as at 11 so as to fit snugly against the corresponding tapered or reduced portion 3 of the door opening 2. This section 10 contains a suitable tumbler mechanism 12 which may be of the ordinary or any preferred construction and is designed to actuate bolts 13 which are slidably mounted within section 10 for engagement with sockets 14 located in the wall of the door opening.

The outer face of section 10 is provided with a circular groove 15 concentric with the center thereof, the inner portion of said groove being extended laterally as at 16 so that the groove is substantially T-shaped in cross section. At desired intervals, preferably diametrically opposite points, the slot 15 is enlarged transversely as indicated at 17. These enlargements are designed to receive T-shaped retaining lugs 18 extending from the inner face of the circular outer door section 19. This section fits snugly against the section 10 and the spindle 20, which actuates tumblers 12 and is revolvably mounted within section 10, is secured to the middle portion of this section 19 preferably by providing it with a winged or angular end held in a recess in section 19 by a filling 19' of soft metal so that by rotating section 19 the spindle will be operated to actuate the tumblers. This section 19 is stepped annularly so as to fit snugly against the shoulders within the stepped portion 4 of the door opening and extending radially from the section 19 are retaining and locking studs or projections 21 preferably carrying anti-friction

rollers 22 and designed, when the door is moved into closed position, to pass through the recesses or slots 7 so as to become seated within the annular groove 5. Section 19 is preferably so constructed that as soon as projections 21 have been inserted through the recesses 7 the door will turn automatically for a short distance, this turning operation being produced either by adding weight to the door at one side of its center or by removing metal therefrom, as has been indicated at 23 in Figs. 1 and 3. As the spindle 20 is secured at one end to section 19 and at its other end to the tumbler mechanism 12 which is held against removal from the section 10, said spindle will act to securely hold the two sections 10 and 19 together and prevent them from becoming separated when the safe is opened.

Suitable graduations and numbers may be placed upon the outer face of section 19 close to its periphery and these numbers and graduations can either be formed in or upon the door sections or the part provided with said numbers and graduations can be removed therefrom and foldable so as to be conveniently carried.

When it is desired to open the door which has been described, the hands of the operator are placed flat against the outer surface of the sections 19 and by turning them said sections will move therewith, the projections 18 traveling in a circle and within the groove 15. Section 10 does not rotate, it being held against rotation by the members 8. It will be apparent therefore that section 19 will operate the spindle 20 and by turning said section 19 backward and forward in the same manner as the knob of an ordinary combination lock is turned, the tumblers 12 can be shifted so as to ultimately retract the bolts 13 from the sockets 14. As this bolt actuating mechanism constitutes no part of the present invention it has not been disclosed in detail. After the bolts have been retracted section 19 is turned until the studs 21 register with the recesses 7 whereupon the door can be opened outwardly. The members 8 permit the door to be moved outward and to be swung relative to the body of the safe. When it is desired to close the safe the door is pushed into the opening 2 thus causing the hinges 8 to fold into the safe. The studs 21 are of course positioned so as to move through the recesses 7 and into groove 5. As soon as the door has been seated in this manner the section 19 is turned in either direction so as to cause the bolts 13 to be projected into sockets 14. This partial rotation of the section 19 can be performed by the operator, although it is not necessary as the door section 19 will automatically partly rotate as soon as released because one-half thereof is heavier than the other as heretofore explained so as to promptly move the studs 21

out of register with recesses 7. It is to be understood that friction between the sections 10 and 19 can be reduced in any preferred manner as by interposing balls or rollers between the bearing faces of the parts. Such a construction however, is so common that illustration thereof is not deemed necessary. It is of course to be understood that the sections 10 and 19 can be readily assembled by inserting the projections 18 into the enlarged portions 17 of groove 15, after which section 19 can be partly rotated relative to the section 10 and the two parts thus securely held together. During the manipulation of the tumblers 12 in the manner hereinbefore set forth the spindle 20 will of course prevent separation of the two sections 10 and 19 whenever the projections 18 move into register with the enlarged portions 17 of the groove 15.

What is claimed is:

1. A safe door comprising movably connected sections, one of said sections being revoluble relative to the other section, the two sections being held against independent movement in the direction of their axes, locking members carried by one of the sections, and means operated by the movement of the revoluble section for actuating said locking members.

2. A safe door comprising an inner relatively fixed section, an outer section mounted to rotate thereon held against independent movement in the direction of its axis, and a combination lock carried by the relatively fixed member and actuated by the operation of the revoluble member.

3. A safe door comprising a relatively fixed member, a combination lock carried thereby, a section revolubly mounted upon the first mentioned section and disposed when actuated to operate the lock, said sections being held against independent movement in the direction of their axes, and safe engaging locking projections carried by the revoluble section.

4. A safe door comprising a relatively fixed section, a relatively movable section mounted to rotate thereon, and a safe engaging locking projection carried by the movable section, said projection being held by gravity normally in a predetermined position relative to the fixed section.

5. A safe door comprising a relatively fixed section having a circular concentric groove therein, a relatively movable section mounted to rotate upon the first mentioned section, retaining devices carried by said movable section and mounted within the groove, and a lock carried by the relatively fixed section and disposed to be actuated by the rotation of the movable section.

6. The combination with a safe having a door opening, said opening being provided with an annular groove in the wall thereof,

said groove having a recess in one of its walls; of a door comprising a relatively fixed and a relatively movable section and movable into the door opening, and a locking projection 5 carried by the movable section and shiftable through the recess and into the groove, said projection being held by gravity normally out of register with the recess.

7. The combination with a safe having a 10 door opening provided with an annular groove in the wall thereof, said groove having a recess in one of its walls; of a door insertible into the opening and having a revoluble section, a locking projection outstanding 15 from said section and insertible through the recess and into the groove, said projection being held by gravity normally out of register with the recess, a lock within the door, and means operated by the movement 20 of the revoluble section for actuating the lock.

8. A safe door comprising a non-revoluble inner section, a revoluble outer section 25 mounted to rotate thereon and having a smooth outer face, said sections being held against independent movement in the direction of their axes, a lock carried by one of the sections, and means operated by the rotation of the outer section for actuating the lock.

9. A safe door comprising an inner non-revoluble section, an outer revoluble section 30 mounted thereon, a lock within the inner section, lock operating means for holding the inner and outer sections against independent movement in the direction of their axes and 35 disposed to be actuated by the movement of

the outer section, and a locking projection outstanding from the movable section for engagement with the wall of the door opening, the outer face of said outer section being 40 smooth and free of recesses or projections.

10. The combination with a safe having a door opening therein; of a door movably 45 mounted within the opening and comprising a non-revoluble inner section, a revoluble outer section movably mounted upon the inner section, a lock carried by one of the sections, lock operating means for holding the inner and outer sections against independent 50 movement in the direction of their axes and disposed to be actuated by the rotation of the outer section, and a locking projection upon said outer section for engagement with the wall of the door opening, the outer face 55 of said outer section being free of recesses or projections and disposed to rest flush with the outer wall of the safe.

11. A safe door comprising an inner non-revoluble section having a concentric groove 60 in one face, an outer revoluble section, extensions thereon mounted to travel within the groove, a lock within the inner section, and means extending from the outer section for actuating the lock.

In testimony that I claim the foregoing as 65 my own, I have hereto affixed my signature in the presence of two witnesses.

DANIEL H. RIGGAN.

Witnesses:

J. A. DAMERON, Jr.,
W. W. CAWTHORNE.