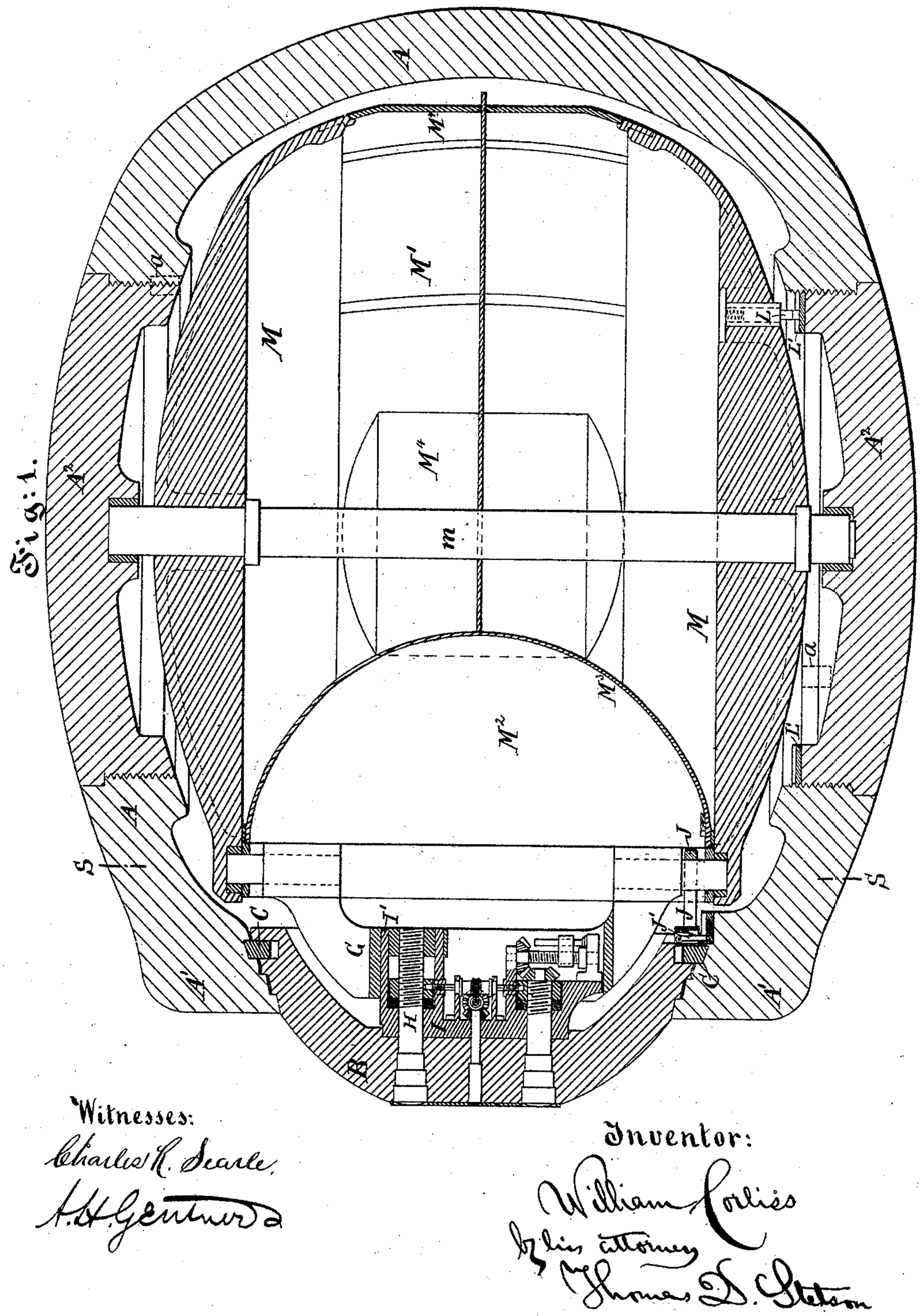
(No Model.) 4 Sheets—Sheet 1.

W. CORLISS.

BURGLAR PROOF SAFE.

No. 271,313. Patented Jan. 30, 1883.



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Thomas D. Stetson

(No Model.) 4 Sheets—Sheet 2.

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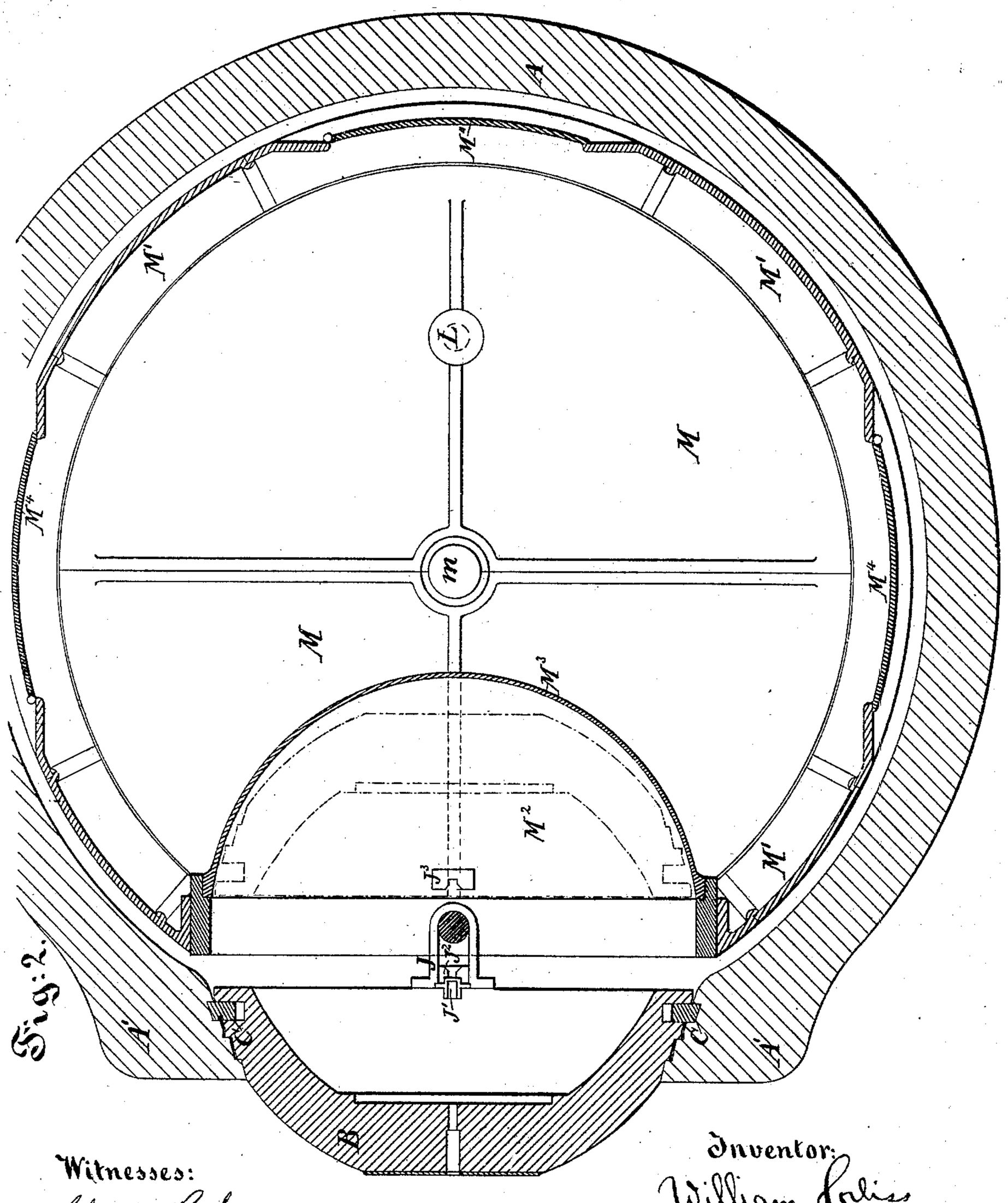

Fig. 2.

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(No Model.)

4 Sheets—Sheet 3.

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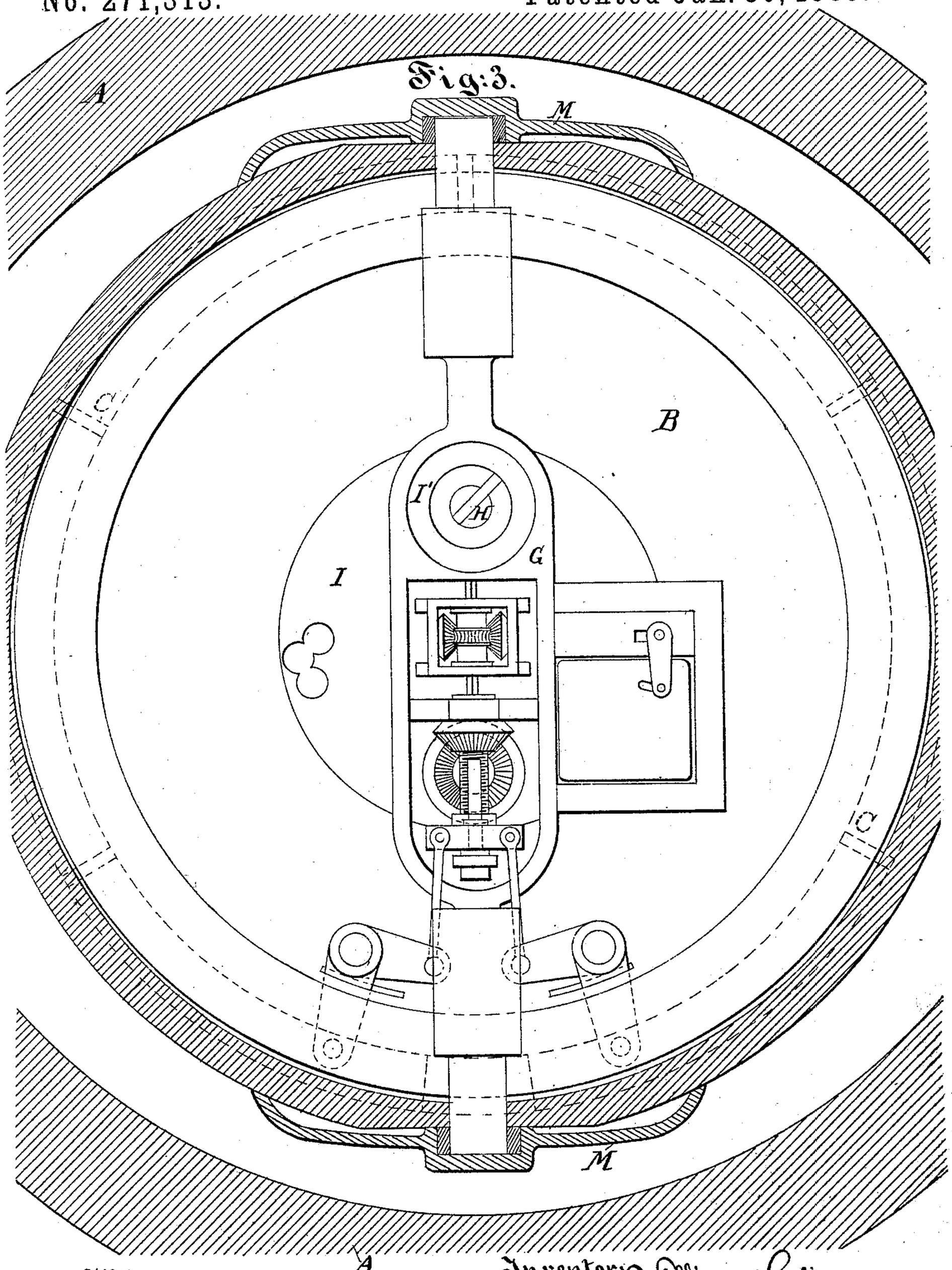
BURGLAR PROOF SAFE.

No. 271,313. Patented Jan. 30, 1883.

Fig: 3.



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(No Model.) 4 Sheets—Sheet 4.

W. CORLISS.

BURGLAR PROOF SAFE.

No. 271,313. Patented Jan. 30, 1883.

Fig: 4.

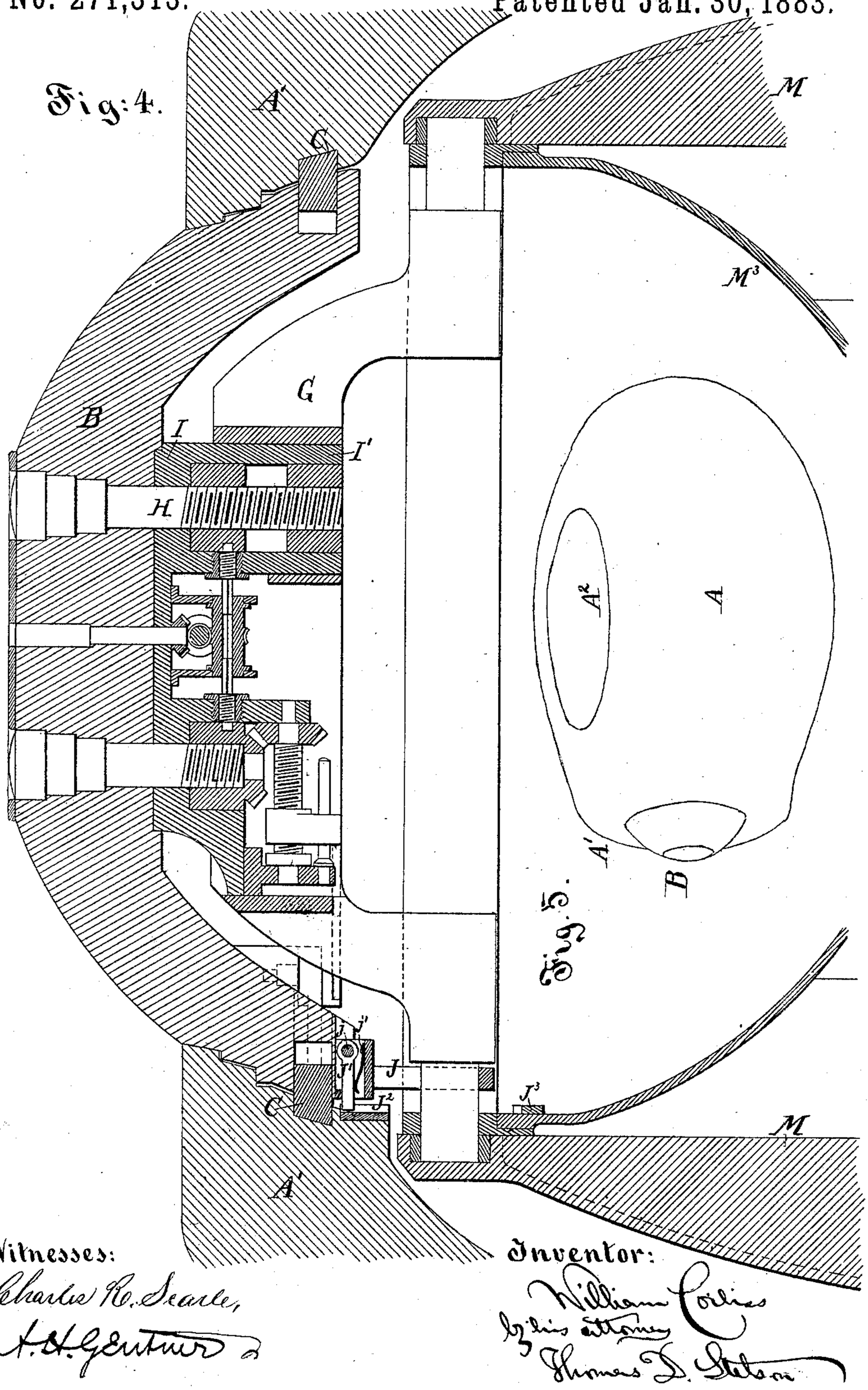

Fig: 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM CORLISS, OF PROVIDENCE, RHODE ISLAND.

BURGLAR-PROOF SAFE.

SPECIFICATION forming part of Letters Patent No. 271,313, dated January 30, 1883.

Application filed June 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CORLISS, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Burglar-Proof Safes; and I do hereby declare that the following is a full and exact description thereof.

In a patent granted to me March 25, 1873, No. 137,061, I have described a burglar-proof safe of spherical form, with a door opening inward and turning on a carrying-frame in the vertical axis of the safe, said carrying-frame being provided with suitable shelving on which the articles to be protected are placed. According to the construction of that safe the shell or main body is bisected in a plane passing through or in proximity to the center of the entire structure, the two halves being screwed firmly together.

I have now worked out another construction of safe, retaining all the advantages of the other, but superior thereto in many respects.

According to my new construction I obtain a larger available capacity with a given weight. All the parts are made easily-accessible, and the strength of the structure is increased. The entire main body of this safe is formed by one single shell or casting, with a relatively small aperture for the door. The shape of this shell may be properly compared with a planet, being spherical with the portions near the poles flattened. In one or in both these flattened portions are formed holes of sufficient diameter to permit the introduction of the inwardly-opening door, which holes are subsequently closed by means of heads screwed in firmly. The articles to be protected are placed on suitable shelving carried on or forming an interior shell which is capable of revolving on a shaft in the vertical axis of the structure, so that all the parts of the periphery of the revolving shell may be readily brought opposite the aperture for the door, which is at a point on or near the equator of the structure. It will be noticed, now, that as it is desired for the sake of strength to make the aperture for the door relatively small, access to the upper and lower portions of the interior would be difficult, if the safe-body were perfectly spherical, and consequently this room at the poles would be practically useless, while the volume and weight would be considerably larger. This is a very important reason for flattening the safe-body at the poles. I produce thereby a safe of the largest available capacity and the greatest strength possible with a given weight. The peculiar planet shape of the safe being dictated by reasons of economy in volume and material, as demonstrated, I avail myself thereof in the practical construction of the details.

As above stated, the door is preferably made to open inward. The flattened portions at the poles offer a most convenient place for the formation of a sufficient hole or holes for the introduction of the door. These holes facilitate also in other respects the construction. The joints of these openings with the closing heads have a cylindrical form, and being in a nearly flat portion of the body offer in every respect the greatest strength possible with the least amount of metal. This form of joint obviously precludes the effective use of wedges, and, furthermore, as the flattened surface of the safe-body forms nearly a right angle with the line of the joint, it also avoids the possibility of spalling or chipping off the metal around the head or heads, against which process provision would have to be made by a special re-enforcement of the metal if the line of the joints were at a sharp angle with the surface of the safe-body—in other words, if the latter were perfectly spherical.

It will be observed that in the old form of safe, as set forth in my above-mentioned patent, the ring-shaped joint, formed in a plane, necessitated a large increase of metal at that point in order to prevent the possibility of splitting or rending it apart by means of wedges. In the planet-shaped safe the necessity of a joint of this nature is avoided altogether, and I am able to produce a safe of more uniform thickness and increased strength.

When the door is made to open inward, as I prefer, the mechanism for securing the same may be similar to that described in an application for patent filed by me December, 30, 1881, and allowed January 4, 1882; or any other suitable mechanism may be employed for the purpose. But instead of connecting the door directly with the internal revolving shell, using the latter as a bracket therefor, I employ

a supplemental bracket turning on the internal revolving shell, and supporting the door with liberty to move the latter backward and forward to a small extent, and to turn it on the axis of and together with this supplemental bracket. By this arrangement I avoid the necessity of moving the door bodily inward to such an extent as to permit the revolution of the interior shell or casing if the door were not capable of swinging on said interior shell, for it is evident that by using the supplemental bracket a very small inward motion of the door suffices to allow its revolution on the axis of said bracket. Then, when the door is thus turned half a revolution, the entire interior shell may be turned without bringing the door in contact with any part of the main body of the safe.

Another important advantage resulting from the employment of this supplemental bracket is that the entire locking mechanism, which is mounted on the inside of the door, is made easily accessible for inspection and repairs. This is due to the fact that the supplemental bracket springs between the aperture for the door and the axis of the main bracket or interior revolving shell, so that a half-revolution of the supplemental bracket causes the inside of the door, and consequently the locking mechanism, to be presented toward the door-aperture in close proximity thereto, while, if the door were mounted directly on the main bracket, a half-revolution of the latter would present the locking mechanism also opposite the door-aperture, but in this case in the rear part of the interior of the safe, where access would be extremely difficult.

I provide suitable means for guiding the door in its inward-and-outward motion, and also for holding it in position after it has been turned, so as to permit the revolution of the interior shell. The latter itself is also provided with means for holding it with a certain resistance in given positions.

The invention is intended more partiularly for large safes for treasuries, banks, and safe-deposit companies, and the like; but some of the advantages of the invention may be realized in smaller constructions.

The accompanying drawings represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical section of the entire safe. Fig. 2 is a horizontal section of the same, the locking mechanism being omitted. Fig. 3 is a vertical section on the line S S, Fig. 1, on a larger scale. Fig. 4 is a vertical section through the door and its adjuncts, corresponding to Fig. 1. Figs. 3 and 4 are on the same scale. Fig. 5 is a general perspective view.

Similar letters of reference indicate like parts in all the figures.

A is the main shell or body of the safe, cast in one piece, of spherical form, with the portions at the top and bottom flattened. The relatively small hole for the door B is formed at the equator, and the circumference thereof is strengthened by an annular increase of the thickness of the metal, forming a circular boss, A′, as illustrated.

At the flattened poles of the body A are formed holes of sufficient diameter to permit the introduction of the door B, and of the parts composing the interior revolving shell. These holes are subsequently closed by stout heads A^2, firmly screwed in and secured against unscrewing by means of one or more pins, *a*, driven from the inside into the screw-joint, as represented. The heads A^2 are formed with a considerable offset near the outer surface in order to prevent the driving of wedges.

One of the advantages of the flattened spheroidal or oblate spheroidal form is the reducing the risk of the metal being spalled off adjacent to the joint around the parts A^2. When the safe is made spherical the surface adjacent to such joint stands at an acute angle with the joint. The oblate form adopted gives a close approximation to a right angle, and conduces to the safety of the contents of the safe thereby.

The door or stout movable part B, when in the proper adjustment, effectually closes the only aperture of the completed safe. It is formed with offsets, as shown, and when in position is locked by the segmental bolt C, moved out by suitable mechanism through the aid of strong links and bell-crank levers, as shown. When thus moved outward or expanded this bolt C engages in a groove extending quite around the door-aperture, giving great strength to resist any movement of the door.

The interior shell destined to contain the articles to be protected is fixed to a vertical shaft, *m*, mounted in suitable brasses in the interior faces of the parts A^2. The top and bottom are formed of two sufficiently-stout shells, M M, made in halves and bolted together. They are fixed to the shaft *m*, and are dished to correspond to the form of the interior of the safe-body, and are placed at a sufficient distance therefrom to avoid friction therewith. These disks M M, together with the shaft *m*, constitute what I term the "main bracket." Between these disks is a casing, M′, (shown in Figs. 1 and 2,) equipped with doors M^4. In the drawings I have shown three such doors. This casing or shell may be divided and subdivided by partitions in any manner desired; or it may be left without division, according to the requirements of the business. For storing bullion and coin few, if any, divisions are required. A hemispherical recess, M^2, is formed in one side of this casing, in which recess the door B is received when it is turned on its own axis, or, rather, on the supplemental bracket G, supported at the top and bottom in the parts M. The thin shell M^3 guards this recess against the tumbling into it of any article stored in the safe.

The supplemental bracket, G, is carried in suitable bearings in the parts M, and supports the door B, allowing the latter to be turned on

its own axis, carried around with the general interior, and also moved bodily to a moderate extent to and from said bracket G. When the supplemental bracket G, with the door B, is turned so that the latter is received in the recess M^2, as illustrated in Fig. 2, the entire interior shell, with the door and its adjuncts, may be revolved either entirely or partly on the central shaft, *m*. Thus conditioned, the safe is open and all parts are made accessible through the door-opening.

When the safe is to be locked the entire interior shell is revolved until the cavity M^2 is brought opposite the door-cavity. Then the door B, with the supplemental bracket G, is caused to perform a half-revolution around the axis of the latter, and being thus brought in proper relation to the door-aperture, but somewhat too far inward, is closed by being moved bodily outward until the offsets around its edges match tightly against the corresponding offsets around the aperture. The expanding-ring or segmental bolt C is then moved strongly outward and locked, and all is secure.

The means for moving the door bodily to and from the axis of the bracket G are indicated in Figs. 3 and 4. The door is opened by being moved bodily inward by turning the screw H to a sufficient extent to disengage the door from the body A. The door is then, by the force of the hand or otherwise, made to perform a half-revolution, being supported by the bracket G, turning on the axis of and with the latter. When the door is thus snugly received in the hemispherical recess M^2 the entire interior, M M M′ M^2 *m*, with the door and its connections, may be revolved easily within the safe-body, so as to expose all parts of the contents of the safe in succession to the door-aperture, it being understood that the inner doors, M^4, are opened and closed, as required, either with or without a lock for each.

I is a lock-plate, which carries the entire locking mechanism, and supports and partly guides the door in its inward-and-outward movement as it is made by the rotation of the screw H. In order to steady the door in this movement, so as to prevent its swinging on the part I′ of the lock-plate, a yoke, J, is fastened to the door near the bottom. This yoke J embraces with a close fit the lower trunnion of the supplemental bracket G, but with liberty to go and come.

In order to prevent an accidental turning of the entire interior shell when in a given position, (either with a certain opening or door, M^4, thereof presented opposite the opening for the door B, or with the latter itself presented opposite its opening,) I provide a spring-latch, L, inclosed in a suitable casing formed in one of the shells M. On the inner face of the adjacent head, A^2, are fastened in a circular series a number of latch-plates, L′, in such positions that whenever in the revolution of the interior shell a door or opening of the latter, or the main door B, is presented opposite the opening for the door in the safe-body, the latch L snaps into a corresponding latch-plate, L′, and tends to hold the entire revolving shell with gentle force in that position. Both the depressions in the latch-plates L′ and the end of the latch L are beveled, so as to facilitate the engagement and disengagement of these parts.

A nearly similar arrangement is provided to hold the door against accidental turning, and to guide in its outward movement in the act of closing.

The yoke J carries a latch, J′, suspended on a center, *j*, and gently pressed outward in a radial direction by means of a spring, *j′*.

J^2 J^3 are two latch-plates, the first one being fixed to the main body A, near the door-aperture, while the second is attached to the shell M^3. Both these latch-plates are formed with guideways that are made flaring toward the axis of the bracket G. When the door is to be opened, and is for this purpose first moved bodily inward, the latch J′ nearly recedes out of the guideway in the plate J^2. Then, on turning the door, the flaring end of this guideway presses said latch inward until it is capable of passing by the edge of the plate J^2, and when a half-revolution of the door is completed the latch J′ snaps into the guideway of the plate J^3, and thus holds the door B with gentle force against further turning. When the door is to be closed, the turning thereof with sufficient force disengages first the latch J′ from the guideway in the plate J^3, and when another half-revolution is nearly completed, so as to again bring the door B into position to be received in the door-opening on being moved outward, the latch J′ snaps into the guideway in the plate J^2, and this outwardly-contracting guideway gradually guides the door B, when moved outward, exactly into the right position to make a close fit with the door-opening.

Modifications may be made in the details without departing from the principle of the invention. Certain parts of the invention may be used without others. Some advantages of the invention may be realized with a door opening outward. The door need not necessarily be circular. I can, for instance, make it oval.

The heads A^2 may be made without offsets, or the offsets may be higher or lower. The screw-threads may be coarser or finer. One of these heads may suffice, and the opposite portion may be constructed in one with and forming an immovable part of the body. The latching devices L L′ and J′ J^2 J^3, or either of them, may be omitted. The latch-plates L′ may be placed on the main body A, instead of being fastened upon the head A^2.

I claim as my invention—

1. A safe for valuables, having the form of an oblate spheroid with the door in the equator, as herein specified.

2. A safe-body of cast metal of approximately spherical form, having the portions near the poles flattened, and having one aper-

ture for the door at or near a point in the equator, and another opening or openings in one or both poles, with means for securely closing the same, substantially as and for the purposes herein specified.

3. A burglar-proof safe of approximately spherical form, having the portions near the poles flattened, and having an aperture for the door at or near a point in the equator, in combination with a revolving interior shell or casing, substantially as and for the purposes herein specified.

4. In a burglar-proof safe having an inwardly-opening door, the revolving interior casing or main bracket, in combination with a supplemental bracket carried on the main bracket and supporting the door, substantially as and for the purposes herein specified.

5. In combination with a safe having a revolving interior casing, a latch, L, and one or more latch-plates, L′, one or both having surfaces beveled in both directions, combined and arranged to engage with each other substantially as and for the purposes herein specified.

6. In a safe having an interior revolving main bracket, and a supplemental bracket carried thereon and supporting the inwardly-opening door, the latch J′, carried on the door or on a part fixed thereto, in combination with the latch-plates J^2 J^3, all arranged for joint operation with relation to the main bracket, to the door, and to the safe-body substantially as and for the purposes herein specified.

7. In a safe of approximately spherical form, having a revolving interior shell or main bracket, and a supplemental bracket carried on said main bracket and supporting the door, the hemispherical shell M^3, arranged to separate the door and its locking mechanism from the general interior of the safe, substantially as herein specified.

In testimony whereof I have hereunto set my hand, at Providence, Rhode Island, this 24th day of June, 1882, in the presence of two subscribing witnesses.

WILLIAM CORLISS.

Witnesses:
A. H. GENTNER,
SAML. T. DOUGLAS.