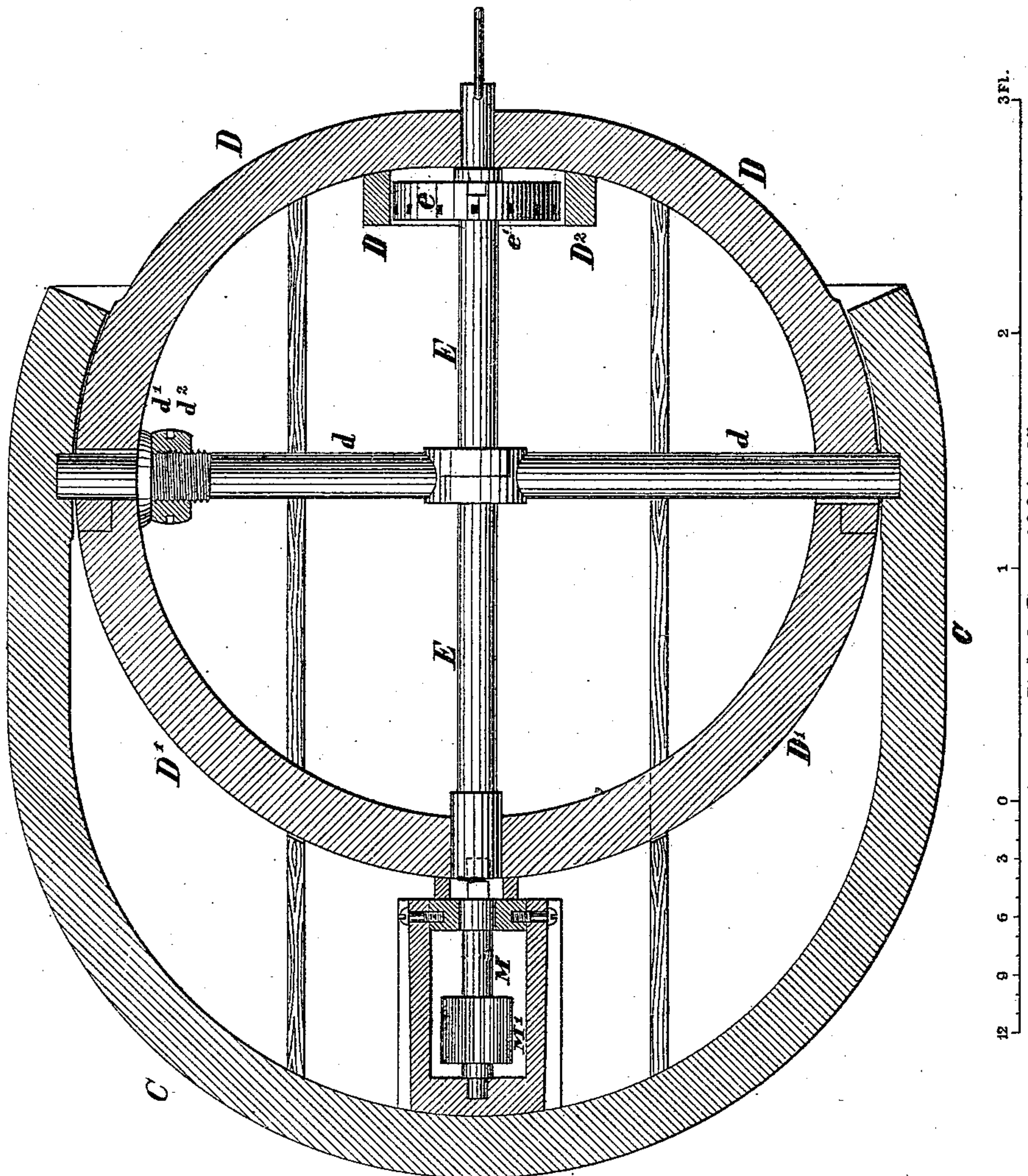


WILLIAM CORLISS.
Improvement in Safes.

No. 126,131.

Patented April 30, 1872.

Fig. 1.



Witnesses,
Arnold Hoernemann.
Campbell C. Livings

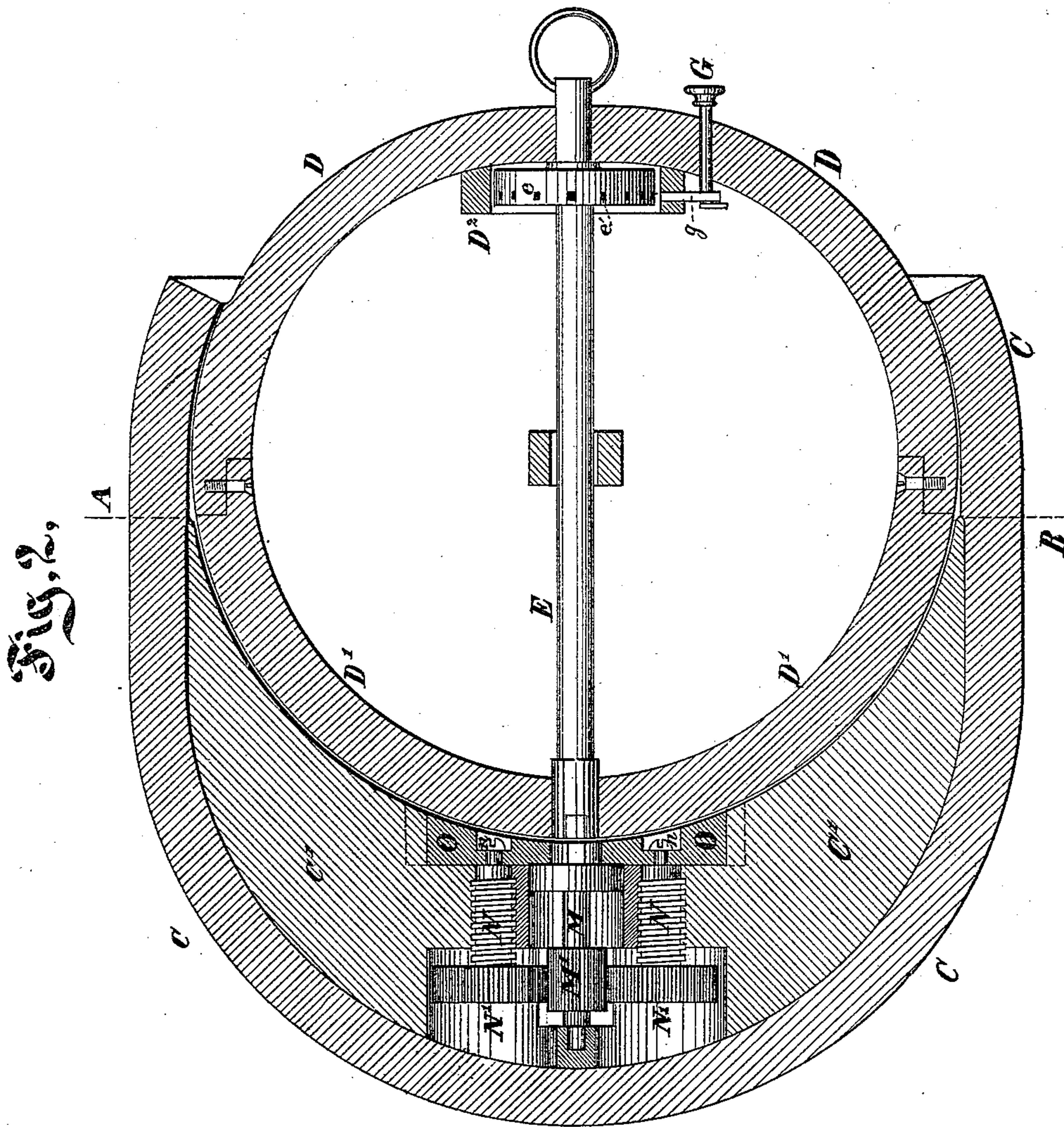
Inventor,
William Corliss
By his attorney J. D. Stetson

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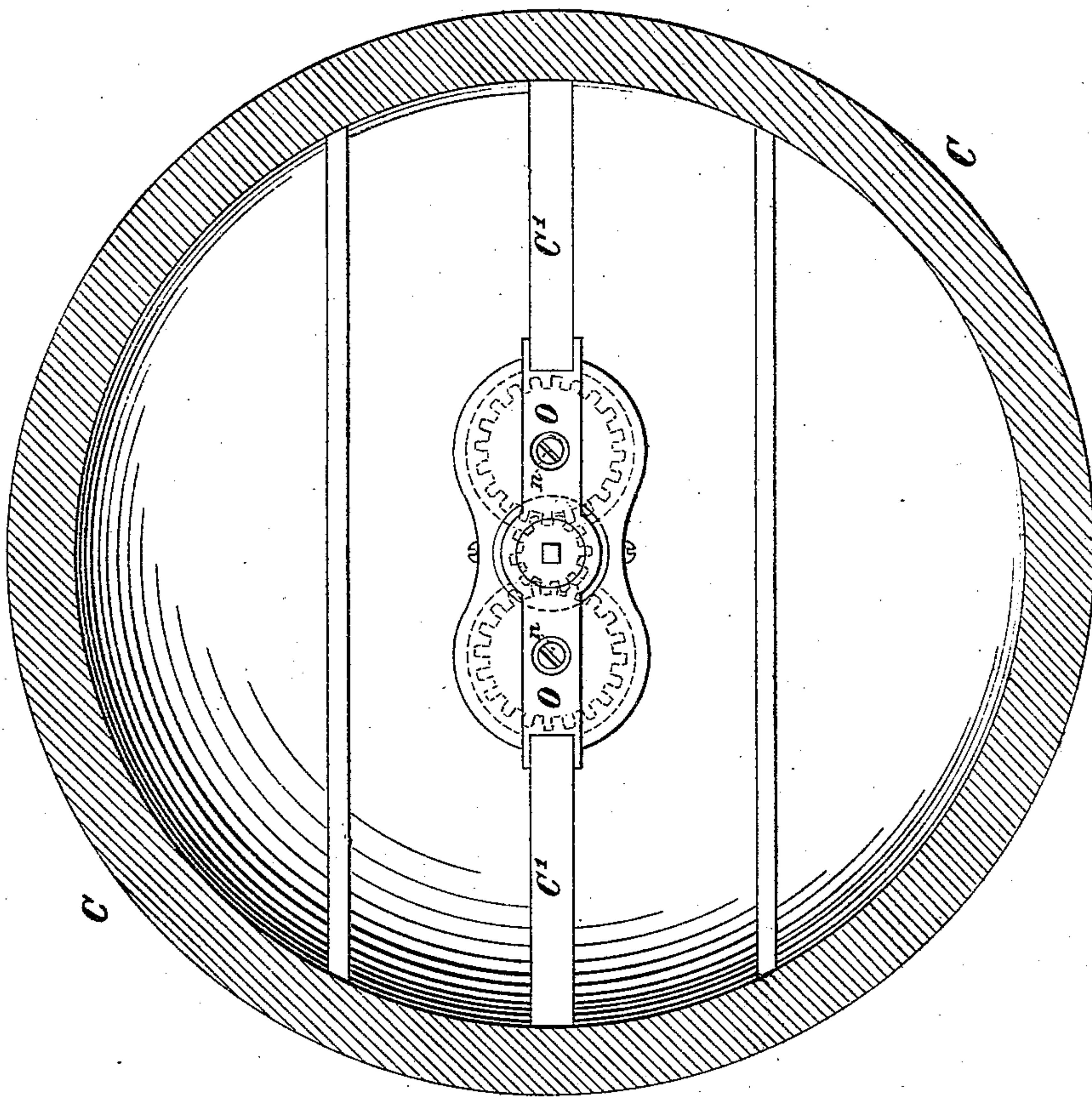
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Fig. 3.



Witnesses,
Arnold Hoernemann.
Campbell C. Livings

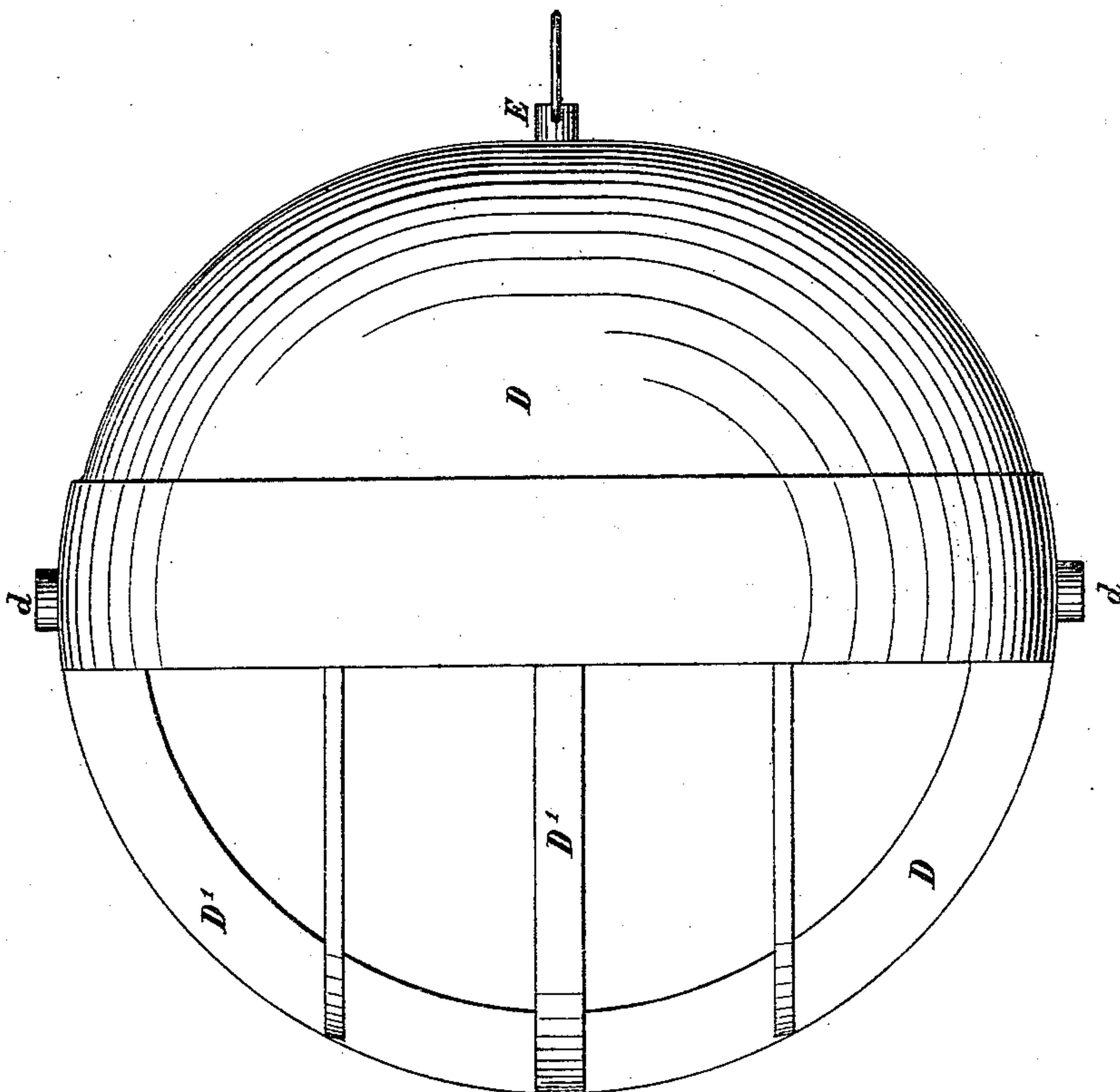
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Fig. 4,



Witnesses,

Arnold Hermann.
Campbell C. Livings

Inventor,

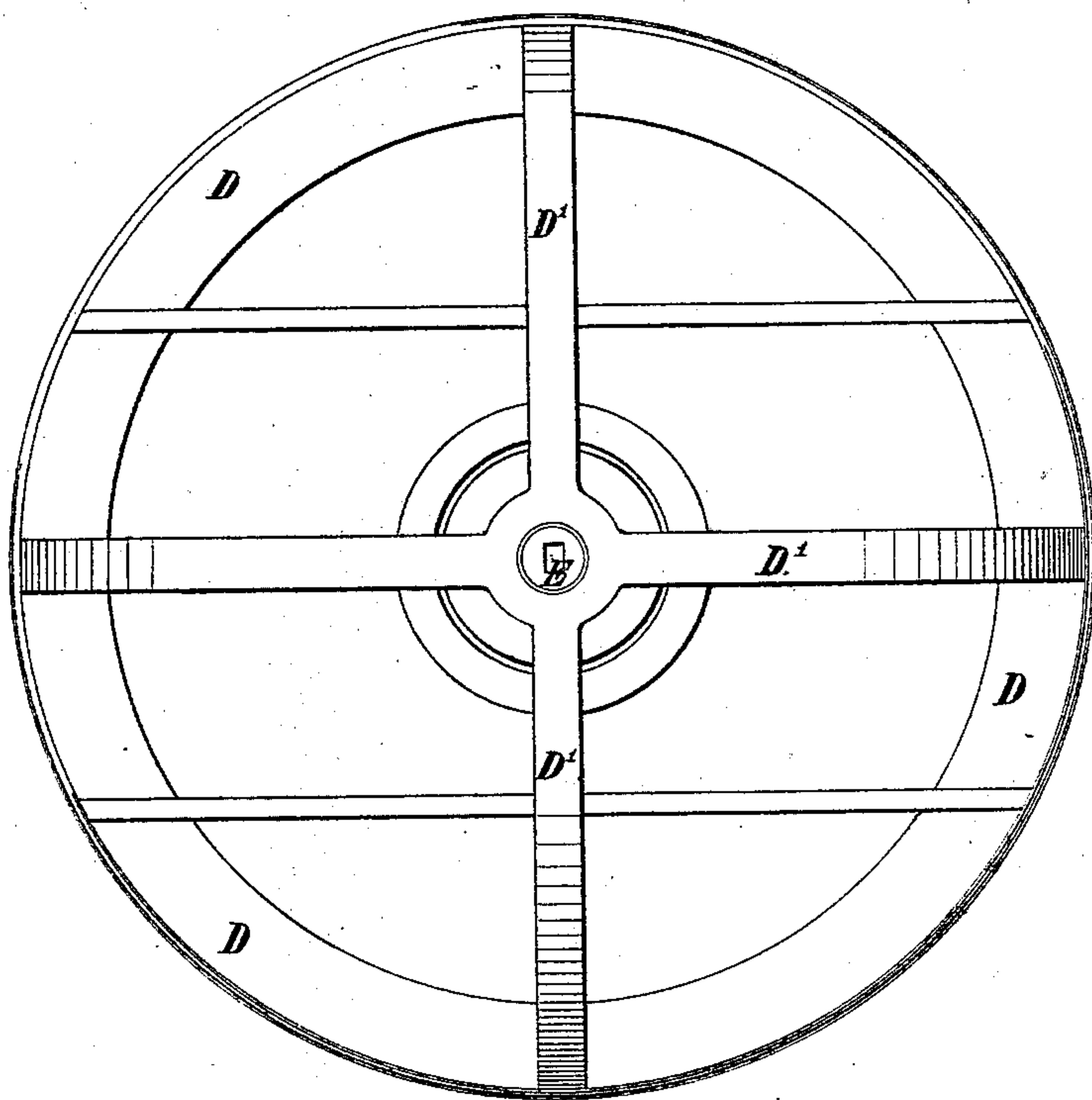
William Corliss
by his attorney *J. D. Stetson*

WILLIAM CORLISS.
Improvement in Safes.

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Fig. 5.



Witnesses,

Arnold Hermann
Campbell C. Livings

Inventor,

William Corliss
by his attorney *J. D. Sutton*

UNITED STATES PATENT OFFICE.

WILLIAM CORLISS, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN SAFES.

Specification forming part of Letters Patent No. 126,131, dated April 30, 1872.

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 Safes for Holding Valuables, of which the following is a specification:

The invention is applicable to either portable or stationary burglar-proof securities. It will be understood that in making it portable there may be any suitable cradle or frame with wheels, not represented.

I make the main body of the safe in two parts, C and D, each of a spherical contour, the part C being the largest. The part D fits and revolves within the part C. The following is a description of what I consider the best means of carrying out the invention in its several details.

The accompanying drawing forms a part of this specification.

Figure 1 is a central vertical section representing the safe in its closed condition. Fig. 2 is a horizontal section, showing the parts in the same condition. Fig. 3 is a cross-section through the body of the safe, the revolving part which performs the function of a door being removed. The section is on the line A B in Fig. 2. Figs. 4 and 5 represent the door alone or detached from the main body of the safe. In Fig. 4 is a side view, and Fig. 5 is a rear view.

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

The shell C, having the form represented, is constructed with a backing-piece, C', which fills up a portion of its interior. The door D is spheroidal in form, and is a little more than half a sphere. When it is turned with its open face to coincide with the open mouth of the part C, the interior of the door, which forms a large proportion of the interior of the safe, is accessible for the introduction or removal of valuables; and it may be provided with shelves, pigeon-holes, and other suitable appliances for the classification and retention of articles of value. It may have strong boxes, made in any ordinary or approved manner, provided with separate keys, if in any case desirable. The place in the interior of the shell C not required for the rotation of the door D may be also provided with shelves,

pigeon-holes, and the like. Access may be obtained to it by setting the door half open and reaching past the door, and the shelves which are attached thereto. To obtain more convenient access to the space in the rear of the door a portion of the shelves and the like on the spherical door may be removable. The door is closed when its open side is turned inward, and its continuous spheroidal surface is presented to secure the entire mouth of the part C. The front of the spheroid is flattened. This allows the end of the shaft, the lock-knobs, and any other small projections to stand out beyond the surface without going beyond the path swept by the revolution of the door. The portion of the door which matches against the edge of the shell C, near the mouth, when the door is closed, is a zone of a perfect sphere. The interior of the shell C at that point is nicely finished to a corresponding form. The door D is mounted with a little play upon the vertical shaft or pintle, *d*, which latter is made in two parts to allow of its introduction after the main parts are in place. The looseness of fit between the door D and the shaft or pintle *d* allows the door to yield a little forward and backward in obedience to any sufficient force. The weight of the door is received upon the pintle *d* through the medium of the collar or washer *d*¹, which is adjustable up and down by the aid of the nut *d*². When the door is to be opened or revolved I desire it to hang loosely, or very slightly bearing against the interior of the shell C; but when it is turned into the closed position and is to be left secured I provide means for pressing it strongly forward. The looseness of its connection to the shaft *d* must be sufficient to allow the door to move forward as far as it will, and form a very tight contact with the interior of the mouth of the shell C. The open side of the door, which forms the back of the door when it is closed, is a strong bow, which I term a bail, D'. This bail is composed of two members, upright and horizontal, both strongly connected to the edge of the door D and forming, in effect, a part thereof. The backing-piece C' supports a shoe, O, which is correspondingly concave on its front edge to match to the back edge of the bail D'. The shaft E extends horizontally through the door D and bail D', and turns in nicely-fitting bearings

therein. It is capable of slight longitudinal motion sufficient to allow it to engage and disengage with the short shaft M, which is mounted in bearings in the backing-piece C'. This shaft M carries a gear-wheel, M', which is broad and gears into large gear-wheels, N', which, by their rotation, carry endless screws, N, which drive forward the shoe O, when the shaft E is properly operated to effect this end. The forcible pressing forward of the shoe O, by means of these screws N, compels the tight joint or fit between the door D and the interior of the shell C, before referred to. It will be understood that the front end of the shaft E, where it projects beyond the surface of the door, allows the shaft to be seized and turned, either by the aid of the ring represented or by any suitable wrench or key, while the back end of the shaft is recessed with a rectangular cavity adapted to fit upon the correspondingly-shaped head of the short shaft M. Supposing the safe to be closed and the door D, with its connections, forced forward to the furthest possible extreme by the action of the screws N through the medium of the shoe O, I will proceed to show what is necessary to unlock it. The shaft E being in its extreme backward position presents its thickened rear end fitted into a corresponding hole in the shoe O. Both these parts are strong, and will resist any amount of violence which could be applied to tend to turn the door and its adjuncts around. There is no means for a burglar to apply any considerable force, because of the absence of angles and other sufficient holding means on the front, which is presented at the open end of the exterior casing C. But even if a great force could be applied tending to turn the door around on its pintle, *d*, such a motion is effectually prevented by the bolting effect of the shaft E. It stands closely fitted in a hole in the stout bail D' and extends therefrom directly into a corresponding hole in the stout shoe O immediately adjacent thereto. In order to turn the door by violence in this condition the entire bolt E must be sheared off. To open the door it is necessary both to withdraw the bolting-shaft E and liberate the door from the strong pressure exerted by the shoe O, crowding it forward and forming a strong frictional contact with the hollow spherical surface in the shell C around the mouth. In practice we effect this latter operation first, and only withdraw the shaft E by pulling it forward as the last operation previous to revolving the door. The first act is to liberate the locks. The shaft E carries a large stout collar or wheel, *e*, which is recessed, as indicated, to receive the bolt or bolts of one or more locks. The locks may be of any ordinary or suitable character, but I will assume that they are some of the elaborate forms of dial-locks now used to secure the doors of bank-vaults. In such case there will be one or more knobs projecting to a slight distance beyond the front face of the door to allow of the operation of the lock mechanism. In case

they are locks with keys there may be key-holes.

My invention allows of the employment of any of the ordinary approved lock mechanisms. These mechanisms are necessarily so intricate that I have omitted their representation in these figures. It will be understood, however, that their bolt or bolts match in the recess or recesses *e'* in the wheel *e*, which is firmly fixed upon the shaft E; and so long as the lock-bolts are not withdrawn they effectually preclude either the turning of the shaft E or the drawing of it forward or toward the operator. The wheel *e* turns within a stout collar, D², which latter is fixed firmly upon the back or hollow face of the door D. The holes for the bolts through this collar D² are not shown; but it will be understood that two, ten, or any other number of bolts project inward from any desired number of locking mechanisms, first through the collar D² and thence into the recesses *e'*, which correspond in number and position on the periphery of the wheel *e*. Thus conditioned the lock-bolts, as before stated, resist either the axial movement of the shaft E forward or its rotation. The notches being in the front side of the wheel *e* the bolts must be sheared off to withdraw it; and the notches being deep and square the lock-bolts must be sheared off in the other direction to allow the shaft to turn. The small size of the front end of the shaft E would cause it to be twisted off before any considerable amount of shearing force could be exerted on the lock-bolts. The wheel *e* may be forged in one with the shaft E, or it may be welded solidly thereon or cast therewith. Another mode of construction, which is preferable for convenience and almost equally efficient, is to continue the small portion of the front end of the shaft E a little way inward from the seat of the wheel *e*, and form the latter with a corresponding small hole, so that it shall fit tightly upon the reduced portion of the shaft E and rest against a square shoulder, where it joins the thicker portion of the said shaft. Either of these constructions prevents the possibility of pulling outward the shaft E until the lock-bolts are properly withdrawn.

It will be understood that the shaft E should be made, at the front end, of such a combination of materials as would resist drilling, and that it should project so little as to give but a very slight hold through which to apply any twisting force. The door being thus safe against violence, and the locks being assumed to be, by their character and number, ample security against any fraudulent operation thereof, it is evident that if the bodies of the parts C and D cannot be perforated or fractured the contents are absolutely inaccessible through any violence.

To open the safe properly, the owner has simply to operate the lock, through the knobs or other means, to withdraw the bolts; then to apply the force of the hand, either by means

of the ring E' or other suitable handle, to turn the shaft E, the shaft M, and through its connected gearing the screws N, which operate to draw back the shoe O. So soon as the shoe O has been sufficiently withdrawn the door D relaxes its tight fit against the corresponding spherical parts of the shell C, the gravity of the parts contributing to this result; and now the shaft E has simply to be drawn forward by a pull upon the ring E', or equivalent connection; and the door is now free to turn easily on its pivot or pintle, *d*, and the safe is opened.

I have described in other applications for patents of even date herewith some of the modifications in the construction of the main parts C and D, and I will not encumber this description with any further reference thereto.

What I claim as my invention, and desire to secure by these Letters Patent, is as follows:

1. The screws N N, operated through the medium of the shaft E and its connections, to force forward the door D and release it again by the turning of the shaft E in the reverse direction, as specified.

2. The shoe O, arranged as represented relatively to the bail D¹ at the back of the revolving-door D, adapted to serve as a bearing-surface to transmit the force of the screws N N in pushing forward the door as a resisting-surface to prevent a movement of the door too far inward by any force and as a hold for the shaft E, which serves therewith as a locking-bolt, substantially as herein specified.

3. The recessed wheel *e e'*, carried on the operating-shaft E and arranged to receive the bolts of one or more locks to prevent the necessary movement for the opening of the safe until the bolts are withdrawn, as specified.

4. In connection with the last above, I claim the stout collar D², encompassing the wheel *e e'* and adapted to guide and sustain the lock-bolts immediately adjacent to their matching into the recesses *e'* in the wheel *e*, as specified.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

WILLIAM CORLISS.

Witnesses:

ARNOLD HOERMANN,
CAMPBELL C. LIVINGS.