

(Model.)

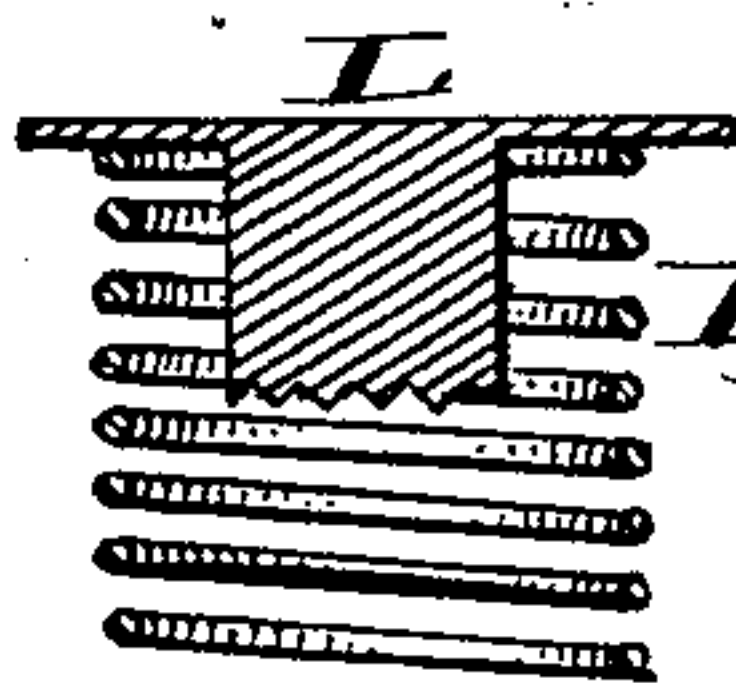
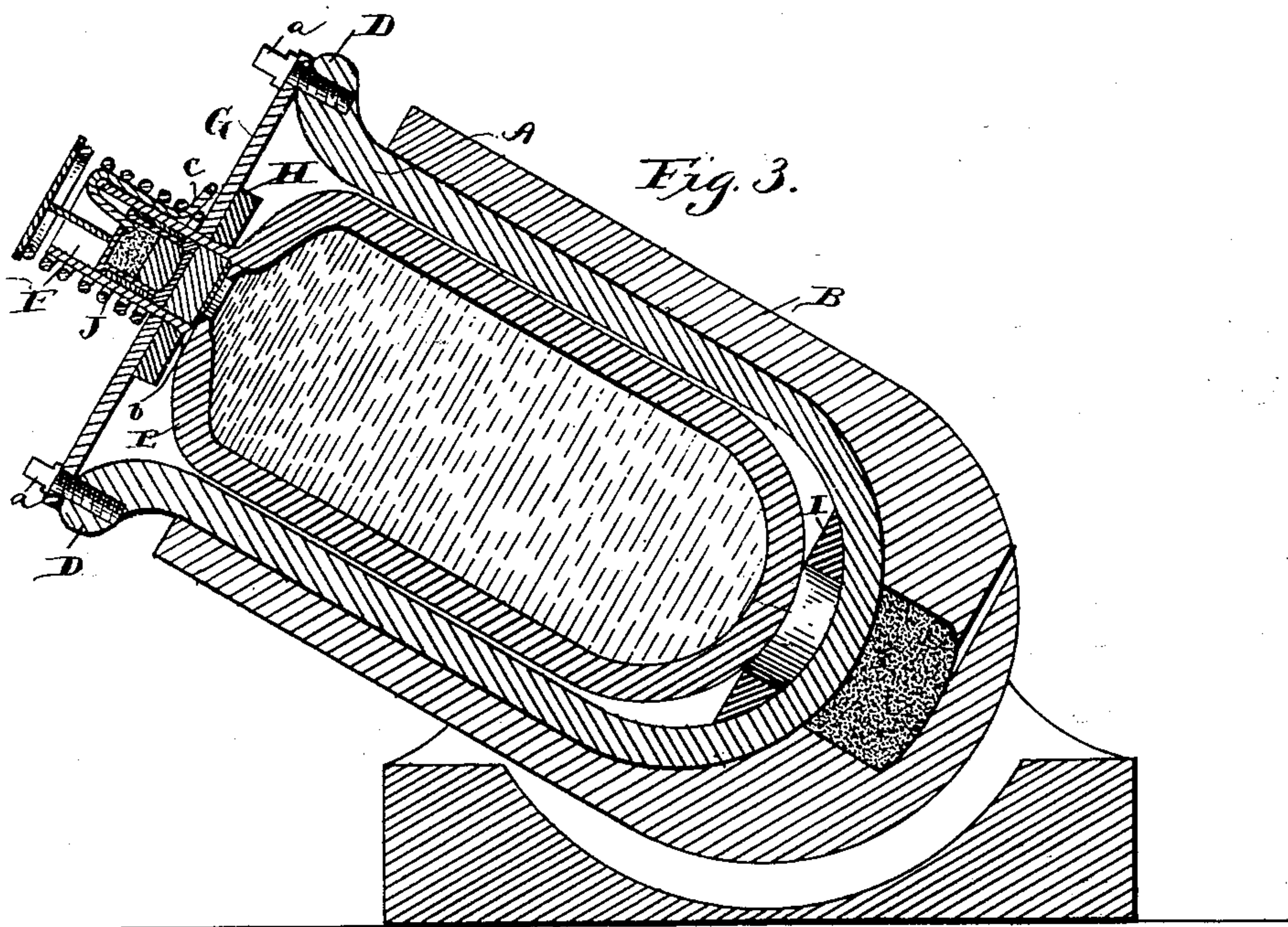
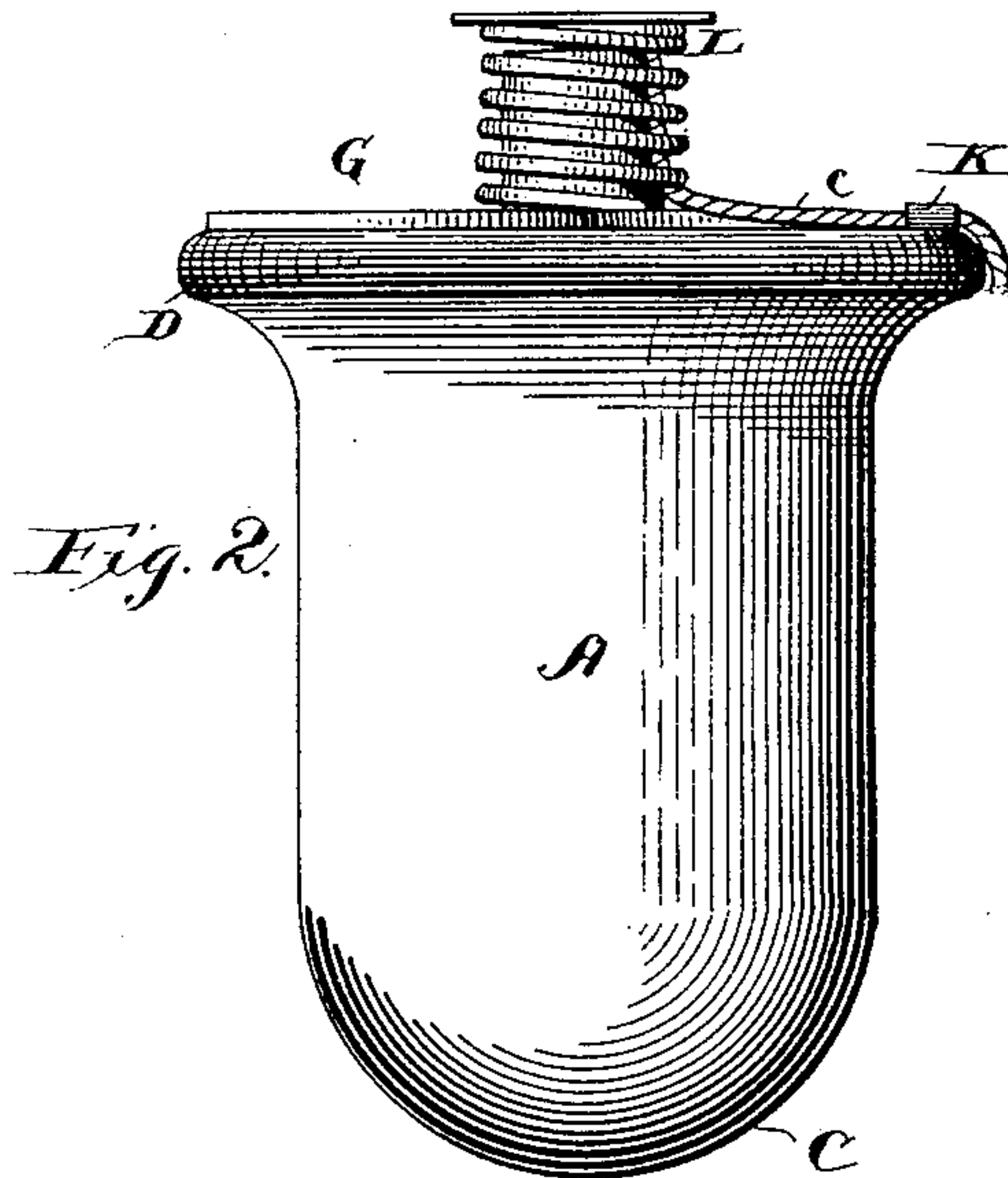
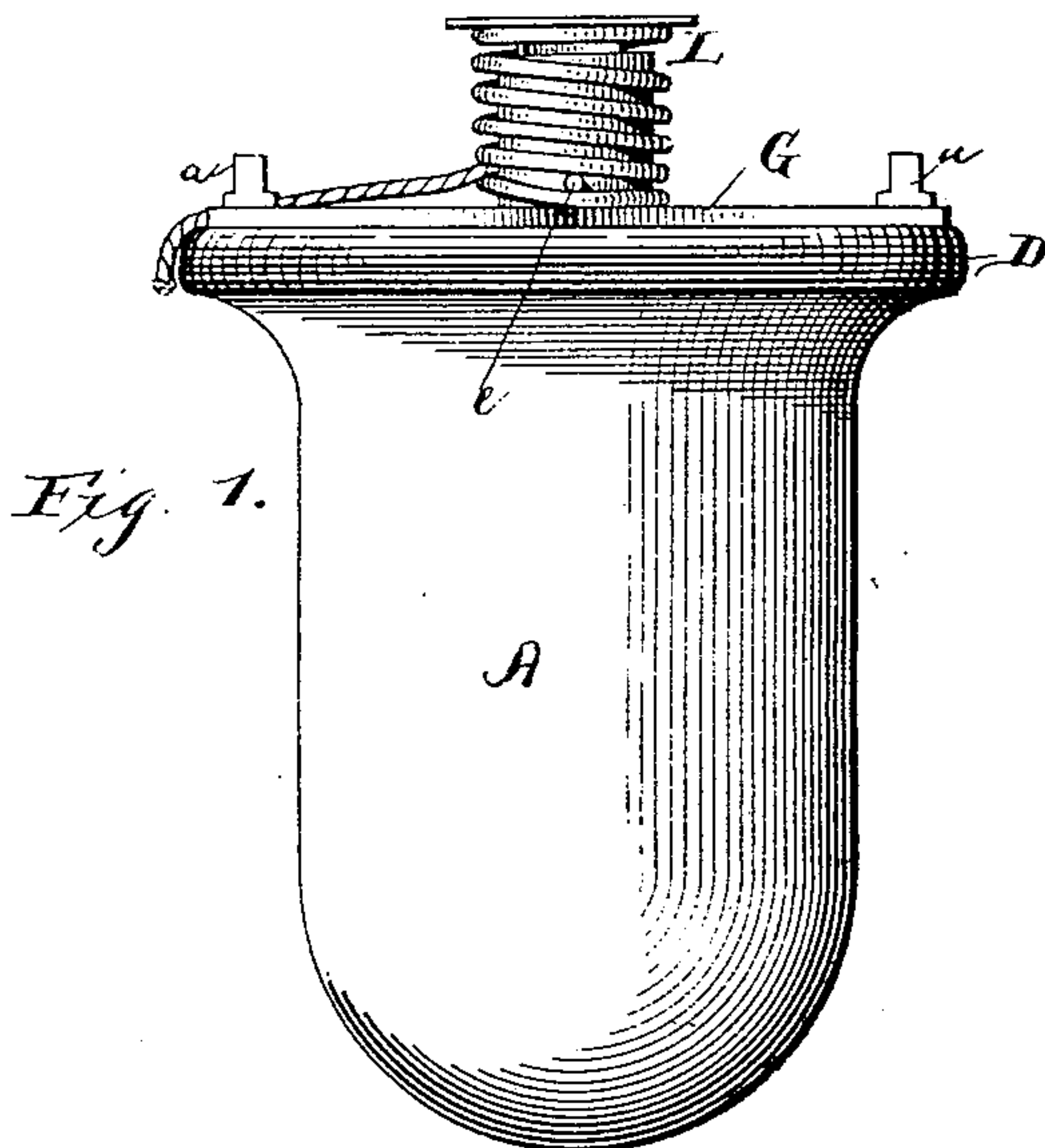
2 Sheets—Sheet 1.

J. GARRICK.

SHELL.

No. 322,275.

Patented July 14, 1885.



WITNESSES
John Enders Jr.
J. F. White.

INVENTOR
Joseph Garrick
 By *O. E. Duff* Attorney

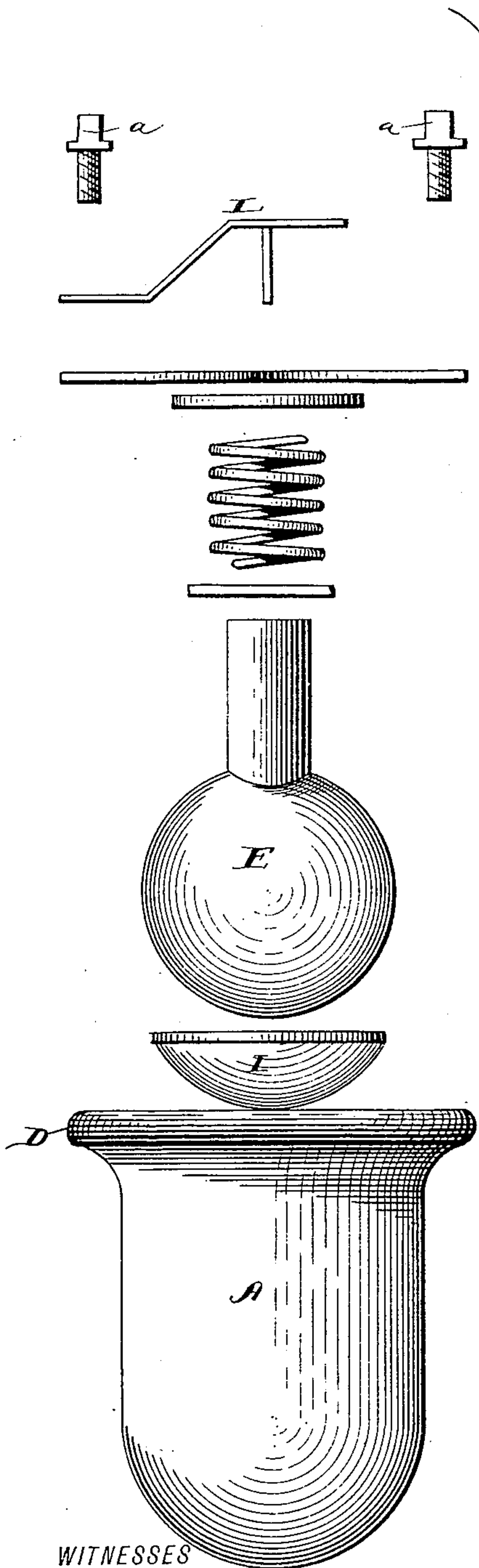
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J. GARRICK.
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2 Sheets—Sheet 2.

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WITNESSES
John Enders, Jr.
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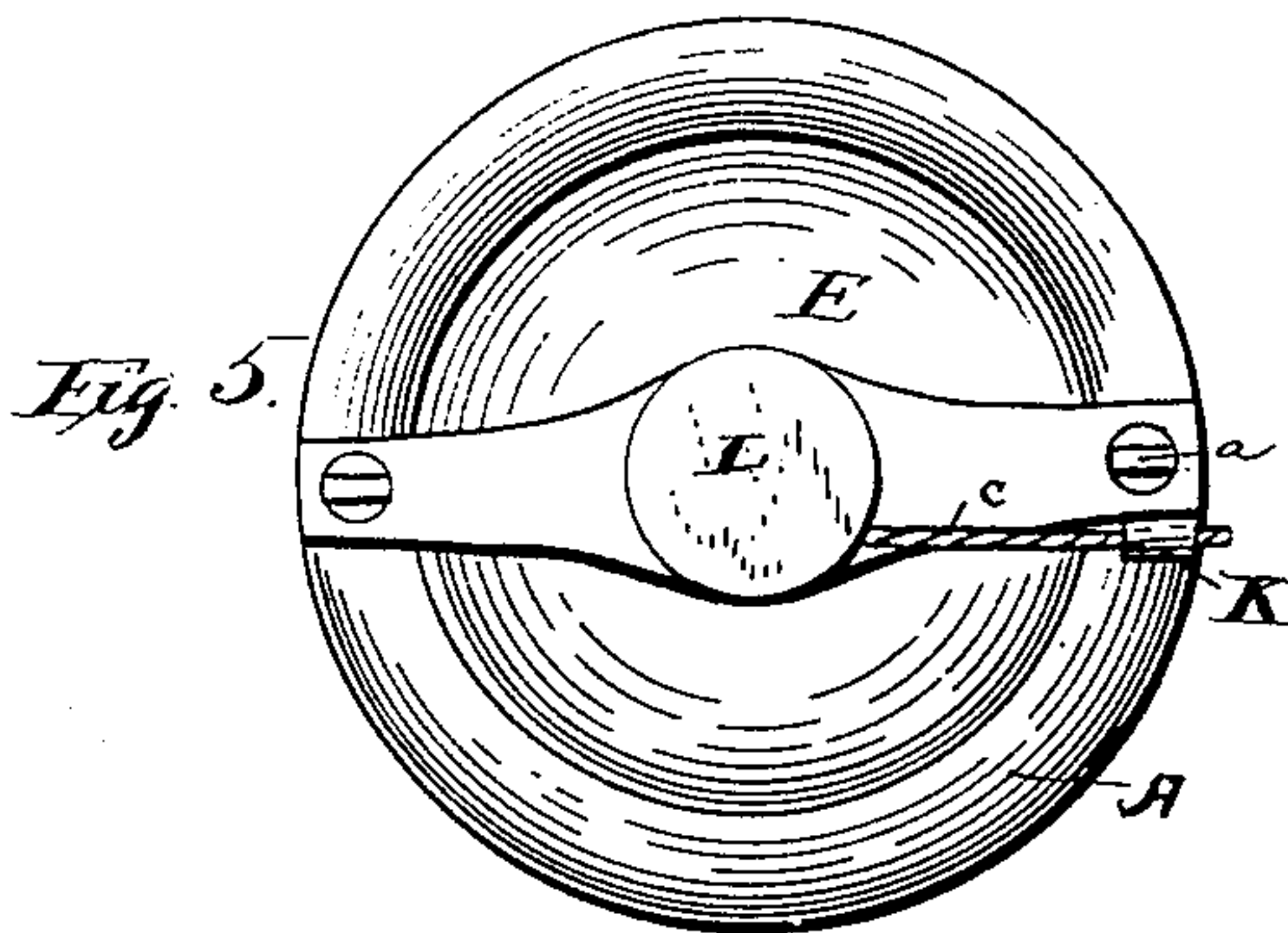


Fig. 7.

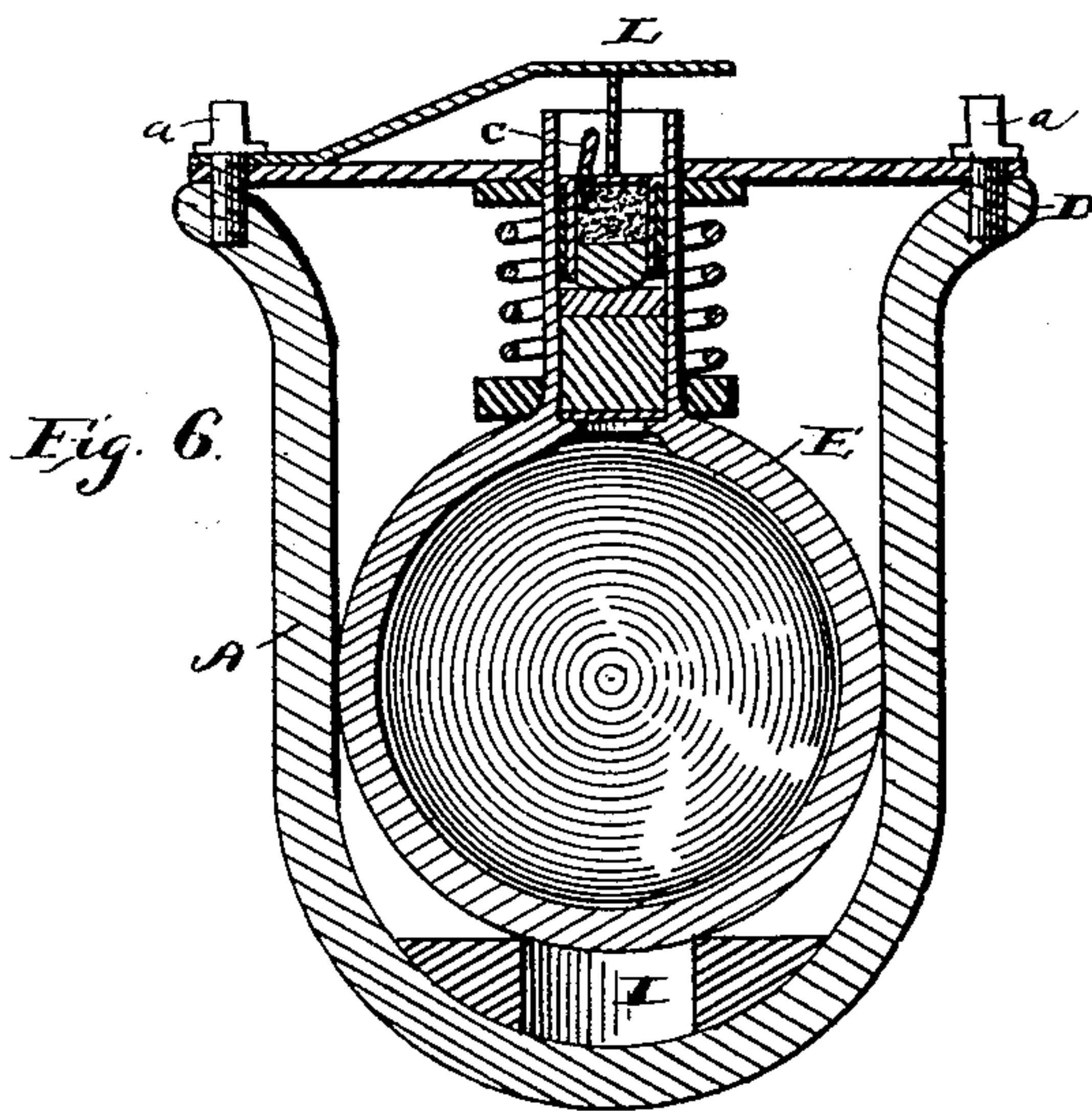


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOSEPH GARRICK, OF MICHIGAN CITY, INDIANA.

SHELL.

SPECIFICATION forming part of Letters Patent No. 322,275, dated July 14, 1885.

Application filed May 22, 1885. (Model.)

To all whom it may concern:

Be it known that I, JOSEPH GARRICK, of Michigan City, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Projectiles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to an improvement in projectiles for mortars; and to this end it consists of an outer and inner shell, the outer shell having its body of a cylindrical or other shape, a curved spherical base, and the edge of its open mouth provided with a curved annular flaring flange, which projects over the mouth of the mortar. The smaller inner shell, fitting easily within the outer shell, is of a spherical or oblong shape and free and independent of the other shell, and is provided at its upper central surface with a central elongated tube. This tube projects through an aperture in a flat metallic brace or plate, secured to the flange of the outer shell by bolts entering into screw-threaded holes in said flange, and thus holds the tube and inner shell in a central position. Around the neck of the said tube I place a flexible cushion or packing, the object of which is to allow a certain amount of freedom of movement and vibration, and also to overcome the inertia when the gun is discharged and keep it from being dislodged from its central position. This hollow elongated tube, protruding from the inner shell and projecting beyond the metallic plate or brace, is constructed with a narrow strip or projection upon its inner circular surface adjacent to the entrance to the inner shell proper to act as a lodgment or seat for the piece of tin or any suitable material which is placed over the aperture of the tube, and hermetically sealed with plaster-of-paris and glue to keep out the moisture. Upon the top of the seal is placed the exploding-cartridge and time-fuse, which will be more fully hereinafter explained. There is situated in the bottom of the outer shell an elastic sabot or seat, having a central aperture for the inner shell, as shown clearly

in the accompanying drawings, which seat acts in conjunction with the cushion around the neck of the elongated tube, the purpose of which was hereinbefore described.

Referring to the drawings, Figure 1 is an elevation of the shell complete, showing the fuse, and the pin *e*, which secures the spiral spring and cutter in position. The tension of the spring may be slightly varied by turning it around the pin in a screw-like manner. Fig. 2 is a like elevation, showing the guiding and holding loop for the fuse, through which it passes. Fig. 3 is a sectional view of an elongated shell, clearly illustrating the construction and arrangement of all its parts. Fig. 4 is a sectional view of the cartridge-cutter and spring. Fig. 5 is a top plan view looking into the shell. Fig. 6 is a sectional view of spherical shell, the seal, the cartridge and plate being the same as that shown in Fig. 3, except the flat spring as applied to the cutter instead of the spiral one. Fig. 7 shows detail views of all the parts composing the projectile, ready to be united one to the other, as follows: The outer shell is first set upon its end. The sabot is then inserted. The inner shell is then placed centrally within the outer one, its base resting on the sabot or chair. The shell is then charged. A flexible cushion is now put over the neck of the shell. Then the spring is slipped on, and on top of it another flexible cushion, and over that the plate *G*, which secures all the parts together, and particularly the inner shell in a central position, these being modifications of another form, hereinafter pointed out. When the flat spring is used to carry the cartridge-cutter, one end of it is secured by one of the bolts which is screwed into the flange of the outer shell. However, it must be understood that the cartridge is not inserted into the tube of the shell until the shell is desired to be fired. During transportation a cork is simply inserted in the neck, which protects the tube intact. When the projectile is put in order to be fired, the spring is slightly turned, the cartridge put in, and it is ready for use.

Like letters of reference indicate corresponding parts in all the figures.

A designates the outer shell, of cylindrical or other shape, having the spherical base *C* and the curved annular flange *D*, which, when

the shell is inserted in the mortar B, projects over the mouth of it, as shown in Fig. 3.

The inner shell, E, is of a spherical or oblong form, and is provided with the central elongated tube, F, which projects through the metallic plate or brace G, which is of any suitable shape, said plate being secured to the outershell, A, by the bolts *a a*, and screw-holes within the flange D, and holds the shell and tube centrally within the outer shell or casing, A.

H is the flexible cushion or packing around the neck of the tube F, and located between the plate and the inner shell, which, in conjunction with the flexible sabot or seat I, provided with an aperture in its central surface for the base of the shell E, allows enough freedom of movement, and at the same time prevents too much vibration in a vertical direction of the shell E. These packings or cushions may be of any suitable material—as, for instance, a spiral spring may be used either for the seat at the bottom of the shell E or for the cushion, the neck of the tube F, or might be used for both, without altering the spirit of my invention.

b is a narrow strip or projection upon the inner circular surface of the tube F, upon which is placed the tin and sealing device. The percussion-cartridge J is placed on top of this wall or partition, and is provided with the time-fuse *c*, which is passed through a guide-hole, K, formed of a piece of metal, and held between the plate G and the flange D by the bolts *a*. Thus the fuse is made to project over the flange, and is bound to be ignited by the flash of the powder when the mortar is discharged.

Should the fuse fail to fulfill its allotted duty, I take the precaution to provide the spiral spring and cutter L, which will cause the percussion of the cartridge J and force the partition between the shell and tube into the shell. Instead of using the spiral spring and cutter shown, I could use another style—that of a single flat spring held by the bolt *a*, as shown in Fig. 5.

e designates a small pin or catch, the object of which is to register with the spaces between the spirals of the spring-cutter L, and thereby hold the said cutter securely upon the tube F.

The manner of operating and firing of this shell may be briefly stated as follows: The gunner touches off the charge in the mortar. The flash of the powder ignites the time-fuse, which projects downwardly over the flange of the outer shell. Thus the cartridge is exploded, and forces the partition between the cartridge and the chamber of the shell proper into the shell, and causes the gun-cotton or other powerful explosive to burst both shells simultaneously; but if the fuse should fail to operate I have provided for that emergency by using the hereinbefore-described cutter, which is bound to bring forth the desired effect for the reason that the shell, being heavier

at its open end, will fall or strike thereon, and the cutter will act as a percipient.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a projectile, the combination of the outer and inner shells, the outer shell being provided at its open mouth with a curved annular flange, and the inner shell fitting within the outer one and provided with a central elongated tube provided with an inward circular projection around its cylindrical interior near its end to act as a seat for the percussion-cartridge and time-fuse, as set forth.

2. A projectile for mortars, composed of an outer and an inner shell, the inner shell being provided with an elastic tubular sabot at its base formed with a circular space in the center thereof to admit the inner shell to sit therein, a central elongated tube at its outer end having a circular strip upon its inward surface to act as a seat for the sealing device and the percussion-cartridge, an elastic washer interposed between the inner shell and the device for holding it within the outer one, as set forth.

3. A projectile for mortars, composed of an outer and inner shell, the inner shell being provided with a central elongated tube having a narrow strip or projection upon its inner circular surface to act as a seat for the percussion-cartridge-holding time-fuse, substantially as set forth.

4. A projectile for mortars, composed of an outer and an inner shell, the inner shell being provided with an elongated central tube having a narrow strip or projection upon its inner circular surface to act as a seat for the percussion-cartridge, and a spring and cutter for said cartridge arranged on said tube at or near the end thereof near the cross-plate which holds the inner and outer shells centrally together, said spring engaging a small pin upon the tube, and also serving to hold the cutter-plate which carries the cutter proper, substantially as set forth.

5. A projectile for mortars, composed of an outer and an inner shell, the inner shell being provided with an elongated tube, a pin or catch properly situated thereon near the cross-plate and upon its outward surface, and a spring carrying the cutter-plate and cutter engaging said pin or catch and situated at or near the end of the tube, as set forth.

6. A projectile for mortars, composed of an outer and inner shell, the outer shell being provided with a curved annular flange and a device for holding the inner shell within the outer one consisting of a metallic brace or plate with an aperture in its central surface and secured to the said shell by bolts and screw-threads therein, substantially as set forth.

7. A projectile for mortars, composed of an outer and inner shell, the outer shell being provided with a curved annular flange, and a

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guide-loop or holder for the time-fuse upon the surface of the said flange, substantially as set forth.

5 8. A projectile for mortars, composed of an outer shell and the inner shell, having a tubular cushion interposed between their bases, the inner shell having a neck provided with a narrow strip or projection upon its inner circular surface for the reception of the seal
10 and cartridge and on its outer side the auto-

matic firing mechanism, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH GARRICK.

Witnesses:

O. E. DUFFY,
F. R. HARDING.