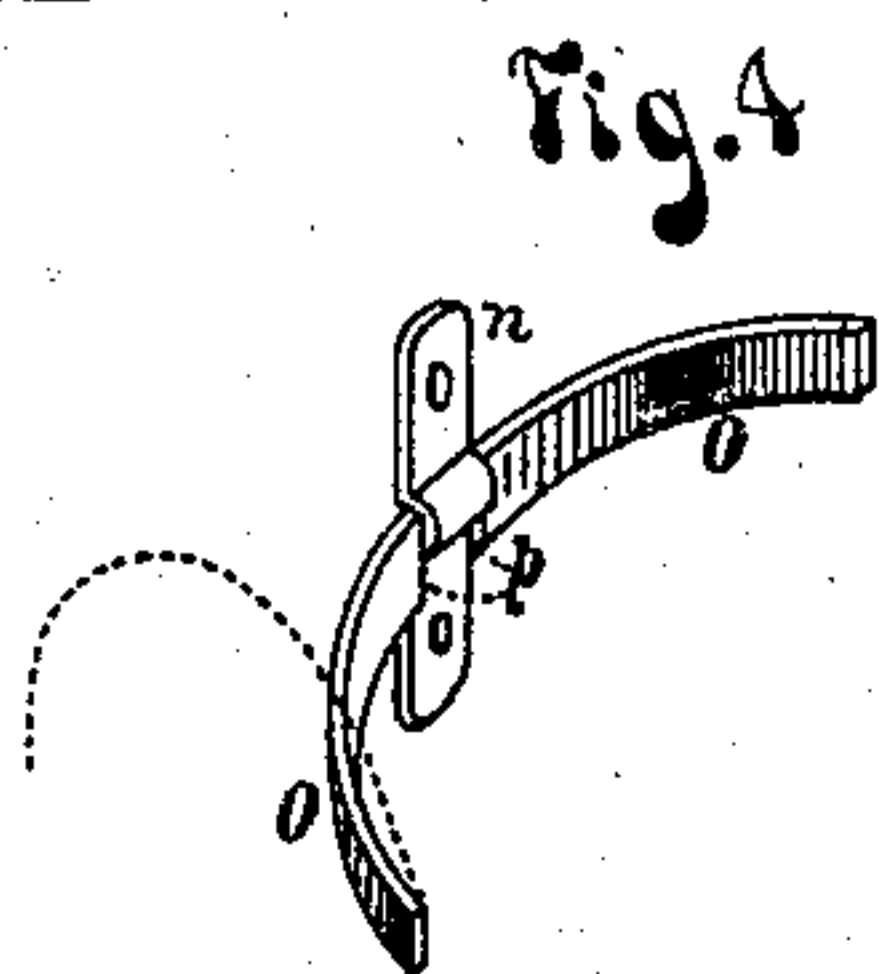
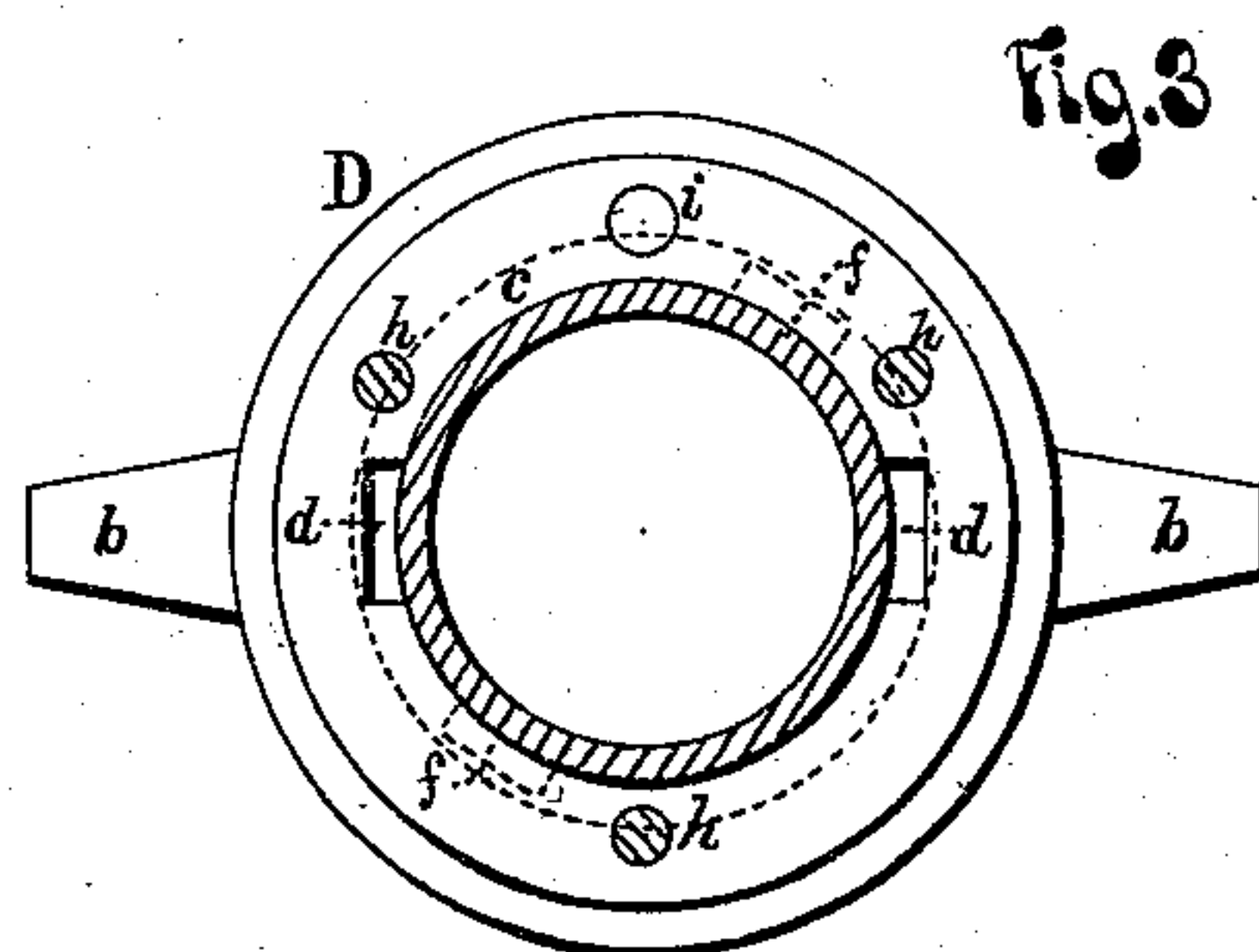
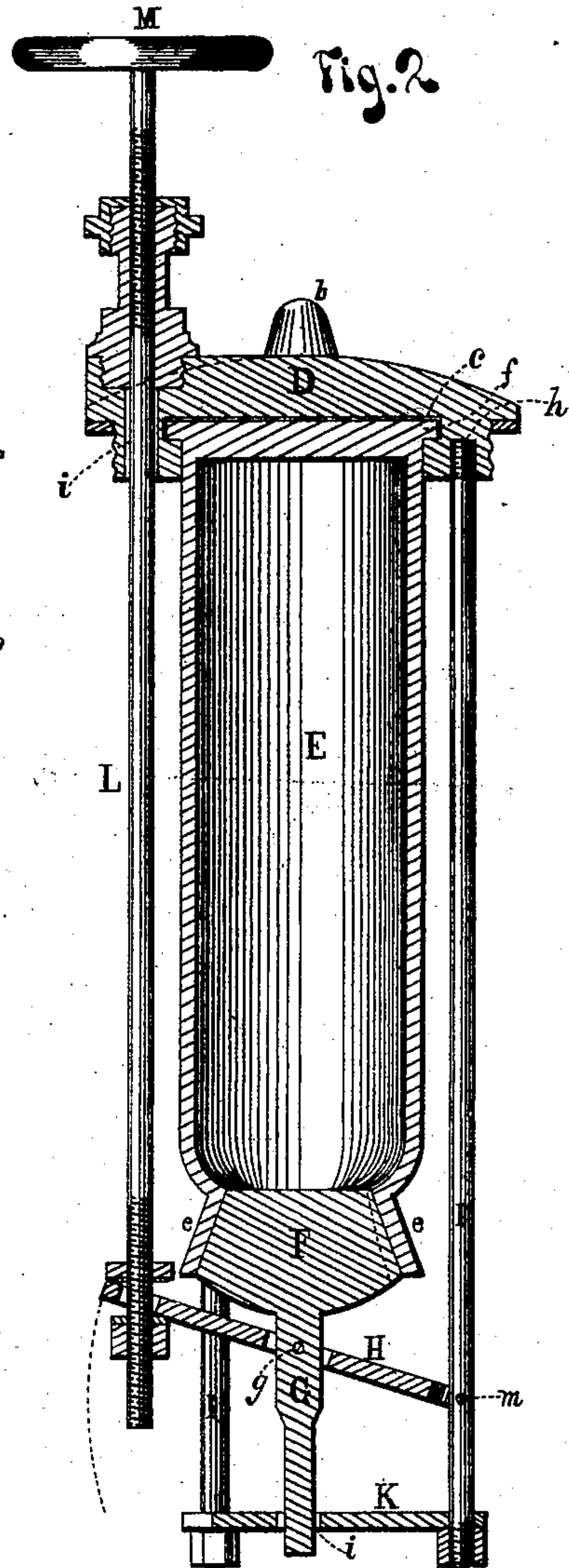
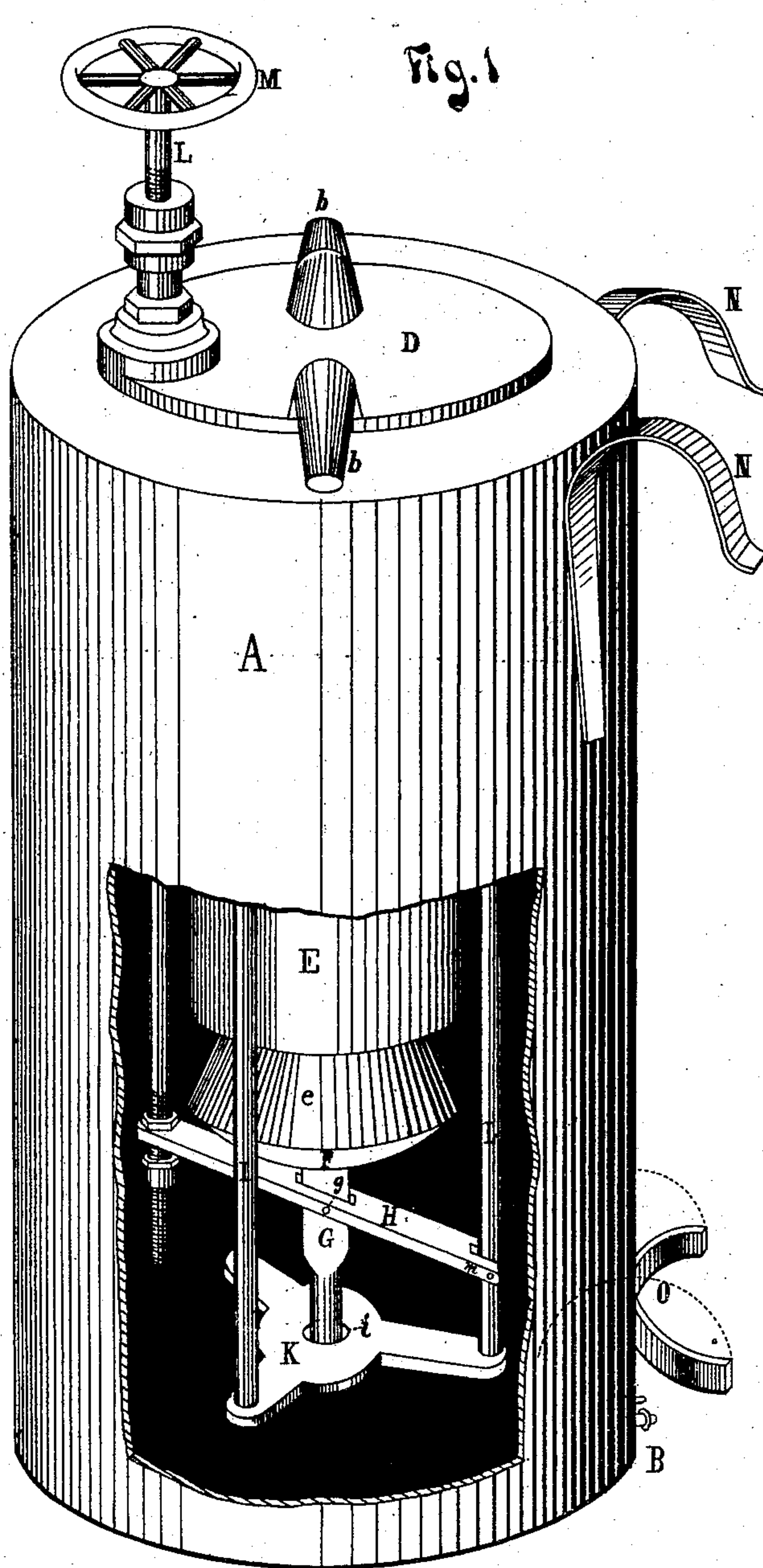


S. HODKINSON.
Fire-Extinguishers.

No. 153,437.

Patented July 28, 1874



WITNESSES
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By

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UNITED STATES PATENT OFFICE.

SAMUEL HODKINSON, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. 153,437, dated July 28, 1874; application filed August 23, 1873.

To all whom it may concern:

Be it known that I, SAMUEL HODKINSON, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and Improved Fire-Extinguisher; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 represents a perspective view of the outer vessel broken out to show within it the acid-jar and its attachments. Fig. 2 represents a vertical section of the acid-jar and its attachments. Fig. 3 represents a bottom view of the screw-cap and its attachments. Fig. 4 represents a perspective view of the back brace turned concavity outward.

My invention is a portable fire-extinguisher; and consists in the peculiar construction, arrangement, and operation of the same, for the purpose of generating carbonic-acid gas, and ejecting the same, by its own expansive force, upon the flame of a burning substance for its extinguishment.

The peculiar features of my device for accomplishing the aforesaid purpose are a hollow cylindrical vessel closed at the bottom, and having an opening through the top, over which is screwed a cap, said cap to not only close up said opening, but to hold firmly in an inverted position an acid-jar, which is placed within the aforesaid vessel, said acid-jar closed tightly with a stopper, which is removed at will by a lever attachment; and, finally, metallic or equivalent shoulder-hooks, and a reversible metallic back brace, all of which is hereinafter more fully described, and illustrated by the accompanying drawings, in which the same letters designate identical parts of the device in the different figures, respectively.

The letter A represents a hollow cylindrical vessel, in which is placed, by means of a suitable opening through its top, soda and water. This cylinder is provided near the lower end, and in a convenient position to reach when said extinguisher is adjusted upon the back of the operator, with a suitable stop-cock, B, to which may be suitably attached a short hose, with its accompanying pipe, all for purposes

hereinafter described. The letter D represents a metal cap made to screw tightly, by means of the projecting handles *b*, over the aforesaid opening through the top of the vessel A, and is provided with a suitable washer, to make said opening still more gas-tight when the cap is screwed down. The bottom of said cap is bored out, so that a ring is formed near the outer edge the depth of the screw-thread of the cap, and of suitable size to hold within it the bottom of the inverted acid-jar, hereinafter described. Into the inner edge of said ring is cut a horizontal circular slit, *c*, and into said slit, through the lower portion of the said inner edge, are cut, opposite to each other, the slots *d*, for purposes also hereinafter described. The letter E represents an acid-jar, made of lead, but more suitably of glass, having a flaring mouth, *e*, and opposite to each other, on the bottom edge, the lugs *f*, the former to receive the cone-shaped stopper F, and the latter, by their insertion into the aforesaid slots *d*, and being turned in the slit *c*, to firmly hold the said acid-jar in an inverted position. Inserted and firmly fastened by one end into said stopper F is a metallic standard, G, the other end of which passes through and is attached to the middle of a lever, hereinafter described, by means of a journal-pin, *g*. Into the bottom of the aforesaid ring of the cap D, at the angle-points of an equilateral triangle, are bored the screw-holes *h*, into each of which is screwed a metallic standard-rod, I, and to the lower ends of these rods is fastened a three-armed brace, K, thus forming a substantial frame around the aforesaid acid-jar. Passing through another hole, *i*, in the screw-cap D, and suitably secured by screw-collars into said cap, is a fourth independent screw-rod, L. To the top of said screw-rod is fastened the wheel M, and to the lower end is attached the power end of a lever, H, by means of two nuts placed on said screw-rod, one above and the other immediately beneath said lever. The middle of said lever H is attached, as aforesaid, to the middle of the stopper-standard G, and the fulcrum end is hinged, at *m*, to the standard-rod I immediately opposite the aforesaid screw-rod L.

In order to properly limit the sidewise motion imparted to the stopper-standard G by

the said lever H, the lower end of said standard is passed loosely through the hole *l* of the three-armed brace K, said hole being of a size just sufficient to prevent the bending of the standard or the breaking of the stopper, and yet allow the freedom of motion corresponding to the curved motion of the power end of said lever. The letter N represents two shoulder-hooks of metal or its equivalent, suitably and firmly fastened upon the outside of said vessel A, and near its upper end, as shown by Fig. 1 of the drawings, for a purpose hereinafter described. The letter O represents a back brace, which is hinged at its center, by the loop *n*, to the outside also of said vessel A, near its lower end, and directly below the aforesaid hooks. This allows the said back brace to be turned over or reversed, either outwardly or inwardly, as shown by the dotted curved lines in Fig. 4 of the drawings, so that its concavity may embrace the back of the operator when using the device, and when it is not in use to embrace the convex surface of the aforesaid vessel and be out of the way. The said loop *n* passes over the rounded or journal portion within the sides of a slot, *p*, cut into the lower edge of the middle of said back brace, said sides thus forming shoulders, which limit the aforesaid reversing motion of said brace, and prevent its ends from falling below a horizontal position.

The arrangement and operation of the combined parts are as follows: The outer vessel A is partially filled with soda and water, and the acid-jar with sulphuric acid, in such proportions as to neutralize the alkali. The filled jar is then placed, by means of the aforesaid lugs *f* and the slots *d*, in the slit *c* of the screw-cap D, right end up, within the rod-frame heretofore described; the screw-rod L screwed into its position; the lever H adjusted, its power end to the screw-rod L, its fulcrum end to the opposite frame-rod I at *m*, and its middle, by means of the aforesaid journal-pin *g* and the standard G, tightly closing the stopper F within the mouth of the acid-jar, and the three-armed brace K then screwed to the ends of the frame-rods I, loosely inclosing the end of the standard G. The acid-jar being then inverted and placed, frame and all, within the outer vessel A, and the cap D screwed tightly down, the whole device is ready for operation.

Whenever the extinguisher is needed for stopping combustion the wheel M is turned

round a sufficient number of times to screw down the rod L, which moves the lever H, which, in its turn, being attached to the standard G, removes the stopper from the mouth of the acid-jar, thereby precipitating the acid into the midst of the alkaline solution, and generating the gas for use. The outer vessel A is then attached to the back of the operator by means of the shoulder-hooks N and the back brace O, as heretofore described, the stop-cock B turned, and the gas discharged, as aforesaid, wherever desired, through the said hose and pipe.

From the above description herein detailed it will be distinctly perceived that the combined action of the devices used to remove the stopper from the mouth of an inverted jar containing sulphuric acid is a close imitation of the combined movement of the thumb and finger to accomplish the same result. Now, one of the most difficult things to do known to a chemist is the removal of a glass stopper from the mouth of a sulphuric-acid bottle. After even a short time standing the chemical action of the sulphuric acid upon the glass—and this material resists the longest—glues the stopper to the mouth of the jar, and thereby renders its removal without breakage so extremely difficult. All this is easily and safely accomplished by the aforesaid combined action of the lever H and the stopper-standard G, the latter being moved sidewise and downward, while the former is being moved at its power end downward, yet so as to describe the arc of a circle. Thus the sidewise motion of the standard breaks the connection on one side of the stopper to the mouth of the jar, while the downward motion in combination entirely removes the said stopper from the jar; therefore,

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the hinged lever H with the power-screw L and the stopper F, substantially as and for the purposes specified.
2. The curved and reversible back brace O, constructed and used substantially as and for the purposes specified.

SAMUEL HODKINSON.

Witnesses:

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