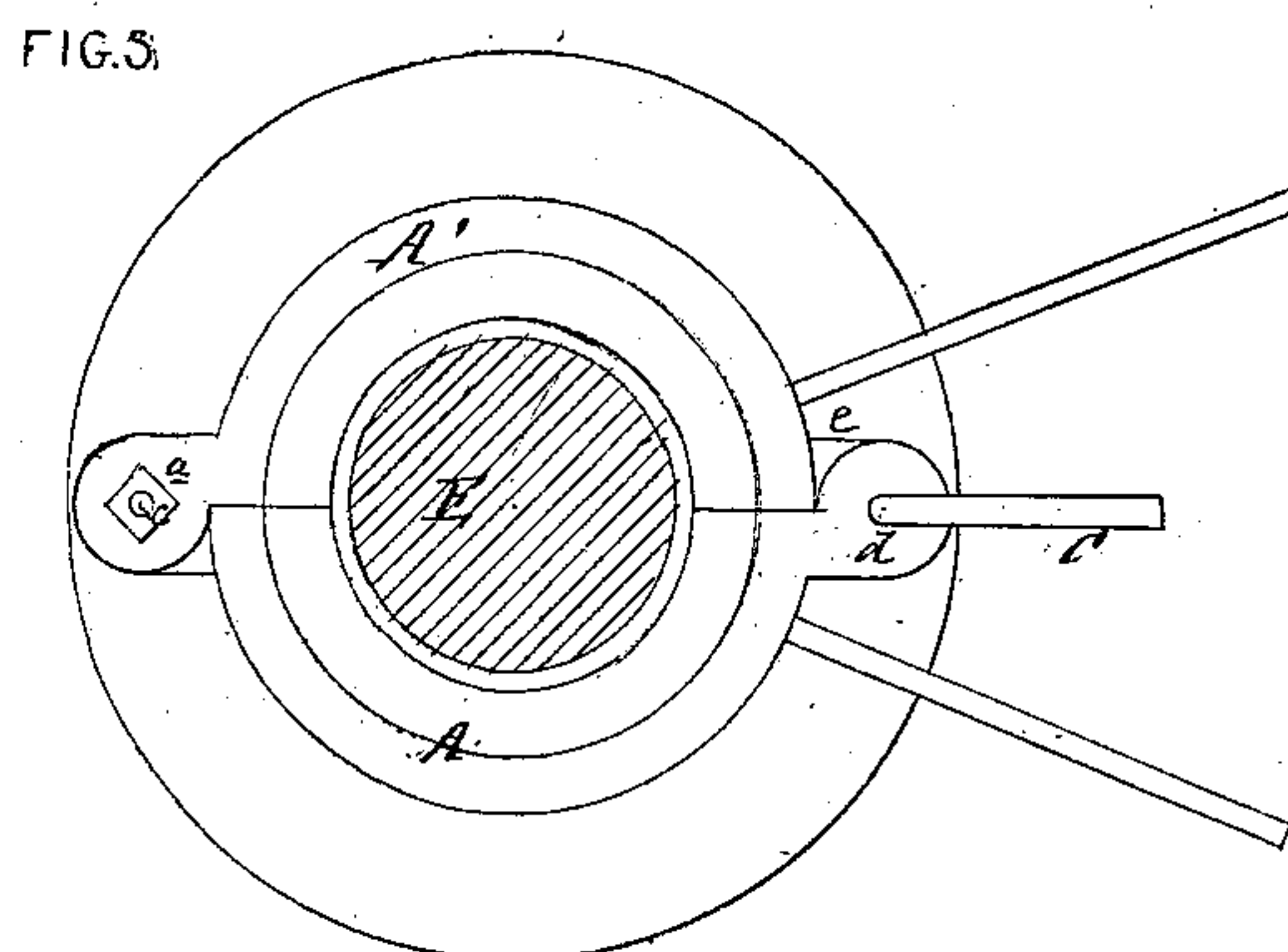
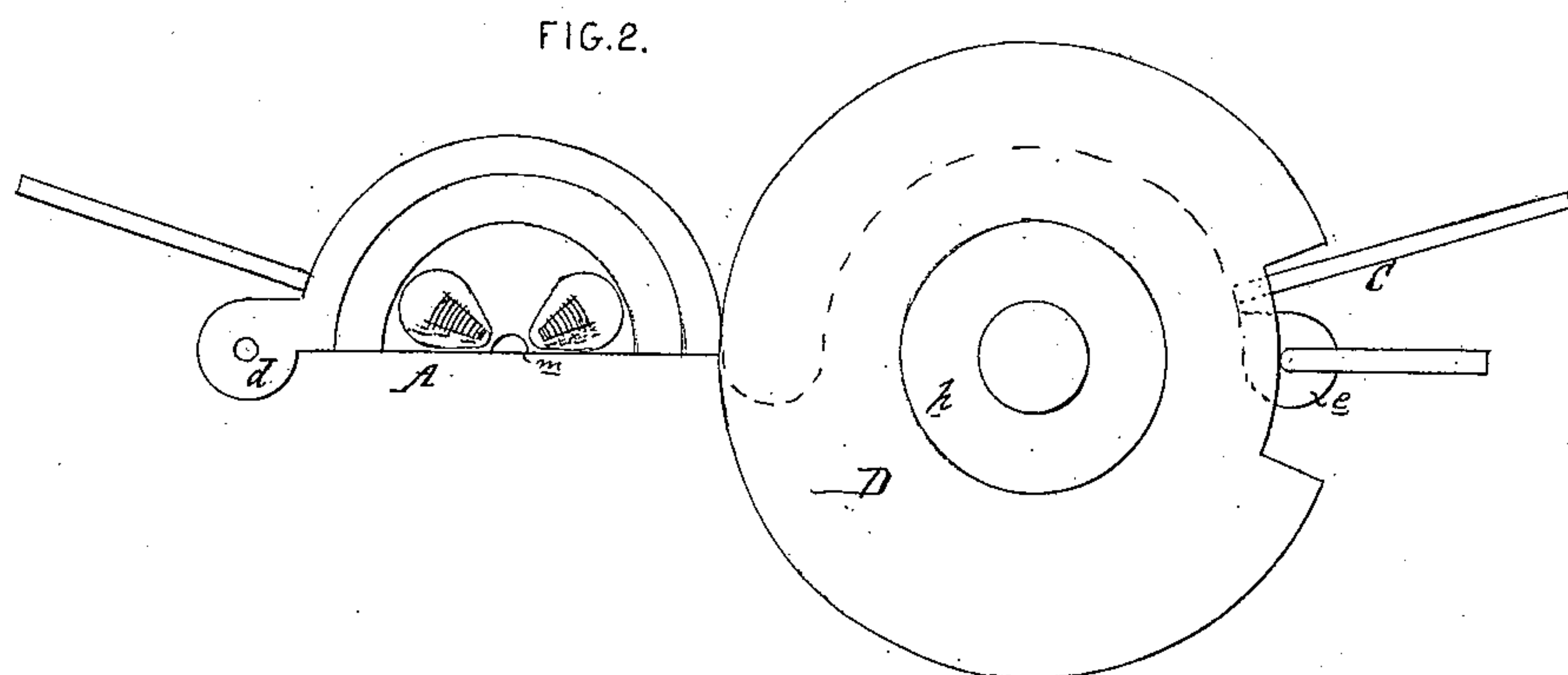
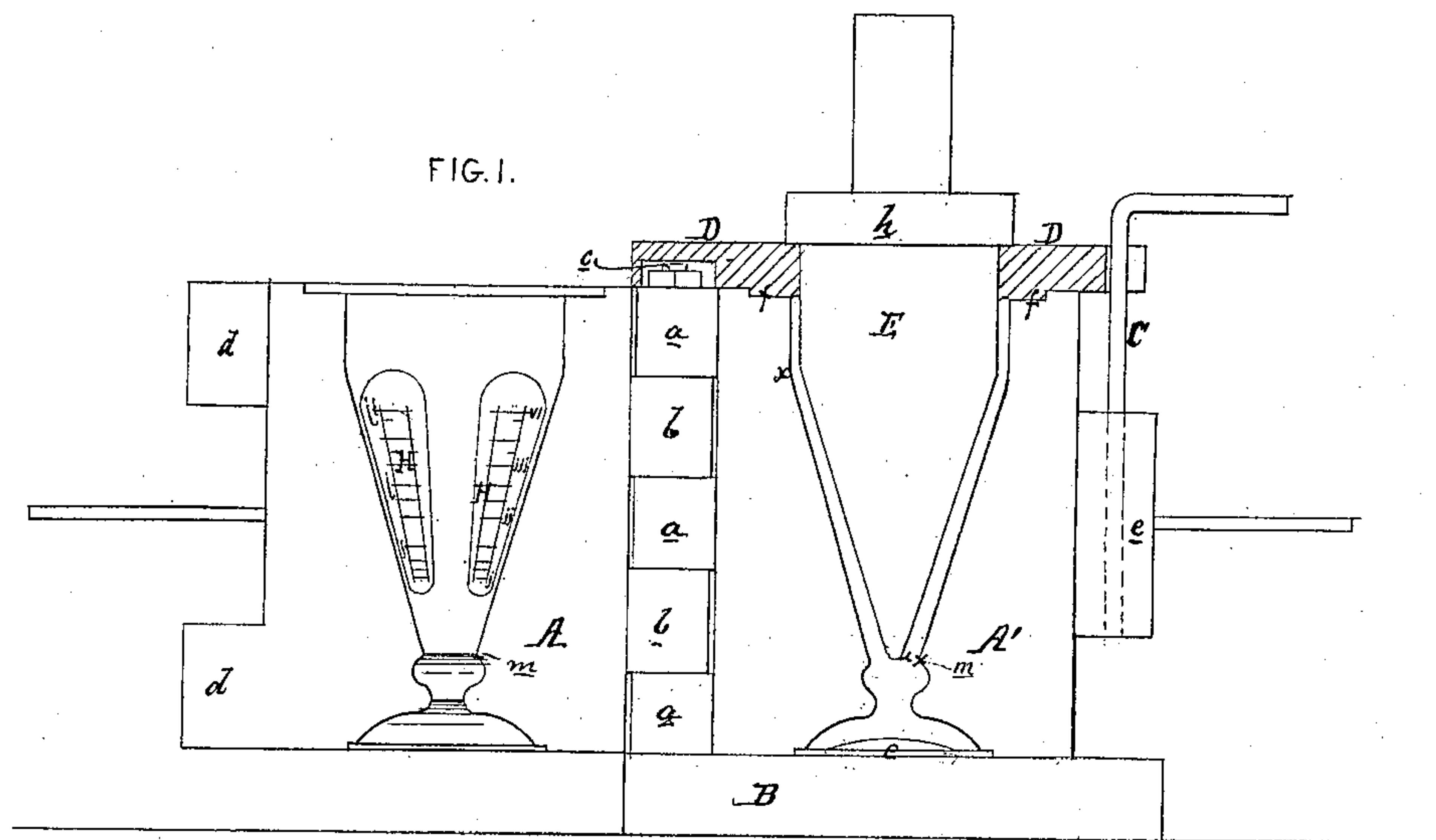


W. HODGSON, Jr.
MANUFACTURE OF GRADUATED GLASS MEASURES.
No. 34,424. Patented Feb. 18, 1862.



WITNESSES.

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WILLIAM HODGSON, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN THE MANUFACTURE OF GRADUATED GLASS MEASURES.

Specification forming part of Letters Patent No. 34,424, dated February 18, 1862.

To all whom it may concern:

Be it known that I, WILLIAM HODGSON, Jr., of Philadelphia, Pennsylvania, have invented a new and Improved Mode of Manufacturing Graduated Glass Measures; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in making glass measures in a press-mold, so constructed, marked, and shaped that all vessels made therein will be precisely alike as regards form and capacity, and will have graduations so arranged in respect to that form and capacity that the same accurate measurement may be made by all the vessels alike, thereby avoiding the usual tedious, expensive, and at the same time uncertain operation of testing each vessel separately and marking each in accordance with the test.

In order to enable others skilled in the art to practice my invention, I will now proceed to describe the manner in which I carry it into effect.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a view of an opened mold, by the aid of which I practice my improved mode of manufacturing glass vessels; Fig. 2, a plan view of Fig. 1; Fig. 3, also a plan view showing the mold as closed.

Similar letters refer to similar parts throughout the several views.

The mold is composed of two halves A and A', the former having projections *a a*, between which similar projections *b b* on the half A' of the mold fit snugly, as seen in Fig. 1, a pin C, passing through the projections, thereby hinging the halves together, and the lower end of the said pin being secured to the base-plate B. The half A of the mold has projections *d d*, between which fits a projection *e* on the half A', a detachable pin C passing through the whole of these projections when the mold is closed. In each half of the mold is formed a depression of such a shape that when the two halves are brought together and connected to each other by the pin C they will inclose space of a form corresponding to that of the exterior of the glass measure, (which, in the present instance, is similar to those

used by physicians, apothecaries, &c.) the base-plate B having a convex projection *e*, by means of which the desired concave recess is formed in the under side of the foot of the measure.

D is a plate having on the under side an annular projection *f*, which, fitting snugly to an annular recess in the top of both halves of the mold, serves to maintain the circular opening of the plate concentric with the space inclosed by the two halves of the mold. In this opening of the plate D fits the plug E, the lower portion of which is cone-shaped to correspond with the conical interior of the glass measure, the plug having a collar *h*, which, resting on the top of the plate D, prevents the conical portion of the plug from descending beyond a given point into the interior of the mold, which point is indicated in the exterior of the mold by a certain mark *m*, which I term the "apex-mark."

In the inside of the mold is cut a series of lines and figures *II H* to correspond with the desired graduations and marks on the glass measure, the position of these lines and figures from each other and from the apex-mark being determined by carefully testing a glass measure made in the mold prior to the cutting of the graduations therein, and cutting the marks of the mold in accordance with those ascertained by the test for the respective graduations.

In forming the glass measure the two halves of the mold are first brought together and secured by the pin *c*, the plate D being subsequently placed on the top of both halves. After this a given quantity of molten glass is poured into the interior of the mold and the conical end of the plug E is forced through the opening of the plate D into the molten glass, thereby compressing the latter against the inside of the mold and into the graduated cuts until the collar *h* bears on the plate D and the apex of the plug comes to a point exactly coinciding with the apex-mark *m*, when the desired shape will be imparted to both the interior and exterior of the glass, the exterior having the projecting marks, figures, and letters corresponding with those cut in the mold, all the glasses pressed in the mold will be precisely alike, both as regards their form and the position of the graduated marks,

and all will be in the same respect like the original measure which first served as a guide for marking the mold, and the accuracy of any one of the glasses may be known by comparing the apex in the interior with the apex-mark *m* of the exterior.

Graduated glass measures have hitherto been manufactured by first forming, by blowing or otherwise, a blank vessel, and subsequently cutting the marks thereon, the graduations of each glass being determined by pouring previously-ascertained quantities of fluid into the glass, the surfaces of the different quantities pointing out the position of the required marks—an operation not only tedious, but liable through carelessness to cause inaccuracies.

It will be evident that by my process, as described above, the delay and expense incurred in cutting the marks on the glass are avoided, as the marks are made simultaneously with the formation of the vessel itself. It will also be evident that if the marks in the mold are in the first instance properly graduated from a test-measure and the operation of molding, as described above, properly conducted, particularly in regard to the depression of the plug to the given point, every measure made in the mold will be accurate.

It will be observed on reference to Fig. 1 that the upper portion of the interior of the mold, as well as a portion of the plug E, has parallel sides, the upper edge of the glass

measure having, consequently, similar parallel sides. After removing the glass from the mold this parallel upper portion is cut away, and the usual lip from which the liquid contents are poured is formed on the edge. The object of this apparently superfluous upper edge of the glass is to allow more of the molten material to be poured into the mold than is absolutely required for forming the measure and allowing the superfluous quantity to flow upward, thereby insuring the required compression of the glass and a sound and even upper edge.

Without confining myself to any particular form of mold, I claim as my invention and desire to secure by Letters Patent—

The forming of graduated glass measures and the graduations thereon at one operation in a press-mold, so constructed, marked, and shaped that all vessels made in the same mold will be precisely alike as regards form and capacity, and will have graduations so arranged in respect to that form and capacity that the same accurate measurement may be made by all vessels alike, as herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. HODGSON, JR.

Witnesses:

HENRY HOWSON,
L. J. LANCASTER.