

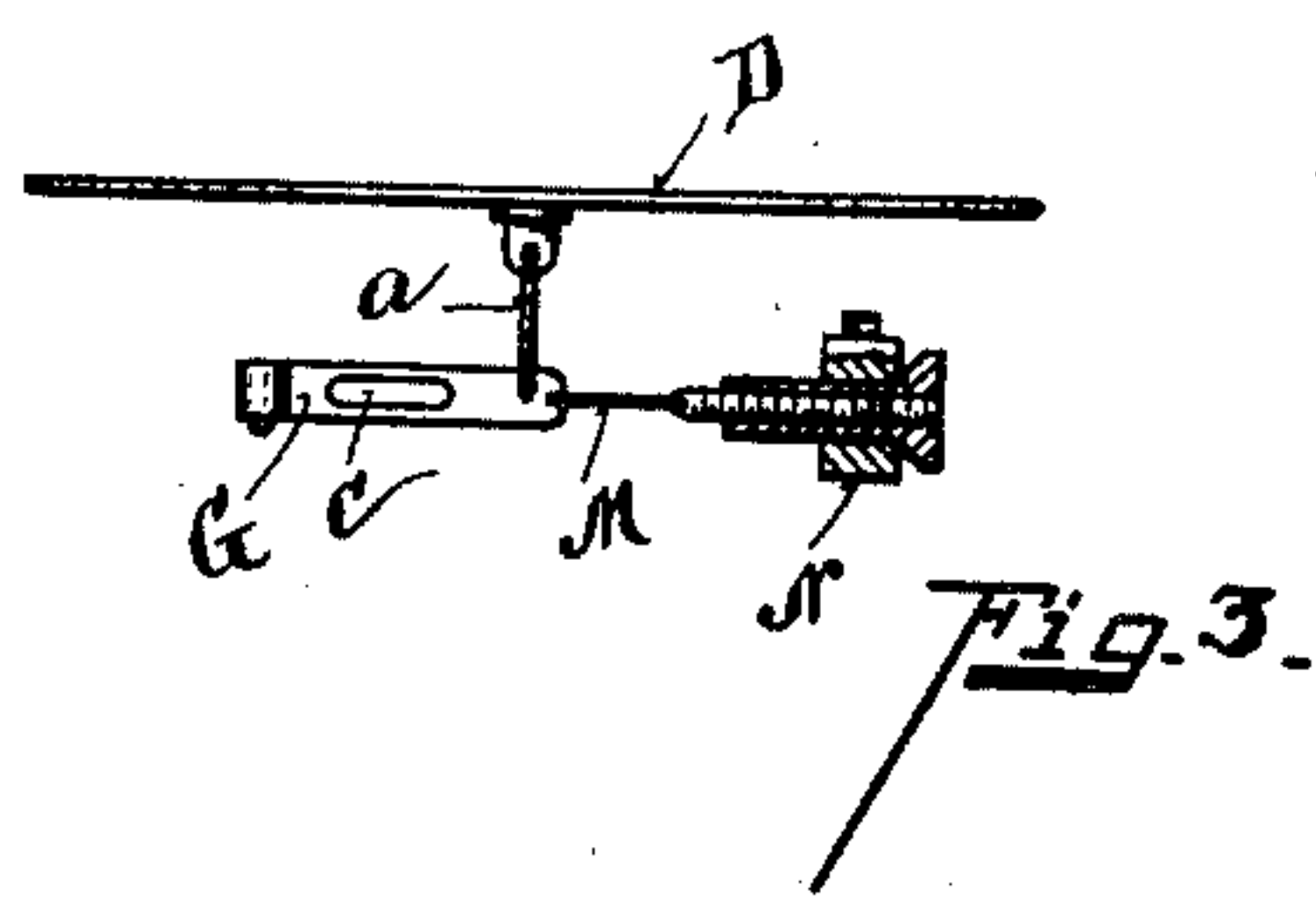
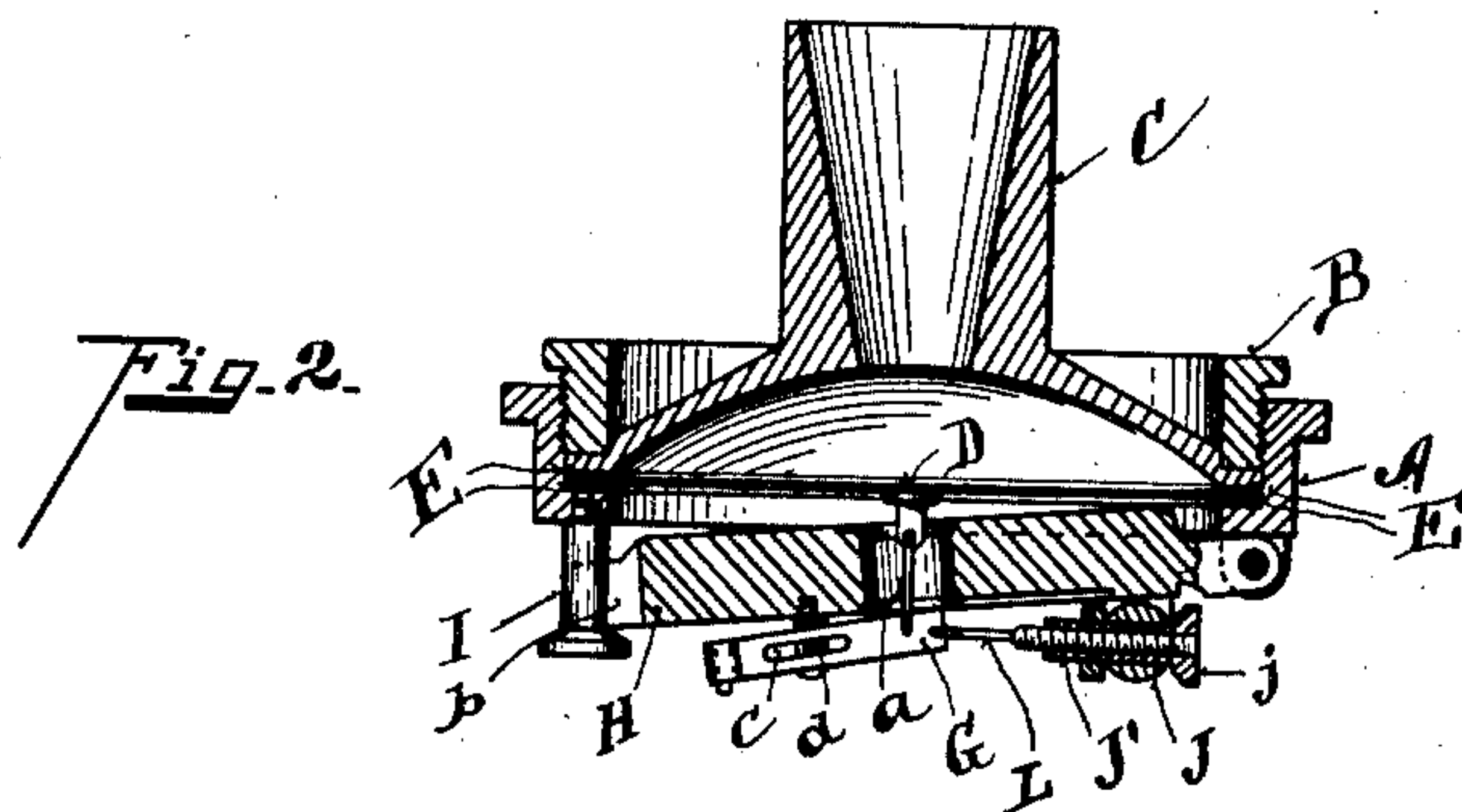
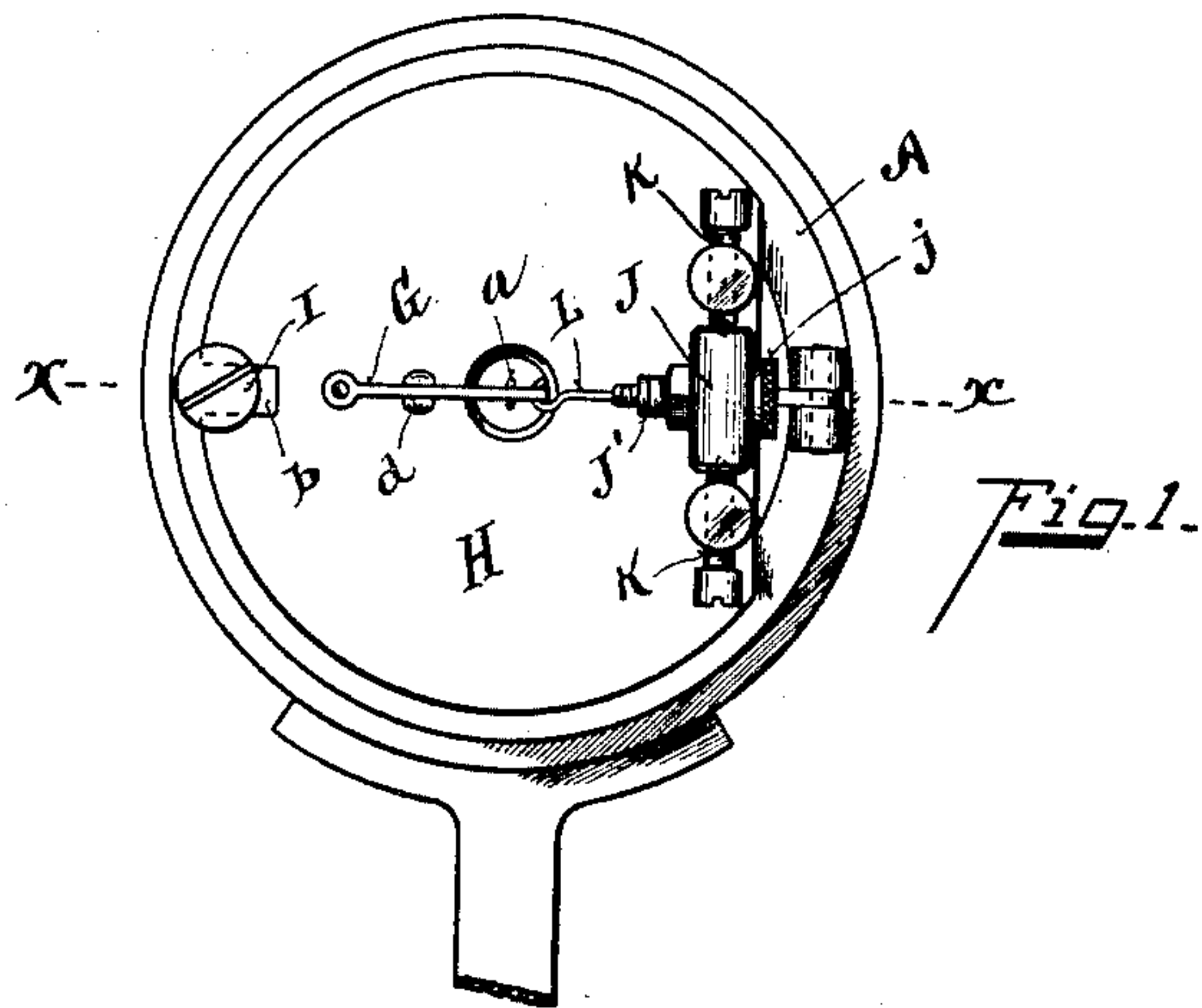
No. 679,467.

Patented July 30, 1901.

C. W. NOYES.
PHONOGRAPH REPRODUCER AND RECORDER.

(Application filed Mar. 21, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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PHONOGRAPH REPRODUCER AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 679,467, dated July 30, 1901.

Application filed March 21, 1901. Serial No. 52,126. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. NOYES, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Phonograph Reproducers and Recorders, of which the following is a specification.

The object of my invention is to improve the tone and quality of a phonographic reproducer or recorder and to do away with the metallic sound as far as possible.

I have produced a mechanism adapted to compensate for the different physical attributes and characteristics of different diaphragms. Glass diaphragms are now more universally employed than any other, because the quality of tone is found to be better with glass than with other material; but it is universally found in practice that whenever a different diaphragm is placed in the reproducer or recorder a different tone results. This difference is probably due to several causes—to different thickness and to differences in other physical characteristics.

My invention enables the instrument to be adjusted so as to compensate for these variations of the diaphragms and consequent variations in the tone, whereby a given operator can produce the same quality of tone from different glasses or diaphragms having the varying characteristics as specified.

The features of my invention will be more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a bottom plan view of my improvement. Fig. 2 is a section on line *x x*, Fig. 1. Fig. 3 is a modification of the stylus-lever and attachments.

In the accompanying drawings the figures are slightly enlarged for better representing the parts.

A represents the ordinary reproducer-cup; B, the clamping-ring for securing the same; C, the tube-plate; D, the diaphragm; E E, the gaskets which are placed upon each side of the glass, so as to cushion the same.

a represents the link, which connects the diaphragm with the stylus-lever G. H rep-

resents a plate hinged to the cup A. I represents the limiting-weight screw, which passes through the slot *b* in the plate H, so as to limit the downward movement of the weighted plate. These parts, except the stylus-lever, are of the ordinary construction.

The stylus-lever is provided with a longitudinal slot *c*, (shown in Figs. 2 and 3,) through which the fulcrum *d* passes. This slot is provided for the purpose of adjusting the stylus-lever longitudinally on its center to compensate for the varying thickness or quality of the diaphragm. In the preferred form of construction shown in Fig. 2 the following devices are provided for the purpose of enabling this adjustment to be readily made by the operator when the phonograph is in position for use.

J represents a rock-shaft which is supported on gimbal-point center screws K K, so that a sensitive movement thereof may be obtained.

L represents a link connected to the screw J', tapping through the lever J. Said link is hooked into the stylus-lever G, forming a jointed connection.

j represents the head of the screw J' for turning the screw out or in, so as to move the stylus-lever G on its fulcrum, and thereby adjust it to the required position to suit the quality of the diaphragm employed.

It will be remembered that the stylus-point has but a very small motion due to the recording or reproducing sound-waves. There is also a vertical movement of the limiting-weight to accommodate the instrument to the inequalities of the record or cylinder. Owing to the slight movement of the stylus for making or receiving impressions, the connection between the adjusting-screw and the stylus-lever must be very delicate, so as not to interfere with the free movement of the same.

In Fig. 3 I have shown a modified form of making a connection between the adjusting-screw and the stylus-lever, which consists of a thin elastic or flexible plate or wire M, the ends of which are secured to the lever and screw-shank. It is sufficiently long between the attaching-points, however, to flex readily under the slightest vibrations of the dia-

phragm. In this construction it will be seen that a single fixed post N is all that is required, as the flexing of the connecting-plates M is sufficiently delicate to allow the free movement of the stylus-lever and yet hold it in place. This construction obviates the necessity of the rock-lever J. (Shown in Fig. 2.) I have shown these two forms simply to illustrate the fact that variations may be made in the means for shifting the relative positions of the fulcrum and lever. I do not wish to limit myself to the specific forms herein shown or described.

It will be observed that in the preferred form I have shown the adjusting mechanism, while adapted to vary the leverage of the stylus, is entirely flexible in the direction to and from the diaphragm and substantially rigid or unyielding in the direction of adjustment, the tension being sufficient in degree to prevent such shifting of the lever on the fulcrum when the device is in operation as would make any practical variation in the results produced.

I have discovered that different diaphragms applied to the same reproducer produce different tones, due to the varying physical characteristics of the respective diaphragms, and that by shifting the position of the fulcrum relative to the stylus to lengthen or shorten the leverage these physical differences in the diaphragms may be compensated for, so that all may be made to produce a standard tone, or the tones may be varied within given limits to suit the ear of the operator.

Having described my invention, I claim—

1. In a phonograph reproducer or recorder, the combination of a stylus-lever, a fulcrum, and means for adjusting and fixing the leverage of the stylus, whereby the varying tones

of different diaphragms may be compensated for, substantially as specified.

2. In a phonograph reproducer or recorder, a fulcrum, a stylus-lever, provided with a slot admitting of different relative positions of the fulcrum and stylus, and means for adjusting and fixing said fulcrum and stylus in different relative positions, substantially as specified.

3. In a phonograph reproducer or recorder, a fulcrum, a stylus-lever provided with a slot admitting of different relative positions of the fulcrum and stylus, and an adjusting mechanism attached to the free end of the lever, substantially as specified.

4. In a phonograph reproducer or recorder, a fulcrum, a stylus-lever provided with a slotted bearing for the fulcrum, and adjusting means attached to the free end of the stylus adapted to hold the stylus to its position of adjustment, but permitting free pivotal movement in the direction of the diaphragm, substantially as specified.

5. In a phonograph reproducer or recorder, a fulcrum, a stylus-lever provided with means for shifting the fulcrum position, flexible in the direction of the diaphragm and substantially rigid in the direction of adjustment, substantially as specified.

6. In a phonograph reproducer or recorder, a fulcrum, a stylus-lever, and means for shifting the fulcrum position of the stylus-lever, said means being flexible in the direction of the diaphragm, substantially as specified.

In testimony whereof I have hereunto set my hand.

CHARLES W. NOYES.

Witnesses:

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