

No. 628,812.

Patented July 11, 1899.

H. JONES.

SOUND RECORDING AND REPRODUCING MACHINE.

(Application filed Aug. 13, 1898.)

(No Model.)

Fig. 1.

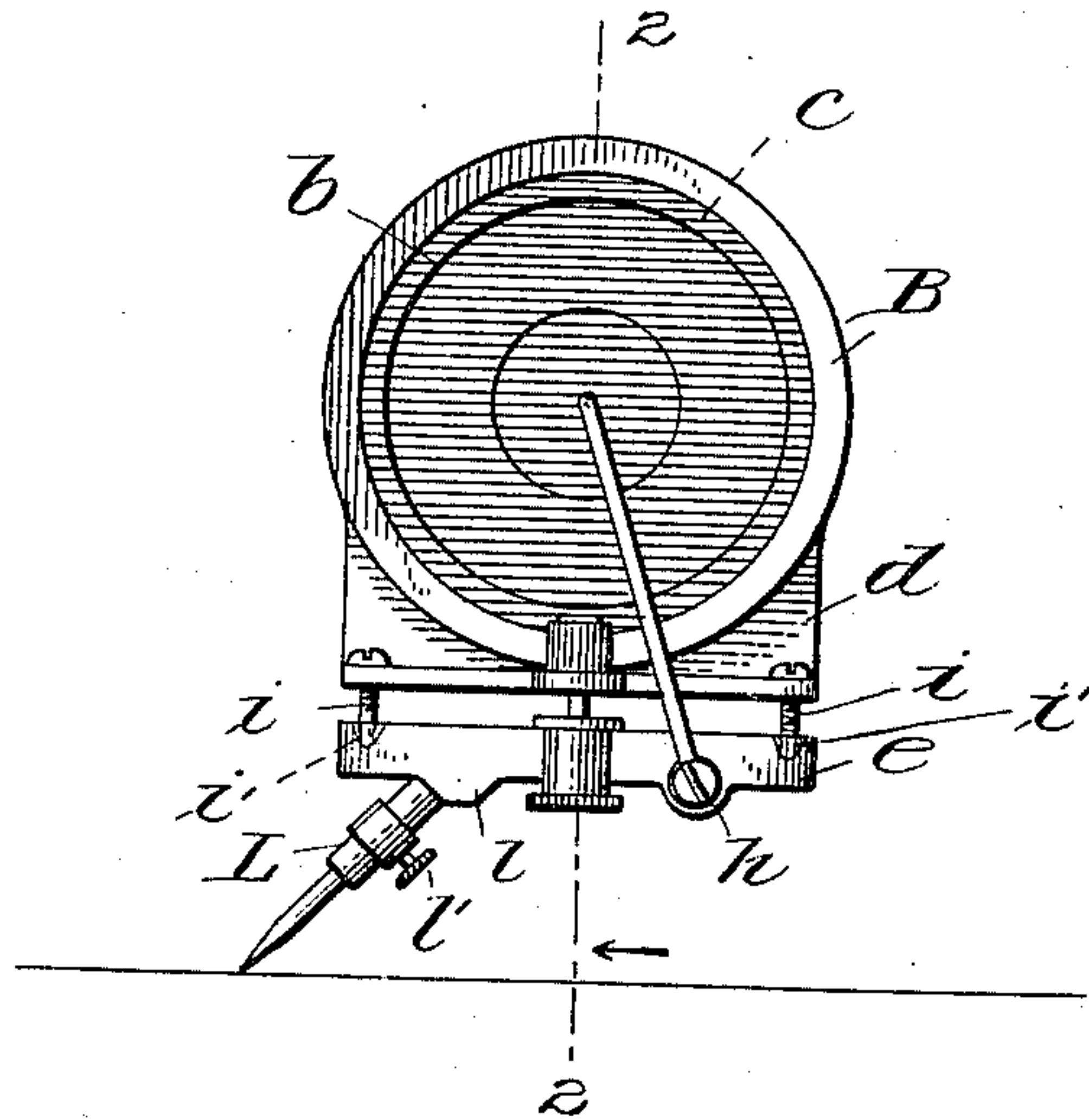


Fig. 2.

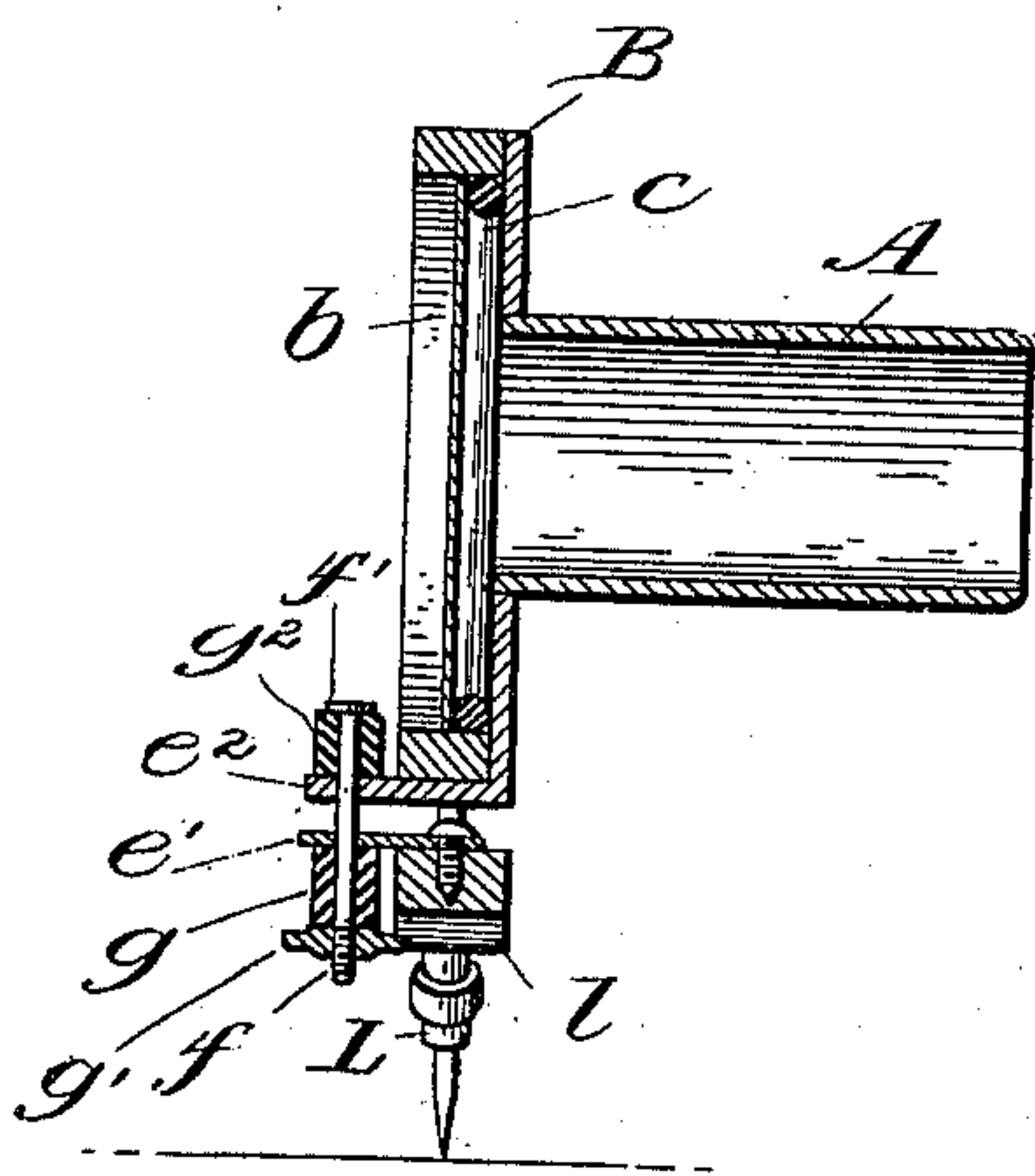
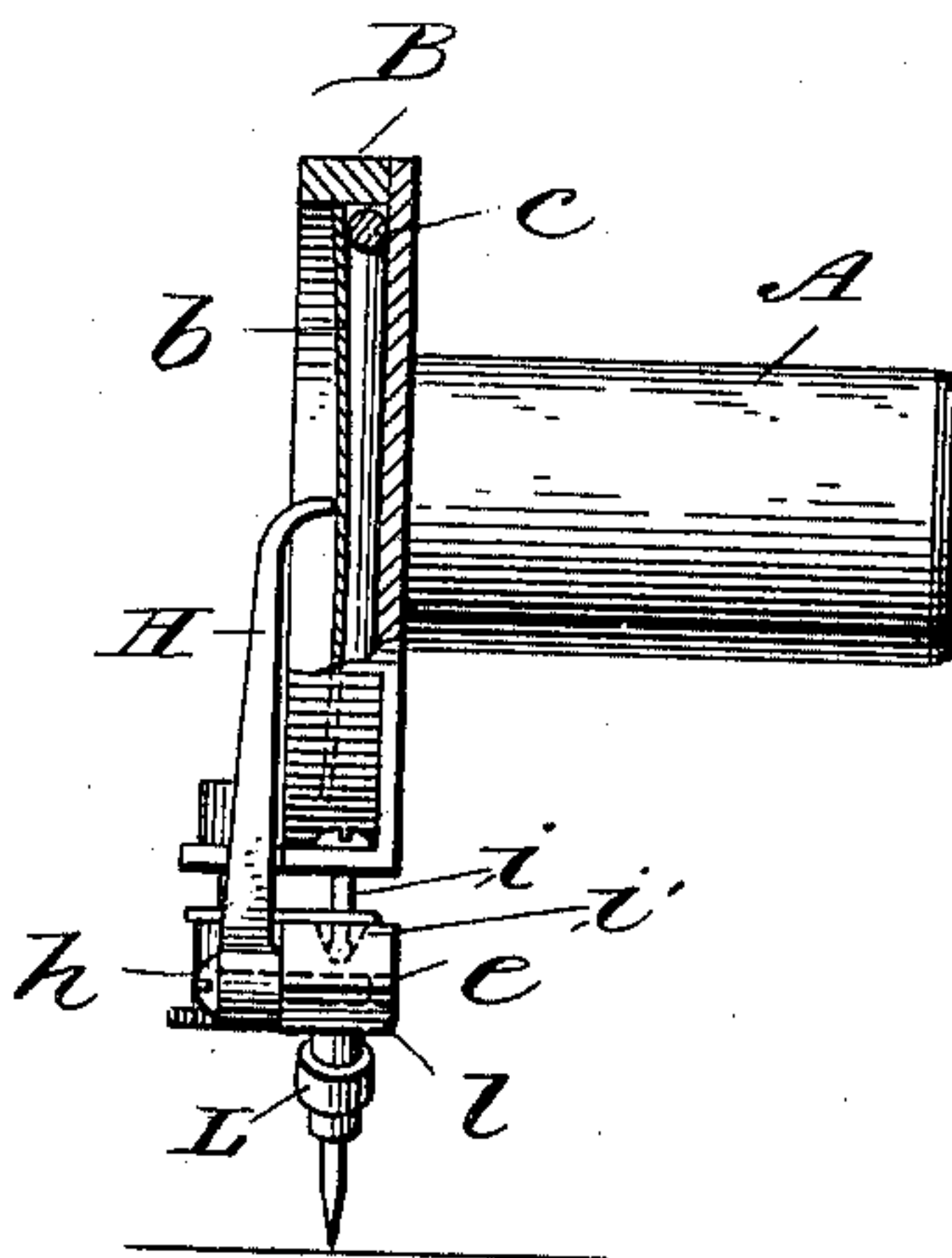


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## SOUND RECORDING AND REPRODUCING MACHINE.

SPECIFICATION forming part of Letters Patent No. 628,812, dated July 11, 1899.

Application filed August 13, 1898. Serial No. 688,513. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY JONES, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Sound Recording and Reproducing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention has relation to certain improvements in sound recording and reproducing machines; and the principal objects of the said invention are to provide an improved construction of sound-box; also, to provide an improved construction of mounting the stylus-bar upon the sound-box casing, whereby greatly-improved results are obtained.

My invention consists in the construction, combination, and arrangements of parts, such as will be hereinafter more fully described, and particularly pointed out in the claims.

Referring to the accompanying drawings, forming part of this specification and in which similar letters of reference are used to indicate similar parts, Figure 1 is a front elevation of a sound-box embodying my improvements. Fig. 2 is a central vertical section taken about on the line 2 2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a side elevation of the same, a portion of the sound-box casing being broken away and the diaphragm being shown in section.

In the said drawings, A designates the receiver or transmitter, as the case may be, which is secured to the circular diaphragm-holder B, in which is loosely fitted the diaphragm *b*, having on its rear side a rubber washer or ring *c*, which keeps the said diaphragm away from the casing B. Extending from the lower side of the casing B and formed integral therewith is a flanged plate *d*, and a short distance below this flange *d* is the transversely-arranged stylus-supporting bar *e*, which runs parallel with the part *d* and is secured thereto by means which will be hereinafter described. In this construction the stylus-bar is connected directly with the transversely-arranged supporting-bar *e*, which also has rigidly connected to it the stylus-holder, thereby making a rigid con-

nection between the stylus-point and the diaphragm.

In about the center of the supporting-bar *e* is a projecting lug *e'*, provided with an aperture for the reception and support of a transversely-arranged bolt *f*, and on the flange of the plate *d* is formed a similar-shaped projection *e''*, also provided with an aperture for the reception and support of the bolt *f*. On the bolt *f*, below the support *e'*, I provide a resilient block *g*, of rubber or other suitable material, the said block abutting against the projection *e'* and against a milled disk *g'*, which is screw-threaded on the lower end of the bolt *f*. On the upper end of the said bolt *f* and bearing against the upper side of the projection *e''* is a similar rubber block *g''*, having its upper end abutting against the small washer *f'*, which is rigidly secured to the bolt *f*. These rubber blocks *g g''* form springs, the tension of which can be adjusted by means of the milled head or nut *g'*, and serve to exert pressure on the stylus-bar and keep it in contact with the diaphragm *b*, the elasticity of the diaphragm acting as a spring in the other direction and returning said diaphragm to its normal position. Instead of using the resilient blocks *g g''* coiled springs might be used with the same result.

The stylus-bar H is secured to the supporting-bar *e* by means of a suitable screw, such as *h*, thereby making it rigid with the said supporting-bar, and the upper end of the said stylus-bar bears against the diaphragm at its center, as illustrated, the springs *g g''* tending to keep it in contact with the diaphragm, as heretofore described.

In each end of the flange on the plate *d* are openings screw-threaded for the reception of the pivot-screws *i*. The upper surface of the stylus-supporting bar *e* is provided with socket-openings *i'*, adapted for the reception of the balls formed on the end of the pivot-screws *i*, thereby forming practically a ball-and-socket joint at each end of the stylus-supporting bar, so that the said supporting-bar can have easy lateral movement when vibrated under the action of the sound-waves transmitted through the stylus, the said pivot-screws also serving to prevent any longitudinal movement of the stylus-support, which



would be objectionable. The bolt *f* and its springs, heretofore described, serve to hold the stylus-supporting bar to the plate *d* of the diaphragm-holder B.

- 5 On the under side of the stylus-supporting bar *e* and to one side of the center thereof is a projecting lug *l*, to which is rigidly secured the stylus-holder L, provided with the set-screw *l'* for holding and adjusting the stylus.
- 10 The stylus-point and its holder are illustrated as being at an angle of about forty-five degrees, which of course might be changed, although it is generally considered as essential that the stylus-point be set at an angle in
- 15 machines of this character.

The operation of my invention will be readily understood from the foregoing description.

- 20 The exact construction herein described and illustrated might be modified without departing from the spirit of my invention; but the structure shown is a preferable form of construction and thoroughly illustrates the invention.

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

1. In a sound recording and reproducing machine, the combination with the diaphragm-holder of a supporting-bar pivotally connected thereto, a stylus-bar rigidly secured to the said supporting-bar adapted to bear against the diaphragm-plate, a stylus-point rigidly connected to the said supporting-bar and means applied to the said supporting-bar for exerting pressure against the diaphragm in one direction, substantially as described.

2. In a sound recording and reproducing machine, the combination of a diaphragm-holder a supporting-bar carried by the diaphragm-holder, pivotal connection between the said holder and the supporting-bar, a stylus-bar rigidly secured to the supporting-bar and adapted at its upper end to bear against the diaphragm, a stylus-point carried on the lower side of said supporting-bar, and a spring connection between the said supporting-bar and the diaphragm-holder for exerting pressure on one side of the diaphragm, substantially as described.

3. In a sound recording and reproducing machine, the combination of a diaphragm-holder, a diaphragm loosely mounted therein, a yielding ring interposed between the said diaphragm and its holder, a supporting-bar carried by the diaphragm-holder, pivotal joints between the said supporting-bar and

the diaphragm-holder, a stylus-bar rigid with the said supporting-bar adapted to bear at its upper end on the diaphragm, a stylus-point rigidly connected to the said bar, and a spring connection between the supporting-bar and the diaphragm-holder on one side thereof adapted to exert pressure through the medium of the stylus-bar on one side of the diaphragm, substantially as described.

4. In a sound recording and reproducing machine, the combination of a diaphragm-holder, a diaphragm loosely mounted therein, a supporting-bar carried by the said holder pivotally connected thereto, a stylus-bar and stylus rigid with the said supporting-bar, spring connections between the supporting-bar and the diaphragm-holder on one side thereof and means for adjusting the tension of the said springs for regulating the pressure exerted upon the diaphragm, substantially as described.

5. In a sound recording and reproducing machine, the combination with the diaphragm and its holding-frame, a transversely-arranged supporting-bar, sockets provided in the ends of said bar, studs carried by the diaphragm-holding frame adapted to the said sockets, a bolt passing through the supporting-bar and through the diaphragm-holding frame, springs arranged on said bolt to press the stylus-bar against the diaphragm in one direction only, a screw for adjusting the tension of said springs, a stylus-bar rigidly connected to the supporting-bar adapted to be held in contact with the diaphragm through the action of the said springs and a stylus-point rigidly secured on the under side of the supporting-bar, substantially as described.

6. In a sound recording and reproducing machine, the combination of the diaphragm loosely mounted in a holding-frame, a flanged plate, *d*, formed on the holding-frame, a lug, *e*<sup>2</sup>, formed on the said flange, a stylus-supporting bar having a stylus-bar, H, rigidly secured thereto, a stylus-point carried on the lower side of said supporting-bar, ball-bearing studs, *i*, adapted to the sockets, *i'*, an extension, *e'*, secured to the upper side of said bar, a bolt, *f*, supported by the extensions, *e'*, *e*<sup>2</sup>, a screw-threaded nut on one end of said bolt, and springs, *g*, *g*<sup>2</sup>, arranged, substantially as described.

In witness whereof I have hereunto set my hand this 11th day of August, A. D. 1898.

HENRY JONES.

Witnesses:

BENJ. F. PERKINS,  
HORACE PETTIT.