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E. C. BOULANGER & J. B. DELAYE.

MECHANISM FOR DRIVING THE DIAPHRAGMS OF DISK PHONOGRAPHS.

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Fig. 1.

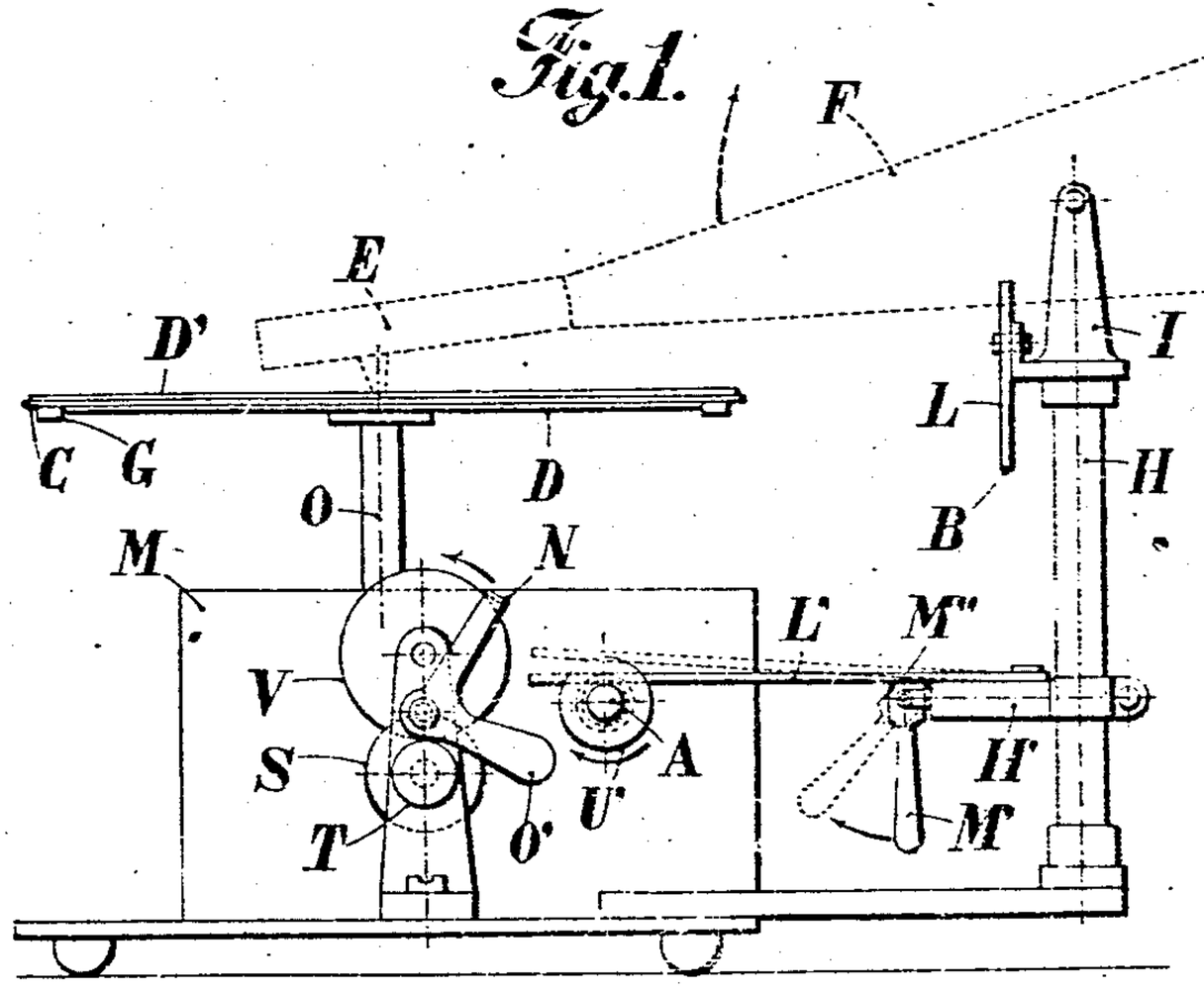


Fig. 3.

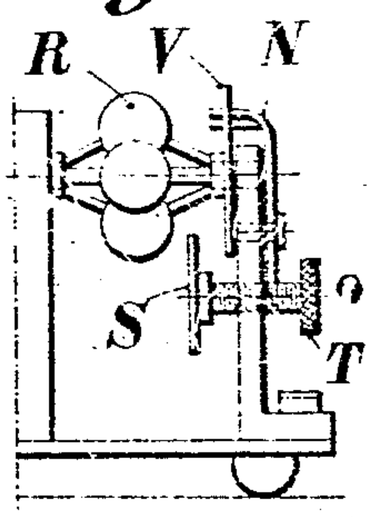


Fig. 2.

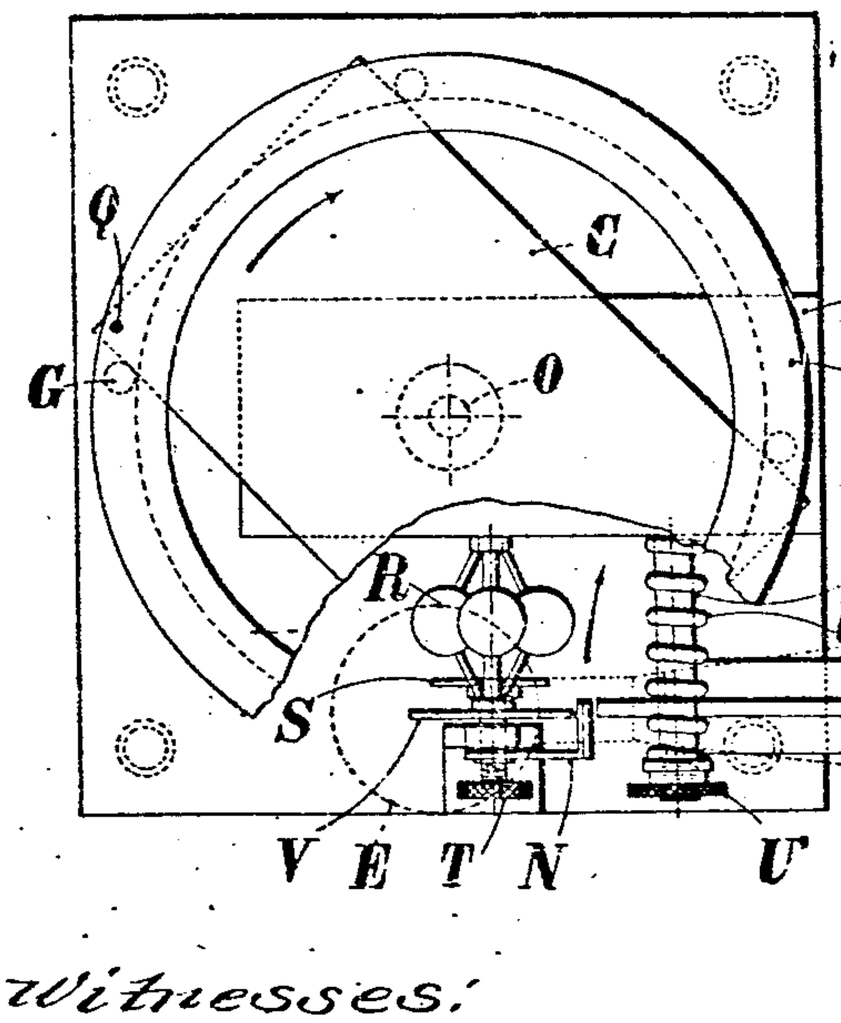
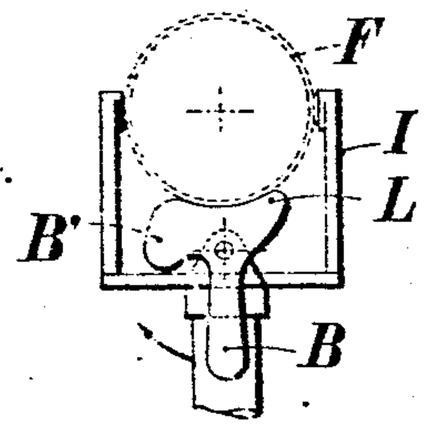
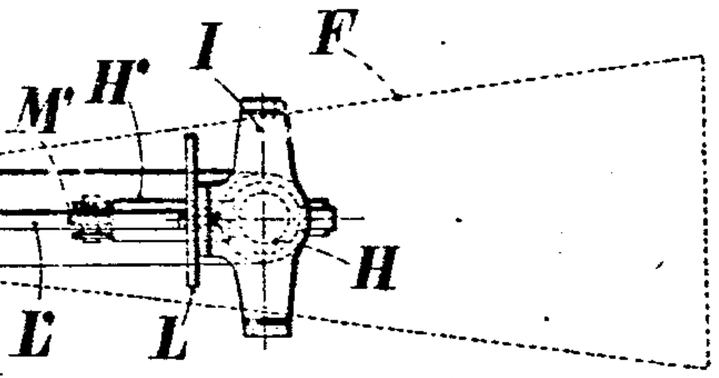


Fig. 4.





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UNITED STATES PATENT OFFICE.

ELISE C. BOULANGER AND JEAN BAPTISTE DELAYE, OF PARIS, FRANCE, ASSIGNORS, BY MESNE ASSIGNMENTS, TO SOCIÉTÉ ARTHUR CERF ET CIE., OF PARIS, FRANCE, A CORPORATION OF FRANCE.

MECHANISM FOR DRIVING THE DIAPHRAGMS OF DISK PHONOGRAPHS.

No. 897,053. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed November 27, 1907. Serial No. 404,047.

To all whom it may concern:

Be it known that we, ELISE CAMUS BOULANGER and JEAN BAPTISTE DELAYE, citizens of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Mechanism for Driving the Diaphragms of Disk Phonographs, of which the following is a specification.

The invention has for its object to produce the displacement of the sound box of disk phonographs in an automatic manner, while dispensing with the costly parts (which are also difficult to regulate) such as are ordinarily employed.

The displacement is ordinarily effected by means of a screw carriage with which there are engaged at will the jaws of a nut fixed to the fitting for the trumpet and serving to displace it. This disengagement of the sound box from the disk is effected in the mechanism described, in a special manner; in addition, an arrangement described permits of recording or reproducing phonographic postcards.

Figure 1 is a side elevation of the apparatus as a whole. Fig. 2 is a plan view of the apparatus shown in Fig. 1. Fig. 3 represents a front elevation of the regulating mechanism. Fig. 4 is a front elevation of the sound box lifting mechanism.

The apparatus consists of an ordinary movement M, one of the shafts O of which is vertical and carries the plate D which at will may receive the disk, or by dispensing with the screw for fixing the disk, permits of arranging on the plate a phonographic postcard for reproduction or recording. With this object the card is placed upon the plate and is held at the center by means of a flat ring D′ provided with small pins G serving to center it upon the plate. This disk is likewise provided with a point Q which enters the card C, and holds it in the normal position necessary to effect its reproduction or recording.

The trumpet F is mounted on a pillar H upon which it is able to rotate; this trumpet carrying a sound box E which in the usual manner is provided with a diaphragm having a stylus which is placed in contact with the disk. The movement of the trumpet to carry the stylus of the diaphragm to and from engagement with the disk or record is obtained by means of a cam fixed to the summit of the pillar carrying the trumpet; it pivots on a shaft in the direction indicated by the arrow in Fig. 4, this operation results in causing the upper part of the said piece to rotate. This part presents the form of a profiled cam, the part B′ being eccentric and causing the trumpet F to rise; when the handle B is turned from right to left, the center of this cam is concave and enables the trumpet to be supported in the position necessitated for the efficient operation of the diaphragm of the sound box. The part L′ of the cam is less eccentric in the drawing but it may present the same form as B′, which would enable the trumpet to be raised whether the handle B is turned to the right or left.

In Fig. 3 the speed regulating mechanism and the braking mechanism are shown. The regulator R is of the ordinary centrifugal ball type and is provided with a disk V against which the shoe N of the brake may be caused to bear at will by acting upon the handle O′. Beneath the shaft of the regulator there is arranged a screw, provided with a plate S against which the disk V strikes and exerts a braking action so as to modify the speed of the regulator.

The mechanism for displacing the sound box which is characteristic of the invention, is as follows: The movement is provided with a shaft A, which in ordinary running controls the driving screw. This shaft is prolonged outside and is provided with a spiral spring U, which surrounds and is able to rotate with the said shaft. At its extremity this shaft carries a screw threaded portion provided with a knob U′ enabling the interval separating the convolutions of the spring and consequently their pitch to be modified. A narrow, flexible strip L′ engages on the one hand between the convolutions and on the other hand is fixed to the arm H′ which is solid with the pillar H which carries the trumpet. When the shaft A rotates, its rotation produces a corresponding rotation of the external part carrying the spring U; the latter rotates and consequently the strip L′ which is engaged between the convolutions follows the same movement; the result is the pivoting of the pillar H and the displacement of the trumpet F.

The method of displacement is very sim-

ple; the pitch formed by the convolutions of the spring may be varied at will and the rocking movement of the trumpet may be varied in such a manner as to cause it to correspond with the separation of the convolutions recorded or to be recorded. The spring U may be replaced by a sleeve, externally screw threaded driven by the shaft A upon which it would be mounted with easy friction, this sleeve will also be adjustable; as before, the strip L′ engaging between the convolutions of the screw of the sleeve and following its movement. The disengagement of the strip L′ from between the convolutions and consequently its independence, is obtained by means of a lever M′, which in rocking about its shaft lifts the strip L′ by means of the eccentric part M″ with which it is provided. The result of this method of driving is to permit of recording disks wherein the interval separating the furrows recorded varies, this interval being caused to vary either by modifying the interval between the convolutions of the spring or by changing the pitch of the screw threaded sleeve.

Having thus described and ascertained the nature of our invention, and in what manner the same may be performed, we declare that what we claim is:

1. A disk phonograph comprising a revoluble support adapted to receive the disks, a diaphragm having a stylus mounted to traverse a disk on said support and movable toward or from the center thereof to describe spiral convolutions thereon, and a feed screw operatively connected to the revoluble disk support and the diaphragm and adjustable with reference to the pitch thereof to cause corresponding variations in the pitch of the convolutions described by the stylus with respect to a disk on said support.

2. A disk phonograph comprising a revoluble disk support, a diaphragm having a stylus adapted to coöperate with a disk upon said support and mounted to move toward or from the center of such disk, and a feed screw operatively connected to the revoluble support and coöperating with the diaphragm and having means for adjusting the pitch thereof to cause the stylus of the latter to describe convolutions of different pitches upon the disk rotating with said support.

3. A disk phonograph comprising a revoluble disk support, a diaphragm mounted to move toward or from the center of a disk on said support and having a stylus, a feed screw operatively connected to the disk support and to said diaphragm for causing the stylus of the latter to describe convolutions of said disk as the latter rotates, and means for varying the pitch of said screw to cause a corresponding variation in the pitch of the convolutions described upon the disk by the stylus of the diaphragm.

4. A phonograph comprising a revoluble record support, a diaphragm having a stylus adapted to coöperate with a record on said support, and a feed screw having one end supported and operatively connected to the record support and embodying a convoluted spring, a part connected to the diaphragm and coöperating with the convolutions of said spring for feeding the stylus of the diaphragm relatively to the record, and means on the opposite or free end of said screw and coöperating with such spring to vary the pitch thereof.

5. A phonograph comprising a revoluble record support, a diaphragm and stylus mounted to coöperate therewith, and a feed device rotatably connected to the record support and comprising a shaft, a helical spring mounted thereon, a part connected to the diaphragm and engaging between the convolutions of said spring to feed the diaphragm relatively to the record, and a device adjustable axially of said shaft for compressing or expanding said spring to increase or decrease the pitch thereof and thereby correspondingly varying the pitch of the convolutions described by the stylus of the diaphragm with respect to the record.

6. A phonograph comprising a revoluble record support, a diaphragm and stylus mounted to coöperate therewith, and a feed device for the diaphragm comprising a shaft rotatably connected to the record support, a helical spring surrounding said shaft and rotatable therewith, a part connected to the diaphragm and coöperating with the convolutions of said spring for feeding the stylus of the diaphragm relatively to the record, and a nut threaded on said shaft and adjustable axially thereof for compressing or expanding the spring to vary the pitch thereof.

7. A phonograph comprising a revoluble record support, a diaphragm and stylus mounted to coöperate therewith, a feed device comprising a convoluted spring rotatably connected to the record support, and a member movable with the diaphragm and adjustable to and from operative position relatively to the convolutions of said spring.

8. A phonograph comprising a revoluble record support, a rotatable standard, a sound trumpet mounted to rotate with said standard and provided with a diaphragm having a stylus to coöperate with a record on said support, a feed screw rotatably connected to the record support, a member connected to rotate with said standard and movable to and from operative position relatively to the feed screw, and a cam pivoted to said standard and coöperating with said member to disengage the latter from the screw.

9. A phonograph comprising a revoluble record support, a rotatable pillar provided with forked bearing arms at its upper end, a

sound trumpet rotatable with said pillar and pivotally attached to the bearing arms thereon so as to swing in a vertical plane, a diaphragm and stylus on the trumpet movable to and from operative position relatively to a record on said support, and a cam pivoted on a part of the pillar to turn in a plane transverse to the axis of the trumpet and coöperating with the trumpet to support the latter and the diaphragm in an operative or an inoperative position.

10. A disk phonograph comprising a revoluble record supporting plate, a ring surrounding the edge of said plate for clamping a phonographic card thereon, pins for centering said ring on said plate, the pins being spaced to receive a phonographic card without perforating the same, and a point arranged within the card receiving space between the centering pins and adapted to perforate such card to cause the latter to rotate with said plate.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ELISE CAMUS BOULANGER.
JEAN BAPTISTE DELAYE.

Witnesses:
DEAN B. MASON,
EMILE KLOTZ.