

No. 725,878.

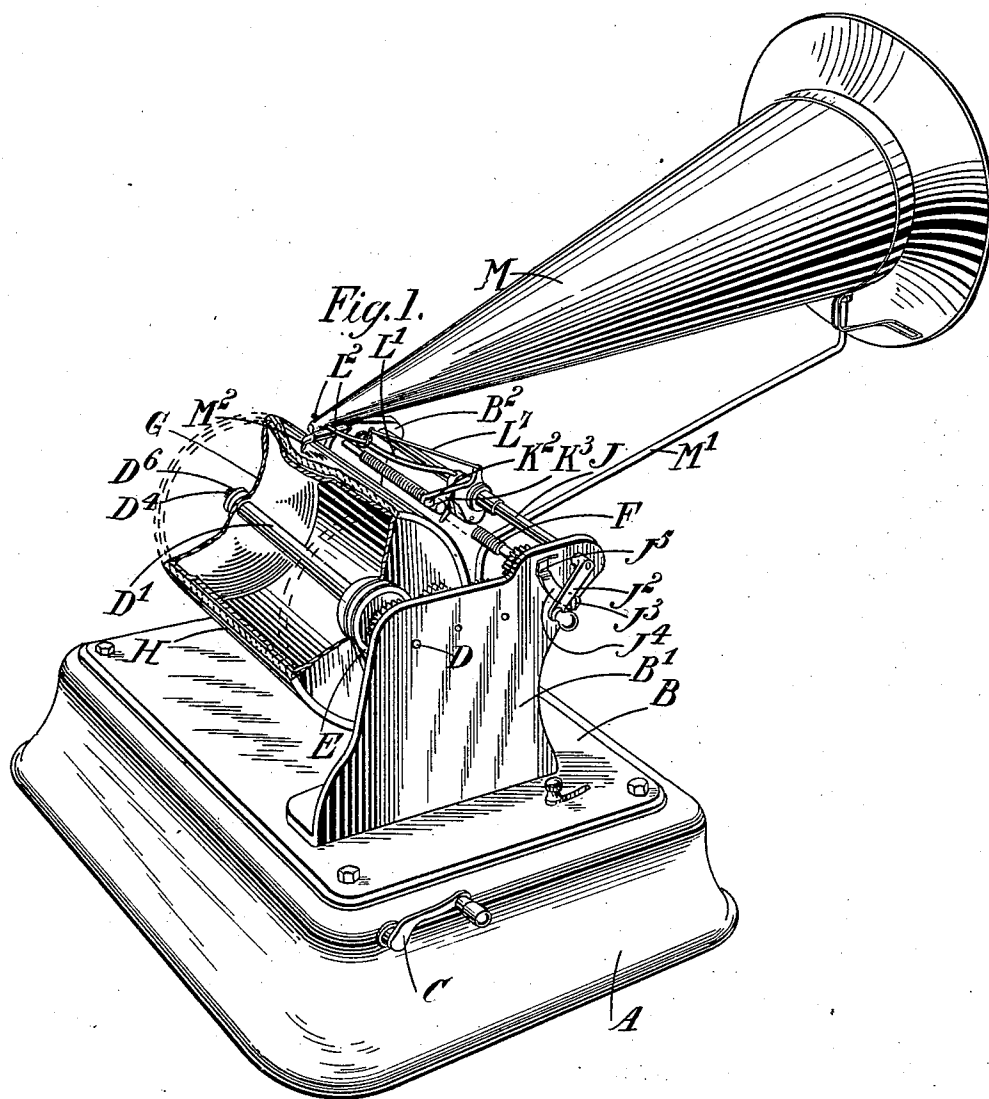
PATENTED APR. 21, 1903.

W. C. RUNGE.
GRAPHOPHONE, PHONOGRAPH, OR THE LIKE.

APPLICATION FILED DEC. 13, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
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NO MODEL.

2 SHEETS—SHEET 2.

FIG. 2.

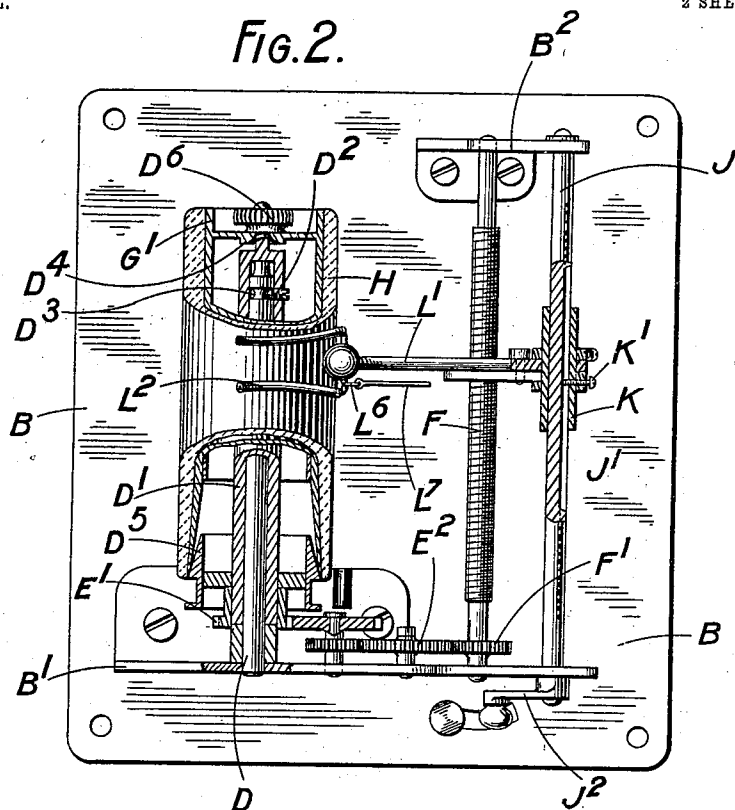
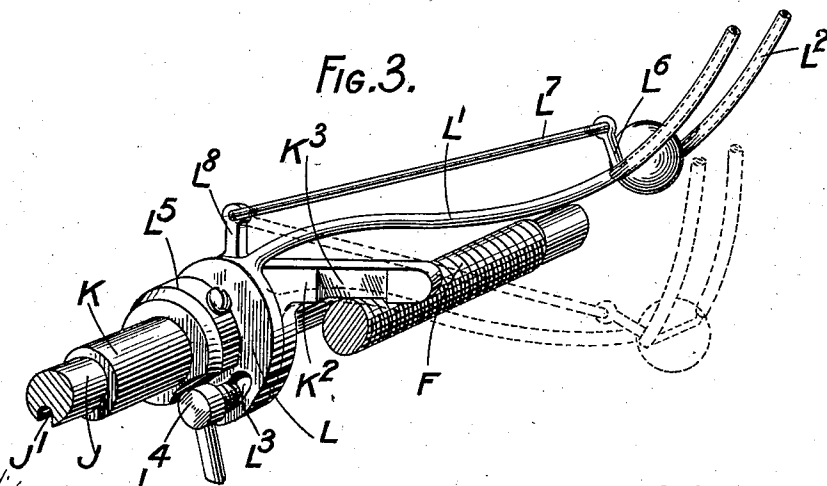


FIG. 3.



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UNITED STATES PATENT OFFICE.

WALTER C. RUNGE, OF LONDON, ENGLAND.

GRAPHOPHONE, PHONOGRAPH, OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 725,878, dated April 21, 1903.

Application filed December 13, 1901. Serial No. 85,824. (No model.)

To all whom it may concern.

Be it known that I, WALTER C. RUNGE, a citizen of the United States of America, residing at London, England, have invented certain new and useful Improvements in or Relating to Graphophones, Phonographs, or the Like, (for which applications for Letters Patent have been made in Great Britain under Nos. 20,920 and 20,921, both dated October 18, 1901,) of which the following is a specification.

This invention relates to graphophones, phonographs, and the like, and has particular reference to instruments which are intended to be used with record-cylinders of various diameters. In instruments of this type the position of the smaller or stylus-carrying end of the sound-trumpet has to be varied to suit the diameter of the record in use, and according to this invention I provide what may be termed an "adjustable locking device," whereby the carrier or guide for the trumpet may be readily fixed in the desired position.

In the accompanying drawings, Figure 1 is a perspective view with parts broken away, showing one construction of graphophone according to this invention. Fig. 2 is a plan of the same. Fig. 3 is a perspective view showing details of the locking device.

With reference first to Fig. 1, A is a hollow base which contains the motor-driving mechanism for the instrument, attached to the under side of a base-plate B. Details of the motor itself are not shown, as they form no part of the present invention. It will be understood that the motor may be, say, a clock-work-train of the ordinary type driven by a spring, which can be wound up by means of the handle C.

Upon the base-plate B are standards B' and B², serving to support the various parts of the machine. Carried upon a spindle D, rigidly held in the standard B', is a sleeve D', free to turn about the spindle D, but prevented from longitudinal movement thereon by means of a screw D², which engages with a groove D³ in the spindle. This sleeve D' forms the axle for the record-mandrel, and it is provided with a screw D⁴ at its outer end and a cone D⁵ near the end adjacent to the standard B'. The sleeve D' is driven from

the motor by means of a belt E, which passes below the base-plate B to a suitable pulley forming part of the motor, and a gear-wheel E', attached to the sleeve D', drives, through a train of wheels E², another wheel F', attached to a leading-screw F, which is mounted free to turn between the standards B' and B².

Two record-mandrels of different diameters are provided, one, the larger, being shown at G in Fig. 1 and the other at G' in Fig. 2. Each of these mandrels is provided at one end with a slightly-coned mouth which fits over the conical portion D⁵, attached to the sleeve D', and at the other end with an end plate, which is furnished with a central hole through which the screw D⁴ passes, a nut D⁶ serving to secure the mandrel in position. The record H is carried friction-tight upon the mandrel in the usual way.

Supported between the standards B' and B² and free to turn therein is a guide-bar J, furnished with a slot J' and having a handle J² attached to it at one end. This handle J² normally rests against a stop J³, Fig. 1, and can be moved over a spring J⁴, which presses against its under surface, this spring being bent, as at J⁵, at one end, so as to receive and hold the handle J² in a definite position when it is moved. Sliding freely upon the guide-bar J is a sleeve K, having attached to it by a screw K' an arm K², part of which is formed as a knife-edge K³ to engage with the thread of the leading-screw F. The screw K' passes through the boss forming part of the arm K² and extends through the sleeve K into the groove J', thus preventing the sleeve from rotating upon the guide-bar J. Mounted upon the sleeve K adjacent to the arm K² is a disk L, supporting a carrier-arm L', the other end of which bears a fork L², serving as a guide for the smaller end of the sound-trumpet M. This sound-trumpet is pivotally supported at its larger end by a bent arm M', and when the instrument is in operation the stylus M², carried at the lower end of the trumpet, rests in the grooves in the record H. As the instrument is made to take records of two diameters, it is necessary that the position of the carrier-arm L' should be adjustable relatively to that of the arm K². This is accomplished by making the disk L free to turn

about the sleeve K and providing it with a slot L³, through which a screw L⁴ passes into a tapped hole in the boss carrying the arm K². If this screw L⁴ be loosened, the carrier-arm L', which is kept from lateral movement on the sleeve K by means of a collar L⁵, may be turned around upon the sleeve as far as the extent of the slot L³ permits. Preferably the slot is of such a length that the carrier-arm L' is in its proper position to suit one record when the tightening-screw L⁴ is at one end of the slot and in a corresponding position to suit the other record when the screw is at the other extremity of the slot. As the arm L' and the sound-trumpet are of different lengths and turn about different centers, the arms L² tend to shift relatively to the adjacent portion of the sound-trumpet when the two members mentioned are moved from one position to the other. This would be disadvantageous, as owing to the fact that the sound-trumpet is tapered or conical there would be a variation in the space between the guiding forked arms and the walls of the trumpet. To obviate this, the forked arms L² are made to turn in the end of the carrier-arm L', so that they may be adjusted to occupy approximately the same position whether the instrument is used with a large record or a small one. This adjustment may be made by hand; but it is preferably accomplished automatically by attaching to the forked arms L² a small rod or crank L⁶, which is linked by a rod L⁷ to a lug L⁸, attached to the back portion of the arm K². By thus linking the forked arms L² to a stationary point eccentric to the axis about which the carrier-arm L' turns it is possible to keep the forked arms L² in approximately the same position relatively to the sound-trumpet whether the trumpet be raised for use with a record of large diameter or lowered for use with a smaller record.

When it is desired to place the instrument out of action—that is, to withdraw the point of the stylus M² out of contact with the record H—the handle J² is moved until it engages with the bent portion J³ of the spring J⁴. This partially rotates the guide-bar J and the sleeve K and lifts the knife-edge K³ out of engagement with the leading-screw F, while the same movement causes the forked arms L² to raise the stylus clear of the record. When in operation, the weight of the carrier-arm L' and the other members mounted upon the sleeve K is sufficient to keep the knife-edge K³ in engagement with the thread of the leading-screw F.

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

1. In a graphophone the combination of a guide for the sound-trumpet, a support whereon said guide is capable of limited rotary movement, means for imparting a lateral movement to the guide and its support, and means for securing said guide in any one of a plu-

rality of radial positions relatively to its support substantially as and for the purpose set forth.

2. In a graphophone the combination of a driven leading-screw, a guide-bar mounted parallel thereto, a sleeve free to slide along but not to rotate upon said guide-bar, an operative connection between the sleeve and the leading-screw, a guide for the sound-trumpet mounted upon the sleeve and capable of limited rotary movement thereon and means for securing the guide in any one of a plurality of radial positions relatively to the sleeve substantially as and for the purpose set forth.

3. In a graphophone the combination of a driven leading-screw, a guide-bar mounted parallel thereto, a sleeve free to slide along but not to rotate upon said guide-bar, an arm mounted upon said sleeve and adapted to engage with the leading-screw, a disk also mounted upon the sleeve and capable of limited rotary movement thereon, a carrier-arm attached to said disk and provided with a forked guide for the sound-trumpet and means for securing the disk in any one of a plurality of radial positions substantially as and for the purpose set forth.

4. In a graphophone the combination of a driven leading-screw, a guide-bar mounted parallel thereto, a sleeve free to slide along but not to rotate upon said guide-bar, an arm mounted upon said sleeve and adapted to engage with the leading-screw, a disk also mounted upon the sleeve and capable of limited rotary movement thereon, a carrier-arm attached to said disk, forked arms pivotally mounted at the free end of the carrier-arm and means for securing the disk in any one of a plurality of radial positions substantially as and for the purpose set forth.

5. In a graphophone the combination of a driven leading-screw, a guide-bar mounted parallel thereto, a sleeve free to slide along but not to rotate upon said guide-bar, an arm mounted upon said sleeve and adapted to engage with the leading-screw, a disk also mounted upon the sleeve and capable of limited rotary movement thereon, a carrier-arm attached to said disk, forked arms pivotally mounted at the free end of the carrier-arm, a link connecting the forked arms with a stationary point eccentric to the axis about which the disk turns and means for securing the disk in any one of a plurality of radial positions substantially as and for the purpose set forth.

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

WALTER C. RUNGE.

Witnesses:

ARCH J. FRENCH,
HARRY B. BRIDGES.