No. 652,710. Patented June 26, 1900.

F. W. BAYNES.

PHONOGRAPH.

(Application filed Feb. 16, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

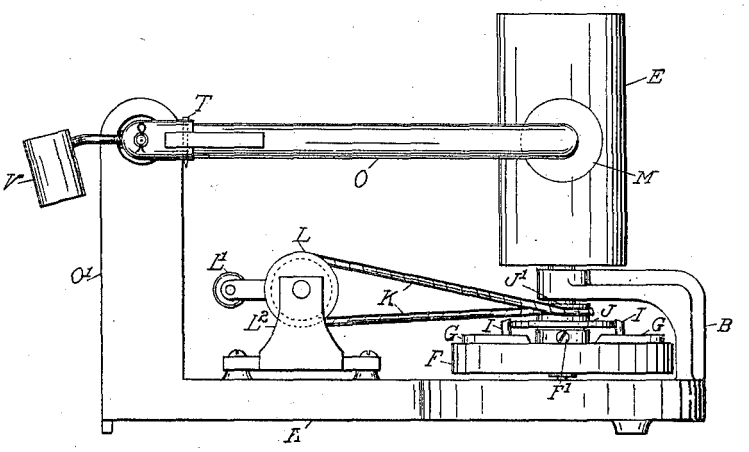

Fig. 2.

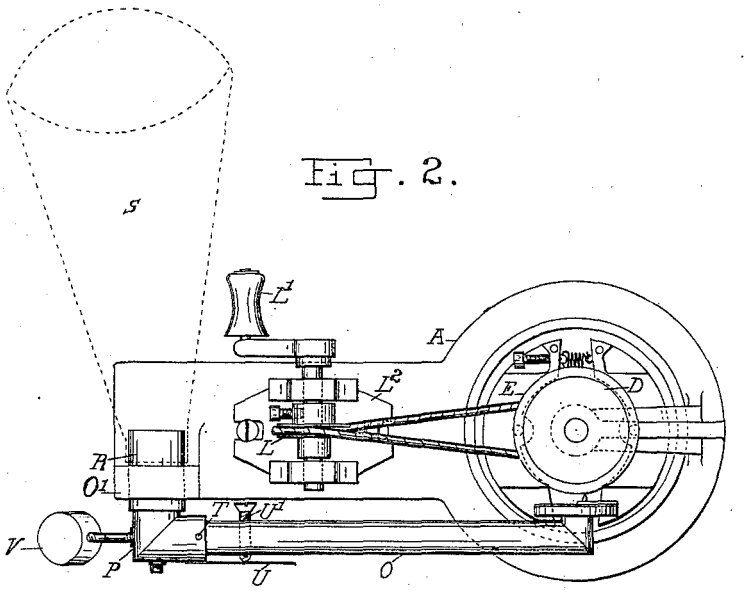

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Fig. 3.

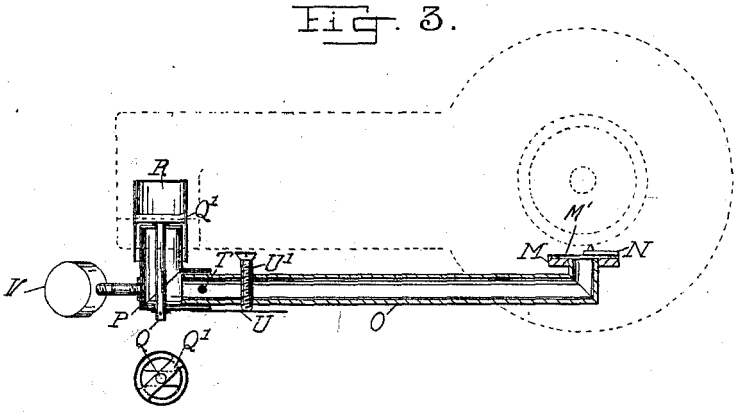


Fig. 4.

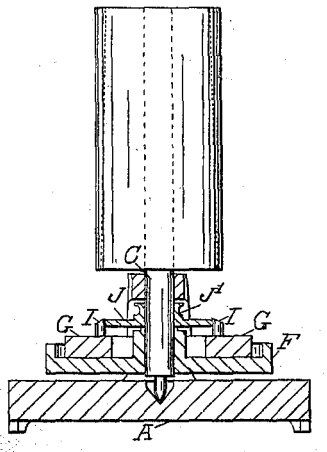
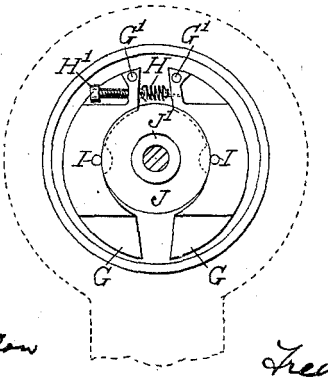


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK WALTER BAYNES, OF LONDON, ENGLAND.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 652,710, dated June 26, 1900.

Application filed February 16, 1899. Serial No. 705,605. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WALTER BAYNES, a subject of the Queen of Great Britain and Ireland, and a resident of 93 Umfreville road, Harringay Park, London, England, have invented certain new and useful Improvements in Phonographs, Gramophones, and the Like; and I hereby declare that the following is a full, clear, and exact description of the same.

My invention relates more especially to an apparatus for reproducing voice and other sounds.

It consists of the novel construction and arrangement of the various parts, whereby a simple and effective machine can be produced.

The invention will be better understood upon reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the apparatus. Fig. 2 is a plan of the same. Fig. 3 is a section of the hollow turnable arm which carries the sound-box. Fig. 4 shows a section of the speed-regulating gear with the record-cylinder in position; and Fig. 5 shows a plan of the same, but with the record-cylinder and its holder removed.

In carrying out my invention I form a suitably-shaped frame A, having at one end a bracket B to support vertically the spindle C of the holder D for the record-cylinder E. The said holder is firmly secured to that part of the spindle C extending above the bracket, so that the record-cylinder can be placed on the holder or removed therefrom with little trouble. Said spindle is pointed at its lower end and takes its bearing upon the base-plate of the frame A in such a manner as to minimize friction as far as possible. A fly-wheel F is affixed by means of a set-screw F′ to the spindle C and carries two movable weights G and G, which are pivoted thereto at G′ and G′. The said weights are drawn toward each other by a spring H, the tension of which can be regulated by a screw H′. Pins I and I, preferably of ebonite, are fixed to the weights G and G for the purpose of engaging the periphery of the disk J, formed on the pulley J′ and loosely arranged upon the spindle C. The said pins on the weights in their normal position grip the disk J, so that when the pulley is revolved motion is imparted to the spindle C and holder D. So long as the speed of the said holder is normal the pins will remain in contact with the disk; but should the holder attain a greater speed than is required for the proper working of the machine the weights G and G will open out farther at their free ends by the centrifugal force set up and so cause the pins I and I to release the disk J, thus breaking the connection with the driving power until the proper momentum is restored. This form of connection between the driving and driven parts, moreover, insures a regular movement to the holder independently of the driving parts.

The disk J is revolved by means of an endless belt K, which is arranged upon the pulley J′, before mentioned, and a pulley L, connected with the turning-handle L′. The said pulley and handle are fixed upon a spindle carried by the adjustable bracket L^2.

The record-cylinders that I use with my apparatus may be formed of any suitable substance; but I prefer them of prepared wax made in the ordinary manner. In the exterior of the cylinder is formed a fine spiral groove from one end to the other. In this groove the impressions of the sound-waves are formed by any suitable recording sound-box carried on the arm O.

When a record-cylinder, placed on the holder, is revolved at a suitable speed, the impressions thereon are transformed into sounds by means of a reproducing sound-box carried on the free end of a light movable tubular arm O and here shown as of the usual type, consisting of the case M, diaphragm M′, and stylus N. This arm is mounted on a standard O′, so as to pivotally swing in a vertical plane and carry the stylus through an arc of contact with the cylinder nearly approaching the vertical. The said arm is furnished with an elbow-piece P, which is pivoted on a spindle Q, projecting from a cross-bar Q′, made rigid in the tube R, to which the resonator or trumpet S (shown in dotted lines in Fig. 2) or a suitable device for conveying the sounds to the ear is attached. The arm O is loosely connected to the said elbow-piece by a pin T in such a manner as to be capable of a

slight lateral movement. It is, however, forced inward by a spring U, projected from and carried by the elbow-piece P, the tension of the said spring being regulated by a screw U', so that the stylus will bear against the record-cylinder at a suitable uniform pressure. A weight V is secured to the elbow-piece P in such a position as to counterbalance the arm O, and thus make said arm very sensitive to the influence of the spiral groove of the cylinder, so that the arm may be freely moved thereby from one end of the cylinder to the other with very little resistance. The same result may, however, be obtained by the employment of a delicate spring fastened at one end to a fixed support near the pivot and the other end engaging with the said arm.

To use the apparatus, it is only necessary to place a cylinder bearing the record upon the holder D, then lower the arm to the starting position if the record begins at the bottom of the cylinder, as is assumed in the drawings, arrange the resonator to intensify the sounds, or suitable flexible tubes to convey them direct to the ears upon the tube R, and turn the handle L' at a suitable speed, when the desired result will be obtained.

It is understood that the term "sound-box" is generally known in the art to indicate any sound-sensitive instrument, whether used as a recorder or reproducer, and it is so intended as used in the specification and claims of this application without limiting the meaning to any particular type, for it is obvious that the spirit of my invention does not reside in this feature; but it is equally well adapted for use with most any other type of sound recording or reproducing instrument, whether employing box, diaphragm, and stylus or not.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, a suitably-journaled record-cylinder, an angular tube pivotally mounted, a hollow spring-pressed arm pivoted to the tube, and a sound-box carried by the arm to travel over the surface of the cylinder, substantially as described.

2. In a device of the character described, a suitably-journaled record-cylinder, a swinging arm comprising two members with an adjustable resilient connection therebetween, and a sound-box carried by the arm to travel over the surface of the cylinder, substantially as described.

3. In a device of the character described, a suitably-journaled record-cylinder, in combination with a swinging arm comprising two members pivoted together, a spring projecting from one member, a set-screw threaded through the other member and bearing on the spring, and a sound-box carried by one of the said members to travel over the surface of the cylinder, substantially as described.

4. In a device of the character described, a suitably-journaled record-cylinder, in combination with a swinging tubular arm comprising an angular member having one arm pivotally mounted on an axis in a plane at right angles to the axis of the cylinder, a second member pivoted to the other arm of the angular member on an axis in a plane at right angles to the pivotal axis of said angular member, a resilient connection between the two members, and a sound-box carried by one of said members to travel over the surface of the cylinder, substantially as described.

5. In a device of the character described, a suitably-journaled record-cylinder, a stationary tube, a spindle axially disposed within the tube in a plane at right angles to the axis of the cylinder, a swinging tubular arm comprising an angular member with one arm thereof telescoped within the tube and journaled on the spindle, a second member telescoped within and pivoted to the other arm of the angular member in a plane at right angles to the spindle, a spring projecting from the angular member, a screw threaded in the second-named member and bearing on said spring, a weight connected to the angular member, and a sound-box carried by the second-named member to travel over the surface of the cylinder, substantially as described.

6. In a device of the character described, a suitably-shaped frame, an angular bracket projecting therefrom, a vertical spindle journaled in the bracket and frame, a fly-wheel rigidly secured to the spindle between the bracket and frame, spring-pressed weights pivoted to the fly-wheel, a pulley having a friction-disk loosely mounted on the spindle, pins projecting from the weights to normally engage the friction-disk, means for imparting motion to the pulley, a record-cylinder secured on the free upper end of the spindle, a standard on the frame, a spring-pressed arm pivotally attached to the standard to swing in a vertical plane, and a sound-box carried by the arm to travel over the surface of the cylinder, substantially as described.

7. In a device of the character described, a suitably-journaled record-cylinder, in combination with a swinging arm comprising two members pivoted together, a spring projecting from one member and bearing on the other member, and a sound-box carried by one of the said members to travel over the surface of the cylinder, substantially as described.

8. In a device of the character described, a tube, a spindle arranged axially therein, an elbow telescoped with the tube and journaled on the spindle, and an arm pivoted to the elbow, substantially as described.

9. In a device of the character described, a tube, a spindle arranged axially therein, an

elbow with one end telescoped with the tube and journaled on the spindle, an arm telescoped with the other end of the elbow and pivoted thereto on an axis in a plane at right angles to the spindle, a screw threaded in the arm, and a spring on the elbow bearing on the screw, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

FREDERICK WALTER BAYNES.

Witnesses:
W. D. ROWLINGSON,
J. WYETH.