No. 785,723. PATENTED MAR. 28, 1905.

V. H. EMERSON.

GRAPHOPHONE REPRODUCER.

APPLICATION FILED SEPT. 7, 1904.

Fig. 1.

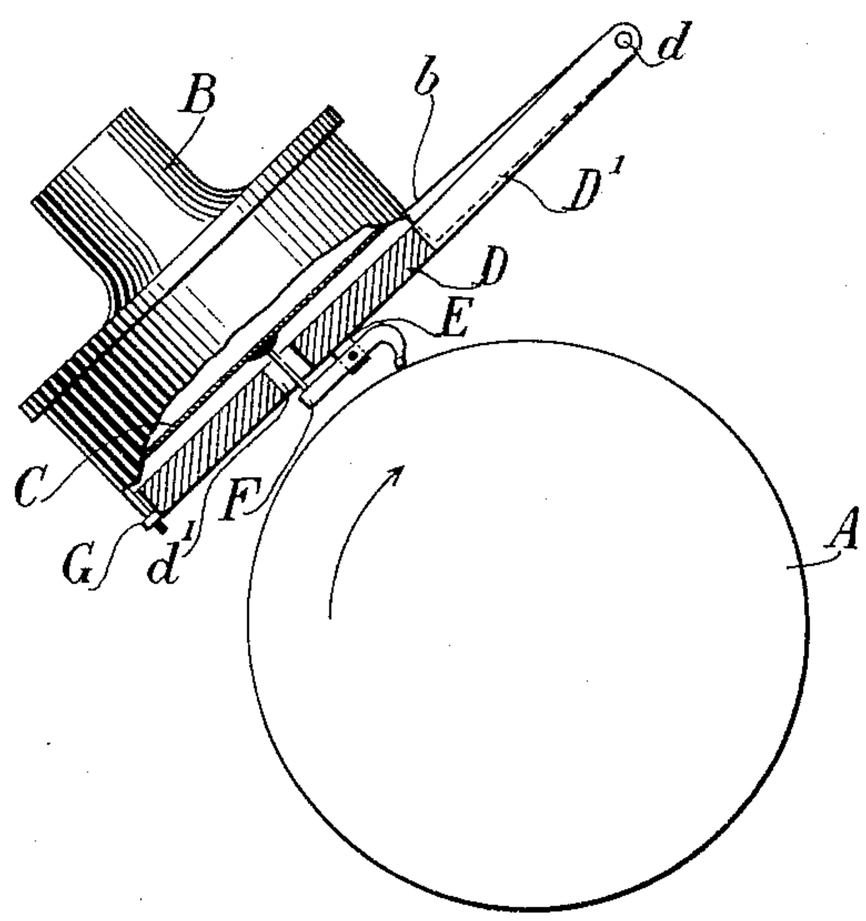
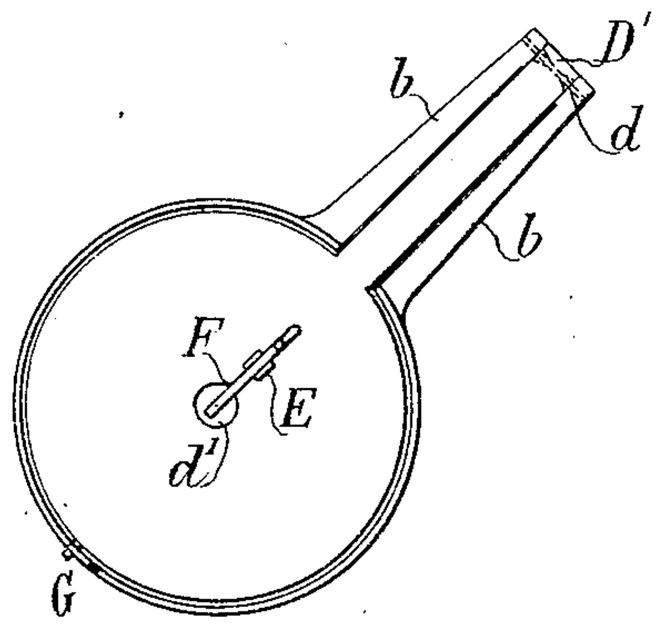


Fig. 2.



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No. 785,723. Patented March 28, 1905.

UNITED STATES PATENT OFFICE.

VICTOR H. EMERSON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE AMERICAN GRAPHOPHONE COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF WEST VIRGINIA.

GRAPHOPHONE-REPRODUCER.

SPECIFICATION forming part of Letters Patent No. 785,723, dated March 28, 1905.

Application filed September 7, 1904. Serial No. 223,648.

To all whom it may concern:

Be it known that I, VICTOR H. EMERSON, a citizen of the United States, residing in Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Graphophone-Reproducers, of which the following is a specification.

My invention relates to floating-weight reproducers or "speakers" for graphophones or other talking-machines.

The invention consists in the construction and arrangement of parts, as hereinafter pointed out and claimed; and the object of my invention is to provide a speaker which will give better audible reproductions and which will not wear out the sound-record to any appreciable extent.

The annexed drawings illustrate one embodiment of my invention.

Figure 1 is a side view, partly broken away, showing my improved speaker in operative relation to the record-cylinder; and Fig. 2 is a face view of the speaker.

A represents a cylindrical record which revolves in the direction indicated by the arrow.

B is the main portion or head of the speaker, provided with the ordinary diaphragm C and mounted, as by a carrier or otherwise, so that it may be fed longitudinally along the surface of the record in any well-known manner.

D is the floating weight, shown as a thin plate circular in form and provided with a prolongation or arm D′, which latter is pivoted, as at *d*, between two bracket-arms *b b*, that extend from the head B. Between the pivot *d* and the center of the floating weight D is located the pillar E, in which is pivoted the stylus-bar F. The outer end of the stylus-bar F, preferably in the form of a gooseneck, carries the reproducing stylus or jewel, and the inner end of the stylus-bar is connected with the center of the diaphragm C, preferably by a link which passes through the central aperture *d′* in the floating weight.

At G is shown a stop consisting of a staple secured to the head of the speaker and engaging a short pin projecting from the floating weight. The hole through the arm D′ where the pivot *d* passes is tapered at each end, as shown in Fig. 2, to permit a slight lateral play of the floating weight and its parts.

It will be noticed that any tangential pull upon the stylus caused by the revolution of the record A is exerted in a direction toward pivot *d* and that the center of gravity of the floating weight, which is ultimately supported by the stylus resting on the record-groove, is almost at the geometrical center of the floating weight, so that the pressure of this weight is exerted upon the stylus with increased leverage. It will also be noted that so long as the sound-record is absolutely and ideally the perfect cylinder and the mechanism of the talking-machine is ideally perfect and the record-groove a true helix the floating weight is inactive, its only function being to maintain a steady and uniform pressure upon the stylus, but that whenever there is any eccentricity of the cylinder or any departure from the ideal conditions then the mass of the floating weight will either be lifted or will swing down or from side to side. In other words, the center of gravity of this floating weight will be shifted vertically or laterally, or both.

Actual comparisons and tests have demonstrated that audible reproductions by means of my new speaker are far clearer and more natural and certain than the reproductions from the same record by any other speaker now known and that whereas with other speakers the record is practically worn away after a few hundred reproductions, so that the audible reproductions become quite faint and harsh, with my new speaker I have obtained many hundred reproductions from the same record without any appreciable diminution in quality or volume.

I have shown and described the particular construction with some fullness, but merely for the sake of clearness, since I do not limit myself to the precise details herein set forth, and parts of my invention may be used to the exclusion of other parts.

One main idea of my invention consists in pivoting the floating weight at a point beyond its periphery, and of course this may be ac-

complished in many ways. Another idea consists in having the "thrust" (caused by the revolution of the cylinder) toward the pivot of the floating weight instead of a "pull" away from it. This has been found to render the device equally sensitive to the normal irregularities of the record and far more sensitive in tracking the record-groove, and the fact that in my construction this floating weight responds to impulses more sensitively means that its reaction upon the record-surface is less violent than heretofore. Hence the record is not worn away.

Having thus described my invention, I claim—

1. The combination with a sound-box and its diaphragm, of a floating weight pivoted to said sound-box at a point beyond the peripheries of said box and weight, and a stylus mounted on said weight and connected with said diaphragm.

2. The combination with a sound-box and a floating weight pivoted together beyond their peripheries, of a stylus-bar pivoted upon said weight between the geometrical center and the pivot-point of said weight.

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

VICTOR H. EMERSON.

Witnesses:
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