J. H. J. HAINES.

GRAPHOPHONE.

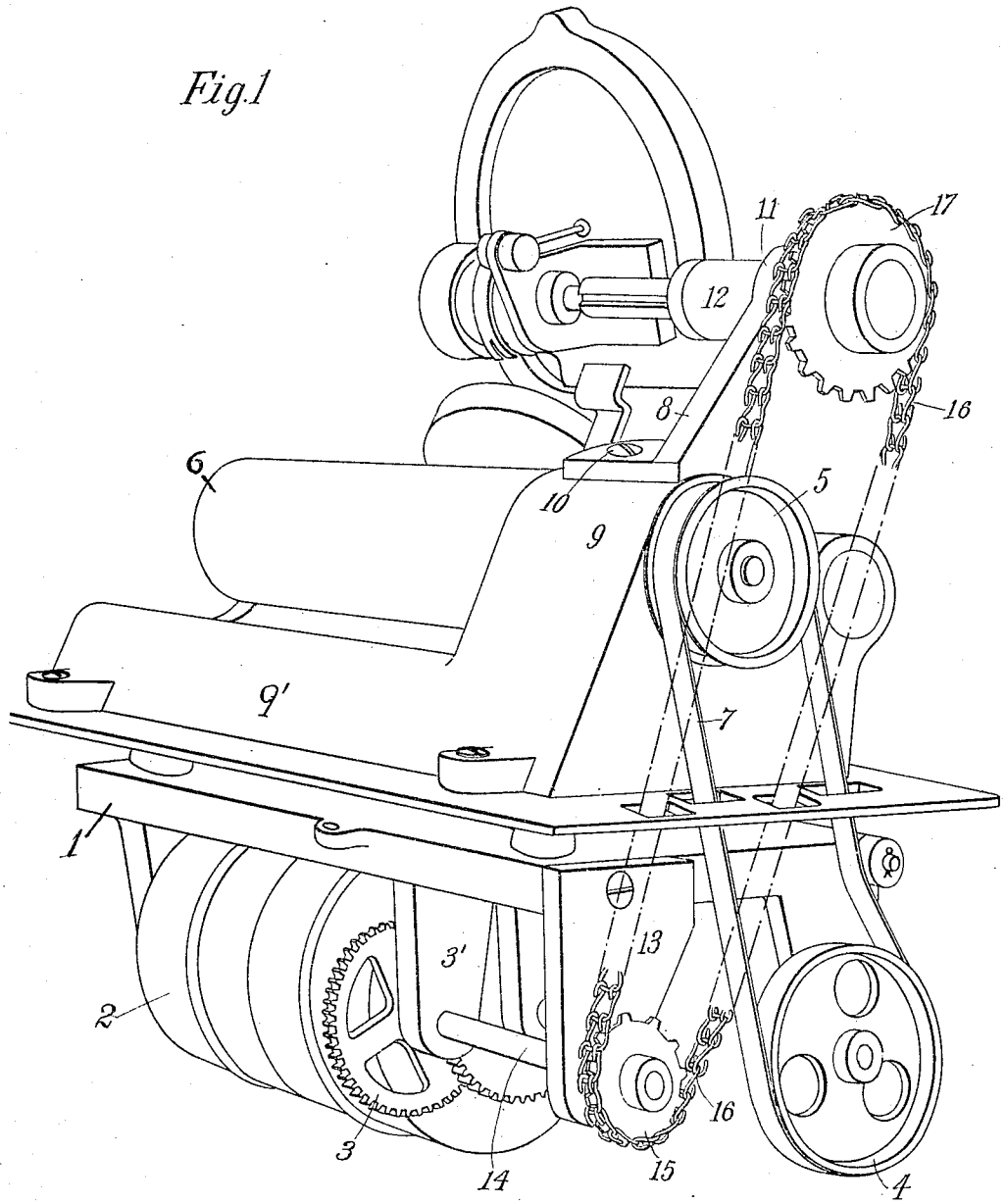
APPLICATION FILED APR. 16, 1906.

920,324.

Patented May 4, 1909.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

H. M. Thompson.

Arth. C. Fitzhugh.

Inventor

John H. J. Haines.

By his Attorneys

Mauro, Cameron, Lewis & Massie

J. H. J. HAINES.

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2 SHEETS—SHEET 2.

Fig. 2

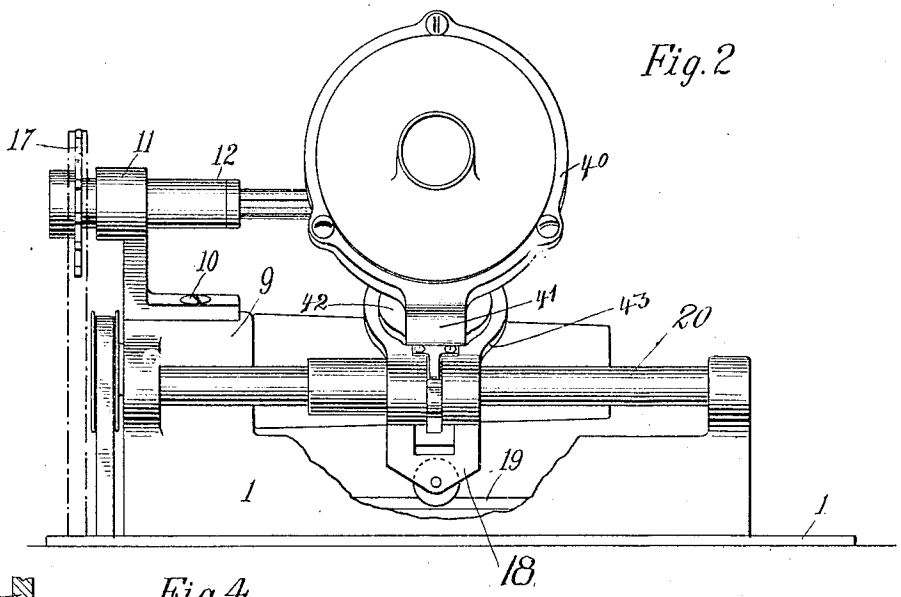


Fig. 4

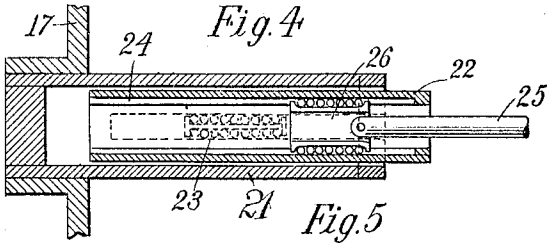


Fig. 3

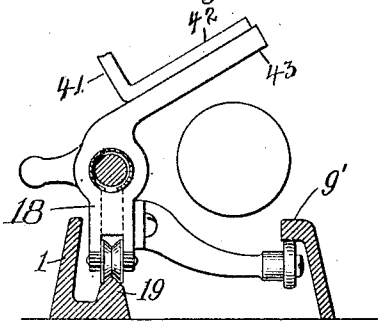


Fig. 5

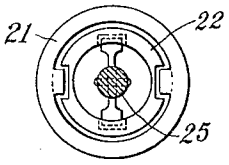


Fig. 6

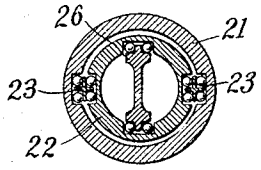
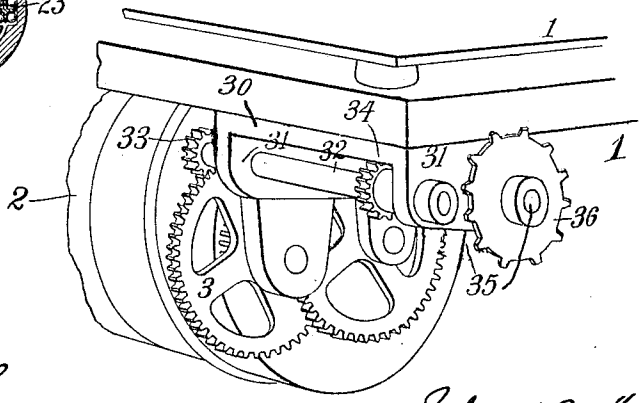


Fig. 7



Witnesses

M. Thompson.

Ruth C. Fitzhugh.

Inventor

John H. J. Haines.

By his Attorneys

Mauro, Cameron, Lewis & Macchi

UNITED STATES PATENT OFFICE.

JOHN H. J. HAINES, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN GRAPHOPHONE COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF WEST VIRGINIA.

GRAPHOPHONE.

No. 920,324. Specification of Letters Patent. Patented May 4, 1909.

Application filed April 16, 1906. Serial No. 312,014.

To all whom it may concern:

Be it known that I, JOHN H. J. HAINES, a citizen of the United States of America, and a resident of New York city, New York, have invented a new and useful Improvement in Graphophones, which improvement is fully set forth in the following specification.

This invention relates to graphophones or other talking machines employing a relay device for increasing the volume of sound reproduced, such as set forth in the Higham patents (Nos. 678,566; 712,930; etc.) and Macdonald patents (No. 796,743, etc.).

One part of the invention is based upon my observation or discovery that, whereas heretofore the friction-pulley or drum constituting a part of said relay device has been driven at a comparatively high rate of speed (about sixty revolutions per minute), the same benefits may be obtained if the said friction device be driven at a comparatively low rate of speed (say about fifteen revolutions per minute). I make use of this discovery or observation by taking power for revolving the friction-pulley from nearer the motor than heretofore, by reason of which I am enabled to apply the relay device to talking-machines having motors of less power than heretofore believed capable of running the machine itself and also the relay device.

The invention consists further of certain features of construction which permit the relay device being applied to a machine not originally constructed for that purpose.

The invention consists also of certain details to be pointed out and claimed.

The invention will be best understood by reference to the accompanying drawings in which—

Figure 1 is a perspective view of the rear of a graphophone, with the casing or box therefor removed, showing the relay device proper in outline only; Fig. 2 is a front view of the same graphophone; Figs. 3–6 are sectional views of details; and Fig. 7 is a modification of Fig. 1.

In the drawings, 1—1 represents the bed-plate of an ordinary graphophone or other talking-machine.

2 is the casing containing the (spring) motor.

3 is a gear wheel being "the first intermediate gear" of the gearing as now commonly employed in talking-machines of this class.

4 represents a pulley driven from the motor, by the intermediate gearing (most of which is not shown), in the usual manner.

5 is a pulley fast on the mandrel 6, and driven from pulley 4 by the belt 7.

All the foregoing parts are as usually employed in graphophones.

8 represents a bracket adapted to be secured upon the upper portion 9 of the casting of the graphophone, as by a bolt 10. At the upper end of this bracket is a bearing 11 in which is mounted the shaft 12 of the relay device.

On the underside of the bed-plate 1—1, I provide a lug 13, having a bearing that registers with the bearing in the lug 3′; and, instead of mounting the gear 3 on the stud-bearing as heretofore, I provide therefor a shaft 14 which is journaled in lugs 3′ and 13.

15 is a sprocket-wheel fast to the outer end of shaft 14, and 16 is a sprocket-chain passing around wheel 15 and the sprocket-wheel 17, which latter is fast on the shaft 12 of the relay-device.

The frame 40 of the speaker has a neck or bracket 41 extending from the edge thereof at practically right angles, and from this neck extends a ring 42 substantially parallel with the speaker 40. Ring 42 fits into the ring 43 that forms a part of the carriage, being inserted and held therein, and detachable therefrom, in the manner well known in the ordinary Edison phonograph construction.

Referring to Figs. 2 and 5, 18 is a member depending from the ordinary carriage of the talking-machine, said lug being provided with one or more rollers which run along the straight edge 19, that rises from the front of the bed-plate 1. A longer bracket arm or member depending from the carriage is

curved so as to extend below the mandrel and engage another straight edge at the rear of the covering of the machine (beneath the portion 9′ of the casting 9, see Fig. 3). While I do not claim the use of rollers (as just explained) as novel with myself, what I believe to be novel is the so-adjusting of the parts that the rollers upon member 18 will bear practically all the weight of the carriage and its parts (including the relay-device), instead of having this weight borne as heretofore by the split-sleeve 20 that encircles the feed screw. The weight of the carrier being thus borne by the rollers, all friction is practically eliminated and function of the split-sleeve 20 is merely to guide and steady the carriage.

Fig. 4 shows not only the employment of anti-friction devices (rollers or ball-bearings) in the telescoping-journal heretofore employed for driving the relay-device, but also the lengthening of the "feathers" or splines. 21 represents the larger section of the journal, which is tubular and mounted in the bearing 11, and has the sprocket-wheel 17 fast upon its outer end. 22 is the intermediate section, also tubular, provided externally with two diametrically opposite longitudinal grooves in which engage the two extended splines 23 projecting inwardly from the bore of member 21. 24 represents two oppositely located internal longitudinal grooves in the bore of the member 22. 25 represents the third member of the telescoping shaft, having its diameter somewhat smaller than the bore of the member 22 in which it is seated, so as to permit member 25 to have a slight sidewise play. At the inner end of this member 25 is pivoted a somewhat extended key 26 provided with roller-bearings and adapted to engage in the internal grooves 24. This construction not only removes any friction of those parts, but likewise any tendency of the parts to jam or bind.

The modification shown in Fig. 7 is for the purpose of applying a relay device to a machine not originally built for one. 30 represents a plate having two lugs 31 in which is journaled a shaft 32 carrying a gear 33 that meshes with the first intermediate gear 3 of the machine, and having at its other end a gear 34 that meshes with a similar gear (not shown) mounted on a stub-axle 35. Fast on the other end of this stub axle is a sprocket wheel 36, which carries a sprocket chain as in Fig. 1. (The object of the additional gearing 34, is to give the proper direction to the revolution of wheel 36). The other parts of the apparatus are as shown in Fig. 1. The plate 30 will be secured to the bed-plate of the talking-machine, as by tapping a screw-threaded hole into the bed-plate and screwing the two together; in like manner a screw-threaded hole will be tapped into the portion 9 of the casting, and the bracket 8 screwed thereto; the relay device proper may be screwed, soldered or otherwise fastened to the carriage of the machine; and, finally, the sprocket-chain is slipped over the sprocket-wheels 36 and 17.

I have described my invention with some particularity, yet for the sake of clearness only, without intending thereby to limit myself to the precise constructions shown, since the same may be modified without departing from the spirit of my invention; for instance I may dispense with sprocket-wheels and chain and employ a shaft with mitered gears. It will also be understood that parts of my invention may be used to the exclusion of other parts.

Having thus described my invention, I claim:

1. The combination with a talking-machine, of a detachable relay-device comprising three parts, namely, a detachable bracket carrying the reproducer and the relatively stationary part of the relay-device proper, another detachable bracket carrying the relatively movable part of said relay-device, and a third detachable bracket carrying means for rotating said movable part.

2. The combination with a talking-machine, of a bracket carrying gears and a sprocket-wheel and adapted to be secured to said talking-machine, another bracket carrying the movable member of a relay-device including a sprocket-wheel adjacent to the first named sprocket-wheel and adapted to be secured to the talking-machine, and the relay-device proper adapted to be secured to the carriage of the talking-machine and actuated through said sprocket-wheels.

3. The combination with a talking-machine, of a relay-device therefor comprising a reproducer and the relatively stationary part of the relay-device proper, a detachable bracket carrying the relatively movable part of said relay-device secured to the frame of the talking-machine, and a detachable bracket carrying means for rotating said movable part.

4. The combination with a talking-machine, of a relay-device therefor comprising a detachable bracket carrying the reproducer and the relatively stationary part of the relay-device proper, the relatively movable part of said relay-device and suitable supports therefor secured to the frame of the talking-machine, and a detachable bracket carrying means for rotating said movable part.

5. The combination with a talking-machine, of a relay-device therefor comprising a detachable bracket carrying the reproducer and the relatively stationary part of the relay-device proper, another detachable bracket carrying the relatively movable part of said relay-device, and suitable means for rotating said movable part.

6. The combination with a talking-machine, of a relay-device comprising the reproducer and the relatively stationary part of the relay-device proper, a detachable bracket carrying the relatively movable part of said relay-device secured to the frame of the talking-machine, and means for rotating said movable part.

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

JOHN H. J. HAINES.

Witnesses:
C. A. L. MASSIE,
JOHN J. PHEELAN