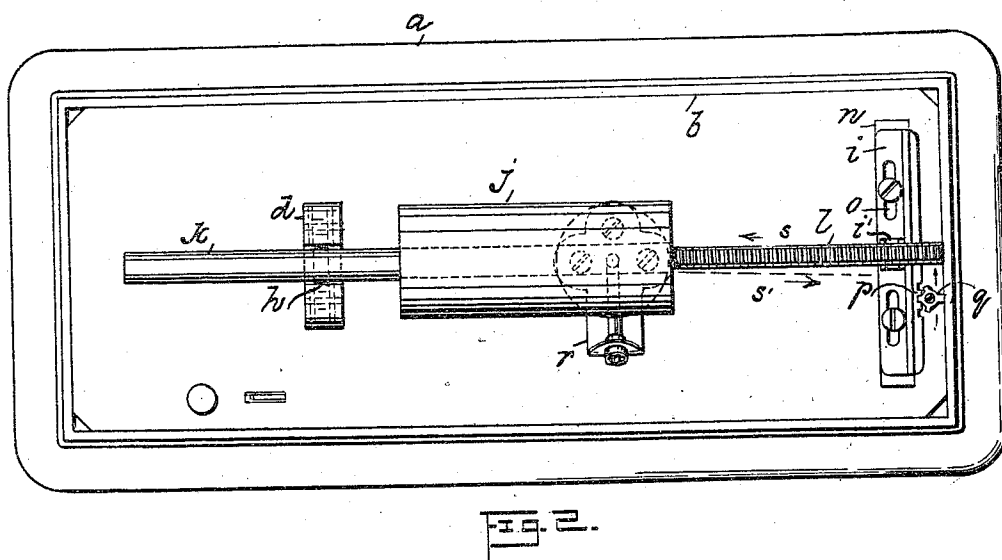
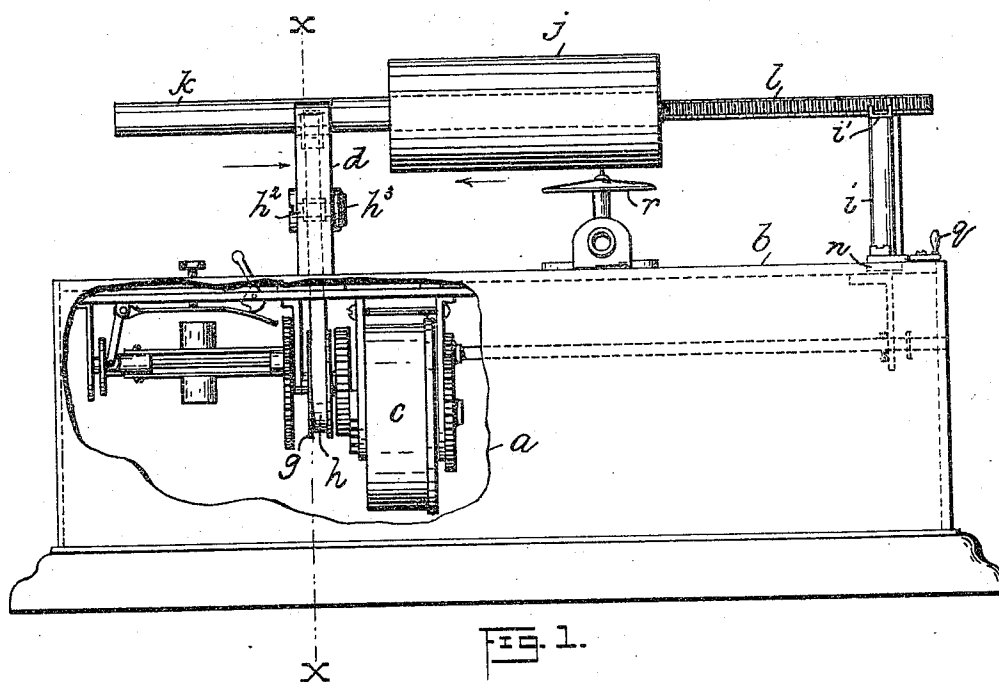


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 2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.

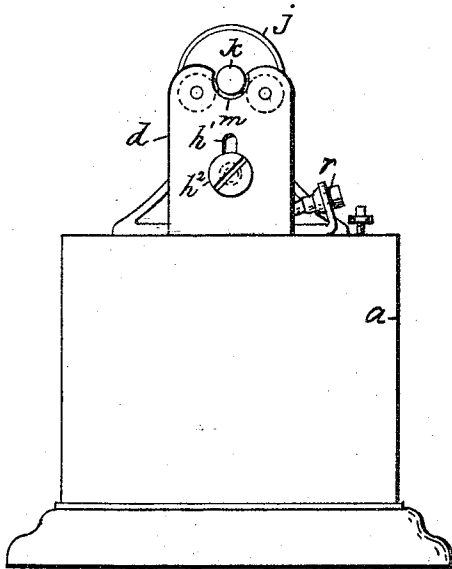


FIG. 3.

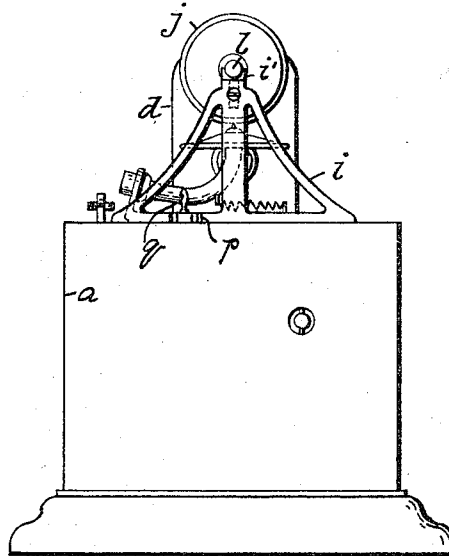


FIG. 4.

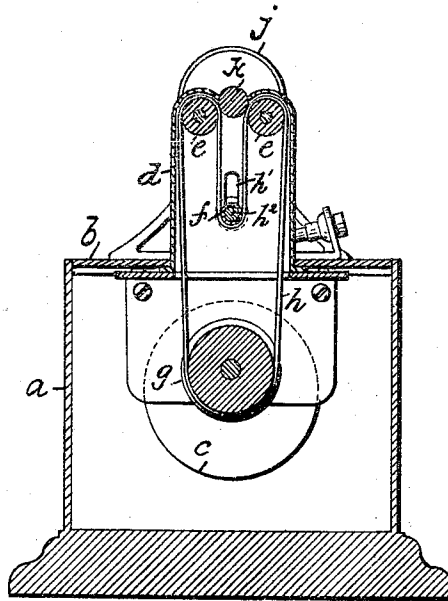


FIG. 5.

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PHONOGRAPH.

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Specification of Letters Patent.

Patented Feb. 8, 1910.

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To all whom it may concern:

Be it known that I, CHARLES M. HUGHES, a citizen of the United States, residing in the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Phonographs, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it pertains to make, construct, and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to increase the simplicity in construction and operation of the phonograph, by decreasing the number of parts of which the machine is composed, by lessening or avoiding the necessity for adjustment of the various parts in practice, and by increasing the convenience of manipulation of the machine. To this end, I have made many changes, all with the objects of increased simplicity, convenience, and efficiency.

Heretofore, it has been customary to rotate the mandrel shaft by directly connecting the same with the motor shaft by suitable pulleys, belts or gear wheels. One feature of my invention is an improvement upon this arrangement; and consists in rotating the mandrel shaft without directly connecting it to the motor shaft by means of pulleys, belts, gear wheels or the like, by causing said mandrel to rest upon and be rotated by frictional engagement with a belt which passes over a pulley on the motor shaft, and over a pair of pulleys and under an idler, which are conveniently secured in a case upon the top of the machine, and in which the mandrel shaft is supported and rotated.

In the accompanying drawings forming a part of this specification, Figure 1 is a side elevation of my improved machine, partly in section. Fig. 2 is a plan view. Figs. 3 and 4 are end elevations of the same; and Fig. 5 is a vertical sectional view taken on lines *x-x* of Fig. 1, looking in the direction indicated by the arrow.

Similar letters of reference refer to like parts throughout the specification and drawings.

In the drawings, *a* represents the case of the machine and *b* the top, to the under side

of which is mounted in any convenient manner, a motor *c* of the usual type. A casing *d* of any desirable shape is secured to the top of the machine, and provided with two small pulleys *e* and an adjustable idler *f*. A driving pulley *g* is secured to the motor shaft, over which the belt *h* passes, which drives and also passes over the pulleys *e* and under the idler *f*, which are located in the casing *d*.

In the drawings, I have shown an elongated slot *h'* in both sides of the casing, through which a stud *h²* passes, upon which is loosely mounted the idler *f*, said stud being provided at one end with a knurled nut *h³*, which together with the stud affords a ready means for changing the vertical position of the idler, in order to adjust the belt *h*. An adjustable bracket *i* provided with a nut section *i'* is conveniently mounted upon the top *b* of the machine.

The phonogram mandrel *j* is mounted upon a shaft *k* and has extending from one side thereof, the feed screw *l* which is in engagement with the nut section *i'*. The bracket *d* in its top side, is cut away at *m*, so as to expose the belt *h*.

From the foregoing description, it will be seen that the phonogram carrying shaft *k* is in no way geared to the motor by gears or belts, as has been customary heretofore, but that the shaft *k* simply rests upon the belt *h* between the two pulleys *e*, and is driven by frictional engagement therewith, and that the other end of the shaft which is screw-threaded, is in engagement with the screw-threaded nut section *i'* by means of which the phonogram cylinder is slowly displaced in the direction indicated by the arrow. This construction enables me to drive the phonogram cylinder without the production of noise which would be detrimental in the operation of the instrument. It also makes the instrument exceedingly sensitive, and capable of reproducing sounds accurately.

The nut section *i'* is preferably swiveled on the top of the adjustable bracket *i* in any convenient manner, and adapted to receive the feed screw *l* which extends from one end of the phonogram mandrel *j*.

n represents a sound box of the usual type, conveniently secured to the top of the machine, and designed to receive a sound horn of the ordinary kind.

From the above description, it will be

apparent that I have produced a phonograph possessing the features of advantage enumerated as desirable, and I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, as obvious modifications will suggest themselves to those skilled in the art.

I claim:

1. In a phonograph, the combination of a motor, a frictionally driven phonogram carrying shaft, and means arranged upon said phonograph and driven by said motor for supporting and driving the phonogram carrying shaft by frictional engagement with said means.

2. In a phonograph, the combination of a motor, a frictionally driven horizontal phonogram carrying shaft, and adjustable driving means arranged upon said phonograph and driven by said motor for supporting and driving said phonogram carrying shaft by frictional engagement therewith.

3. In a phonograph, the combination of a motor, a frictionally driven phonogram carrying shaft, a support provided with a nut section for supporting one end of said shaft, and driving and supporting means operated by said motor for supporting and frictionally driving the other end of said phonogram carrying shaft.

4. In a phonograph, the combination of a motor, a frictionally driven phonogram carrying shaft, a support provided with a swiveled nut section for supporting one end of said shaft, and an adjustable driving and supporting means operated by said motor for supporting and frictionally driving the other end of said phonogram carrying shaft.

5. In a phonograph, the combination of a motor, a pair of pulleys connected by a belt with the motor and a phonogram carrying shaft resting upon and supported by said belt and driven by frictional contact therewith.

6. In a phonograph, the combination of a motor carrying a pulley, a pair of pulleys mounted in a casing and connected by a belt with the pulley on the motor, and a phonogram carrying shaft resting upon and supported by said belt and being driven by frictional engagement therewith.

7. In a phonograph, the combination of a motor, a pair of pulleys and an idler mounted in a casing and connected by a belt with the motor, and a phonogram carrying shaft resting upon and supported by said belt and being driven by frictional engagement therewith.

8. In a phonograph, the combination of a motor carrying a pulley, a pair of pulleys mounted in a casing and connected by a belt with the pulley on the motor, a support provided with a swiveled nut section and a phonogram carrying shaft resting upon said belt and swiveled nut section and being driven by frictional engagement with said belt.

9. In a phonograph, the combination of a spring motor, a casing provided with a pair of pulleys and an idler, said pulleys and idler being connected by a belt with said spring motor, a support provided with a swiveled nut section and a phonogram carrying shaft resting upon said belt and swiveled nut section and being driven by frictional engagement with said belt.

10. In a phonograph, the combination of a motor, a pair of pulleys and an adjustable idler mounted in a casing, and connected by a belt with the motor, a support provided with a nut section and a phonogram carrying shaft resting upon said belt and support and being driven by frictional engagement with said belt.

This specification signed and witnessed this 12th day of November 1909.

CHARLES M. HUGHES.

Witnesses:

FREDK. C. FISCHER,
C. A. ALLISTON.