(No Model.)

T. A. EDISON.

PHONOGRAPH.

No. 513,097. Patented Jan. 23, 1894.

Fig. 1.

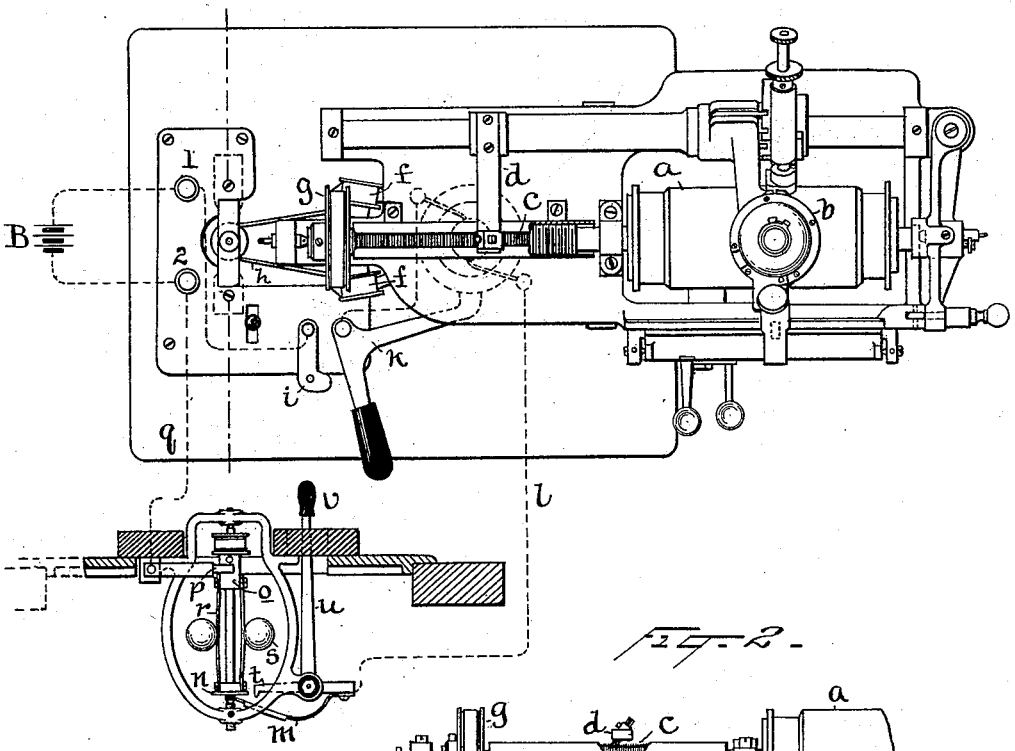
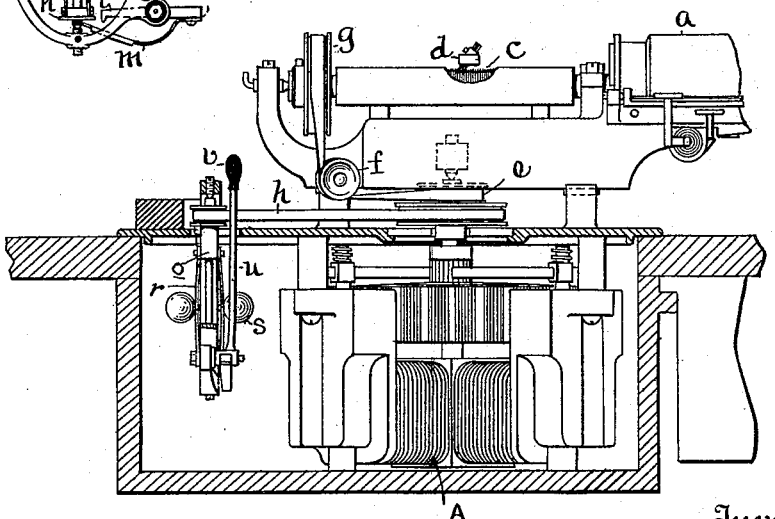


Fig. 2.



Witnesses

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THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 513,097, dated January 23, 1894.

Orginal application filed December 3, 1890, Serial No. 373,413. Divided and this application filed May 24, 1893. Serial No. 475,315. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonographs, (Case No. 965,) of which the following is a specification.

This application is a division of my application filed December 3, 1890, Serial No. 373,413, and relates to the governor for controlling the speed of the phonograph, which governor is shown and described, but not claimed, in said specification.

The object of my invention is to provide the phonograph driven by an electric motor with a simple and effective governing device for the regulating speed of the motor, and consequently that of the phonograph, the operation being performed by the use of a centrifugal governor, which, when a certain speed is reached, opens the circuit of the motor, means being provided for altering or adjusting the point at which the circuit will be broken.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of the phonograph, with the governor shown in elevation, detached from the machine, and with the electrical connections and electric motor illustrated in diagram; Fig. 2, a front elevation showing the motor and governor and a portion of the phonograph itself.

The phonograph shown is of the usual character, and it is not necessary to describe it in detail further than to state that *a* is the phonogram blank, *b* the frame which carries the recorder and reproducer, *c* the feed screw, and *d* the feed arm. The phonograph is operated by the electric motor A, from whose shaft a belt *e* extends, passing under pulleys *f*, *f*, and over a pulley *g* on the shaft of the feed screw. A belt *h* also extends from a pulley on the motor shaft to the movable portion of the centrifugal governor.

B represents the battery for supplying current to the electric motor. The circuit from the battery goes to the binding posts 1 and 2, and the motor circuits are as follows: From binding post 1 to the stationary contact *i* of the switch *k*, from the movable part of the switch *k* to the motor, from the other terminal of the motor by wire *l* to the spring *m* which rests against the disk *n* at the lower part of the movable portion of the governor, thence through the governor to the sleeve *o* at the upper part thereof, and by spring *p*, which rests on sleeve *o*, to wire *q*, and so to binding post 2. The details of the field magnet and armature connections of the motor are not shown.

The governor is of the ordinary form, the lower ring having the disk *n* being connected by springs *r*, carrying balls *s*, with the upper sleeve *o*, the result being that as the speed of the motor increases, the disk *n* is caused to rise, and when it has risen to a sufficient extent will leave the spring *m* and open the motor circuit. The spring *m* follows the rising disk *n* until it reaches the adjustable stop *t*, which checks any further spring movement of the spring *m* and permits the disk *n* to leave the spring. The position of the stop *t* is adjusted by means of the arm *u* which extends up through the upper plate of the phonograph and terminates in a handle *v*. By this adjustment of the position of stop *t*, the point at which the circuit is broken is determined. This provides a very simple and convenient arrangement for the purpose, and by arranging both the spring *m* and the spring *p* so that they both bear upon the movable portion of the governor, the necessity of taking the current through the bearings of the governor from a movable to a stationary part thereof is avoided, and a constant and reliable electrial connection is always assured.

I do not claim in this application any features of construction of the phonograph itself, of the motor, or of the relative arrangement and connections of the motor and phonograph, this application being confined solely to the governor, which I have been required by the Patent Office to embody in a separate application.

What I claim is—

1. The combination with a phonograph and an electric motor for operating the phonograph, of a centrifugal governor mechanically connected with the motor, and two contacts in the motor circuit independent of the bearings of said governor and bearing on the movable portion of the governor, one of said con-

tacts being arranged to make and break contact with said movable part as the same is moved, substantially as set forth.

2. The combination with a phonograph and a motor for operating the same, of a centrifugal governor mechanically connected with said motor, a disk connected with the moving part of said governor, a stationary contact in the motor circuit normally resting on the face of said disk, and another stationary contact in the motor circuit resting on the movable part of said governor, substantially as set forth.

3. The combination with a phonograph and a motor for operating the same, of a centrifugal governor mechanically connected with the motor, a spring contact in the motor circuit normally resting upon the movable part of said governor, a stop in the path of spring movement of said contact, and another connection with said governor, completing the motor circuit, substantially as set forth.

4. The combination with a phonograph and a motor for operating the same, of a centrifugal governor mechanically connected with the motor, a spring contact in the motor circuit normally resting upon the movable part of said governor, an adjustable stop in the path of spring movement of said contact, and another connection with said governor, completing the motor circuit, substantially as set forth.

5. The combination with a phonograph and a motor for operating the phonograph, of a centrifugal governor mechanically connected with the motor, a disk connected with the movable part of said governor, a spring in the motor circuit normally resting on said disk, a pivoted arm in the path of spring movement of said spring, means for raising and lowering said arm, another spring contact resting on the movable part of the governor, and an electric circuit including the motor, the governor and both said spring contacts, substantially as set forth.

6. The combination with a phonograph and a motor for operating the same, of a centrifugal governor mechanically connected with the motor, said governor having a disk and a sleeve united by springs and carrying governor balls, a stationary contact normally bearing on said disk, another stationary contact connected with said sleeve, and an electric circuit including the motor, the governor and both said contacts, substantially as set forth.

This specification signed and witnessed this 22d day of May, 1893.

THOS. A. EDISON

Witnesses:
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