

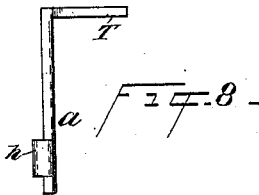
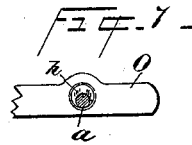
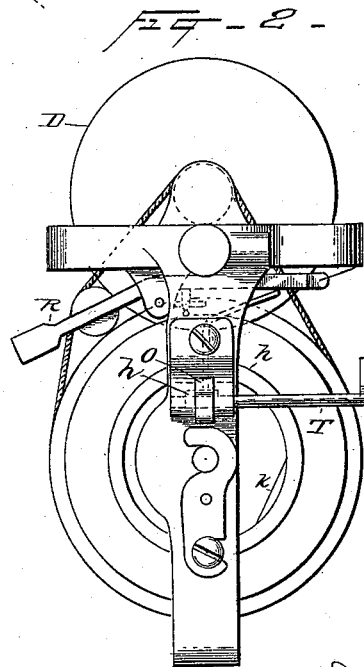
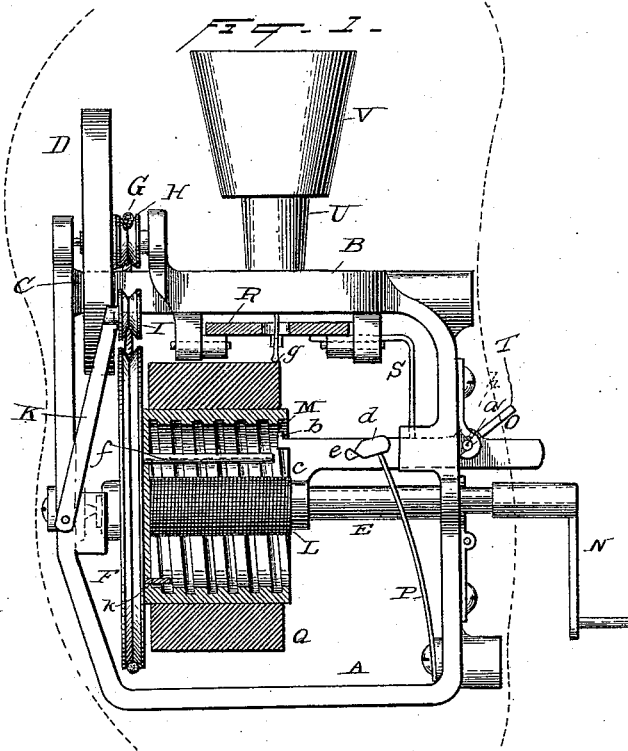
(No Model.)

2 Sheets—Sheet 1.

T. A. EDISON.
PHONOGRAPH DOLL.

No. 456,301.

Patented July 21, 1891.



Witnesses

Norris D. Clark,
[Signature]

Inventor

Thomas A. Edison

By his Attorneys

[Signature]

(No Model.)

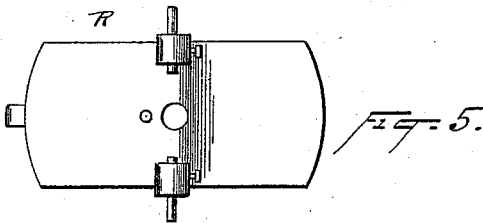
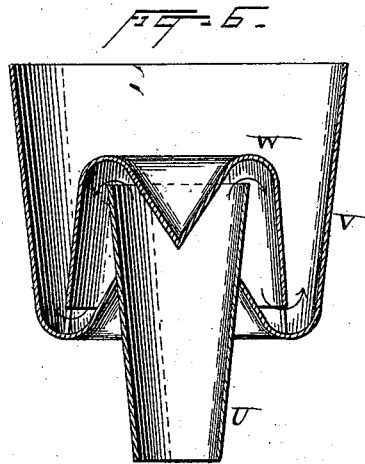
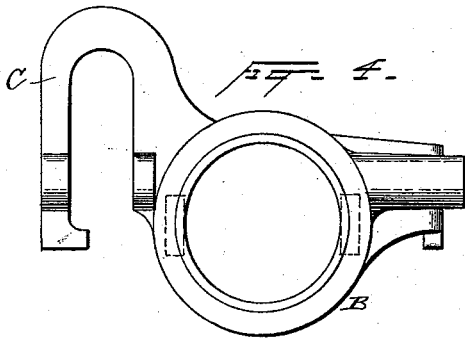
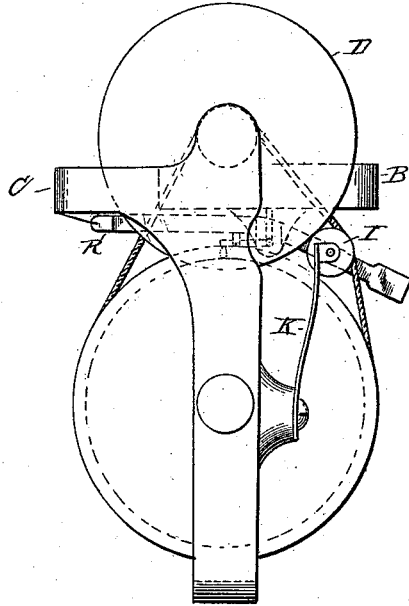
2 Sheets—Sheet 2.

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FIG. 3



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UNITED STATES PATENT OFFICE.

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

PHONOGRAPH-DOLL.

SPECIFICATION forming part of Letters Patent No. 456,301, dated July 21, 1891.

Application filed July 30, 1890. Serial No. 360,347. (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. 867,) of which the following is a specification.

My invention relates mainly to reproducing phonographs designed to be inclosed in dolls or other toys and bearing a short sound-record intended to be reproduced as often as required.

More especially my invention relates to that class of phonograph set forth in my patent, No. 423,039, dated March 11, 1890, in which the revolving shaft has no longitudinal movement, but the phonogram-cylinder has an advancing movement on the shaft.

The object of my invention is to produce a phonograph of this general character which shall be simple and cheap of construction, and convenient and effective in operation; and to this end my invention consists in the various novel devices and combinations of devices employed by me in accomplishing the above-named object, as hereinafter set forth and claimed.

My invention is illustrated in the accompanying drawings.

Figure 1 is a view in elevation and partial vertical section of a phonograph embodying my invention; Fig. 2, a side elevation of the same; Fig. 3, a similar elevation looking from the other side; Fig. 4, a top view of the frame which carries the operating parts; Fig. 5, a bottom view of the weight which supports the reproducing point; Fig. 6, a vertical section of the resonator; Fig. 7, a detached side view of a portion of the feeding-bar, and Fig. 8 a detached view of the operating portion of the tracking device.

A is the supporting-frame, at the top of which is formed a collar B for supporting the diaphragm, and at one side a U-shaped projection C, which forms bearings for the fly-wheel D.

E is the shaft, supported in bearings at sides of the frame and provided near one end with the grooved pulley F, from which a cord G extends over the pulley H on the shaft of the fly-wheel.

I is an idle-pulley, carried by a spring-arm K, and pressing against the belt G for keeping the same tight.

Upon the shaft E is sleeved the phonogram-cylinder, which consists of a metal drum closed at one end and provided with a hub L sleeved on the shaft. The interior of the drum is formed with a coarse screw-thread M, and the exterior of the hub L is formed with a much finer screw-thread. The shaft E is provided with a handle N, extending outside the frame and outside the body of the doll or other figure in which the instrument is placed for turning said shaft. Also extending outside is the bar or feeding-arm O, through which passes the spindle *a*, and which has at its inner end on one side a short tooth *b*, for engaging with the coarse screw-thread M, and on the other side a tooth *c*, for engaging with the fine screw-thread L. A spring P, secured at one end to the frame, has at its free end a beveled head *d*, which engages with one side or the other of a beveled projection *e* on the bar O, according to the position in which said bar is placed. A pin *f* extends from the pulley F through the back of the drum, so that when said pulley is turned with the bar O engaging either of the screw-threads the drum is turned, and also advances along the shaft.

The sound-record is upon the cylinder Q, which is preferably made of a hard wax or wax-like material, the same being placed on the revolving drum in the manner set forth in my patent above referred to.

The reproducing-point *g*, connected with the diaphragm, is pivotally supported upon the balanced weight R. The use of such a weight forms no part of my present invention, the same being claimed in my application filed July 30, 1890, Serial No. 360,345.

Attached to the bar O is a pin S, which extends up under the weight R. The bar O is also arranged to have a slight longitudinal movement, which is communicated to it by means of the turning-spindle *a*, whose handle T extends outside the doll or other figure, and which is formed with a cam or eccentric *h* within the aperture of the bar O, so that the turning of the spindle T moves the said bar longitudinally. The dotted line in Fig. 1 illustrates the outline of the figure in which the phonograph is inclosed.

Inside the phonogram-cylinder, at its inner end, is formed a cam-surface *k*, for a purpose to be presently explained.

I provide the phonograph with a resonating-chamber for increasing the loudness of the reproduced sound, the same consisting of a funnel *U*, attached directly above the diaphragm, an external circular chamber *V*, attached to the funnel *U*, and an intermediate partition *W*, one portion of which is formed into a cone entering the upper part of the funnel *U*, while another portion is placed between said funnel and the exterior chamber *V*, encircling said funnel, so that a circuitous path is provided for the sound between resonating-walls, as indicated by arrows in Fig. 6.

The operation of these devices is as follows: In the position shown in Fig. 1 the phonogram-cylinder is at the end of the reproduction, and in order to bring it into position to repeat the record once more the protruding end of the bar *O* is depressed, which disengages the tooth *c* from the fine screw-thread and brings the tooth *b* into engagement with the coarse screw-thread, the spring-catch *d* passing to the other side of the beveled projection *e*, and so holding the bar in this position. The same movement of the bar raises, by means of the pin *S*, the weight *R* and the reproducing-point carried by said weight, so that by turning the crank *N* the phonogram-cylinder is moved rapidly along the shaft with the reproducing-point out of contact with the record. When the cylinder reaches its outermost position, the cam-surface *k* strikes the tooth *b* and depresses the inner end of the bar *O*, so as to bring the tooth *c* into engagement with the fine screw-thread and allow the reproducing-point to again come into contact with the record, the catch *d* now engaging with the upper side of projection *e*, as before. By now turning the crank *N* the cylinder is moved back slowly to the position indicated in the drawings, the record being reproduced in this operation. If at the commencement of the reproduction the sound is found to be indistinct, so as to indicate that the point is not exactly in line with the record, the spindle *T* is turned slightly, which has the effect of moving the whole cylinder longitudinally very slightly on the shaft, so as to bring the point again into position. This furnishes an effective and readily-operated tracking device for bringing the point into the track of the record.

What I claim is—

1. In a phonograph, the combination, with the revolving shaft, of the phonogram-cylinder provided with two screw-threads of different sizes and the feeding-arm adapted to engage with either of said screw-threads, substantially as set forth.

2. In a phonograph, the combination of the phonogram-carrying drum having an internal screw-thread and a hub externally screw-

threaded, said screw-threads being of different sizes, and the feeding-arm adapted to engage either of said screw-threads, substantially as set forth.

3. In a phonograph, the combination, with the phonogram-cylinder having two screw-threads of different sizes, of the feeding-arm adapted to engage with either of said screw-threads, and the spring-catch for holding said arm in either position, substantially as set forth.

4. In a phonograph, the combination of the internally-screw-threaded drum, the externally-screw-threaded hub, the said screw-threads being of different sizes, the pivoted bar adapted to engage either of said screw-threads, the projection on said bar, and the flat spring having a head adapted to engage with either side of said projection to hold said bar in either position, substantially as set forth.

5. In a phonograph, the combination, with the phonogram-cylinder having two screw-threads, of the feeding-arm adapted to engage either screw-thread, and an extension from said arm engaging the operating-point to raise the same off the record, substantially as set forth.

6. In a phonograph, the combination, with the internally-screw-threaded drum and the externally-screw-threaded hub, of the feeding-arm placed between the same and adapted to engage with either of them and the cam-surface on the interior of said drum for tripping said arm, substantially as set forth.

7. In a phonograph for dolls and like purposes, a tracking device for the reproducing-point, extending outside the doll or other figure, so as to be operated from the exterior, substantially as set forth.

8. In a phonograph, the combination, with the stationary operating-point, of the movable phonogram-cylinder and means for moving said cylinder slightly in a longitudinal direction for bringing said point into the track of the record, substantially as set forth.

9. In a phonograph, the combination, with the stationary operating-point and the movable phonogram-cylinder, of the feeding-arm engaging said cylinder, and the cam and operating-handle for moving said arm to adjust the record with reference to said point, substantially as set forth.

10. The combination, with a reproducing-phonograph, of the funnel extending therefrom, the resonating-chamber entered by said funnel, and the circular partition surrounding the end of said funnel within the chamber, whereby a circuitous sound-passage is provided, substantially as set forth.

This specification signed and witnessed this 5th day of July, 1890.

THOS. A. EDISON.

Witnesses:

E. COURAN,
W. PELZER.