

(Model.)

T. A. EDISON.  
PHONOGRAPH REPRODUCER.

No. 394,106.

Patented Dec. 4, 1888.

FIG. 1.

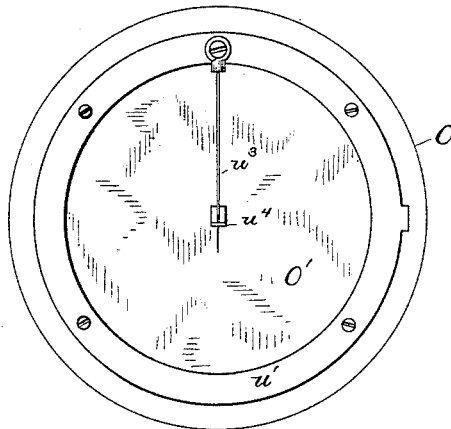
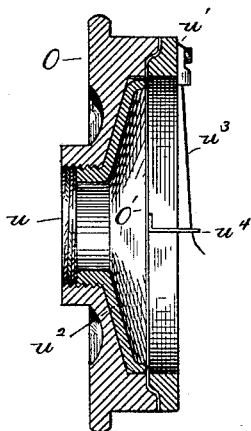


FIG. 2.



Witnesses.  
*E. S. Rowland*  
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# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY, ASSIGNOR TO  
THE EDISON PHONOGRAPH COMPANY, OF NEW JERSEY.

## PHONOGRAPH-REPRODUCER.

SPECIFICATION forming part of Letters Patent No. 394,106, dated December 4, 1888.

Original application filed November 26, 1887, Serial No. 256,189. Divided and this application filed March 2, 1888. Serial No. 265,888. (Model.)

### *To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonograph-Reproducers, (Case No. 761, division of Case No. 741.) of which the following is a specification.

The object I have in view is to produce an efficient reproducing-instrument for phonographs; and my invention consists in the several novel features and combinations, as fully hereinafter explained, and pointed out by the claims.

In the accompanying drawings, forming a part hereof, Figure 1 is a bottom or rear view of the reproducer on an enlarged scale, and Fig. 2 a sectional view of the same.

O is a metal plate forming the body of the reproducer. It has an opening,  $u$ , passing centrally through it, to which the listening-tube of the phonograph is applied. The plate O is recessed at its back, and has stretched across it a diaphragm,  $O'$ , which is preferably a thin animal membrane. This diaphragm is secured in place by a ring,  $u'$ , which is secured to the back of the plate O, while the diaphragm is stretched by another ring,  $u''$ , which has a neck screwing into the opening  $u$  of the plate, and is capable of being turned by a tool, so as to stretch the diaphragm  $O'$  more or less. To one edge of the ring  $u'$  is secured a fine spring-wire,  $u^3$ , which is long enough to reach from the point where it is secured to the center of the diaphragm, and has its inner end turned downwardly, as shown, to follow the spiral line of indentations upon the phonogram. The inner end of this spring-wire  $u^3$  is attached to the center of the diaphragm by a strip,  $u^4$ , of rubber. The tendency of the spring-wire is to bend away from the diaphragm, so that it strains the small rubber strip  $u^4$  and places the diaphragm under an initial tension. The movement of the point of the wire  $u^3$  in reproducing is so slight that the strain is

never wholly removed from the rubber strip  $u^4$ , and hence the diaphragm is always under tension, which tends to draw it outwardly at the center. This makes the instrument exceedingly sensitive and capable of reproducing sounds accurately. The end of the wire  $u^3$  being rounded and burnished, it will not obliterate the phonogram-record, even though that record is made in quite soft material.

I have found that by connecting the reproducing-point with the diaphragm by a strip of elastic material—such as rubber held under tension—the proper wave motion is transmitted to the diaphragm, but the scratching noises which seem to require molecular transmission are largely obliterated.

What I claim is—

1. A phonograph-reproducer having, in combination, a diaphragm and a reproducing-point connected with the diaphragm by a strained elastic strip, substantially as set forth.

2. A phonograph-reproducer having, in combination, a diaphragm and reproducing-point, a spring tending to throw the reproducing-point away from the diaphragm, and an elastic strip connecting the point with the diaphragm, whereby a spring-tension will always exist between the point and the diaphragm, substantially as set forth.

3. A phonograph-reproducer having, in combination, a diaphragm and a spring-wire secured at its outer end and projecting toward the center of the diaphragm and turned to form a reproducing-point, said spring-wire tending to spring away from the diaphragm, and a strip of india-rubber connecting the end of the spring-wire to the center of the diaphragm, substantially as set forth.

4. A phonograph-reproducer having, in combination, a diaphragm of animal membrane, a reproducing-point, a spring tending to throw the reproducing-point away from the diaphragm, and an elastic strip connecting said point with the center of the diaphragm, substantially as set forth.

5 A phonograph - reproducer having, in combination, a diaphragm of animal membrane, a ring for stretching such diaphragm, a reproducing - point, a spring tending to throw the reproducing-point away from the diaphragm, and an elastic strip connecting said reproducing-point with the diaphragm, substantially as set forth.

This specification signed and witnessed this 20th day of February, 1888.

THOS. A. EDISON.

Witnesses:

WILLIAM PELZER,  
E. C. ROWLAND.