

(No Model.)

T. A. EDISON.

BURNISHING ATTACHMENT FOR PHONOGRAPHS.

No. 382,414.

Patented May 8, 1888.

FIG. 1.

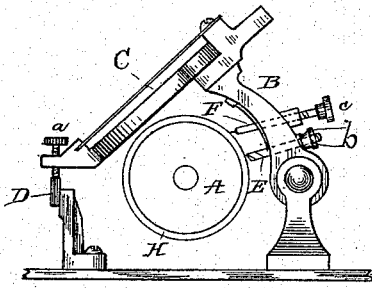


FIG. 2.

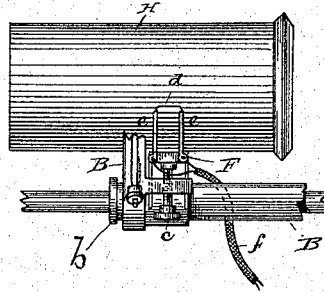


FIG. 3.

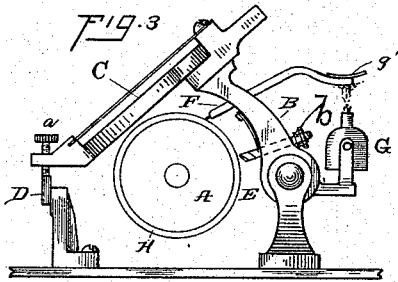
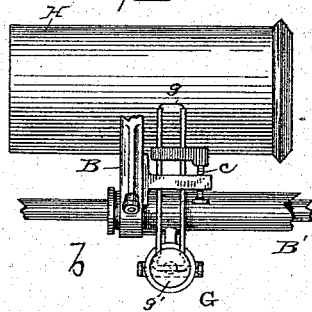


FIG. 4.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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

## BURNISHING ATTACHMENT FOR PHONOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 382,414, dated May 8, 1888.

Application filed November 26, 1887. Serial No. 256,190. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonographs, (Case No. 742,) of which the following is a specification.

The object I have in view is to improve the articulation of the phonograph. This I find can be accomplished by burnishing with a heated burnishing-tool the wax or wax-like surface of the phonogram-blank. The effect is to smooth out the tool-marks produced in turning the surface to a true cylinder, and to reduce greatly the scratching noise heard in the recorder, and consequently made a part of the record which is reproduced by the reproducer.

I provide the phonograph itself with the heated burnishing-tool as well as with the cutting-tool, the former acting after the latter upon the surface. Both tools are adjustably carried by the holding-arm or guide-sleeve of the phonograph, so that they can be brought into proper relation with the surface and made to work at the same time upon it. The burnishing-tool may be a piece of platinum wire heated by the electric current, or it may be a piece of wire which is heated by a small alcohol-lamp and conducts the heat to the burnishing-point of the tool.

In the accompanying drawings, forming a part hereof, Figure 1 is an end elevation of the phonogram-cylinder and phonogram-blank with the holding-arm and the cutting and burnishing tools carried thereby; Fig. 2, a top view with the holding-arm broken away; Fig. 3, a view similar to Fig. 1, showing a modified form of the heated burnishing-tool; and Fig. 4, a view similar to Fig. 2, showing the modified form of burnishing-tool.

A is the revolving phonogram-cylinder.

B is the traveling holding-arm mounted on the guide-sleeve B' and carrying the recorder and reproducer, the arm and sleeve being fed laterally by a lead-screw on the shaft of the phonogram-cylinder, as will be well understood. The frame C, carried by the arm B, rests upon the guide-rest D, it being adjustably supported thereon by a set-screw, a.

Through the arm B passes the shank of the

cutting-tool E, adjustable by means of the nut b. There is also carried by an extension on the arm B the heated burnishing-tool F. This is adjustable by means of the screw c, and acts upon the phonogram-blank surface after the cutting-tool.

In Figs. 1 and 2 the burnishing-tool is composed of a platinum strip or wire, d, to which heavier wires or rods e lead. The rods e are connected by a flexible cord, f, with a battery for supplying current for heating the strip or wire d. The strip or wire d is heated to a dull red, and is made to bear lightly on the wax or wax-like surface of the phonogram-blank.

In Figs. 3 and 4 the heat is produced by a small alcohol-lamp, G, which is carried by the guide-sleeve B' and travels with the holding-arm. The burnishing-tool in this latter arrangement may be a silver or aluminium wire, g—say one-eighth of an inch in diameter and reduced to one thirty-second of an inch at its burnishing end, such end being heated by conduction from the lamp. The end of the wire g above the flame of the lamp may carry a plate, g', so that the tool can be adjusted without disturbing the influence of the lamp. The wire, except at the flame and the burnishing end, may be covered by a poor conductor of heat, such as asbestos.

The phonogram-blank H is a cylinder slipping over the phonogram-cylinder A. It has a surface of wax or a wax-like material on a base of harder material—such as plaster-of-paris. The phonogram-blank may be turned and burnished before being placed on the phonogram-cylinder of the phonograph; but it is preferred to have the cutting and burnishing tools upon the phonograph itself, since the phonogram-blank can then be turned true to the cylinder of the machine, and can have the record removed from its surface, so that the phonogram-blank can be used over again repeatedly.

I do not claim in this application the process of preparing the wax surface of a phonogram-blank by burnishing the same, or first cutting and then burnishing the same, since I propose to file a separate application for patent upon such process. Nor do I claim herein a phonogram-blank having a recording-surface of wax or a wax-like material, or having such a surface

and a backing of tougher material, since this is covered by my application for Patent No. 734, Serial No. 252,964; neither do I claim herein such a phonogram-blank when the base  
 5 is of a molded material—such as plaster-of-paris—since this is covered by my application No. 740, Serial No. 256,188; neither do I claim herein a phonogram-blank having a burnished wax or wax-like surface, since this will be  
 10 made the subject of a separate application for patent.

What I claim is—

1. In a phonograph, the combination, with  
 15 a wax-surfaced blank, of a burnishing-tool mounted upon the machine in position to act on the wax surface of the blank, substantially as set forth.

2. In a phonograph, the combination, with  
 20 the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a heated burnishing-tool mounted upon the machine in position to act on the wax surface of the blank, substantially as set forth.

25 3. In a phonograph, the combination, with

the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a cutting-tool and a burnishing-tool mounted upon the machine in position to act in succession on the wax surface of the blank, substantially as set forth. 30

4. In a phonograph, the combination, with the revolving phonogram-cylinder and the traveling holding-arm, of the cutting-tool and the heated burnishing-tool moving with such  
 35 traveling holding-arm, substantially as set forth.

5. In a phonograph, the combination, with the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a burnishing-tool  
 40 mounted upon the machine in position to act on the wax surface, and electric-circuit connections for heating the tool by an electric current, substantially as set forth.

This specification signed and witnessed this 22d day of November 1887.

THOS. A. EDISON.

Witnesses:

WILLIAM PELZER,  
 E. C. ROWLAND.