

(No Model.)

E. H. AMET.
GRAPHOPHONE.

No. 562,753.

Patented June 23, 1896.

FIG. 1.

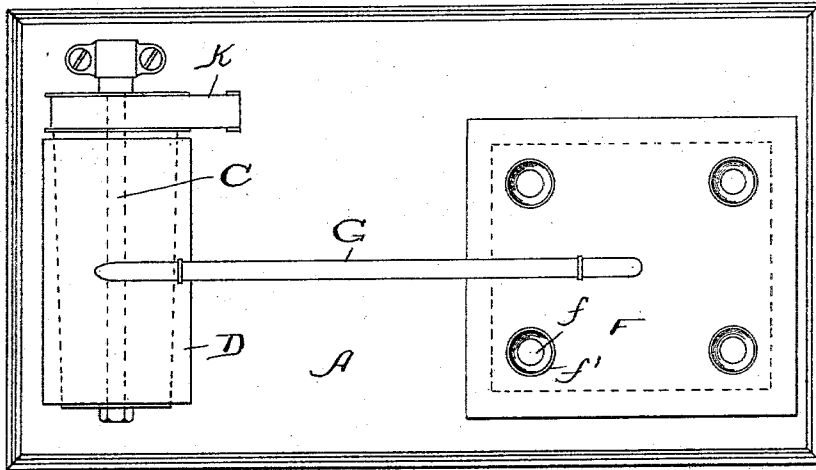


FIG. 2.

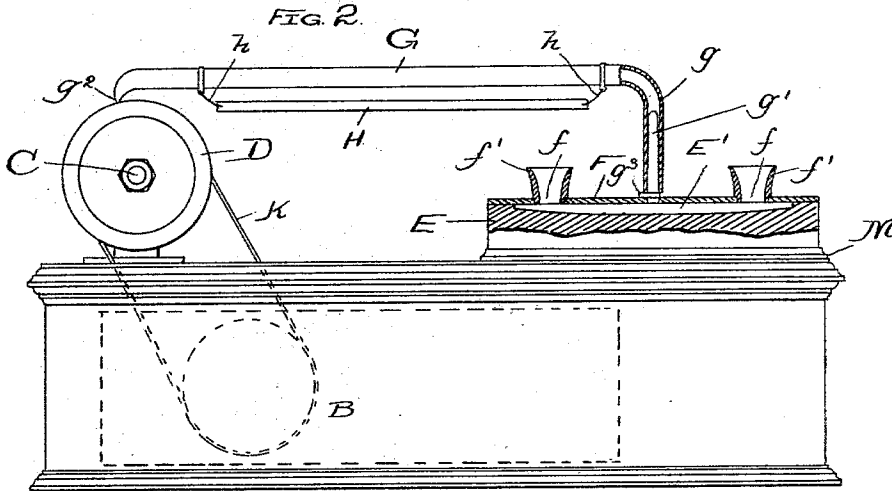


FIG. 3.

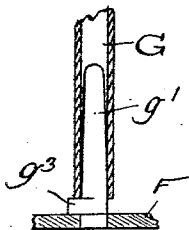
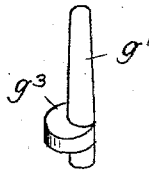


FIG. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD H. AMET, OF WAUKEGAN, ILLINOIS, ASSIGNOR OF ONE-HALF TO
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GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 562,753, dated June 23, 1896.

Application filed September 16, 1895. Serial No. 562,645. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. AMET, a citizen of the United States, residing in Waukegan, in the county of Lake and State of Illinois, have invented a new and useful Improvement in Graphophones, of which the following is a specification.

My invention relates to improvements in graphophones or devices designed for reproducing articulate speech, music, or other sounds recorded in phonograms or sound-writings.

The object of my invention is to provide a device or mechanism for this purpose of a simple, cheap, and durable construction, by means of which such phonograms or sound-writings may be accurately and perfectly reproduced without any attendant disagreeable scraping, grating, or interfering noises produced by the action of the mechanism. I have discovered that this result may be accomplished; and herein my invention consists by means of a simple sounding-board of wood, suitably secured by glue or otherwise to a base-block, in connection with a simple arm of glass or other suitable material resting at one end on the sounding-board and at the other end resting on the phonogram-cylinder or sound-record, the end of the glass tube or arm resting upon the sound-record being drawn to a fine point, so as to follow the spiral groove or thread of the sound-writing record on the phonogram cylinder or blank, and the end of the glass arm or tube resting on the sounding-board being adapted to permit the arm to swing laterally to enable its outer or pointed end to properly feed from one end to the other of the phonogram-cylinder as said cylinder revolves. By this simple means I have found by experiment that articulate speech, songs, instrumental or other music recorded in sound-writings or phonograms may be accurately and perfectly reproduced with great loudness, clearness, and distinctness, and free from all harsh or interfering sounds.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts,

Figure 1 is a plan view of a graphophone or sound-writing reproducing mechanism embodying my invention. Fig. 2 is a side elevation partly in section. Fig. 3 is an enlarged sectional view showing the connection of the arm with the sounding-board, and Fig. 4 is a perspective view of the connecting-pin.

In the drawings, A represents the frame, the same being preferably in the form of a box or case inclosing the spring or other motor B, by which the shaft or holder C for the phonogram blank or cylinder D is driven or rotated.

E is a block, preferably of wood, secured preferably to the top of the box or frame A. F is the sounding-board secured to the block or support E, preferably by glue. The block or support E is hollowed out or furnished with a cavity E', so that the sounding-board F, which is preferably square or rectangular in shape, will rest upon the block only at its margin or outer edges. The sounding-board is preferably about four inches by five inches in size, and I prefer to make it about one-sixteenth to one-eighth of an inch in thickness of dry seasoned wood, such, for example, as cedar.

G is the arm, of glass or other suitable material, one end of which rests upon the phonogram-cylinder and the other upon the sounding-board. The arm is preferably hollow and made of a simple single glass tube by bending it at one end to form a right-angle socket g to fit over the upright pin g' , which is secured to the sounding-board, preferably near its middle or center, and by bending and drawing its other end to a fine point g^2 to adapt this pointed end to follow the thread or spiral groove of the sound-writing. The pin g' is preferably of wood and is provided with a flange, shoulder, or collar g^3 at one side of the pin, so that the lower end of the glass tube will only rest, touch, or have a bearing or support at one side or at a short arc of its circumference; that is to say, touching only at the eccentric collar or shoulder g^3 of the pin g instead of touching all the way around the pin. This is clearly illustrated at Figs. 3 and 4. The shank of the pin g' is inserted through a

suitable hole formed in the sounding-board to receive it, and the pin should also be glued to the sounding-board if it is made in a separate piece therefrom, as shown in the drawings. The point or pointed end g^2 should project at an angle from the tube or arm G, as illustrated in the drawings, so that only the extreme end or point of the arm will touch the sound-writing cylinder when this end of the arm is resting on the cylinder. The connecting-pin g' should be made long enough or project up into the hollow bent arm of the tube far enough to prevent the tube or arm from tilting sidewise when resting on its two bent ends, one bent end on the sounding-board and the other bent end on the phonogram-cylinder or sound-writing. The hollow tube is preferably in diameter about the size of an ordinary lead-pencil and about eight inches in length. In other words, its length should be sufficient to permit the necessary radial or laterally-swinging movement of the arm on its pivot, to allow its pointed end to follow the thread or spiral groove of the sound-writing from one end of the phonogram-cylinder to the other without causing the arc thus described to carry the point g^2 much to either side of a vertical plane passing through the axis of the phonogram-cylinder.

The phonogram-cylinder, sounding-board, and the laterally-swinging arm G should preferably be so combined together that the point g^2 of the arm will always remain slightly to the left of a vertical plane passing through the axis of the phonogram-cylinder, as illustrated in the drawings, as the point g^2 will thus better follow the spiral groove or thread of the sound-writing.

The point g^2 of the arm G, which follows the thread of the sound-writing, is preferably formed by simply bending the end of the tube and drawing it to a point while the glass is heated in the ordinary manner that a glass blower or worker operates, the extreme point naturally forming itself into a smooth and rounded shape. The glass tube or arm G, suitably furnished with the bent end g and with the point g^2 , can thus be made at a very small cost, not exceeding, for example, a few cents apiece, as the glass tube itself is very cheap, and as it only requires a few moments' labor to bend its end g at an angle to form the pivot of the arm and to bend and draw its other end to form the point g^2 , no expensive rounding or polishing of the point being required, as is the case where such points are formed of jewels or other hard substances which are not shaped to the required form by the natural process or law, as is the case in my invention, and the sounding-board and its block can also be produced at an exceedingly small cost, not exceeding a few cents.

To increase the weight of the hollow arm or tube G and cause its pointed end g^2 to better follow the phonogram groove or thread automatically and of itself alone without the inter-

vention or aid of any feed-screw or other mechanism, I preferably attach to it a weight H, the same consisting, preferably, of a bar of metal. The weight H is preferably attached to the arm G by means of two pieces of thread or string or rubber h , tied around the glass arm G at points slightly farther apart than the length of the weight H, so that the two strings h will incline toward each other and thus prevent the weight having any injurious vibratory or pendulum action.

The laterally or horizontally swinging arm G may be returned from one end of the phonogram-cylinder to the other after it has followed it from end to end, in order to again reproduce the sound writing or record on the phonogram-cylinder, by hand or by any suitable automatic mechanism for this purpose.

K is the belt by which the phonogram cylinder, shaft, or holder is driven from the spring or other motor.

The sounding-board F is preferably provided with one or more holes or openings f to permit the escape of the sound-waves from the air-cavity between the sounding-board and its block or support. These openings or holes f may also preferably be furnished with short horns f' , made of wood and inserted in the holes. These flaring tubes or horns f' also afford a means for receiving or attaching a rubber ear-tube, if desired.

It will be observed that the rotating phonogram-cylinder or sound-writing record is mounted in fixed or stationary bearings on the frame, and has no feed movement, and that the sounding-board is also fixed in position and has no feed movement, and that the reproducing-arm rests loosely at one end on the sounding-board and at the other end on the phonogram-cylinder or sound-writing, and that the spiral groove or thread of the sound-writing itself serves as the means for swinging the arm laterally to feed the point end thereof from one end to the other of the cylinder. The bent end g of the tube G fits the wood pin g' loosely, so as to permit the arm to swing laterally on this pin as a pivot. After the extreme circular end of the tube is cut or broken off it should be stuck in the flame a moment, so as to render this end smooth and thus prevent any undue friction between it and the flange or collar g^3 of the pin g' .

Between the frame or case A and E, I place a sound-insulating packing M, preferably of felt, rubber, or other like material.

I claim—

1. A graphophone or mechanism for reproducing sounds from phonograms or sound-writings, consisting in connection with the phonogram-cylinder or sound-writing of a sounding-board, and an arm resting loosely at one end on the sounding-board and at the other end on the phonogram-cylinder or sound-writing, substantially as specified.

2. The combination with a rotating phono-

gram-cylinder or sound-writing, of a fixed or stationary sounding-board and a glass arm having an integral point at one end to ride on the phonogram-cylinder or sound-writing, said arm resting at one end on the sounding-board and at the other end on the phonogram-cylinder, substantially as specified.

3. The combination with a rotating phonogram-cylinder or sound-writing, of a fixed or stationary sounding-board and a glass arm resting at one end on the sounding-board and at the other end on the phonogram-cylinder, said arm having a loose pivotal connection with said sounding-board, substantially as specified.

4. The combination with a rotating phonogram-cylinder, of a stationary sounding-board furnished with an upwardly-projecting pin and a hollow glass arm having a bent end fitting on said pin, and a pointed bent end at its other extremity resting on the phonogram-cylinder, substantially as specified.

5. The combination with a rotating phonogram-cylinder, of a stationary sounding-board furnished with an upwardly-projecting wood pin and a hollow glass arm having a bent end fitting on said pin, and a pointed bent end at its other extremity resting on the phonogram-cylinder, substantially as specified.

6. The combination with a rotating phonogram-cylinder, of a stationary sounding-board furnished with an upwardly-projecting pin and a hollow glass arm having a bent end fitting on said pin and a pointed bent end at its other extremity resting on the phonogram-cylinder, and a shoulder or collar at one side of said pin so that the bent cylindrical end of said tube will only have a bearing at a portion of its circumference, substantially as specified.

7. The combination with a rotating phonogram-cylinder of a sounding-board, with a hollow arm pointed at one end and resting at the other end loosely pivoted on the sounding-board, said sounding-board being furnished with one or more openings through the same, substantially as specified.

8. The combination with a base-block or support of a sounding-board secured thereto, a phonogram-cylinder and a glass arm resting at one end on the cylinder and the other end on the sounding-board, said glass arm being hollow, having a bent pointed end at one extremity and a right-angle bent end at the other extremity fitting a pin or pivot attached to the sounding-board, substantially as specified.

9. The combination with a base-block or support of a sounding-board secured thereto, a phonogram-cylinder and a glass arm resting at one end on the cylinder and the other end loosely pivoted on the sounding-board, said sounding-board being perforated, substantially as specified.

10. A phonogram or sound-writing record following-point composed of glass and made

integral with the arm by which it is carried, substantially as specified.

11. The means for communicating sound-vibrations from a phonogram or sound record to a sounding-board, consisting of a tube of glass, having an integral point formed on its end to follow the sound-record, substantially as specified.

12. The means for communicating sound-vibrations of a phonogram or sound-record to a sounding-board, consisting of a tube of glass having an integral point formed on its end to follow the sound-record, and having at its other extremity a bent end, one edge of which rests upon the sounding-board, substantially as specified.

13. The means for communicating sound-vibrations of a phonogram or sound-record to a sounding-board, consisting of a tube of glass furnished with a weight consisting of a bar attached at each end to said tube by two threads or cords at points farther apart than the length of the bar, substantially as specified.

14. A graphophone or mechanism for reproducing sounds from phonograms or sound-writings, consisting in connection with the phonogram-cylinder or sound-writing of a sounding-board, and an arm resting loosely at one end on the sounding-board and at the other end on the phonogram-cylinder or sound-writing, and a weight attached to said arm, substantially as specified.

15. The combination with a rotating phonogram-cylinder of a sounding-board with a hollow arm pointed at one end and resting on the phonogram-cylinder, and resting at the other end on the sounding-board, said arm having a pivotal connection with said sounding-board to permit it to swing laterally or horizontally, and a weight attached to said arm, substantially as specified.

16. The combination with a rotating phonogram-cylinder, of a stationary sounding-board furnished with an upwardly-projecting pin and a hollow glass arm having a bent end fitting on said pin, and a pointed bent end at its other extremity resting on the phonogram-cylinder, and a weight attached to said arm by a thread or cord, substantially as specified.

17. The means for communicating sound-vibrations from a phonogram or sound-record to a vibratable body, consisting of an arm resting at one end on the phonogram or sound-record and at the other end loosely pivoted on the vibratable body, substantially as specified.

18. The combination with a base or support of a vibratable body secured to said base or support, a phonogram-cylinder, and an arm having an integral point at one end resting on the phonogram-cylinder, and said arm resting at its other end on said vibratable body, substantially as specified.

19. The combination with a base or support

of a vibratable body secured to said block, a
phonogram-cylinder, an arm resting at one
end on the cylinder and the other end on the
vibratable body, and a sound-insulating pack-
5 ing between said block and the frame, sub-
stantially as specified.

20. A phonogram or sound-writing record
following-point, composed of glass and shaped

by the natural tendency of the glass when
molten to assume a globular or rounded form, to
substantially as specified.

EDWARD H. AMET.

Witnesses:

H. M. MUNDAY,

S. E. CURTIS.