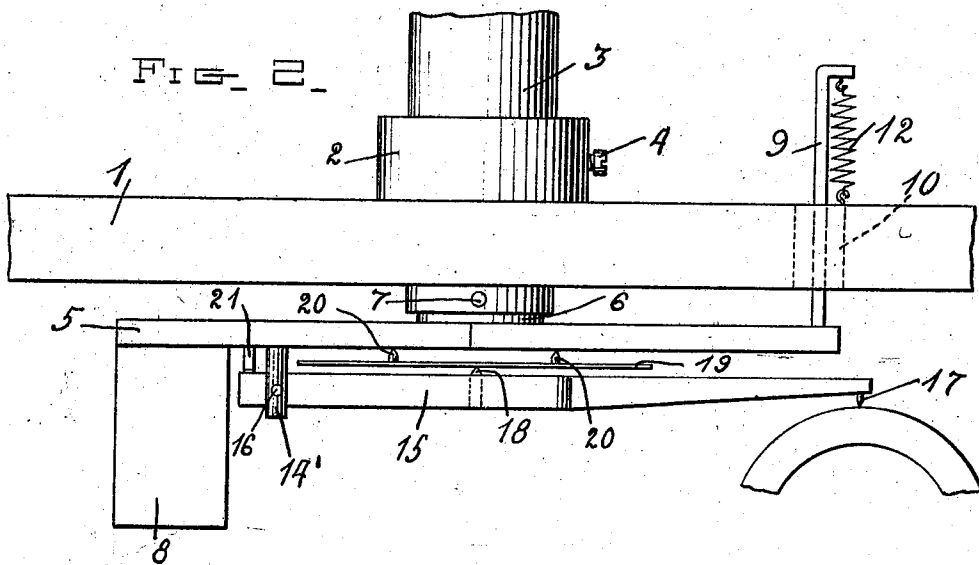
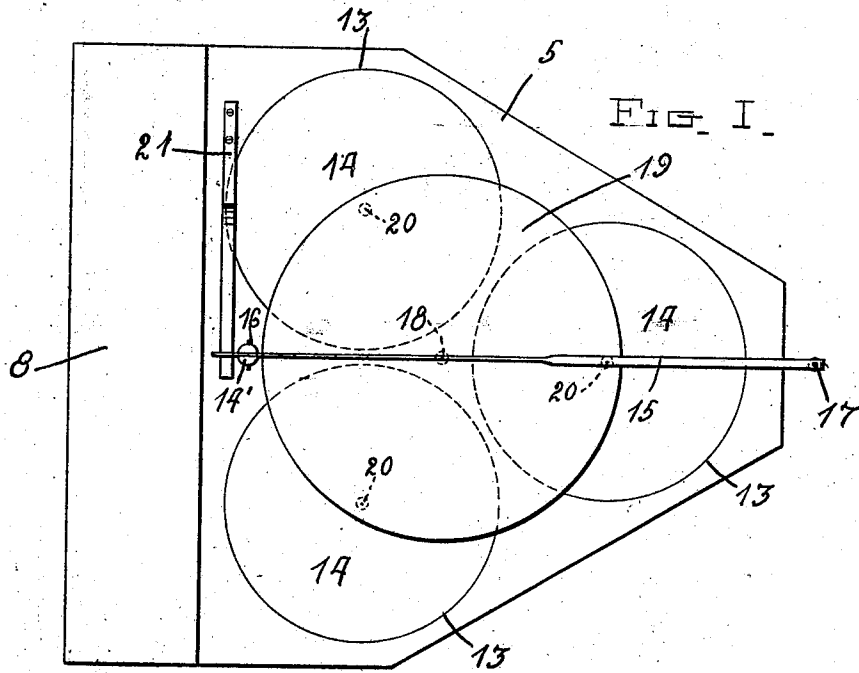


No. 867,821.

PATENTED OCT. 8, 1907.

W. HART.
SOUND REPRODUCER FOR GRAPHOPHONES.
APPLICATION FILED MAY 4, 1907.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM HART, OF KIRKSVILLE, MISSOURI.

SOUND-REPRODUCER FOR GRAPHOPHONES.

No. 867,821.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed May 4, 1907. Serial No. 371,928.

To all whom it may concern:

Be it known that I, WILLIAM HART, a citizen of the United States, residing at Kirksville, in the county of Adair and State of Missouri, have invented certain new and useful Improvements in Sound-Reproducers for Graphophones; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to improvements in sound reproducers for graphophones, and the like.

The object of the invention is to provide a device of this kind by means of which the volume of sound will be greatly increased and made more clear and distinct.

15 With this object in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

20 In the accompanying drawings, Figure 1 is a side view of a sound reproducer constructed in accordance with the invention; and Fig. 2 is a bottom plan view of the same.

Referring more particularly to the drawings, 1 denotes a portion of the frame of the graphophone to which the reproducer is attached. On the frame 1 is arranged a sleeve or collar 2 in which is adjustably mounted the lower reduced end of the horn, or sound transmission device, 3, said end being secured in the collar 2 by means of a set screw 4. Pivotaly mounted on the lower end of the horn 3 is a diaphragm plate 5, said plate being provided with an inwardly projecting tubular boss 6, which is adapted to be inserted in the lower end of the horn 3, and is pivotally connected to said end by pivot studs or pins, 7.

35 On the lower side of one end of the plate 5 is a weight 8, and to the opposite end is secured an upwardly projecting arm or bar 9, which is adapted to work through a slot or passage, 10, in the frame 1, as shown. The upper end of the arm 9 is bent at right angles, and to said bent end is connected the upper end of a counterbalancing spring 12, the lower end of which is connected to the frame 1. The spring 12 is here shown as a light coil spring, the tension of which is exerted to counterbalance the weight 8 arranged on the opposite end of the diaphragm plate 5. The plate 5 is substantially triangular in shape and is provided with a plurality of circular openings, 13, three of which are shown in the present instance, and is the preferred number employed. In the openings 13 are arranged diaphragms 14, which may be formed of any suitable material, but which are preferably formed of thin sheets of aluminium.

50 On the underside of the plate 5 adjacent to the weighted end of the same is formed a downwardly projecting centrally disposed bearing stud, 14', the lower end of which is bifurcated and adapted to receive the inner end of a record engaging lever 15, said lever being

pivoted in the stud 14' by a pivot pin 16. The lever 15 is reduced in thickness substantially midway between its ends to form a spring construction for the inner pivoted end of the lever, whereby the point 17 on 60 the outer end of the lever may readily engage and follow the grooves on the record.

Formed on the upper edge of the inner portion of the lever 15 is an upwardly projecting bearing point 18 upon which is mounted a thin aluminium transmission 65 disk, 19, by means of which the vibrations or movements of the lever 15, caused by its engagement with the grooves in the record, are transmitted to the diaphragms 14 in the plate 5. The disk 19 is provided on its upper side adjacent to its outer edge with a series of 70 diaphragm engaging points, 20, which are arranged at equal distances apart around the disk and in position to be engaged with the center of each of the diaphragms, 14.

By providing the transmission disk 19, the vibrations from the record are simultaneously imparted or transmitted to the three diaphragms, thereby causing the latter to vibrate and reproduce the sound as one diaphragm, the sound vibrations thus produced from the three diaphragms being greatly increased and 80 made more clear and distinct. The sound vibrations from the diaphragms are conducted through the tubular boss 6 into the sound transmitting horn, where it is further amplified and increased in volume.

Connected to the underside of the plate 5, and adapted to bear upon the inner end of the lever 15, is a light spring 21 which is adapted to hold the lever 15 in position to support the transmission disk, 19, in engagement with the diaphragms when the outer end of the lever is not in engagement with or supported by the 90 record. The spring 12 connected to the arm 9 on the end of the lever 15 is adapted to counterbalance the weight 8 at the opposite end of the plate 5 and force the point 17 on the outer end of the lever 15 downwardly into engagement with the grooves on the record. 95

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention may be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the 100 minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

Having fully described my invention, what I claim 105 as new and desire to secure by Letters-Patent, is:

1. A sound reproducer for graphophones, comprising a pivotally mounted diaphragm plate, diaphragms arranged in said plate, a record engaging lever pivotally mounted on said plate, and a transmission disk supported by said lever and held in engagement with said diaphragms, substantially as described. 110

2. A sound reproducer for graphophones, comprising a

pivotally mounted diaphragm plate, a weight arranged on one end of said plate, a counterbalancing spring connected to the opposite end thereof, a plurality of diaphragms arranged in said plate, a record engaging lever, and a sound transmitting disk supported by said lever and held in engagement with said diaphragms, substantially as described.

3. A sound reproducer for graphophones, comprising a horn, a diaphragm plate pivotally mounted on the lower end of said horn, said plate having formed therein a plurality of diaphragm openings, a plurality of diaphragms arranged in said openings, a record engaging lever pivotally mounted to the underside of said plate, a sound transmission disk supported by said lever and held thereby in operative engagement with said diaphragms, a record engaging point on the outer end of said lever, and means to force the latter downwardly to engage said point with the grooves on the record, substantially as described.

4. A sound reproducer for graphophones, comprising a horn, means to adjustably secure the end thereof in the frame of the graphophone, a diaphragm plate pivotally

mounted on the lower end of said horn, said plate having formed therein a plurality of diaphragm openings, diaphragms in said openings, a weight secured to one end of said plate, a counterbalancing spring connected to the other end thereof, a pivot stud on the underside of said plate, a spring record engaging lever pivotally mounted in said stud, a record engaging point on the outer end of said lever, a bearing pin arranged upon the inner portion of the lever, a sound transmitting disk supported upon said bearing pin, diaphragm engaging points on said disk and adapted to be engaged with the diaphragms in said plate, and a spring to support said lever and disk when the former is disengaged from the record, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM HART.

Witnesses:

H. A. HART,

T. J. WHITZEL.