

May 5, 1925.

1,536,969

J. PAVEK

PHONOGRAPH REPRODUCER

Filed Feb. 19, 1924

2 Sheets-Sheet 1

Fig. 1.

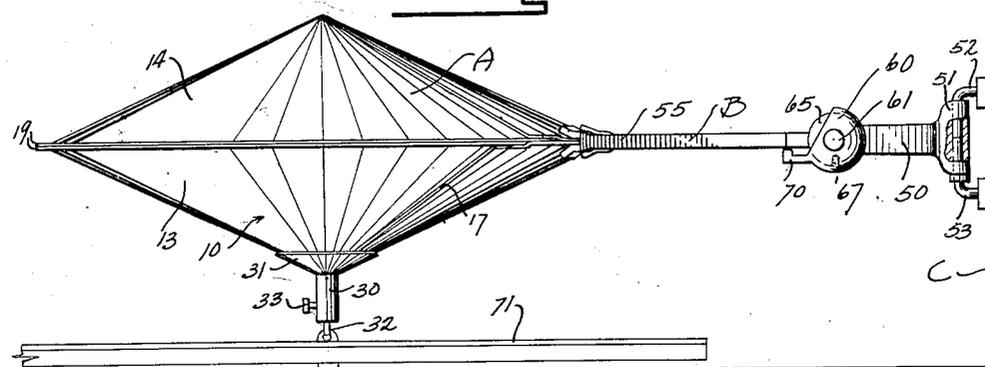
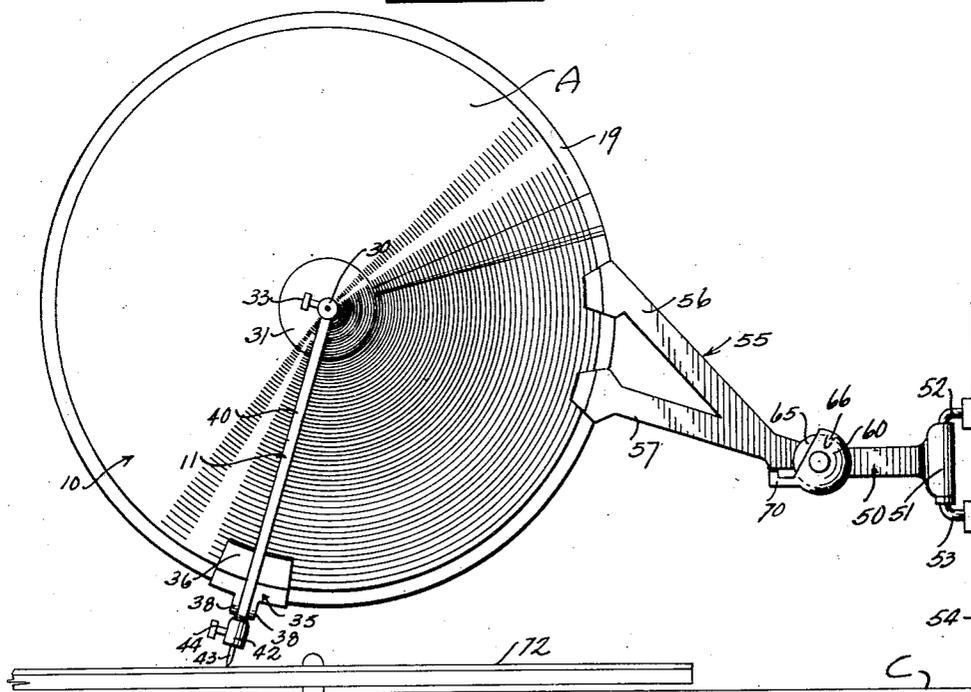


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

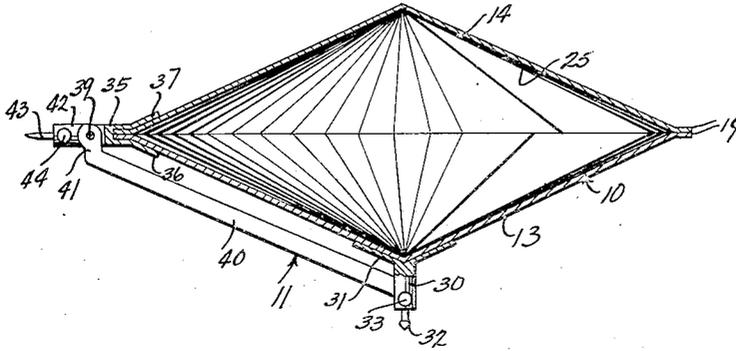


Fig. 4.

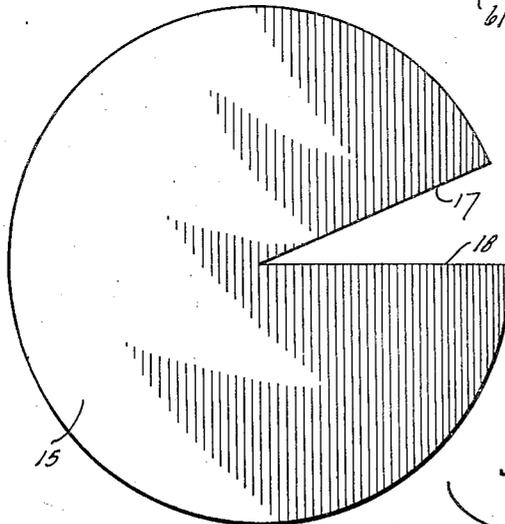
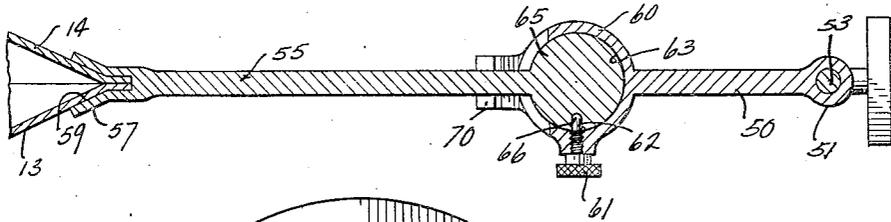


Fig. 5.

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UNITED STATES PATENT OFFICE.

JERRY PAVEK, OF CHICAGO, ILLINOIS.

PHONOGRAPH REPRODUCER.

Application filed February 19, 1924. Serial No. 693,875.

To all whom it may concern:

Be it known that I, JERRY PAVEK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Phonograph Reproducer, of which the following is a specification.

This invention relates to improvements in sound reproducing construction.

10 The primary object of this invention is the provision of a relatively simple and economical type of reproducer which may be used upon phonographs or other sound reproducing mechanism as a means of repro-
15 ducing sounds in a clear, loud tone.

A further object of this invention is the provision of a sound reproducing device embodying a relatively large and simple type of diaphragm construction which is used to
20 reproduce sound without the necessity of providing a sound amplifying horn or other sound box construction.

A further object of this invention is the provision of a sound reproducer embodying
25 merely a diaphragm construction which is fitted with stylus holding means adapted to conform the diaphragm construction for the reproduction of sound from vertical or lateral cut records; the same being acutely sensitive and responsive to sound vibrations.

30 Other objects and advantages of this invention will be apparent during the course of the following detailed description.

35 In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

40 Figure 1 is a side elevation of the improved reproducing mechanism showing the same in position for the playing of vertical cut records, such as the Edison.

45 Figure 2 is a side elevation showing the improved reproducer in position for the playing of lateral cut records, such as manufactured by the Sonora and Victor talking machine companies.

50 Figure 3 is a cross sectional view taken through the diaphragm and stylus supporting construction of the improved reproducer.

55 Figure 4 is a fragmentary cross sectional view taken through a supporting construction by which the improved reproducer may be universally used upon lateral and vertical cut records.

Figure 5 is a plan view of a sheet of material showing the same prior to its formation as a diaphragm of the improved reproducer.

In the drawings, wherein for the purpose of illustration is shown but the preferred
60 embodiment of this invention the letter A may generally designate the improved reproducer which may be supported by a construction B so that the same will be of universal use in connection with the playing of talk-
65 ing machine records; the supporting construction B, of course, connecting the reproducer upon a phonograph C.

The reproducer A includes a diaphragm construction 10 and stylus supporting means
70 11. The diaphragm construction 10 consists of the peripherally connected substantially conical shaped diaphragms 13 and 14 which are preferably formed of some inherently
75 stiff although resilient or yieldable material such as pyroxyline, cardboard, composition paper, fiber, or the like. As to the formation of these diaphragms 13 and 14, the same is of identical construction, and each of the
80 same are formed of a substantially segmental piece of material 15, such as illustrated in Figure 5 of the drawings. This segmental disc 15 is preferably cut to provide a segment of less than 360°, and greater than
85 270°. In the formation of the diaphragms 13 and 14 the segment 15 is centrally bulged from a side thereof, and the facing edge portions 17 and 18 of this disc are brought into meeting relation, and preferably overlap and
90 glued together to provide an imperforate diaphragm of conical shape. Incident to the glued overlapped edge portions 17 and 18 the diaphragm will hold its conical shape.

The diaphragms 13 and 14 after being conically formed as above mentioned are
95 placed in peripherally engaging relation with the peripheral flanges 19 thereof in outwardly extending relation and in abutment; the facing surfaces of these flanges 19 being
100 glued together. The apices of the diaphragms 13 and 14, of course, face in opposite directions, and thus an enclosed sound reproducing compartment 25 is provided between the diaphragms 13 and 14.

Referring to the stylus means 11 of the
105 reproducer, it is preferred to provide a stylus holder 30 centrally connected to the diaphragm 13, and in a fixed relation by means of a conical disc 31 which is affixed to the apex of the diaphragm 13 and ex-

tends over a considerable surface of said diaphragm so that the same may be properly set in vibration as the stylus moves in a sound groove. The stylus holder 30, of course, extends in the direction of the axis of the diaphragm construction 10, and may be provided with a suitable socket adapted to receive a stylus or needle 32 which may be clamped in the holder 30 by means of a set screw 33, as in ordinary construction. Adjacent and secured over the periphery of the diaphragm construction 10 is a bracket 35, which is of substantially Y-shaped formation, providing spaced and relatively diverging flange portion 36 and 37 adapted to receive therebetween a portion of the periphery of the diaphragms 13 and 14, so that said flanges respectively overlie the diaphragms 13 and 14 for a short distance. This bracket 35 is of course secured in fixed relation to these diaphragms at the periphery of the construction 10, and it provides the spaced ears 38 radially extending outwardly from the peripheral portion 19 of the diaphragms; said ears 38 being transversely apertured in aligning relation to receive a pintle or pin 39 in a detachable relation therethrough. A stylus frame arm 40 is preferably integrally connected to the central stylus holder 30 and extends in spaced relation along the diaphragm 13, and at its opposite end is offset, at 41, as illustrated in Figure 3 of the drawings, and transversely apertured; the apertured portion being adapted to be received between the spaced ears or lugs 38 and to receive at the aperture thereof the pintle 39, by means of which this stylus frame arm 40 is pivotally connected to said pin or pintle 39. Rigid with the arm offset end 41 is a stylus holder 42, which provides a suitable socket therein for receiving a stylus or needle 43, which may be clamped therein by means of the ordinary set screw 44. When the stylus arm 40 is pivoted to the pintle 39 the stylus 43 extends radially from the diaphragm construction 10, and it is used in playing records of the lateral cut type.

The means B for supporting the reproducer A upon the phonograph C preferably includes a bracket arm 50 having a sleeve 51 at one end thereof which receives therein sections 52 and 53 of a bracket which is secured to a wall 54 of the phonograph C so that the arm 50 may swing horizontally. An arm 55 of substantially Y-shaped or V-shaped formation is provided, which includes the arm portions 56 and 57 at their free ends having substantially Y-shaped sockets 59 therein for receiving peripheral portions of the diaphragm construction 10 in a fixed relation therein so that the arm 55 is substantially connected in a tangential relation to the reproducer A.

The arms 50 and 55 are preferably pro-

vided at their free ends with a novel ball and socket construction by means of which the reproducer A may be universally pivoted for playing either vertical or lateral cut records. This ball and socket construction preferably contemplates the provision of a segmental hollowed socket 60 which laterally supports a set or retaining screw 61 therein which has a smooth bearing end 62 which projects into the socket opening 63 of the socket segment 60. At its free end the arm 55 has a ball 65 which is oscillatively disposed in the socket 63. This ball 65 is preferably provided with openings 66 and 67 therein adapted to be positioned so that the shank end 62 of the set screw 61 may be inserted therein when the diaphragm construction is to be either positioned in a horizontal plane for playing vertical cut records, or positioned in a vertical plane for playing lateral cut records. It is preferred that the socket segment 60 be provided with a forward extension 70 which may receive the arm portion 55 in a resting relation thereon intermediate its pivot socket 60 and the reproducer as a means of supporting the latter when not playing upon a record.

Referring to the manner of operation of the reproducer, when playing records of the vertical cut type, the reproducer A is positioned in a horizontal plane and the needle 32 engages in the groove of the record 71, substantially in the relation illustrated in Figure 1 of the drawings. In this position the retaining screw 61 of the socket arm 50 is so positioned that the bearing end 62 is disposed in the opening 66 of the ball 65, so that the reproducer A may rise and fall in a vertical direction. The reproducer as it moves transversely across the record swings about the pivot provided by the bracket sections 52 and 53. It is apparent that the playing of this vertical cut type of record 71 will set the diaphragms 13 and 14 in vibration, incident to the direct connection of the stylus holder 30 with the central portion of the diaphragm 13.

In playing records of the lateral cut type the set screw 61 is released so that the ball 65 may be swung within its socket until the reproducer is positioned in a vertical plane and the needle of the stylus 43 may enter the groove of a record 72, substantially in the relation illustrated in Figure 2 of the drawings. In this position the retaining screw 61 at its bearing end enters the opening 67 of the ball 65, and the ball cannot then move within its socket except in a vertical direction; the reproducer being free to swing across the record incident to connection of the arm 50 with the bracket sections 52 and 53. In the playing of the lateral cut type of records it is important that the stylus holder 42 is pivotally connected to the pin 39, since vibration of the stylus frame arm

40 may be transmitted to the central portion of the diaphragm 13, and the sound amplified in the diaphragm construction 10 accordingly.

5 From the foregoing description of this invention it is apparent that a relatively simple type of reproducer has been provided which will supplant the expensive reproducing and sound amplifying horn now
10 provided with phonographs. Especially is this so where it is the desire to provide an inexpensive phonograph construction. The diaphragm construction 10 may be made of any material as above described, and it is
15 desired to make the stylus means 11 of metal, in order to transmit the vibration to the diaphragm for the reproduction of sound.

Various changes in the shape, size, and arrangement of parts may be made to the
20 form of invention herein shown and described, without departing from the spirit of this invention or the scope of the claims.

I claim:

1. A reproducer comprising a pair of substantially conical shaped diaphragms each
25 formed of a segmental sheet of material centrally bulged into a conical shape with the side edge portions of the same in meeting and secured relation, said diaphragms
30 being peripherally connected to provide a

closed compartment therebetween, and stylus means supported by said diaphragms.

2. In a reproducer a diaphragm construction consisting of a pair of segmental discs of inherently stiff although yieldable
35 material responsive to vibrations, each of the same being centrally bulged by bringing the facing edges thereof into an overlapped and secured relation, and means peripherally securing the two diaphragms together
40 with the apices thereof facing in opposite directions to provide an enclosed sound amplifying compartment therebetween.

3. As an article of manufacture a diaphragm construction for reproducers consisting of two similarly formed unperforated conical diaphragms outwardly flanged
45 at their peripheries and glued together to provide an enclosed compartment therebetween.

4. In a device of the class described a diaphragm construction consisting of a pair of conical diaphragms oppositely bulged to
50 provide a compartment therebetween, and stylus holding means secured at the peripheral edge to said diaphragm construction in straddling relation to the conical diaphragms.

JERRY PAVEK.