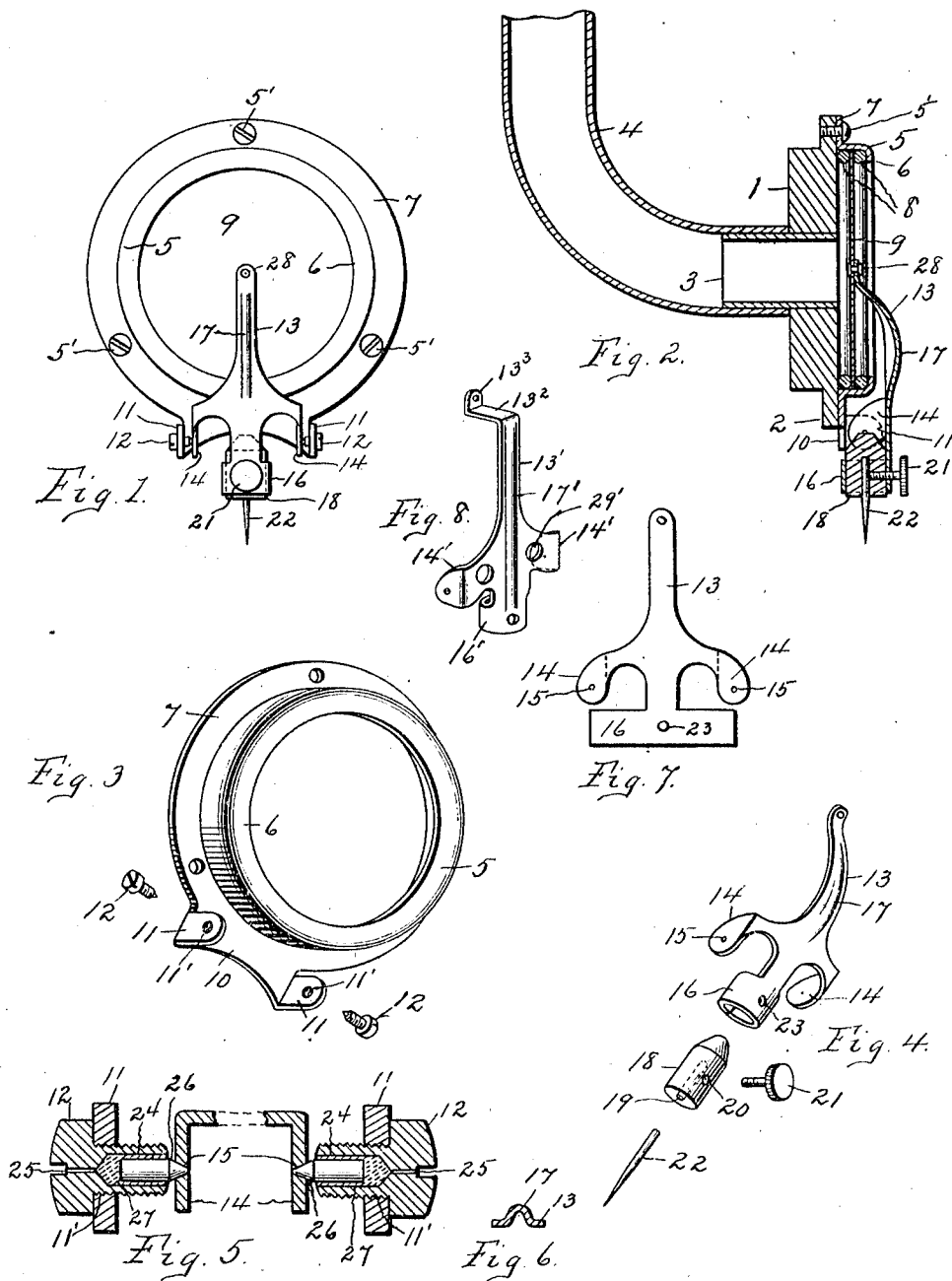


1,061,729.

Patented May 13, 1913.



Witnesses:
Gertrude L. Smith.
Louis Sanders

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By Attorney
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UNITED STATES PATENT OFFICE.

PLINY CATUCCI, OF NEWARK, NEW JERSEY, ASSIGNOR TO A. F. MEISSELBACH & BROTHER, A CORPORATION OF NEW JERSEY.

SOUND-BOX.

1,061,729.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed April 26, 1912. Serial No. 693,353.

To all whom it may concern:

Be it known that I, PLINY CATUCCI, a citizen of the United States, residing in the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Sound-Boxes, of which the following is a specification.

The particular embodiment of my present invention, as set forth in the annexed specification, is designed more particularly for use in connection with the phonograph described and illustrated in my co-pending application, Ser. No. 693,352 filed on the 26th day of April, 1912, and has for its purpose the simplification of structures of this kind, and at the same time a material reduction in the cost of manufacture.

The invention also lends itself admirably to a more delicate adjustment of the parts than has hitherto been accomplished in sound boxes of the character and kind for use on the so called disk record, such as use the sharp pointed steel stylus needle.

In the drawings accompanying this application, Figure 1 illustrates a front or face elevation of the sound box with the stylus lever and stylus shown in plan. Fig. 2 illustrates a longitudinal section of the same. Fig. 3 is a perspective view of the clamping ring. Fig. 4 illustrates the stylus lever and stylus with the parts thereof separated to show the details of their construction. Fig. 5 illustrates an enlarged section of the jeweled screw pivots used to support the stylus lever. Fig. 6 is a cross section of the stylus lever showing the bead stamped therein for strengthening the same. Fig. 7 illustrates the stylus lever blank. Fig. 8 illustrates a slightly modified form of stylus lever.

Similar reference numerals refer to like parts throughout the specification and drawings.

The box body consists of a plane disk of metal 1 of considerable thickness, and is provided with the circumferential flange 2. Through the center of the disk 1 extends the aperture into which is rigidly inserted the connecting thimble 3, said thimble being provided for the purpose of connecting the sound box to the sound conveying tube 4. On the front face of the sound box body 1 is rigidly secured the clamping ring 5 by means of the screws 5' screw threaded into the flange 2. The latter is made from a disk of metal cut out in the center and

stamped to the shape shown in cross section in Fig. 2. This clamping ring has a depth beneath the inwardly extending flange 6, to the outer face of its flange 7, a trifle less than the combined thickness of the two gaskets 8 and the diaphragm 9, so that when the clamping ring 5 is rigidly secured to the flanges 2 of the box body 1, the gaskets 8 will be slightly compressed with the margin of the diaphragm therebetween. Inasmuch as the clamping ring is accurately gaged as to thickness and dimensions, it will be seen that the gaskets 8 with the diaphragm 9 may always be put under the same compression, and this uniform compression is found to be one of the important elements in the character of reproduction of sound in devices of this kind. The clamping ring 5 is provided, upon the one side, with an extension 10, integral with the body of said ring, and this extension is also provided with a pair of lugs 11, bent at right angles to the plane of the ring and said lugs are provided with screw threaded apertures 11' to receive the screw threaded pivots 12 in accurate alinement with each other.

It is one of the objects of this invention to provide a stylus lever, which in itself, will contain all of the elements found to be requisite in a stylus lever and its supports combined. The stylus lever proper is formed from sheet steel blanked to the shape as illustrated in Fig. 7, and it consists of the strip 13 having the lateral lugs 14 rearwardly directed and provided with accurately positioned pivot sockets 15. The end of the blank is also provided with rectangular projections 16. In this shape it is ready to be pressed into the form illustrated in Figs. 1, 4, and 8, wherein the lugs 14 are shown bent at right angles to the general plane of the blank, while the lateral projections 16 are bent into tubular shape and the forward end is given a camber and provided with a stiffening bead 17. The stylus lever as thus formed, I find to be very rigid longitudinally and yet to possess all of the transverse elasticity required in a substantially perfect stylus lever. In the tubular part, formed by the bending of the projections 16, is located the stylus or needle socket 18. This socket consists of a cylindrical piece of metal having the socket hole 19 extending into one end thereof and the

lateral screw threaded aperture 20 to receive the set screw 21, whereby the needle 22 is rigidly held in position. The socket piece 18 has a diameter a trifle larger than the inner diameter of the tubular part of the stylus lever, so that when the socket 18 is forced into the tubular part of the stylus lever, the arms 16 of said tubular part will firmly grip the socket piece. I also provide an aperture 23 on the upper side of the tubular parts of the stylus lever, so that the set screw may pass through it and into the screw threaded aperture 20 to grip the needle 22, and thus the single set screw performs the double function of rigidly holding the needle in the socket 19, and at the same time the set screw prevents any displacement of the socket piece 18.

In practice, the pivot screws 12 may be of ordinary case hardened steel with cone points, or if desired, they may be of a special construction with jeweled points. To make jeweled pivots the ordinary machine screw, like that shown in Fig. 5, may be used, said screw having its point counterbored as at 24, with a small aperture 25 extending completely through the axis of the screw. A cone point sapphire jewel 26 is inserted into the counterbore 24 where it is held in position by cement, such as shellac or amyacetate 27. The small aperture 25 is for the purpose of preventing the trapping of the bubble of air in the minute counterbore which might result in displacing the jewel 26.

In Fig. 8 I have illustrated a slightly modified form of stylus lever. In this case, instead of curving the forward portion of the lever as illustrated in Fig. 4, the shank 13' is made perfectly straight with a rectangular bend 13² made in its upper end, with of course, a further rectangular bend 13³ provided for attachment to the center of the diaphragm by means of a rivet or other attaching means as 28. In order to render the stylus lever perfectly rigid, although made of spring steel, I provide the shank 13' with a longitudinal bead 17' running throughout the length of said shank, and extending down to the cylindrical or tubular portion 16'. The lateral arms 14' are also of the same shape and configuration as the corresponding parts of the form illustrated in Fig. 4. In order however, to render these lateral arms or lugs 14 more elastic or resilient in the plane of the metal and yet longitudinally rigid, the necks of said arms are made somewhat wider and provided with the apertures 29 so as to reduce their cross section and yet preserve the longitudinal rigidity of the structure. In this modified form every part of the stylus lever is intended and so constructed as to be practically rigid with the exception of the

two lateral arms or lugs 14'; these for the purposes and objects above set forth are made resilient in order that the pivot screws 12 may find a yielding bearing upon the stylus lever.

From the above description, it will be seen that I have by the construction illustrated, provided a sound box and its requisite parts at once simple in construction, easy to manipulate, not likely to get out of order, and accomplishing all of the objects set forth in the preamble.

I claim,

1. In a phonograph sound box, the combination of a body section, a clamping ring having lateral supporting lugs thereon, and a diaphragm, a rigid stylus lever, having resilient supporting lugs pivotally secured between the lateral supporting lugs upon said clamping ring.

2. In a phonograph sound box, the combination of a body section, a diaphragm, a clamping ring for securing said diaphragm to said body section, lateral lugs upon said ring, adjustable pivot pins extending through said lugs in axial alinement with each other, a rigid stylus lever connected to said diaphragm, resilient supporting lugs upon said lever, for resiliently supporting said lever between said pivot pins.

3. In a phonograph sound box, the combination of a body section, a diaphragm, a flanged clamping ring for securing said diaphragm to the body section, rigid lugs upon said clamping ring, a rigid stylus lever connected to the center of said diaphragm, a pair of resilient supporting lugs upon said stylus lever, adjustable pivots extending inwardly from said rigid lugs for pivotally supporting between them said rigid stylus lever through said resilient lugs thereon.

4. In a phonograph sound box, the combination of a body section, a diaphragm and a flanged clamping ring for securing said diaphragm to said body section, a pair of rigid lugs integral with said clamping ring, and extending laterally therefrom, pivot pins adjustably secured in said lugs, and a rigid stylus lever secured to said diaphragm and resilient lugs upon said lever located between said rigid lugs and held therein by said pivots.

5. A stylus lever for phonograph sound boxes, comprising a rigid strip of metal having a pair of lugs extending relatively upon opposite sides of its median line, with their extremities bent at right angles to the general plane of the lever and provided near their extremities with pivot sockets, a second pair of resilient lugs extending respectively upon opposite sides of one extremity of said lever, being bent into a tubular resilient ring, a cylindrical stylus needle socket extending into and frictionally held by said tubular ring, and a clamping screw

extending through said tubular resilient ring through said socket to bear upon the stylus needle inserted into the axis of said socket.

5 6. In a phonograph sound box, the combination of a body section, a diaphragm, a clamping ring for securing said diaphragm to said body section, lateral lugs upon said ring, adjustable pivot screws extending
10 through said lugs in axial alinement with each other, said pivot screws each having an axial counterbore therein, a jewel pivot ac-

curately secured in each of said counterbores, a rigid stylus lever connected to said diaphragm and resilient supporting lugs on said lever for resiliently supporting said lever between said jewel pivots. 15

In testimony whereof I have hereunto set my hand.

PLINY CATUCCI.

Witnesses:

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W. B. WALTZINGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."