No. 666,716. Patented Jan. 29, 1901.

L. P. VALIQUET.

DIAPHRAGM FOR SOUND BOXES.

(Application filed June 1, 1899.)

(No Model.)

Fig. 1.

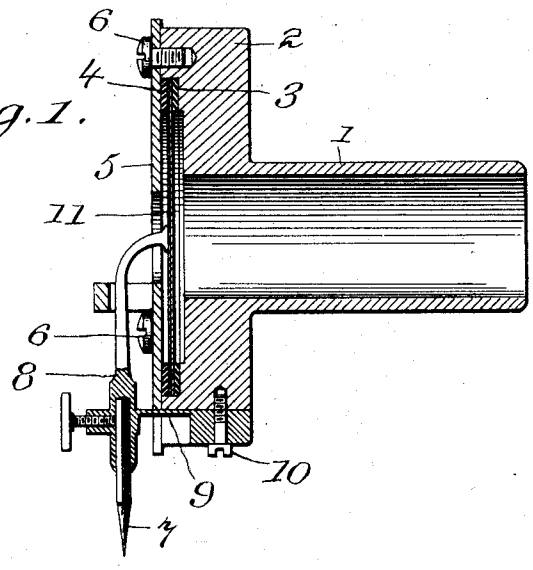
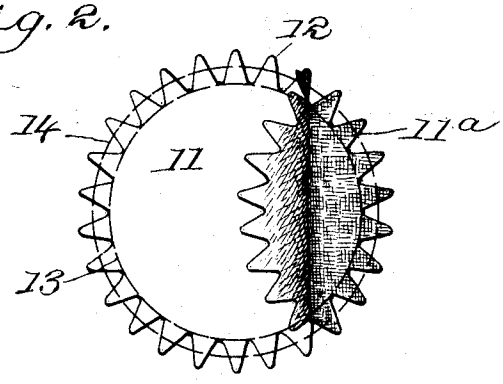


Fig. 2.



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LOUIS P. VALIQUET, OF NEW YORK, N. Y., ASSIGNOR TO THE UNIVERSAL TALKING MACHINE COMPANY, OF SAME PLACE.

DIAPHRAGM FOR SOUND-BOXES.

SPECIFICATION forming part of Letters Patent No. 666,716, dated January 29, 1901.

Application filed June 1, 1899. Serial No. 718,943. (No model.)

To all whom it may concern:

Be it known that I, LOUIS P. VALIQUET, a citizen of the United States of America, and a resident of New York city, county of New York, State of New York, have invented certain new and useful Improvements in Diaphragms for Use in Sound-Boxes, of which the following is a specification.

My invention relates to sound-reproducing apparatus, and is more specifically designed to produce an improved form of diaphragm for use in sound-boxes on talking-machines for recording or reproducing sounds mechanically.

The preferred form of apparatus embodying my invention is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a longitudinal section of a sound-box embodying my invention. Fig. 2 is a detail view of one form of diaphragm.

Throughout the drawings like reference-figures refer to like parts.

The body of the sound-box consists of a tube 1, with a flange 2 recessed on its outer face in the usual manner. Within this circular recess are confined the washers 3 4 of any suitable material—leather, rubber, or the like—and these are held in position by an annular face-plate 5 of any convenient shape and material, said face-plate being fastened to the flange 2 of the sound-box by screws 6 6 or otherwise.

A reproducing-needle 7 is carried in a reproducer-arm 8, mounted on the spring-plate 9, fastened to the body of the reproducer by the screw 10. Of course any equivalent mounting could be substituted for that shown. The inner end of the reproducer-arm 8 rests against the diaphragm 11, which in my invention is made with serrated edge 12. These serrations may be of any convenient form, but preferably of the triangular shape shown. The serrations 12 are firmly held between the opposing surfaces of the washers 3 and 4 or other forms of opposing surfaces adapted to be forced together by the clamping action of the face-plate 5 upon the flange 2.

One point of my invention is the holding of the diaphragm 11 by the projecting serrations 12 only and the varying of the action of the diaphragm by varying the amount which the pressing-surfaces overlap said serrations. If a stiff diaphragm is desired, the washers 3 and 4 or other equivalents are caused to overlap the entire portion of the serrations down to the broken line 13, Fig. 2. If more flexible diaphragm action is required, the opposing surfaces are caused to overlap only a portion of said serrations—as, for instance, down to the broken line 14 or some other point selected to produce the desired adjustment of the diaphragm. The diaphragm when cut in this form may be made of a variety of materials; but I prefer to make it of linen or equivalent textile or parchment-like fabric. A single thickness may be used or the diaphragm may be built up to a plurality of thicknesses, the adjacent sheets being held together by an intervening layer of adhesive material, such as fish-glue. In Fig. 2 such a construction is shown, one of the sheets 11^a being left flat, while the upper sheet 11 is rolled back partly. Various forms of linen fabric may be employed; but I find the best results to be produced by the use of the ordinary linen tracing-cloth, which may be first soaked to partly remove the sizing with which it is treated to fit it for use as a tracing material.

The mode of operation of my invention is of course evident from the foregoing description.

The diaphragm being preferably built up of several sheets of linen with intermediate layers of fish-glue or said diaphragm being formed of other materials, the same is cut or stamped in the form shown in Fig. 2 and the serrated edges are grasped between the opposing surfaces of the washers 3 and 4 or other adjustable surfaces, which are forced together by the clamping action produced by assembling the parts of the reproducer. The reproducer-arm 2 is then adjusted in position with its inner end bearing on the center of said diaphragm and the sound-box is complete and ready for use.

The advantages of my invention lie in the great purity of tone produced by it, which is entirely free from the ordinary metallic sound of sound-reproducing apparatus, in the cheapness of the resulting construction, the necessity of using mica or other high-priced material being avoided and the use of cheap leather

washers being possible in place of washers of high-priced material usually necessary, in the non-liability of the diaphragm to be affected by climatic changes or age, and in the ease of adjustment of said diaphragm as to flexibility by simply varying the amount by which the opposing surfaces of the holding-rings overlap the serrations at the edge of the diaphragm.

It is evident, of course, that various changes could be made in the details of construction shown without departing from the spirit and scope of my invention so long as the principle of operation or the relative shape and arrangement of parts is preserved. Various other materials might be used for the diaphragm and the shape of serrations might be varied. Other constructions of holding-rings might be substituted for the loose washers 3 and 4 and other means of clamping said holding-rings might be employed; but all these I consider changes in form and not of substantial variations from my invention.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. A diaphragm for talking-machines having a serrated edge composed of saw-shaped teeth of the material composing the body of the diaphragm.

2. The combination of a sound-box having opposing diaphragm-retaining surfaces, a diaphragm having serrated edges projecting between said opposing surfaces, and means for clamping the surfaces down upon the serrated edges of the diaphragm.

3. The combination of a sound-box having opposing diaphragm-retaining surfaces, a diaphragm of textile fabric having serrated edges projecting between said opposing surfaces, and means for clamping the surfaces down upon the serrated edges of the diaphragm.

Signed by me at New York city this 20th day of May, 1899.

LOUIS P. VALIQUET.

Witnesses:
LILIAN FOSTER,
ERNEST O. CLAPP.