N. S. WAKEFIELD.

DIAPHRAGM FOR SOUND REPRODUCERS.

APPLICATION FILED JAN. 31, 1910.

980,713. Patented Jan. 3, 1911.

Fig. 1.

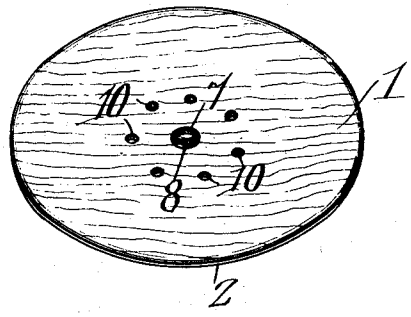


Fig. 2.

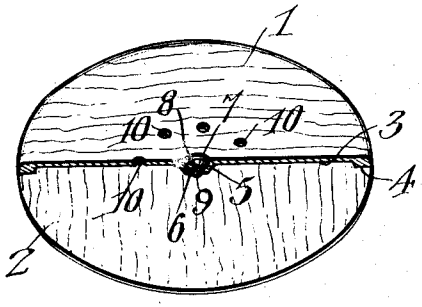


Fig. 4.

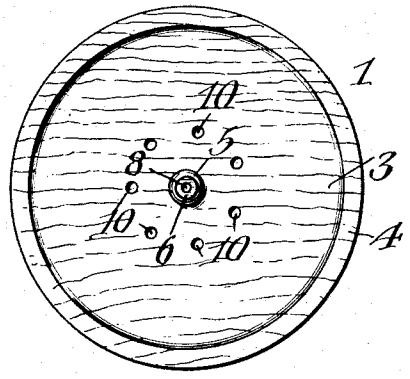


Fig. 3.

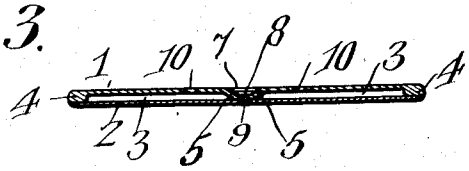
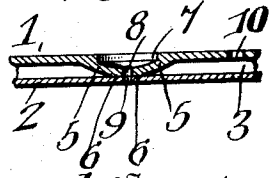


Fig. 5.



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DIAPHRAGM FOR SOUND-REPRODUCERS.

980,713. Specification of Letters Patent. Patented Jan. 3, 1911.

Application filed January 31, 1910. Serial No. 541,201.

To all whom it may concern:

Be it known that I, NATHAN STOWELL WAKEFIELD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Diaphragm for Sound-Reproducers, of which the following is a specification.

This invention relates to a diaphragm designed especially for phonographs, telephones, or other sound-reproducing instruments, and the principal object of the invention is the provision of an extremely simple and inexpensive diaphragm possessing superior sound-reproducing properties.

Another object of the invention is to provide a diaphragm of the chambered type consisting of a novel arrangement of disks fastened together to form a unitary structure, and so designed as to reproduce the delicate tones or sound shades as well as accurately reproducing the volume and register of the original sound without the disagreeable, harsh metallic sounds as is the case with diaphragms commonly in use.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a perspective view of the diaphragm. Fig. 2 is a perspective view showing the inner disk of the diaphragm in section. Fig. 3 is a diametrical section of the diaphragm. Fig. 4 is a plan view showing the inner face of the inner disk. Fig. 5 is an enlarged sectional view of the central portion of the diaphragm.

Similar reference characters are employed to designate corresponding parts throughout the views.

The diaphragm is made of two comparatively thin disks or plates 1 and 2 of wood or other suitable material, which are permanently secured together, by gluing or otherwise, according to the material used, to constitute a unitary structure. The disk 1 forms the side of the diaphragm that is presented to the chamber of the sound box or the sound-reproducing device, while the disk 2 is disposed at the outside next to the stylus-carrying arm. One of the disks, preferably the inner disk 1, has its inner face cut out to form a shallow chamber 3. This operation can be performed in a turning lathe, and the cut is made from a point inwardly from the periphery to a point adjacent the center of the disk, whereby a peripheral flange 4 and a central hub 5 will be left. The disk 2 is perfectly flat, both on its inner and outer surfaces, and is connected with the disk 1 by being glued to the flange 4 and hub 5. As shown in Fig. 5, the hub has a flat face 6 for providing a substantial area to which the disk 1 can be fastened. The outer face of the disk 1 is provided with a depression 7 directly at the hub 5, and the bottom of this depression is provided with an aperture 8 registering with an aperture 9 in the disk 2 for receiving the screw which attaches the diaphragm to the stylus-carrying arm. The hub 5 has a three-fold function, in that it mechanically connects the two disks together at the center, forms a sound post between the disks, and prevents the screw from being tightened to such an extent as to crack the disks in fastening the diaphragm to the stylus-carrying arm. The chamber disk 1 is provided with a plurality of apertures 10 adjacent to and concentrically arranged around the hub for the purpose of permitting the sounds to be carried from the diaphragm into the machine or sound box by the vibration of the diaphragm, which feature, together with the sounding post formed by the hub, conduce to the reproduction of clear, round tones. When the diaphragm is made of wood, it is preferable to glue the disks together with their grains extending transversely to each other so that one disk will serve to strengthen the other. Since the disks are connected together, both at the center and edge of the diaphragm, a comparatively durable article is produced, and one having a minimum thickness considering the box-like form.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and

that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. A chambered diaphragm for sound-reproducing devices consisting of a pair of parallel flat-thin disks permanently secured together both at the center and periphery.

2. A diaphragm for sound-reproducing devises consisting of a pair of parallel flat-thin disks permanently secured together at the center and around the periphery, one of the disks being chambered and having a plurality of apertures opening from the chamber.

3. A diaphragm for sound reproducers consisting of a flat disk having one side hollowed out in the form of a shallow chamber surrounded by a peripheral flange, and a second disk bearing flat against the flange and rigidly secured thereto, one of the disks having a central hub forming a sounding post against which the other disks bears, the said hub and the disk bearing against the same being adapted to have a fastening means inserted therethrough for connecting the disks in fixed spaced relation and securing them to a support.

4. A diaphragm for sound reproducers consisting of a pair of flat parallel disks, one of the disks having a flat annular flange bearing against the inner face of the other disk and one of the disks having a central hub bearing flat against the opposed face of the other disk, the outer face of the disk having the hub being depressed within the area of the hub to receive a securing device.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

NATHAN STOWELL WAKEFIELD.

Witnesses:

CLAUDE MYERS,

LOUIE WOODWORTH.