No. 701,410. Patented June 3, 1902.

W. L. SMITH.

SOUND MOTOR.

(Application filed Nov. 23, 1901.)

(No Model.)

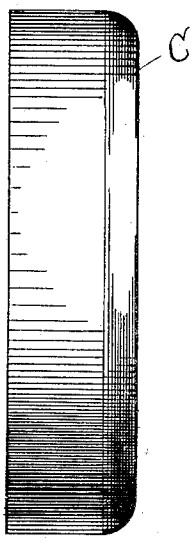


Fig. 1

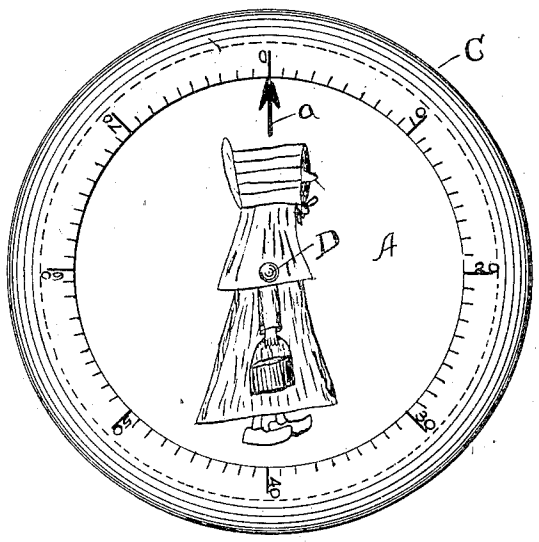


Fig. 2

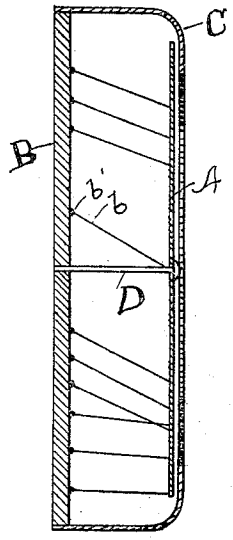


Fig. 3

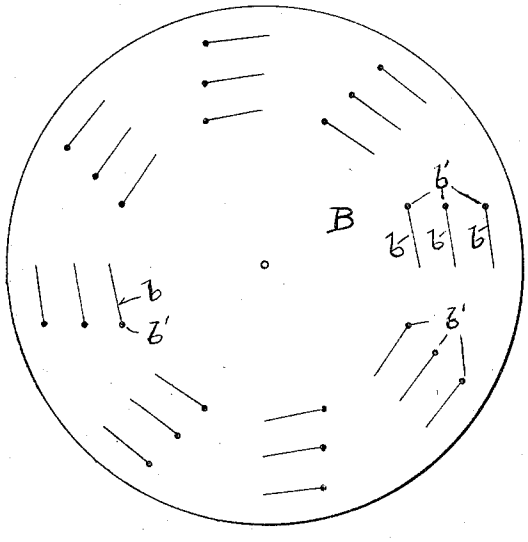


Fig. 4

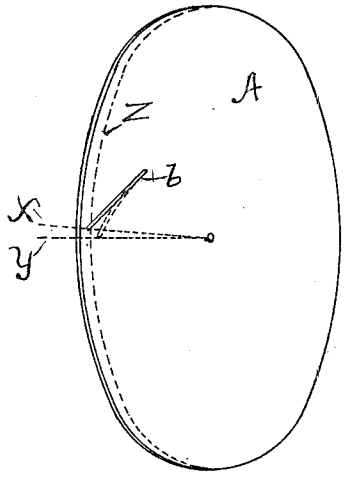


Fig. 5

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UNITED STATES PATENT OFFICE.

WALTER L. SMITH, OF GARWIN, IOWA.

SOUND-MOTOR.

SPECIFICATION forming part of Letters Patent No. 701,410, dated June 3, 1902.

Application filed November 23, 1901. Serial No. 83,477. (No model.)

To all whom it may concern:

Be it known that I, WALTER L. SMITH, a citizen of the United States, and a resident of Garwin, county of Tama, and State of Iowa, have invented certain new and useful Improvements in Sound-Motors, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to a sound-motor or a toy or advertising device which is designed to be operated by the waves emanating from vocal or instrumental sounds.

The invention comprises a suitable casing having an opening in one wall thereof, a rotative diaphragm within the casing, and a plurality of fibers or bristles fastened to the casing and frictionally engaging the back of the diaphragm and inclined in the direction of the rotation thereof, the arrangement being such that any deflection of the fibers under the influence of successive sound-waves will rotate the disk.

The invention consists of the parts and details hereinafter fully described, particularly specified in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the device. Fig. 2 is a front elevation of the same. Fig. 3 is a diametrical section. Fig. 4 relates to a detail of the device, showing particularly the arrangement of the fibers for rotating the disk; and Fig. 5 is a diagrammatic view illustrating the mode of operation of the motor.

In the drawings is shown a casing having a back B and a front or top C, the latter being provided with a circular aperture to permit of the passage of wave sounds into the casing for the purpose to be hereinafter explained. The casing may be of any convenient shape or size, but is preferably circular, as shown. Located within the casing and fixed to the back B is a perpendicular pin or pivot post D, on which is pivoted a diaphragm, as the disk A, which is designed to rotate just back of and be visible through the opening in the front or top C, and the said disk may be provided with decorative or advertising matter of any suitable character, as shown.

Fastened to the back B, as at b', by gluing or otherwise, are a number of struts comprising the fibers or bristles b, the free ends of which bear against the back of the disk A. These fibers are designed to rotate the disk on its pivot when acted on by sound-waves. To this end the fibers or bristles are quite fine and very elastic and preferably arranged in rows, as shown, the free ends of each row at the point of contact with the disk A being in a line radial to the axis of the disk, Fig. 4, and inclined at an angle of, say, sixty degrees in the direction of rotation. The rows of fibers preferably impinge the disk near the periphery thereof in order that their slightest deflection may be readily imparted to the disk. The disk being limited in its outward movement by the head of the pin D or, if desired, by the edge of the top C, the pressure on the disk as each successive wave sound strikes the same, assuming that the mouth of the speaker or a musical instrument be held in proximity to the pinion in the front C, will move the disk a slight degree longitudinally, as to the pin D, and inasmuch as the elastic fibers b are fastened to the back B and bear against the rear face of the disk the thrust thereof will cause the disk to move forward. This will be understood by reference to the diagram in Fig. 5. The full lines indicate the original positions of the disk A and fibers or bristles b. As the disk is moved longitudinally as to the pin D by sound-waves or to the dotted-line position Z the relative height of the fibers will be decreased and their movement from X to Y will be imparted to the disk and rotate the same. In the interval between each pair of waves the fibers move back to their original position, the free ends thereof sliding over the disk and moving it outwardly to its original position on the pivot-post, but not rotating it backwardly. The rear side of the disk A is preferably made of a slightly-rough material in order that the fibers may easily engage the same to move the disk forward.

By providing the outer face of the front C with graduations and the disk with a pointer a the device may be employed for testing the duration and volume of vocal and instrumental sounds.

I claim as my invention—

1. In a sound-motor, in combination, a cas-

ing, an axially-movable rotatable diaphragm therein, and a plurality of deflectable struts secured at one end to the casing and frictionally engaging the diaphragm and inclined in the direction of rotation thereof.

2. In a sound-motor, in combination, a casing, a longitudinally-movable rotatable diaphragm therein, and a plurality of elastic fibers secured at one end to the casing and frictionally engaging the diaphragm with their free end, the said fibers being inclined in the direction of rotation of the diaphragm.

3. In a sound-motor, in combination, a casing, a headed pin located in the casing, a disk rotatably mounted on and movable longitudinally as to the pin, and a plurality of elastic fibers secured in the casing and frictionally engaging the rear face of the diaphragm, the said fibers being inclined in the direction of rotation of the diaphragm.

4. In a sound-motor, in combination, a casing, a rotating disk the rear face of which is roughened, a headed pin fixed in the back of and extending perpendicularly into the casing, a disk rotatably mounted on and movable longitudinally as to the pin, a plurality of elastic fibers secured at one end to the back of the casing and bearing with their free end against the back of the disk, the said fibers being inclined in the direction of rotation of the disk.

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Witnesses:
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