H. S. MARTIN.

ELECTRIC MUSICAL INSTRUMENT.

APPLICATION FILED APR. 29, 1916.

1,216,829. Patented Feb. 20, 1917.

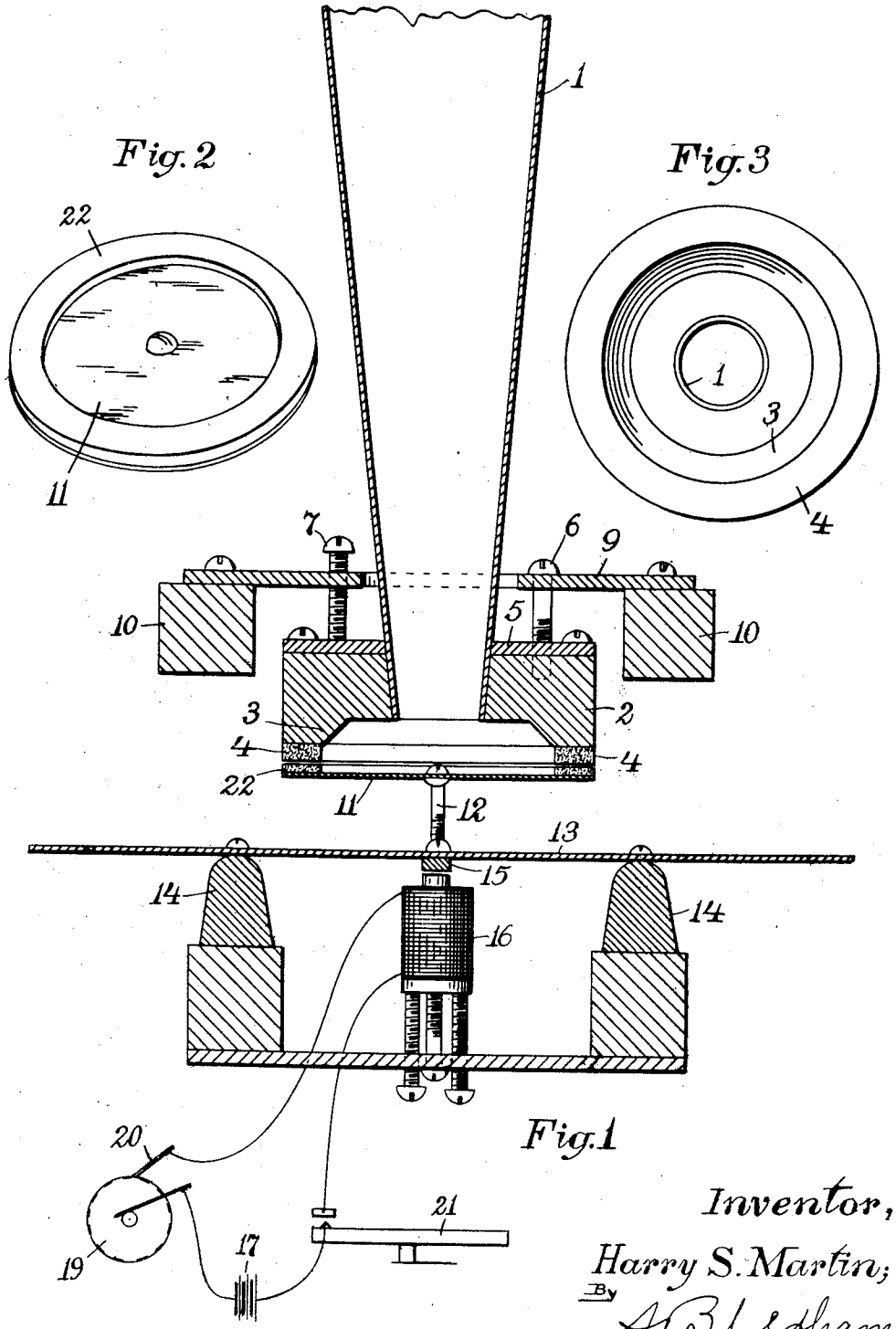


Fig. 2

Fig. 3

Fig. 1

Inventor,

Harry S. Martin;

By A. Bledham.

Attorney.

UNITED STATES PATENT OFFICE.

HARRY S. MARTIN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO CHORALCELO COMPANY, A CORPORATION OF MAINE.

ELECTRIC MUSICAL INSTRUMENT.

1,216,829. Specification of Letters Patent. Patented Feb. 20, 1917.

Application filed April 29, 1916. Serial No. 94,466.

To all whom it may concern:

Be it known that I, HARRY S. MARTIN, a citizen of the United States, and a resident of the city of Boston, in the county of Suffolk and Commonwealth of Massachusetts, having invented new and useful Improvements in Electric Musical Instruments, hereby declare the following to be a full, clear, and exact specification of the same.

This invention pertains to that type of musical instruments wherein a sonorous body is vibrated through the influence of appropriately timed magnetic pulsations; and it has for its purpose the production of sonorous vibrations of a new quality and greater volume.

In the accomplishment of these results, I provide a sonorous chamber having a mouth composed of a yielding material, with a properly timed vibrating reed or member percussing the entire periphery of said mouth, thereby setting up in the column of air in the sonorous chamber a vigorous and unusual musical tone.

In the drawings forming part of this specification, Figure 1 is a sectional elevation showing my invention as applied to a single musical note, but the suitably modified duplication of which would produce an entire musical instrument. Fig. 2 is a perspective view of the portion of my instrument which I term a striking reed. Fig. 3 is an under view of the mouth of the sonorous chamber.

The reference numeral 1 designates the sonorous chamber, which is here shown as conical, but may be of any other suitable shape, and of a length to yield the rate of vibrations desired. The smaller end of this cone 1 is supported snugly within a block 2, composed of wood, compressed fiber or the like, and having an annular mouth 3 to which a ring of felt 4 or other yielding material is cemented. Upon the upper surface of the block 2 is fastened a metal plate 5 which is supported by screws 6, 7 from a large plate 9 held at its edges by suitable bars 10. Since certain of the screws pull, as 6, and the others push, as 7, the vertical adjustment of the block 2 can be accurately determined.

Directly below the felt ring 4 is a circular diaphragm 11 connected at its center by a stem 12 with a thin bar 13 tuned to the same pitch as the cone or horn 1. This thin bar is supported at its nodes by rails 14, and carries an armature 15 transversely disposed at its midlength. Beneath the armature is an electromagnet 16 presenting its pole thereto, and adapted when energized to attract thereto the armature and hence the thin bar 13.

Electric impulses are communicated to this electromagnet from a suitable source 17 interrupted by a rotary circuit breaking device comprising a toothed disk 19 and a brush 20. Such pulsatory currents are delivered to the electromagnet whenever the key 21 is depressed.

For many tones, it is best to cement a felt ring 22 to the outer portion of the diaphragm 11, but for other effects this ring is dispensed with.

The key 21 having been depressed, properly timed electric pulsations are delivered to the electromagnet 16, and the bar 13 is set into vibration. The diaphragm 11 is set into like vibration, and being suitably spaced relative to the felt ring 4, its peripheral portion constantly strikes the ring 4, and by such striking and by the pulsations which it gives to the column of air in the horn 1, it sets up the powerful and unusual sonorous vibrations desired. Without such actual engagement or striking of the said parts, the effects produced will be quite unsatisfactory both in loudness and timbre.

While I do not restrict myself to the devices illustrated and described for resiliently supporting the disk or striking reed 11, the same are simple and efficient mechanically, and also add to the sonorous effect musically.

What I claim is:

1. A musical instrument comprising a sonorous chamber having a mouth surrounded by a yielding material, and a vibrating body striking said yielding material.

2. A musical instrument comprising a sonorous chamber having a mouth surrounded by a yielding material, and a vibrating body striking said yielding material throughout the entire circle about the mouth.

3. A musical instrument comprising a sonorous chamber having a mouth surrounded by a yielding material, and a vibrating body striking said yielding material throughout the entire circle about the mouth, the rate of vibration of said body bearing a musical relationship to the pitch of said chamber.

4. A musical instrument comprising a sonorous chamber having a circular mouth, and a vibrating disk parallel with the plane of said mouth, one having a yielding ring attached thereto adapted to be struck when the disk is vibrating.

5. A musical instrument comprising a sonorous chamber having a circular mouth surrounded with a ring of yielding material, a thin disk equal in diameter to the exterior of said ring, a ring of yielding material attached to the peripheral portion of said ring, and means for vibrating said disk to cause said rings to strike, the rate of vibration bearing some musical relationship to the pitch of said chamber.

6. A musical instrument comprising a block having a central opening formed with a mouth, a felt ring attached to said block about said mouth, a horn supported in said opening, means supporting said block with said mouth beneath, a thin disk below said mouth, resilient means supporting said disk at its center, and means for vibrating said resilient supporting means and causing a percussive action to be given through said disk to said felt ring.

7. A musical instrument comprising a block having a central opening formed with a mouth, a horn supported in said opening, a vibrating disk near said mouth, a ring of yielding material between said disk and mouth normally out of contact with one thereof, a plate having a hole therein surrounding but out of contact with said horn, means supporting said plate, and screws connecting said block and plate for adjustably supporting the block and horn.

8. A musical instrument comprising a sonorous chamber having a mouth, a thin disk near said mouth, yielding material between said disk and mouth normally out of contact with one thereof, a thin bar supported at its nodes, a stem rigid with the center of said disk and the midlength of said bar, and electromagnetic means for vibrating said bar.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 8th day of April, 1916.

HARRY S. MARTIN.

Witnesses:
EDWARD S. CROCKETT,
A. B. UPHAM.