H. L. CASSARD.

PHONOGRAPH.

APPLICATION FILED JULY 21, 1915.

1,178,840.

Patented Apr. 11, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

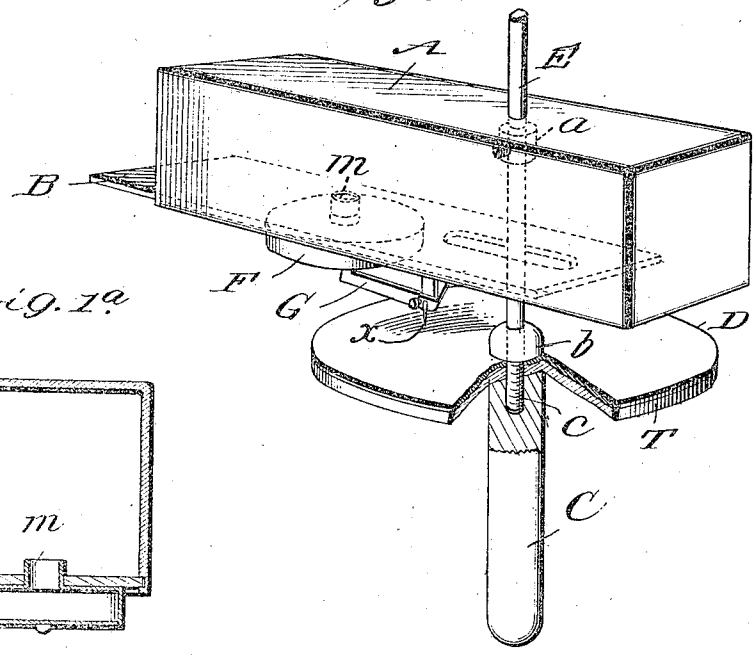


Fig. 1a

Fig. 4.

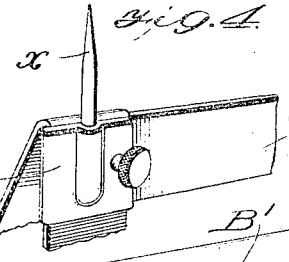


Fig. 2.

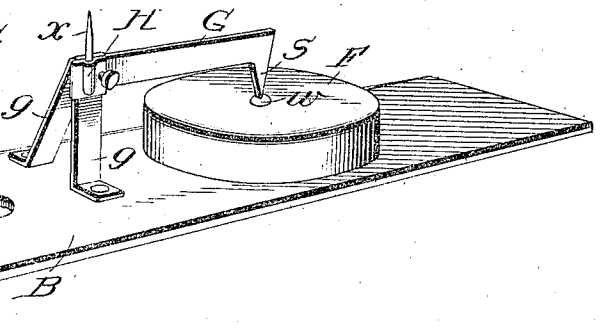
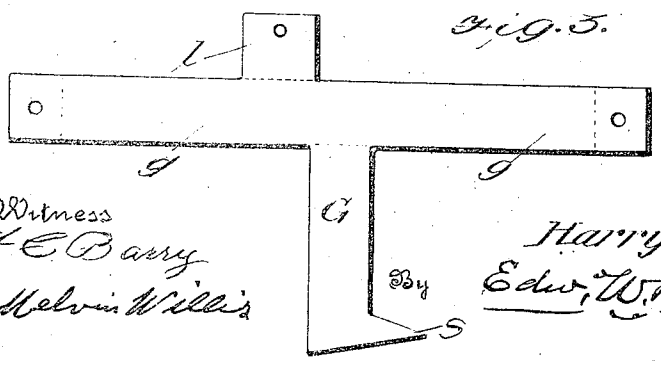


Fig. 3.



Witness
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2 SHEETS—SHEET 2.

Fig. 5.

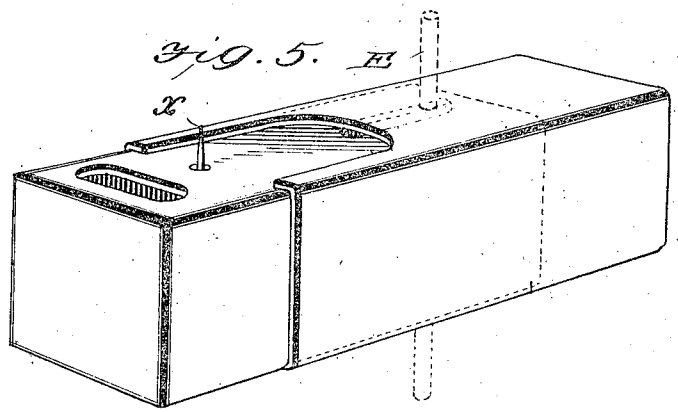


Fig. 6a.

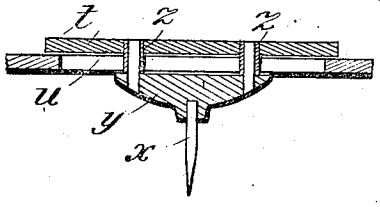


Fig. 6.

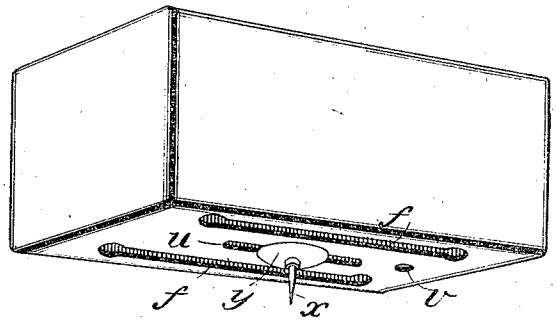


Fig. 7.

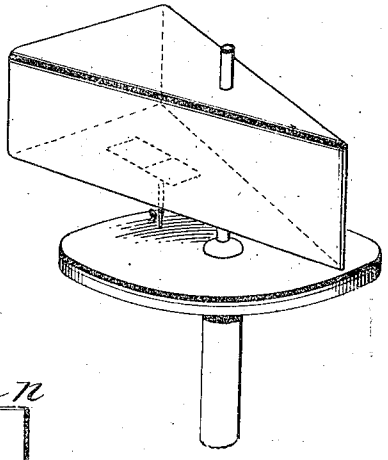
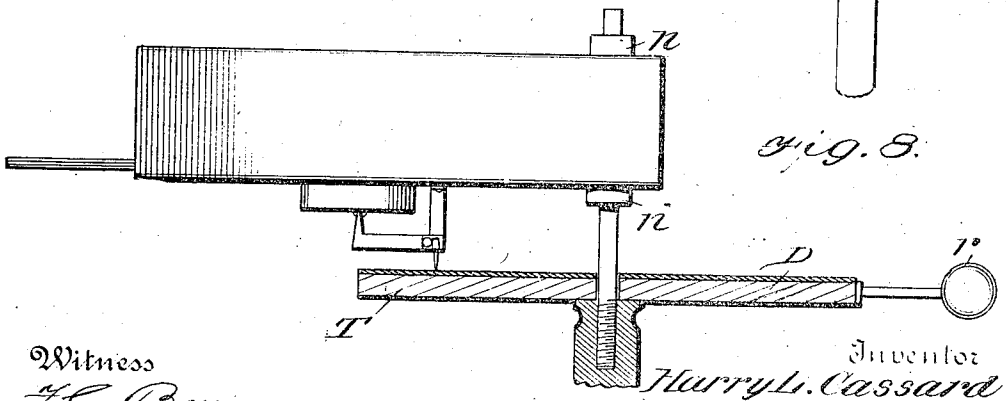


Fig. 8.



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UNITED STATES PATENT OFFICE.

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PHONOGRAPH.

1,178,840. Specification of Letters Patent. Patented Apr. 11, 1916.

Application filed July 21, 1915. Serial No. 41,107.

To all whom it may concern:

Be it known that I, HARRY L. CASSARD, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Phonographs, of which the following is a specification.

My invention is designed to provide a talking machine or sound producing device of the kind known as phonographs, graphophones and gramophones.

It relates more particularly to the gramophone type in which a disk record is employed. My idea is to provide a cheap toy of this kind for reproducing articulate speech, music, songs, &c., in which, instead of a definitely driven motor mechanism, the device is to be held in the hand and the necessary movement for causing the traverse of the needle in the groove of the record is secured by a whirling action in the hand, one of the parts being eccentrically weighted to cause, by centrifugal action, a movement between the needle and the record. U. S. Patent No. 836,470 was granted to E. C. Smith for a device of this general character. My invention is designed to be an improvement upon this device, which permits of the use of cheap ten cent records and secures a much clearer and louder tone and at a less expense, as will be more fully described hereafter with reference to the drawing, in which:

Figure 1 is a perspective view of the complete device. Fig. 1ª is a sectional end view of the open end of the sound box. Fig. 2 is an enlarged under side view of the sliding bottom of the sound box and its attachments. Fig. 3 is a view of the blank from which the needle holder frame is fashioned. Fig. 4 is a view of the needle holder, and Figs. 5 to 8 are views showing modifications.

In the drawing, Fig. 1, A is a resonant box preferably square in cross section and of elongated form and open at one end. The bottom B of the box slides longitudinally in guideways at the lower longitudinal edges of the box.

D is an ordinary disk record of gramophone type which is clamped rigidly to a basic table T on handle C in right angular position.

E is an axial stem, screw threaded at its lower end *e* to enter the handle C in axial position and having a small enlargement or flange *b* which clamps the disk to the end of the handle when the screw stem is turned in and which permits the quick and easy substitution of new disk records. A wooden block or hub *a* embraces the axial stem E within the box and is rigidly connected to the stem by a set-screw just beneath the top of the box so as to hold the box a predetermined distance above the disk record. On the lower side of the sliding bottom B of the box is rigidly mounted a light diaphragm F of the same general form and structure as the lid of a pill box made of any vibrating material, paper or cardboard serving the purpose for cheap construction. This diaphragm chamber opens into the box through a short tube *m*. Beside the diaphragm there is fixed to the bottom a three-part needle frame consisting of a horizontal member G and two angularly arranged legs *g g* which at their apex carry the needle *x* secured thereto by a needle holder H, which latter is indented on one side with a seat to hold the shank of the needle and which needle holder is clamped to the frame by a set-screw and is made to pinch and hold rigidly the needle. The horizontal member of the needle holding frame has at its outer end a spur *s* which rests against the diaphragm through the intermediary of a bit of wax *w*. For the cheap and convenient formation of this needle frame it is stamped in one piece of thin metal in the form of the blank shown in Fig. 3, the lug *l* of the blank in Fig. 3 forming, when bent around, the needle holder H of Figs. 2 and 4.

Referring now to Fig. 1, it will be seen that the sound box A turns freely on the stem E as an axis and the needle rests in the spiral groove of the record D, the center of gravity of the box being on one side of the axial stem, so that when the handle C is grasped in the hand and a whirling or gyratory motion is given to the box the latter swings around the axial stem E and the needle traverses the groove in the non-rotating disk and thus the record of the disk is reproduced by the vibrant quality of the diaphragm and sound box, which latter acts like a violin body to greatly amplify and clarify the sound, whether it be articulate speech or music.

In carrying out my invention I make various modification of the same. Thus, for in-

stance instead of making the whole bottom of the box slidable, the box may be made in two telescopic or collapsible sections as in Fig. 5, one section being hung on the axial stem and the other being arranged to carry the needle and capable of progressive motion in radial direction to the central axis as the needle traverses the groove of the record. Furthermore, the sound box may be constructed as in Fig. 6, in which the box is closed on all sides and has slotted holes *f* like the *f*-holes of a violin, to let the sound out. In this case the needle *x* is attached to a button *y* and this, see Fig. 6ª, is connected by two rubber covered pins *z* to a slide *t* inside the box. The rubber covered pins *z* slide in a slot *u* in the box toward or away from the axial center *v*. In Fig. 5 one side of the movable box section forms the diaphragm and in Figs. 6 and 6ª the button *y* and attached slide *t* form the diaphragm.

Another modification, seen in Fig. 7, shows the sound box in triangular or wedge shape. This not only makes the outer end heavier for better centrifugal effect, but also gives a diverging horn-like outlet for the sound, the box being open at its larger end.

As so far described, the sound box revolves and the disk record is relatively stationary. It is obvious that the sound box may, as in Fig. 8, be relatively stationary and the disk rotated by providing it with an eccentric weight, *r* and swiveling it on the axial stem, and clamping the sound box in such case rigidly to the handle by nuts *n n*.

In all of these forms the resonant sound box, of violin action, is employed and the sound box is provided with two parts capable of relative progressive movement toward or away from the center in radial direction to permit the proper traverse or progression of the needle in the groove of the disk record, the needle and diaphragm being both supported upon and carried by the sound box, but being slidably adjustable in relation thereto.

What I claim is:

1. In a sound producing device of the kind described, the combination with a disk record member and a manually operable handle with axial stem; of a sound box supported upon said stem and bearing a diaphragm and needle, the sound box being provided with a slidable member carrying said diaphragm and needle.

2. In a sound producing device of the kind described, the combination with a disk record member and a manually operable handle with axial stem; of a sound box supported upon said stem and bearing a diaphragm and needle, the sound box being provided with a slidable member carrying said diaphragm and needle, the sound box being arranged to swing about the axial stem.

3. In a sound producing device of the kind described, the combination with a disk record member and a manually operable handle with axial stem; of a sound box supported upon said stem and bearing a diaphragm and needle, the sound box being provided with a slidable member comprising said diaphragm, the slidable member being arranged to form the bottom of the sound box and movable in guideways in the lower edges of the same.

4. In a sound producing device of the kind described, the combination with a disk record member and a manually operable handle with axial stem; of a sound box supported upon said stem and bearing a diaphragm and needle, the sound box being provided with a slidable member comprising said diaphragm and needle, the sound box having an opening in its walls to permit the issuance of the sound vibrations.

5. In a sound producing device of the kind described, the combination with a disk record member and a manually operable handle with axial stem; of a sound box bearing a diaphragm and needle, the sound box being provided with a slidable member carrying said diaphragm and needle, and a support attached to the axial stem within the sound box and resting against the lower surface of the upper side of the same to hold the sound box and its needle in proper relation to the subjacent record disk.

6. In a sound producing device of the kind described, the combination with a disk record member and a handle with axial stem; of a sound box bearing a diaphragm and needle, the sound box being provided with a slidable member carrying said diaphragm and needle, and a support attached to the axial stem to sustain the sound box and needle in proper relation to the disk record.

7. In a sound producing device of the kind described, the combination with a disk record member and a sound box; of a central subjacent handle having an upright axial stem passing through the sound box and supporting the same and having a screw threaded lower end adapted to enter the handle, and a projection adapted to clamp the disk record against the handle.

In testimony whereof I affix my signature.

HARRY L. CASSARD.