C. E. WOODS.

GRAPHOPHONE.

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1,163,120.

Patented Dec. 7, 1915.

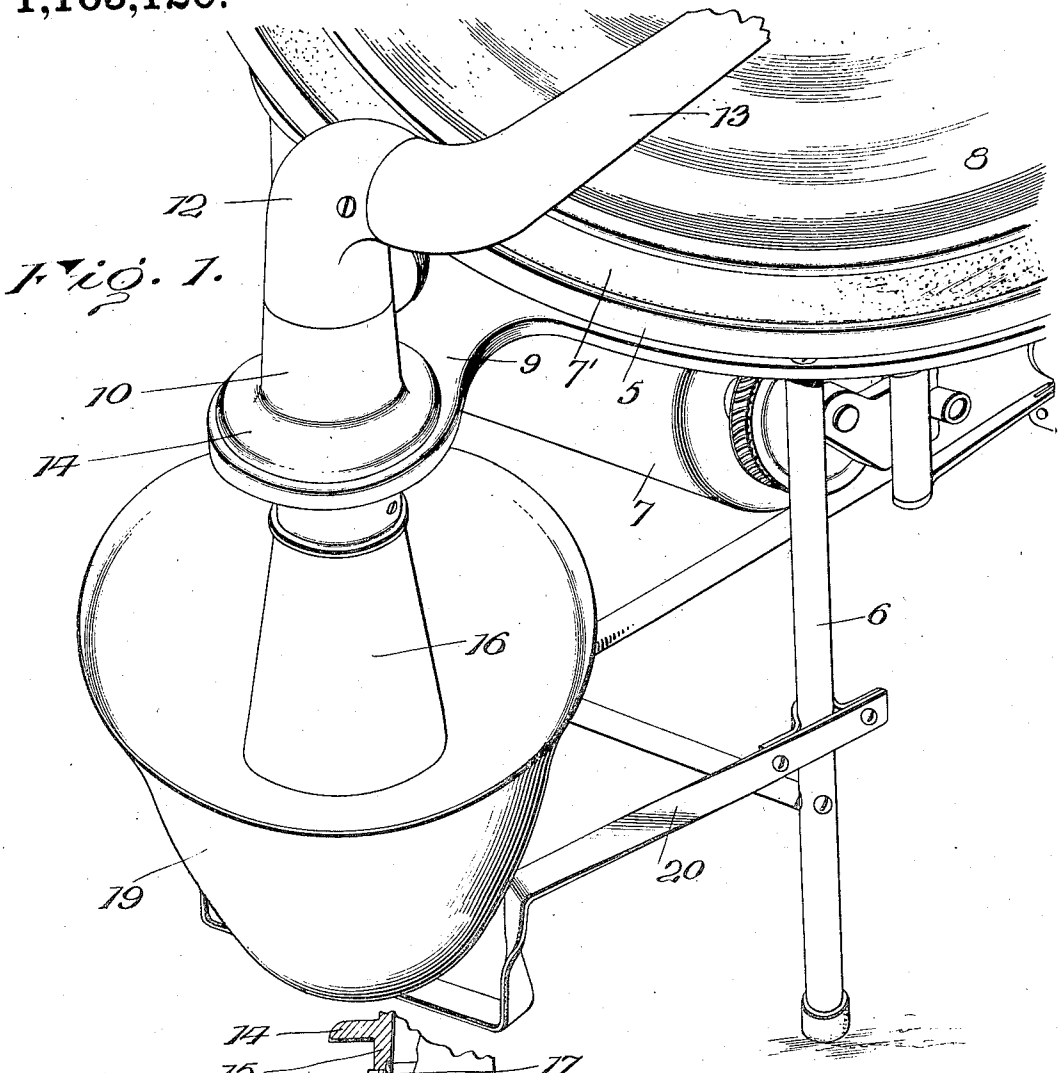

Fig. 1.

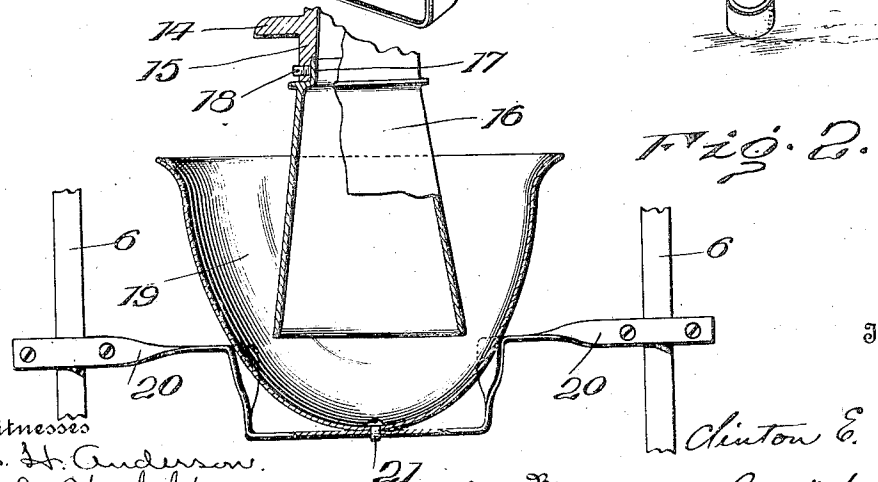

Fig. 2.

Witnesses

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GRAPHOPHONE.

1,163,120. Specification of Letters Patent. Patented Dec. 7, 1915.

Application filed August 30, 1913. Serial No. 787,459.

To all whom it may concern:

Be it known that I, CLINTON E. WOODS, of Bridgeport, Connecticut, have invented a new and useful Improvement in Graphophones, which invention is fully set forth in the following specification.

The present invention is an improvement in graphophones, and the object of the invention is to provide a hornless machine of simple, compact and cheap construction, which will emit an increased volume of sound, and deliver the sound waves uniformly in all directions.

The invention will be better understood by reference to the accompanying drawing, illustrating one expression of the inventive idea, and wherein—

Figure 1 is a perspective view, partly broken away, of a talking machine provided with the invention; and Fig. 2 is a detail vertical section, partly in elevation, showing the deflector and the tube that conveys the sound waves thereto.

Referring to the drawing, wherein like reference numerals in the two views indicate like parts, 5 represents a motor board supported by any suitable means such as a plurality of legs 6. To the under side of the board is secured, in any suitable manner, a motor 7, here shown as a spring motor. A turn-table 7′ is driven by said motor and with it the sound record 8. The motor board is provided with a perforated ear 9 on which is mounted a hollow support 10 for the tone arm, which latter comprises, preferably, a horizontal member 13, on the free end of which latter is secured a sound box (not shown), and an elbow 12 to which the member 13 is horizontally pivoted. The vertical leg of the member 12 is vertically pivoted on the hollow support 10, the support serving to permit movement of the tone arm including the elbow about a vertical axis but to hold the elbow against other movements. The hollow support 10 is provided with a flange 14, which rests on the ear 9 adjacent the perforation therein, and an extension 15 which projects downwardly through said perforation and in engagement with the walls thereof. Secured to said extension in any suitable manner is a downwardly projecting tone tube 16, preferably tapering in shape, and, as here shown, being provided at its upper end with a flange 17 engaging the inside of the extension 15, said tube being held in place by a screw 18 which passes through the extension 15 and engages the flange 17. Any suitable means for securing tube 16 in place may, however, be employed. Said tube projects into a parabolically shaped reflector 19 which, as here shown, is supported by a bracket 20 in any suitable manner, as by a screw 21, said bracket being held by two of the legs 6. It will be appreciated, however, that any suitable supporting means for the reflector may be employed. The mouth of this parabolic reflector opens upwardly and, preferably, this mouth is in a horizontal plane below that of the plate 5. The opening of the tube 16 is at approximately the focus of the parabolic reflector, with the result that the sound waves issue vertically from the latter undistorted and in parallel lines, and spread with equal and great volume in all directions.

It has been found that, with a parabolic reflector against which the sound waves are delivered by a tube the opening of which is positioned at approximately the focus of said parabolic reflector, an increased volume of sound is secured; and that, by arranging said reflector with its mouth pointing upwardly, said increased volume of sound will be delivered uniformly in all directions.

I am well aware that it has been heretofore proposed to provide a parabolic reflector with the end of a tone tube at or near its focus, and I do not therefore claim such a construction broadly. However, by my invention I have provided a novel arrangement of parts having important advantages. In a graphophone of the disk type the tone arm is vertically pivoted at one side of the turn-table and, when simplicity and compactness are desired, the sound amplifying or reflecting devices must be located close to the axis of vertical pivoting. In my improved construction, there is provided a short vertical tone tube having its axis coincident with the axis of pivoting, and the upward opening parabolic reflector is arranged with its axis coinciding with the axis of pivoting and with the axis of the tone tube. In this way the maximum of compactness is attained. With this arrangement it is not even necessary to carry the main parts of the frame outward to the tone

tube and the reflector, and these parts can be positioned outside of the outline of the frame and out of vertical register with the main frame board which supports the turn-table, the motor and other parts. Preferably as shown, the main frame elements are provided with one extension 9 for carrying the tone tube and the pivot for the tone arm and with another independent extension 20 for carrying the parabolic reflector.

While, for the purpose of illustration, one expression of the inventive idea has been herein shown and described in detail, it is to be understood that the invention is not to be limited to the construction shown, but that the inventive idea is susceptible of various mechanical expressions within the limits of the claims hereto appended.

What is claimed is:—

1. In a graphophone, the combination of a tone arm adapted to carry a sound box at one end and provided at the other end with a downward directed elbow about the vertical axis of which it is free to swing, a non-rotary vertical tone tube communicating at its upper end with the said tone arm elbow and having its axis coincident with the said axis of swinging, and a parabolic reflector having its axis vertical and coincident with the aforesaid axes and having its focus at the lower end of the tube and its upper edge considerably above the lower end of the tube.

2. In a graphophone, the combination of a tone arm adapted to carry a sound box at one end and provided at the other end with a downward directed elbow, a support for the elbow permitting movement about a vertical axis but holding it against other movements, a non-rotary vertical tone tube communicating at its upper end with the said tone arm elbow and having its axis coincident with the said axis of swinging, and a parabolic reflector having its axis vertical and coincident with the aforesaid axes and having its focus at the lower end of the tube and its upper edge considerably above the lower end of the tube.

3. In a graphophone, the combination of a motor board, a turn-table on the board, mechanism including a motor for driving the turn-table mounted beneath the board, supporting means for the board and the devices attached thereto, an upward opening parabolic reflector rigidly connected with the said supporting means and board and positioned with its axis vertical and out of vertical register with any part of the supporting means and motor board, a non-rotary vertical tone tube terminating at its lower end at the focus of the reflector, and a tone arm adapted to carry a sound-box at one end and provided at the other end with a downward directed elbow having a vertical pivotal axis coincident with the axes of the reflector and tone tube.

4. In a graphophone, the combination of a motor board, an ear extending horizontally from the board, a vertical tube secured to the ear, a tone arm connected with the tube at the upper end thereof, a parabolic reflector having its axis vertical and having its focus at the lower end of the tube, and means independent of the said tube and ear for supporting the reflector.

5. In a graphophone, the combination of a motor board, legs for supporting the motor board, a vertical tube, means for supporting the tube from the board, a tone arm connected with the tube at the upper end thereof, a parabolic reflector having its axis vertical and having its focus at the lower end of the tube, and means carried by the legs independently of the board for supporting the reflector.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CLINTON E. WOODS.

Witnesses:
JOHN R. PETRIE,
JOHN S. GRIFFITH.