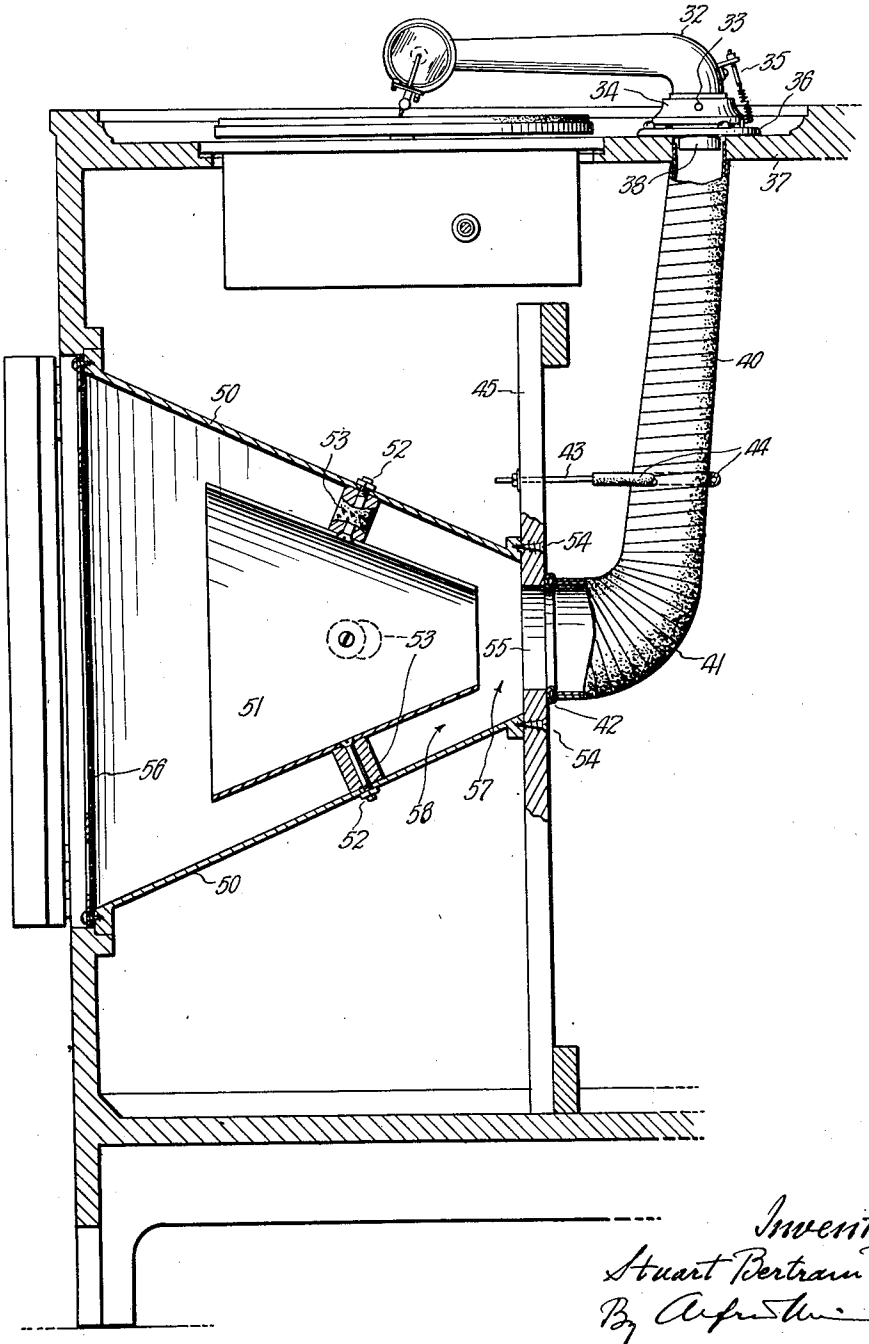
Jan. 6, 1925. 1,522,095

S. B. BOOTY

AMPLIFYING HORN

Original Filed June 7, 1922 2 Sheets-Sheet 1

Fig. 1



Inventor:
Stuart Bertram Booty
By
Atty.

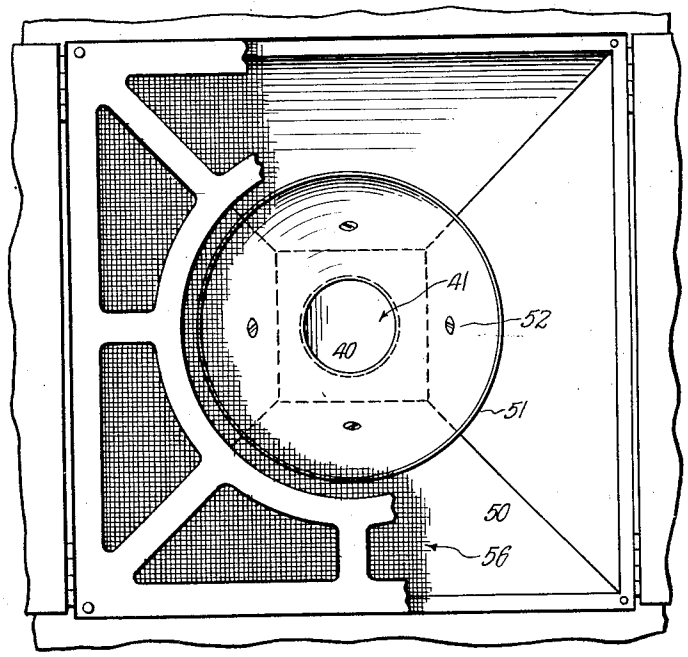
Jan. 6, 1925. 1,522,095

S. B. BOOTY

AMPLIFYING HORN

Original Filed June 7, 1922 2 Sheets-Sheet 2

Fig. 2



Inventor:
Stuart Bertram Booty
By Alfred Thurston
Atty.

Patented Jan. 6, 1925. 1,522,095

UNITED STATES PATENT OFFICE.

STUART BERTRAM BOOTY, OF DULWICH HILL, NEAR SYDNEY, NEW SOUTH WALES, AUSTRALIA.

AMPLIFYING HORN.

Original application filed June 7, 1922, Serial No. 566,462. Divided and this application filed January 3, 1923. Serial No. 610,507.

To all whom it may concern:

Be it known that I, STUART BERTRAM BOOTY, subject of the King of Great Britain and Ireland, residing at 33 Barnesbury Grove, Dulwich Hill, near Sydney, in the county of Cumberland and State of New South Wales, Australia, have invented certain new and useful Improvements in Amplifying Horns (being a division of application No. 566,462, filed 7th June, 1922), of which the following is a specification.

This invention relates to apparatus for reproducing sounds from disc records and cylindrical records. Its objects are to produce clarity and loudness in the reproduction.

The tone arm is connected to a resonator amplifier through a taper tube which is independently supported and is wrapped to dampen vibration in its walls. The resonator comprises two chambers concentrically arranged; one of these chambers is resonant to vibrations of relatively high frequency and the other to vibrations of relatively low frequency.

In the accompanying drawings,—

Fig. 1 is a longitudinal sectional elevation through a talking machine incorporating the features of my invention, and

Fig. 2 is a fragmentary frontal elevation of the resonator, a portion being broken away to show the interior construction.

The shoulder bend 32 of a tone arm is carried in a trunnion mounting which offers it sufficient vertical freedom of movement to allow of insertion of needles and adjustment of the reproducer on the record. The trunnion mounting pins 33 are carried in a ball bearing collar 34 which offers freedom for traverse of the tone arm as the needle runs through the groove on the record. The "load" imposed on the needle to hold it in the record groove is controllable by the screw adjustable spring bridle 35 which connects the back of the shoulder bend 32 to the ball bearing collar 34 in which it is trunnioned. The base ring 36 which covers the ball bearing collar 34 is screwed down to the case top 37, a metal tube extension 38 protruding downwardly therefrom.

The connector tube or sound column 40 is a tapered tube of copper or aluminium, bent at 41, and terminated at its mouth end in a rubber collar 42; the top end of this tube 40 sets closely about the tube extension 38 of the tone arm but does not contact with it. The tube 40 is supported by a bracket 43 which embraces it in a rubber covered U shaped collar 44. The bracket 43 is fixed in the heavy diaphragm plate 45 in the underpart of the machine cabinet structure. The thin metal sound column 40 is wound all over with two or more thicknesses of tape of any fibrous material covered in varnish, to render the wall of the tube non-vibratory.

The resonator in which the invention consists, contains two flared chambers, an outer chamber 50 which may be rectangular in cross section, and an inner concentrically disposed frustro conical trumpet 51. The trumpet 51 is mounted in the chamber 50 by bolts or the like 52 which pass through cork spacing washers 53, the object of which is to prevent transmission of vibration from the chamber walls 50 to the trumpet walls 51, or vice versa. The back end or throat of the chamber 50 is attached by screws 54 to the cabinet diaphragm plate 45, with the orifice 55 in said plate, which aligns with the mouth of the sound column 40, centrally disposed in relation to it at its forward end. At its forward end the chamber 50 may be covered with silk or other like porous fabric 56 subdivided by fretwork or the like. The conical trumpet 51 is secured with its narrow open end directed towards the aperture 55 in the diaphragm plate 45, with an annular intervening clearance space 57 somewhat deeper than the annular clearance space 58 between the trumpet 51 and the chamber walls 50. The trumpet 51 is about half the length of the resonator box 50. The resonator box 50 is constructed of jointed ply wood and the trumpet 51 of thin metal such as steel or brass. The trumpet 51 functions as an articulator. Sonorous sounds are amplified in the resonator box 50, but vibrations of high frequency are amplified with superior effect in the trumpet 51 with the result that clearer articulation and enunciation are obtained with substantial absence of reverberation or echo effect.

To obtain efficient results it is necessary that resonant tones shall not be imposed on the vibrating air column between the reproducer and the amplifier. To prevent

such objectionable effects the sound column 40 is clad to dampen vibration in its walls.

What I claim as my invention and desire to secure by Letters Patent is:—

In apparatus for reproducing sounds of low and high frequency from disc records and cylindrical records, a resonator amplifier consisting of a flaring rectangular jointed ply-wood chamber open at both ends and having its back end or throat attached to a diaphragm plate in alignment with an orifice in said plate and the mouth of a sound column centrally disposed in relation to the orifice in said plate, an inner concentrically disposed frusto-conical metal trumpet about half the length of said flaring rectangular wooden chamber secured with its narrow open end directed towards the orifice in said diaphragm plate, the annular clearance space between the narrow open end of said trumpet and the orifice in said diaphragm plate being somewhat deeper than the annular clearance space between said trumpet and wooden chamber, and non-vibratory means consisting of bolts passing through cork washers for mounting said trumpet.

In testimony whereof I affix my signature.

STUART BERTRAM BOOTY.