No. 797,724. PATENTED AUG. 22, 1905.

C. J. EICHHORN.

AMPLIFYING HORN.

APPLICATION FILED JUNE 14, 1904.

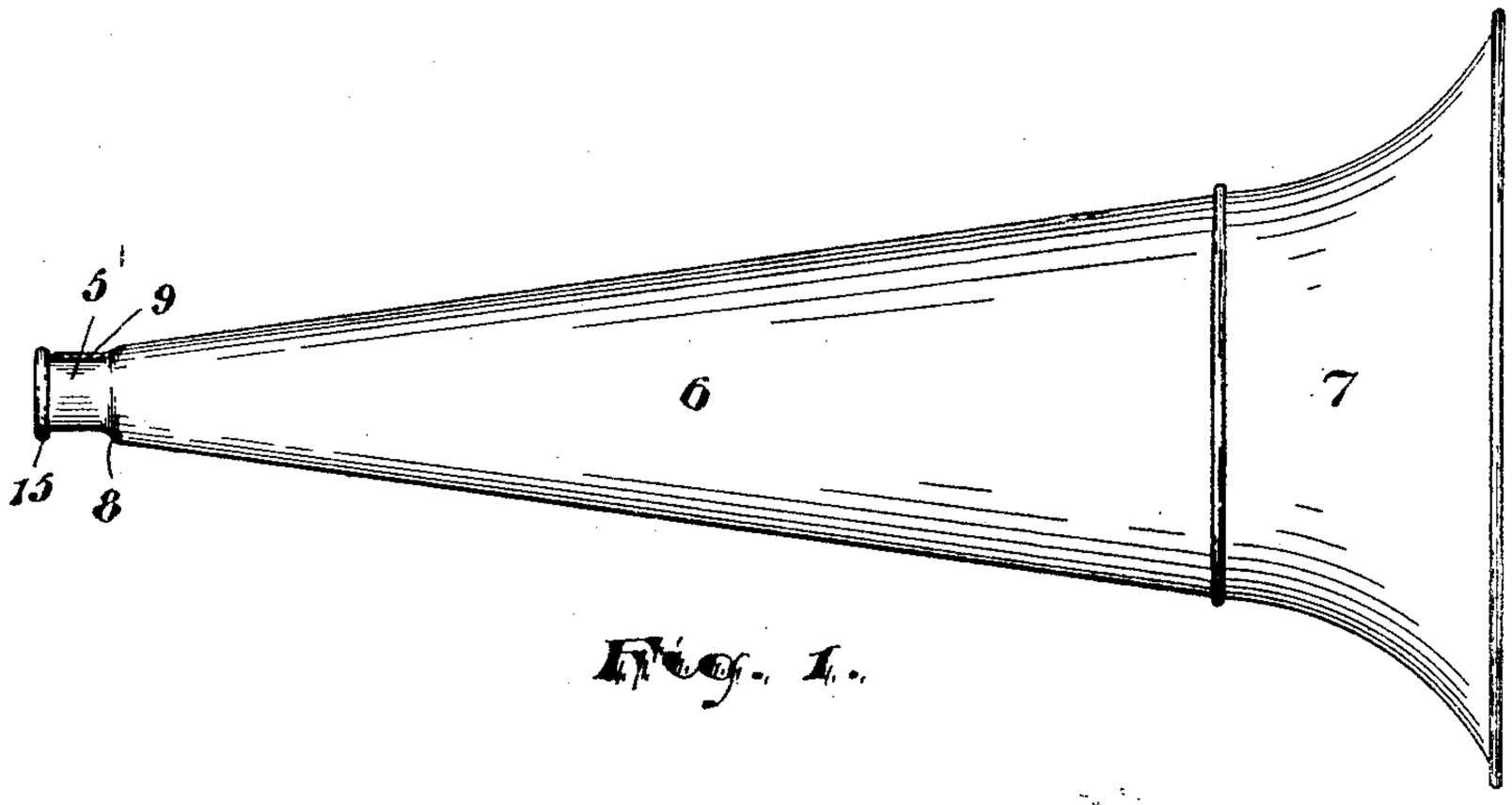

Fig. 1.

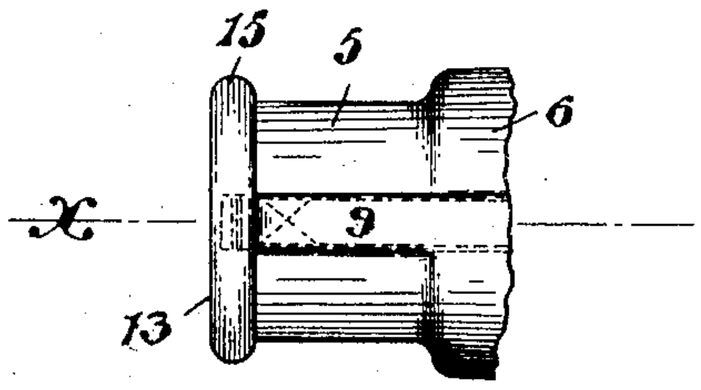

Fig. 2.

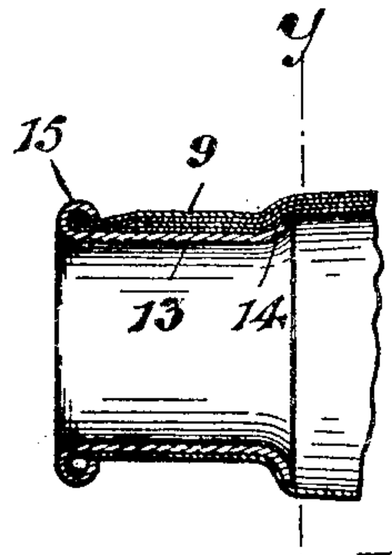

Fig. 3.

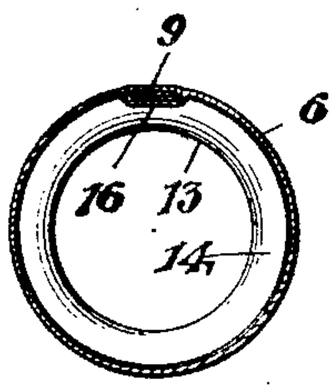

Fig. 4.

WITNESSES:

Ralph Lancaster

Russell M. Everett.

INVENTOR:

Charles J. Eichhorn,

BY

Charles A. Pell

ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES J. EICHHORN, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE TEA TRAY COMPANY, OF NEWARK, NEW JERSEY.

AMPLIFYING-HORN.

No. 797,724. Specification of Letters Patent. Patented Aug. 22, 1905.

Application filed June 14, 1904. Serial No. 212,509.

To all whom it may concern:

Be it known that I, CHARLES J. EICHHORN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Amplifying-Horns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to secure greater stiffness and strength in an amplifying-horn at the smaller end thereof where it is coupled to a talking-machine, recording-machine, or similar apparatus or device, it being understood that such horns are usually attached and supported at their smaller end, the large end projecting in a horizontal direction away from the bearing or support to which the horn is secured.

Other objects are to enable the horns to be manufactured with greater facility and ease, to present a neat finish at the extremity, and to secure improved effects in the reproducing operations.

The invention consists in the improved amplifying-horn and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of the improved amplifying-horn. Fig. 2 is a detail plan of the smaller end thereof on an enlarged scale. Fig. 3 is a section taken through line x of Fig. 2, and Fig. 4 is a section taken through line y of Fig. 3.

In said drawings, 5 indicates the small tubular end of my improved horn. 6 is the flaring body thereof, which may be the frustum of a cone, and 7 indicates the bell end of the horn.

Heretofore the said small end of the horn has been made cylindrically tubular, as shown, after the sheet metal has been bent into approximately conical form and the longitudinal edges thereof connected or jointed. This has been done by pressing the metal inward by means of dies or formers at points a little back or away from the smaller extremity of said flaring part, so as to form a shoulder 8 and so that the metal instead of being flaring, as at the beginning of the process, is cylindrical and is adapted to fit closely and properly upon or into the speaker-tube of the talking-machine or in connection with a large horn, so as to properly receive the rubber tube commonly employed in connecting said horn with the machine.

To secure greater stiffness and strength at the small end and at the same time to secure the desired result without materially increasing the cost, I form the flaring body and cylindrical end with a longitudinal seam at one side, as indicated at 9, the said seam being formed by bending the edges of the metal so that they interlock one edge with the other, as indicated in Fig. 4, the interlocking thickness of metal producing a rib of quite solid metal which gives increased strength and rigidity to the horn, especially where it is needed, to enable said small end to sustain the weight of the larger end.

In my improved construction the projecting rib is disposed by the tools employed in manufacturing it, so that at the body of the horn the said rib projects inward from the walls of the flaring body, as indicated in Fig. 4, while in the tubular or cylindrical smaller end 5 the said rib projects outwardly from the outer walls of said cylindrical portion. I thus secure increased strength of the tubular part where the supporting strain is brought upon the horn; but where the said horn is prominently in sight the outer surface is smooth, because of the projection of the rib being on the inside. Thus the said horn is rendered more sightly and neat in its appearance, as well as strong, and, furthermore, because of the outer projection of the rib the cylindrical part is made smooth on the inside, and the speaker-tube may fit within the said cylindrical part with greater neatness and nicety of adjustment and with greater firmness and security. To still further increase the strength of the smaller end of said horn, especially when the flaring body and small cylindrical end of one integral piece are of thin sheet metal, such as conduces to lightness and convenience in handling, I reinforce the said cylindrical part by means of an in-

ternal thimble or bracing-shell 13. (Shown more clearly in Figs. 3 and 4.) Said shell comprises a seamless tube which is inserted closely within the smaller cylindrical end against the interior walls thereof, and I lock the said tube within said smaller end by pressing outward the inner or forward end, as at 14, the pressing being accomplished by means of a spinning process or pressure provided by tools in any suitable manner. The opposite end of the said tube, shell, or thimble is turned outward and forward over the rear extremity of the smaller end, as at 15, thus giving neatness of finish to the extremity of the horn and avoiding the sharp and more or less ragged edges heretofore commonly provided in all horns of this class.

To enable the inner end of the bracing-shell to fit close against the flaring sides of the body 6, where said body connects with the cylindrical smaller end, I have formed a notch 16 in the flaring inner extremity of said shell to receive the rib. The said rib lying in said notch also serves to prevent the bracing-shell from turning within the smaller end.

Having thus described the invention, what I claim as new is—

1. The improved horn, herein described comprising a flaring body and a cylindrical small end integral with said body, and a tubular shell inserted within said cylindrical small end, the inner end of said shell being turned outwardly into flaring body and the opposite end being turned outwardly and forwardly over and around the extremity of said cylindrical small end, substantially as set forth.

2. The improved horn herein described comprising a flaring body and a cylindrical small end, a shoulder being formed interiorly at the junction of the cylindrical and flaring walls, and a tubular shell extending at one end into the flaring body and thereat being bent outwardly against said shoulder and at the opposite end projecting out from said cylindrical small end and being outwardly bent to engage the rear extremity of said small end substantially as set forth.

3. The improved horn having a longitudinal seam formed by turning and interlocking the opposite edges of said horn, said horn having a cylindrical small end and a flaring large end, the said longitudinal rib projecting outward at the cylindrical part and inward at the flaring part, substantially as set forth.

4. The improved horn having a longitudinal seam formed by turning and interlocking the opposite edges of said horn, said horn having a cylindrical small end and a flaring large end, the said longitudinal rib projecting outward at the cylindrical part and inward at the flaring part, and a shell or thimble inserted in said small cylindrical end and having its forward end notched and pressed outward against the flaring sides of the horn, substantially as set forth.

5. The improved horn having a longitudinal seam formed by turning and interlocking the opposite edges of said horn, said horn having a cylindrical small end and a flaring large end, the said longitudinal rib projecting outward at the cylindrical part and inward at the flaring part, and a shell or thimble inserted in said small end and having a notched forward end, into the notch of which the said rib lies and having an outwardly and forwardly curved rearward end covering the extremity of the said cylindrical small end of the horn, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of May, 1904.

CHARLES J. EICHHORN.

Witnesses:
CHARLES H. PELL,
RUSSELL M. EVERETT.