

No. 814,891.

PATENTED MAR. 13, 1906.

L. L. TERHUNE.
HORN FOR RECEIVING AND DELIVERING SOUND.

APPLICATION FILED MAY 22, 1903.

Fig. 3.



Fig. 1.



Fig. 4.



Fig. 2.

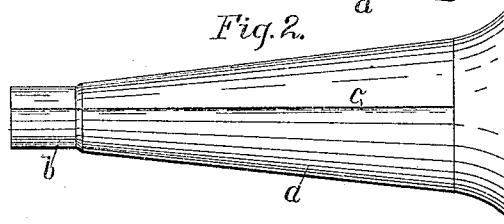


Fig. 5.

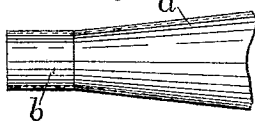


Fig. 6.

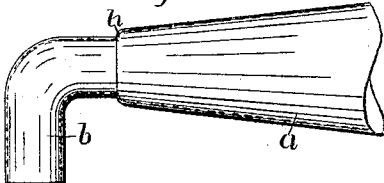


Fig. 7.

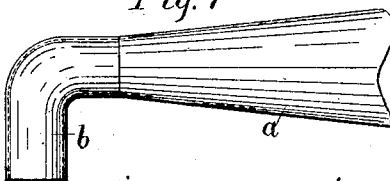


Fig. 8.

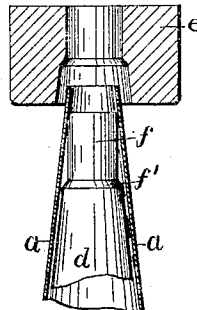


Fig. 9.

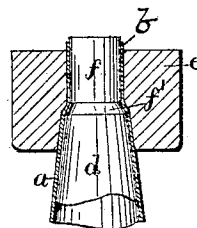


Fig. 10.

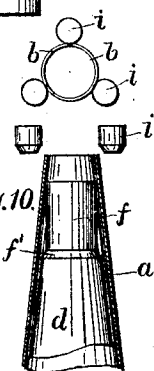
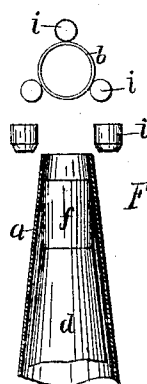


Fig. 11.



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HORN FOR RECEIVING AND DELIVERING SOUND.

No. 814,891.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed May 22, 1903. Serial No. 158,244.

To all whom it may concern:

Be it known that I, LEONARD L. TERHUNE, a citizen of the United States, residing in Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Horns for Receiving and Delivering Sound; 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in horns for use in receiving and concentrating sound and for delivering and amplifying sound, and is particularly applicable to recording and reproducing horns on talking-machines.

The object of my invention is to construct a horn made of one piece of material having the ferrule formed integral with the body of the horn, thereby reducing the cost of manufacture considerably and producing a more rigid and durable construction. Heretofore it has been customary to form the conical body of the horn in one piece and the cylindrical ferrule of the horn of another piece and then uniting the two pieces by soldering them together. This construction has been very objectionable in view of the fact that the acid used in the soldering process would invariably run into the seam of the conical part of the horn and prevent the japan with which the horn is usually covered from adhering to the seam at that particular point where the acid would run.

In the accompanying drawings, Figures 1 and 2 are longitudinal views of a horn in which my improvement is shown. Figs. 3 and 4 are end views of the same, illustrating the seam of the horn in one case, as in Fig. 3, on the outside of the ferrule and the seam in Fig. 4 on the inside of the ferrule. Figs. 5, 6, and 7 are partial longitudinal views of a horn in which modified forms of my improvement are shown. Fig. 8 shows a horn-blank placed upon a tapering mandrel with the forming-die arranged above it preparatory to forming the cylindrical ferrule thereon. Fig. 9 shows the finished horn on the mandrel with the die in position. Fig. 10 shows a horn-blank placed upon a tapering mandrel with the forming-die, consisting of three rollers, suitably mounted above the same pre-

paratory to forming the cylindrical ferrule thereon. Fig. 11 shows a modified form of mandrel.

In describing my improvement I shall call attention to the accompanying drawings, where like references indicate corresponding parts of the different views of the same.

a indicates the conical body of the horn, and *b* the cylindrical ferrule, which is formed integral therewith.

c indicates a lock-seam of the ordinary kind extending lengthwise of the horn. In Fig. 3 the lock-seam is shown on the outside of the cylindrical ferrule *b*, while in Fig. 4 it is shown on the inside of the same. In a small horn, especially one which fits directly on the cylindrical extension of the recorder or reproducer, it is desirable to form the seam *c* on the outside of the cylindrical ferrule *b*, so as to form a cylindrical interior in the ferrule, which permits the ferrule to be readily placed over the cylindrical extension of the recorder or reproducer, while in horns of larger dimensions, where a tube is used to make connections between the ferrule of the horn and the cylindrical exterior of the recorder or reproducer, the construction of the seam as shown in Fig. 4 is desirable.

h is a shoulder formed between the conical body of the horn *a* and the cylindrical ferrule *b*.

The manufacturing process of my improved horn is very simple and is as follows: The conical body-blank of the horn *a*, made of any suitable material, consisting of one piece of material, is formed into a conical body and placed on a tapering mandrel *d*, provided with a cylindrical extension *f* and a shoulder *f'*, as in Fig. 8, and a cylindrical forming-die *e* is forced down over it, as shown in Fig. 9, which crowds the metal of the conical body-blank around the cylindrical extension *f* of the mandrel *d*, causing the metal of the conical body-blank to be formed as shown in Figs. 1 and 2 and provided with the cylindrical ferrule *b* at its apex and the shoulder *h* between the conical body of the horn *a* and the cylindrical ferrule *b*.

The tapering mandrel *d* in Fig. 11 is devoid of the shoulder *f'*, Fig. 8, so as to form a horn, as illustrated in Figs. 5 and 7.

In Figs. 6 and 7 I have shown the cylindrical ferrule *b* provided with a rectangular extension, so that the horn may be used on a disk talking-machine as distinguished from the horn used on a cylindrical machine.

In Figs 10 and 11 I have shown a modified form of die which consists of a series of small rollers *i*, suitably mounted in a frame, which in this case can be fed over the apex of the horn-blank when the same is placed on the mandrel and crowd the metal around the same, or the horn and mandrel together may be fed into the die, thereby producing the same results.

10 The horn is preferably made of brass, although it is evident that other well-known materials—such as papier-mâché, metal, celluloid, &c.—might be substituted.

What I claim as my invention, and desire 15 to secure by Letters Patent of the United States, is—

1. An amplifying-horn, having a conical body, a cylindrical ferrule and a shoulder connecting said body and ferrule, said ferrule 20 and shoulder being swaged from said conical body.

2. An amplifying-horn, having a conical body and a cylindrical ferrule, a shoulder connecting said body and ferrule, said shoulder and ferrule being swaged from the body 25 of the horn, and the end of the ferrule being bent at right angles to that portion thereof which is adjacent to the body of the horn.

3. The improved horn having a longitudinal seam formed by turning and interlocking 30 the opposite edges of said horn, said horn having a cylindrical small end and a flaring large end, the said longitudinal seam projecting inwardly throughout the length of the flaring and cylindrical parts.

This specification signed and witnessed 35 this 20th day of May, 1903.

LEONARD L. TERHUNE.

Witnesses:

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