F. C. APPLEGATE.

PHONOGRAM.

APPLICATION FILED FEB. 20, 1907. RENEWED MAR. 29, 1909.

939,120. Patented Nov. 2, 1909.

FIG. 1.

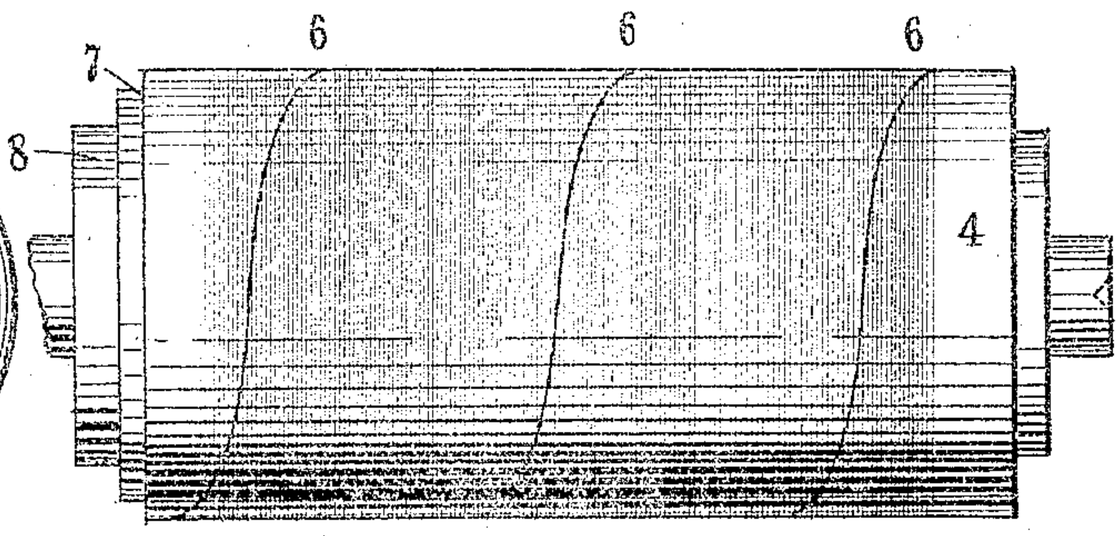


FIG. 2.

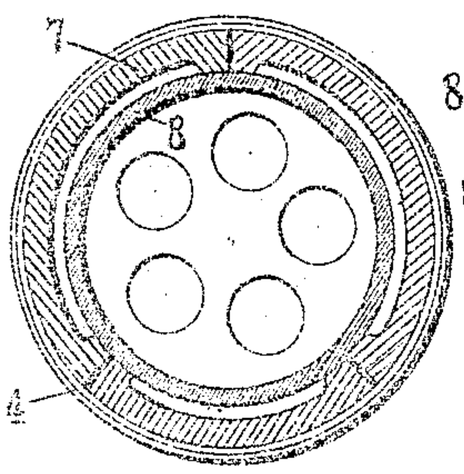


FIG. 4.

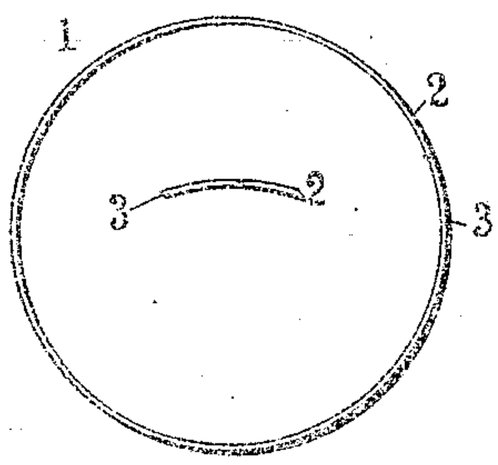


FIG. 3.

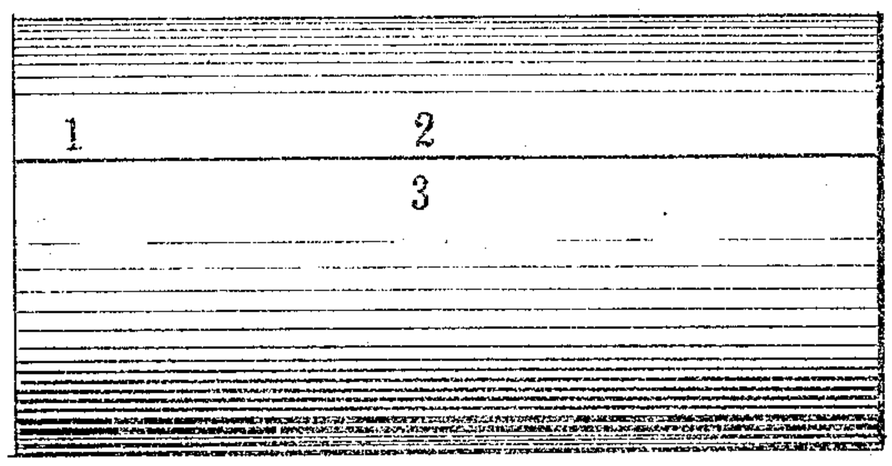


FIG. 6.

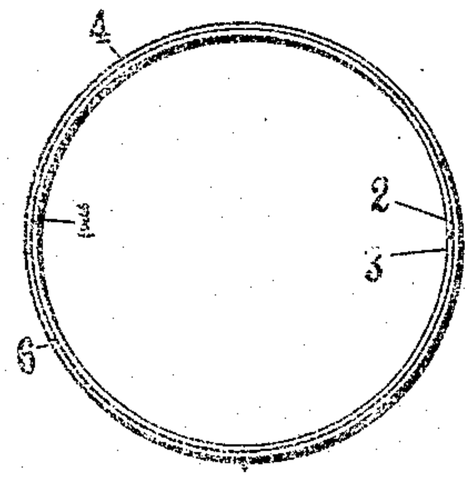


FIG. 5.

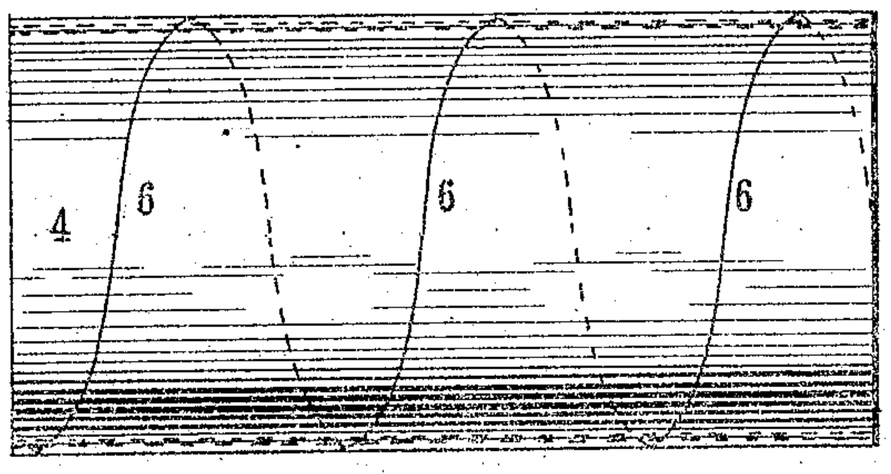
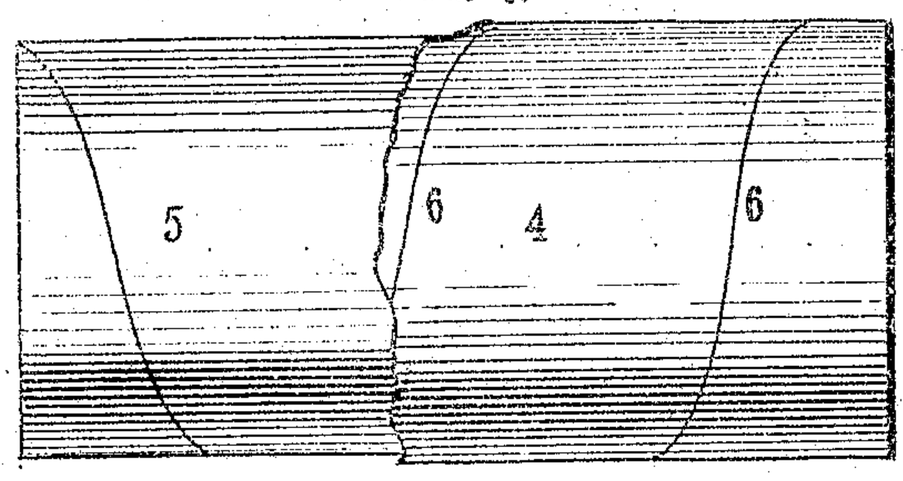


FIG. 8.

FIG. 7.



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UNITED STATES PATENT OFFICE.

FRANK COLSEN APPLEGATE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ROYAL PHONE & PHONOGRAM CO., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

PHONOGRAM.

939,120. Specification of Letters Patent. Patented Nov. 2, 1909.

Application filed February 20, 1907, Serial No. 358,404. Renewed March 29, 1909. Serial No. 486,531.

To all whom it may concern:

Be it known that I, FRANK COLSEN APPLEGATE, 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 Phonograms, of which the following is a specification.

My invention relates to cylindrical phonograms of impressible material such as celluloid, xylonite or the like material, and my object is to cheaply produce such phonograms from sheet material and in which the united edges of the sheet run approximately circumferentially to eliminate the unpleasant knocking sound caused by a stylus striking a longitudinal joint during reproduction.

Hitherto such phonograms have been made of seamless tubular material and the cost has been excessive. It has been found impracticable to commercially produce tubes thin enough to give the desired flexibility. Unsuccessful attempts have been made to use sheet material with a lap joint but such joint struck the stylus squarely at right angles to the line of motion and caused a clicking or knocking sound at each revolution of the record.

I attain my objects and obviate the difficulties in the manner illustrated in the accompanying drawing in which:—

Figure 1 is a view of my improved phonogram on a mandrel; Fig. 2 a cross sectional view of the structure of Fig. 1; Fig. 3 a view of the backing of my improved phonogram; Fig. 4 an end view of the structure of Fig. 3; Fig. 5 a view of the structure of Fig. 3 with the facing ribbon secured thereto; Fig. 6 an end view of the structure of Fig. 5; Fig. 7 a view, partly in section, of a modified form of my improved phonogram; and Fig. 8 a view of a lapped joint facing.

My improved phonogram comprises a ribbon of impressible material wound helically with the edges either butting or slightly lapping. Before this ribbon is wound into a helix the edges to be united are treated with a solvent or cement so they will be firmly united.

In practice a backing sheet 1 is wrapped about a substantially cylindrical form or core with its edges 2 and 3 either butting or slightly lapping, in the latter form the edges are preferably beveled. The facing ribbon 4 is then wound helically around the backing as shown in Figs. 5 and 6. Before this ribbon is wound onto the backing the surfaces to be joined may be treated with a solvent or cement so that the backing and facing will be firmly united.

My preferred material for both facing and backing is celluloid or xylonite but any impressible sheet material may be used. I find that acetones have the property of softening the materials named so that they bind or weld together. As the acetones do not dry out quickly ample time is afforded for the various operations.

It is apparent that the edges of the facing strip 4 will touch or lap in the form of a helical line 6 running from end to end of the phonogram. If a lapped joint is used the finishing process squeeze the soft material in such manner that the double thickness caused by the lapping is completely obliterated. The blank thus formed is then placed in a polished die and expanded therein under the combined influence of heat and pressure whereby the solvent or cement is driven off. The softened material is driven into intimate contact with the die and when dry and hard has the high polish of the die. As the material is compacted and welded together along the helical line of union a substantially smooth and even outer surface is obtained. The sound record may now be impressed on the blank thus produced by any of the well known methods.

If preferred the smooth polished die may be replaced by a sound matrix and the sound record impressed on the blank in the first instance but I find in practice that the best results are obtained by first making the blank with a polished surface.

As shown in Fig. 7 the backing is in the form of a ribbon 5 wound in a direction opposite to that of the facing.

A backing of cheap, coarse celluloid may be employed and the facing strip may be, and preferably is, a thin ribbon of fine celluloid. To secure the best results the facing should be of such width that only a single joint is crossed by the stylus on each revolution. As the line of union of the edges of the facing ribbon is helical it runs approximately circumferentially when it passes under the stylus and does not cause

the knocking sound that a joint striking the stylus transversely does.

By the use of thin sheet material the phonograms may be materially thinner than those made of seamless tubing and consequently more flexible. Records made in accordance with my invention also run true when in use as they are of uniform thickness throughout.

In use the phonogram is placed on a mandrel sleeve 7 of any desired type which is placed on the talking machine mandrel 8. It is then played like an ordinary cylinder record.

I claim:—

1. A cylindrical phonogram comprising a strip or ribbon of impressible material wound into a helix and having its edges united.

2. A cylindrical phonogram of impressible material comprising a backing sheet and a facing ribbon helically secured thereon with its edges united.

3. A cylindrical phonogram of impressible material comprising a backing sheet of coarse material and a facing ribbon of fine material helically secured thereon with its edges united.

4. A cylindrical phonogram of impressible material comprising a backing strip wound helically into a tube and a facing strip wound helically in the opposite direction and secured on the backing with the edges united.

5. A cylindrical phonogram comprising a strip or ribbon of impressible material wound into a helix with its edges united and a sound record on the outer face thereof.

6. A cylindrical phonogram comprising a backing sheet and a facing of impressible material helically secured thereon with its edges united and a sound record on the outer face thereof.

7. A cylindrical phonogram comprising a backing sheet of coarse material, a facing ribbon of fine impressible material helically secured thereon with its edges united and a sound record on the outer face thereof.

8. A cylindrical phonogram of impressible material comprising a backing strip wound helically into a tube and a facing strip wound helically in the opposite direction and secured to the backing with the edges united and a sound record on the outer face thereof.

In testimony whereof I, have affixed my signature in presence of two witnesses.

FRANK COLSEN APPLEGATE.

Witnesses:
CHARLES S. ACKLEY,
HOWARD F. LUPTON.