V. M. HARRIS.

MANUFACTURE OF PHONOGRAPH RECORD BLANKS.

APPLICATION FILED SEPT. 18, 1908.

960,320.

Patented June 7, 1910.

Fig. 1

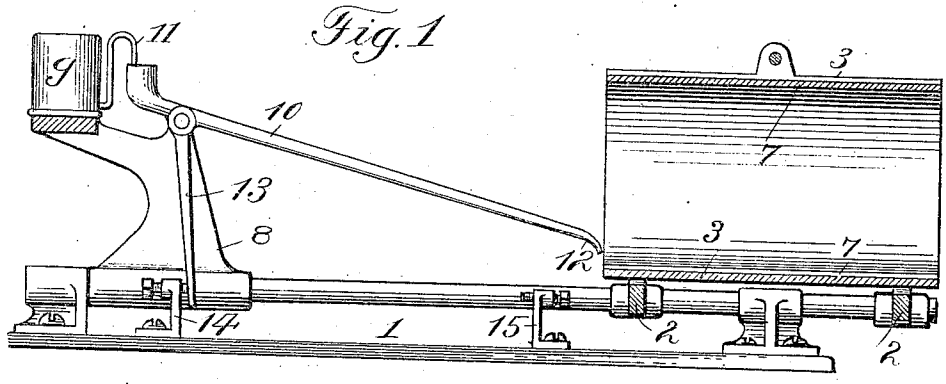


Fig. 2

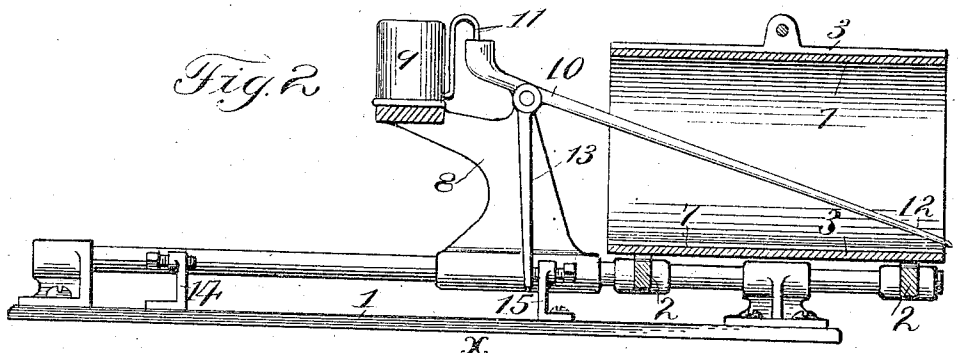
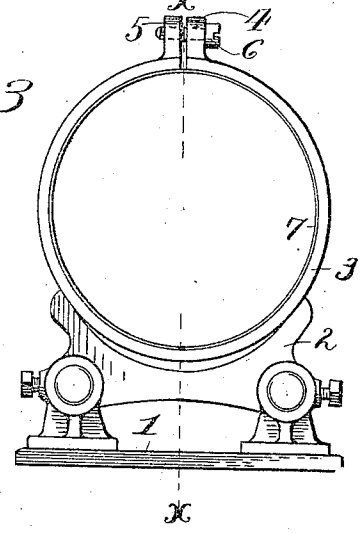


Fig. 3



Attest:

J. C. Turner

Jno. F. Oberlin

Inventor.

Varian M. Harris

by J. B. Fay

Attorney.

UNITED STATES PATENT OFFICE.

VARIAN M. HARRIS, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNITED STATES PHONOGRAPH COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

MANUFACTURE OF PHONOGRAPH-RECORD BLANKS.

960,320. Specification of Letters Patent. Patented June 7, 1910.

Application filed September 18, 1908. Serial No. 453,634.

To all whom it may concern:

Be it known that I, VARIAN M. HARRIS, citizen of the United States, resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Manufacture of Phonograph-Record Blanks, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

This invention relates to a process of forming phonograph record blanks from sheets of celluloid, and has for its object to provide a simple and efficient process of joining the abutting ends of the sheets of celluloid in a strong and permanent manner, the process being more especially adapted for joining a sheet of the material bent into a tubular form, and so held while abutting ends are joined together to form a tubular phonograph record blank, equal in all respects to the drawn tubes or cylinders heretofore used in the manufacture of phonograph records, all as will hereinafter more fully appear.

In the accompanying drawing illustrative of an apparatus adapted to practically carry on the present improved process: Figure 1 is a longitudinal section on line *x*—*x*, Fig. 3. Fig. 2 is a similar section with parts occupying a different operative position, and Fig. 3 is an end elevation.

Similar numerals of reference indicate like parts in the views.

Referring to the drawings, 1 represents a stationary slideway of any usual construction, and provided with suitable feet by which it is supported in a horizontal position upon a work bench or table.

2, are a plurality of saddle pieces secured in fixed relation to the slideway, and adapted to support the cylindrical work holder in proper position in the apparatus.

3, is the cylindrical work holder above referred to, and consisting of a cylindrical shell of metal, or other equivalent rigid material, slitted along its length to form the longitudinal opening or gap 4 in the wall of the holder as shown.

5 are ears upon the opposed edges of the gap 4, through which passes adjusting screw 6, by which an adjustment in the diameter of the holder can be effected as required in the actual and continued use of the apparatus.

7, is the sheet of celluloid to be operated upon, and which is bent into cylindrical form, and inserted into the interior of the cylindrical holder 3, with the meeting edges and seam formed thereby, located at the underside of the blank celluloid cylinder so formed, and as shown more particularly in Fig. 2.

8, is a carriage sliding longitudinally on the slideway 1, and carrying a supply tank 9 in which is contained a supply of cementing fluid used in the practical operation of the apparatus, and which fluid will usually consist of a cellulose product dissolved in ether, or the other solvent likewise capable of dissolving the material composing the sheet 7.

10, is a fountain pen pivotally supported on the carriage 8, and having one end connected by a flexible tube 11, with the supply tank 9, while its other end is of an elongated form and ends in a capillary discharge point 12 through which the cementing fluid flows, as said point moves in contact with the work.

13, is a depending operating arm rigidly connected to the fountain pen 10, aforesaid.

14 and 15 are stationary stops arranged near the limit of the longitudinal travel of the carriage 9, in each direction, which stops are adapted to alternately contact with the arm 13, to raise the discharge point 12 from the work, at the ending of its active stroke, and in like manner depress said discharge point at the ending of its inactive stroke and previous to the beginning of the active stroke; such operations taking place in an automatic manner during the continued operation of the apparatus.

The operation of the present process in connection with the apparatus just described is as follows: A sheet of celluloid of the proper dimensions is bent into a cylindrical form and inserted in the interior of the cylindrical work holder 3, which is adjusted to the required diameter by the adjusting screws 6. The work holder is then placed in position on the saddle pieces 2, with the seam of the celluloid cylinder located at the lowermost point in the height of said cylinder as shown. The operator now moves the carriage 8 to bring the discharge point

12 of the fountain pen 10, to the rear end of the interior of the work and work holder, and as such position is reached the stop 15 contacts with arm 13 to automatically depress the discharge point 12 to an operative position. A return movement is now imparted to the carriage and the discharge point 12, is drawn along the longitudinal seam of the celluloid sheet 7 to deposit the cementing solution; with the ending of such active or return stroke of the carriage, the stop 14 contacts with the arm 13, to automatically raise the discharge point 12 into its normal inoperative position. The work holder with its contained cylinder of celluloid is now removed from the apparatus and stacked away to dry out, and is replaced by a succeeding holder and its contained sheet of celluloid, the system requiring a large number of counterpart work holders in the attainment of rapid and perfect work.

The apparatus herein described constituted the subject matter of my former application for Letters Patent Serial No. 338,729 filed October 13, 1906, and no claim is herein made to such apparatus. By the foregoing steps, however I am enabled not only to manufacture cylindrical phonograph record blanks of celluloid with greater expedition and corresponding decrease in cost, than by methods heretofore prevailing but actually to produce a much superior article; for it is essential to the taking of an accurate and faultless record on the blank, that its outer surface be as highly polished as possible. Such polishing is of course obtained in a much more perfect degree, as well as more easily, when the material is in sheet form than in the case of tubular articles. In my method of butt-welding the edges of the sheets together by exteriorly supporting the same and applying the solvent from within, I not only avoid any ridge or inequality, which would be fatal to the usefulness of the article for the purpose in hand, but I preserve the smooth exterior of the sheet, now become a cylinder, with such success, that it becomes impossible to detect in the finished article the original line of cleavage.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the process herein disclosed, provided the step or steps stated by any one of the following claims or the equivalent of such stated step or steps be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, bringing two such edges together under pressure exerted transversely thereof, and simultaneously effecting the softening and adhesion of such abutting edges.

2. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, bringing two opposite edges together and causing such edges to abut by pressing exteriorly on the sheet, and simultaneously effecting the softening and adhesion of the abutting edges.

3. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, bringing two opposite edges together and causing such edges to abut by pressing exteriorly on the sheet, and simultaneously applying a suitable solvent along such abutting edges, whereby their softening and adhesion is effected.

4. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, bringing two opposite edges together and causing such edges to abut by pressing exteriorly on the sheet, and simultaneously applying a suitable solvent along such edges from within, whereby their softening and adhesion is effected.

5. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, bringing two opposite edges together and causing such edges to abut by pressing exteriorly on the sheet, said sheet being horizontally disposed with such abutting edges located lowermost, and applying a suitable solvent along such edges from within, whereby their softening and adhesion is effected.

6. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, maintaining the sheet in substantially cylindrical form, causing the meeting edges to abut by pressing exteriorly on the cylinder, and simultaneously effecting the softening and adhesion of such abutting edges.

7. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, maintaining the sheet in substantially cylindrical form, causing the meeting edges to abut by pressing exteriorly on the cylinder, and applying a suitable solvent along such abutting edges, whereby their softening and adhesion is effected.

8. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at sub-

stantially right angles to the surface of the sheet, maintaining the sheet in substantially cylindrical form, causing the meeting edges to abut by pressing exteriorly on the sheet, and applying a suitable solvent along such edges from within, whereby their softening and adhesion is effected.

9. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, maintaining the sheet in substantially cylindrical form, causing the meeting edges to abut by pressing exteriorly on the cylinder, said cylinder being horizontally disposed with the abutting edges located lowermost, and applying a suitable solvent along such edges from within, whereby their softening and adhesion is effected.

10. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges at substantially right angles to the surface of the sheet, maintaining the sheet in substantially cylindrical form, causing the meeting edges to abut by exteriorly pressing on the cylinder, exteriorly supporting such edges by a smooth surface, and applying a suitable solvent along such edges from within, whereby their softening and adhesion is effected, and a smooth exterior surface preserved.

11. In the manufacture of phonograph record blanks, the steps which consist in forming a sheet of celluloid with edges substantially at right angles to the surface of the sheet, maintaining the sheet in substantially cylindrical form, causing the meeting edges to abut by pressing exteriorly on the cylinder, exteriorly supporting such edges by a smooth surface, said cylinder being horizontally disposed with such abutting edges located lowermost, and applying a suitable solvent along such edges from within, whereby their softening and adhesion is effected, and a smooth exterior surface preserved.

Signed by me this 15th day of September, 1908.

VARIAN M. HARRIS.

Attested by—
B. J. CAHR,
SIMEON STRAUS.