J. W. AYLSWORTH.

DUPLICATE SOUND RECORD.

APPLICATION FILED JUNE 16, 1906.

953,454. Patented Mar. 29, 1910.

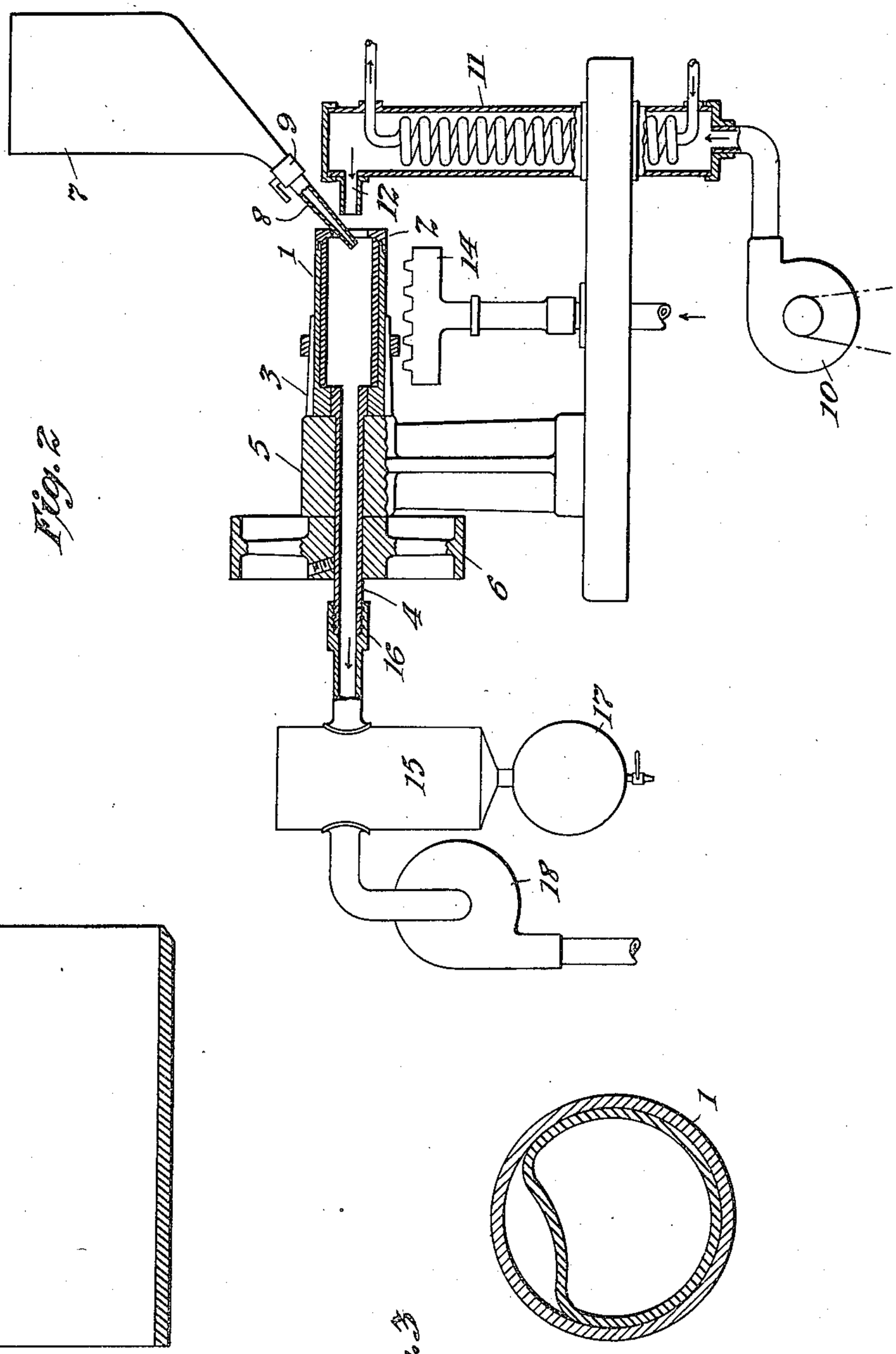

Fig. 2.

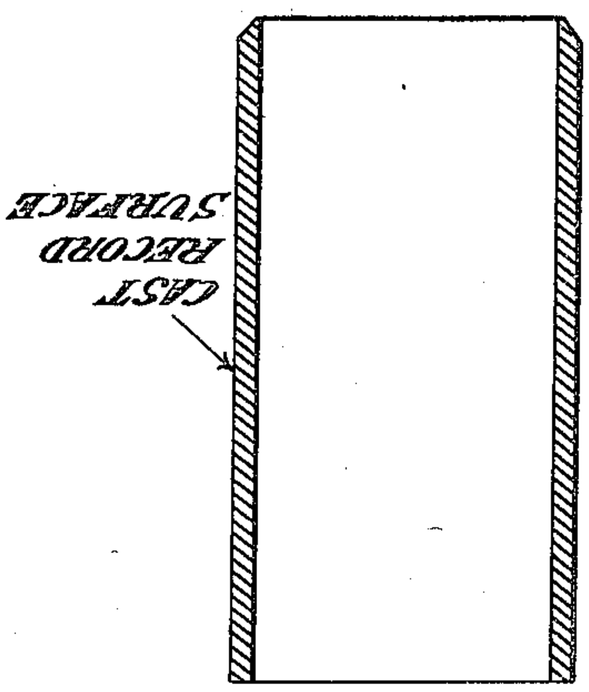

Fig. 1.

Fig. 3.

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UNITED STATES PATENT OFFICE.

JONAS W. AYLSWORTH, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO NEW JERSEY PATENT COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

DUPLICATE SOUND-RECORD.

953,454. Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed June 16, 1906. Serial No. 322,078.

To all whom it may concern:

Be it known that I, JONAS W. AYLSWORTH, a citizen of the United States, residing at 223 Midland avenue, East Orange, county of Essex, and State of New Jersey, have invented certain Improvements in Duplicate Sound-Records, of which the following is a description.

My invention relates to improvements in duplicate sound records.

In Patent No. 855,555, granted June 4, 1907, I describe a process for making duplicate sound records of celluloid, collodion, cellulose acetate, pyroxylin and similar solid materials, which during the process of manufacture are maintained in a state of solution, the solvent being evaporated after the solution has been uniformly distributed over the bore of the matrix so as to take an impression therefrom and being maintained intimately in engagement with the matrix by rapidly rotating the same so as to develop centrifugal force. As I point out in said patent, duplicate sound records made of these materials by the improved process are superior to those heretofore made in the respects, first, that the impression obtained is provided with a true cast surface, the material having no tendency to change its condition or form, and therefore retaining the record impression unimpaired for an indefinite time; and second, that the record can be made of any desired thickness with perfectly solid and homogeneous walls, there being no tendency whatever to flake or scale off.

The purpose of the present application is to describe and claim the improved sound record as a new article of manufacture. As such, the invention may be defined as a duplicate sound record formed of celluloid (in which term I include all so-called indestructible materials for the purpose, such as collodion, pyroxylin and cellulose acetate) and having homogeneous or non-laminated walls and with a cast permanent record surface, as distinguished from one in which the material is merely distorted or displaced.

In order that the invention may be better understood, attention is directed to the accompanying drawing, forming part of this specification and in which—

Figure 1, is a longitudinal sectional view of my improved record, Fig. 2, a diagrammatic view of a suitable apparatus for producing the same, and—Fig. 3, a cross-sectional view through the matrix showing one way of removing the finished records therefrom.

In all of the above views corresponding parts are represented by the same numerals of reference.

The matrix 1 is provided on its interior with the record surface in relief and is obtained in any suitable way, preferably by a process of vacuous deposit, as is common in the art. It may be provided with an end flange 2, carrying the engraved matter for identifying the record. A chuck 3 is shown for rotating the matrix at the desired high speed, said chuck being carried at the end of a hollow shaft 4, mounted in a bearing 5, and rotated by a pulley 6. The solution of the celluloid-like material is maintained in a tank 7, from which a spout or nozzle 8 leads to the matrix, a gate valve 9 being provided for controlling the flow of solution through the same.

In order to evaporate the solvent from the solution within the matrix, I show a fan 10, connected to a chamber 11, from which extends an outlet 12 leading directly to the matrix. A steam coil is provided within the chamber 11 for the purpose of heating the air, so as to facilitate the evaporation. A nozzle 14 may be located outside of the matrix for supplying a hot blast to the same to effect the evaporation. In order to recover the solvent I illustrate a condenser 15 connected by a coupling 16 with the hollow shaft 4, and provided with a tank 17 beneath it, in which the condensed solvent may be collected. A suction fan 18 may be connected to the condenser to effect the circulation of hot air, although this fan may be dispensed with if the blower 10 is of sufficient capacity.

In obtaining duplicate sound records I employ a solvent of a celluloid-like material, for instance, pyroxylin dissolved in acetone, which solution is maintained within the tank 7. The solution should not be too viscid, because in that condition it will not flow readily and will not take a good impression, but may be of about the consistency of molasses to give good results. The matrix being rotated at the desired high speed, a sufficient charge of the solution is allowed to enter the matrix and will be uniformly distributed over the bore of the lat-

ter by reason of the centrifugal force developed. In thus being distributed it will drive inwardly any air bubbles which may be entrapped thereby, so as to result in a very perfect and accurate impression of the record surface being secured. This distribution of the material, of course, will be effected within a few seconds. The blower 10 is now operated so as to drive a blast of warm air through the matrix, and if desired, the matrix may be heated exteriorly by the blast 14. By thus heating the solution while the matrix is still rotating at the desired speed, the solvent will be very rapidly driven off and will be separated by the condenser 15 and collected in the tank 17. When the solvent has been entirely evaporated the resulting record will be obviously formed of the desired celluloid-like material, the thickness of which will depend upon the amount of the solution originally introduced within the matrix. In every event, the record will be continuous, homogeneous and non-laminated throughout, irrespective of the thickness of its walls, and the record surface will be impressed therein by a true casting operation, so that there will be no tendency to change or alter the configuration thereof.

It will be understood that the records can be made of a celluloid-like material to which has been added more or less of a soluble adulterant, such as castor oil or camphor, and also, that two or more celluloid-like materials may be used together in a common menstruum. After the record has been finished, it may be removed from the matrix by first dipping the latter in hot water, so as to soften the record slightly and permit it to be collapsed inwardly as shown in Fig. 3, or, if its walls are too thick to be readily collapsed, the matrix may be cooled to a sufficient extent to cause the record to shrink radially and thus detach itself and permit of its removal.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:—

1. As a new manufacture, a duplicate sound record made of cellulose ester having homogeneous and non-laminated walls and with a cast sound record on its exterior, substantially as and for the purposes set forth.

2. As a new manufacture, a duplicate sound record made entirely of cellulose ester, having homogeneous and non-laminated walls, free from internal stress, and of sufficient thickness to be sufficiently stiff, and with a cast sound record on its exterior, substantially as set forth.

3. As a new manufacture, a duplicate sound record made of a nitro derivative of cellulose, having homogeneous and non-laminated walls, and with a cast sound record on its exterior, substantially as set forth.

This specification signed and witnessed this 2nd day of June 1906.

JONAS W. AYLSWORTH.

Witnesses:
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