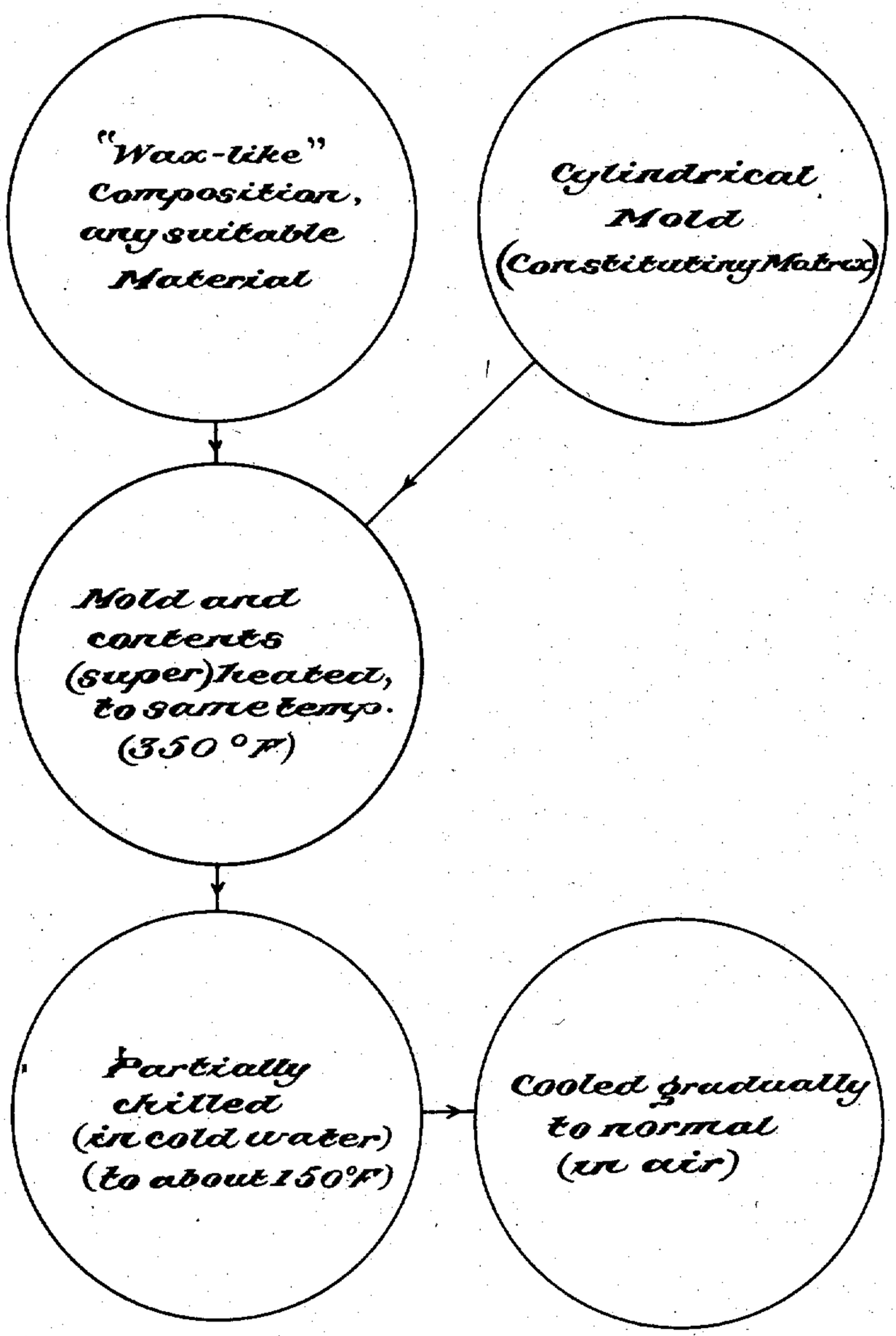
No. 773,801. PATENTED NOV. 1, 1904.

T. H. MACDONALD.

PRODUCTION OF SOUND RECORDS OR SIMILAR ARTICLES.

APPLICATION FILED MAR. 12, 1904.

NO MODEL.



Witnesses
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No. 773,801. Patented November 1, 1904.

UNITED STATES PATENT OFFICE.

THOMAS H. MACDONALD, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO AMERICAN GRAPHOPHONE COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF WEST VIRGINIA.

PRODUCTION OF SOUND-RECORDS OR SIMILAR ARTICLES.

SPECIFICATION forming part of Letters Patent No. 773,801, dated November 1, 1904.

Application filed March 12, 1904. Serial No. 197,865. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. MACDONALD, of Bridgeport, Fairfield county, Connecticut, have invented a new and useful Improvement in the Production of Sound-Records or Similar Articles, which is fully set forth in the following specification.

The present invention is an improvement in casting tubular or other bodies (sound-records or blank tablets) of wax-like or other material for use in the talking-machine art. There is a related process invented by me and described in Reissue Patent No. 12,095, dated March 10, 1902, for molding sound-records, which process consists in superheating the sound-record composition (commonly known in the art as "wax") after it has been introduced into the mold, and chilling it down from the superheated temperature.

The present invention is particularly advantageous when applied to a process wherein the wax is superheated, but is also applicable to any process wherein the molded article is chilled or reduced in temperature.

According to my present invention the mold containing the wax is heated, (preferably superheated,) as heretofore, the casting in the mold is then suddenly and symmetrically chilled from the exterior, as heretofore, except that the temperature is not reduced to normal by this first chilling operation, and, finally, the casting (having its temperature already reduced) is gradually cooled to normal and is then readily removed from the mold.

In carrying out the process set forth in my said reissue patent it sometimes happens that the sudden or severe chilling when carried too far has the effect of warping or otherwise injuring the cast record. The object of the present invention is mainly to overcome or avoid this difficulty.

In the preferred mode of carrying out my present invention the mold containing the wax-like material is superheated, and the mold and the limpid wax therein are brought to substantially the same temperature. Of course the mold may be heated first and the wax then poured in, or the mold may be superheated after the wax is in place, or the admission of the wax and the heating of the material may go on simultaneously. With the molds and "wax-like material" now in use I have found a temperature of about 350° to 375° Fahrenheit to give good results.

The two-step cooling process is satisfactorily carried out as follows: The heated mold containing the wax of about the same temperature is placed in cold water or is subjected to the action of cold water upon its exterior, care being taken that the water shall not act upon the wax within the mold and shall not very appreciably exert its cooling effects upon the interior or bore of the casting. This accomplishes the sudden and symmetrical chilling referred to in my said reissue patent as giving a good surface to the cast sound-record or other article, and this step is discontinued when the wax is chilled down to a point where it is in a plastic state, having a consistency about equal to very stiff putty. With the material now in use the water-cooling step may be continued for about five minutes, (if the wax has been heated to about 375° Fahrenheit,) at the end of which time the interior of the wax casting will be of a temperature of about 150° Fahrenheit, though its outer surface would of course be practically as cool as the mold. At this point the mold containing the casting is removed from the water-cooling treatment and is set in a cool-air draft, furnished by a rapidly-running electric fan, or the mold with its casting is otherwise subjected to a more gradual cooling effect. The air-cooling treatment reduces the temperature of the casting quite rapidly, though not so fast as the water would do. Employing the present record material, I find from five to seven minutes of air cooling is sufficient to complete the cooling of these molded articles. At the end of this time they may be lifted from the mold without any difficulty.

The material employed in carrying out this invention is preferably the composition described in my Patent No. 606,725, dated July 5, 1898, to which may be added a small amount

of carnauba-wax or other hardening substance.

The drawing annexed hereto for convenient reference represents the successive steps in my process of casting sound-records. I have set forth these steps with some particularity; but the invention is not limited to the precise forms and details disclosed.

Having thus described my invention, I claim—

1. The process of casting by means of a mold, which consists in raising the mold and its contents to above normal temperature, then rapidly chilling the same but not to normal temperature, and finally gradually cooling same to normal temperature.

2. The process of casting by means of a mold, which consists in raising the mold and its contents to a higher temperature, then rapidly and symmetrically chilling the same from the exterior but not to normal temperature, and finally gradually cooling the same to normal temperature.

3. The process of molding sound-records or blank tablets, which consists in first superheating the mold and its contents and then cooling the same by a two-step process, the first step being sudden and the second being gradual.

4. The process of molding sound-records or blank tablets, which consists in first raising the mold and the wax composition therein to a temperature of about 350° Fahrenheit, then chilling the same rapidly to a temperature of about 150° Fahrenheit, and finally reducing the temperature more gradually to normal.

5. The process of molding sound-records or blank tablets, which consists in giving the mold and its wax-like contents a temperature of about 350° Fahrenheit, then rapidly and symmetrically chilling the same from the exterior to about 150° Fahrenheit, and finally reducing the temperature gradually to normal.

6. The process of molding sound-records or blank tablets, which consists in first superheating the mold and its contents to about the same temperature, second rapidly chilling the same from the outside until the contents have become plastic and of about the consistency of very stiff putty, and finally reducing the temperature gradually to normal.

7. The process of molding sound-records or blank tablets, which consists in first superheating the mold with its contents, then chilling the same by the action of water but not as low as normal temperature, and finally chilling the same by air to normal temperature, substantially as described.

8. The process of molding sound-records or blank tablets, which consists in first having the mold of approximately the same temperature as the molten material therein, then rapidly and symmetrically chilling the same from the exterior to a temperature below the melting-point of the contents of the mold, then reducing the temperature of the same gradually to normal, and finally removing the cast article from the mold.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS H. MACDONALD.

Witnesses:

M. A. SPALDING,

C. A. GIBNER.