

No. 771,880.

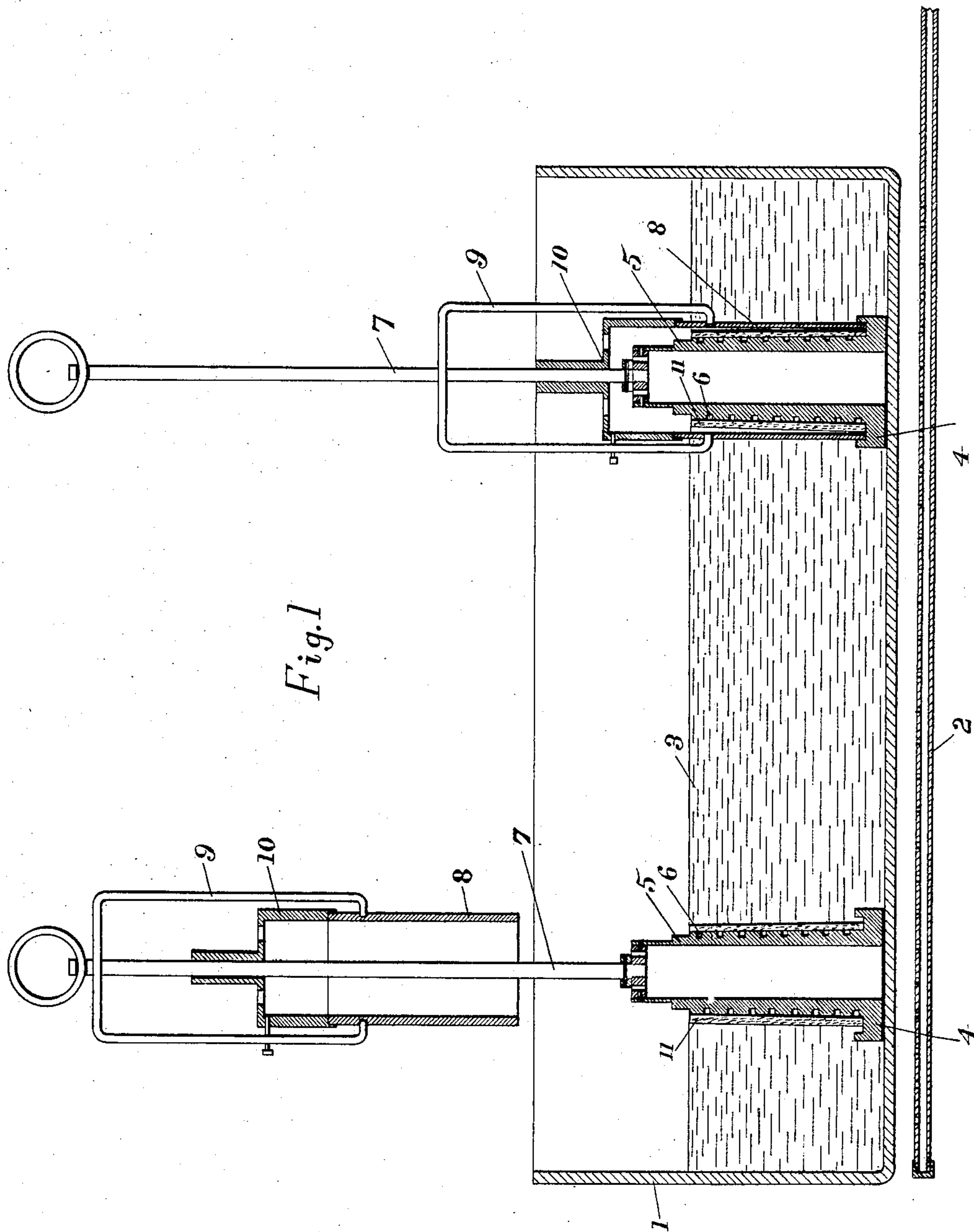
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W. H. MILLER & A. N. PIERMAN.

PROCESS OF MANUFACTURING CYLINDRICAL PHONOGRAPH RECORDS
OR BLANKS.

APPLICATION FILED OCT. 23, 1903.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

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PANY, OF ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PROCESS OF MANUFACTURING CYLINDRICAL PHONOGRAPH RECORDS OR BLANKS.

SPECIFICATION forming part of Letters Patent No. 771,880, dated October 11, 1904.

Application filed October 23, 1903. Serial No. 178,175. (No model.)

To all whom it may concern:

Be it known that we, WALTER H. MILLER, re-
siding at Orange, and ALEXANDER N. PIER-
MAN, residing at Newark, in the county of Es-
sex and State of New Jersey, citizens of the
United States, have invented certain new and
useful Improvements in Processes of Making
Cylindrical Phonograph Records or Blanks, of
which the following is a description.

Our invention relates to an improved proc-
ess for making cylindrical phonograph rec-
ords or blanks, and particularly of the type
described and claimed in our Patent No.
726,966, dated May 5, 1903, wherein a mass
of fibrous material, such as cotton-wool, is dis-
tributed throughout a cylindrical record or
blank, the wax-like substance impregnating
the fibrous material, so as to produce a sub-
stantially indestructible article. In our Pat-
ent No. 726,965, dated May 5, 1903, we de-
scribe a process for making such articles con-
sisting in first wrapping a sufficient layer of
the fibrous material around a core located
within a suitable mold and then in permitting
a molten wax-like material to enter the space
between the core and the mold from below,
so as to thoroughly impregnate the fibrous
mass. We find from experiment that when
the fibrous mass is sufficiently thick as to
loosely fill the space between the core and the
mold or when the fibrous mass is relatively
compressed, as when it is wound quite tightly
around the core, the carrying out of the spe-
cific process of our prior patent under com-
mercial conditions results in some cases in the
trapping of air within the fibrous mass and
the formation of air-bubbles on the surface
of the resulting duplicate sound record or
blank, so as to affect the commercial charac-
ter of the latter. Consequently in the carry-
ing out of the specific process of that patent
under commercial conditions care would have
to be observed not to have the fibrous mass
too thick or too tightly wound on the core,
and as a result the records or blanks made
thereby would contain an undesirably small
proportion of the fibrous material and would
not therefore be as relatively indestructible

as records or blanks containing a larger pro-
portion of the fibrous material.

The object of our present invention is to
provide a process in which a larger propor-
tion of fibrous material can be commercially
used and in which the fibrous material can be
more tightly wound on the core than with the
process of our prior patent, whereby a supe-
rior quality of product can be obtained under
commercial conditions.

To this end the invention consists in apply-
ing the fibrous mass to the core, then in per-
mitting the fibrous mass to become thoroughly
impregnated with the molten wax-like mate-
rial while the latter is substantially free of
the mold, so that the wax-like material in-
stead of being confined to a very small path,
as with our previous patent, can enter the
fibrous mass throughout substantially its en-
tire surface, and, finally, in bringing the mold
into the proper relation to the fibrous mass
to confine the proper quantity of wax-like
material between the core and the mold as to
result in the production of the desired article
when the mold and core are removed from
the molten wax-like material and the record
or blank is allowed to set, after which it is
separated from the core and then from the
mold.

In order that our invention may be better
understood, attention is directed to the accom-
panying drawing, forming a part of this
specification, and in which we show a sectional
view of the tank containing the molten wax-
like material and showing two molds, one in
the position which it occupies when the fibrous
mass is being impregnated by the wax-like
material and the other in the position which
it occupies after the fibrous mass has been im-
pregnated and just before the mold and core
are removed.

The tank 1 is of any suitable character and
size and is heated in any suitable way—as,
for example, by a gas-burner 2. This tank
contains a mass 3 of a suitable wax-like ma-
terial in a molten condition. We preferably
employ for this purpose the ordinary wax-like
material of which modern duplicate phono-

graph-records are made; but any composition can be employed for the purpose so long as it is capable of being maintained in a molten condition and is substantially free of products of decomposition and presents a sufficiently hard and permanent record-surface on the finished product.

A base 4 carries a hollow core 5, the latter being preferably formed with a thread 6, so as to result in the formation of a spiral rib on the interior of the duplicate or blank, as will be understood. A handle 7 may be connected with the core, so as to remove the same from the tank when desired. A cylindrical mold 8 is employed, the bore of which is perfectly smooth when blanks are to be made or which carries the negative representation of a sound-record when duplicate sound-records are to be produced. This mold may be provided with a handle 9 for operating it. A cap 10 is preferably removably carried by the mold to permit a surplus of the wax-like material to accumulate above the mold, so that when the blank or duplicate record is cooling and setting any diminution in bulk due to shrinkage will be compensated for by added material supplied from the surplus bulk within the cap, as will be understood.

In carrying our process into effect we prefer to proceed substantially as follows: A mass 11 of a suitable fibrous material, preferably cotton-wool, is applied to the core 6 and is preferably made thick enough to loosely fill the space between the core and the mold. The base 4, core 5, with layer of fibrous material, and mold 8, with cap 10, are now assembled, as shown at the right of the drawing, and preferably heated in any suitable way to about the temperature of the molten material. This preliminary heating can be and in practice has been most effectively secured by immersing the assembled parts for several minutes in the molten material or in a separate tank containing similar material in a heated state. If a separate heating-bath is used, then after all the parts have been thoroughly heated to or substantially to the temperature of the material they are placed in the tank 1, after which the mold 8 and cap 10 are elevated to the position shown at the left, so as to directly expose the fibrous material to the molten mass. The latter, therefore, is free to enter the fibrous material, so as to impregnate the same, which it does in two or three seconds, and any air which may be contained within the fibrous mass will be permitted to escape to the surface. After the fibrous mass has been thus impregnated with the molten material the mold is moved to position over the core and is seated on the base 1, as shown at the right of the drawing, so as to retain the molten material between the core and the mold. The parts are now removed by elevating the handle 7, and after

the wax-like material has set sufficiently, as by cooling-water applied to the outside of the mold and to the inside of the core, the latter is removed, after which the duplicate sound record or blank is shrunk diametrically by a reduction of temperature applied in any suitable way, preferably by a water-jacket, and is then withdrawn longitudinally. The article is now finished by properly trimming the edges and by reaming the bore, if necessary. It will of course be understood that suitable provision should be made for maintaining the level of the molten wax-like material in the tank 1 as material is removed therefrom at each operation.

While our improved process has been particularly designed for use in the manufacture of indestructible sound records or blanks of the type described, it will be understood that by omitting the application of the mass of fibrous material to the core the process can be carried out in the manufacture of ordinary sound records or blanks with the advantage of reducing the possibility of air-bubbles appearing on the surface of the latter.

Having now described our invention, what we claim as new therein, and desire to secure by Letters Patent, is as follows:

1. A process of manufacturing sound records or blanks, which consists in introducing a core within a mass of molten wax-like material so as to surround the core, then in confining a portion of the wax-like material between the core and a mold, then in removing the core and mold from the molten material and in permitting the confined mass to set, and in finally removing the core from the set material, substantially as and for the purposes set forth.

2. A process of manufacturing sound records or blanks, which consists in introducing a core within a mass of molten wax-like material so as to surround the core, then in confining a portion of the wax-like material between the core and a mold, then in removing the core and mold from the molten material and in permitting the confined mass to set, then in removing the core from the set material, and in finally shrinking the resulting record or blank diametrically to clear the surfaces and removing it longitudinally from the mold, substantially as and for the purposes set forth.

3. A process of making indestructible records or blanks, which consists in applying a mass of fibrous material to a core, then in introducing the core and fibrous mass in a molten wax-like material which impregnates the mass, and finally in introducing a mold into the molten material so as to surround the fibrous mass and confine a portion of the wax-like material between the core and the mold, substantially as and for the purposes set forth.

4. A process of making indestructible records or blanks, which consists in applying a mass of fibrous material to a core, then in introducing the core and fibrous mass in a molten wax-like material which impregnates the mass, then in introducing a mold into the molten material so as to surround the fibrous mass and confine a portion of the wax-like material between the core and the mold, and finally in removing the core and mold from the molten wax-like material and allowing the material between the core and the mold to set, substantially as and for the purposes set forth.

5. A process of making indestructible records or blanks, which consists in applying a mass of fibrous material to a core, then in introducing the core and fibrous mass in a molten wax-like material which impregnates the mass, then in introducing a mold into the molten material so as to surround the fibrous mass and confine a portion of the wax-like material between the core and the mold, then in removing the core and mold from the molten wax-like material and allowing the material between the core and the mold to set, and finally in removing the core from the

set material, substantially as and for the purposes set forth.

6. A process of making indestructible records or blanks, which consists in applying a mass of fibrous material to a core, then in introducing the core and fibrous mass in a molten wax-like material which impregnates the mass, then in introducing a mold into the molten material so as to surround the fibrous mass and confine a portion of the wax-like material between the core and the mold, then in removing the core and mold from the molten wax-like material and allowing the material between the core and the mold to set, then in removing the core from the set material, and finally in shrinking the resulting sound record or duplicate diametrically so as to clear the surface and withdrawing it longitudinally from the mold, substantially as and for the purposes set forth.

This specification signed and witnessed this 22d day of October, 1903.

WALTER H. MILLER.

ALEXANDER N. PIERMAN.

Witnesses:

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