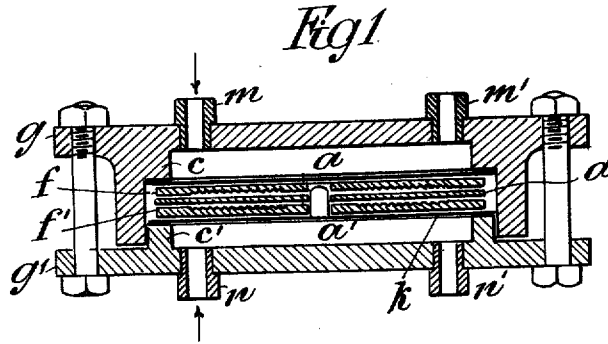
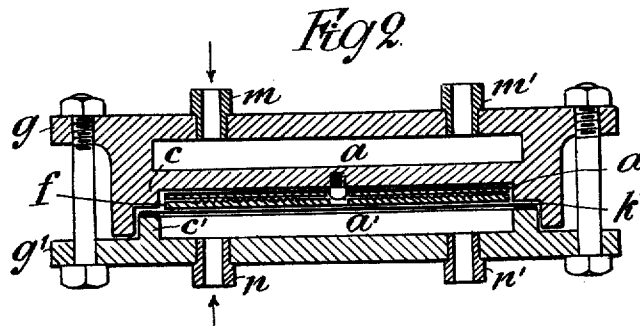
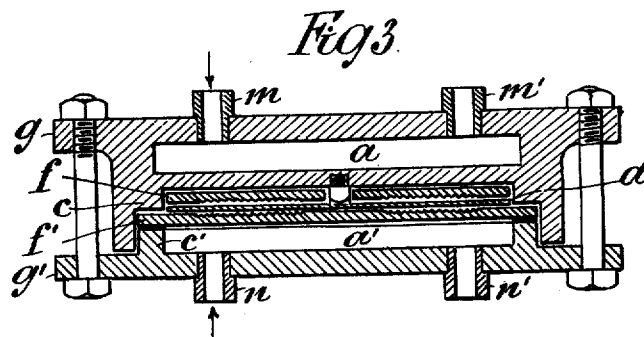


R. A. GLOETZNER.
 PRODUCTION OF DISK RECORDS.
 APPLICATION FILED MAY 14, 1919.

1,311,342.

Patented July 29, 1919.



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PRODUCTION OF DISK RECORDS.

1,311,342.

Specification of Letters Patent.

Patented July 29, 1919.

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To all whom it may concern:

Be it known that I, RAYMOND A. GLOETZNER, director, citizen of the United States of America, residing at present at No. 9 Aschaff-
5 fenburgerstrasse, Berlin-Schöneberg, Germany, have invented certain new and useful Improvements in the Production of Disk Records, of which the following is a specification.

10 This invention relates to improvements in the manufacture of sound records in disk form and in particular to the kind known as flexible disks. Such flexible disks have been
15 manufactured in a manner similar to that of the usual composition disk records, known generally as gramophone record viz: The flexible tablet has been impressed between matrices placed in dies between the platens of a heavy hydraulic press. On account of
20 the fact that these matrices, being galvano-plastic products, are very rarely of even thickness and in consequence thereof that the matrix surface does not conform to a geometric plane, it has not been possible to impress
25 the entire surface of a tablet perfectly. Resort was had to other means and in particular to a more direct manner of impression, viz: that of forcing the flexible tablet against the matrix by means of a fluid or gaseous
30 pressure exerted directly against the rear side of the tablet, as disclosed, for example, in British patent to Seymour, No. 24,552 of 1910. This method has not given the desired results as will be pointed out later. After
35 considerable experimenting I have devised a method which permits the production of a record absolutely true to the original in every detail, and which can be best explained by referring to the accompanying drawing,
40 in which—

Figure 1 represents a section through an apparatus embodying one form of my invention, and

45 Figs. 2 and 3, are sectional views of modified forms thereof, embodying however the same principle.

Referring to the drawings, in Fig. 1 g and g' , are hollow platens or dies which are kept in close contact with one another during the
50 operation by means of any kind of a press or similar apparatus, or of a simple bolt connection such as I have indicated on the peripheral portions of the platens. c and c' , are annular shoulders or rings constructed
55 integral with the platens g and g' and forming the chambers a and a' . Attached to

these rings c and c' , in a manner to be described hereafter are diaphragms k and k' , and resting on these diaphragms are the matrices f and f' . Between the latter is the
60 tablet d which is to be impressed. Inlets for the pressure medium are indicated at m and n , and outlets therefor at m' and n' .

In Fig. 2 I have shown an arrangement using only one diaphragm and have omitted
65 one matrix, using the back of the die to impress the reverse side of the tablet, as in a single sided record. In Fig. 3 I substitute for each diaphragm a thin and flexible matrix.
70

In this apparatus the diaphragm forms a substantial part of the same and the working fluid acts in the inclosed chamber without coming in contact either with the matrix or the tablet. It is obvious that by
75 these means I obtain the same specific pressure upon each face of the tablet and that in consequence a record uniform in every detail results.

It is known that fluids have a deleterious
80 effect upon most thermo-plastic and chemical compounds in that they act either as a partial solvent of an ingredient contained in the compound or as a disintegrating agent which destroys the structure and renders the
85 compound valueless for fine and exact impressions. In the present invention I have prevented any direct action of the compressing fluid on the tablet by retaining the fluid in a hermetically sealed recess or compart-
90 ment in the apparatus and at the same time permit the fluid to exert its full pressure upon the tablet. It may be added that this pressure being exerted on both sides of the tablet the tendency of the latter to warp is
95 overcome and the further objectionable feature is avoided that the flexible tablets, which are more or less imperfect, have pin holes therein and foreign matter, etc., embedded in them which permits the fluid to
100 enter between the matrix and the tablet and so impair the impression. Another considerable advantage of the construction lies in the fact that tablets can be pressed in the ordinary atmosphere without recourse be-
105 ing had to packing materials to prevent the medium from entering between and separating the matrix and the tablet. The diaphragms can be made of any suitable material and attached to the annular shoulders
110 or rings by a counter ring, when using leather or a similar material. I prefer,

however, to use a metal diaphragm in the shape of a thinly rolled steel or brass sheet of about fifteen one-thousandths of an inch in thickness and to weld or solder this sheet onto the shoulders or rings of the platens. It need not be specially pointed out that for carrying out the process according to my invention matrices which will flex so as to conform to any irregularity of the tablet should be used. Furthermore the pressure medium can be any fluid or gas, and can be used at various temperatures and in any combination to best suit the process.

Other changes and modifications may be employed, but the spirit of my invention lies in employing in connection with a pressing device a chamber having a flexible part in the shape of a diaphragm upon which a fluid or gaseous pressure acts directly and transmits its pressure to or through a matrix to the sound tablet.

In such of the appended claims as refer specifically to a "flexible" matrix, the above-mentioned property of the matrix of conforming itself to irregularities in the record blank or tablet is intended to be covered; but where the matrix is used without the diaphragms, as in the arrangement shown in Fig. 3, the matrix itself will have a diaphragm-like, flexing action which, in a sense, is supplemental to its ordinary flexion. In any case, moreover, the pressure of the gas or other fluid is exerted against the matrix, whether directly or indirectly, to force the matrix against the blank.

Having thus described my invention I claim:

1. The process of molding disk sound records, which consists in imposing against the record blank, while supported against movement, a flexible matrix having the sound vibration to be recorded marked on its working face; and subjecting the matrix to the action of fluid pressure directed toward its opposite face so as to force the matrix against the record blank and thereby impress the vibrations in the adjacent face of said record blank, substantially as described.

2. The process of molding disk sound records, which consists in imposing against the record blank, while supported against movement, a matrix having the sound vibrations to be recorded marked on its working face; and subjecting the matrix to the action of fluid pressure directed toward its opposite face so as to force the matrix against the record blank and thereby impress the vibrations in the adjacent face of said record blank; said matrix and record blank constituting companion elements, at

least one of which is constructed of flexible material, substantially as described.

3. The process of molding disk sound records, which consists in imposing against the record blank, while supported against movement, a matrix having the sound vibrations to be recorded marked on its working face; and forcing the matrix bodily against the record blank so as to impress the vibrations in the adjacent face thereof by means of a flexible diaphragm which contacts with the matrix and which is distended by fluid pressure, substantially as described.

4. A device for molding disk sound records, comprising a pair of opposed dies, at least one of which is provided with a fluid pressure chamber having an inlet and an outlet for the fluid, said dies adapted to receive between them a record blank; and a matrix on which the vibrations to be recorded are marked interposed between said pressure chamber and said blank and in contact with the blank to be forced against said blank by the pressure of the fluid in the chamber, so as to impress the vibrations in the adjacent face of the blank, substantially as described.

5. A device for molding disk sound records, comprising a pair of opposed dies, at least one of which is provided with an annular shoulder defining a fluid pressure chamber, said chamber having an inlet and an outlet for the fluid, and said dies being adapted to receive a record blank between them; and a flexible matrix on which the vibrations to be recorded are marked interposed between said chamber and said blank and in contact with the blank to be forced against said blank by the pressure of the fluid in the chamber, so as to impress the vibrations in the adjacent face of the blank, substantially as described.

6. A device for molding disk sound records, comprising a pair of opposed dies, at least one of which is provided with an annular shoulder defining an open-ended fluid pressure chamber, said chamber having an inlet and an outlet for the fluid, and said dies being adapted to receive a record blank between them; a flexible diaphragm closing the open end of said chamber and adapted to be forced toward the blank by the pressure of the fluid; and a matrix interposed between said diaphragm and said blank so as to be impressed against the blank by the distention of the diaphragm, substantially as described.

In testimony whereof I affix my signature.

RAYMOND A. GLOETZNER.