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C. JÄGER
PHONOGRAPHIC RECORD
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1,859,396

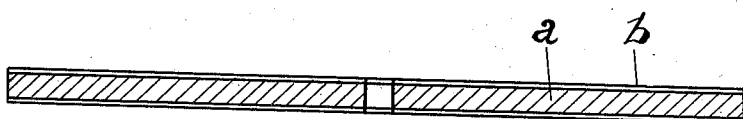


Fig. 1

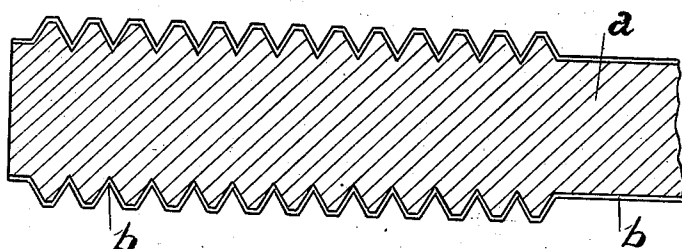


Fig. 2

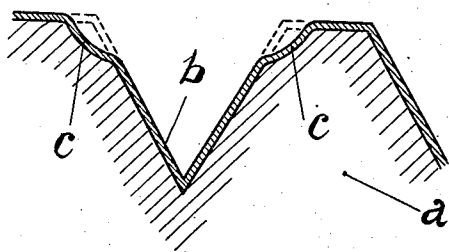


Fig. 3

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UNITED STATES PATENT OFFICE

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PHONOGRAPHIC RECORD

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My primary object is to provide a phonograph disk adapted to be recorded on an ordinary phonograph by the old acoustical method, that is, a disk made of metal, provided with a smooth helical groove and which, placed on the revolving turntable of an ordinary phonograph, will be recorded by means of the diaphragm and needle of the phonograph, the needle impressing in the said smooth groove the sound waves transmitted to the diaphragm from outside the phonograph.

Phonographic records having guide grooves for the needle, and made of metal, for instance of zinc, copper, brass, nickel and the like, are known. Phonographic records formed of different layers of metal are also known, the thin upper layer of said records produced galvanoplastically from the negative form being correspondingly re-inforced. The object of my present invention is to provide a phonographic record with guide grooves formed of two superimposed metals of different hardness.

If sound curves are recorded on a disk made of soft metal, the recording style will be deeply forced into the material owing to the amplitude of movement imparted thereto. However the record successfully obtained in this way will be rapidly destroyed in use, because the sound curve serves as a guide groove for the needle which will be repeatedly forced into the soft metal. On the other hand if trials are made for recording sound curves on a record disc made of hard metal, the style will produce either no impressions or only very slight impressions on said record, so that the sound will not at all be reproduced or only very weakly reproduced, the needle destroying however slowly the path of the sound curve.

My present invention aims to unite the advantages of the soft and hard metals by the fact that the disc serving to receive the record and provided with guide grooves is formed

of two superimposed metals of unequal hardness in such a way that said disc will be formed of a soft metal base coated with a thin harder metal layer. The harder coating layer is on one hand so thin that in the recording operation the impressions of the recording style may be made through said layer into the softer metal base, and on the other hand so hard that it will permit repeated use of the record without injury.

In the accompanying drawings:

Fig. 1 is a cross section of a record disc according to my invention prior to the formation of the needle guiding grooves thereon. Said disc is made for instance of circular shape and formed of an inner soft metal core *a*, the opposite sides of which are coated with thin layers of hard metal *b*.

Fig. 2 shows also an enlarged cross section of the record disc, on which the needle guiding grooves are formed by stamping, pressing and the like.

Fig. 3 is an enlarged cross sectional view of the groove.

The soft metal core *a* may also be first provided with needle guiding grooves and then coated with a thin hard metal layer prior to the recording operation. The coating *b* (Fig. 2) is so thin that the impressions *c* produced by the recording style in the recording operation will be made sufficiently deep into the soft metal core *a* (Fig. 3) without injuring the thin hard metal coating *b*.

By way of example, I may form a base or core of aluminum, electro-plated with a harder metal such as copper or nickel.

Having now fully described my said invention, what I claim and desire to secure by Letters Patent, is:

1. The herein described process of forming a phonographic disk for recording and reproducing purposes, consisting in providing a core of relatively soft metal formed with a stylus-receiving groove, providing the core with a flexible thin hard metal surface

film conforming to the groove, the hard metal surface film being of a character readily responsive to stylus recording indentations for transmitting said indentations permanently to the soft metal core without breaking through the hard metal.

2. A phonographic record comprising a core of soft metal and a flexible thin hard metal surface film for the core, the surface film being readily responsive to stylus recording indentations, and insuring that such indentations are transmitted to and remain permanently in the soft metal without rupture of the hard metal film.

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