No. 701,649. Patented June 3, 1902.

L. P. VALIQUET.

TALKING MACHINE.

(Application filed Nov. 16, 1901.)

(No Model.)

Fig. 1.

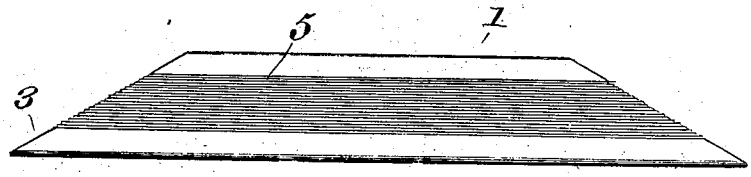


Fig. 2.

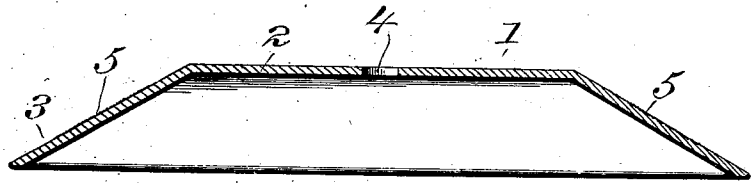
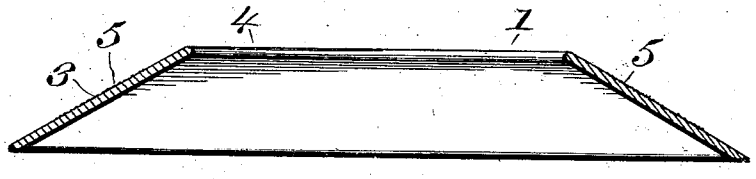


Fig. 3.



WITNESSES:

L. E. Pearson

W. H. Humphrey.

INVENTOR

Louis P. Valiquet

BY

A. Van Rensselaer

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LOUIS P. VALIQUET, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNIVERSAL TALKING MACHINE MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

TALKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 701,649, dated June 3, 1902.

Original application filed June 8, 1899, Serial No. 719,769. Divided and this application filed November 16, 1901. Serial No. 82,604. (No model.)

To all whom it may concern:

Be it known that I, LOUIS P. VALIQUET, a citizen of the United States of America, and a resident of the city of New York, county of New York, State of New York, have invented certain new and useful Improvements in Talking-Machines, of which the following is a specification.

My invention relates to talking-machines generally; and it consists more especially of an improved form of plate or body, as hereinafter claimed, in which the grooves containing the undulations or other variations corresponding to the undulations of the sound-waves are formed, the same being a division of my pending application filed June 8, 1899, and serially numbered 719,769.

Heretofore two general types of blanks have been employed in which the sound-record groove is formed. These two general forms are the cylinder and the flat disk. Each has its advantages and disadvantages. The cylindrical form is less liable to warp out of shape, and the surface speed of the record while being rotated is the same at all points. The disadvantages, however, of this form are that it is bulky and difficult to pack in shipping and cannot have the record-grooves conveniently stamped or cast upon it. Consequently in the majority of cases each copy of the record has to be cut or otherwise formed by a tool traveling over the surface of each particular blank. The advantages of the disk-shaped or flat record are that it takes up little space, can readily be stamped or cast from a matrix or die of harder material, and can bear upon its face the title of the composition recorded upon it, together with the signature of the performer, if desired. The disadvantages, however, of the disk-shaped record are that it is liable to warp slightly out of shape, which requires the employment of compensating mechanism in the reproducer, and that as the record has a plate that is rotated about an axis perpendicular to its face the surface speed of points at different radii from the axis varies. As a result the undulations produced by sounds of the same pitch are longer in the outer curves of the spiral formed by the record-groove than they are in the inner curve of said spiral, and as a result practically only a portion of the face of the plate nearest the outer circumference is valuable for record-making purposes. My invention combines the advantages of both these forms of record and avoids most of the disadvantages of each form. Its essential feature is the forming of the record-groove on the curved surface of a plate shaped in the form of a frustum of a cone.

The preferred form of record-plate embodying my invention is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a side view in elevation of my improved form of sound-record plate. Fig. 2 is a central section through the dish-shaped plate. Fig. 3 is a similar view of a modification.

Throughout the drawings like reference-figures refer to like parts.

1 represents the sound-record plate, the same being in form of a dish-shaped shell and having a flat central portion 2 and a surrounding curved portion 3. The portion 3 of the plate conforms to the curved surface of the frustum of a cone, the flat central portion being in a plane at right angles to the axis thereof. The plate 1 is designed for use with any convenient form of motor-driven turn-table—such, for example, as that disclosed in my pending application, above referred to—the same having the motor-shaft inclined to the plane of the horizon and the turn-table carried thereby conically shaped to fit into the concave side of the dish-shaped sound-record plate. Centrally of the record-plate an opening 4 is formed to fit loosely over the end of the motor-shaft, which ordinarily projects above the turn-table. The record-grooves 5 are stamped or cast or otherwise formed upon the curved surface of the dish-shaped plate in the shape of a combined spiral and helical line.

Preferably, of course, the record-plate should be mounted to rotate so that the reproducer may travel in a horizontal plane, thereby reducing the power necessary to feed it across the record as much as possible. The parts

may be thus operatively combined by constructing the record-rotating apparatus so that the uppermost element of its conical surface shall be parallel to the plane of the horizon. To accomplish this, the angle of the cone from which the frustum is cut—that is to say, the angle which any element of its surface makes with its axis—should be equal to the angle which the axis of the motor-shaft makes to the plane of the horizon. As shown, I have represented the record-plate in the shape of a frustum cut from a sixty-degree cone, and accordingly the inclination of the motor or turn-table shaft to the plane of the horizon or the base of the machine is sixty degrees also.

When the record is rotated in the usual way, the needle of the reproducer is placed in the sound-groove at the beginning of the record and is fed along by said record, although, of course, positive-feeding apparatus could be employed, if desired. Accordingly the reproducing-needle travels in a line substantially parallel to an element of the curved surface of the frustum of the cone to which the record-plate is shaped.

The advantages of my invention comprise the following: The angle of the cone being made sufficiently obtuse, the copies of the record could be stamped or cast by a die or mold and disengaged therefrom with the same freedom as in the case of a flat record. The record-plate having the form shown is so braced that it cannot warp or twist to any appreciable degree. The record-plate immediately and automatically centers itself upon the supporting-table. The degree of frictional contact between the record-plate and the supporting-table is much greater than in the case of a flat record. Consequently no thumb-screw or other means for holding the record-plate against the table is necessary, and the central opening 4 might be enlarged until the flat portion 2 of the plate disappeared, as shown in Fig. 3. A large number of commercial records can be packed together in very nearly as small a space as the same number of flat records could be packed, the various plates fitting into one another like a series of saucers. The difference in radii of the first loop of the spiral groove and the last loop of said spiral groove is less than would be the case in a flat record of the same length impressed upon a flat plate of the same diameter. This difference may of course be still further reduced by making the cone of a more acute angle. A sufficient space is still left at the center of the dish-shaped record for carrying the title of the composition and the signature of the performer.

It is evident, of course, that various changes could be made in the details of construction of the apparatus illustrated without departing from the spirit and scope of my invention, so long as the relative arrangement of parts or the principle of operation disclosed is preserved.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. As an article of manufacture, a sound-record in the shape of a frustum of a cone with a web of material extending across the smaller end forming a flat central portion, the record-grooves being formed in the curved surface of said frustum.

2. As an article of manufacture, a sound-record in the shape of a frustum of a cone, with a web of material extending across the smaller end forming a flat central portion, the record-grooves being formed in the curved surface of said frustum in a helical line about the axis of said frustum.

3. As an article of manufacture, a dish-shaped sound-record having record-grooves formed on the outer curved surface of the cone-shaped portion.

Signed at New York, N. Y., this 27th day of September, 1901.

LOUIS P. VALIQUET.

Witnesses:
W. H. PUMPHREY,
L. E. PEARSON.