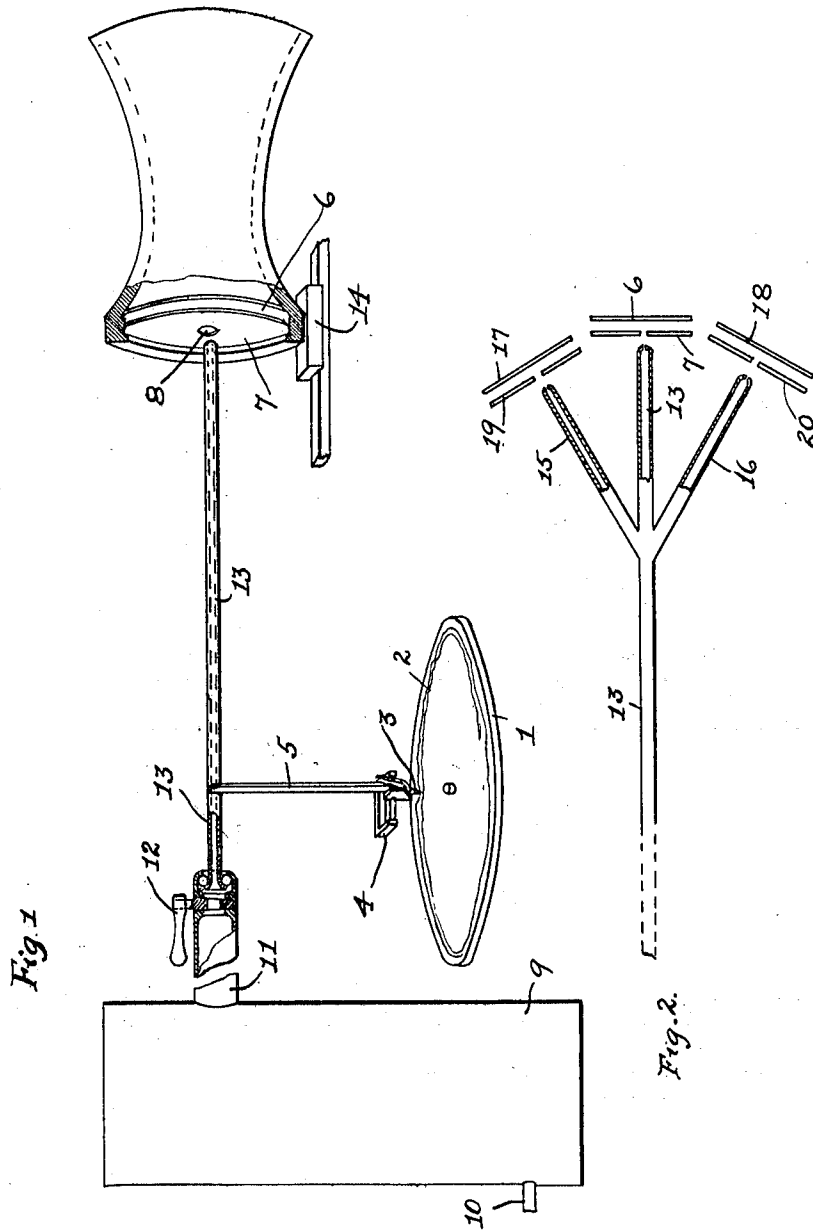


I. KITSEE.
 PHONOGRAPHY.
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1,040,213.

Patented Oct. 1, 1912.



WITNESSES

Edith R. Stiller
 Mary C. Smith

INVENTOR

I. Kitsee

UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

PHONOGRAPHY.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ISIDOR KITSEE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Phonography, of which the following is a specification.

My invention relates to an improvement in phonography.

It has reference to the reproduction of sound from sound-records.

It is immaterial for the purpose of my invention if the record is of the cylindrical or disk type; so also is the shape of the stylus or needle and its mode of support immaterial.

The necessary parts for practising my invention are a sound record (of any desired type), a needle or stylus, a source of gaseous material, a phonographic diaphragm, means to project a jet of said material on the diaphragm and means to deflect said jet in accordance with the variations of the lines of record.

In the accompanying drawing, I have illustrated one arrangement of practising this my invention, but it is obvious that the mechanical arrangement may differ to suit requirements without departing from the scope of my invention.

In the drawing, Figure 1 illustrates my invention in partial sectional and partial perspective view. Fig. 2 is a similar view of part of my invention in modified form.

1 is the sound record, here shown as one of the disk type; 2 the lines of record; 3 the stylus or needle; 4 the support for same; 5 the lever adapted to vibrate in unison with the vibrations of the stylus or needle; 6 the phonographic diaphragm; 7 a shield for same; 8 a perforation in said shield; 9 a reservoir for gaseous material; 10 the means to connect said reservoir to compressing means; 11 an outlet pipe; 12 a valve to control the outlet of the compressed gaseous material; 13 a hollow stylus or lever through which the gaseous material is to be conveyed. 14 are the means to move the diaphragm toward or away from the terminal of said stylus.

In Fig. 2, 15 and 16 are the branch levers extending from the lever 13. 17 and 18 are the diaphragms adjacent thereto and 19 and 20 are the shields of the diaphragm.

The mode of operation of my invention is

as follows: The stylus or needle 3 is placed in the grooves of the record 1 and the record is then, by any of the well known means, rotated or otherwise set in motion. The reservoir 9 is filled with compressed gaseous material, preferably with compressed air. The lever 5 is connected to the hollow stylus or lever 13. The diaphragm with its shield is placed in a position, so that the jet of air shall, during the vibration of the lever 13, alternately impinge on the diaphragm itself. The jet of air may normally strike the diaphragm, or may normally only strike the shield, and through the vibrations be brought right opposite the perforations 8 thereby striking the diaphragm. The valve 12 is open to a degree so that the force of the compressed air should be of the required strength when striking the diaphragm 6. Through the movement of the record 1, the needle 3 is vibrated and these vibrations are conveyed to the lever 5. The vibratory movement of this lever will set in vibrating motion the lever 13. The jet of air issuing from the mouth of this lever will then alternately strike, through the perforations 8, the diaphragm, or be impinged on the solid shield of the diaphragm. The diaphragm, therefore, will vibrate in accordance with the vibrations of the needle 3 and will, therefore, reproduce sound with the aid of which these vibratory lines of record were formerly produced. In Fig. 2, I have shown the means whereby with the same record 3, diaphragms may be set in vibratory motion, but it is obvious that the number of branch levers and, therefore, diaphragms may be increased at will. Through the greater or lesser opening of the valve 12, the force with which the air-jet strikes the diaphragm 6 may be regulated and varied even during the performance of the phonograph.

I have not illustrated the means by which the reservoir 9 may be filled with compressed air, as such means are well known and may differ according to requirements; but I prefer that during the time of the operation of the device, the reservoir 9 should remain connected through the means 10 with said compressing means.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The method of reproducing sound, which consists in impinging a jet of a medium under pressure against a phonographic

diaphragm a limited area only of which is exposed to the action of said jet, and causing said jet to vibrate across the exposed area of said diaphragm under the influence of the vibratory lines of a sound record, whereby impingement of the medium upon the diaphragm takes place at intervals to cause said diaphragm to vibrate in harmony with the vibratory lines of the record.

2. The method of reproducing sound, which consists in causing a continuously-flowing gaseous jet to be deflected in accordance with the vibratory lines of a sound record, and receiving the jet upon the surface of a phonographic diaphragm a limited area only of which is exposed to the action of said jet, the range of deflection of said jet being greater than the exposed area of the diaphragm, whereby actual impingement is established only when the jet is moving across said exposed area in following the lines of the sound record.

3. The method of reproducing sound, which consists in exposing a limited area of a phonographic diaphragm, discharging a jet of a medium under pressure in the direction of the diaphragm for impingement

thereagainst, and deflecting said jet in accordance with the vibratory lines of a sound record and in relation to the exposed area of said diaphragm, whereby impingement upon the diaphragm takes place at intervals to cause said diaphragm to vibrate in harmony with the vibratory lines of the record.

4. The method of reproducing sound, which consists in impinging a jet of a medium under pressure against a phonographic diaphragm a limited area only of which is exposed to the action of said jet, causing said jet to vibrate across the exposed area of the diaphragm under the influence of the vibratory lines of a sound record, whereby impingement of the medium upon the diaphragm takes place at intervals to cause said diaphragm to vibrate in harmony with the vibratory lines of the record, and varying the force of said jet to vary the amplitude of the reproduced sound.

In testimony whereof I affix my signature in presence of two witnesses.

ISIDOR KITSEE.

Witnesses:

MARY C. SMITH,
EDITH R. STILLEY.