

No. 733,521.

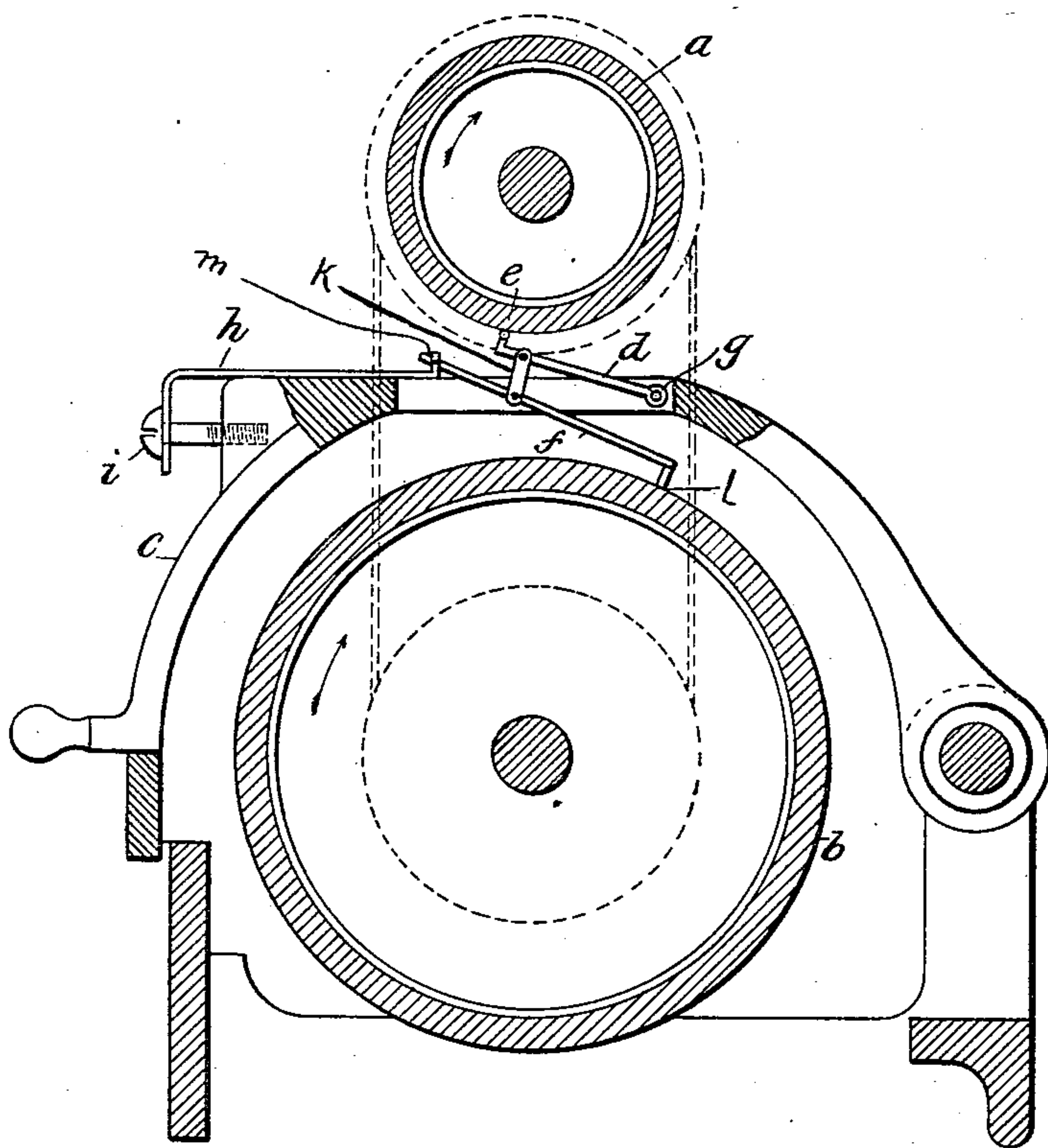
PATENTED JULY 14, 1903.

C. WALCUTT.

APPARATUS FOR DUPLICATING PHONOGRAPHIC SOUND RECORDS.

APPLICATION FILED JAN. 9, 1901.

NO MODEL.



WITNESSES

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## UNITED STATES PATENT OFFICE.

CLEVELAND WALCUTT, OF ASNIÈRES, FRANCE.

APPARATUS FOR DUPLICATING PHONOGRAPHIC SOUND-RECORDS.

SPECIFICATION forming part of Letters Patent No. 733,521, dated July 14, 1903.

Application filed January 9, 1901. Serial No. 42,655. (No model.)

*To all whom it may concern:*

Be it known that I, CLEVELAND WALCUTT, a citizen of the United States, residing at Asnières, Seine, France, have invented certain new and useful Improvements in Apparatus for Duplicating Phonographic Sound-Records, of which the following is a specification.

The object of my invention is to provide a mechanism adapted to cut an amplified reproduction of the record from a phonographic cylinder or disk. Such amplified reproduction may be cut upon a cylinder of larger diameter or disk of larger surface. To do this, I provide a suitable frame to carry two phonogram-cylinders mounted upon parallel shafts separated a suitable distance to admit of the interposition of a stylus system between the same. Said stylus system instead of being pivoted centrally is pivoted nearer to the cylinder bearing the record, so that the longer-cutting stylus may have an amplified movement. It is intended thus to provide a means of transferring the record from an ordinary cylinder to a cylinder of larger diameter.

It is well known that the imperfections in phonographic reproductions are due in part to the fact that the spherical reproducer is not allowed to engage all the portions of the record representing fundamental tones and principal overtones, because some of the waves or gouges thereof are of less length than width. Owing to the relatively great diameter of the recording edge to the depth of the cut all the depressions of which the record is formed are characterized by a greater width than depth. In the case of waves which are of a greater length than width the reproducer will be free to engage the entire length of the wave; but when the length of the wave is less than its width the spherical reproducer will not be allowed to engage the record-groove, but will be arrested by the crests of the adjacent waves. The reproducer in the latter case, therefore, does not accurately track the record, and the reproducer-diaphragm is not vibrated in accordance with the record.

To this end my invention consists in employing two cylinders, one of which is a record-bearing cylinder and the other a cylinder of larger diameter to receive the ampli-

fied duplicate record. I use a large cylinder in order to obtain better reproductions by increasing the peripheral speed of the recording-surface.

The figure is a sectional end elevation showing the features of my invention, in which—  
*a* represents the record-bearing cylinder, having its direction of rotation indicated by an arrow.

*b* represents the enlarged cylinder, having its direction of rotation also indicated by an arrow.

*c* represents a traveling arm adapted to move in the line parallel with the axis of the cylinders *a* and *b*.

*d* represents the stylus, having a reproducer-ball *e* on one end and connecting with cutting-stylus *f*.

The stylus system consists of the stylus-lever *d*, pivoted to the traveling arm *c* at *g*, and is provided with the reproducing stylus or ball *e* and the stylus-lever *f*, suspended between its ends from the lever *d* by means of the link *k* and carrying upon its longer arm the cutting or recording stylus *l*, the opposite end being pivotally connected with the adjusting-arm *h* at *m*, as shown, which is secured to the traveling arm *c* by means of the adjusting-screw *i*, as shown. By this means and because of the angular position of the link *k* with respect to the levers *d* and *f* the adjustment of the screw *i* inwardly will produce a greater pressure of the two styluses upon their respective cylinders, while the withdrawal of the screw will reduce such pressure or finally withdraw the stylus system completely from contact with the cylinders preparatory to their removal from the mandrels. It will be noticed that all of the movements of the reproducing stylus or ball *e* due to its following the groove in the master-record are communicated with increased amplitude to the cutting or recording stylus *f*, thereby increasing the depth of the furrow or cut upon the duplicate cylinder, and inasmuch as the duplicate cylinder has a greater surface speed than the master record or cylinder it is clear that the duplicate record will be considerably amplified.

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



1. In a phonographic-record-duplicating device, the combination, of a traveling arm, a stylus system mounted thereon, said system consisting of reproducing and recording stylus-levers, a link connecting said levers, and a screw adjustment device consisting of a rigid bar mounted upon the traveling arm and pivotally connected at one end to the end of one of the stylus-levers, and means for adjusting said bar whereby the pressure of the two styluses upon their respective cylinders may be varied and positively regulated.

2. In a phonographic-record-duplicating device, the combination of a traveling arm, a stylus system mounted thereon said system consisting of reproducing and recording stylus-levers, a link connecting said levers intermediate their ends, one of said levers being pivoted to the traveling arm, an adjusting-arm consisting of a rigid bar mounted upon the traveling arm, a pivotal connection between the other lever and said adjusting-arm, and a positive means for producing a longitudinal adjustment of said adjusting-

arm whereby the pressure of the two styluses upon their respective cylinders may be regulated.

3. In a phonographic-record-duplicating device, the combination of a traveling arm, a lever carrying a reproducing stylus or ball pivotally secured thereto, an adjusting-arm consisting of a rigid bar mounted for longitudinal movement upon said traveling arm, a lever carrying a recording-stylus pivotally secured to said adjusting-arm and a link connecting said levers intermediate their ends, whereby the longitudinal movement or adjustment of the adjusting-arm will produce a varied pressure of the two styluses upon their respective cylinders.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 20th day of December, 1900.

CLEVELAND WALCUTT.

Witnesses:

EDWARD P. MACLEAN,  
GEORGE E. LIGHT.