No. 635,120. Patented Oct. 17, 1899.

G. BETTINI.

PHONOGRAPH.

(Application filed June 8, 1899.)

(No Model.)

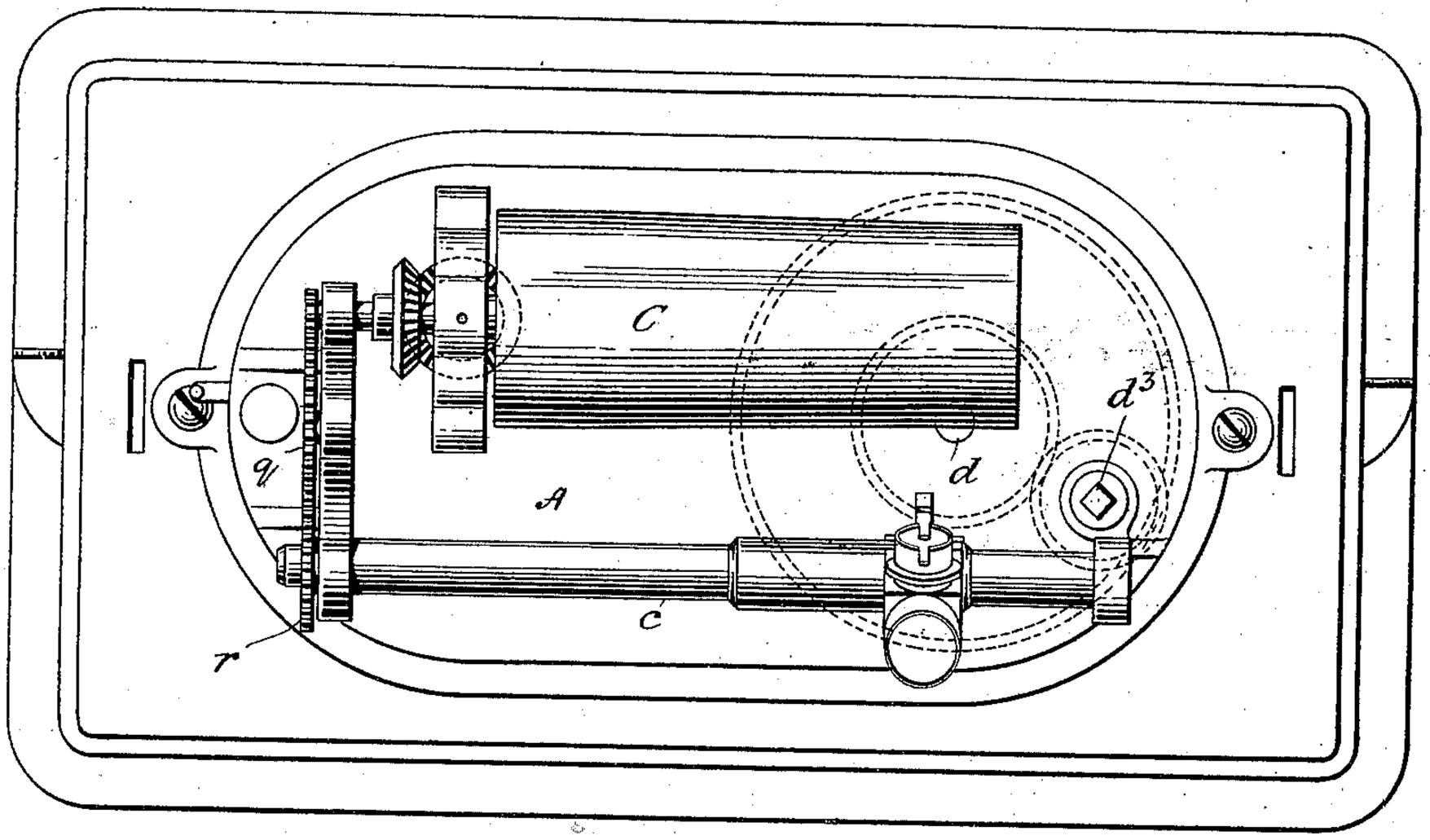

Fig. 1

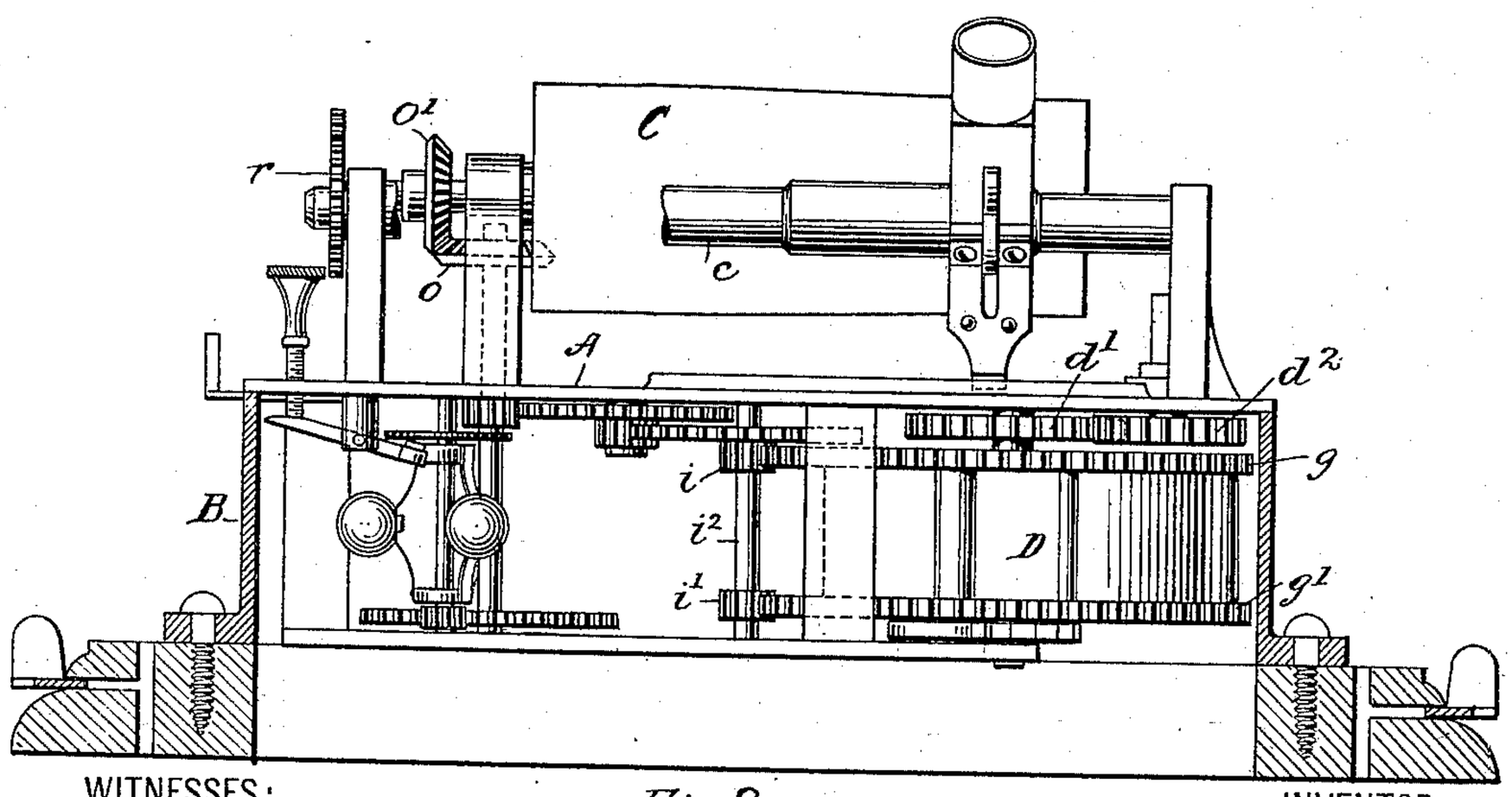

Fig. 2.

WITNESSES:

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PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 635,120, dated October 17, 1899.

Application filed June 8, 1899. Serial No. 719,753. (No model.)

To all whom it may concern:

Be it known that I, GIANNI BETTINI, a subject of the King of Italy, residing at the city of New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Phonographs, of which the following is a full, clear, and exact description.

This invention relates to sound recording and reproducing machines, the object being to improve the general construction of the machine in the direction of simplicity and compactness of structure; and to this end the invention consists in the details of construction hereinafter described and claimed.

With reference to the accompanying drawings, Figure 1 is a plan of my improved machine; and Fig. 2 is a front elevation of the machine, the motor-casing being in section and parts broken away.

One of the features of my invention, enabling me to place the motor (which is a spring-motor in this instance) immediately beneath the plate upon which the phonograph proper is mounted without enlarging said plate for this purpose, is the construction of the motor-train and the arrangement of the key-shaft with respect thereto.

The plate A is of oblong shape, rounded at each end, and fits upon the upper edge of a motor-casing B, of the same general shape. This top plate is no larger than is necessary to support the cylinder C, the shaft *c* upon which the recording and reproducing devices are carried, and the bearings in which said cylinder and shaft are mounted. The drum D, upon which the mainspring of the motor is wound, is arranged horizontally beneath the plate A at one end of the casing and concentric with the curved end of said casing, so that the largest possible size of drum may be used without wasting space. To wind this kind of drum, it has been customary to use a horizontal lever projecting from the side of the motor-casing and fitted inside with a pawl that engages with a ratchet on the drum-shaft; but I wish to do away with this means for winding and substitute one which does not occupy so much space. A key-shaft and key is the form of winding device I prefer; but with the large drum located concentrically in the curved end of the casing it would be impossible to adjust the key to the axis *d* of the drum, because of its position immediately beneath the cylinder C. Hence I apply to the drum-shaft a gear-wheel d' and mount in the top plate another gear-wheel d^2, whose shaft d^3 projects upward through the top plate at a point where a key can be readily adjusted to it. This reverses the direction of the operator's hand in winding the motor; but it permits of the use of the largest-size drum in a casing or frame no larger than is necessary to support the parts of the phonograph. Obviously the same size of drum could be used if it were set somewhat to one side and the casing enlarged to the same extent to accommodate it; but this is undesirable.

The drum itself is constructed upon a novel plan. Its end flanges are both formed into gear-wheels *g g'*, which engage with separate pinions *i i'* on a common shaft i^2, from which shaft the gear-train leads to the cylinder C and shaft *c*. This arrangement of double gearing from the drum to the train insures a more positive transference of the power, since there will be no tendency of the shaft i^2 to bend or work unevenly.

Most of the wheels of the train are arranged in horizontal planes immediately beneath the cover-plate A; but the last shaft of the train extends upward through the cover-plate and carries a beveled gear *o*, which engages with another similar gear *o'* on the cylinder-shaft. From this shaft motion is transmitted through gears *q* and *r* to the shaft *c*, which carries the usual screw for moving the sound recording or reproducing stylus and diaphragm across the face of the record-cylinder.

Having described my invention, I claim—

In a sound recording and reproducing machine, the combination of a plate having a circular end, a record-carrying cylinder arranged opposite said plate and covering the center of said circular end of the plate; a motor-casing of substantially the same shape in plan as said plate and being covered by said plate; a spring-drum located in said casing and mounted concentrically with the circular end of the plate and casing, a gear-wheel on the axle of said drum; another gear-wheel engaging therewith and mounted on a key-

shaft having its bearing in said cover-plate and through which it projects; a gear-train leading from the drum and a shaft extending from the train through the cover-plate, and beveled gearing connecting said shaft with the shaft of the record-carrying cylinder, substantially as described.

In witness whereof I subscribe my signature in presence of two witnesses.

GIANNI BETTINI.

Witnesses:
WM. A. ROSENBAUM,
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