

No. 681,981.

Patented Sept. 3, 1901.

E. E. RUSSELL.  
REPRODUCER FOR PHONOGRAPHS.

(Application filed June 10, 1901.)

(No Model.)

Fig. 1

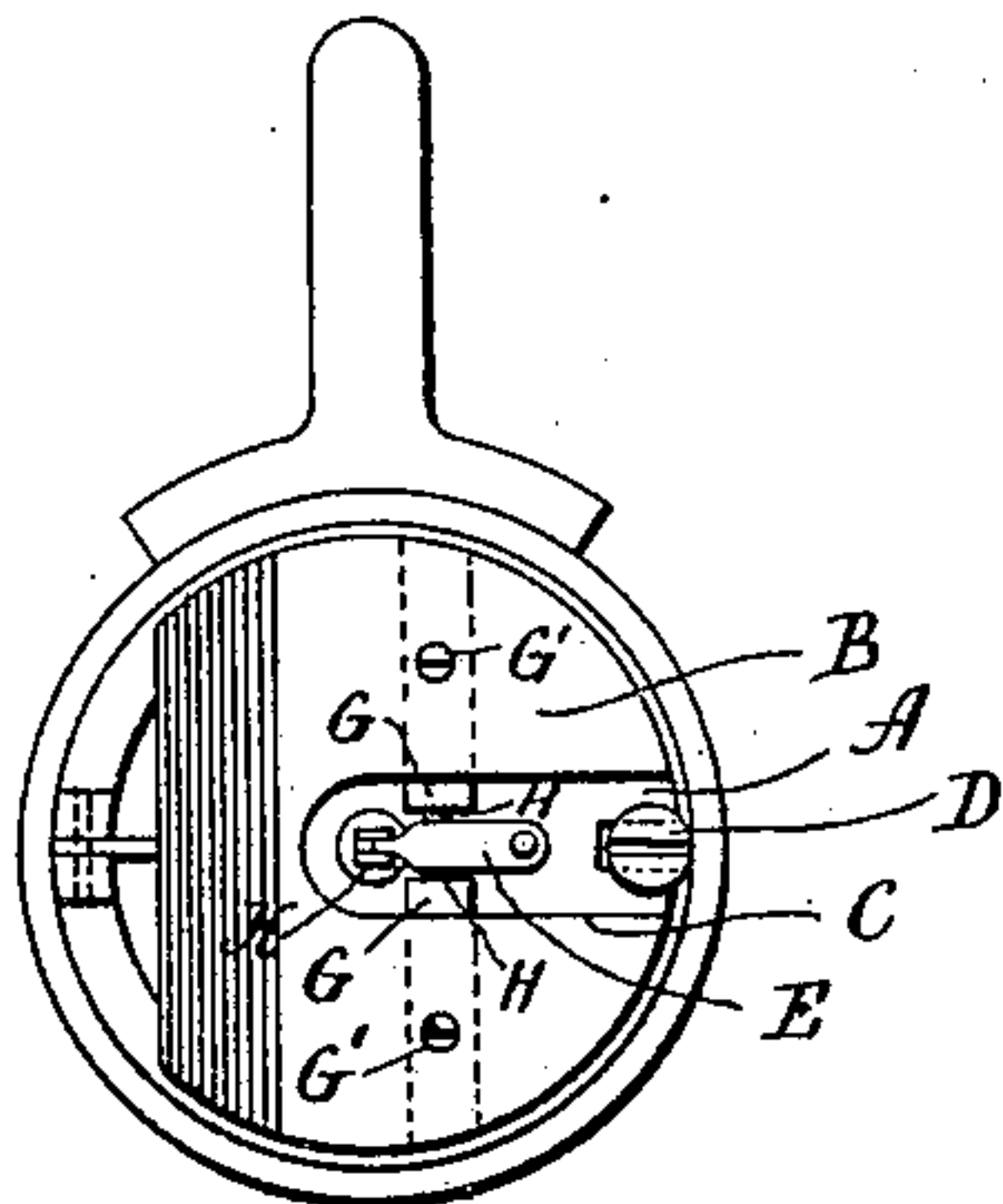


Fig. 2

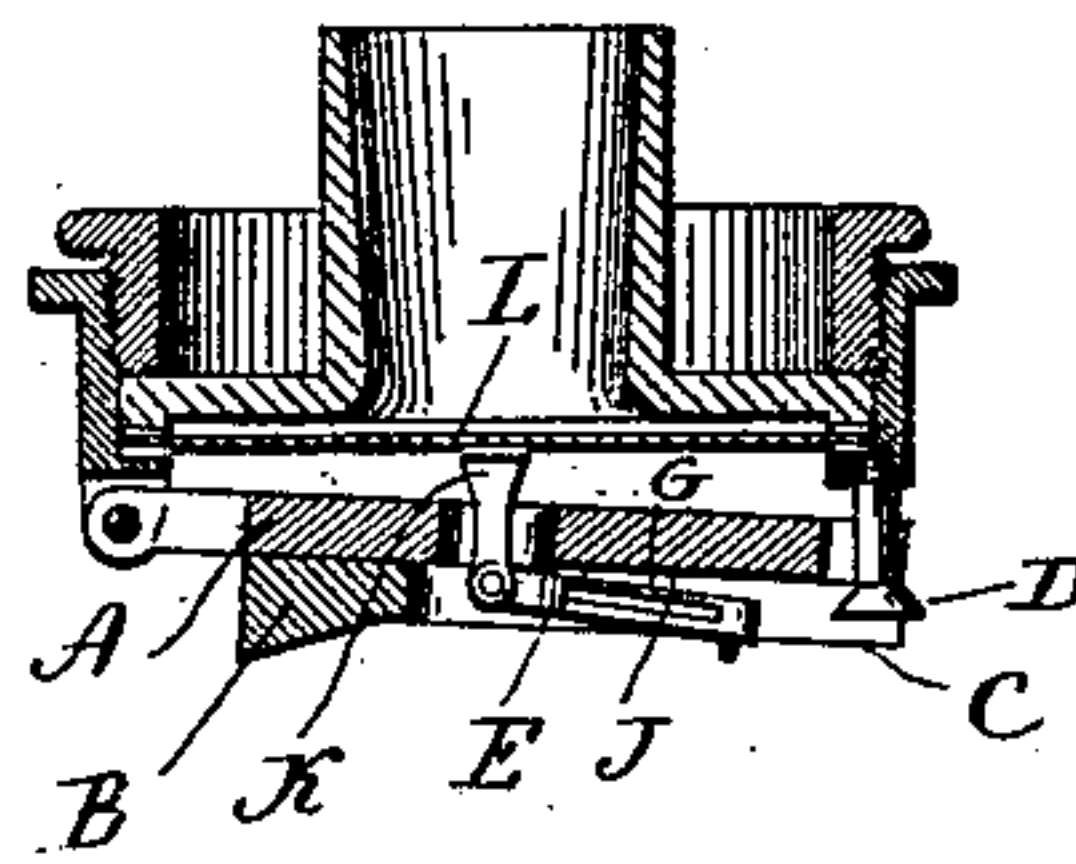


Fig. 3

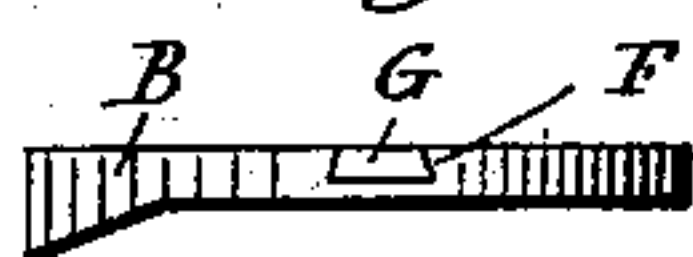


Fig. 4

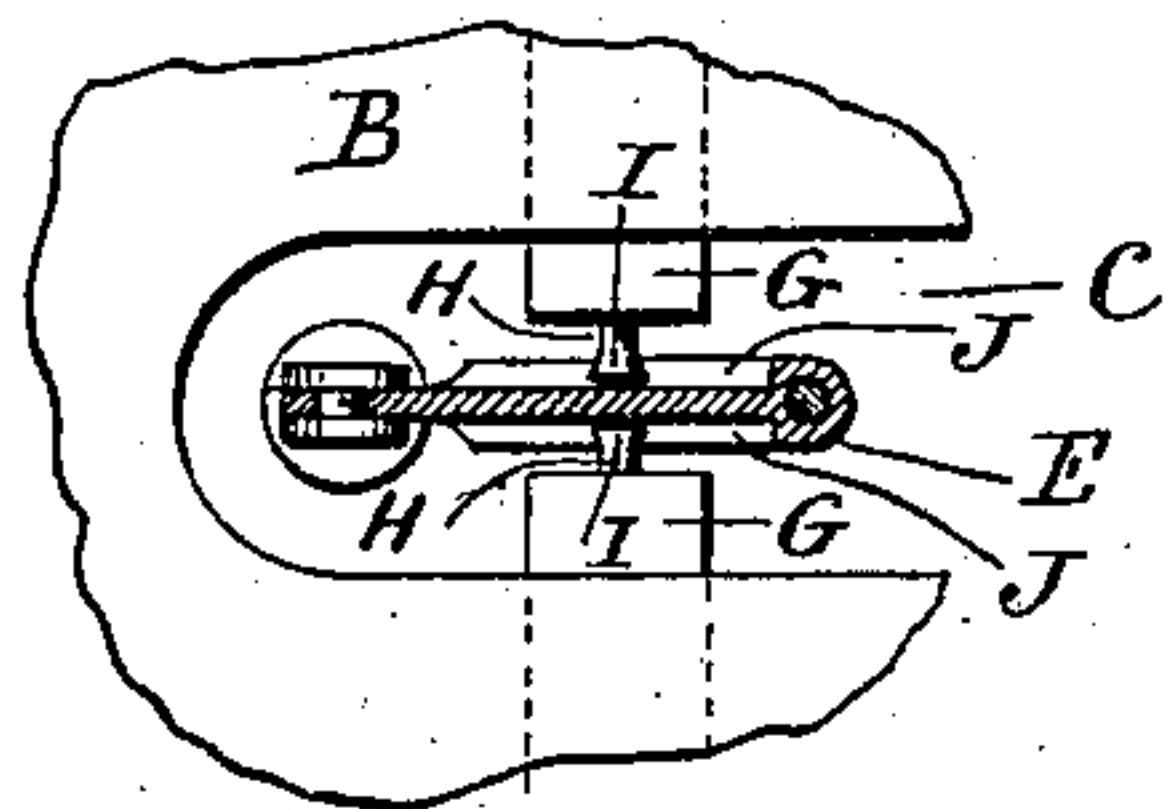


Fig. 5

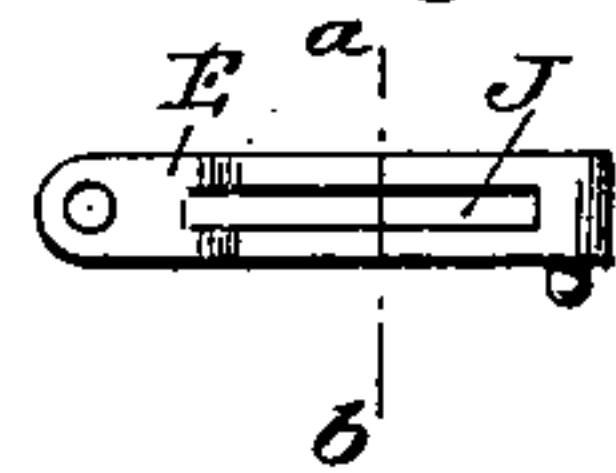


Fig. 7

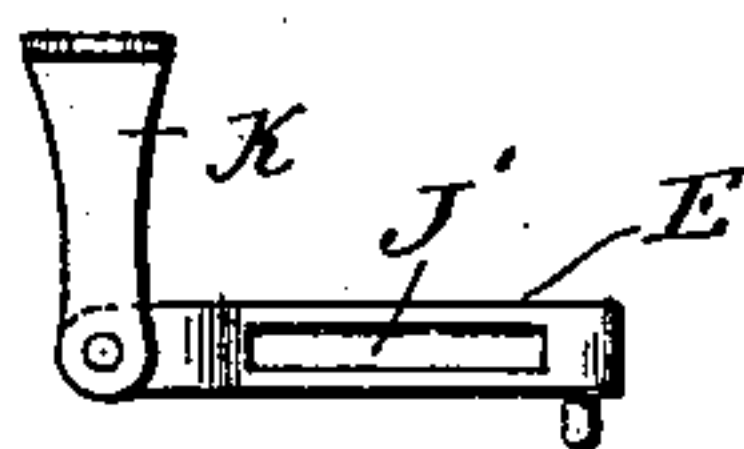
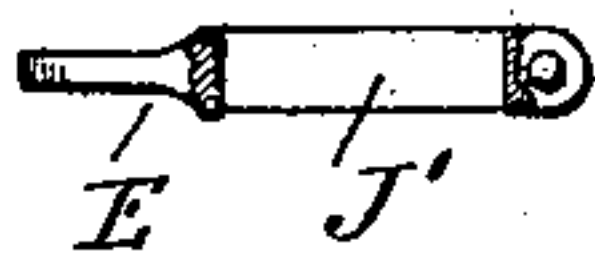


Fig. 6



Fig. 8



Witnesses.

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# UNITED STATES PATENT OFFICE.

EVANS E. RUSSELL, OF NEW HAVEN, CONNECTICUT.

## REPRODUCER FOR PHONOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 681,981, dated September 3, 1901.

Application filed June 10, 1901. Serial No. 63,853. (No model.)

*To all whom it may concern:*

Be it known that I, EVANS E. RUSSELL, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Reproducers for Phonographs; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, an under side view of a receiver constructed in accordance with my invention; Fig. 2, a sectional view of the same; Fig. 3, an edge view of the auxiliary weight detached; Fig. 4, a broken under side view, partially in section, showing the manner of mounting the sapphire-arm in the weight; Fig. 5, a side view of the sapphire-arm detached; Fig. 6, a sectional view on line *a b* of Fig. 5; Fig. 7, a side view of a modified form of sapphire-arm connected with a diaphragm-post; Fig. 8, an under side view, partially in section, of the modified sapphire-arm shown in the preceding figure.

This invention relates to an improvement in reproducers for phonographs, graphophones, and other similar sound-reproducing instruments in which the sound is reproduced through a sapphire-arm resting upon a record-cylinder and in connection with a diaphragm, the object of this invention being an improved means for connecting the so-called "sapphire-arms" with the diaphragm and in mounting the sapphire-arm in the weight; and the invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and particularly recited in the claims.

The reproducer herein shown is of ordinary construction and too well known to require description.

To the face of the weight A, I apply an auxiliary weight B, which may be formed integral therewith or formed separately, as shown, so as to be attached to the weight, as at present constructed. In this auxiliary weight is a recess C to give clearance to the weight-retaining screw D and the sapphire-arm E, which is mounted in the weight. As a convenient means for mounting the arm I

form the inner face of the auxiliary weight with undercut grooves F and in these grooves locate corresponding dovetail slides G, in the ends of which are pins H. These pins are preferably formed with enlarged heads I, which extend into undercut grooves J, which are arranged longitudinally in opposite sides of the arm E. The slides G are held in position by set-screws G', extending upward through the face of the auxiliary weight B. The inner end of the arm is adapted to be riveted directly to a post K, which is secured to the face of the diaphragm L and so as to extend therefrom through the weight A. To add to the effectiveness of the auxiliary weight, I increase the thickness at one side, as clearly shown in Fig. 2 of the drawings.

It is apparent that instead of forming headed pins H, as described, a single pin may be employed, which will extend through the sapphire-arm, the arm being provided with a slot J' for that purpose, as shown in Figs. 7 and 8 of the drawings. By thus mounting the sapphire-arm in the weight and connecting it directly with the diaphragm-post the vibrations are saved and a fuller clearer round musical tone is produced than is possible when the sapphire-arm is loosely connected with the diaphragm-post and rigidly connected with the weight.

The operation of this reproducer is the same as those of ordinary construction, and therefore does not require description.

It will be understood that various changes from the details of construction herein shown and described may be made without departing from the spirit and scope of my invention. I therefore do not wish to be understood as limiting the invention to the exact details shown.

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

1. In a reproducer, the combination with the diaphragm-post and weight of an auxiliary weight adapted to be secured to the weight, a sapphire-arm pivotally mounted in the said auxiliary weight and connected directly to the diaphragm-post, substantially as described.

2. In a reproducer, the combination with a weight, of slides mounted therein, a sap-



phire-arm mounted between said slides, a diaphragm-post connected directly with one end of said sapphire-arm, substantially as described.

- 5 3. In a reproducer, the combination with a diaphragm-post and weight, of slides mounted in the said weight and formed with inwardly-projecting headed pins, and a sapphire-arm formed in opposite sides with  
10 grooves to receive said pins, and connected

at its inner end directly with the diaphragm-post, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EVANS E. RUSSELL.

Witnesses:

FREDERIC C. EARLE,  
F. C. TUTTLE.