

L. J. GERSON.  
SOUND REPRODUCING MACHINE.  
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962,565.

Patented June 28, 1910.

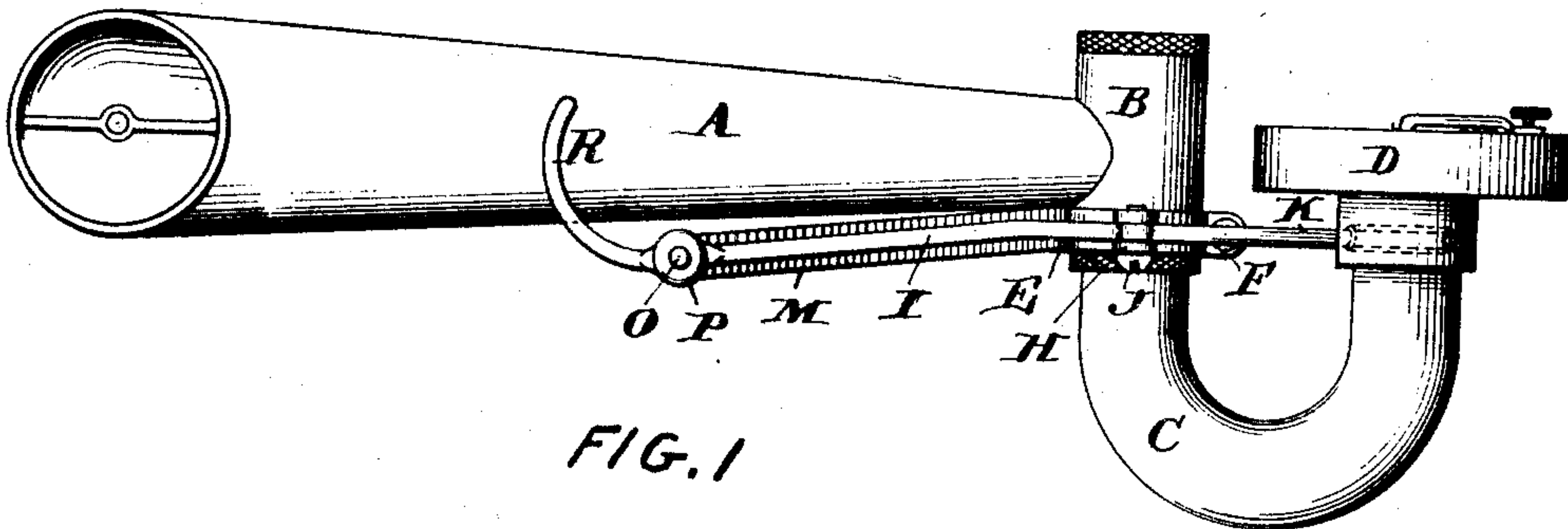


FIG. 1

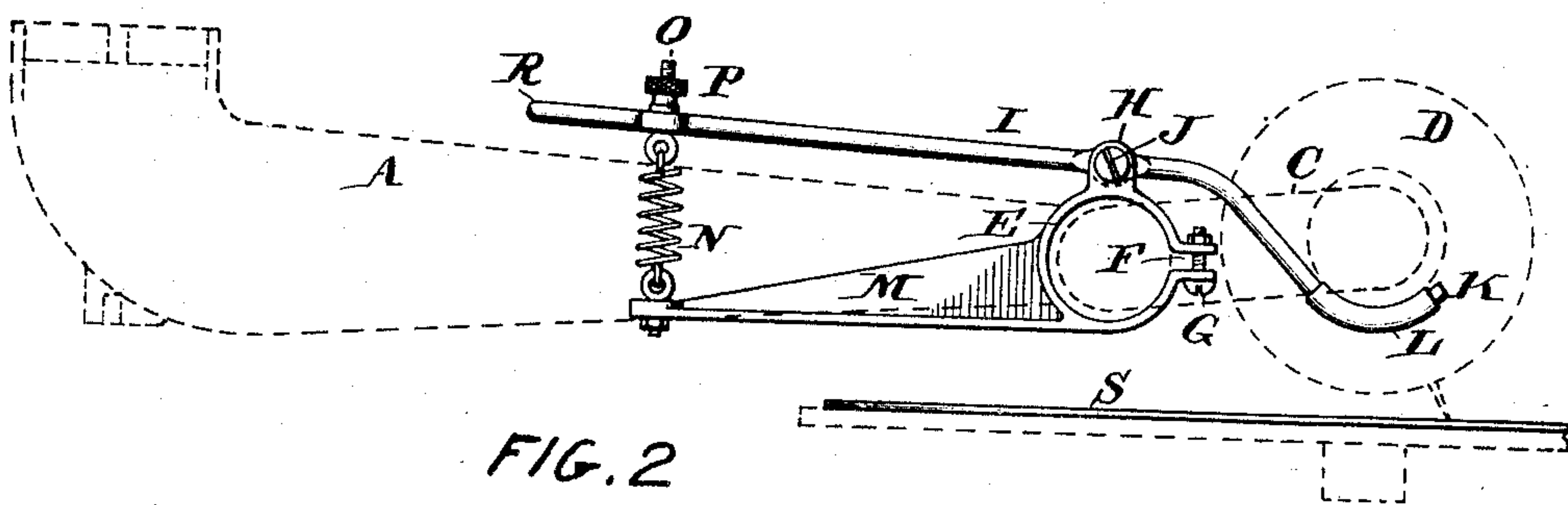


FIG. 2

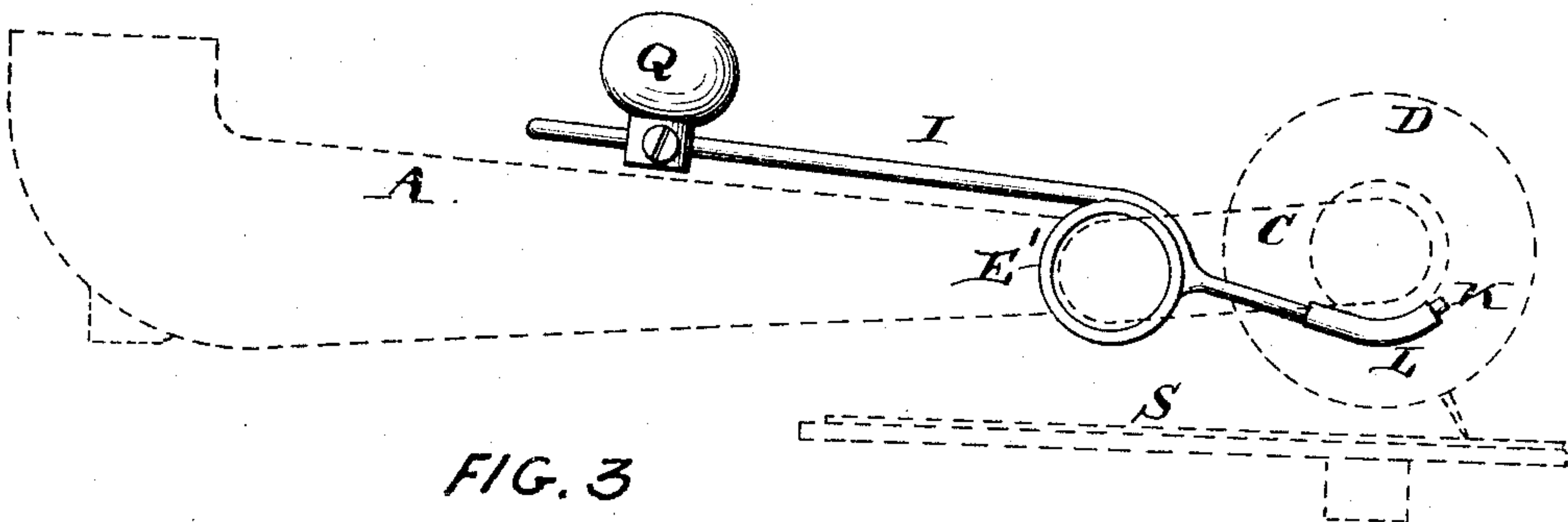
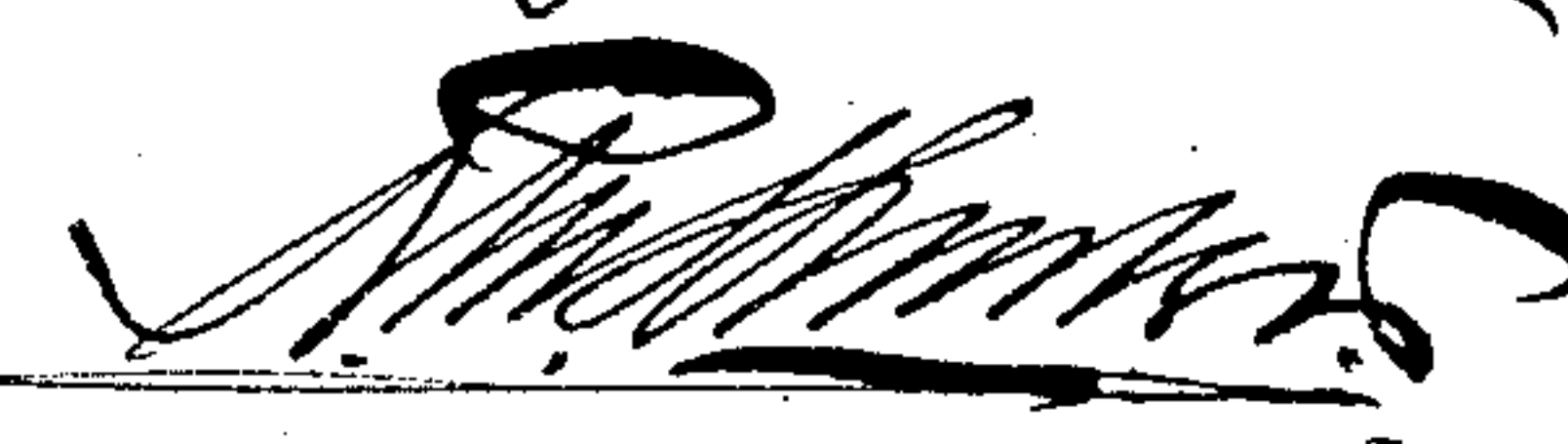


FIG. 3

Witnesses

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# UNITED STATES PATENT OFFICE.

LOUIS JAY GERSON, OF PHILADELPHIA, PENNSYLVANIA.

SOUND-REPRODUCING MACHINE.

962,565.

Specification of Letters Patent.

Patented June 28, 1910.

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*To all whom it may concern:*

Be it known that I, LOUIS JAY GERSON, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Sound-Reproducing Machines, of which the following is a specification.

My invention has reference to sound reproducing machines and consists of certain improvements which are fully set forth in the following specifications and shown in the accompanying drawings which form a part thereto.

In many types of sound reproducing machines in which a floating reproducer is employed in connection with a disk having a laterally undulating sound record, there is great wear upon the record groove by the stylus point tracking the groove, because of the excessive weight exerted upon the record groove by the sound box and its supporting means.

The object of my invention is to provide a sound reproducing machine with a counterbalancing device for the sound box and the tubular arm supporting it, whereby the weight of said parts and each of them, may be counterbalanced to the extent desired to reduce the pressure and consequent wear upon the record disk, with the result that the life of the record is increased and much of the scratching sounds at present reproduced are largely eliminated.

My invention consists of the tubular arm, such as employed in disk talking machines, provided at its free end with a sound box having capacity for vertical movement or adjustment, combined with a counterbalancing device carried by the tubular arm and counterbalancing the weight of the sound box, whereby the pressure of the stylus upon the record disk of the machine may be varied.

My invention further consists in providing a pivoted tubular arm with a hinged tubular part terminating in a sound box, and combined with a lever device hinged to the pivoted tubular arm and having one end extended forward to support the sound box and the other extending rearward and provided with means for counterbalancing some of the weight of the sound box.

My invention also comprehends details of construction which, together with the features above specified, will be better under-

stood by reference to the drawings, in which:

Figure 1, is a plan view of a tubular arm and sound box of a talking machine having my improvements applied thereto; Fig. 2, is a side elevation of the counterbalancing devices embodying my improvements and with the tubular arm, sound box and record disk indicated in dotted lines; and Fig. 3, is a similar view to that shown in Fig. 2, illustrating modification of my invention.

A is a tubular arm, such as employed in a disk talking machine in commercial use, and is usually supported so as to swing laterally over the record S. The end of this tubular arm A is provided with a transverse tubular bearing B. Journaled in this bearing is a goose neck formed of the tubular part C and carrying at its free end the sound box or reproducer D, having a stylus or needle which tracks the groove in the record S. This construction is such that the bearing B remains normally at a fixed distance above the record S, whereas the sound box is free to swing vertically as desired, being held and guided by the goose neck C which is journaled in the part B of the arm A. My invention is very easily adapted to this character of sound box supporting arm and as shown, it comprises the following counterbalancing devices: A collar E fits over one of the lateral ends of the tubular bearing B, and has flanges F through which the clamping screw G extends, and by which the collar E is rigidly clamped in fixed position upon the part B of the said arm A. The upper part of this collar is provided with a flange H carrying a pivot pin J upon which is pivoted the counterbalancing lever I. The forward end K of this lever I is extended downward and under the hub portion at the back of the sound box D, and to prevent rattling, said end K may be covered with a piece of rubber tubing L to form a cushion structure. The collar E is also provided with a rearwardly extending bracket M to which a counterbalancing spring N is secured. The other end of the spring is attached to an adjusting screw O which extends upward through the lever I, and is provided with a nut P. By turning the nut P, any desired tension may be put upon the spring to counterbalance, to a greater or less extent, the weight of the sound box D and tubular goose neck C. The rear end of the



lever I may be bent laterally as at R so as to strike the upper part of the arm A and act as a stop whenever the sound box is turned upward or backward, as for instance, when applying a new needle or stylus point.

By having the collar E adjustably clamped upon the bearing B, it is evident that the counterbalancing device as a whole may be adjusted in any suitable position to suit the requirements of the apparatus.

When the collar E is properly clamped by the screw G, it becomes rigidly attached to the part B of the arm A, but with capacity for proper adjustment of the counterbalancing attachment. I am enabled to reduce the friction between the stylus point and the groove of the record disk S to a minimum and with a proper co-action for reproducing sound and feeding the sound box. By attaching the counterbalancing device to the part B, all strain upon the journal bearing of the goose neck C is removed, and consequently the counterbalancing device is sensitive and does not interpose objectionable strains.

My invention may be employed in connection with various types of disk record sound reproducing machines and yet in all cases there will be a hinged arm or element carrying the sound box whereby it may be raised or lowered with respect to the sound record disk, combined with a counterbalancing means independent of said arm or element and sound box for counterbalancing them and yet permitting them to be raised independent of the counterbalancing devices.

It will be observed that, in the general constructions shown, the arm structure supporting the sound box may be considered as composed of two tubular parts, one having a relatively fixed distance from the record disk, and the other pivoted to said part in such manner as to enable the sound box to be raised and lowered with respect to the disk, combined with a counterbalancing device having a connection with that portion of the tubular support which is maintained at the relatively fixed elevation from the record disk and adapted to counterbalance the sound box while, permitting it to be freely raised, preferably independently of the counterbalancing device, when so desired.

I have shown the construction of my invention in the form which is excellently adapted for commercial use, but I do not limit myself to the details as these may be modified without departing from the spirit of the invention.

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

1. In a sound reproducing machine, the combination of a tubular arm, a sound box, a hinged tubular part on the end of the tubular arm to support the sound box whereby it may be raised or lowered, and a counter-

balancing device for counterbalancing the sound box and free end of the hinged tubular part consisting of a lever pivoted in vertical alinement with the axis of the hinged tubular part and having one end arranged for supporting the sound box and tubular part and the other end bent laterally over the tubular arm to act as a stop, and a counterbalancing means operating upon the other end of the lever.

2. In a sound reproducing machine, the combination of a tubular arm, a sound box, a hinged tubular part to support the sound box hinged to the tubular part whereby it may be raised or lowered, and an independent counterbalancing device for counterbalancing the sound box and free end of the hinged tubular part and from which the said parts are vertically adjustable, said counterbalancing device consisting of a lever pivoted axially with the hinge of the tubular part and having one end arranged for supporting the sound box and tubular part, and a counterbalancing means operating upon the other end of the lever.

3. In a sound reproducing machine, the combination of a tubular arm having a transverse tubular end, a tubular goose neck hinged to the tubular end of the tubular arm, a sound box secured to the free end of the tubular goose neck, and counterbalancing devices carried by the tubular arm and operating to support the sound box and goose neck against the action of gravity consisting of a counterbalancing lever adjustably hinged to the transverse tubular end of the tubular arm and having a connection with the sound box and goose neck the construction being such that it is adjustable circumferentially about the axis of the hinge of the goose neck.

4. In a sound reproducing machine, the combination of a tubular arm, a tubular goose neck hinged to the end of the tubular arm on a transverse axis, a sound box secured to the free end of the tubular goose neck, a counterbalancing lever hinged in substantial vertical alinement with the axis of the hinge of the goose neck and operating to support the sound box and goose neck against the action of gravity, a collar clamped to the tubular arm so as to be adjusted circumferentially about the axis of the hinge of the goose neck and supporting the counterbalancing lever, and means acting upon the other end of the lever for counteracting the weight of the sound box and goose neck the construction being such that the hinge of the lever, the counterbalance means and the contact with the goose neck are all in the same plane.

5. In a sound reproducing machine, the combination of a disk, a tubular sound conveying part having a relatively fixed distance above the disk, a second tubular sound



conveying part hinged to the first mentioned tubular part, a sound box secured to the free end of the second tubular part, and a counterbalancing device carried by the first mentioned tubular sound conveying part and acting to counterbalance the weight of the second tubular part and its sound box consisting of a lever hinged in vertical alignment with the hinge joint of the second tubular part and having one end arranged to support the sound box and said second tubular part, and counterbalancing means consisting of a spring and devices to adjust its tension carried on the first mentioned tubular part to operate the lever.

6. In a sound reproducing machine, the combination of a disk, a tubular sound conveying part having a relatively fixed distance above the disk and having a transverse tubular end, a second tubular sound conveying part hinged to the first mentioned tubular part on its transverse tubular end, a

sound box secured to the free end of the second tubular part, and a counterbalancing device carried by the first mentioned tubular sound conveying part and acting to counterbalance the weight of the second tubular part and its sound box consisting of a collar clamped in position upon the transverse tubular end of sound conveyer part and having a bracket, a counterbalancing lever hinged to the collar in vertical alignment with the axis of the hinged tubular part, a spring connecting the lever with the bracket, and means for adjusting the tension of the spring.

In testimony of which invention, I have hereunto set my hand.

LOUIS JAY GERSON.

Witnesses:

R. M. HUNTER,  
AUGUST W. REITIG.