

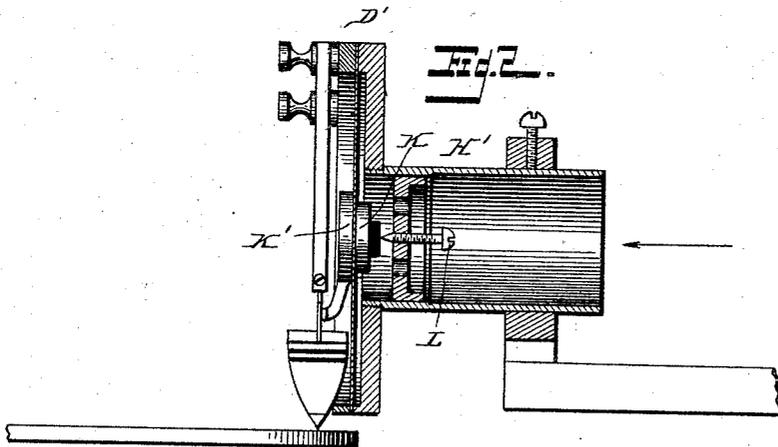
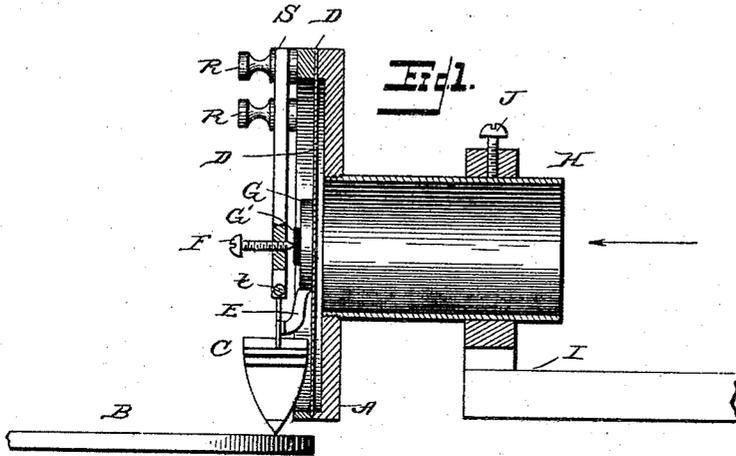
(No Model.)

2 Sheets—Sheet 1.

E. L. WILSON.  
SOUND RECORDING INSTRUMENT.

No. 489,666.

Patented Jan. 10, 1893.



Witnesses.

J. M. Fowler Jr.  
R. T. Heck.

Inventor.

Edward L. Wilson  
M. Doolittle  
By Attorney.

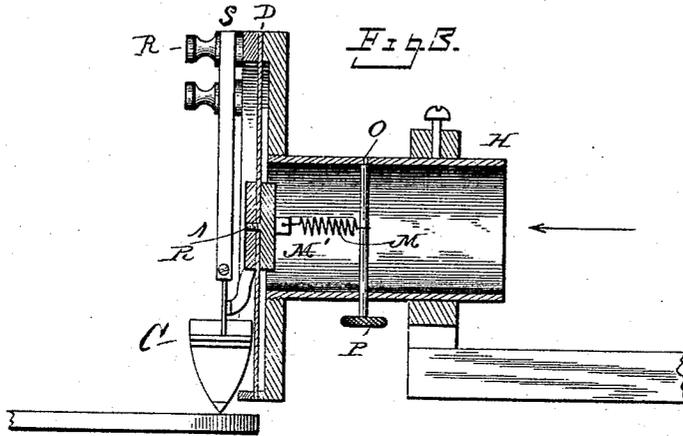
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Witnesses:  
R. F. Heck  
J. M. Blackwood

Inventor:  
Edward L. Wilson  
By *M. W. Doolittle*  
Attorneys

# UNITED STATES PATENT OFFICE.

EDWARD L. WILSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

## SOUND-RECORDING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 489,666, dated January 10, 1893.

Application filed August 11, 1892. Serial No. 442,836. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD L. WILSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Sound-Recording Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in gramophones and similar sound recording instruments, and it has for its object to give to the diaphragm greater flexibility, while maintaining a proper tension, whereby louder and more distinct articulations of spoken language and better results in the recording of musical notes, are produced, which better results of course will follow in the reproduction of the same sounds. In such instruments, in which the record surface of a metal plate is impressed by a stylus attached to a transmitting vibratory diaphragm it is necessary to employ what is known as a damper to give to the diaphragm a certain amount of pressure to produce such a tension of the same as will properly receive the sound vibrations, and at the same time maintain its flexibility. But if this tension is too great the flexibility is impaired or destroyed and the sounds indistinctly recorded.

My invention is illustrated in the accompanying drawings in which

Figure 1 is a side view in elevation partly in section, and Fig. 3 is a similar view of a modification. Fig. 2 is a similar form of apparatus now in use and is given to illustrate the difficulties my invention is designed to obviate.

Referring to Fig. 1, A is the frame of a sounding box composed of a circular disk and ring, between which, at the rim, a diaphragm D is rigidly secured.

C is a stylus hinged on a rod, or otherwise pivoted, at the point *t*, on a supporting frame, and adapted to operate on the record plate B. The support S is attached by screws R to the rim of the sounding box.

H is a sound receiving tube secured to a support I by a screw, J, and provided with a screw thread on one end by which it is screwed into the box A, so that the inner end

of the tube is opposite the center of the diaphragm.

G is a circular piece of hard rubber secured to the center of the diaphragm and provided with a finger E, of the same material, adapted to contact with the shank of the stylus.

G' is a piece of soft rubber secured to the center of the rubber piece G.

F is a damper, consisting of a screw, which is inserted from the outside of the sounding box and diaphragm, through the support S, and directly against the center of the soft rubber piece G'. Preferably the damper should be applied at the center as here described, but some variation may be made in this respect without departing from my invention.

In some instances the stylus has been used as a damper, but not with good results, when thus used both as a stylus and sound recorder, but by my method it will be noticed that the damper and stylus are arranged independent of each other, so that each is permitted to do its own work independently. It will also be noticed in this form of my invention that as the damper is outside of the diaphragm the latter is forced against the sound waves.

In one known method, illustrated in Fig. 2, the damper, L, is mounted in the tube H' and is forced against the rubber bearings K, rigidly secured to the diaphragm D'. The diaphragm is also held between the inside rubber bearing K and the outside hard rubber bearing K' secured on the opposite side of the diaphragm, and carrying the finger connected with stylus. By this method the diaphragm is rendered more inflexible, as the pressure of the sounds against the diaphragm is added to by the pressure of the damper in the same direction. The tension thus produced on the diaphragm is too great to produce the best results.

In Fig. 3 I have illustrated a modification of the principle of my invention which is to force the diaphragm, by the damper tension, in the direction from which the sound proceeds. In this modification the damper consists of a spring, M, secured in the tube H, on a rod, O, which is adapted to be turned, so as to regulate the tension of the spring by the thumb nut, P. The opposite end of the spring is secured to the double rubber bearing R, on

the diaphragm, and the outside portion of which is provided with the finger connecting with the stylus. In addition to the advantage mentioned of forcing the diaphragm against the sound there is a great advantage in the convenience of manipulating the damper by having access to it outside of the sound receiving tube, as shown by my improvements in Figs. 1 and 3, and comparing them with the arrangement shown in Fig. 2. By this easier access to it the damper can also be better adjusted to give greater steadiness and support to the diaphragm, especially when the damper is to be placed and operated at any point on the outside of the sound receiving tube.

It will be noticed that my invention is applicable to other instruments in which it is desirable to regulate the tension of a sound receiving diaphragm.

Having thus described my invention what I claim is:—

1. The combination with a sound receiving tube of a diaphragm and a damper, said damper arranged outside of said tube and adjusted to bear directly on or near the center

of said diaphragm, substantially as and for the purpose described.

2. In a sound recording instrument the combination with the stylus, of a record plate, a damper and a diaphragm, said damper arranged to operate on or near the center of the diaphragm, and on the outside thereof, and the stylus and damper arranged to work independently of the other, substantially as described.

3. In a sound recording instrument the combination with a sound receiving tube, of a transmitting vibratory diaphragm and stylus, a rubber pad secured to the center of said diaphragm and provided with a finger to connect with said stylus, and a damper located outside of said tube and diaphragm and adapted to be forced against said pad, substantially as and for the purpose described.

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

EDWD. L. WILSON.

Witnesses:

JOS. H. BLACKWOOD,  
ROY. F. HECK.