

No. 620,823.

Patented Mar. 7, 1899.

I. ANDION.
GRAPHOPHONE.

(Application filed Jan. 3, 1898.)

(No Model.)

Fig 1

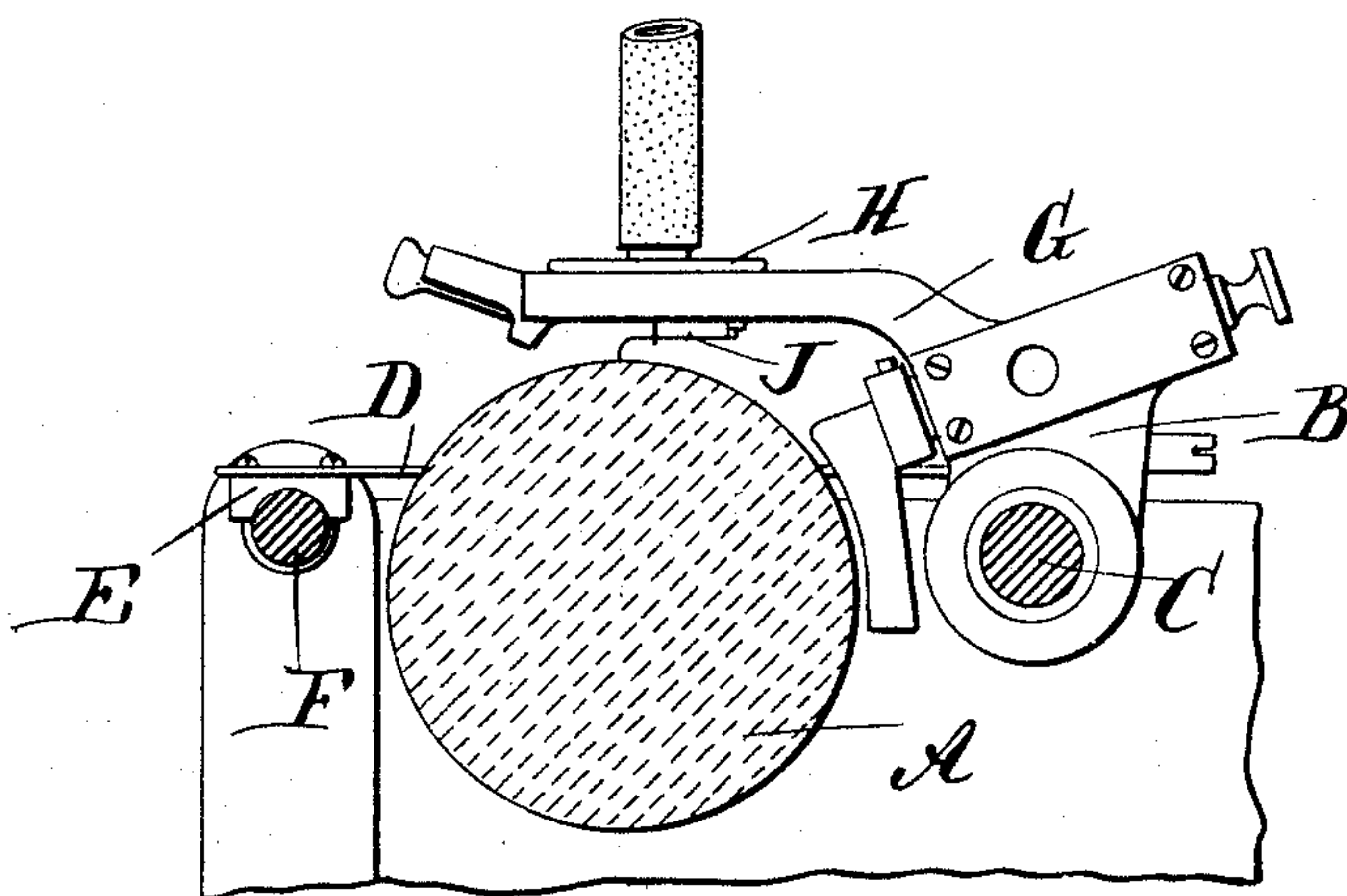
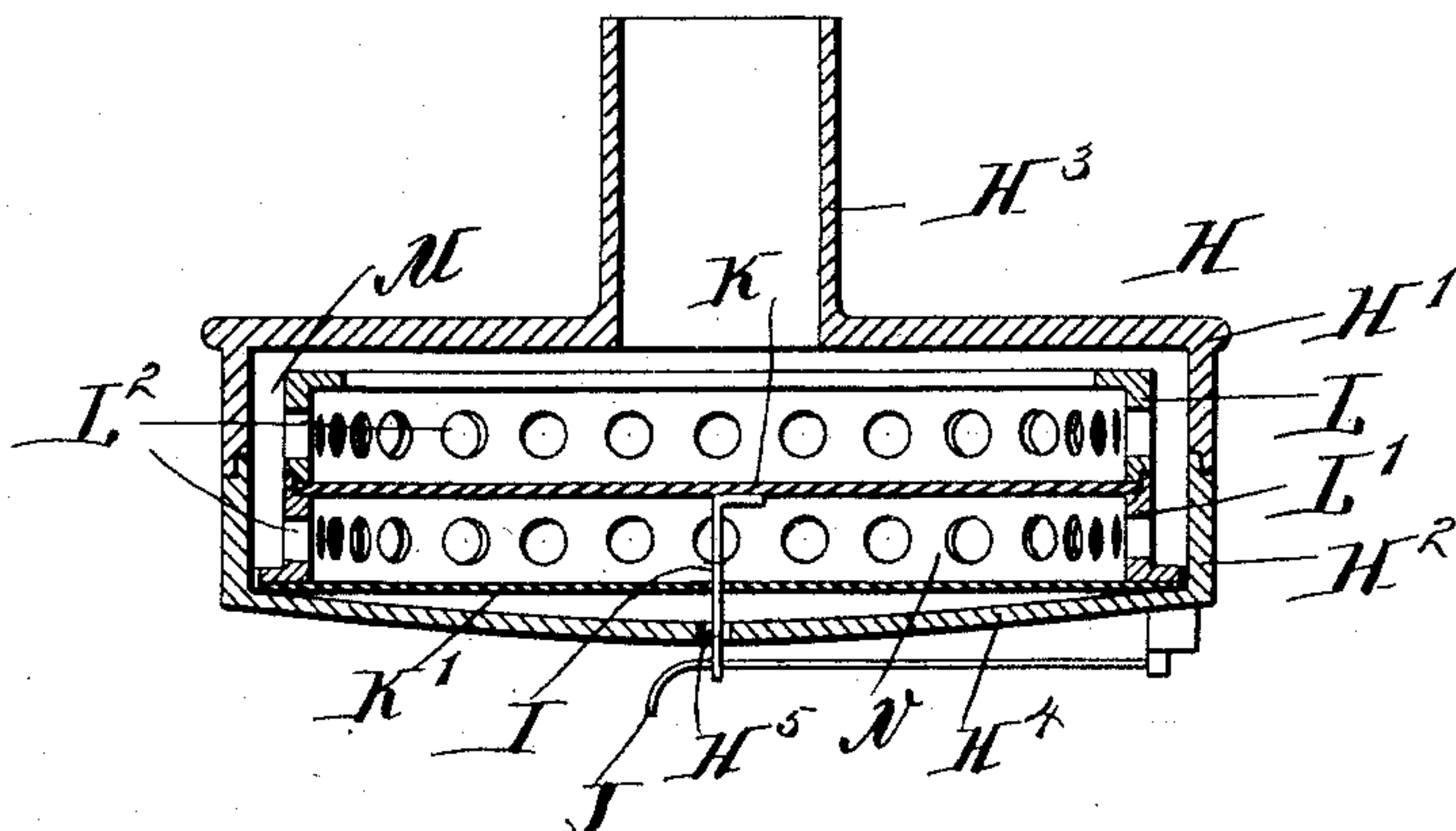


Fig 2



WITNESSES:

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GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 620,823, dated March 7, 1899.

Application filed January 3, 1898. Serial No. 665,300. (No model.)

To all whom it may concern:

Be it known that I, INOCENCIO ANDION, a subject of the King of Spain, residing in New York city, county and State of New York, have invented a new and Improved Phonograph, of which the following is a full, clear, and exact description.

My invention relates to phonographs, and particularly to the recorders and reproducers thereof.

The object of my improvement is to increase the volume of the sound in a reproducer or in a recorder to secure a more perfect recording action by concentrating the sounds and preventing the scattering or loss thereof. This object I attain by means of a novel construction, such as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a broken sectional elevation of a phonograph, showing the recording-cylinder in transverse section; and Fig. 2 is a sectional elevation of the reproducer.

A is the phonograph-cylinder, and B the carriage, slidable longitudinally upon the rod C and having an arm D, carrying a half-nut E in engagement with the feed-screw F. The carriage has an arm G, upon which is mounted the recorder or reproducer H. So far as described the parts may be constructed and arranged as in the ordinary construction of phonographs. The reproducer H, however, is located so as to be horizontal—that is, about midway between the guide-rod C and the feed-screw F—instead of being disposed obliquely adjacent to the feed-screw, as in the ordinary construction. This arrangement reduces the weight of the arm G and renders the apparatus more sensitive.

The reproducer proper, H, as shown in detail in Fig. 2, consists of a separable shell H¹, one half of which carries a nipple H³, adapted for connection with a reproducing-horn or with hearing-tubes in the well-known manner. The other half of the shell H² has a concaved bottom H⁴, which is solid, except for a central perforation H⁵, through which passes the pin I, adapted to operate the stylus J. I desire it to be understood that any suit-

able or approved connection may be employed between the stylus J and the pin I. The latter is secured rigidly to the main (mica) diaphragm K, which is held between two rings or collars L L', located within the shell H¹ H², but spaced from the cylindrical walls thereof, so as to afford an annular chamber M in communication with the interior of the nipple H³. The rings L L', in conjunction with the bottom H⁴, form a diaphragm-holder. Each of the collars L L' is provided with a series of perforations L² in its cylindrical wall, so that the annular chamber M communicates directly with the space below the diaphragm and also with the space above the same. The perforations in the upper ring L may be omitted without entirely sacrificing the advantages of my invention; but I believe that better results will be obtained when peripheral perforations are provided both above and below the diaphragm. The diaphragm may be held upon a shoulder of the lower ring L' by an interior flange at the bottom of the upper ring L.

The lower ring L' is used to hold in position against the marginal portion of the concaved bottom H⁴ a supplementary diaphragm K', which may be made of paper or other vegetable material or any suitable substance. This diaphragm has a small central perforation through which the pin I passes; but the diaphragm engages the pin tightly enough to prevent the downward escapement of sounds.

It will be obvious that the sounds produced by the vibration of the diaphragm K cannot escape downward, as the supplementary diaphragm K' will reflect upwardly any vibrations set up in the chamber N, contained between the two diaphragms, and as said chamber communicates, through the perforations in the lower ring L', with the annular chamber M and the nipple H³ it will be evident that the vibrations of the air on the lower face of the main diaphragm will reach said nipple as well as the vibrations of the air on the upper side of the diaphragm. There will therefore be no loss of sound, since the auxiliary diaphragm K' completely closes the chamber N and the aperture H⁵ in the dish or concaved bottom H⁴ is very small.

It will be understood that the construction hereinbefore described may, with slight obvi-

ous changes, be applied to a phonograph-recorder as well as to a reproducer, since these two parts of the apparatus are similarly constructed.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A phonograph recorder or reproducer, comprising an exterior shell, a diaphragm-
10 holder of smaller diameter than the shell located within the shell and spaced therefrom peripherally so as to form an annular chamber between the shell and the holder, and two spaced diaphragms in the holder, the latter
15 being apertured peripherally between the diaphragms so that the chamber between the diaphragms communicates with that between the shell and the diaphragm-holder.

2. A phonograph recorder or reproducer,
20 comprising an exterior shell, a diaphragm-holder located therein and spaced therefrom peripherally so as to form an annular chamber between the shell and the diaphragm-holder, the shell being provided at the top
25 with an aperture communicating with said annular chamber, and two spaced diaphragms located in said holder, the latter being apertured peripherally between the two diaphragms.

30 3. A phonograph recorder or reproducer, comprising an exterior shell, a diaphragm-holder located within the shell and spaced therefrom so as to form a chamber between the shell and the holder, and two spaced diaphragms in the holder, the latter being apertured peripherally between the diaphragms
35 so that the chamber between the diaphragms

communicates with that between the shell and the diaphragm-holder, the holder being also further apertured peripherally above the upper or main diaphragm. 40

4. A phonograph recorder or reproducer, comprising an exterior shell having a dished bottom provided with a central aperture, a holder located within the shell and spaced
45 therefrom peripherally, a main diaphragm in the holder, an auxiliary diaphragm between the holder and said dished bottom, said auxiliary diaphragm being centrally apertured, and the holder being peripherally apertured between the two diaphragms, and a pin secured to the main diaphragm and extending tightly through the auxiliary diaphragm and loosely through the bottom of the shell. 50 55

5. A phonograph recorder or reproducer, comprising an exterior shell, a diaphragm-holder of smaller diameter than the shell located within the shell and spaced therefrom peripherally so as to form an annular chamber between the shell and the holder, the holder being open at one end and the shell being provided at the adjacent end with a nipple for the passage of sound-waves, a diaphragm located at the opposite end of the
60 holder and closing said end, and a second diaphragm located within the holder about midway between the ends thereof, the holder being apertured peripherally both above and below said central diaphragm. 65

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