

No. 766,141.

PATENTED JULY 26, 1904.

J. C. ENGLISH.
SOUND BOX FOR TALKING MACHINES.
APPLICATION FILED OCT. 21, 1903.

NO MODEL.

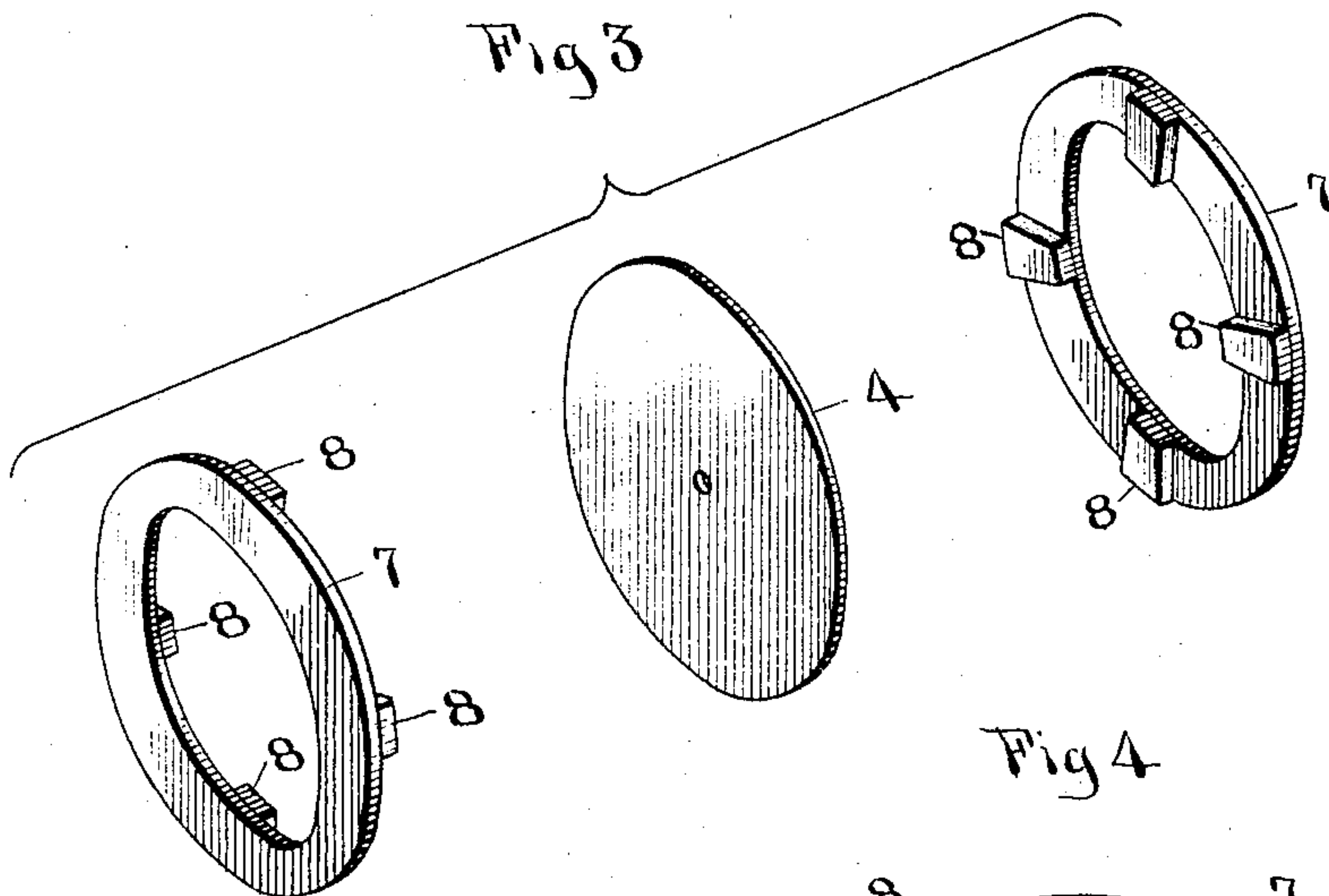


Fig 4

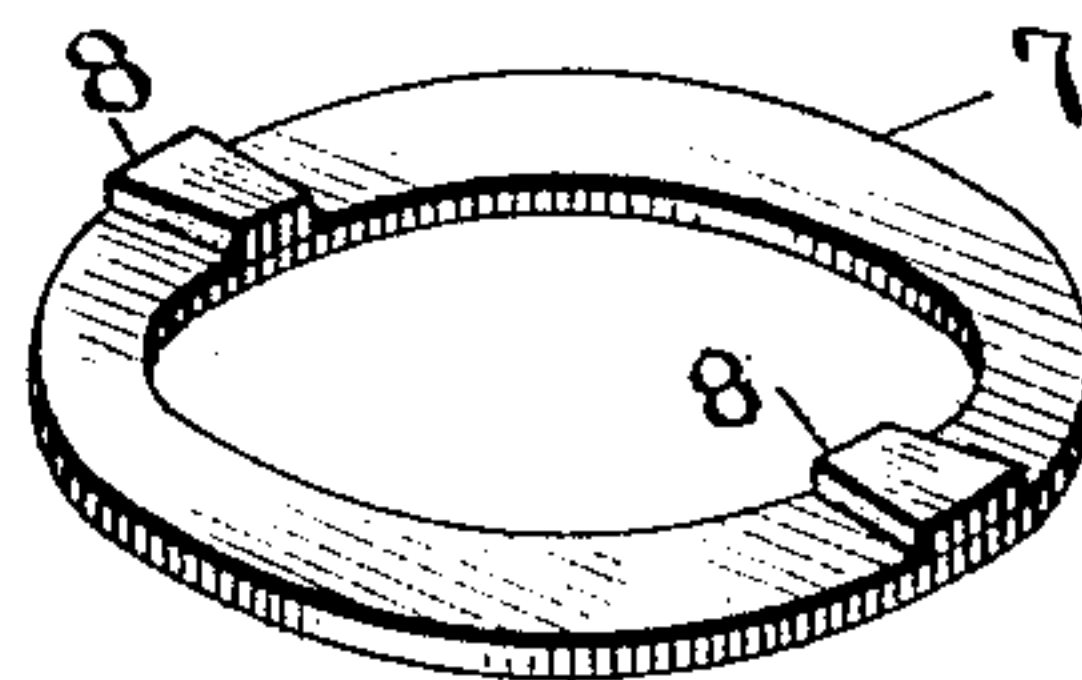


Fig 1

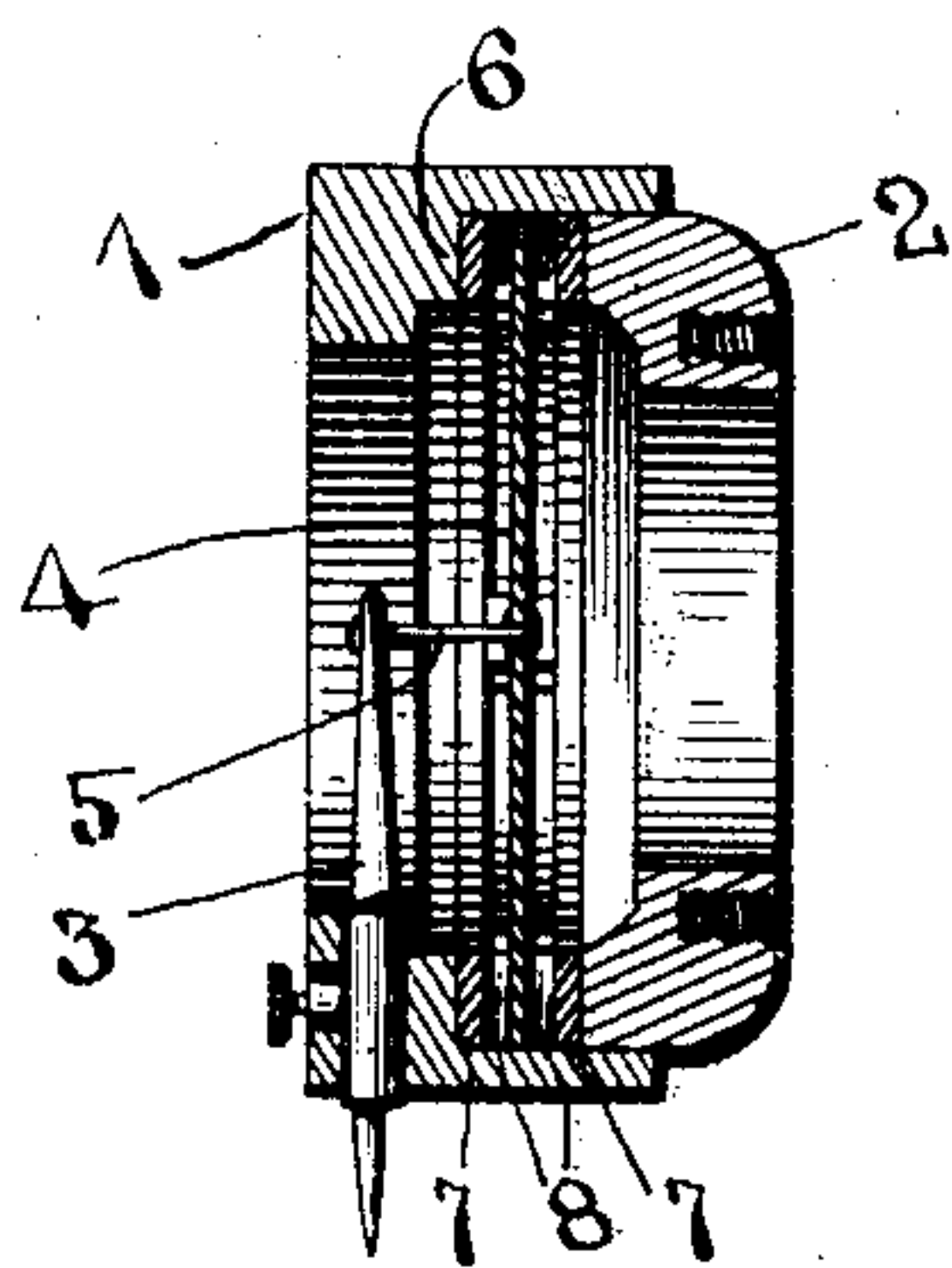


Fig 2

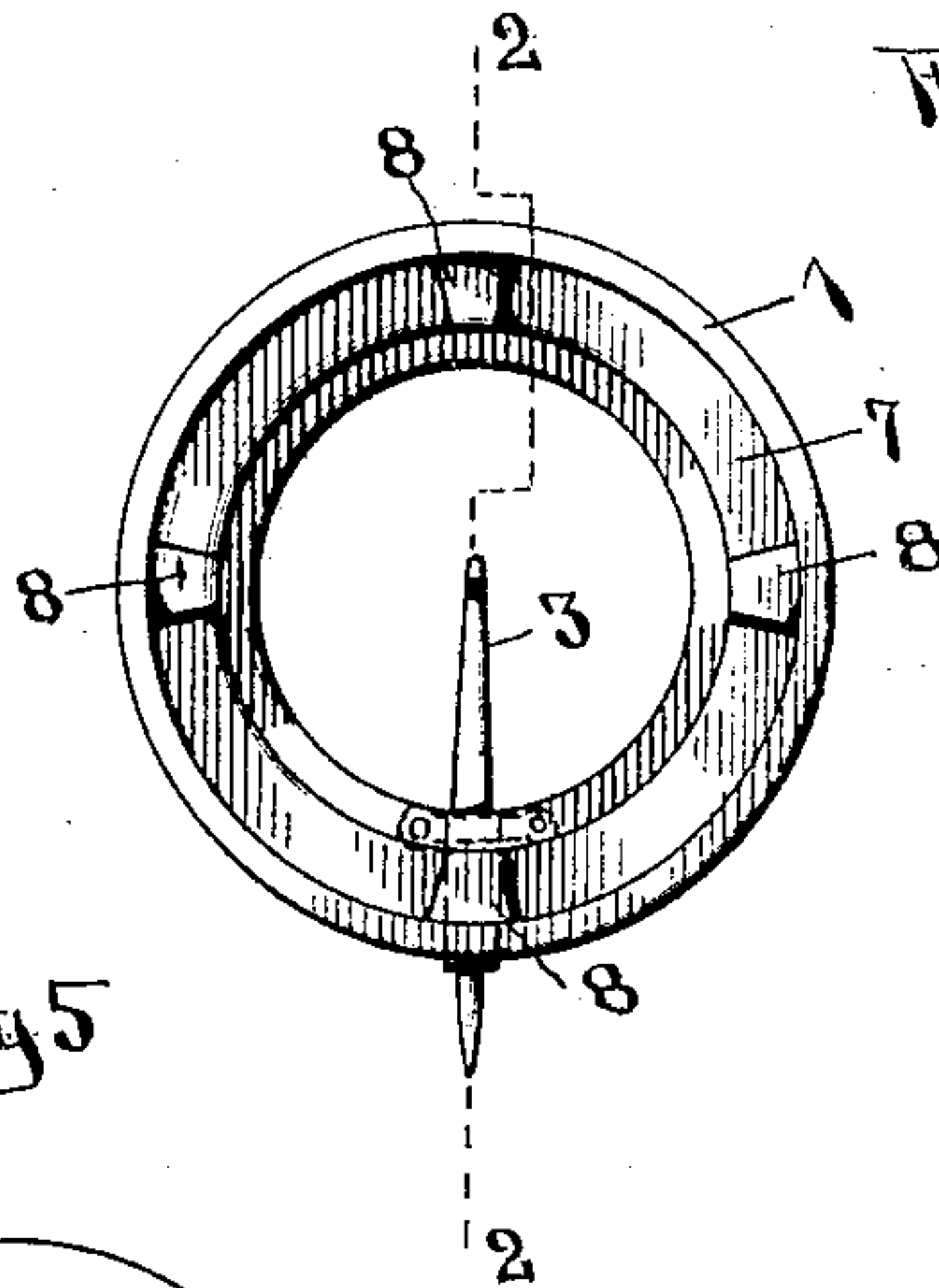
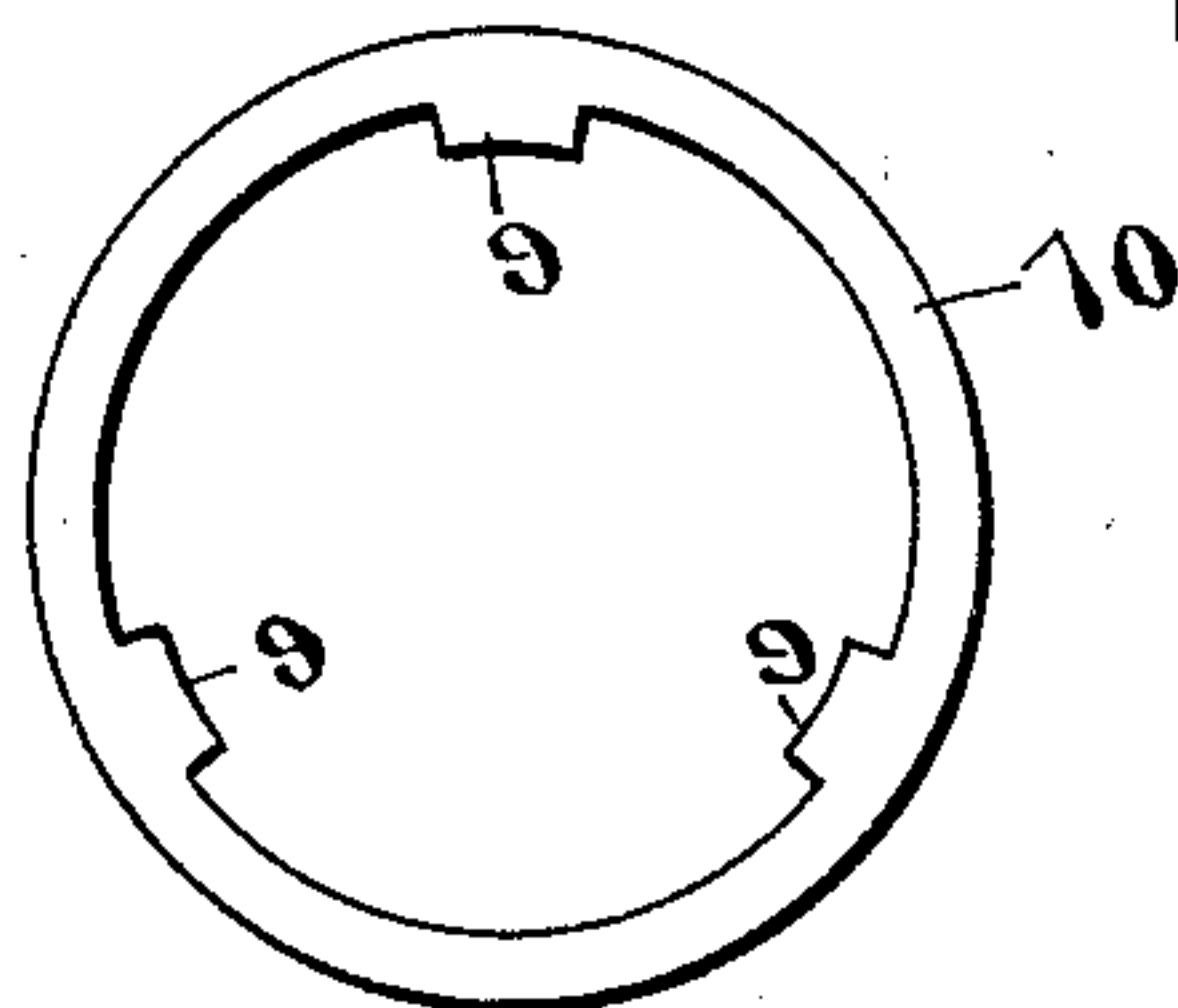


Fig 5



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UNITED STATES PATENT OFFICE.

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SOUND-BOX FOR TALKING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 766,141, dated July 26, 1904.

Application filed October 21, 1903. Serial No. 177,859. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. ENGLISH, a citizen of the United States, and a resident of the city of Camden, State of New Jersey, have
5 invented certain new and useful Improvements in Sound-Boxes for Talking-Machines, of which the following is a full and complete disclosure.

This invention relates to certain improvements in sound-boxes for talking-machines, and has for its object to provide a construction which will decrease the cost of manufacture and improve the volume and quality of the reproduction. In sound-boxes of this
10 class it is usual to make the diaphragm of mica, and heretofore to obtain the best results it has been the practice to employ only selected pieces of mica and to confine the same at the peripheral portion between washers, this arrangement being found to produce
20 the best results in reproducing sounds. Owing to the fact that only selected pieces of mica were found available in the construction of sound-boxes of this class, it is obvious that
25 there has been considerable waste of material; and one of the objects of this invention is therefore to provide a construction whereby pieces of mica heretofore found unavailable for this purpose may be employed with equal
30 success, and thus lessen the cost of the sound-box.

While the above is one of the main features of my invention, it also consists of the general arrangement and structure to improve the
35 volume and quality of the reproduction, as hereinafter described.

In the accompanying drawings, which show a preferred embodiment of my invention, Figure 1 is a sectional elevation of a sound-box embodying my invention and taken about
40 on the line 2 2 of Fig. 2. Fig. 2 is a rear elevation of the front section of the sound-box frame with the diaphragm removed and the front washer in place. Fig. 3 is a perspective
45 view of the diaphragm and the front and rear washers grouped in the relation they occupy when assembled. Fig. 4 is a perspective view of another form of washer that may be em-

ployed. Fig. 5 is a plan view of still another form of washer that may be employed. 50

Referring to said drawings, 1 and 2 designate the sections of the sound-box, 3 the stylus-bar, and 4 the diaphragm joined to the stylus-bar by pins 5, said parts, with the exception of the manner of mounting the diaphragm, 55 being of ordinary construction. The section 1 is provided interiorly with an annular seat or shoulder 6, between which and the end of the section 2 the washers and diaphragm employed in the embodiment of my invention 60 illustrated are situated.

In accordance with the broad principle of my invention I employ a support for the side of the diaphragm that contacts circumferentially with only a portion of the face thereof, 65 as distinguished from an unbroken or continuous support. The support for sound-box diaphragms are usually at the edges thereof and are circular, so that the diaphragm is supported and clamped around its entire edge, 70 whereas by my invention the diaphragm is clamped so that a portion or portions of its edge is free and unsupported. I have found it convenient to have a support of this kind on opposite sides of the diaphragm and also to 75 employ a plurality of sets of such supports, although my invention is not limited thereto, as it embraces, broadly, supporting a diaphragm by a clamping face or support that contacts with only a portion of the side face thereof, 80 that another portion or portions are free and unsupported instead of having the clamping faces or supports unbroken and extend entirely around the diaphragm. By thus supporting the diaphragm I have found that I 85 may not only employ a grade and quality of mica heretofore unavailable for the purpose, but that independent of the material of which the diaphragm is composed the clearness, distinctness, and naturalness of the volume and 90 quality of tone is improved.

The preferred embodiment of my invention is one in which the edges of the diaphragm are clamped and supported at intervals, so that portions of the edges are unsupported, 95 and it is manifest that various constructions

may be employed for this purpose; but as a simple and convenient arrangement I have shown washers 7, having raised portions or faces 8. The washers 7 are arranged between
5 and seated on the shoulder 6 and end of section 2, with the raised portions 8 opposing and adjacent each other and with the diaphragm interposed and clamped between the latter.

10 In Figs. 1, 2, and 3 the washers 7 are each provided with four raised portions or clamping-surfaces 8, and, as shown by Figs. 1 and 3, when assembled in operative position these portions 8 are opposite each other to clamp the edges
15 of the diaphragm between them, although the number of raised portions may be varied—for instance, by using two, as shown in Fig. 4. The clamping portions 8 alone may be made of paper and of a separate piece attached to the washer 7 proper, as shown, although other material may be employed, or obviously the washer and clamping portions may be made integral.

Fig. 5 shows another construction of washer
25 for supporting the diaphragm in accordance with my invention and comprises a ring 10, fitting within the diaphragm-chamber formed between the seat 6 and the end of the section 2. This ring is provided with a plurality of
30 lugs or projections 9, extending inwardly in the plane of the ring 10 from the inner edge thereof. The diameter of the diaphragm used in connection with this form of washer is about equal to the inner diameter of the
35 ring 10, so that the edge portion of the side faces thereof are clamped between the lugs or projections 9. In thus mounting and clamping the diaphragm in position the sides of the same are held and supported at its edge
40 portion at intervals only, and I have found in practice that not only by this arrangement am I enabled to employ with equal results a grade and quality of mica heretofore discarded and retain in a high degree the clearness, distinct-
45 ness, and naturalness of the volume and quality of tone, and thereby effect a saving in the cost of making the sound-boxes, but in addition this construction in itself improves the volume and quality of tone in this regard, and therefore except in the claims, wherein the employment of a different grade of mica is made a feature of this construction, my invention is not limited thereto, as diaphragms of selected
50 pieces of mica and of other material may be mounted in accordance herewith with improved and advantageous results.

My invention is to be distinguished from that class of sound-boxes in which the diaphragm is supported from its edges as distinguished from its sides, for instance, as it
60 has been proposed, by employing teeth or serrations extending outwardly from the outer edge or boundary of and in the plane of the diaphragm proper, which teeth or serrations
65 are suitably clamped. In this class of sound-

box the supports do not contact with the sides of the diaphragm, but merely clamp these projecting teeth or serrations, whereas in my invention the sides of the diaphragm proper are clamped between the supports.

Having thus described my invention, what I claim to be new, and desire to protect by Letters Patent of the United States, is—

1. In a sound-box, a diaphragm, and means for supporting circumferentially, as distinguished from radially, only a portion of the side face thereof, and leaving the remaining portion of said diaphragm free and unsupported. 75
2. In a sound-box, a diaphragm and a support therefor, contacting circumferentially, as distinguished from radially, with only a portion of the side face thereof, and leaving the remaining portion of said diaphragm free and unsupported. 85
3. In a sound-box, a diaphragm, and supports situated on opposite sides thereof and contacting circumferentially, as distinguished from radially, with only a portion of the side faces thereof. 90
4. In a sound-box, a diaphragm, and opposing supports situated on opposite sides thereof and each contacting circumferentially, as distinguished from radially, with only a portion of the side face thereof. 95
5. In a sound-box, a diaphragm, and opposing supports of substantially the same area situated on opposite sides thereof, and contacting circumferentially, as distinguished from radially, with only a portion of the side faces thereof. 100
6. In a sound-box, a diaphragm, and means for supporting at the sides and circumferentially, as distinguished from radially, only a portion of the edge portion thereof. 105
7. In a sound-box, a diaphragm, and supports situated on opposite sides thereof and contacting circumferentially, as distinguished from radially, with only a portion of the edge portion thereof. 110
8. In a sound-box, a diaphragm, and means for clamping circumferentially, as distinguished from radially, only a portion of the side faces thereof.
9. In a sound-box, a diaphragm, and means for clamping at the sides and circumferentially, as distinguished from radially, only a portion of the edge portion thereof. 115
10. In a sound-box, a diaphragm, having its side faces supported at intervals. 120
11. In a sound-box, a diaphragm, and segmental supports contacting with the side faces thereof.
12. In a sound-box, a diaphragm, and a plurality of supports contacting with each of the sides thereof. 125
13. In a sound-box, a diaphragm, and a plurality of opposing supports situated on opposite sides of the diaphragm, and between which the latter is clamped. 130

14. The combination with the sections of a sound-box, of a plurality of clamping-faces on opposite parts thereof, and a diaphragm situated and clamped between said faces.

5 15. In a sound-box, washers having projecting clamping-faces, and a diaphragm situated and clamped between the same.

10 16. In a sound-box, washers having raised portions located adjacent each other, and a diaphragm clamped between said raised portions.

15 17. In a sound-box, a diaphragm, and means connecting said sound-box and diaphragm and contacting circumferentially, as distinguished from radially, with only a portion of the side face thereof.

20 18. In a sound-box, a diaphragm, and means for supporting circumferentially, as distinguished from radially, only a portion of the side face thereof, said means forming the sole connection between said sound-box and diaphragm.

19. In a sound-box, a diaphragm, means for

supporting circumferentially, as distinguished from radially, only portions of the opposite 25 side faces thereof, said means forming the sole connection between said sound-box and diaphragm.

20. In a sound-box, a diaphragm, and portions of said sound-box on opposite sides of 30 said diaphragm engaging circumferentially, as distinguished from radially, only portions of the side faces thereof, and forming the sole connection between said sound-box and diaphragm,

35 21. In a sound-box, a diaphragm having a portion of its edge free and unsupported, and means for supporting circumferentially, as distinguished from radially, the remaining 40 edge portion thereof.

In witness whereof I have hereunto set my hand this 15th day of October, 1903.

JOHN C. ENGLISH.

Witnesses:

HARRY COBB KENNEDY,
FREDK. C. EBERHARDT.