

No. 850,256.

PATENTED APR. 16, 1907.

W. C. RUNGE.
PHONOGRAM.

APPLICATION FILED JUNE 23, 1906.

Fig. 1:

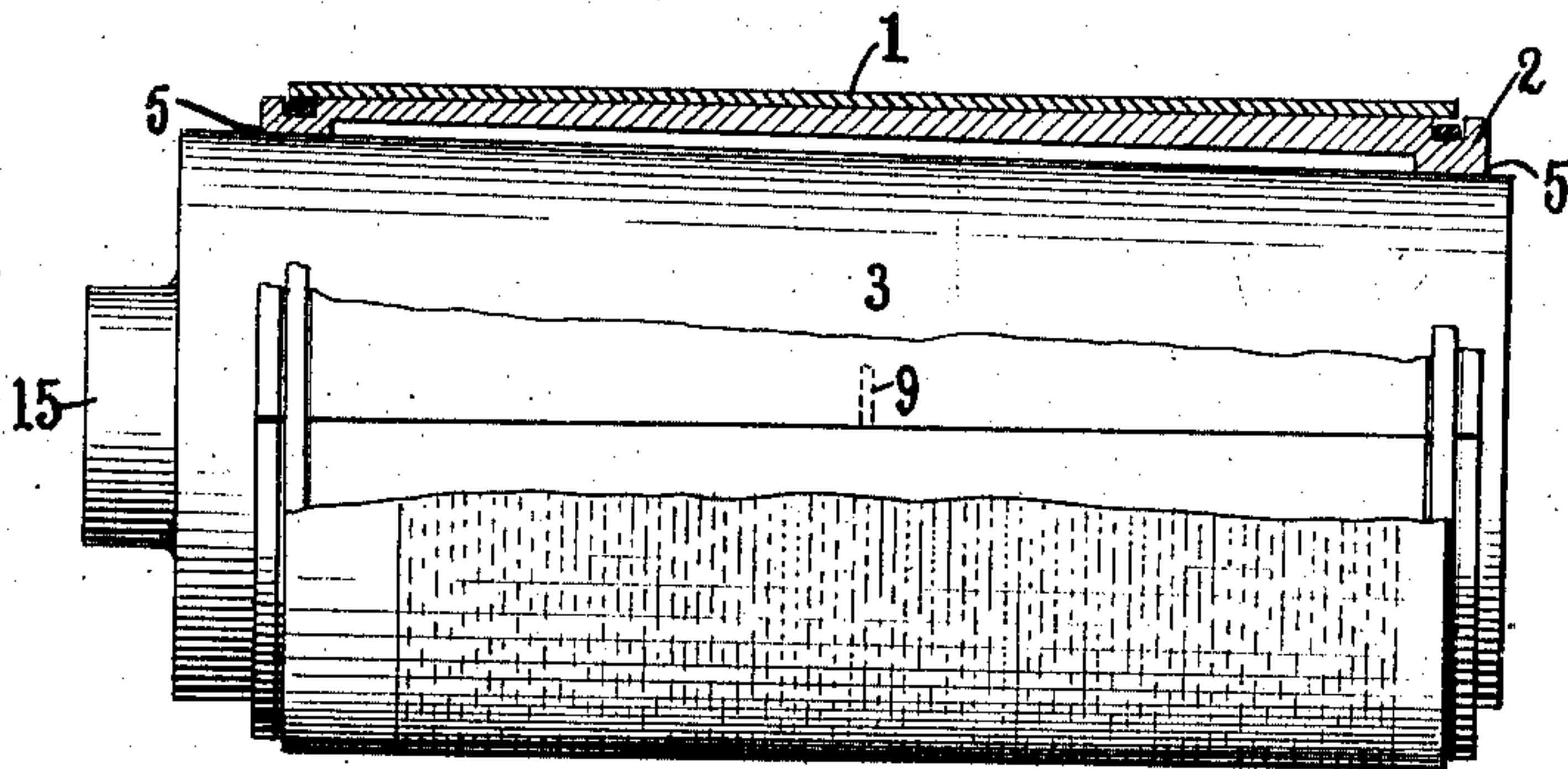


Fig. 2:

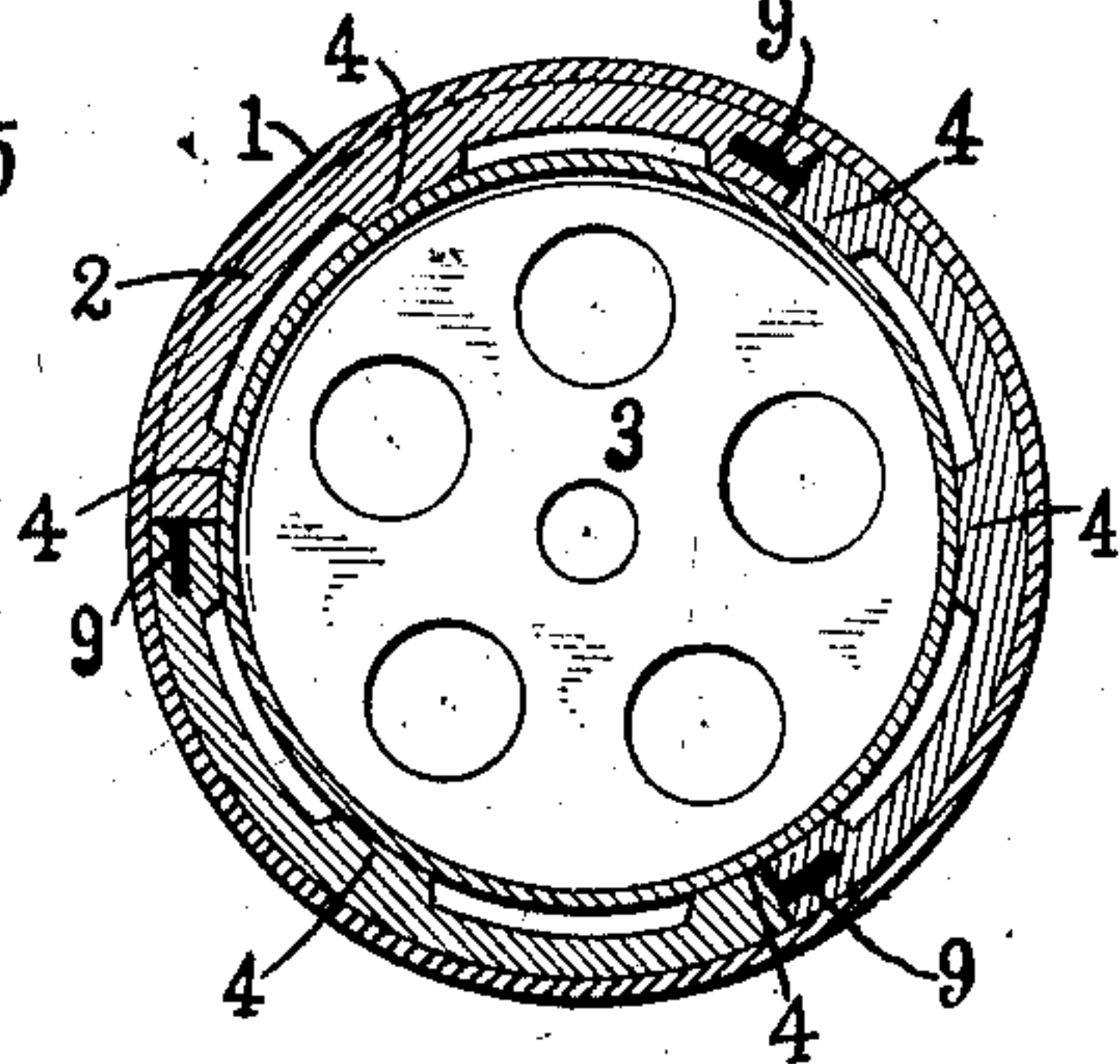


Fig. 3:

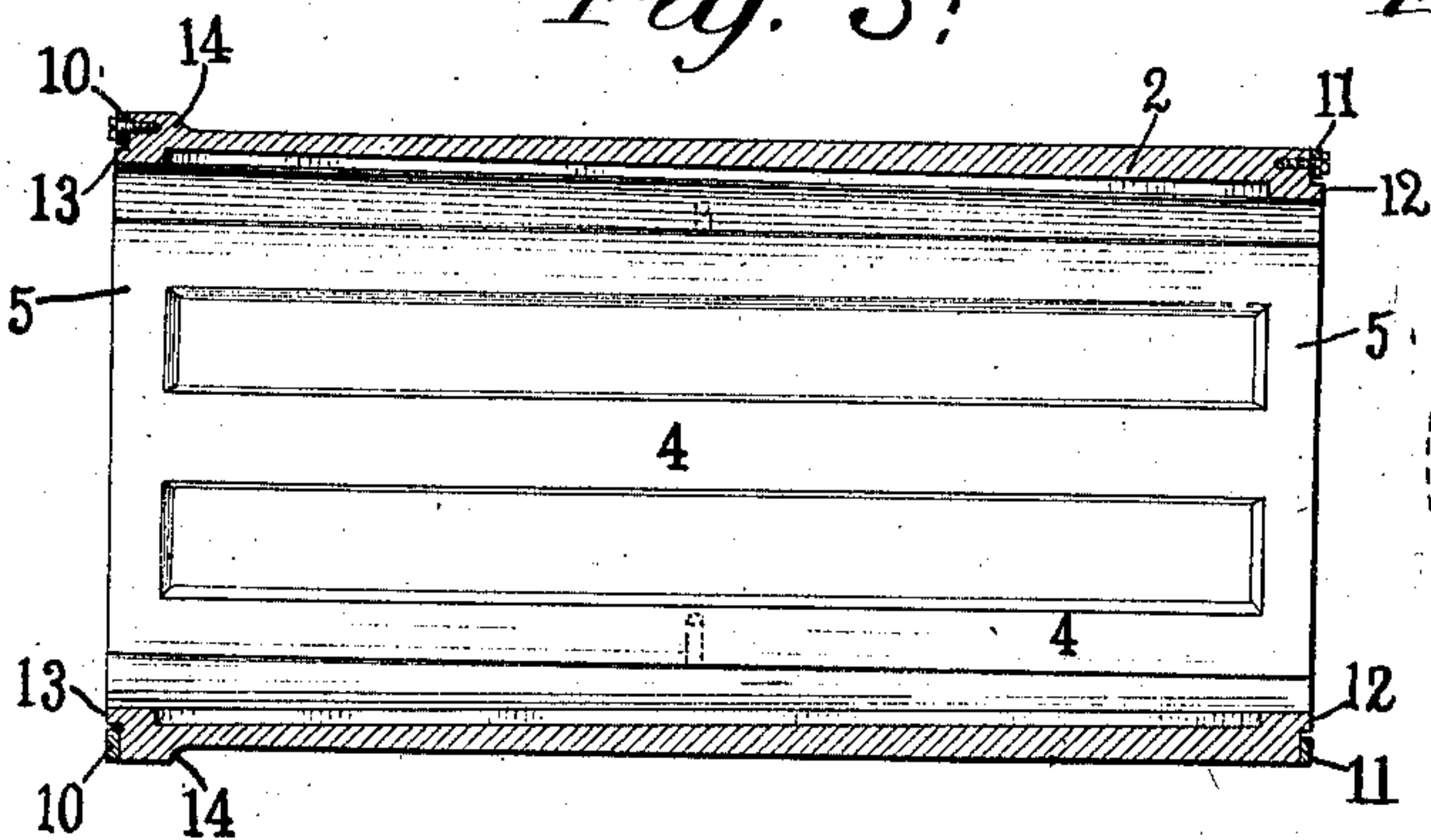


Fig. 6:

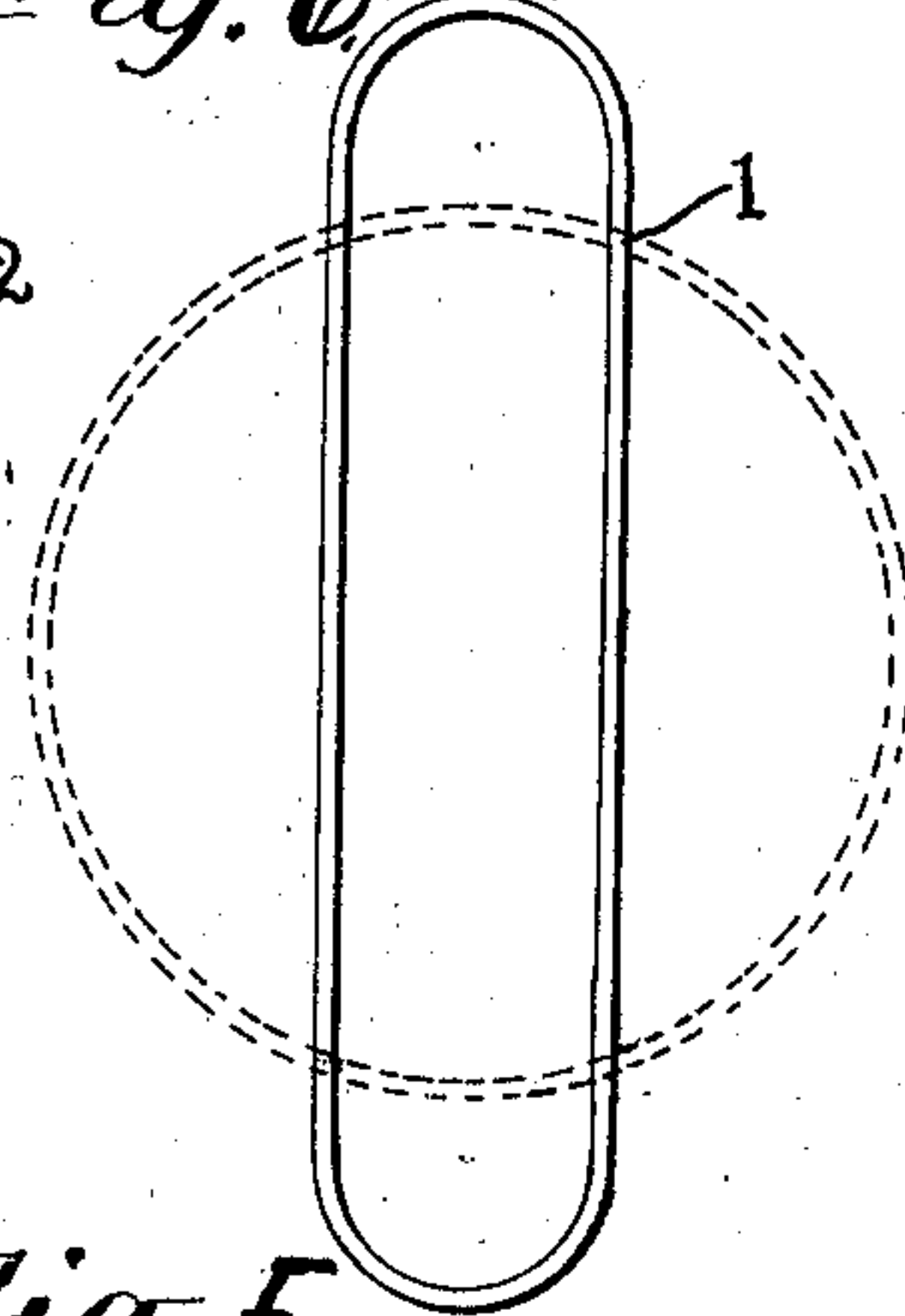


Fig. 4:

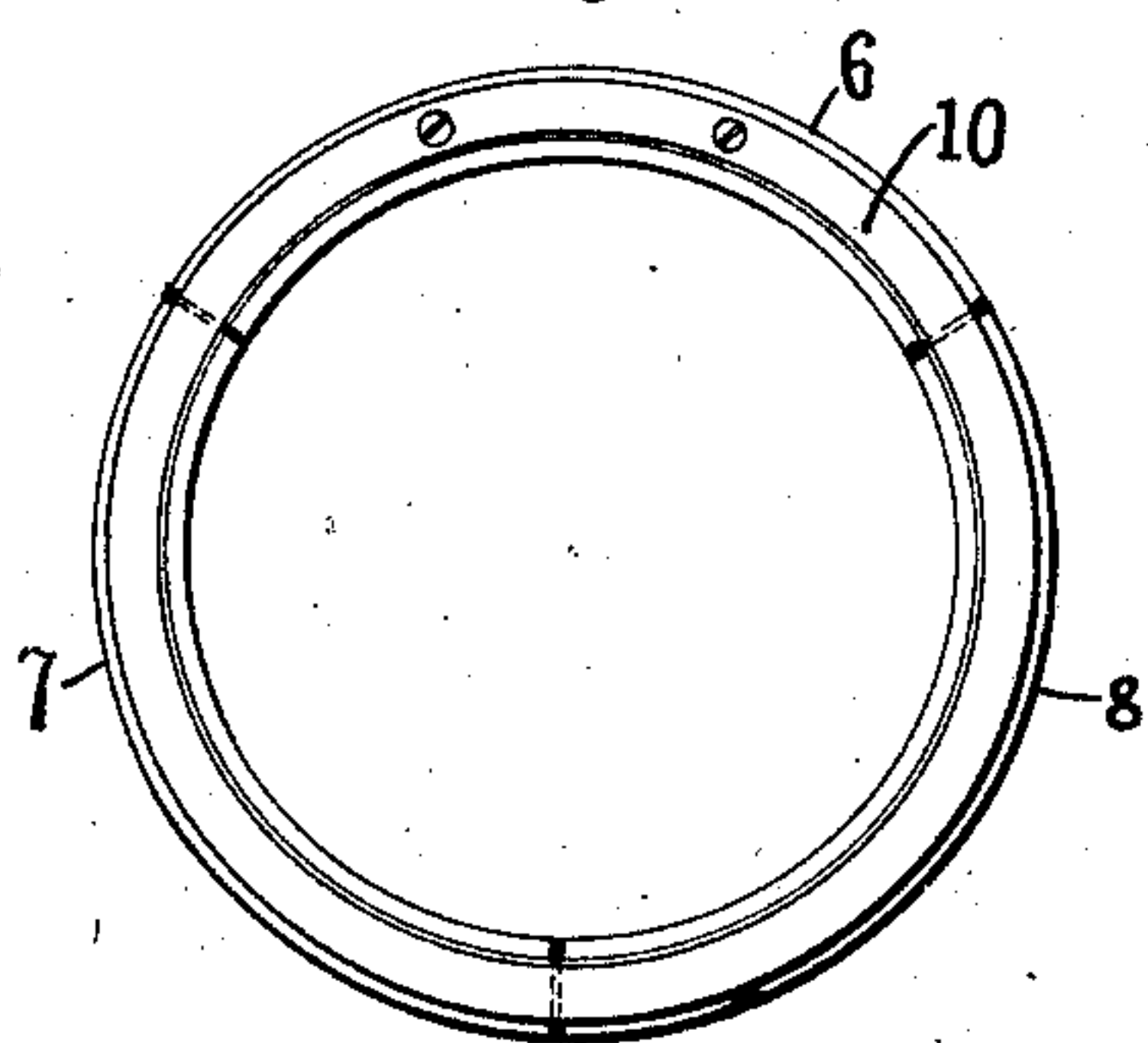
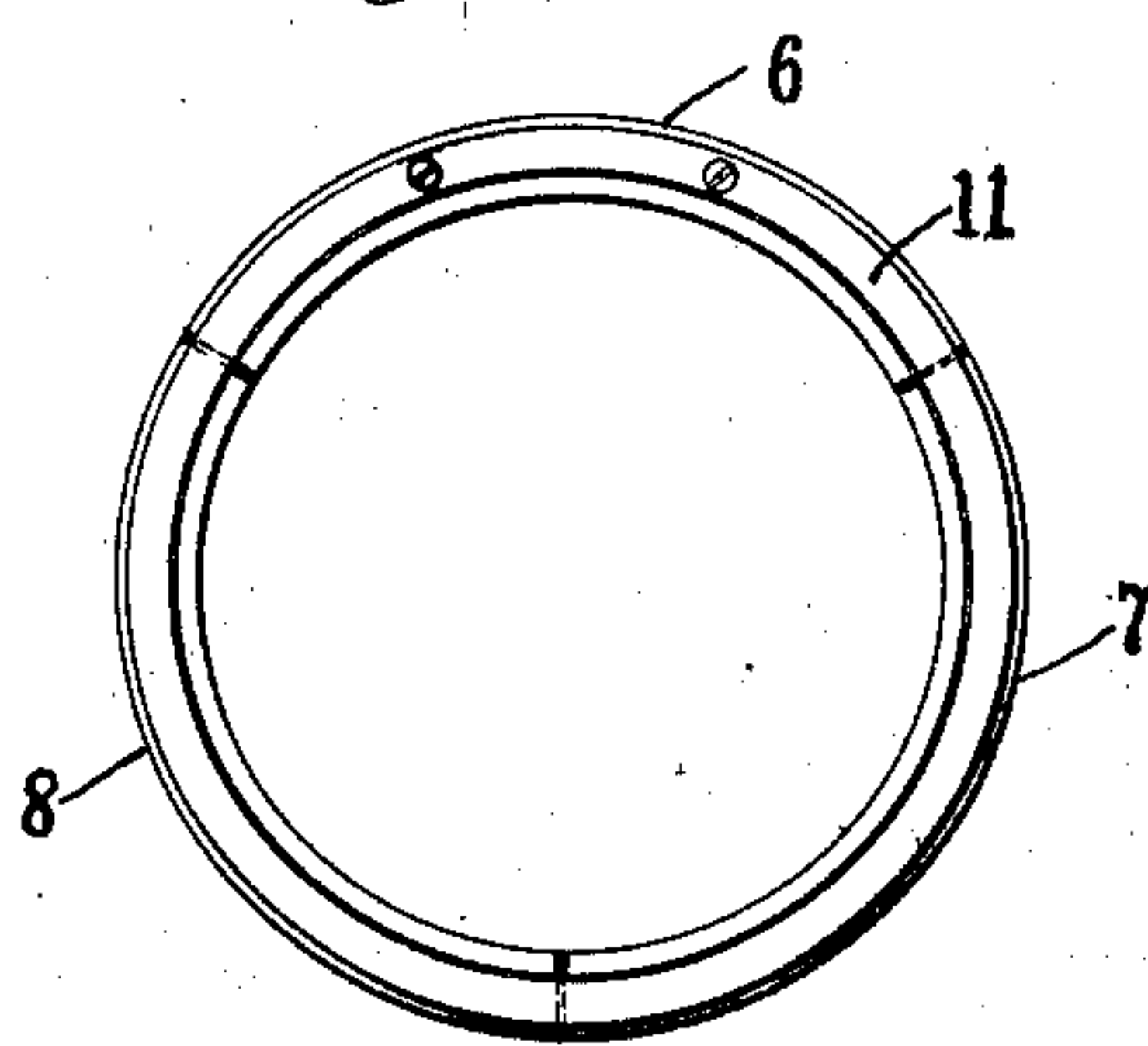


Fig. 5:



WITNESSES:

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UNITED STATES PATENT OFFICE.

WALTER C. RUNGE, OF CAMDEN, NEW JERSEY, ASSIGNOR TO INTERNATIONAL ROYAL PHONE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

PHONOGRAM.

No. 850,256.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed June 23, 1906. Serial No. 323,030.

To all whom it may concern:

Be it known that I, WALTER C. RUNGE, a citizen of the United States, residing in Camden, Camden county, New Jersey, have invented a new and useful Improvement in Phonograms, of which the following is a specification.

My invention relates to phonograms in which the sound-record is impressed on a flexible record-film which is distended and supported on a detachable sleeve adapted to engage the ordinary graphophone-mandrel.

One object is to so construct the sleeve that it will be self-sustaining and capable of uniform radial expansion.

Another object is to reduce the weight and facilitate the storage and transportation of the record-film and to eliminate breakage thereof.

Another object is to provide mechanism by which the record-surface will run concentrically with the mandrel-shaft and true with respect to the reproducer.

I attain these objects in the manner shown in the accompanying drawings, in which—

Figure 1 is a view, partly in section, of my improved phonogram on a mandrel; Fig. 2, a sectional view of the structure of Fig. 1; Fig. 3, a sectional view of a modification of the structure of Fig. 1; Figs. 4 and 5, views of the ends of the structure of Fig. 3; and Fig. 6 is an edge view of my improved record-film, indicating the manner in which it may be collapsed for storage.

Like reference characters designate like parts throughout.

The record-film 1 is in the form of a cylindrical or slightly conical tube of celluloid or like material having the sound-waves impressed in the outer surface thereof. This record, as shown in Fig. 6, is capable of being flattened for transportation.

To distend and support the record 1 during reproduction, an expanding mandrel sleeve or shell 2, of any suitable rigid material, is used. This sleeve is bored inside to the same taper as the graphophone-mandrel 3, and the outside diameter and shape is the same as the interior of the record-film.

To decrease friction between the sleeve 2 and the mandrel 3, the material may be re-

moved from the interior of the sleeve, leaving the ribs 4 and bearing-rings 5.

In order that the sleeve may be expansible radially to receive, distend, and support the record 1, it is made in a plurality of segmental longitudinal sections 6, 7, 8 and provided with means for preventing lateral displacement of the sections with respect to each other and with means for maintaining them in substantially cylindrical form.

As shown in Figs. 1 and 2, the means for preventing lateral displacement comprise the dowels and holes 9. Channels may be made in the outer face of the sleeve and elastic bands or springs slipped therein to maintain the sections in cylindrical form.

As shown in Figs. 3, 4, and 5, the grooves are made in the edges of the sleeve, and rings 10 and 11 are secured to one of the sections engaging the small steps or shoulders 12 and 13 left on the edges of the sections. These rings are of smaller external diameter than the outside of the sleeve to avoid interference in placing record-films on the sleeve.

Various other mechanisms may be employed for holding the sleeve-segments together without departing from my invention, the device shown being merely a preferred form.

A raised flange 14 may be formed near the forward end of the sleeve to act as a stop for the record-film.

In use the record-film is slipped over the sleeve, and both are pushed on the machine-mandrel, as is the case with ordinary phonograms. The pressure is continued until the wedging action of the conical mandrel on the segmental sleeve has distended the record-film and supported it throughout its whole extent. As the sleeve is made to run concentrically with the shaft 15, on which the mandrel is mounted, the record-film will run concentrically therewith, and the sound-record surface will run true with respect to the reproducer, eliminating the throbbing or wavering effect sometimes produced by the eccentric phonograms of commerce. As the record-film is solidly and rigidly supported throughout its entire extent, the volume of sound is constant and the maximum to be obtained; as all the motion imparted by the

sound-waves is utilized in moving the diaphragm and none is wasted in vibrating the phonogram.

I claim—

5 1. A graphophone-mandrel sleeve adapted to be placed on a graphophone-mandrel, comprising longitudinal, segmental sections and means carried wholly by said sections for preventing relative displacement of said sections.
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2. The combination of a graphophone-mandrel sleeve adapted to be placed on a graphophone-mandrel, comprising longitudinal, segmental sections; means carried
15 wholly by said sections for preventing relative displacement of said sections; and a thin, flexible record-film mounted on said sleeve and solidly supported thereby during reproduction.

20 3. A graphophone-mandrel sleeve adapted to be placed on a graphophone-mandrel comprising longitudinal, segmental sections provided with internal bearing-rings adapted to frictionally engage the graphophone-mandrel
25 and means carried wholly by said sections for preventing relative displacement of said sections.

4. A graphophone-mandrel sleeve adapted to be placed on a graphophone-mandrel comprising longitudinal, segmental sections,
30 dowels projecting from one longitudinal edge

of a section, the other longitudinal edge being provided with holes adapted to receive said dowels projecting from an adjacent section.

5. A graphophone-mandrel sleeve adapted to be placed on a graphophone-mandrel comprising longitudinal, segmental sections, dowels projecting from one longitudinal edge of a section, the other longitudinal edge being provided with holes adapted to receive
35 the dowels of an adjacent section, a channel extending circumferentially around the outer face of said sleeve and means in said channel to prevent the complete separation of the sections.
40

6. The combination of a tapered graphophone-mandrel a sleeve tapered inside and adapted to engage said mandrel, the outer face being substantially cylindrical and concentric with the mandrel; a substantially
45 cylindrical record-film carried on the outer face of said sleeve concentrically with the mandrel; said sleeve being composed of a series of longitudinal, segmental sections and means carried wholly by said sections for preventing relative displacement of the sections.
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In testimony whereof I have hereunto subscribed my name this 22d day of June, 1906:

WALTER C. RUNGE

Witnesses:

ROBT. B. KILLGORE,
F. M. ROSE.