

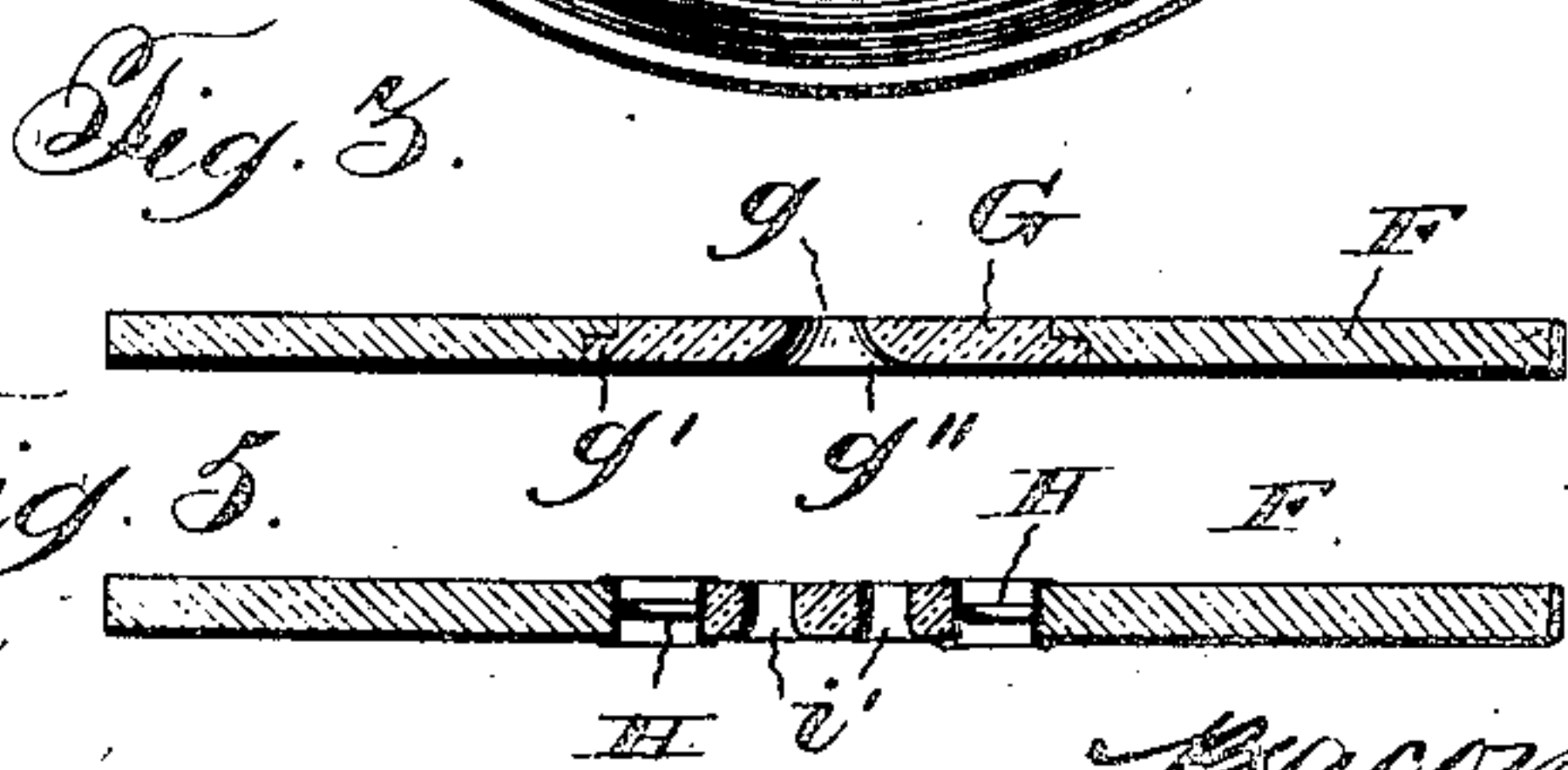
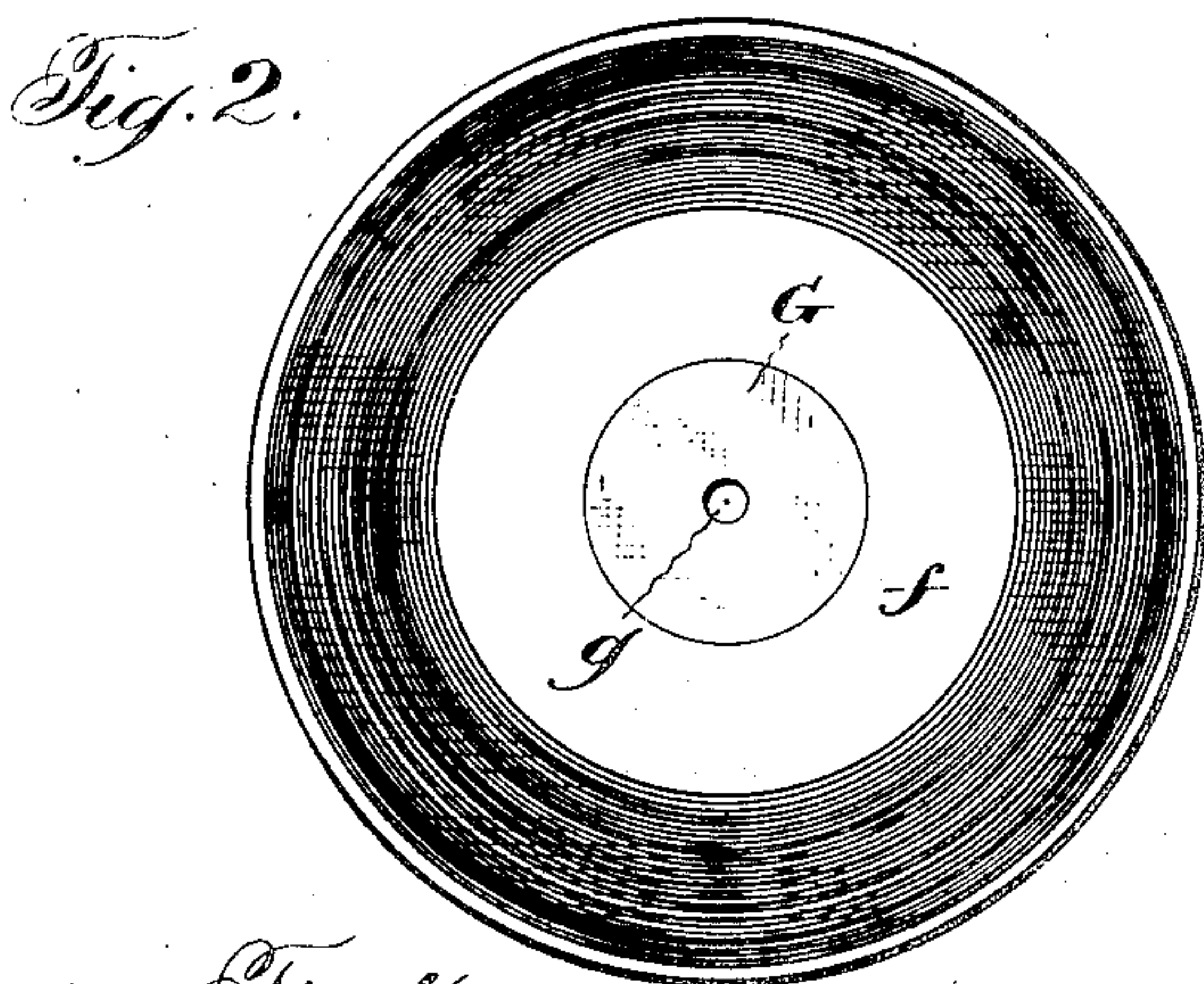
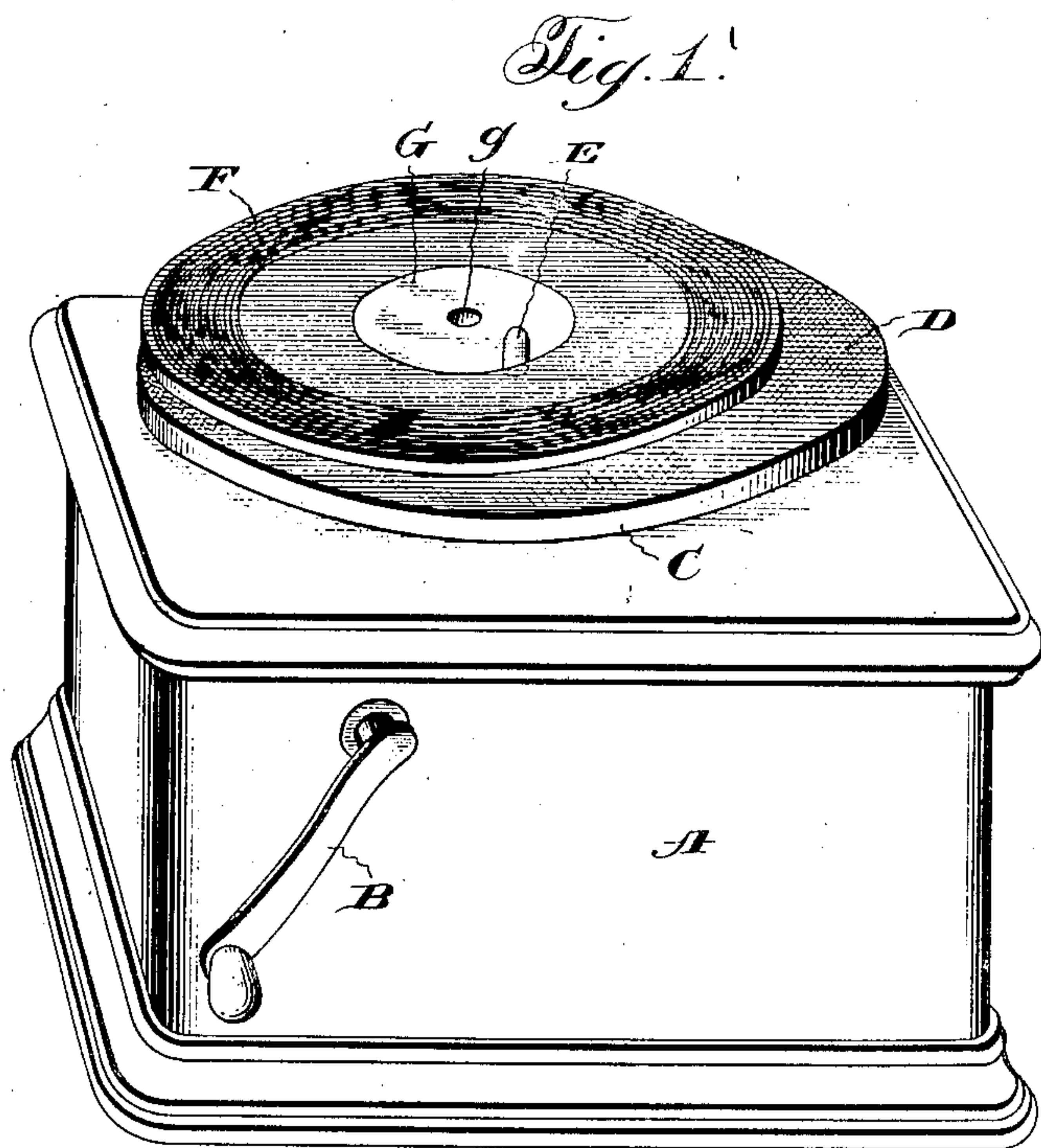
No. 832,403.

PATENTED OCT. 2, 1906.

J. H. MILANS.
SOUND REPRODUCING DISK RECORD.

APPLICATION FILED APR. 21, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 8.

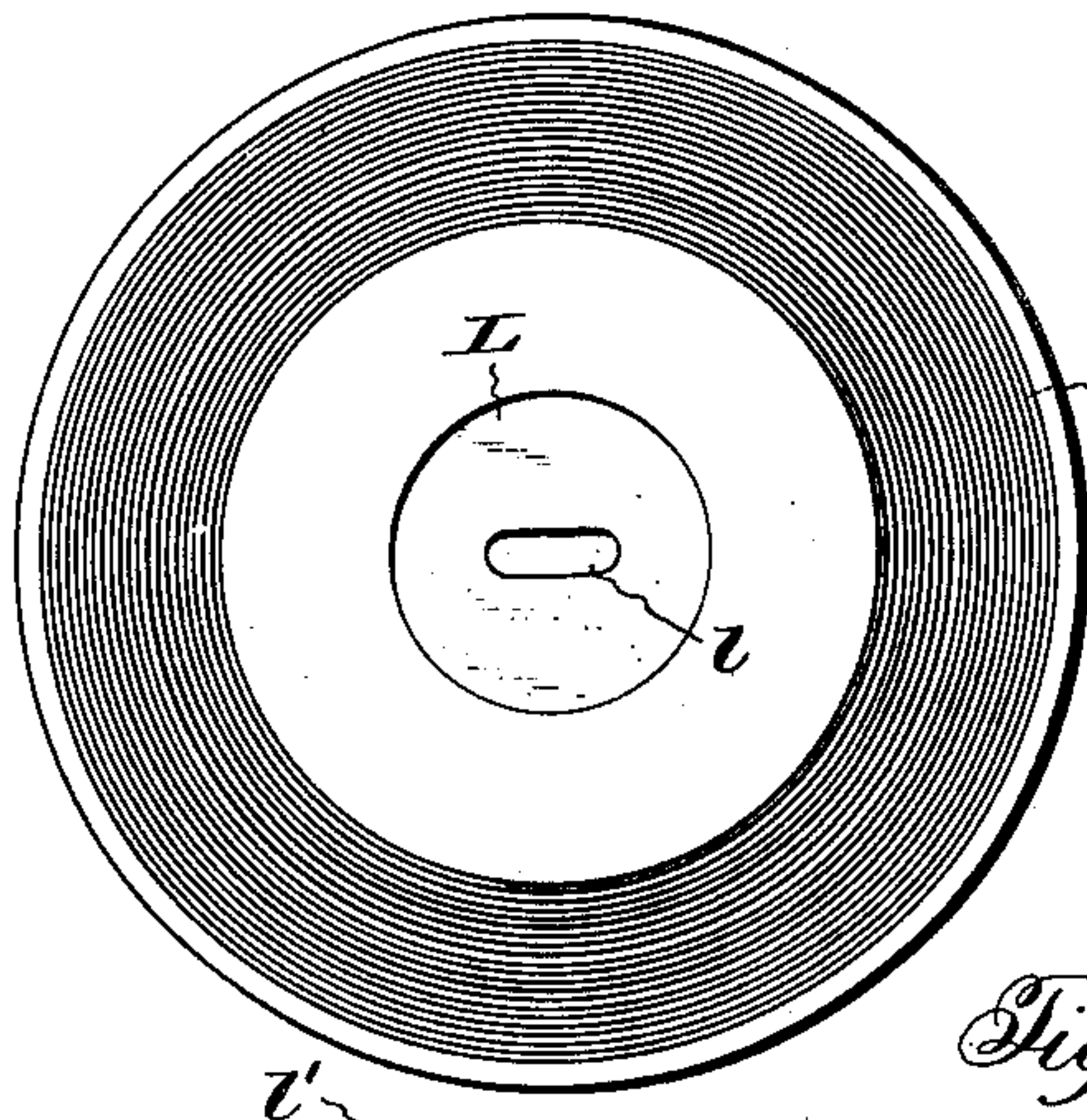


Fig. 10.

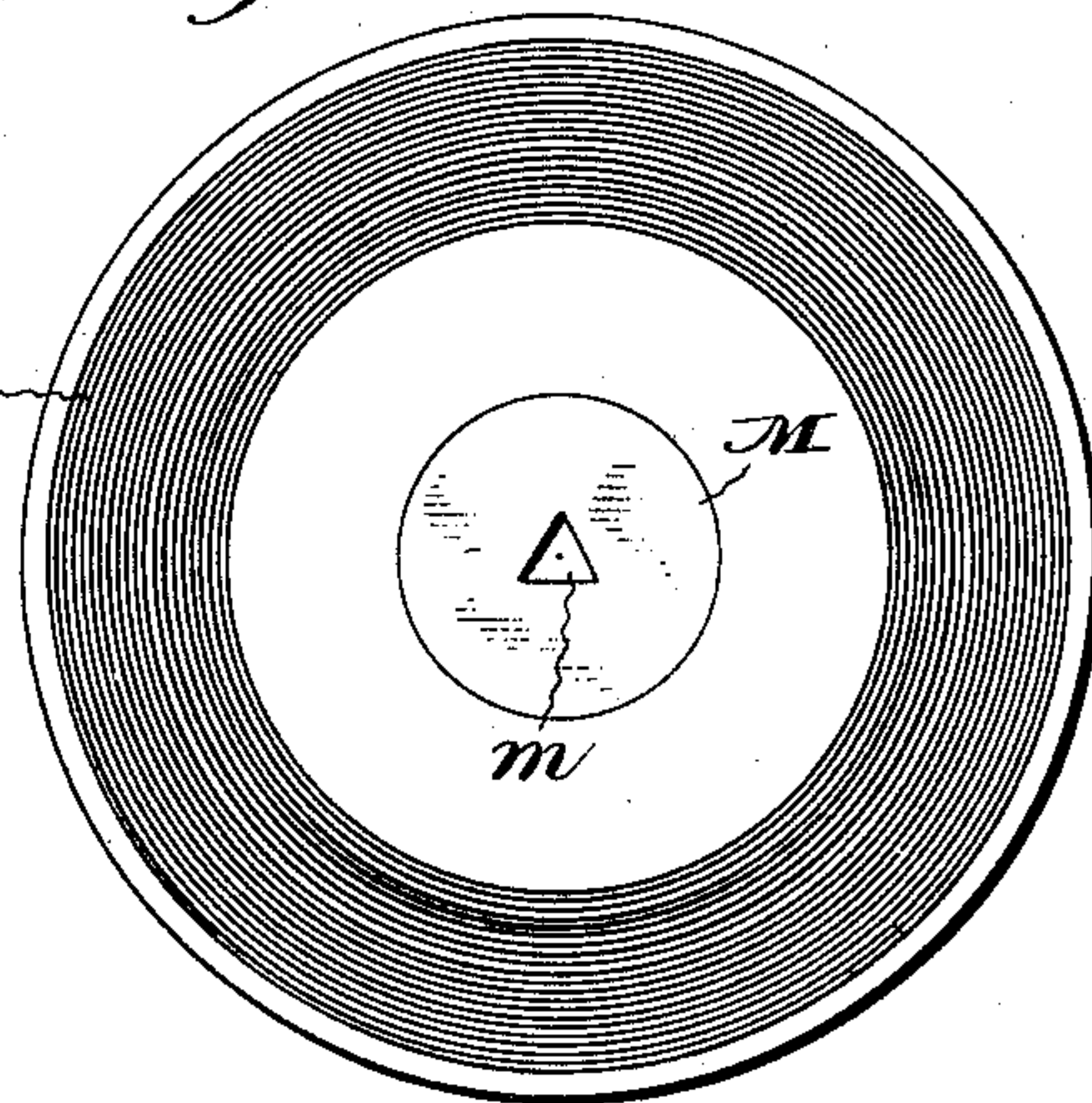


Fig. 9.



Fig. 4.

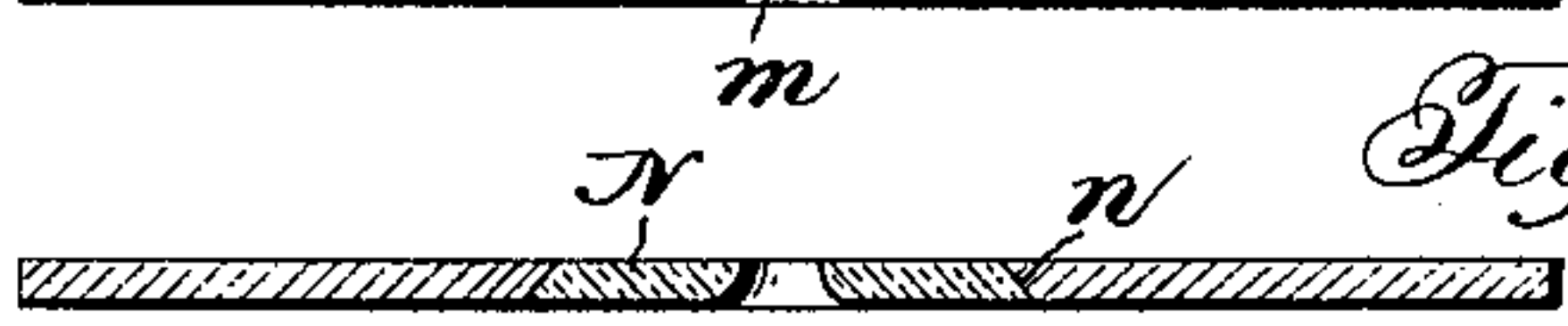
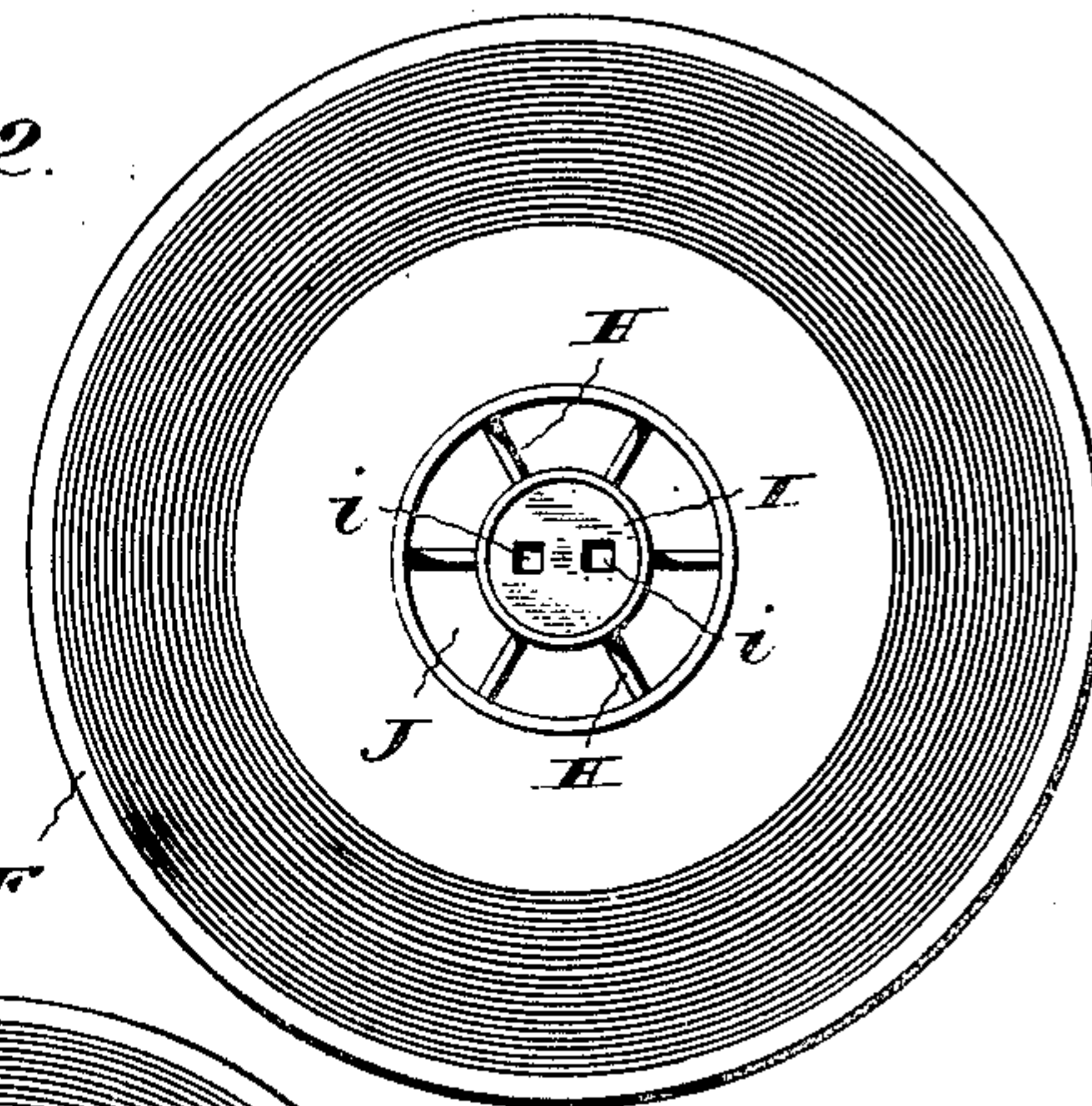


Fig. 12.

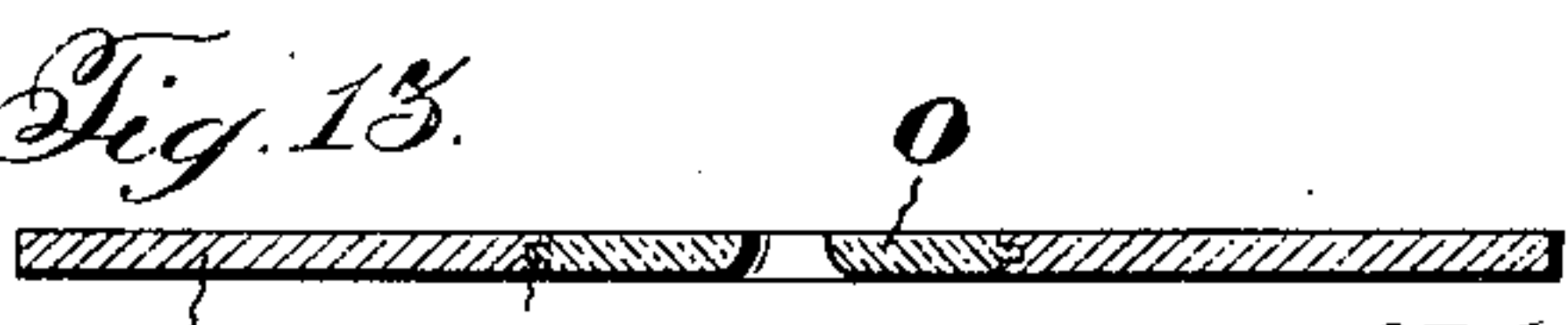


Fig. 13.

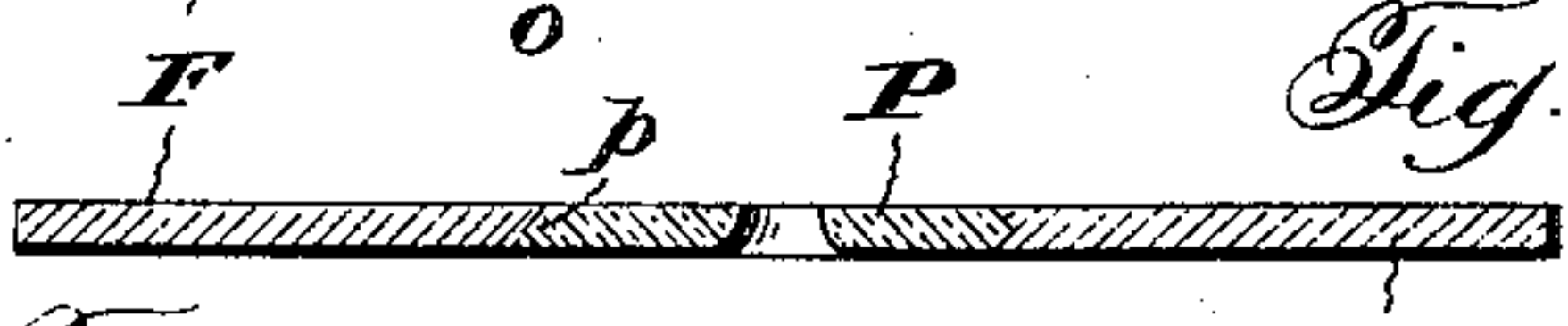


Fig. 14.

Fig. 15.



Fig. 6.

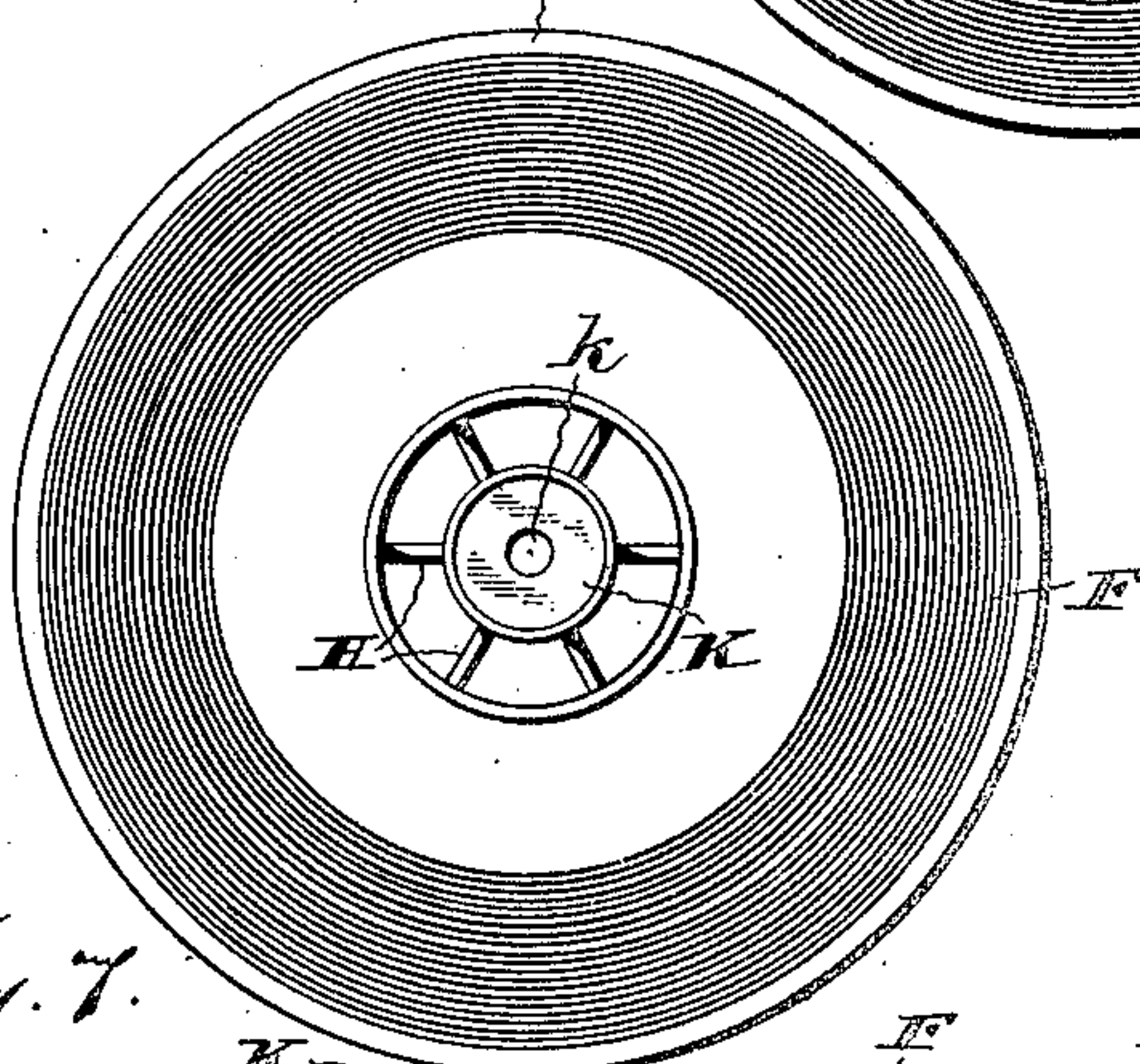


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOSEPH H. MILANS, OF WASHINGTON, DISTRICT OF COLUMBIA.

SOUND-REPRODUCING DISK RECORD.

No. 832,403.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed April 21, 1905. Serial No. 256,698.

To all whom it may concern:

Be it known that I, JOSEPH H. MILANS, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Sound-Reproducing Disk Records, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in sound-reproducing disk records, and has for its primary object to overcome the disadvantages inherent in the hit-and-miss idea involved in the manual application of opaque disks of the character designated to a centering-pin or equivalent device carried by the rotating platform or record-support now universally employed in talking-machine structures and the like.

Abundant experience has emphatically demonstrated that quite a perceptible and irksome inconvenience is encountered in the use of the opaque disks having but a small opening or aperture in its center formed complementary to and designed to snugly fit the centering-pin before referred to, owing to the fact that said pin is entirely obscured by the body of the disk, and although of course said aperture occasionally receives said pin immediately upon application of the disk it is more frequently the case that the base of the disk strikes the head of the pin anywhere approximating the center of the former, with the resultant necessity of shifting the disk back and forth in various directions through the medium of the hands of the operator until the aperture more or less by chance is brought into registration with the pin and the disk lowered upon the platform and centered by said pin preparatory to the engagement of the reproducer therewith. Aside from this annoyance, which obviously is the most striking objection to disks of the type just mentioned, it is also to be observed that in the course of an evening or similar period of time when a large number of records are played, and more especially in sales departments or places of public amusement where records are constantly exhibited, quite a little time in the aggregate is consumed and lost owing to the absence of provision enabling immediate application of the disk to the centering-pin.

As stated, it is with a view to overcome all of the foregoing disadvantages afforded by

disks of the prior art that the present invention has been devised, and in its generic sense the improvements reside in the provision of instrumentalities facilitating the manual application of a normally free sound-reproducing disk record, the main body of which is opaque, to the centering device or devices on the rotary platform or disk-support, it being noted that by the term "normally free" I intend to differentiate disks applied and removed by the hands of the operator in contradistinction to such disks as are used in magazine-machines and the like and shifted by the mechanism thereof from an inactive to an active position, or vice versa.

More specifically, the invention comprehends a disk having an opaque body portion and a centrally-disposed sight-opening or window, which may be in the nature of an open space or transparent disk, or both, through which the centering pin or device may be clearly seen by the operator from above the record, said transparent disk or open space, or both, as the case may be, immediately surrounding an opening or openings formed to correspond with and receive the centering device or devices on the record support or platform, a highly important advantage gained by the formation of a disk record of this type, due to the provisions enabling relatively constant observation of the centering device from above the record, being that said devices may be of non-circular or angular contour or separated and the receiving portions of the disk formed complementary thereto, whereby when they are brought into operative relation a positive drive of the record may be effected as compared with the friction-drive in machines now on the market, thus permitting me to dispense with felt or other frictional engaging surfaces usually carried upon the upper face of the record-supporting frame or platform.

To perhaps more readily impart a clear and full understanding of the invention, I have illustrated in the accompanying drawings, forming part hereof, a number of embodiments of the invention, and the novel details in the construction and arrangement of the several parts thereof will be apparent upon an inspection of said drawings in connection with the detailed description hereinafter contained.

In the drawings, Figure 1 is a perspective view, somewhat fragmentary, of an ordinary

graphophone, showing the manner of applying one of my improved disks thereto, the body of the disk being opaque and the centering portion thereof transparent and apertured, the centering-pin on the platform adapted to enter the aperture showing through said transparent portion. Fig. 2 is a face view of the disk record of Fig. 1. Fig. 3 is a central transverse sectional view through Fig. 2. Fig. 4 is a face view of a record constituting another embodiment of the invention, and this particular form, for the purposes of the present application, I will style my "preferred" embodiment of the invention. Fig. 5 is a central transverse sectional view through Fig. 4. Figs. 6 and 7 are views similar to Figs. 4 and 5 of a third embodiment of the invention. Figs. 8 and 9 and Figs. 10 and 11 are similar views of still further embodiments of the invention, and Figs. 12, 13, 14, and 15 are detail sectional views illustrative of different ways of securing the transparent disks or windows to the opaque record-disks.

Referring now more particularly to the drawings, in the several series of views of which like reference characters designate like features, and first with reference to Figs. 1, 2, and 3, A designates the body or box portion of the graphophone; B, the crank for winding the motor therewithin; C, the rotatable record support or platform actuated by the motor; D, the usual felt or other frictional material secured to the upper face of said platform or support, and E represents the centering-pin adapted to engage an aperture in the record-disk to hold the same in proper position relative to and while engaged by the reproducer, (it being unnecessary to show or further refer to the latter herein.) F is a sound-reproducing disk record of the usual character having a main body portion of opaque material, in the upper surface of which is provided the customary record comprising a spiral groove possessing a sinuous surface in accordance with the sounds desired to be reproduced incident to the rotation of the record and the engagement of the reproducer-diaphragm vibrating pin with the groove. Within these disks there is always a centrally-disposed part *f*, upon which a trade-name or title-bearing label is usually affixed. In keeping with my invention I utilize a part or all of this central portion for a sight-opening or window G, the latter being of transparent material, such as glass, celluloid, or the like. This window has an aperture *g* for the reception of the centering-pin E and in this form is secured to the disk F through the medium of cemented interfitting flanges *g'* at the adjoining edges thereof. Preferably the lower surface of the window is flush with the bottom of the record-disk, so that the same may freely slide or shift over the centering-pin E, and

the aperture *g* is rounded or flared downwardly, as at *g''*, to guide the centering-pin into its proper place. It will be seen that the flange on the periphery of the window underlies the flange of the record-disk, so that in the application of the record to a machine the tendency is always to keep the window in place rather than loosen it. In applying the disk it is invariably the case that the central or windowed portion thereof will be approximately centralized relative to the centering-pin, and such being the case the pin E will at once be seen therethrough and its actual position positively located, Fig. 1, and it is simply necessary for the user to shift the aperture *g* over the disk and permit the record to fall into engagement with the platform D.

Referring now to the embodiment illustrated in Figs. 4 and 5, it will be seen that to the central portion of the record and in a suitable opening therewithin a spider H, preferably of metal, is secured, said spider in turn carrying a transparent disk I, provided with separated angular apertures *i*, designed to engage correspondingly shaped and separated pins of a record support or platform, the lower ends of the apertures being rounded or flared, as at *i'*, Fig. 5. By this particular arrangement an enlarged open space J is left around the window I, through which, as also through the window, the centering devices may be seen, as is obvious. The angularity of the pin-receiving recesses affords a flat steady engagement between the record and its support, and this, together with their separated arrangement, secures a positive drive for the disk when placed in operative position upon a machine.

The form shown in Figs. 6 and 7 is in all respects like that last considered, save that a single rounded aperture *k* is formed in the transparent disk or window K in the spider.

In Figs. 8 and 9 a form of record is disclosed in which the transparent inner disk or window L is of uniform thickness throughout and secured against an overhanging annular shoulder *l'* of the record proper. The opening for the centering device in this particular instance (designated at *l*) is oblong and rounded at its ends as well as downwardly flaring, which also insures a positive drive.

The window M of Figs. 10 and 11 is secured to the record after the same manner as that of the form illustrated in Figs. 1, 2, and 3, the difference between these two embodiments being in the shape of the receiving-aperture for the centering-pin, which in the present instance is triangular, as seen at *m*, and downwardly flaring, as in those previously pointed out.

The remaining figures—i. e., 12, 13, 14, and 15—are added to further disclose ways of securing the windows to the disks. In the first-named figure the edges *n* of the window

N are beveled in a downward and outward direction to engage a corresponding undercut edge of the record. In Figs. 13 and 14, in which the windows are respectively designated O and P, the record is shown as molded directly around said windows, the two being held together through the medium of different types of tongue-and-groove interfittings *o p.* In Fig. 15 the window Q is of uniform thickness throughout, and the edge of the record bordering the central opening thereof is molded around the peripheral portion of said window (indicated at *q*.)

It is to be remembered that in all of the embodiments illustrated in the last four figures the transparent central portions are suitably apertured and tapered for the guidance and reception of centering-pins or the like, and, further, that the record proper of these, as also of the other figures in the case, is opaque.

From the disclosures made herein it is apparent that the invention is susceptible of still other embodiments than those illustrated and also that alterations and changes in the structural details set forth may be made without departing from the spirit of the invention. For example, the transparent disks or windows and sight-openings have in each instance herein been illustrated as circular, because it is believed that this is probably the most expedient and practical formation thereof; but it is obvious that the contour may be changed as desired.

Hereinafter in the hereto-appended claims I will refer to "sight-openings," meaning thereby either the transparent window or disk or the unobstructed space, through either of which the centering-pin may be seen; also, where I refer to "centering" device or pin it is by no means with the intention that this definition refers to the location of the device or pin, but rather the function thereof—*i. e.*, to fix or hold the record in a prearranged and proper relation to the reproducing mechanism.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, the apertured portion being adjoined by a sight-opening.

2. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, the apertured portion being substantially surrounded by a sight-opening.

3. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, and provided with a transparent window adjoining said aperture.

4. As an article of manufacture, a sound-

reproducing record-disk having an opaque body and also having an aperture for a centering-pin, and provided with a transparent window surrounding said aperture.

5. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, and provided with a transparent window adjoining said aperture, said window being carried by the disk and bordered by an open space therebetween.

6. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, and provided with a transparent window surrounding said aperture, said window being carried by the disk and surrounded by an open space therebetween.

7. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, the apertured portion being surrounded by an open space through which the pin may be observed.

8. As an article of manufacture, a sound-reproducing record-disk having an opaque body and also having an aperture for a centering-pin, the apertured portion having an open space through which the pin may be observed.

9. As an article of manufacture, a sound-reproducing record-disk, having an opaque body, and provisions for engagement with a centering device, in combination with further provision whereby said device may be observed through the disk.

10. As an article of manufacture, a sound-reproducing record-disk having an opaque body, and a portion adapted to cooperate with a centering device, said cooperating portion being adjoined by a sight-opening.

11. As an article of manufacture, a sound-reproducing record-disk having an opaque body, and a portion adapted to cooperate with a centering device, said cooperating portion being substantially surrounded by a sight-opening.

12. As an article of manufacture, a sound-reproducing record-disk having an opaque body and a separate transparent portion carried thereby formed to cooperate with a centering device.

13. As an article of manufacture, a sound-reproducing record-disk comprising an opaque body having a part of its interior cut away, and a separate transparent portion inserted therein and carried thereby formed to cooperate with a centering device.

14. As an article of manufacture, a sound-reproducing record-disk comprising an opaque body having a part of its interior cut away, and a separate transparent portion inserted therein and carried thereby formed to cooperate with a centering device, said opaque body having an edge overlapping a

complementary edge carried by the opaque body to secure the parts in place.

15. As an article of manufacture, a sound-reproducing record-disk comprising an
5 opaque body having a part of its interior cut away, a separate transparent portion inserted therein and carried thereby formed to cooperate with a centering device, said opaque
10 body having an edge overlapping a complementary edge carried by the opaque body to secure the parts in place, and the latter edge being uppermost to oppose the tendency of the insert to loosen and separate during the application of the disk to its support.

15 16. As an article of manufacture, a sound-reproducing record-disk having its interior of open-work formation.

17. As an article of manufacture, a sound-reproducing record-disk having its interior
20 of open-work formation, said open-work

formation having a part for engagement with a centering device.

18. As an article of manufacture, a sound-reproducing record-disk having its interior of open-work formation, said open-work
25 formation having an apertured disk part for engagement with a centering device.

19. As an article of manufacture, a sound-reproducing disk record having a main body portion, a transparent portion apertured for
30 engagement with a centering device, and a spider intermediate of and engaging said main body portion and the transparent portion to hold them in operative relation.

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

JOSEPH H. MILANS.

Witnesses:

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K. E. MONTAGUE.