

W. H. HOSCHKE.

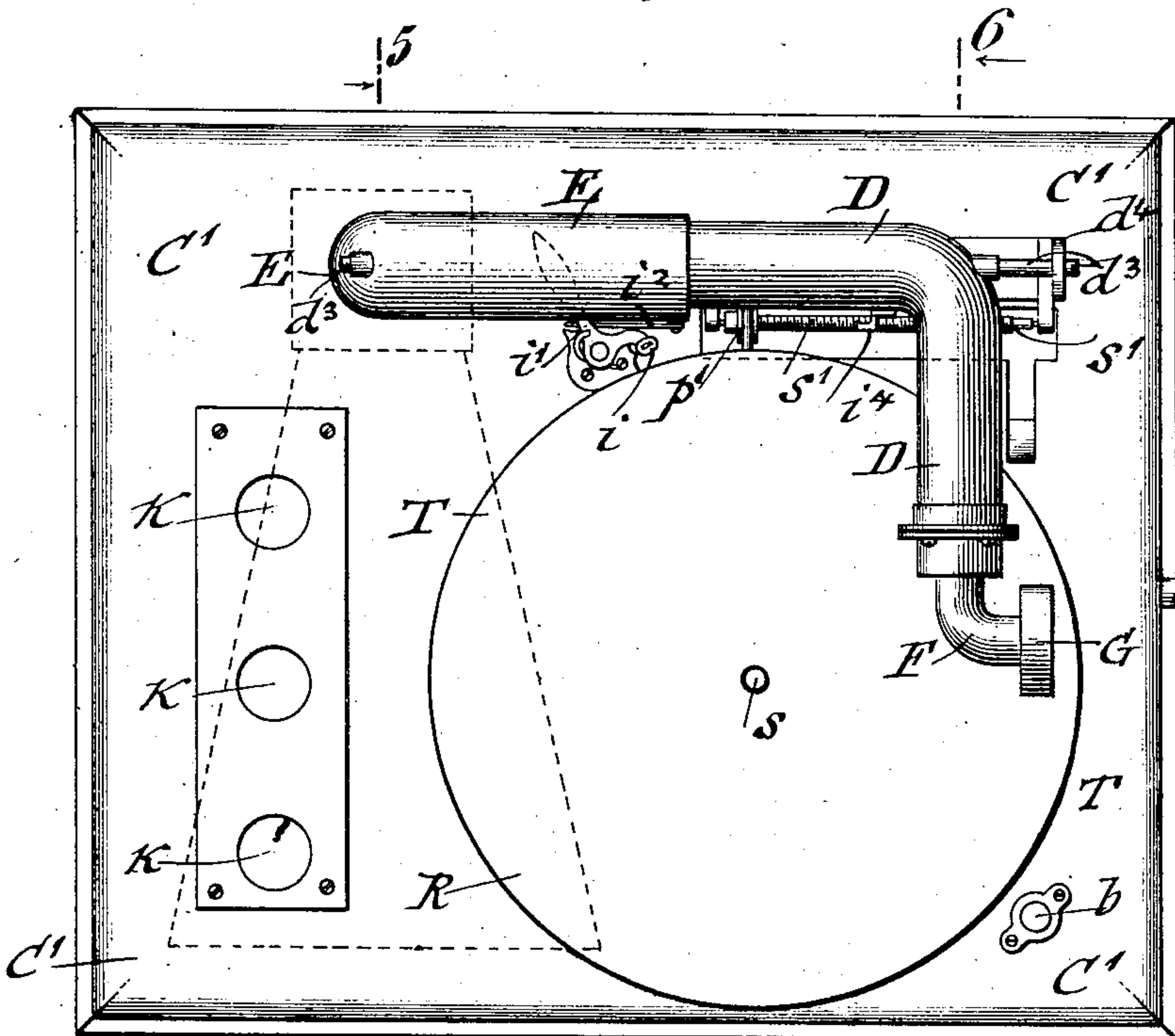
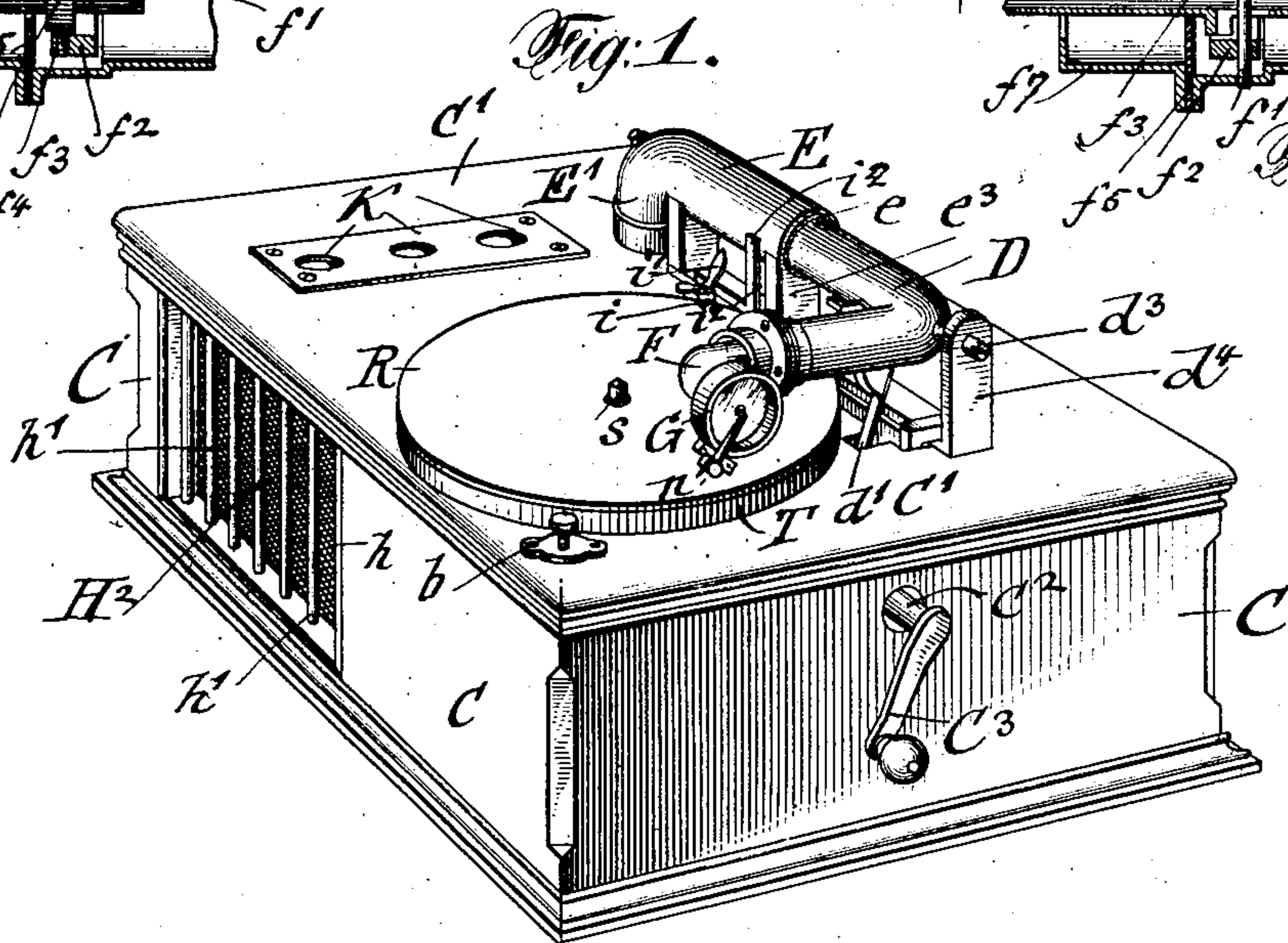
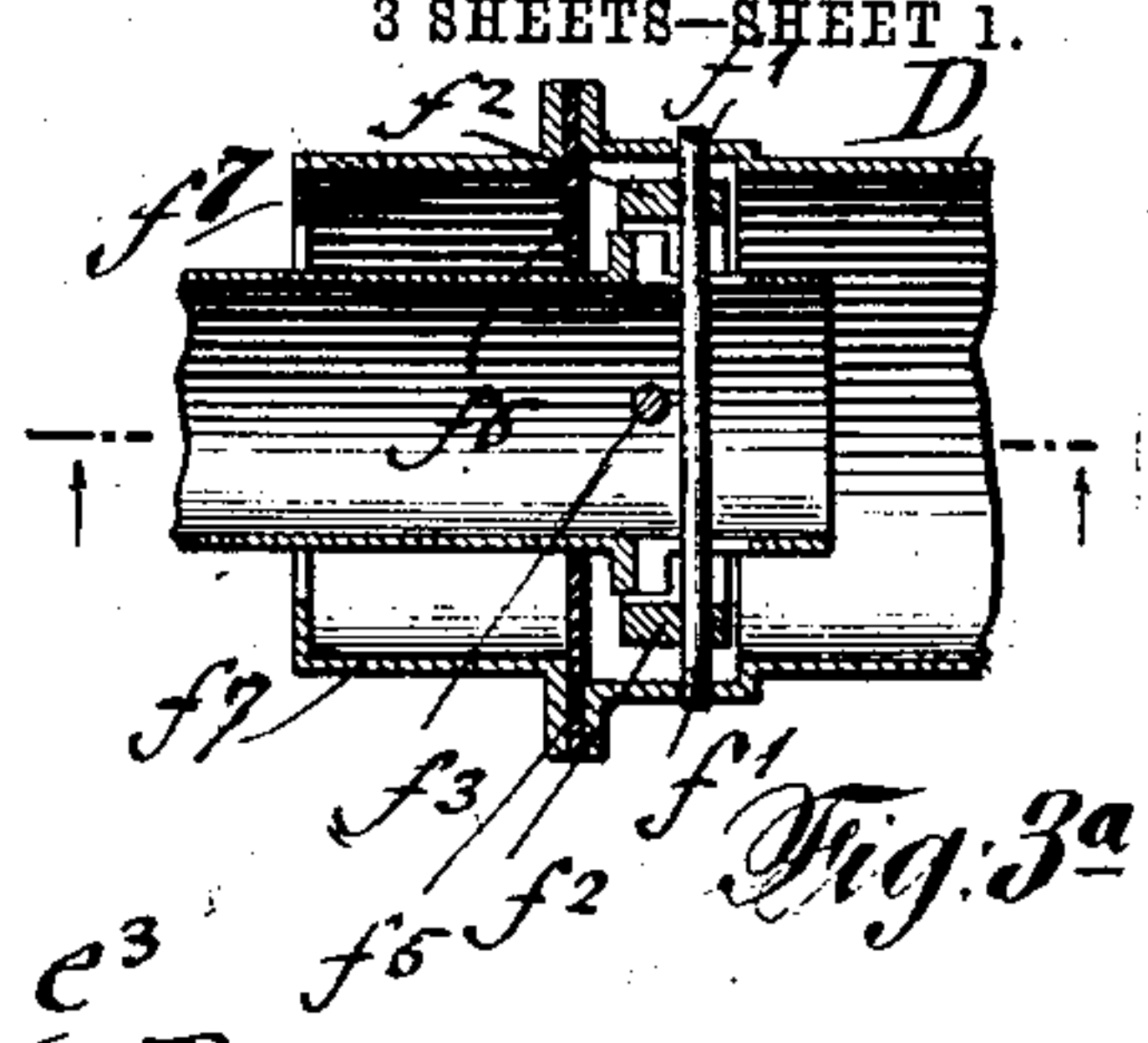
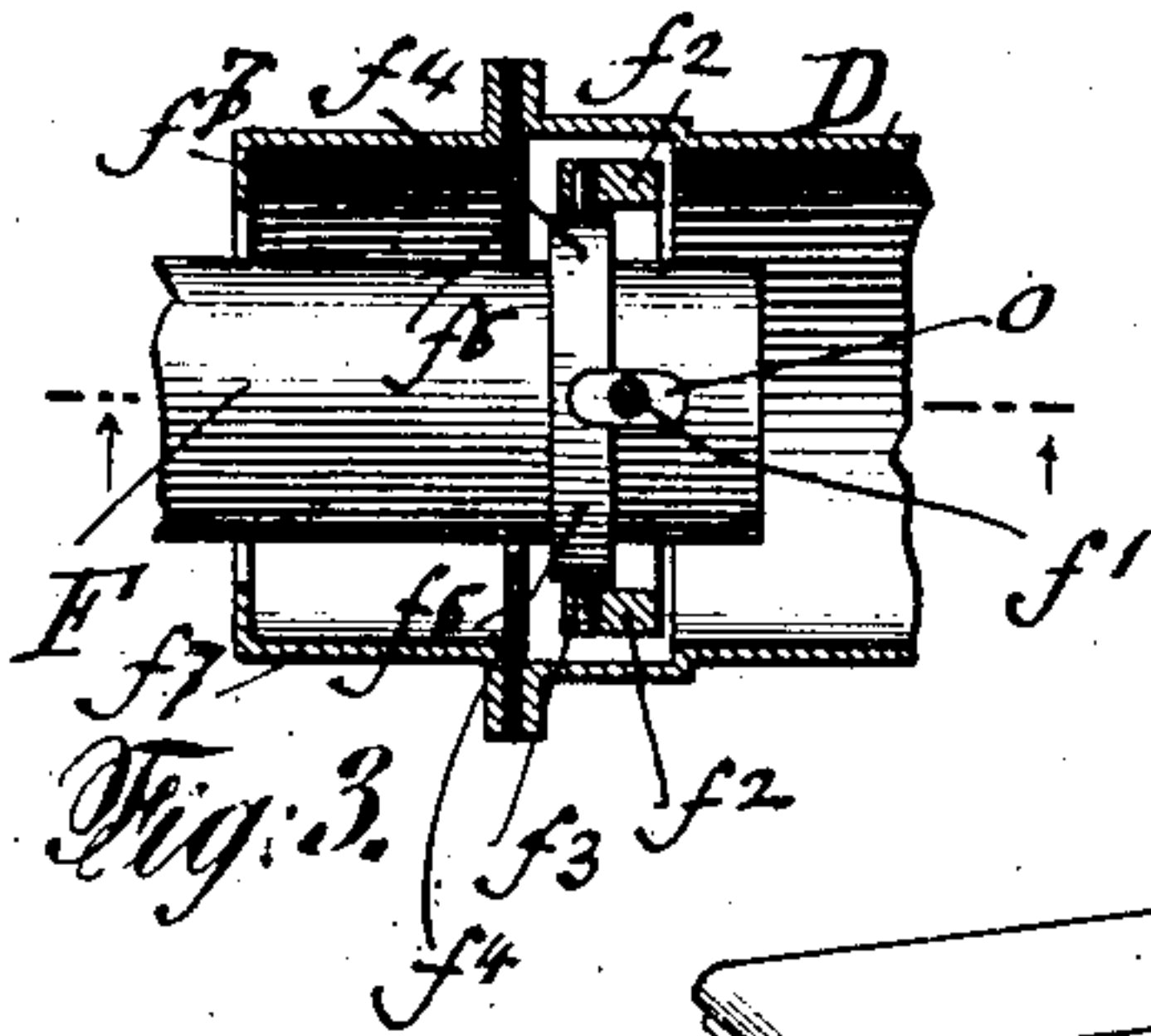
PHONOGRAPH.

APPLICATION FILED MAR. 26, 1909.

948,327.

Patented Feb. 8, 1910.

3 SHEETS—SHEET 1.



Witnesses:  
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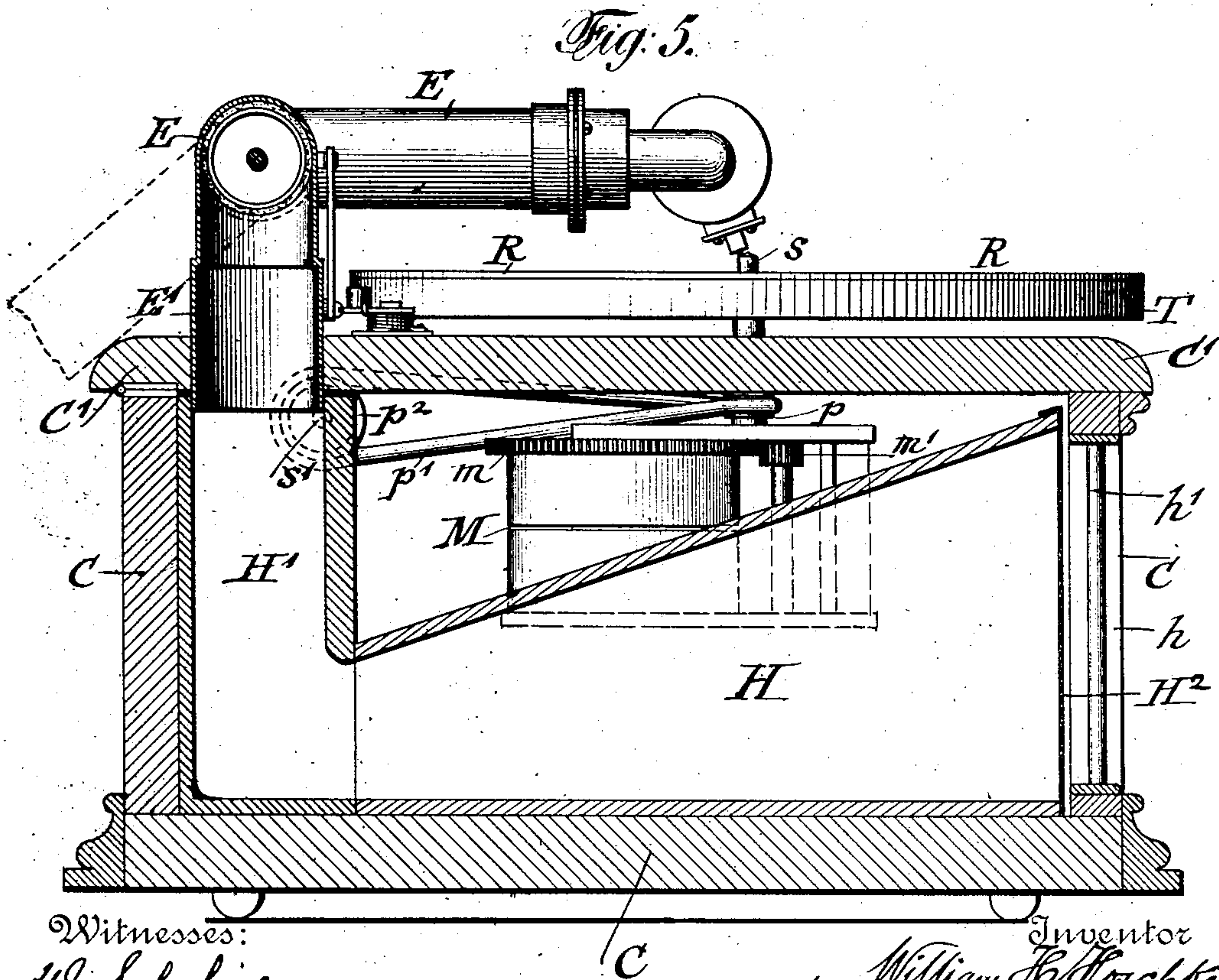
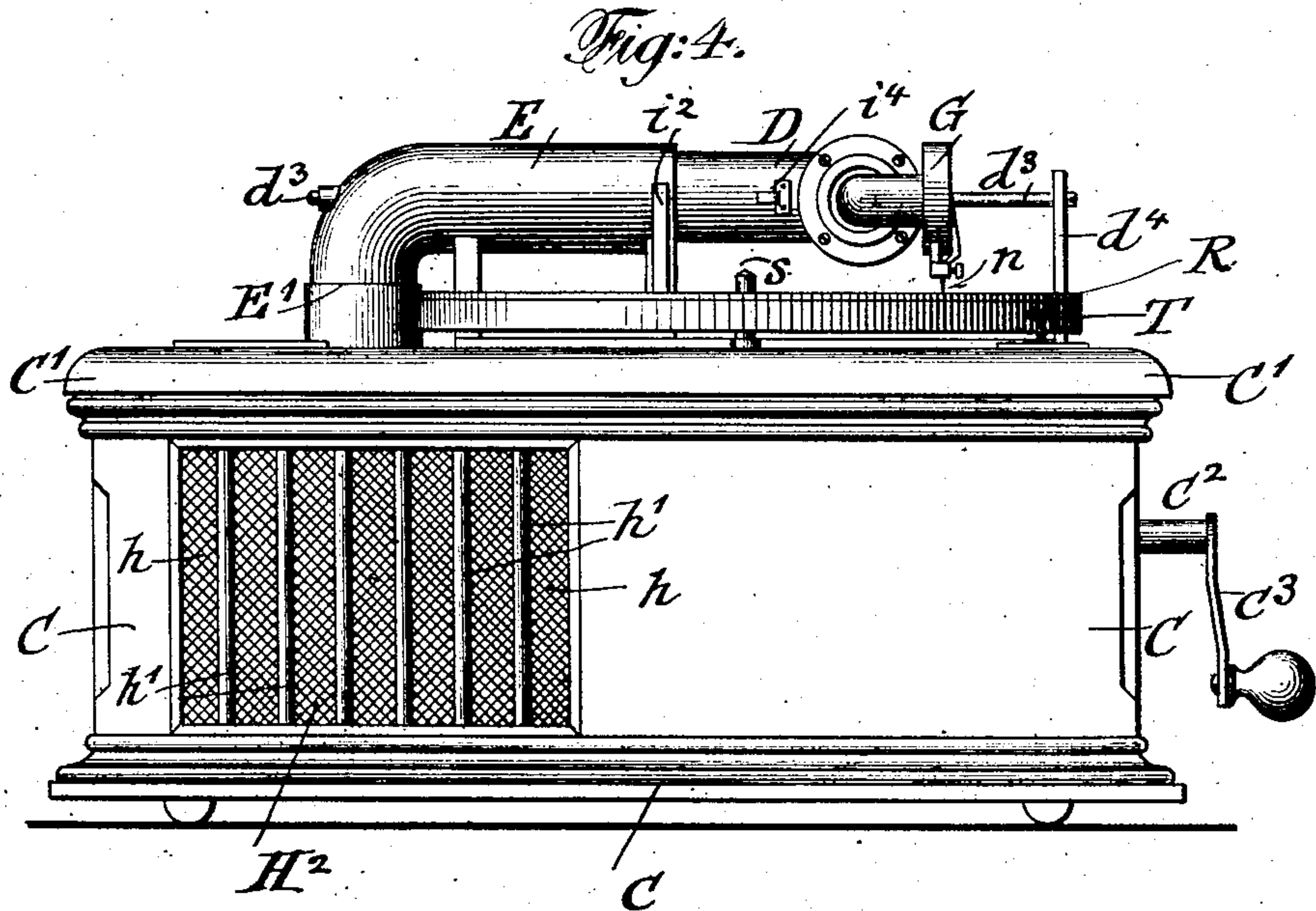
PHONOGRAPH.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 6.

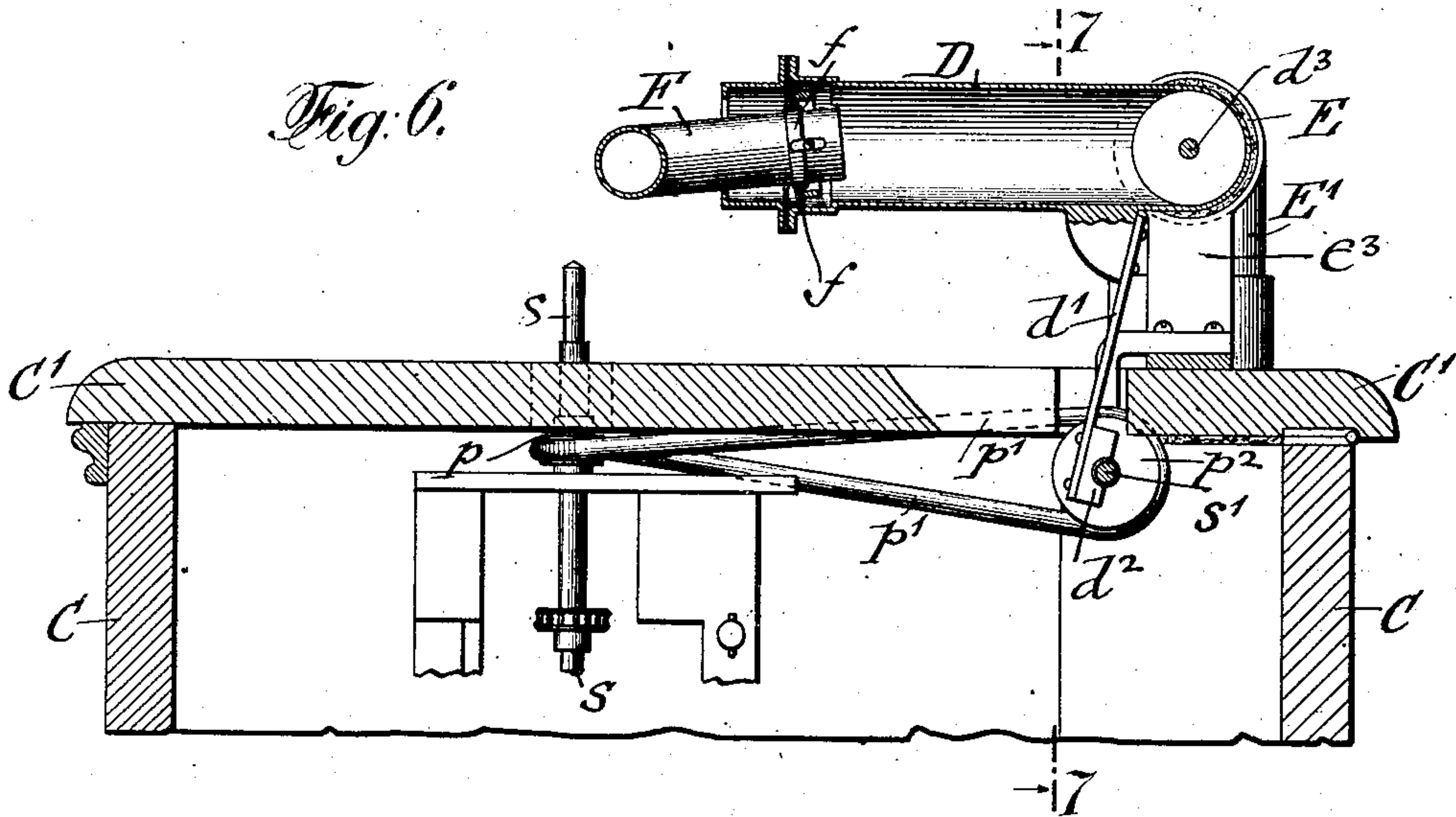


Fig. 7.

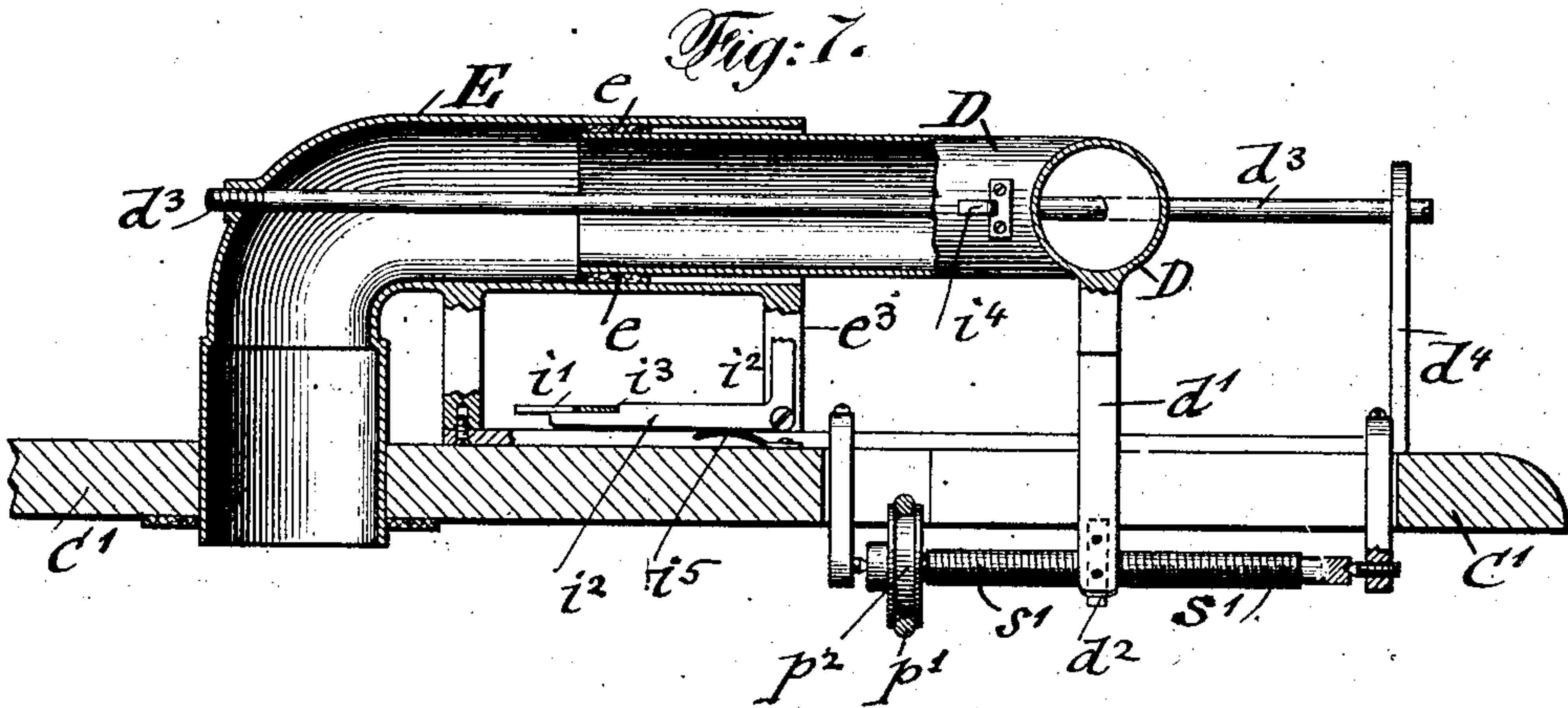
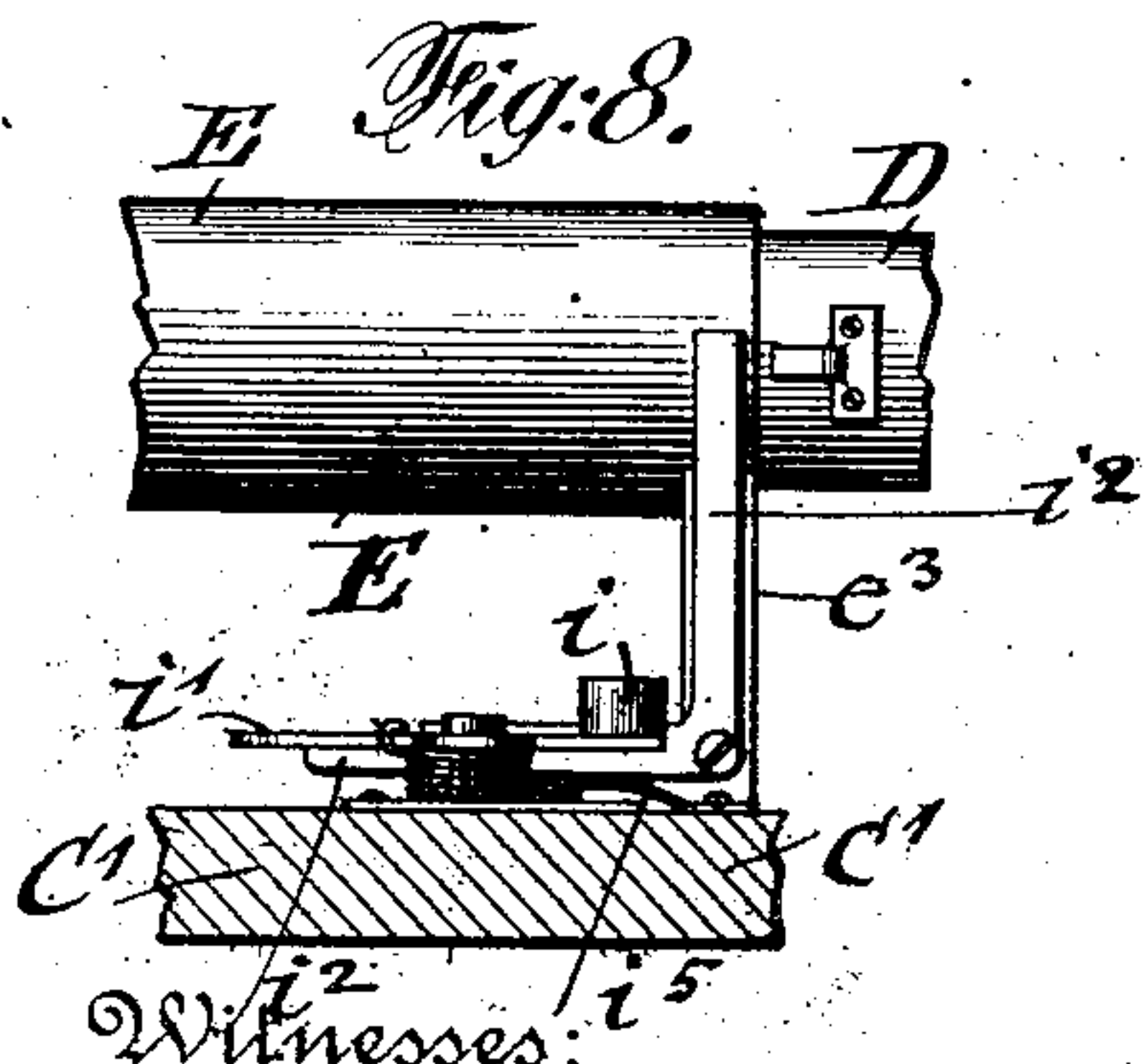
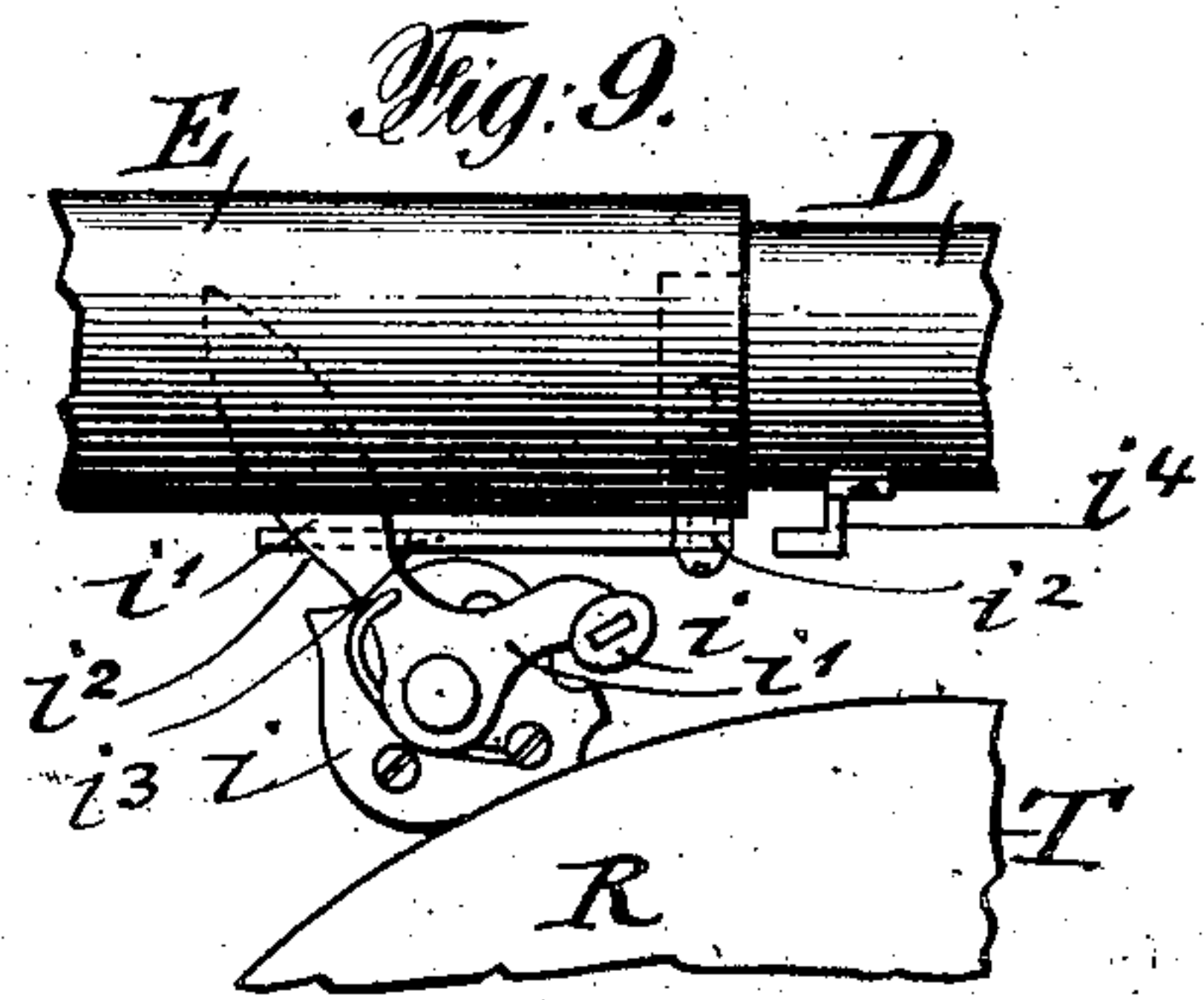


Fig. 8.



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Fig. 9.



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# UNITED STATES PATENT OFFICE.

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## PHONOGRAPH.

948,327.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed March 26, 1909. Serial No. 485,875.

*To all whom it may concern:*

Be it known that I, WILLIAM H. HOSCHKE, a citizen of the United States of America, residing in New York, in the borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Phonographs, of which the following is a specification.

This invention relates to an improved phonograph of that type in which no separate horn is used, but in which the same is arranged in the case in which the actuating motor for the record-carrying turn-table is arranged.

The horn used in phonographic apparatus is objectionable for the reason that it renders the apparatus cumbersome, as the horn takes up too much room, and that it impairs to some extent the clearness of the delivery of the phonographic records. By dispensing with the separate horn and its supporting stand, the entire apparatus becomes handier, more conveniently transportable, and more easily storable when not required for use.

In view of the foregoing, the invention consists of a phonographic apparatus in which the horn is arranged in the casing of the apparatus and operated in connection with a record placed on the rotating disk or turn-table by means of a stationary tube and a slidable sound-conveying tube which telescopes with said stationary tube. The telescoping tube is provided with a tube carrying the diaphragm-case, said tube being connected by a universal joint with the front-end of the telescoping tube. The motor which rotates the turn-table moves simultaneously the telescoping tube, diaphragm-chamber and stylus or needle so as to remove any strain on the latter.

The invention consists further of the combination of the tube carrying the diaphragm-case by a flexible joint with the telescoping sound-transmitting tube, and a sound-retaining web or sleeve, so that the needle moves in the grooves of the record with great facility and reduced friction.

The invention consists further in a stopping device by which the turn-table is automatically stopped when the needle arrives at the end of a record; and the invention consists lastly of certain details of construc-

tion and combinations of parts which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of my improved phonograph, Fig. 2 is a plan-view of Fig. 1, drawn on a larger scale, Figs. 3 and 3<sup>a</sup> are respectively a vertical section and a horizontal section showing the flexible connection of the tube carrying the diaphragm-box with the telescoping sound-transmitting tube, drawn on a larger scale, Fig. 4 represents a front-elevation of the improved phonographic apparatus, Fig. 5 is a vertical transverse section on line 5, 5, Fig. 2, Figs. 6 and 7 are respectively a vertical transverse section on line 6, 6, and a vertical longitudinal section on line 7, 7, Fig. 2, and Figs. 8 and 9 are respectively a detail side-elevation and a plan-view of the automatic stopping device for the rotary disk or turn-table.

Similar letters of reference indicate corresponding parts throughout the different figures of the drawings.

Referring to the drawings, C represents the casing of my improved phonographic apparatus. The casing C is made of oblong shape and of a sufficient size to permit the placing in the same of the sound-delivering horn H and the spring-motor M by which the record-carrying disk or turn-table, as well as the telescoping sound-transmitting tube, is actuated. The case C is provided with a hinged lid C<sup>1</sup> to the under-side of which the spring-motor M is applied. Any approved construction of spring-motor can be used, preferably motors of that kind which are employed in the larger sizes of the well-known Swiss music-boxes. The motor is wound up from time to time by means of a shaft C<sup>2</sup> to which a crank-handle C<sup>3</sup> is applied. The spring-motor M drives by a gear-wheel transmission *m*, *m*<sup>1</sup> the center-shaft *s* of the disk or turn-table T on which the disk-shaped phonographic record R is placed in the usual manner. From the shaft *s* of the turn-table T rotary motion is transmitted by a pulley *p* and belt *p*<sup>1</sup> located at the under-side of the lid C<sup>1</sup> to a pulley *p*<sup>2</sup> on a screw-spindle *s*<sup>1</sup> which is supported in suitable bearings at the under-side of the lid C<sup>1</sup>, said screw-spindle driving, by means of a semi-circular screw-



nut  $d^2$  located at the lower end of an arm  $d^1$  which is attached at its upper end to a sound-transmitting tube D, the latter in sidewise direction, so that the same telescopes into a stationary tube E. The tube E passes by a downwardly-bent portion  $E^1$  through an opening in the lid  $C^1$  to the interior of the case C and connects there with the vertical portion or trunk  $H^1$  of the speaking tube or horn H, which extends from the rear-wall of the case C toward the front-wall, and which is provided at its front-end with a suitable screen  $H^2$  for preventing the ingress of dust to the horn. The case is provided, in front of the screened end of the horn H, with an opening  $h$  and upright rods  $h^1$  for protecting the screened end  $H^2$ , as shown clearly in Figs. 1 and 4. The horn H is preferably arranged at and parallel with the left-hand side of the case so as to permit the sounds to pass out through the opening in the front-wall of the case. It is supported in stationary manner in the case and is preferably made of wood, so that the sounds transmitted from the record are clearly transmitted to the listeners.

The telescoping sound-transmitting tube D is made of angular shape, one end being guided in the upper portion of the stationary tube E and provided with a packing  $e$ , of felt or other material, at its rear-end so as to slide easily and noiselessly in forward and backward direction in the tube E. The telescoping tube D is supported on a stationary guide-rod  $d^3$  which is supported at one end in a bearing of the stationary tube E and at the opposite end on an upright arm  $d^4$  attached to the lid  $C^1$ . The guide-rod  $d^3$  passes through a bearing of the telescoping tube D at its angular bend, as shown clearly in the different figures. The end of the tube E is also supported by a stationary standard  $e^3$  on the lid  $C^1$ . The front-end of the angular telescoping tube D carries by means of a universal joint  $f$  the rear-end of a short angular tube F to the front-end of which the diaphragm-box G is applied. The diaphragm-box carries the diaphragm and the holder for the stylus or needle  $n$  by which the sound-waves embodied in the grooves of the phonographic record are transmitted for reproduction by the diaphragm. The diaphragm-box G with its needle-holder is made in any approved manner. The universal joint  $f$  between the telescoping tube and the angular tube F is shown in Fig. 6 and in detail in Figs. 3 and 3<sup>a</sup>, and serves to impart to the connection between the two tubes F and D the required degree of flexibility. The front-end of the telescoping tube D is connected by a fixed diametrical pivot-pin  $f^1$ , which passes through slots  $o$  of the tube F, with a ring  $f^2$  which carries by a second diametrical pivot-pin  $f^3$  located at right angles to the pivot-pin  $f^1$ , a second ring  $f^4$  that is connected with

the rear-end of the tube F of the diaphragm-box G, so that both are permitted to move freely on the front-end of the telescoping tube D without exerting any injurious strains by the needle or stylus  $n$  on the grooves of the phonographic record.

As the telescoping tube D is moved by its driving mechanism laterally into the stationary tube E, the flexible connection  $f$  imparts the required freedom of motion to the diaphragm-box and needle, but not the needle the movement to the telescoping tube, by which the rapid wearing of the needle as well as of the record is prevented. By the independent driving of the telescoping tube, the record is relieved from driving it, so that but little wear is produced on the record and the needle. Adjacent to the universal joint  $f$  is arranged a ring-shaped web or sleeve  $f^5$ , which is held in position by an extension-tube  $f^7$  at its outer circumference and which encircles by its inner circumference the inner end of the tube F so as to prevent the sounds from escaping at the flexible connection between the tubes D and F; in other words, making the connection sound-proof. The flexible connection between the tubes D and F also permits the lifting of the needle for introducing it into as well as for removing it from the record when starting or interrupting the piece of music represented on the record.

When it is desired to exchange the records, the telescoping tube D, with the tube F, diaphragm-box G and needle  $n$ , is lifted on its guide-rod  $d^3$  into backwardly inclined position, so that the turn-table is entirely free and permits the easy removal of one record from and the placing of a new record on the same. Simultaneously with the lifting up of the telescoping tube, the segmental nut  $d^2$  is removed from the driving-screw-spindle, and thereby the telescoping motion of the tube interrupted.

When the tune represented by the record is played, the motion of the turn-table is automatically interrupted by a stop device, which is shown in detail in Figs. 8 and 9, and which consists of a brake-shoe  $i$  that is pressed against the circumference of the turn-table by means of a fulcrumed and spring-actuated lever  $i^1$ . Adjacent to the rear-end of the lever  $i^1$  is fulcrumed to the supporting post or standard  $e^3$  of the tube E, an elbow-lever  $i^2$  the lower arm of which passes under the spring-actuated stop-lever  $i^1$  and engages the latter by a shoulder  $i^3$ . A fixed stop  $i^4$  on the telescoping tube D abuts against the upper arm of the elbow-lever  $i^2$  when the tube D arrives at the end of its motion and releases the lever  $i^1$  from the shoulder  $i^3$  so that the brake-shoe  $i$  is instantly pressed on the circumference of the turn-table and arrests the motion of the same. When the turn-table is to be ro-



tated the lever  $i^1$  of the stop device is moved against the tension of its spring until it is arrested by the shoulder on the lower arm of the elbow-lever  $i^2$ . A flat spring  $i^5$  acts on the underside of the lower arm of the elbow-lever  $i^2$  so as to hold the same in contact with the stop-lever  $i^1$ . When the telescoping tube D arrives at the end of its telescoping motion after the tune embodying the record has been played, the elbow-lever of the stop-lever is engaged by the stop on the telescoping tube and thereby the stop-lever released and the brake-shoe  $i$  applied to the turn-table and the motion of the latter arrested.

On the left-hand side of the case are located pockets  $k$  for different sizes of needles. These pockets are shown in Figs. 1 and 2. On the right-hand side of the case is arranged the button  $b$  by which the motor is started.

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

1. In a phonograph, the combination, with a record-carrying turn-table, and means for rotating the same, of a stationary sound-carrying tube, an angular tube telescoping in the stationary tube, means for moving the telescoping tube into the stationary tube, a diaphragm-box provided with a needle or stylus, a tube connecting the diaphragm-box with the front-arm of the telescoping tube, and a flexible connection between said tube and said front-arm, and an additional means on which the outer end of said telescoping tube is slidably supported.

2. In a phonograph, the combination, with a case, a record-carrying turn-table, and means for rotating the same, of a horn located in said case, a stationary tube of angular shape connected with said horn, an angular tube telescoping into the upper part of the stationary tube, means for holding said angular tube axially into line with the stationary tube, means for imparting reciprocating motion to the telescoping tube, a diaphragm-box provided with a needle or stylus, a tube connecting the diaphragm-box with the forward arm of the telescoping tube, and a flexible connection between said tube and the forward arm of the telescoping tube, a rod coaxial with said telescoping tube slidably supporting the same, and means for supporting said rod.

3. In a phonograph, the combination of a

stationary tube, an angular movable telescoping tube guided in the stationary tube, a diaphragm-box, a tube connecting the diaphragm-box with the forward end of the telescoping tube, and a flexible connection between said tube and the forward end of the telescoping tube, said flexible connection consisting of a universal joint formed of ring-shaped frames pivotally connected at right angles with each other, and a flexible sound-retaining web.

4. In a phonograph, the combination of a case, a hinged lid for the same, a motor attached to the under-side of said lid, a turn-table driven by said motor, a horn located in the case at one side of said motor and extending from the rear toward the front of the case, a sound-conveying tube secured to said lid and communicating with the horn, an angular sound-conveying tube telescoping into the stationary tube, means for moving the telescoping tube into the stationary tube driven from said motor, a diaphragm-box, a tube connecting the diaphragm-box with the forward end of said telescoping tube, and a flexible connection between said tube and the forward end of the telescoping tube.

5. In a phonograph, the combination, with a rotary turn-table, of a stationary sound-conveying tube, an angular tube telescoping in the same, means for imparting motion to the telescoping tube, and automatic means operated by the movement of the telescoping tube for arresting the motion of the turn-table when the telescoping tube arrives at the end of its movement.

6. In a phonograph, the combination, with a rotary turn-table, of a stationary sound-conveying tube, an angular telescoping tube guided in the stationary tube, means for imparting motion to the telescoping tube, a spring-actuated brake device, a lever for holding the same in position out of contact with the turn-table, and a stop device on the telescoping tube adapted to engage the lever for releasing the stop device and arrest the motion of the turn-table.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

WILLIAM H. HOSCHKE.

Witnesses:

PAUL GOEPEL,  
H. J. SUHRBIER.