

No. 754,508.

PATENTED MAR. 15, 1904.

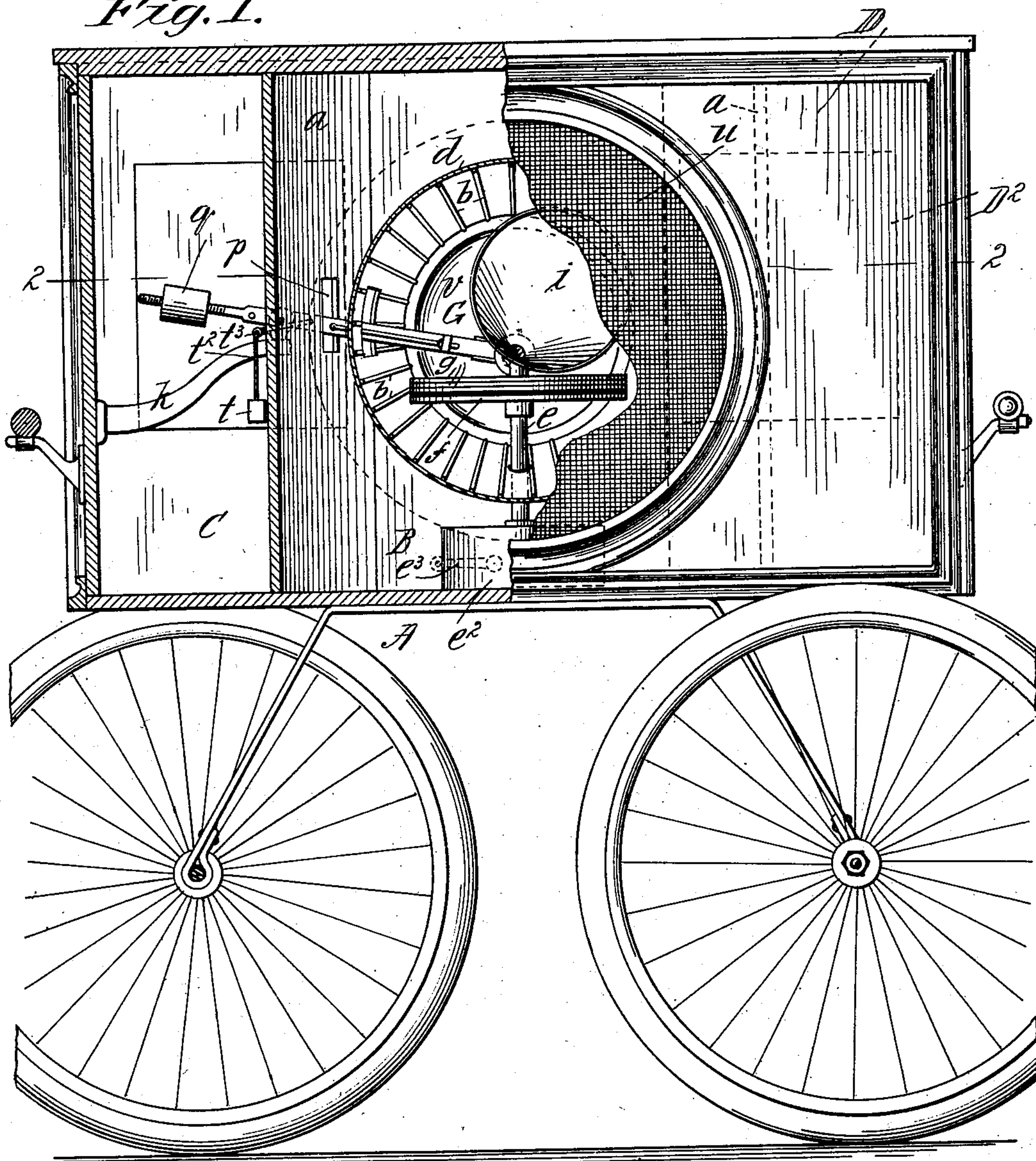
C. W. SKIFF & S. A. GRANT.
PHONOGRAPHIC APPARATUS.

APPLICATION FILED OCT. 18, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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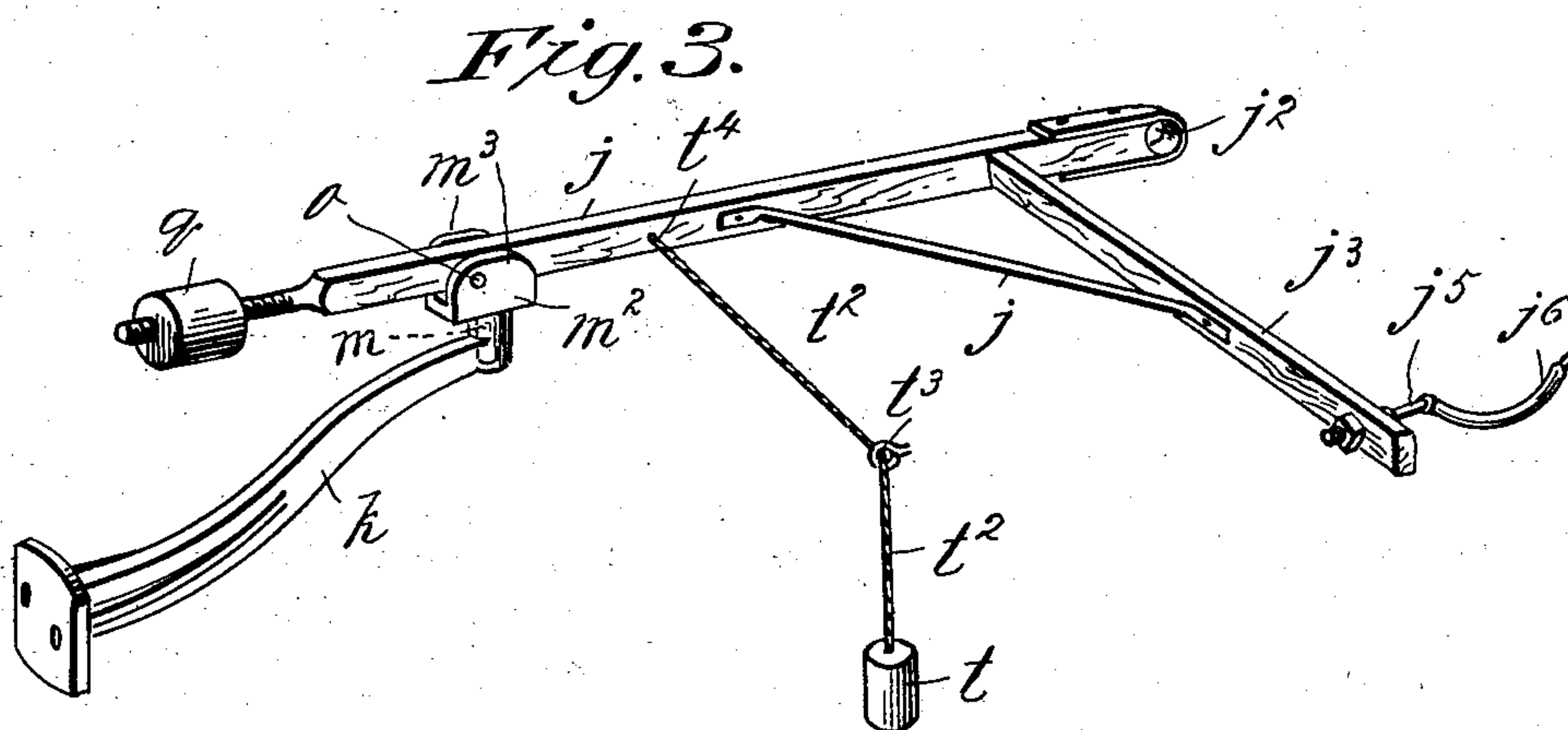
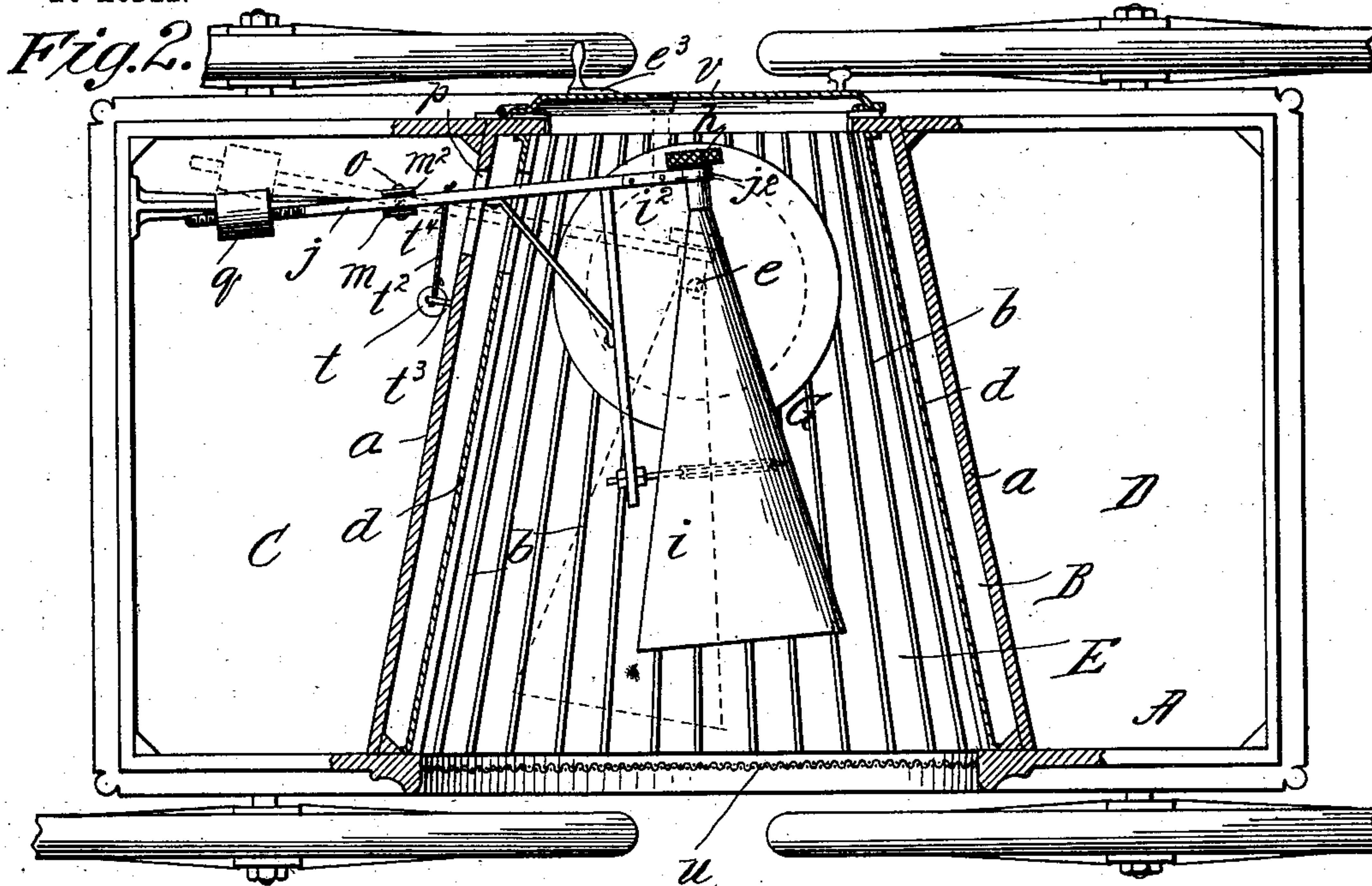
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2 SHEETS--SHEET 2.



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UNITED STATES PATENT OFFICE.

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PHONOGRAPHIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 754,508, dated March 15, 1904.

Application filed October 18, 1902. Serial No. 127,765. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. SKIFF, a resident of Westfield, and SIDNEY A. GRANT, a resident of Springfield, in the county of Hampden and State of Massachusetts, citizens of the United States of America, have invented certain new and useful Improvements in Phonographic Apparatus, of which the following is a full, clear, and exact description.

10 This invention pertains to a sound-reproducing apparatus, and more especially one which is mounted portably, so as to be used conveniently in different places, either for indoors or out of doors.

15 The apparatus of the present invention comprises a case or cabinet having therein the sound-reproducing mechanism, such as a graphophone or phonograph, and provisions and arrangements for the means amplified of
20 voluminous sounding of the instrument, arrangement for the reception and employment successively of several "records;" and the invention comprises other and further constructions and combinations of parts, all as
25 will hereinafter fully appear and be set forth in the claims, and for the carrying out of objects which will be hereinafter mentioned.

30 In the drawings the apparatus is shown as comprising and mounted on a carriage whereby it is adaptable for street use and transportable into houses with about the same convenience that a baby-carriage is.

35 Figure 1 is in part a front elevation and in part a vertical section longitudinally through the wheel-supported cabinet. Fig. 2 is a horizontal sectional view taken about on the line 2 2, Fig. 1. Fig. 3 is a perspective view of novel horn-supporting devices comprised in the present invention.

40 In the drawings, A represents a rectangular case or cabinet having intermediately thereof vertical partitions *a a*, which, as particularly shown in Fig. 2, are divergent from the rear to the front, thereby producing a forwardly-
45 flaring central compartment B and end compartments C and D. Within the central com-

partments C is a frame of frusto-conical form constituted by a series of wires *b*, extending from the rear to the front walls of the cabinet and forming a manner of forwardly-flaring chamber, which may or not be completely inclosed, as by a covering, (indicated at *d*,) which may be gauze or sheet metal. This covering is a preferred provision, but not regarded as a necessity.

55 Located within the forwardly-flaring space E comprised within the plane constituted by the circularly-arranged and forwardly-divergent wires *b* is a graphophone, (indicated in a general way by the reference-letter G,) a preferred type of which sound-reproducing instrument is shown as comprising a vertical shaft *e*, having connection at the bottom of the chamber B with the usual motor *e*², for which *e*³ is the crank for winding it up and
60 establishing a motor energy therein.

The rotatably-vertical shaft *e* has near its top a table *f*, which is rotatable as a part of the shaft, and upon this table may be superimposed a plurality of disk records, each being
70 understood as having a central perforation to fit over the extremity of the shaft which is upstanding above the top of the table *f*.

h indicates the receiver or sound-reproducing device, understood as embodying therein
75 a diaphragm and also embodying the usual pin or pointed stud, which engages into the minute indentations arranged around on the upper face of the record-disk in an involute line, as well known, the succession of indentations in
80 such line causing the pointed stud to have a progression from near the margin of the record-disk toward and finally to near the center of the disk, the successions of indentations and intermediate full or unindented portions
85 of the record imparting to the pointed stud the sound-producing vibrations whereby the diaphragm, through the horn *i*, connected therewith, becomes audibly effective, as well known.

90 It will be perceived that there is next to the receiver and in the line of the axis thereof a

nozzle or tubular section i^2 , which is also in the axial line and as a connected part of the horn, so that the vibration-produced sound from the diaphragm passes direct and straight
5 out through the horn instead of having to reach the horn through a nozzle in the form of a quadrantal bend, as heretofore commonly employed in graphophones or "gramophones" using disk records.

10 Inasmuch as the position, as to its height, of the receiver h is in the use of the apparatus variable according as to whether only one or several of the record-disks are provided on the rotatable table is variable and as the re-
15 ceiver and the horn, which is to all intents and purposes connected thereto as a part thereof, are required to have movements toward the center of the disk in a slightly-curved line, which is, however, approximately radial to the
20 center of the disk, we have provided the receiver and horn-support shown in the drawings, and the same consists of the lever-arm j , mounted to swing in a vertical plane on a stationary supporting-bracket k , said lever-
25 arm also being swivel-connected with said bracket at m , so as to swing horizontally, and said lever-arm has at its one extremity the socket or eye j , through which the horn-nozzle has a supporting engagement and, moreover,
30 the lever has the right-angularly - extended member j^3 , trussed by the brace j^4 , and upon the extremity of this member j^3 is the supporting-arm j^5 of bowed form, which may be practicably composed of stiff heavy wire and
35 preferably covered with a section j^6 of rubber tubing, an intermediate portion of the outwardly-widening horn resting in the hollow of the supporting-arm j^5 , which is in line with the socket-eye j^2 .

40 The peculiar connection between the lever j and the bracket k is constituted by forming an upwardly-opening socket in the extremity of the bracket, into which fits for rotational movement on a vertical axis a depending stud
45 m of a member m^2 , which has the double up-standing ear - lugs m^3 , through which and through the intermediate portion of the lever the pivot o horizontally passes. The said bracket is shown as supported by being
50 screwed to the end wall of the cabinet A near the rear wall, and the lever has its extremity projected through the aperture p in one of the partition-walls for supporting the horn, as shown.

55 q represents a counterbalance-weight, the same screw-threading on the end of the lever j which is farthest from the horn, this weight being adjustable, so that it may nearly but not quite overcome the weight of the phono-
60 graphic devices carried by the other end of the lever and so that while the pointed stud of the receiver may impinge against the record with all requisite force of bearing it will, on the other hand, bear with an entire avoidance
65 of gouging or record-impairing effect.

Although in this character of phonographic mechanism the receiver-stud is forced and consequently with it the receiver and horn are bodily forced inwardly toward the center of the record and the rate and extent of the in- 70 ward feed is entirely regulated and controlled by the involution of the record-indentations, we, however, provide an assisting weight, operative upon the lever, so that the work of feeding the receiver and horn inwardly ac- 75 complished by the record-indentations is rendered measurably far less destructive on such indentations than would be the case in the absence of such auxiliary weight. The said weight is indicated at t and is suspended at the 80 lower end of the cord t^2 , which has a running and guiding engagement through the eye t^3 and a connection at t^4 , a portion of the latter j inwardly beyond the point of swiveling at m of such lever, so that the tendency of said 85 weight is such as to assist, as before mentioned, in swinging the lever and the parts thereon supported from the position shown by the full lines in Fig. 2 toward the position indicated by the dotted lines. 90

In the front of the flaring chamber indicated as comprised within the flaring frame extending from the rear to the front of the cabinet is provided a covering of gauze u by preference, the same not materially obstructing the 95 egress of the sound, but serving the purpose of excluding dirt. The rear of such flaring chamber is covered by the hinged door v , which is so constructed as to constitute a diaphragm or sounding-board, the same being advanta- 100 geously composed of sheet metal, parchment, or the like, and inasmuch as the sound-producing effects in the receiver are present at the rear thereof to as nearly a great extent as forward thereof this rear diaphragm has the 105 effect of materially augmenting the volume of the reproduced selection to be emitted at the front of the cabinet. After one record has been employed and it is desired to use another of those placed one above the other on the ro- 110 tatable table f the diaphragm-constituted door v is swung open at the rear of the cabinet, the horn and receiver elevated by tilting the lever, the last used record-disk is lifted 115 off from the other disks thereunder and removed through the rear opening and may be stowed away in the compartment D, for which a door (indicated at D^2) is provided and the phonographic devices brought to juxtaposition with the next record-disk. 120

It will be perceived in the arrangement shown, more especially by Fig. 2, that this apparatus comprises in substance a horn with- 125 in a horn—that is, the horn i of the phonograph proper is located within the flaring chamber which surrounds it and within the forward end of which chamber the forward end of the horn has its location, so that more effective audible results are acquired.

It will be perceived that the receiver and 130

horn-support, with the receiver and horn mounted thereon as described, enables during the rotation of the record-disk the relations between the horn and receiver to the support to be always constant, the whole supporting device being bodily movable both vertically and horizontally and with the utmost delicacy and with an entire avoidance of friction, and this device is materially advantageous over an arrangement wherein the receiver and horn are so mounted that they have during the playing of a selection swinging or oscillatory movements upon and relative to their support.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described a case or cabinet having an opening in its front and an opening in its rear, a door to close the rear opening, and a forwardly-diverging inclosure located in said cabinet and extending from the front opening to the door-closed opening.

2. In an apparatus of the character described, a case having an opening in its front and a removable diaphragm at its rear wall and having a space or compartment therein extending and divergent from rear to front, said removable diaphragm also forming a closure for the rear end of the compartment, for the purpose set forth.

3. In an apparatus of the character described, a case or cabinet having an opening in its front, and having therein an inclosure, the sides of which are composed of a series of circularly-arranged rods extending from the rear of the cabinet in forwardly-divergent lines to the front opening, and a diaphragm at the rear ends of the rods, substantially as described.

4. In an apparatus of the character described, a case having an opening in its front and having therein a forwardly-widening chamber leading to said front opening, and composed of a series of circularly-arranged forwardly-divergent rods extending from the rear to the front of the case having a coveringsupported thereby independent of the case.

5. In an apparatus of the character described, a phonographic-containing case having therein a forwardly-widening compartment or removable chamber, the rear wall of which is constituted by a vibratory diaphragm and having its front open, for the discharge of sound.

6. In an apparatus of the character described, a case having a front opening for the discharge of sound, a screen covering and protecting said opening, said case having therein, a forwardly-widening phonographic-containing compartment or chamber terminating at said screen-covered opening, and a vibratory door to close the rear end of the compartment.

7. A phonographic case, embodying a sound-

augmenting compartment which flares forwardly to an open front end for the discharge of sound, and a removable diaphragm forming a closure for the rear end of the compartment.

8. A phonographic case, embodying a sound-augmenting compartment which flares forwardly to an open front end for the discharge of sound, a foraminous cover for the open end of the compartment, and a removable diaphragm forming a closure for the rear end of the compartment.

9. In an apparatus of the character described, the combination of a flaring sound-augmenting compartment having a rear closed end and an open end for the discharge of sound, a removable diaphragm to close the rear end, a phonograph within the compartment, and a horn connected with the phonograph and disposed longitudinally within the compartment with its open front end disposed toward the open end of the compartment.

10. In an apparatus of the character described, the combination of a flaring sound-augmenting compartment having its larger end open for the issue of sound, a removable diaphragm forming a closure for the smaller end of the compartment, a phonograph within the smaller end portion of the compartment, and a horn within the compartment with its smaller end connected with the phonograph and its larger discharge end disposed toward the open end of the compartment.

11. In an apparatus of the class described, a case having a forwardly-flaring compartment with an open front end, a sound-augmenting chamber within the compartment, a removable resonating-diaphragm to close the rear end of the compartment and chamber and to permit access thereto, a phonograph, and a phonographic horn connected with the phonograph and arranged in the chamber with its open end disposed toward the open end of the chamber.

12. In an apparatus of the class described, a case or cabinet having forwardly-diverging partitions forming a forwardly-flaring compartment, a sound-augmenting chamber in the compartment, a removable diaphragm to close the smaller rear ends of the compartment and chamber, a phonograph in the compartment, and a horn within the chamber with its smaller end connected with the phonograph and its larger end disposed toward the open end of the chamber.

13. In an apparatus of the class described, a case or cabinet having forwardly-diverging partitions forming a forwardly-flaring compartment, an annular flaring augmenting-chamber within the compartment and extending from the front to the rear of the case, a removable resonating-diaphragm at the rear of the case to close the smaller ends of the compartment and chamber and to permit access thereto, a phonograph in the compart-

ment, and a horn within the chamber with its smaller end connected with the phonograph and its larger discharge end disposed toward the open end of the compartment.

- 5 14. In an apparatus of the class described, a case or cabinet having forwardly-diverging vertical partitions forming a central forwardly - flaring compartment and compartments at each end of the case, an annular forwardly-flaring sound-augmenting chamber in-
10 closed by the partitions, a diaphragm-door at the rear of the case to close the smaller rear

end of the chamber, a phonographic horn in the chamber having its larger discharge end disposed toward the open end of the chamber, 15 and a foraminous cover for the open front end of the central compartment and chamber.

Signed by us in presence of two subscribing witnesses.

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SIDNEY A. GRANT.

Witnesses:

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A. V. LEAHY.