

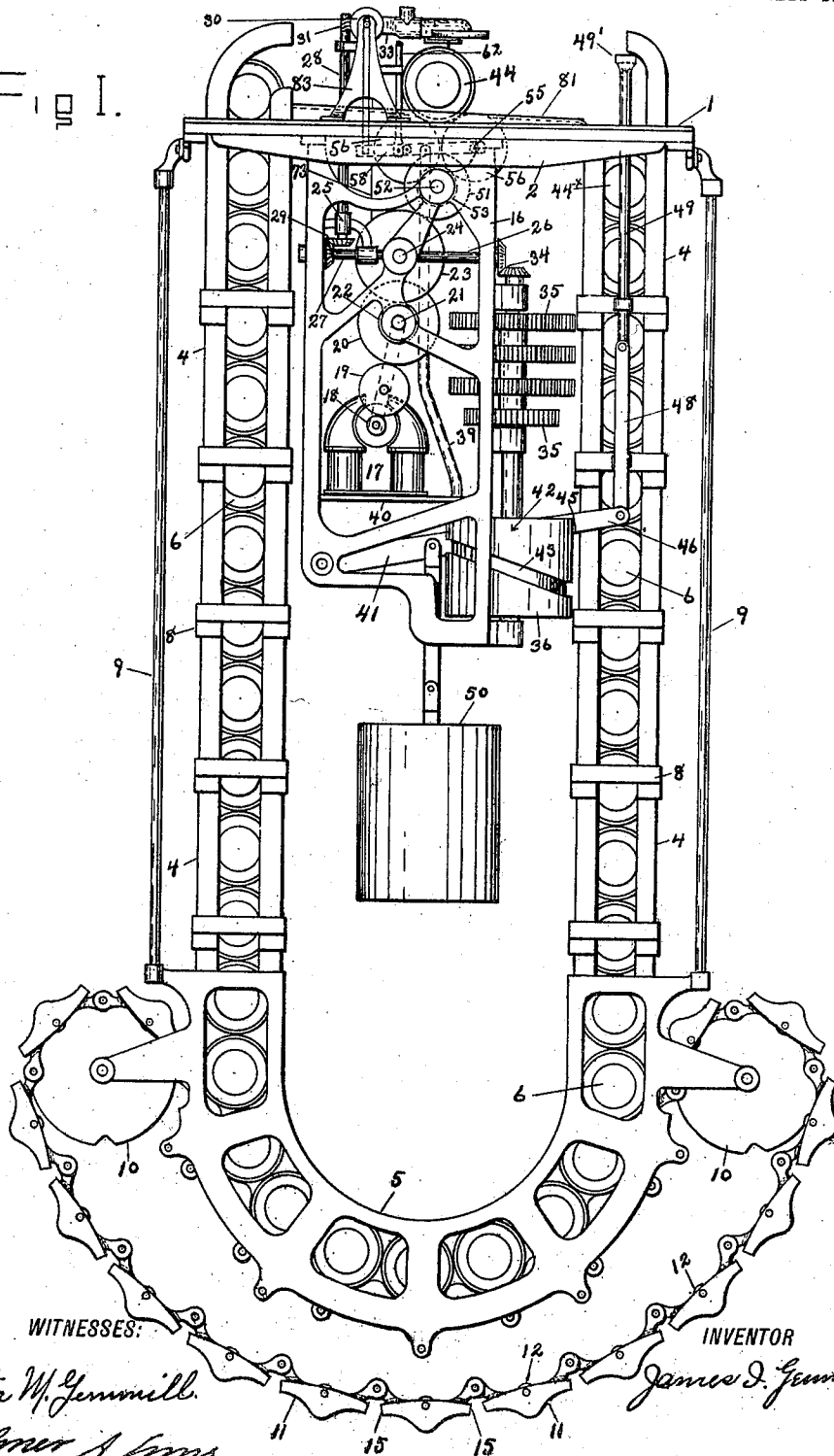
J. I. GEMMILL.
 AUTOMATIC PHONOGRAPH OF THE WAX CYLINDER TYPE.
 APPLICATION FILED JULY 11, 1908.

978,014.

Patented Dec. 6, 1910.

6 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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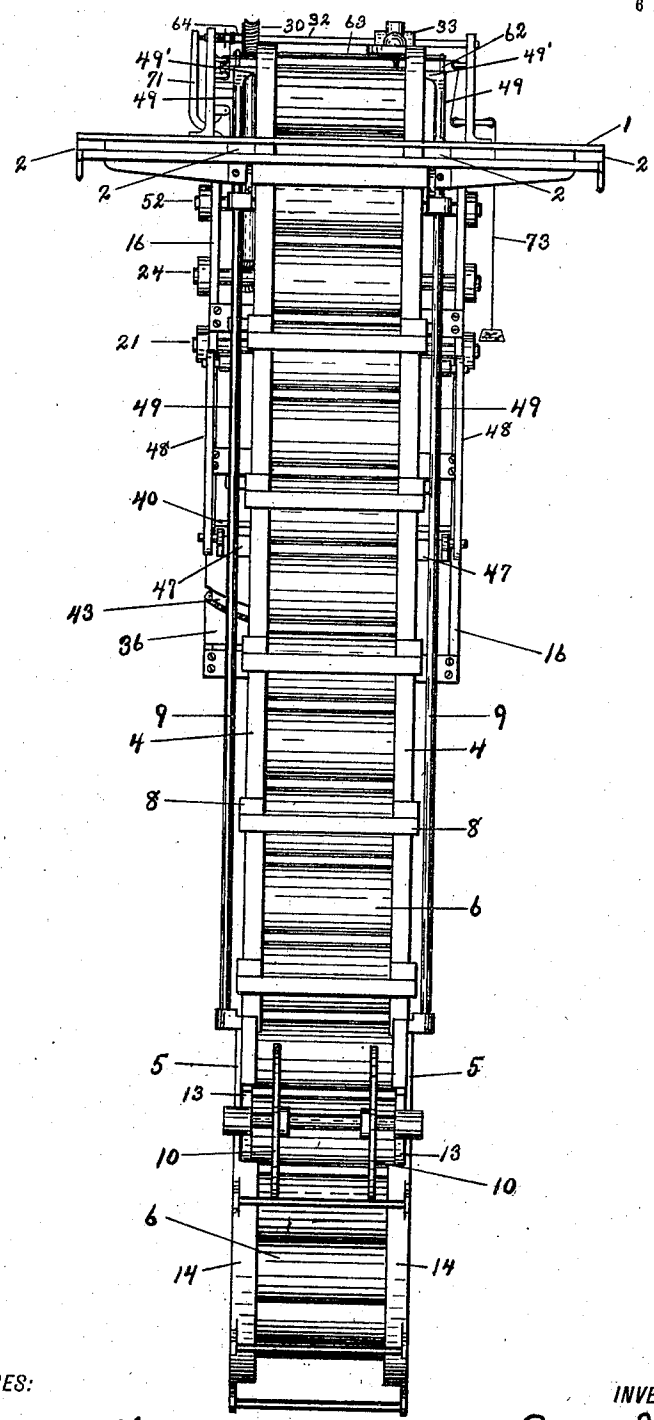
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6 SHEETS—SHEET 2.

Fig. II.



WITNESSES:

Leota W. Gemmill.
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6 SHEETS—SHEET 3.

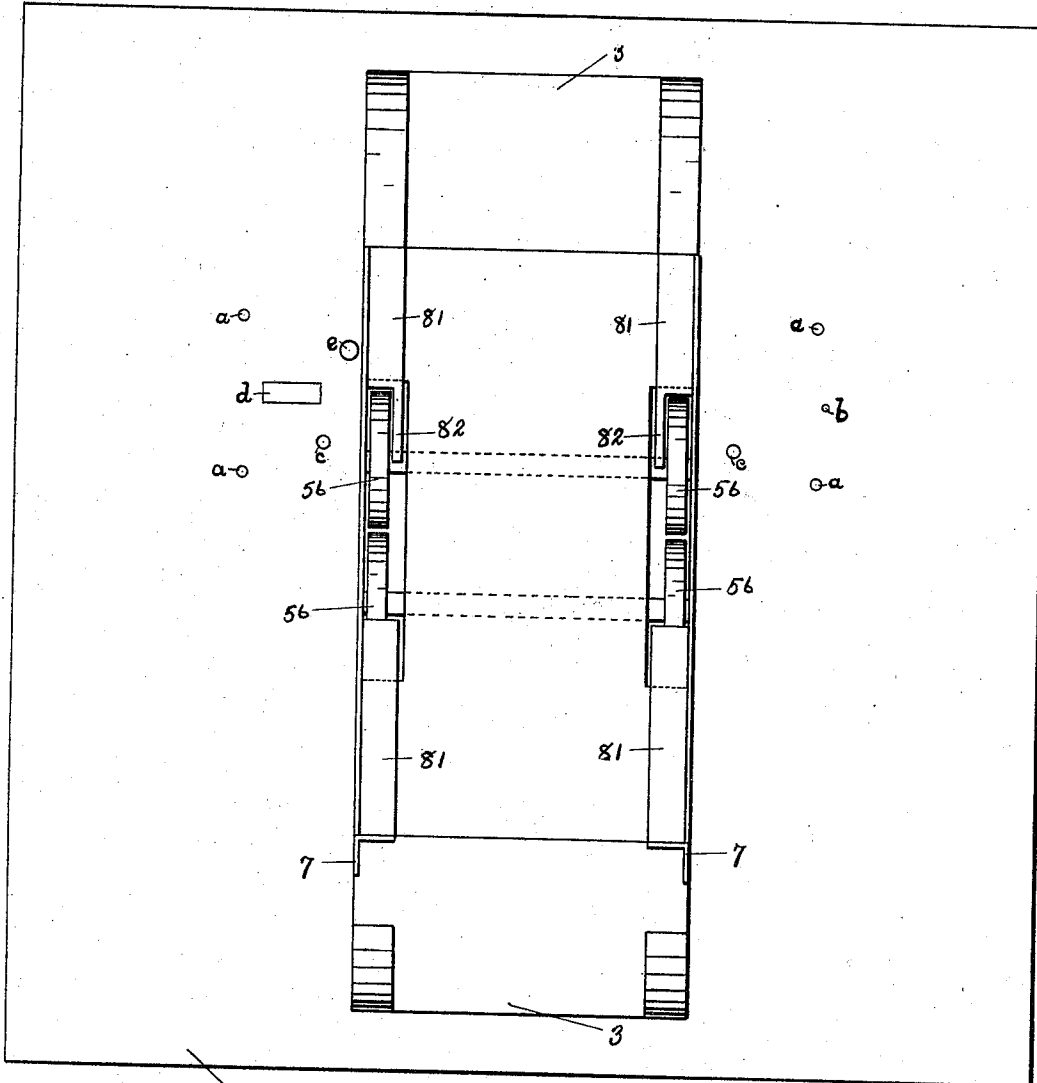


Fig. III.

WITNESSES:

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6 SHEETS—SHEET 4.

Fig. IV.

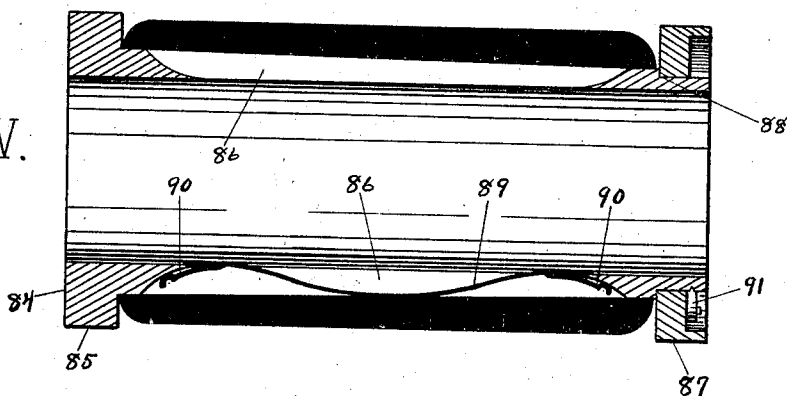


Fig. V.

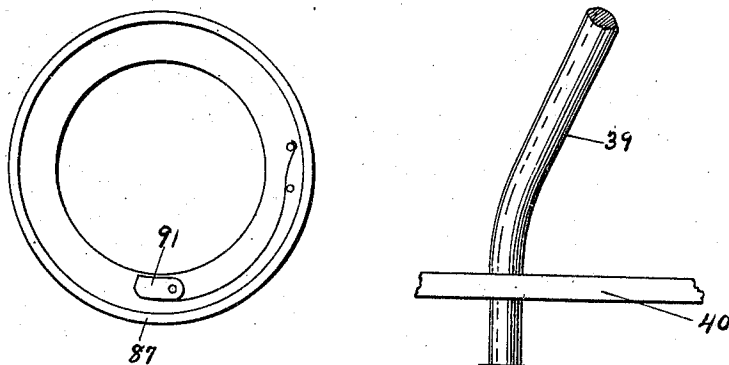
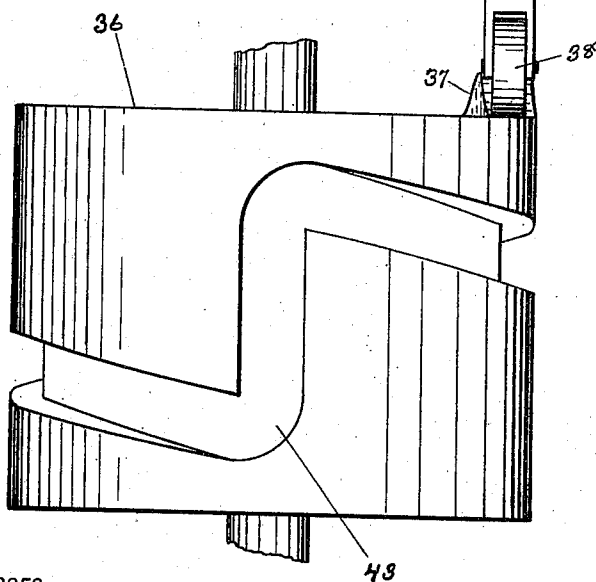


Fig. VI.



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6 SHEETS—SHEET 5.

Fig VII.

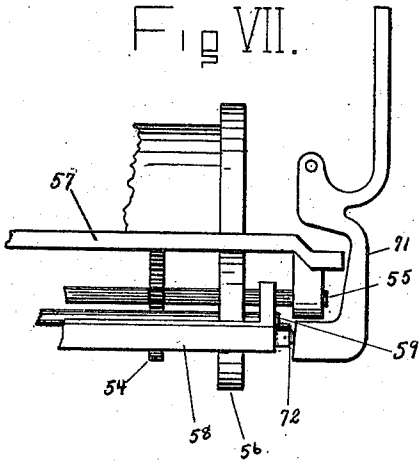


Fig VIII.

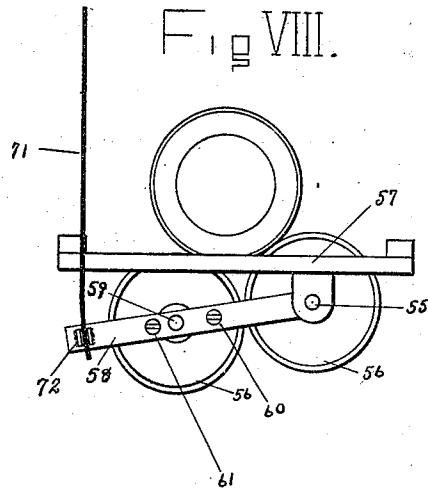
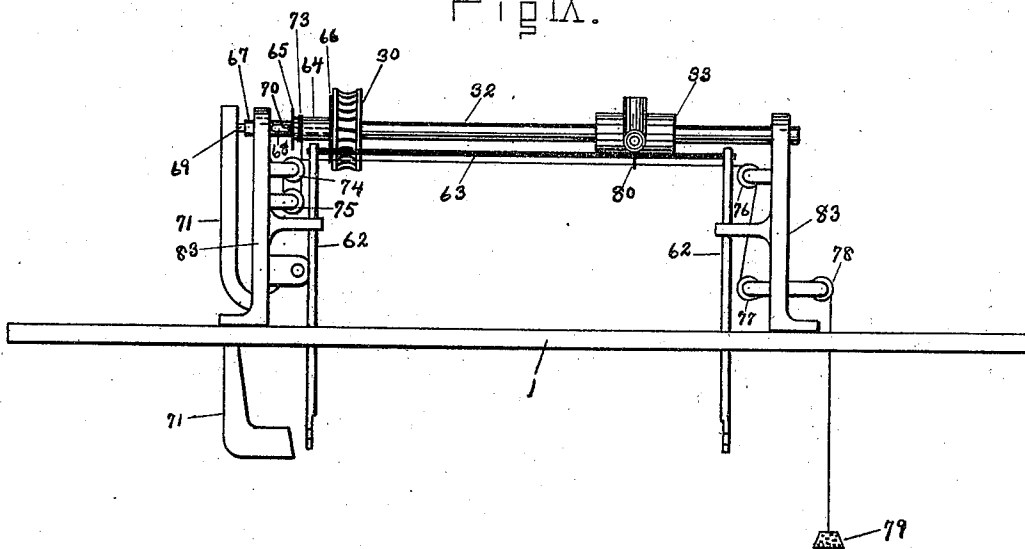


Fig IX.



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6 SHEETS--SHEET 6.



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UNITED STATES PATENT OFFICE.

JAMES IRWIN GEMMILL, OF CLEVELAND, OHIO.

AUTOMATIC PHONOGRAPH OF THE WAX-CYLINDER TYPE.

978,014.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed July 11, 1908. Serial No. 443,172.

To all whom it may concern:

Be it known that I, JAMES I. GEMMILL, citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Automatic Phonographs of the Wax-Cylinder Type, of which the following is a specification.

The principle of the invention is herein explained, and the best mode in which I have applied that principle so as to differentiate it from all other inventions.

My invention relates to automatically operated mechanisms, and particularly to a multiple cylinder record phonograph.

The object of said invention is to produce a talking machine of the character described, which shall be continuous in its action and shall operate for the purpose of reproducing a continuous discourse of music or speech of an indefinite length, as impressed on a series of tablets or phonographic records, which are operated automatically by the machine without any attention or attendance in any way by the operator, and in so operating these tablets or records to do so with the least possible expenditure of time during the silent period of the said mechanism, which occurs between the finishing of one record and the commencement of the next adjacent one. In carrying out this, my object, I have introduced extremely novel mechanical features in the preferred forms of the different mechanisms comprising the machine, which will be hereinafter fully illustrated and described, and in conformity with said illustration and description, will be fully set forth in the claims appended hereto. These results are obtained by the mechanism illustrated in the accompanying drawings which form a part of this specification.

Reference being had at this juncture to the drawings, Figure I, is a vertical view of the machine as seen from the front. Fig. II, a vertical view of the machine as seen from the right hand side of the aforementioned view Fig. I. Fig. III is a plan view of the top of the mechanism, the bottom of which represents the side of the machine as seen in the front of Fig. II, and serves to disclose the arrangement of the inclined planes or ways, serving to conduct records from one side of a magazine to a playing position, and thence to the other side of said magazine. Fig. IV serves to show the preferred form

of record or tablet supporting means. Fig. V discloses a portion of Fig. IV, being an elevation of the section shown at the right hand side of said Fig. IV. Fig. VI is a view of a drum cam which will appear obvious in Fig. I. Fig. VII is diagrammatic, and serves to show a broken portion of a record supporting means in position on means for revolving same, the whole being supported by a movable platform, hereinafter described, and in connection with a lever; the whole forming a part of the mechanism in connection with the upper part of the machine, as seen in Figs. I and II. Fig. VIII is an end view or plan of Fig. VII, further disclosing relative positions of the several parts. Fig. IX is a view of the top plate of the machine together with the mechanism necessary for actuating the sound box to and fro on and over the record tablet being played. Fig. X serves to show in detail some of the parts that are disclosed in Fig. IX.

In a more particular consideration of these drawings, it will be found that similar figures refer to similar parts throughout the same, and again referring to the drawings, in Fig. I, 1 represents the top plate, which is attached to girders, as a supporting means, shown at 2. This plate is perforated, as shown at 3—3, Fig. III, through which is introduced means serving as a magazine for the record supporting means to lie in, and through which they travel. This magazine is shown at 4—4—4—4, Fig. I, and is intimately connected with a pair of castings, one of which is shown at 5, which serves as a connection between the afore-mentioned magazines on the either side, and at the same time, offers a continuous path for the said record tablets, and supporting means for same, as will appear obvious at 6—6—6. These magazines are formed or built up of angular pieces of sheet metal, the shape of which is better disclosed at 7—7 in Fig. III, and are tied together by end and side pieces 8—8, Fig. I. The said castings 5 and the afore-mentioned magazines are supported by means of suspension rods, 9—9, attached to the said castings 5 and the afore-mentioned top plate or platform 1. As a part of the castings 5, it will be noted that I have attached thereto on either side a system of sprocket wheels, shown at 10—10. These sprocket wheels are adapted to carry a pair

of continuous or endless chains, one only of which is shown in Fig. I, and which is made up of a series of peculiarly formed links, as at 11. These links are each and severally
 5 supplied with a small roller, shown at 12—12. The chains as a whole are adapted to enter the castings at points 13—13 in Fig. II, and to proceed around the curvature of the said castings on the under side of the
 10 record or tablet supports respectively. The chains are adapted, after entering the said openings at 13—13, to roll down around on the flanged projection on said castings, shown at 14—14 in Fig. II, using as a means
 15 intermediate between the links of the said chains and the said flanges, the afore-mentioned rollers 12; which it will appear obvious, reduces friction at the traveling point of contact with the castings to a minimum.
 20 It will be noted that the portions of the said links at either end, shown at 15—15, Fig. I, are so proportioned that when they are in position in the chain within the castings, they as a whole, for that portion of the chain
 25 only, will conform truly to the curvature of the afore-mentioned flanges 14—14. It will appear obvious by this much of my disclosure and description, and especially to those who are skilled in this art, that inasmuch as
 30 the said magazines are in the vertical, and inasmuch as the record tablet supporting means are slidable therein, being closely confined, together with the fact that from the point where they diverge from the vertical
 35 to the curve necessary for their passage to the other vertical plane, they are supported on an anti-friction traveling curved support, that this method for conveying record tablets and their necessary supports, is accomplished with the least possible friction and
 40 retardance.

We will next view the necessary mechanism in connection herewith, which is best shown in Fig. I, and in which 16 is one side
 45 of a supporting frame and in turn supported by the said platform 1. This frame supports the motor, 17, connected by a train of gears, 18, 19, and 20, to the first spindle, 21. This spindle also rotates gearing pinion, 22,
 50 geared to wheel, 23, rotating spindle, 24. Spindle 24 has two mechanisms thereon which are not disclosed, but of which a duplicate is shown at 25. These mechanisms serve to impart motion by mitered gears
 55 from the spindle 24 to the spindle, 26, also spindle, 27. The spindle 27 is connected to the spindle, 28, by means of a pair of the afore-mentioned mitered gears, as disclosed in contact with each other at 29. Said spindle
 60 28 serves to rotate the wormed gear wheel, 30, by means of a worm cut on the extreme upper end, at 31, of the said spindle 28. This worm gear wheel is supported on a shaft, shown at 32, Fig. II, said shaft serving
 65 in addition, as a supporting means for a

sleeve, 33, which serves as means to support the reproducer or sound box, hereinafter more fully described.

Referring back to the spindle 26 in Fig. I, it serves to actuate one of two vertical
 70 spindles by means of gearing, shown at 34, imparting motion back and forward through quill-gearing, 35—35, which are supported on the two abovementioned vertical spindles
 75 and which serve to impart a rotative motion to the drum cam 36. The reduction of motion through this train of quill gears, being such, that the cam 36, makes but one whole
 80 revolution during the time required for the complete playing of one record. This drum cam is again disclosed in larger detail in Fig. VI, being viewed from the opposite
 85 side, as that seen in Fig. I. It will be noted, as seen in Fig. VI, that this cam has a protuberance, shown at 37, which serves to engage a roller member, 38, in connection with
 90 an elevator rod, 39, passing through (as a guide way) the motor platform, 40. The said roller 38 and the protuberance 37 are entirely hidden in the assembly drawing, Fig. I, but the rod 39 and the platform 40 with
 95 their relative positions to each other are clearly shown. The use and function of this elevator rod 39 will be hereinafter more fully explained.

A lever, 41, Fig. I, it will be noticed, passes on the farthest side of the cam 36, and at a point central with the cam 36, better defined as at 42. The afore-mentioned
 100 lever is designed, to be connected to the said cam, by means of a roller bearing extending sidewise from the said lever and into the milled slot on said cam, shown at 43.

Taking up the relative rotary motions of this mechanism as far as disclosed, we will
 105 consider the motor as in action, consequently all of the gearing in motion rotating the several parts in the following relative ratio to each other; considering that the standard
 110 speed for a record tablet as now made is one hundred and sixty revolutions to the minute, and to properly give a reproduction of its subject, the ratio of the different speeds of the several different parts are so arranged
 115 as to produce three hundred and fifty revolutions of the record support, during one complete revolution of the mechanism as a whole, and this will be found to be sufficient to play the longest record.

Again considering the record tablet supporting means 44 as necessarily making three
 120 hundred and fifty revolutions to reproduce its subject, and in connection therewith, said cam 36, I have arranged the intermediate gearing in such a manner as to produce a
 125 ratio of movements between the said record support, then in action, and the said cam; in the proportion of three hundred and fifty revolutions for the former, to one revolution
 130 of the latter. In connection with said cam

36 and lever 41, the said lever is divided at a point, 45, and the two resultant ends are brought around the magazine, one of which is shown at 46, Fig. I, and both of which may be seen at 47—47, Fig. II. These lever ends are connected to links, 48, which are in turn connected to slidable members, 49, and one of which is shown in Fig. I, but which are not entirely seen in Fig. II, with the exception of those portions which are above the platform 1, as shown in Fig. II. This last named pair of members 49 will be again alluded to in connection with the entire action of the machine as a whole.

Lever 41, Fig. I, is weighted by a cylindrical weight, shown at 50. Considering the gearing in connection with the afore-mentioned spindle 24 and the gear wheel 23; a gear, 51, supported on spindle, 52, serves to impart motion through said spindle 52 to a pinion, shown at dotted line position, 53, in contact with a gear wheel, 54, as disclosed in Fig. VII. This gear wheel is supported on and rotates the spindle, 55, shown in Figs. I, VII, and VIII. This spindle 55 supports the wheels, 56—56, by means of the platform combination of parts 57 and 58, also spindle, 59.

The screw shown in Fig. VIII, at 60, serves as a connecting point for the afore-mentioned elevator rod 39, and the screw, 61, serves as a connecting point for one of a pair of elevator rods, one of which is shown at 62, Fig. I, and both of which are shown at 62, Fig. IX. The function of these elevator rods together with their connecting piece at the topmost extremity, shown at 63, Figs. IX and X, will be taken up hereinafter.

Considering the shaft 32, as disclosed in Figs. IX and X, as hereinbefore stated, it is rotated by the permanently attached worm gear 30, and in connection therewith I have supplied a slidable moving, rotating drum, 64, which is free on the shaft 32. This drum, when forcibly engaged frictionally, with the worm wheel 30 it is rotated with same and when it is released from said frictional engagement, it is free to be revolved and unwound by the string which was wound upon it, the string being actuated by the gravity of the weight 79, in Fig. IX. This drum has a flanged piece, 65, and a larger flanged piece, 66, at the end adjacent to the worm gear, which is adapted to fit snugly with some friction to the side of said gear, and when so engaged, it will rotate with said gear 30; a sleeve 33, hereinafter again mentioned, is mounted on said shaft 32, and is free to slide thereon. Said shaft 32 is drilled in from its outermost end, 67, and into this drilled hole, a slot 68, is punctured, passing clear through the entire diameter of said shaft. Within the aforementioned hole in said shaft I adapt a pin, 69, which extends

to the position and beyond same, indicated at 70. Said indication 70 also serves to show a cross pin, which is attached to the afore-mentioned pin 69, passing clear through said pin and extending outwardly on either side through the said slot 68 sufficiently far enough to allow said pin 70 to engage the end of the said drum 64, and impinging on the end flanged piece 65.

The member, 71, serves to intimately engage and connect the afore-mentioned pin 69 with the member of the platform combination, shown at 58, Figs. VII and VIII, and by means of a roller anti-friction member, 72, Figs. VII and VIII. The drum 64 when actuated, serves to wind upon itself a cord, shown at 73, and which is easily traceable through its entire length in Fig. IX, passing over pulley wheels, 74, 75, 76, 77, and 78, extending from last named point downward, and an even tension being kept thereon at all times by a weight, 79. This cord is attached to the afore-mentioned sleeve 33 at a point, 80, and when wound upon said drum 64, and at the proper speed, it serves to draw said sleeve 33, carrying the reproducer or sound-box, along said shaft 32, as hereinafter described in detail.

As a connecting means between the afore-mentioned magazines 4—4, I show an inclined plane or run-way disclosed at 81, Fig. I, and again shown at 81—81—81—81, in Fig. III. The tongued portions of 81—81, in Fig. III, shown at 82—82, serve to carry out the idea of the plane of said run-way even to a point directly above the common center of the spindle 59, (as seen in Fig. VIII, supporting a pair of wheels 56), and at the same time, allowing sufficient room between the said tongue and the outermost edges of the said inclined plane for the afore-mentioned wheels to rise through, in conformity with the motion of the portion of the wheel platform combination, shown at 58, Figs. VII and VIII.

The holes in the plate, Fig. III, designated as *a—a—a—a*, are adapted as screw positions for holding the standards, 83—83, shown more clearly in Fig. IX. The hole, *b*, serves for the cord 73 to pass through. The holes, *c—c*, are adapted to the members 62—62, while the slot, *d*, allows for the free working of the member 71, shown in Figs. VII, VIII, IX and X. The hole, *e*, is positioned for the accommodation of the vertical shaft 28.

Considering Fig. IV, in which I show a novel means as a support for a record tablet, describing same in detail, 84 shows a member with an extended flanged end, 85, and which is hollow from end to end, as shown by shading interiorly. This member 84 is disclosed in section showing the position of a record tablet in black. Interstices or slots, shown at 86—86, are milled

or cut on the exterior of the said member 84, said slots being two in number, and extending from the exterior to the interior of said member as shown. At the right hand end of said member 84 I show sectionally a ring, 87, which is adapted to fit on a nicked down portion of said member 84, as disclosed at 88. This ring 87 together with the flared end 85 are both of the same diameter, and slightly larger than the common diameter of a phonographic record tablet. The limited distance between the innermost side of said ring 87 and the flared end 85, as occupied by the said record tablet, is of such a dimension as to allow a very slight lengthwise play of the said record, not for the purpose of allowing the record lee way, but rather to be sure that the afore-mentioned ring 87 will rest uniformly on the member 84 at the position indicated at 88, without binding on the said record. In order to obtain this result, I turn the member 84 down to a diameter small enough to allow the record tablet to freely slip thereon, and for the purpose of securing the rotation of same I depend upon a pair of springs within the slots 86—86, one of said springs only being shown at 89. These springs are held in place as will appear obvious by reason of the spring ends proper being engaged with the innermost side of the member 84 at their two extremities, and being held in that position by spring end members, 90—90, which serve to engage the outermost surface at the two extremes of the milled slot. These springs engage with a firm slight pressure on the innermost side of the wax cylinder record tablet. In further describing the end ring 87, it is held in place on member 84 by means of a spring press clip, 91, engaging with a slot cut for that purpose in member 84. The spring and clip appear obvious in Fig. V.

Before going farther I wish to call attention to the fact that when these record tablet supporting members 84 are in contact with each other at points 85 and 87, that it is physically impossible for one record tablet to touch or interfere with the next adjacent tablet.

Taking up the description of the entire action of this machine, we will assume that the magazine 4 has been filled with record supporting parts 44 in the manner as disclosed in Fig. I, together with the record supporting means with its record as in position at 44 with the reproducer stylus in contact therewith as shown. Upon the motor being started with all of the parts in position as shown, the first action that will take place will be the elevating of the rod 39, which engages the platform member 58, serving to elevate the wheels 56 on the spindle 59 at once elevating the sound box together with the sleeve 33 and the record 44, but in such

a manner due to leverage proportion, as will appear obvious, so that the sound box is removed from off the record, and is continued to be pushed upward by means of the members 62 and the member 63, as shown in Figs. IX and X, the said last action being greater than the upward action of said record supporting means. Immediately upon the record support having been elevated to nearly the extreme of the motion of said members 58, 56, and 59, the said record support 44 has been presented to, and over the top of the wheels 56, and immediately engage the run-way 81 and roll down, falling into a position within the magazine, and thereby resting directly in contact with the last preceding record supporting means. Immediately thereafter, the whole mechanism still being in motion, the cam 36 having advanced slightly, yet sufficiently to bring the vertical part of the milled slot 43, as seen in Fig. VI, in alinement with the afore-mentioned roller bearing on the afore-mentioned lever 41, thereby releasing said lever, which is immediately drawn down, said drawing down being effected by the afore-mentioned weight 50, Fig. I, and thus by means of the divided ends of said lever at 46, links 48 and sliding members 49, causing engagement of the hooked ends of members 49, and shown as 49', with the member 44 just rolled in. The action of this weighted lever and connected parts above mentioned, serves to bring the member 44 down to the position shown at 44*. In thus doing, the whole series of record supports are forcibly displaced, raising the other side of said series proportionately, which said action rolls another member 44 out upon the inclined plane or run-way 81, whereupon it rolls down by gravity to a point where it rolls into the opening between the wheels 56 and the weight thus applied to that combination of wheels connected to the movable member 58 causes the elevator 39 and the members 62, with their relative member 63, to move downward. This motion serves to lower the stylus of the reproducer onto the record the sleeve 33 having been removed to the proper position normally assumed by the said member as a starting position for reproduction of sound. This position was attained during the time that the last named member 44 consumed after it left its revolving position, and prior to its rolling into the magazine. Said motion, to the normal starting position, was produced by the weight 79, as disclosed in Fig. IX, and as hereinbefore described.

The unreeling of the cord 73 was made possible by the fact that the member 58, shown in Fig. VII, was at that time in an elevated position, consequently, the roller member 72 had ceased to exert pressure through contact with the member 71, and

therefore the member 71 had ceased its contact pressure with members, 69, 70, 65, 64, and 66, the action of which would be to allow the said reel 64 to rotate freely on the shaft 32, as shown in Figs. IX and X. Immediately upon the record supporting means having rolled into position with said wheels 56—56, and depressing a portion of that combination, as shown, the member 58 has again caused the portion 72 to engage member 71, producing an opposite effect through member 71, the parts 69, 70, 65, 64, and 66, as last described, thereby causing the member 66 to engage frictionally with the revolving worm gear 30, and at once proceeding to wind up the cord 73, which in connection with member 33 bearing the sound box, proceeds to traverse the revolving record and thus synchronously follow the threaded track on the record being played. The speed of the said worm 30 and shaft 32, Figs. IX and X, is so modulated as to produce this result. The second action of the machine, and so on, are simply repetitions of this action as described, and the members 12—12, 10—10, as shown in Fig. I, constituting the operative members in connection with the castings 5, serve to supply an ever changing, supporting pathway, traveling at all times true as to the common radius, of the path of the afore-mentioned record supporting means, from one vertical plane to the other.

While the form of reproducing machine is a phonograph, as herein shown and described, still it must be obvious that any form of reproducing, or producing mechanism may be used in connection with the several stated features of this mechanism without departing from the spirit or embodiment of this invention in the least.

This machine is not essentially a coin-operated machine, but it may be adapted to be operated by the usual coin slot and switching device for starting and stopping the motor. I wish particularly at this point to call attention to some of the more important features connected in the operation of this, my invention, which will differentiate the same from the prior art as known to me, and which are as follows, to wit:

(1) A series of records are carried entirely through a cycle of motion, each one in contact with its predecessor, and the one superseding it, except at a time in which each individual serial record supporting means must leave that contact, rolling down an inclined plane to a playing position, being played and thence rolling down the said inclined plane into contact with its predecessor.

(2) The records of the series are uniformly spaced apart in the magazine, and fill every position in the complete circuit through which the series moves, and in con-

tact one with the other without any record arbor supporting means, such as an individual or serial supporting means, as is disclosed in the prior art.

(3) The record supporting means are successively displaced from the series and magazine and of their own gravity, roll into a playing position, are played, and are then rolled of their own gravity into another position in the said magazine and series, than from which they were displaced.

(4) The record supporting means in this, my invention, are hollow and are without a central support such as a spindle or a shaft, and are not rotated about their common centers, but are rolled to attain rotary motion, thus differentiating this portion of my invention from all other prior art.

(5) Cylinder records together with their supporting means are bodily displaced from the magazine, and roll from the displaced position into playing position, and are then replaced in a different position in said magazines, without displacing them in their relative positions, in the said series with relation to each other, taking into consideration their individual titles, and the manner of entertainment relative to each individual record.

Having thus described my invention clearly and in conformity with the disclosures or drawings, so that those who are skilled in the art to which this appertains, may make and use same, what I claim and wish to protect by Letters Patent is—

1. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to advance the latter along a portion of a path of movement; said records rolling by gravity to complete their path of movement.

2. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means forming a path along which the latter may travel, said records rolling by gravity along a portion of said path; and mechanical means adapted to advance said records along the remainder of said path, the means forming said path of movement being so arranged relatively to said machine that said records are successively brought into playing position along that portion of their path where they roll by gravity.

3. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to advance the latter along a portion of a path of movement, said records rolling by gravity to complete said movement, whereby said records are successively brought into playing position upon said machine.

4. In mechanism of the character de-

scribed, in combination, a sound reproducing machine; a series of records; mechanical means to advance the latter along a portion of a complete circuit, said records rolling by gravity to complete said circuit, and being successively brought during said gravity-effected advance into playing position upon said machine.

5. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to advance the latter along a portion of a path of movement intermittently, said records rolling by gravity to complete said movement, whereby said records are successively brought into playing position upon said machine.

6. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and mechanical means adapted to advance the latter along a portion of a path of movement, said records rolling by gravity to complete said path of movement, said mechanical means acting upon all of said records at a certain time, and gravity being the only positive force acting upon each individual record in completing its path of movement.

7. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means forming a path of movement along which the latter may travel, said records rolling by gravity along a portion of said path; and means adapted to advance said records along the remainder of said path, said advancing means acting upon all of said records for a portion of the path of movement and gravity being the only positive force acting upon each individual record in completing the path of movement, the means forming the said path of movement being so arranged relatively to said machine that said records are successively brought into playing position thereon.

8. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to bring the reproducer of said machine into playing position; and means adapted to advance said records along a portion of a path of movement, said records rolling by gravity to complete said path of movement.

9. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to bring the reproducing of said machine into playing position; and mechanical means acting to intermittently advance said records along a portion of a path of movement, said records rolling by gravity to complete said path of movement.

10. In mechanism of the character described, in combination, a sound reproducing

machine; a series of records; means adapted to advance the latter along a portion of a path of movement, said records moving by gravity to complete said movement, said force of gravity becoming positively effective subsequent to the commencement of, and consequent upon, the action of said means, said gravity-effected movement resulting in the removal from said series, and the replacement therein, of the records affected thereby, whereby said records are successively brought into relative playing position upon said machine.

11. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to intermittently advance the latter along a portion of a path of movement, said records moving by gravity to complete said movement, said force of gravity becoming positively effective subsequent to the commencement of, and consequent upon, the action of said means, each gravity-effected movement resulting in the removal from said series, and the replacement therein, of a record affected thereby, whereby said records are successively brought into playing position upon said machine.

12. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to advance the latter along a portion of a path of movement, said records moving by gravity to complete said movement, individual records being subjected to a plurality of gravity-effected movements while traversing their complete path of movement, whereby said records are successively brought into playing position upon said machine.

13. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to bring the reproducer of said machine into playing position, and mechanical means adapted to intermittently advance said records along a portion of a path of movement, the completion of said movement being effected by the rolling of said records, said completion being consequent upon, and subsequent to, the movement effected by said advancing means, whereby said records are successively brought into playing position upon said machine.

14. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to bring the reproducer of said machine into playing position; means adapted to advance said records along a portion of a path of movement; the completion of said movement being effected by the rolling of said records, said completion being consequent upon, and subsequent to, the movement effected by said

advancing means, whereby said machine and said records are successively brought into relative playing position.

15. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to bring the reproducer of said machine into playing position; and mechanical means adapted to intermittently advance said records along a portion of a path of movement, the completion of said movement being effected by the rolling of said records individually, said completion of the movement being consequent upon and subsequent to the movement effected by said advancing means whereby said records are successively brought into playing position upon said machine.

16. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means so arranged and actuated as to cause a record by rolling to assume its playing position upon said machine and to be displaced therefrom.

17. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means so arranged and actuated as to cause one of said records by rolling to assume its playing position upon said machine and to be displaced therefrom; and means adapted to rotate the record while in its playing position.

18. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means so arranged and actuated as to cause a record by rolling to assume its playing position upon said machine and to be displaced therefrom; and means adapted to engage said record by rolling contact while the same is in its playing position.

19. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to advance said series as a whole, wherein a record forms a part of said advancing means, said means so arranged and actuated as to cause said records by rolling to assume successively their playing positions upon said machine.

20. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to advance, intermittently, said series as a whole; said means so arranged and actuated as to cause said records by rolling successively to assume their playing positions upon said machine, said rolling motion becoming effective immediately preceding, and immediately subsequent to, the commencement of each of said intermittent advances.

21. In mechanism of the character de-

scribed, in combination, a sound reproducing machine; a plurality of shafts with rollers, said rollers adapted as the only supporting means to retain a record in a playing position upon said machine; means for rotating said shafts; a series of records; means adapted to advance intermittently said series as a whole, each of said advances effecting the movement of a record to its playing position; said records engaging said rollers while the records are in their playing positions so as to be rotated by rolling contact therewith.

22. In mechanism of the character described, in combination, a sound producing machine; a pair of rotary shafts and a frame work therefor, to support the same; roller wheels mounted upon said shafts and adapted as a rolling, supporting means to rotate a record while in its playing position upon said machine; means for rotating said shafts; a series of records; means adapted to advance intermittently said series as a whole, each of said advances effecting the movement of a record to its playing position, where it is rotated; and means adapted to permit said records to move from the rotating position.

23. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means adapted to advance said series as a whole, each of said advances effecting the rolling movement of a record to a playing position relative to said machine; and means adapted to rotate said records while in their respective playing positions; said records also rolling by gravity again into said series.

24. In mechanism of the character described, in combination, a sound reproducing machine; a pair of rotary shafts; roller wheels mounted thereon and adapted as a rolling, supporting means for a record; means for rotating said shafts; a series of records comprising a plurality of communicating columns; means adapted to advance said series as a whole, each of said advances effecting the movement of a record from one of said columns to a position upon said rolling, supporting means which is a playing position relative to said machine; and means permitting the removal of a record from playing position whereby it is permitted to roll back into said series in a column other than that from which it had been advanced to its playing position.

25. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; a magazine for the latter; individual supporting means for said records; and means adapted to cause said records and their individual supporting means successively to roll from said series, assume their playing positions, re-

spectively, relatively to said machine, and to return to said series.

26. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; a magazine for the latter; individual supporting means for said records; and means adapted to cause said records and their individual supporting means successively to move by gravity from said series, assume their playing positions, respectively, relatively to said machine, and return to said series.

27. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; a magazine for the latter; individual supporting means for said records; and means for intermittently advancing said series as a whole, each of said advances effecting the rolling movement of a record and its supporting means to its playing position relatively to said machine.

28. In mechanism of the character described, in combination, a sound reproducing machine and a record; means adapted to support the latter in its playing position; and means adapted to move said supporting means with said record, such movement permitting said record to roll from its playing position.

29. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; means for intermittently advancing the said series as a whole by pressure upon the last record of the series, the records successively rolling into playing position, and means adapted to bring the reproducer of said machine into playing position as each record assumes playing position.

30. In mechanism of the character described, in combination, a sound reproducing machine; a series of records comprising two parallel columns and an intermediate connecting column; a magazine for said series; means for moving said series as a whole, said magazine providing the sole guide-way for said parallel columns during such movement; a separate guide-way for said inter-

mediate column; and other means adapted to bring the reproducer of said machine into playing position, the records rolling by gravity from one of said columns into playing position and from playing position into the other column.

31. In mechanism of the character described, the combination with a sound reproducing machine and a record; of a hollow, tubular record supporting means; means adapted to support the latter in its playing position and to rotate the same, said rotation of the latter producing a playing rotation of the record by rolling contact therewith at both extremities and without further support.

32. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to cause said records, by gravity, to successively leave said series and roll to and assume their playing positions relatively to said machine, and return to said series.

33. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to cause said records, by gravity, to successively roll from said series, assume their playing positions relatively to said machine, and return to the same position in the series, relative to the other records of the series.

34. In mechanism of the character described, in combination, a sound reproducing machine; a series of records; and means adapted to cause said records, by gravity, to successively roll from said series, assume their playing positions relatively to said machine, and return to a different position in the series, but relatively the same with reference to the other records of the series.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES IRWIN GEMMILL.

Witnesses:

LETA M. GEMMILL,
W. A. TIMS.