April 25, 1933. J. KRIZ 1,906,161

POWER OPERATED TALKING MACHINE

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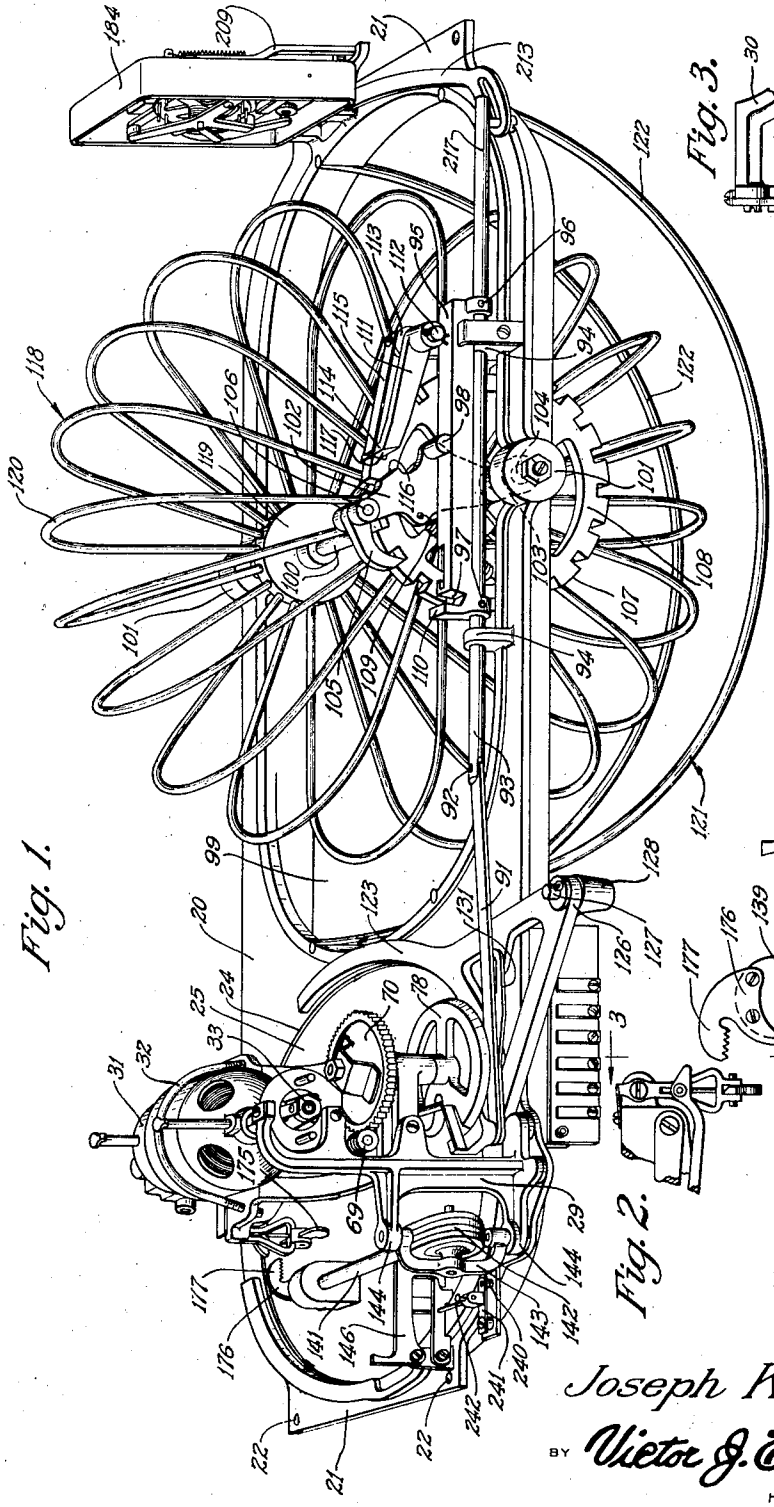


Fig. 1.

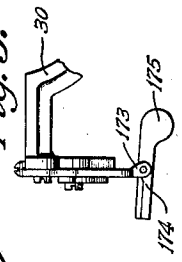


Fig. 3.

Fig. 2.

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Fig. 4.

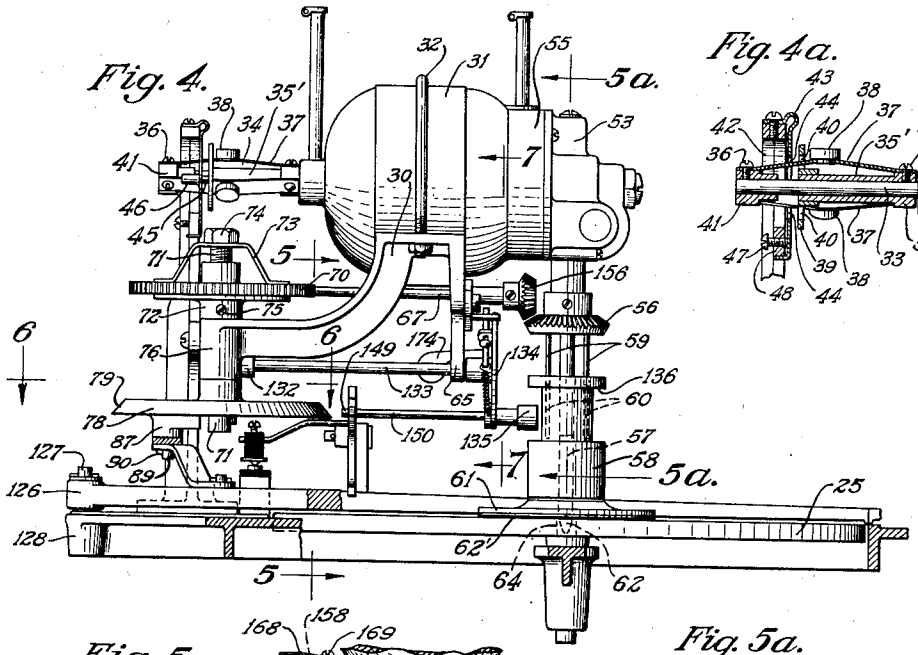


Fig. 4a.

Fig. 5.

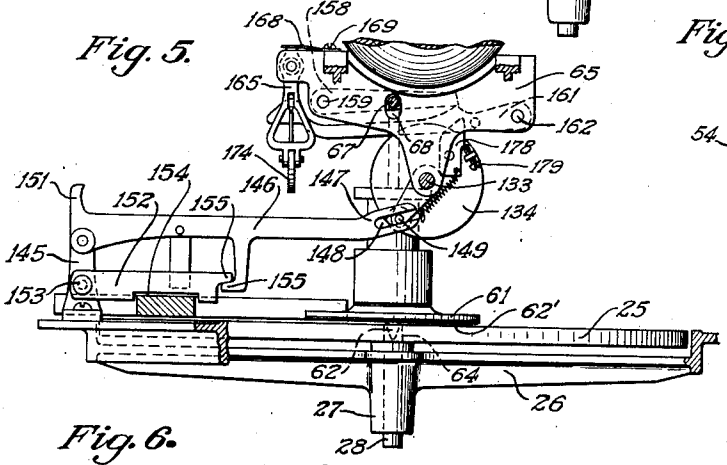


Fig. 5a.

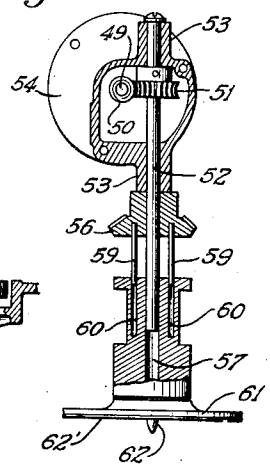
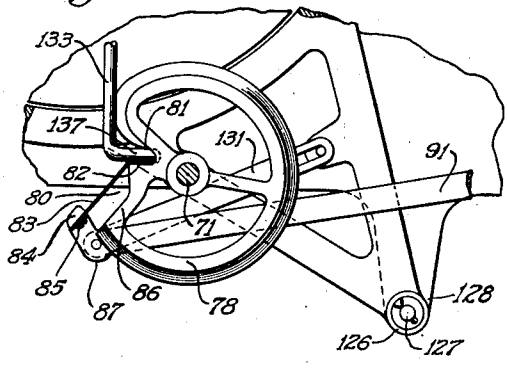


Fig. 6.



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POWER OPERATED TALKING MACHINE

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Fig. 7.

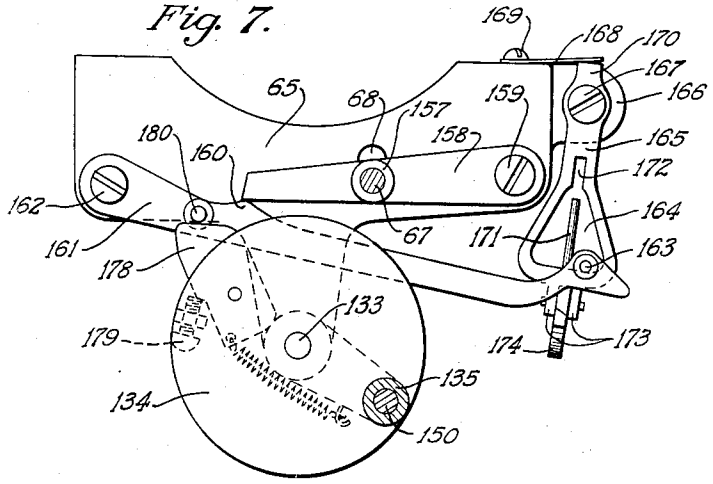


Fig. 8.

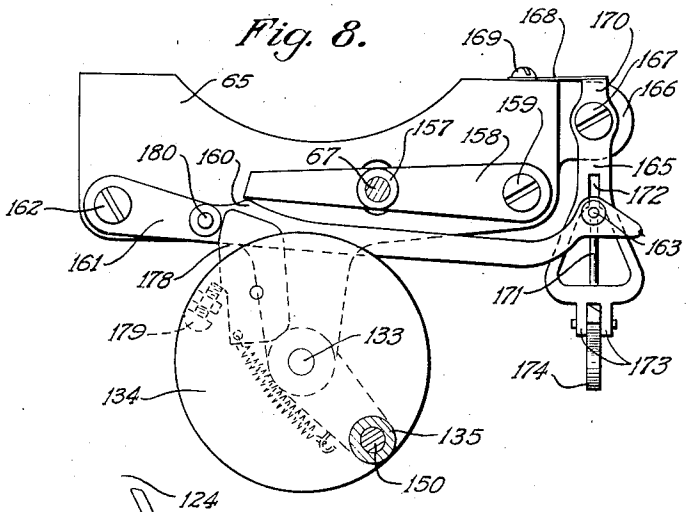
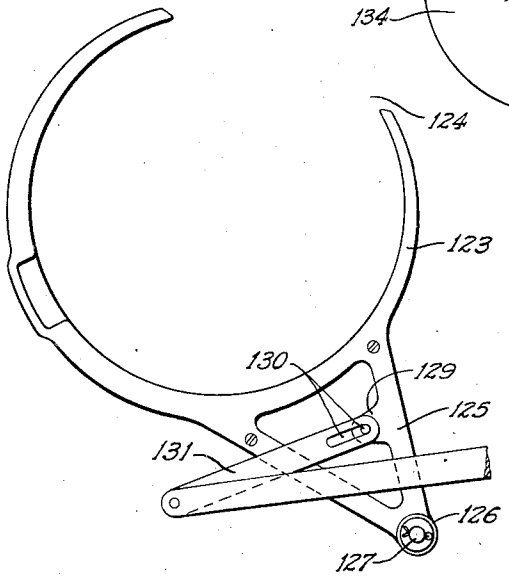


Fig. 9.



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POWER OPERATED TALKING MACHINE

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Fig. 10.

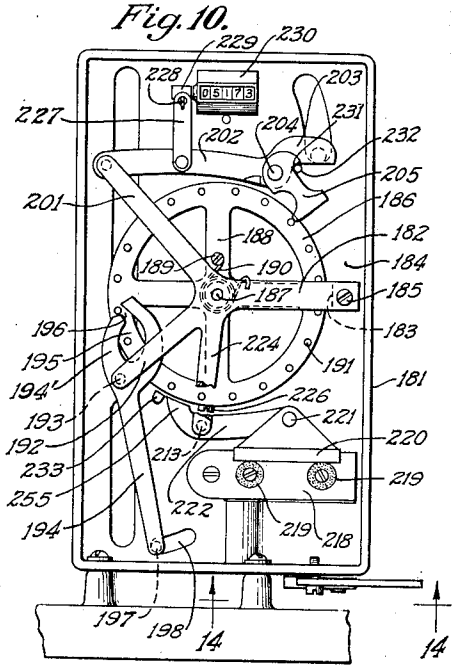


Fig. 11.

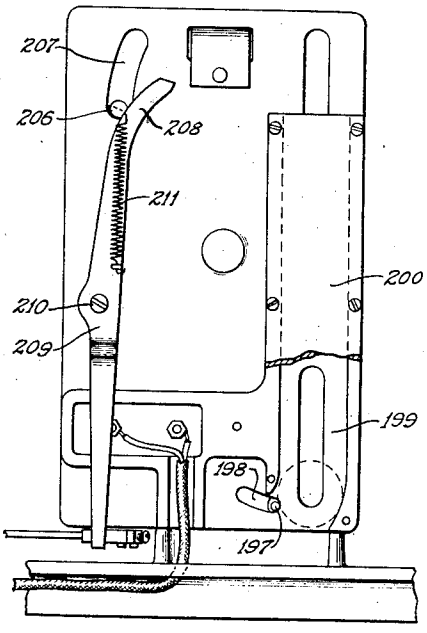


Fig. 12.

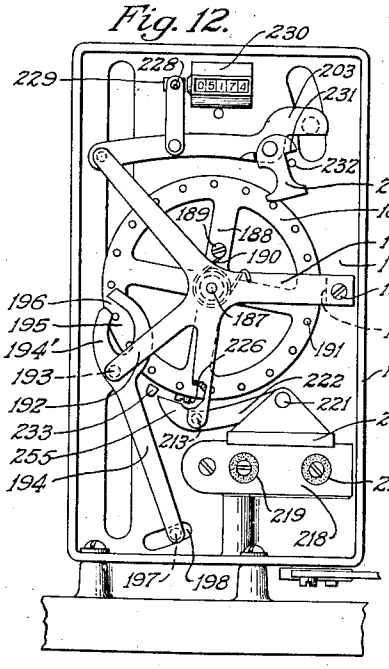


Fig. 13.

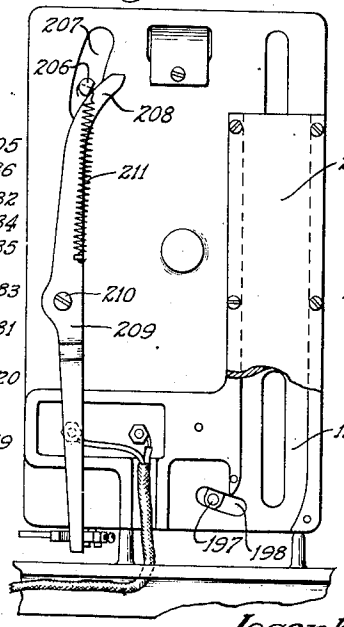
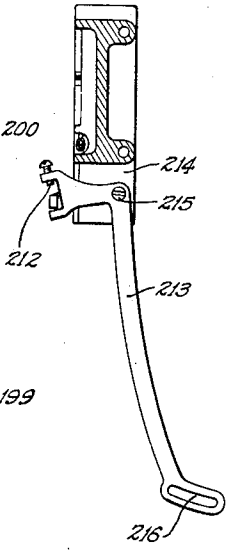


Fig. 14.



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POWER OPERATED TALKING MACHINE

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Fig. 15

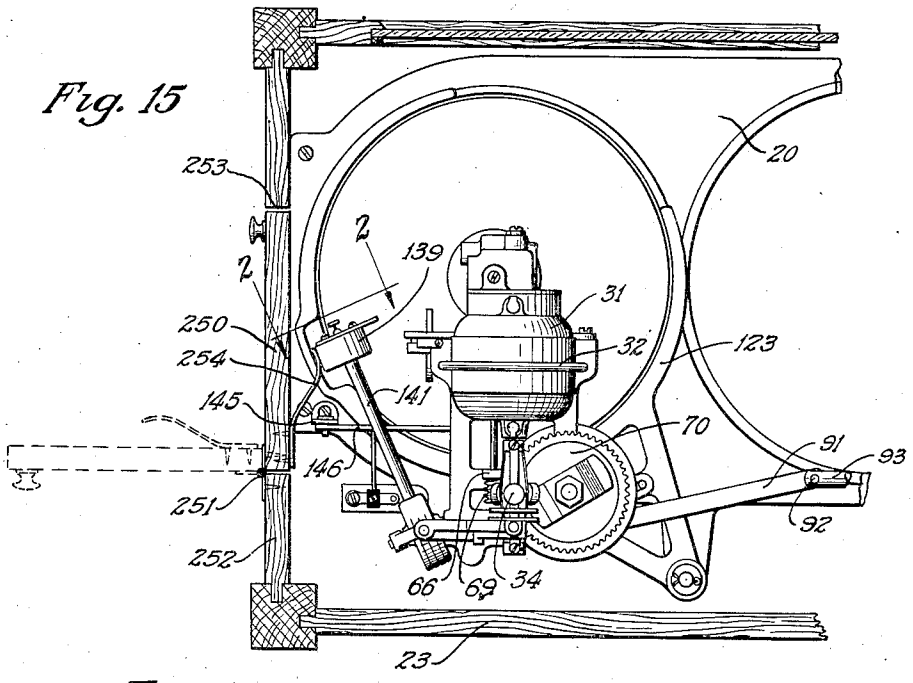
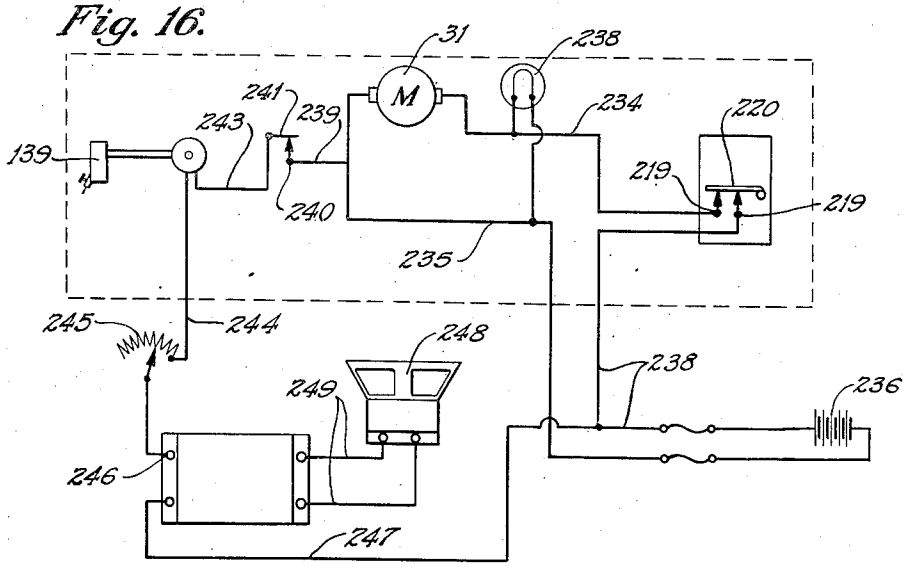


Fig. 16.



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Patented Apr. 25, 1933 1,906,161

UNITED STATES PATENT OFFICE

JOSEPH KRIZ, OF CHICAGO, ILLINOIS

POWER OPERATED TALKING MACHINE

Application filed May 3, 1930. Serial No. 449,536.

This invention relates to certain novel improvements in power operated talking machines, and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

Among the several objects of this invention is to provide a talking machine which may be power driven, and which is of such a structure as to automatically remove records from and to a record supporting turn table.

A still further object of this invention is to provide a talking machine embodying a structure whereby a reproducer is automatically conveyed to and from reproducing contact with a record automatically delivered to and conveyed from a record supporting table.

A still further object of the invention is the provision of a talking machine embodying a coin mechanism for controlling the operation thereof.

A still further object of the invention is to provide a talking machine which includes a structure to afford convenient access to a reproducer for removing the reproducing needle therefrom without disconnecting or exposing the mechanism of the device other than the reproducer.

A still further object of the invention is the provision of a talking machine including a combination and arrangement of parts for centering and removably retaining a record upon a record supporting table.

A still further object of the invention is to provide a talking machine which includes a novel arrangement and combination of parts for centering and locating a record automatically delivered to and removed from a record supporting table.

A still further object of the invention is to provide a talking machine having a novel combination and arrangement of parts for bringing a reproducer into contact with a record centered and retained upon a record supporting table and other mechanism for moving the reproducer from engagement with the record upon complete operation of the reproducer upon the record.

A still further object of the invention is to provide a talking machine which includes a mechanism for delivering a record to a record supporting table, mechanism for centering and retaining the record upon the table, and mechanism for moving a reproducer into engagement with said record, all of which mechanism being operable by a single driving mechanism.

A still further object of the invention is to provide a talking machine having a novel arrangement for supporting a plurality of records intermittently moved to a position to be successively removed from the record holding mechanism to a record supporting turn table and return from the table to the holding mechanism after a reproducer has completed engagement with the record.

A still further object of the invention is to provide a record holding mechanism adapted to support a plurality of reproducing records in radial position with respect to each other, whereby the record holding mechanism is intermittently rotated to permit automatic removal of said records therefrom in successive order.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a perspective view of the invention;

Fig. 2 is a sectional detail view of the invention taken substantially on line 2—2 of Fig. 15;

Fig. 3 is a fragmentary sectional detail view of the invention taken substantially on line 2—2 of Fig. 1;

Fig. 4 is an end elevational view of the invention taken from the left hand side of the invention as shown in Fig. 1;

Fig. 4a is a fragmentary sectional detail view of the invention illustrating a sectional detail view of a governor mechanism embodied in the invention;

Fig. 5 is a fragmentary sectional detail

view of the invention taken substantially on line 5—5 of Fig. 4;

Fig. 5*a* is a fragmentary sectional detail view of the invention taken substantially on line 5*a*—5*a* of Fig. 4;

Fig. 6 is a fragmentary plan view of the invention taken substantially on line 6—6 of Fig. 4;

Fig. 7 is a fragmentary sectional detail view of the invention taken substantially on line 7—7 of Fig. 4;

Fig. 8 is a fragmentary sectional detail view of the invention similar to the detail view illustrated in Fig. 7 showing the parts thereof in a different position;

Fig. 9 is a fragmentary plan view of the record removing arm embodied in the invention;

Fig. 10 is an interior elevational view of the coin mechanism embodied in the invention;

Fig. 11 is an outer elevational view of the coin mechanism illustrated in Fig. 10;

Fig. 12 is an elevational view of the coin mechanism illustrated in Fig. 10 showing the parts thereof in a different position;

Fig. 13 is an elevational view of the coin mechanism embodied in the invention, as shown in Fig. 11, showing the parts thereof in a different position;

Fig. 14 is a fragmentary plan view of certain parts of the coin mechanism taken substantially on line 14—14 of Fig. 10;

Fig. 15 is a fragmentary plan view of the invention showing the same mounted in a cabinet; and

Fig. 16 is a diagrammatical view of a circuit arrangement embodied in the invention.

Referring more particularly to the drawings, the preferred form of construction of the invention includes a base plate 20, Fig. 1, formed of any suitable material and provided with end flanges 21 perforated as at 22 for the projection of suitable connecting elements whereby the base plate may be conveniently mounted within a suitable cabinet 23. At one end portion of the base plate 20 there is provided a circular opening 24 in which is adapted to be rotatably mounted a table 25. Extending transversely of the opening 24 and formed as an integral part of the base plate 20, there is provided a bar 26, Fig. 5, and centrally formed on this bar 26 is a sleeve 27 which is adapted to receive the stud shaft 28 of the table 25.

Adjacent this opening 24 and located at one of the longitudinal edges of the base plate 20 there is provided an upstanding bracket 29, Fig. 1. This bracket 29 has extending laterally therefrom in a direction above the openng 24 a supporting structure 30 on which there is mounted a motor 31 of any approved type. Connection between the supporting structure 30 and the motor 31 is effectuated through means of a U-shaped bolt 32, Fig. 4. The motor 31 is supported upon the supporting structure 30 so as to dispose the shaft thereof in substantially a horizontal plane, and on one end of the shaft 33 of the motor 31 there is mounted a suitable governor mechanism 34 which may be of any approved construction.

In the present instance this governor structure 34 includes a sleeve member 35′ mounted for slidable movement on the shaft 33, and mounted on this sleeve is a collar 35 which has connected thereto by means of connecting screws 36 end portions of flat spring members 37 carrying weight members 38. On this sleeve 35′, Fig. 4*a*, is mounted a disc 39 having slotted portions 40 through which the opposite ends of the springs 37 project. These opposite end portions of the springs 37 are connected to a collar 41 mounted for rotation on the shaft 33.

The bracket 29 includes a U-shaped arm 42 carrying a disc member 43 having a central opening 44 through which the end portion of the governor mechanism projects, and mounted on this disc member are friction elements 45 mounted in sockets 46, Fig. 4, carried by the disc member 43. The disc member 43 as shown in Fig. 4*a* is suspended from the U-shaped arm 42, and the disc member 43 is adjusted toward the disc 39 by means of an adjustment screw 47 carried by the lower limb 48 of the U-shaped arm.

The arrangement is such that the disc 43 by adjusting the screw 47 may be adjusted toward the disc 39, and thereby limit the expansive movement of the springs 37 by centrifugal action created by rotation of the shaft 33.

The opposite end portion 49 of the shaft 33, Fig. 5*a*, has formed thereon a worm gear 50 which operatively meshes with a gear 51 carried by a vertically disposed shaft 52. This shaft 52 is journaled in suitable bearings 53 provided by a cap 54 of the motor casing 55 of the motor 31. On the lower exterior end portion of this shaft there is mounted for rotation with the shaft a bevel gear 56. The shaft portion of the shaft 52 below the bevel gear 56 is adapted to project into an opening 57 of a sleeve 58, whereby the sleeve may have slidable movement upon this portion of the shaft 52. This sleeve is rotatable with the shaft 52, and this is accomplished by providing pin members 59 which project into openings 60 formed in the sleeve 58.

The sleeve 58 carries a horizontally disposed flange 61 which may have secured on its bottom side a suitable friction pad 62′. Centrally located with respect to this flange 61 is a pilot pin 62 which is adapted to project through the central opening formed in a reproducing record 63 mounted upon the table 25.

The arrangement is such that the sleeve is

adapted to slide longitudinally upon the shaft 52 by a mechanism to be hereinafter described. When the sleeve and disc 61, which comprise the record centering and holding means, are permitted to move downwardly relative to the shaft 52, the pilot pin 62 will engage the central opening of the record 63 as well as an opening 64 formed in the table 25 and thus properly locate the record upon the table and hold the record upon the table so that the record will rotate with the table.

The rotation of the record 63 and table 25 is brought about by the rotation of the sleeve 58, and to effectuately rotate the record and table, the friction pad 62′ is provided on the flange 61 whereby this flange when bearing upon the record will by reason of the pad cause the record and table to rotate therewith.

The supporting structure, Fig. 4, provides a depending apron 65 located beneath the motor 31. Opposite this apron the supporting structure provides a bearing 66, Fig. 15. This bearing 66 rotatably supports one end portion of a shaft 67, the opposite end portion of the shaft 67 extending through a vertical slot 68 formed in the apron 65, Fig. 7.

On the shaft 67 there is provided a worm gear 69 adapted to operatively mesh with a gear 70, Figs. 1 and 4. This gear 70 is mounted upon a vertically extending shaft 71. This shaft 71 includes a collar bearing disc 72 which supports the gear 70, and this gear is yieldably held against the disc 72 by means of a U-shaped spring 73 mounted upon the shaft 71 and retained thereon by means of a nut 74 threaded upon the upper end portion of the shaft 71. The collar of the disc 72 is keyed to the shaft by means of a set screw 75 whereby the collar bearing disc will rotate with the shaft when the shaft is rotated by rotation of the gear 70.

The shaft 71 is disposed in a vertical plane and is journaled in a suitable bearing 76 provided by an arm 77 formed as an integral part of the supporting structure.

The shaft 71 below the bearing 76 carries a wheel 78 which wheel 78 is provided with a tapered edge 79. Formed in the periphery of this wheel are two cam notches 80 and 81. The cam notch 81 is defined on one side by a shoulder 82, and extending tangentially from this shoulder is a leaf spring 83. The outer end portion of the leaf spring 83 is connected to a lug 84 by means of a screw 85. The leaf spring defines together with the adjacent portion 86 of the wheel a race-way leading to the interior of the cam slot 80. This lug 84 is formed as an integral part of a boss 87 likewise formed as an integral part of the wheel 78, Fig. 4. To this boss 87 there is pivotally connected by means of a pin 89 and a cotter key 90 one end portion of a link 91, Figs. 1 and 6. The opposite end portion of the link 91 is pivotally connected as at 92 to a slide shaft 93. The slide shaft 93 is supported for movement in a longitudinal direction by means of suitable bearing lugs 94, Fig. 1. Fixed to this slide shaft 93 is a slide bar 95 adapted for longitudinal slidable movement with the slide shaft 92. This slide bar 95 is capable of adjustment relative to the shaft 93, and this adjustment is accomplished by means of set screws 96.

Referring to Fig. 1, it will be seen that in one end of the slide bar 95 there is provided a depending notch 97 into which is adapted to drop at a predetermined time a pin 98, said pin being adapted under certain conditions to ride upon the top edge of the slide bar 95.

Formed in the base plate 20, Fig. 1, is an oval shaped opening 99, and extending transversely of this oval shaped opening is a shaft 100. The ends of this shaft 100 are journaled in suitable bearings 101 provided by the base plate.

The pin 98 hereinbefore referred to is carried by a plate 102 formed as an integral part of a sleeve 103 loosely mounted upon the end 104 of the shaft 100. The plate 102 carries a pawl 105 pivotally connected to the upper end of the plate as at 106. This pawl is adapted to successively engage the flat teeth 107 of a wheel 108 mounted upon the end 104 of the shaft 100 for rotation therewith. The plate is pivotally urged to retain the dog in engagement with one of the teeth of the wheel 108 by means of the spring member 109 having one end portion connected to the plate and the opposite end portion connected to the base 20.

The arrangement is such that upon rotation of the wheel 78 the shaft 93 will be moved in a longitudinal direction and consequently move the slide bar in the same direction. During this movement of the shaft and slide bar the pin 98 will ride upon the top edge of the slide bar 95. When the slide bar reaches a predetermined point in its movement in the longitudinal direction with the shaft, the pin 98 will be engaged by a lip 110 provided by the slide bar, and this lip will pivot the plate 102 against the action of the spring 109. During this pivotal movement the pawl will ride over the adjacent tooth 107 of the wheel 108, and the pin 98 will move into the notch 97. When this pin moves into the notch, the shaft 93 and slide bar 95 will be at a point to commence retroactive movement. Prior to this retroactive movement the pawl will drop to engage one of the teeth 107. As soon as this pawl engages one of the teeth 107, the slide bar will move in a retroactive movement and the plate 102 will be urged in an opposite pivotal movement by the spring 109, and consequently rotate the wheel 108 in step by step formation as the operation thus de-

scribed with reference to the slide shaft 93 is repeated.

To releasably hold the wheel 108 against rotation during the setting of the pawl 105 in position to rotate the wheel, there is provided an arm 111 pivotally supported by a shaft 112 carried by an arm 113 provided by the base 20. This arm includes a dog 114 which is adapted to engage the teeth 107, and this dog is urged into engagement by a spring member 115 supported and connected to the arm 113. On the plate 102 there is provided a shoulder 116 which is adapted, when the plate is pivoted in one direction, to engage a shoulder 117 provided by the arm 111 so as to cam the arm and dog in an upward direction to disengage the dog from the teeth when the pawl has been moved in its rearmost position and at a time when the plate is about to start a retroactive movement. After the plate 102 has moved in an opposite direction, the dog will drop between the successive adjacent teeth and hold the wheel 108 against further movement until the pawl 105 has been set to again rotate the wheel and consequently the shaft 100.

In the use of the invention it is intended that there be provided a plurality of reproducing records so that the records may be successively delivered to and removed from the record supporting table 25 by mechanism to be presently described. To provide for a plurality of records there is provided a record receiving rack 118. This rack includes oppositely disposed hub members 119 fixed to the shaft 100 for rotation therewith. Supported by these hub members radially about the shaft 100 is a plurality of spaced wire loops 120 between which the reproducing records are mounted.

In order to support the records for circumferential movement with the shaft 100, there is provided a supporting structure 121 which includes oppositely disposed substantially semi-circular shaped wire members 122 extended in an inverted position beneath the base plate 20, and extending longitudinally with respect to the oval opening 99. The record receiving rack 118 is intermittently rotated by action of the wheel 108, which wheel is rotated in step by step fashion in the manner hereinbefore described, and as the records are rotated with the rack beneath the horizontal plane of the plate, they will engage the supporting structure 122 and ride upon the wire members 122 comprising this supporting structure.

It is intended as indicated herein that the records be successively removed from and returned to their respective places within the rack, and this is accomplished by providing a record removing arm 123. The inner end portion of this arm, Fig. 9, is formed substantially circular with a portion thereof removed to provide an opening 124 into which the record rack adjacent the arm is received when the arm is moved to a position to remove a record from the rack.

The arm 123 provides a shank portion 125 which is pivotally connected as at 126 to a pin 127 provided by a lug 128 formed as an integral part of the base 20. To a lip 129 provided by the shank 125 there is pivotally connected, by means of a slot and pin connection 130, a link 131. The opposite end portion of this link 131 is pivotally connected to the wheel 78 by means of the pin 89 and cotter key 90.

The arrangement is such that the arm 123 will move in an arcuated path in a manner and for reasons hereinafter set forth.

When the wheel 78 is rotated, pivotal movement is imparted to the shank 125 through the action of the link 131. This movement of the shank will move the arm 123 through the arcuated plane described, and the arrangement is such that when the arm 123 is in its extreme left hand position, it will be disposed concentrically with the periphery of the table 25, as best shown in Fig, 1.

Assume that the arm has conveyed a record to the table 25 and is now about to convey the record from the table back to its respective place upon the rack. This is accomplished by continued movement of the wheel 78, which pivots the shank and arm in an opposite direction. As the arm moves it will engage the edge of the record, slide the record from its position upon the table, and when the arm reaches its extreme right hand movement, the record will be moved into its respective place upon the rack and be supported for rotation from position within the arm by the adjacent wire loop comprising the rack whereby when the rack is rotated by action of the pawl 105 and wheel 108, the next successive record will take the place of the record just removed within the arm whereupon movement of the arm in an opposite direction will slide the record from the adjacent wire loop supporting the same into a position concentric upon the table 25.

After a record has been conveyed from the rack to the table 25, the same will be held upon the table by action of the flange 61, which has at this point of operation been located upon the record for centering the same upon the table 25, and which lowering of the flange 61 is accomplished in this manner.

Rotatably supported by the apron 65 and a bearing 132 provided by the bracket 29 is a horizontally disposed shaft 133, Fig. 4. This shaft carries at its inner end portion a disc 134, and this disc carries a laterally extending finger 135 disposed adjacent the edge thereof. This finger is adapted to oscillate with the disc, and when moved in an upward direction, the finger 135 is adapted to engage an annular shoulder 136 pro-

vided by the sleeve 58, and upon engagement of finger with this shoulder, the sleeve 58 and flange 61 will be elevated relatively to the shaft 52. This oscillation of the disc 134 is accomplished in the following manner.

The shaft 133 at its outer end portion is angled downwardly to provide an arm 137. This arm is adapted to ride upon the tapered edge 79 of the wheel 78, and when this arm is thus riding upon this edge, the shaft will be oscillated to a position to dispose the finger 135 at its point of highest oscillation, and consequently support the sleeve 58 and flange 61 from engagement with the record. As the wheel 78 rides in a clockwise direction, the arm 137 will drop into the race-way 80 provided by the wheel 78 and spring 83, and consequently the shaft 133 will oscillate in an opposite direction and in turn oscillate the disc 134 in an opposite direction to lower the finger 135 to its lowest position, thus allowing the sleeve 58 and flange 61 to move downwardly relative to the shaft 52 in center position upon the record for releasably clamping the record to the table 25 so that said record and table will rotate upon rotation of the sleeve 58.

As soon as the record holding means just described, which means includes the sleeve 58 and flange 61, has moved into record holding position, the needle of the reproducer is brought into engagement with the record, and this is accomplished in the following manner.

The reproducer is indicated at 138, and this reproducer is of the electrical type which conveys the sound to an amplifying unit to be hereinafter described. This reproducer includes, Fig. 2, the usual reproducing needle 140 which may be connected to the reproducer 139 in any suitable manner.

The reproducer is supported by a hollow arm 141. The outer end portion of this arm is connected, Fig. 1, to a ball shaped member 142, and this ball shaped member 142 is disposed between the arms of a yoke 143. This yoke 143 is pivotally supported, Fig. 1, by means of horizontally extending arms 144 provided by the bracket structure 29.

Mounted upon the base 20, Fig. 15, is a lug 145, and pivotally connected to this lug 145 is a rod 146 which extends in a direction transversely of the record at one side thereof. The inner end portion of this rod 146 is provided with a head 147, Fig. 5, which is bifurcated to provide a slot 148 which receives an end portion 149 of an arm 150. This arm 150 is carried by the disc 134 in substantial alignment with the finger 135.

When the disc has been oscillated to its highest point of oscillation, the arm 150 will be disposed at such point, and inasmuch as this point is in a plane above the point of pivotal connection between the rod 146 and the lug 145, the rod will be disposed at an inclination at its inner end portion. As the arm 141 is supported by this rod 146, when the rod 146 is disposed in an inclined plane, the arm and reproducer being elevated to dispose the needle from engagement with the record, will by gravity slide upon the rod and consequently move to an outer position. When the record holding means is disposed in record holding position, the rod 146 will be lowered below a horizontal plane, and this will dispose the needle of the reproducer in engagement with the outer groove of the reproducing record, whereby by reason of the needle in the groove of the record and the rotation of the record the arm 141 and reproducing unit 139 will pivot toward the center of the record. This lowering of the arm below the horizontal plane is accomplished by continued rotation of the wheel 78 whereby the arm 137 will drop into the cam notch 81 of the wheel 78 and oscillate the shaft 133 so as to oscillate the arm 130 to its lowest position of oscillation.

To prevent displacement of the arm 140 and reproducer 130 from the rod 146 when it slides by gravity toward the outer end of the arm, there is provided on the outer end of the rod 146 an upstanding lip 151. Also when the record holding means is in record holding position an arrangement is provided to prevent accidental movement of the record moving arm 123, and this means includes a plate 152 pivotally connected to the lug 145 as at 153 and provided with a notched-out portion 154, Fig. 5, which receives an adjacent portion of the arm 123, the downward pivotal movement of said plate 152 being limited by means of a lip and finger structure 155, Fig. 5.

When the record holding and rotating means is in record holding position and the needle of the reproducer acting upon the record disposed upon the table 25, it is necessary that the wheel 78 and the gear 70 remain idle, and this is accomplished in the following manner.

As herein indicated the shaft 67 extends through an elongated slot 68, Fig. 7, so that the end portion of the shaft projecting through this slot may have a sufficient pivotal movement to disengage a bevel gear 156, Fig. 4, carried by this shaft 67, and which bevel gear is adapted to mesh under certain conditions with the bevel gear 56.

As shown in Figs. 7 and 8, this end portion of the shaft 67 is journaled through a bearing 157 provided by a link 158 pivotally connected to the apron 65 as at 159. The outer end portion of this link 158 is adapted to engage a shoulder 160 provided by a bar 161 pivotally connected to the apron 65 as at 162. The end of the bar 161 opposite the pivotal connection between this bar and the apron is provided with a pin 163 which pin

is adapted to work in a bell shaped slot 164 provided by a plate 165. This plate 165 is pivotally connected to an ear 166 provided by the apron 65, as at 167. Pivotal movement of this plate 165 is resisted by means of a spring 168 connected to the apron 65, as at 169, and disposed with its end portion engaging a flat head 170 provided by the plate.

Positioned in this bell shaped slot 164 and carried by the plate 165 is a pin 171 which has its upper end portion terminating a short distance from a slot 172 formed in this plate. The plate at its lower end portion provides spaced ears 173. These ears 173 pivotally support a lug 174. This lug 174 has one end portion 175, Fig. 1, enlarged to provide a weight whereby the lug is retained in an inclined position upon its pintle which provides the connection between this lug and the ears 173.

As shown in Fig. 1, the reproducer has connected thereto in any suitable manner a trip arm 176 which trip arm includes an angled head 177 adapted to engage the lug 174 under certain conditions which will now be explained.

When the needle has completed its operation in the last or inner groove of the record, the trip arm 176 will have been moved into engagement with the lug 174 and will pivot the plate 165 in the direction of the movement of the arm. Prior to the moving of the plate 165 by reason of engagement between the lug 174 and the trip arm 176, the pin 163 will be disposed in the slot 172 upon the pin 171 holding the bar 161 in its elevated position. The bar 161 being in this elevated position will likewise by engagement of the link 158 with the shoulder 160 elevate the link 158 in an elevated position and consequently the shaft 67 being journaled at one end in this link 158 will be elevated to dispose the bevel gear 156 from meshing relation with the gear 56.

As the plate 165 is pivoted by engagement between the lug 174 and trip arm 176, the pin 163 will be unseated from the pin 171 and drop to the bottom of the bell shaped slot 164. Consequently the bar 161 will be lowered to its lowermost position, and in turn lower the link 158 in its lowermost position, and as stated, the shaft 67 being supported by this link 158 will likewise be lowered to dispose the bevel gear 156 in meshing relation with the bevel gear 56 whereby to rotate the wheel 78, and this rotation of the wheel 78 will take place simultaneously with the raising of the record holding and rotating means, which raising operation has been herein described.

The elevating of the pin 163 upon the pin 171 in the slot 172 is accomplished in the following manner for the purpose of elevating the shaft 67 to dispose the bevel gear 156 from meshing relation with the bevel gear 56.

On the disc 134, Fig. 8, there is pivotally mounted a spring controlled dog 178. This dog 178 is restricted in its pivotal movement in one direction by a set screw 179 carried by the disc 134. The dog is adapted to engage a pin 180 carried by the bar 161. As the arm 137 drops into the cam notch 81, the disc 134, being oscillated in an anti-clockwise direction in the manner herein indicated, will bring the dog into engagement with the pin 180, and this dog being in such engagement will elevate the arm 161 so as to elevate the pin 163 in a position to be disposed upon the pin 171, it being pointed out that the spring 168 serves to vertically locate the pin 171 so that immediately upon elevation of the arm 161 by the dog 180, the pin 171 will be in a position to receive the pin 163.

It will be understood that each step in the operation of the device is timed so that each movement will take place at the proper time, and this timing is of course regulated by the position of the arm 137 upon the wheel 78.

For example, starting with the removal of a record from the record supporting and receiving rack, the arm 123 will convey the record to the table. Upon positioning the record concentrically upon the table 25, the record holding means will be brought into engagement for holding and rotating the record upon operation of the motor. After the record holding means has moved into record holding position, the reproducer will move into its respective position to dispose the needle in engagement with the grooves of the record at the beginning thereof, and after the record has been played the bar 146 will be elevated to elevate the reproducer and permit the same to move back to its original position. At the same time the bevel gear 156 is dropped into meshing relation with the bevel gear 56 so that the record conveying arm will, as soon as the record retaining and rotating means is elevated, convey the record from the table back into its respective place in the rack and remain there until the rack has been intermittently moved in the manner herein described to dispose the next successive record in position to be removed by the record removing arm whereby the operation is again repeated.

Means is provided for controlling the circuit to the electric motor and electric pick-up reproducer and an amplifying unit, the latter to be hereinafter referred to, and this means includes a coin operated mechanism which will now be described.

Referring to Figs. 10 to 14 inclusive, the coin mechanism includes a housing 181 in which there is mounted a spider bracket 182. This bracket includes a limb portion 183 which is fixed to the wall 184 of the housing 181 by means of a screw 185. Between the bracket 182 and the wall 184 there is mounted a wheel 186. This wheel is loosely mounted upon a shaft 187. To one spoke 188 of the

wheel there is attached, as at 189, one end of a spring 190, the other end of the spring being attached to the limb 182, and this spring embraces the shaft 187, thereby when the spring is placed under tension by rotation of the wheel 186 in one direction, it will urge rotation of the wheel in an opposite direction.

Formed on the peripheral edge of the wheel 186 is a plurality of laterally extending pins 191. Pivoted to the limb 192 of the bracket 182, as at 193, is an arm 194. This arm 194 at its upper end portion includes an enlarged head 194' in which a slot 195 is formed, the entrance 196 of the slot being disposed in the path of the pins 191, and said slot 195 is substantially oval in shape to provide a cam for reasons hereinafter set forth.

The lower end portion of the arm 194 carries a stud 197 which projects through a slot 198 formed in the wall 184, and this stud 197 is disposed in the field of the lower end portion of a coin slot 199 provided by a plate 200 secured to the housing 188 as shown.

To the limb 201 there is pivotally connected a horizontally disposed arm 202, which arm 202 is provided with an arcuated head 203. Pivotally connected to this head, as at 204, is a dog 205 which is adapted to engage the pins 191 in a manner and for reasons hereinafter set forth. Carried by the head 203 is a pin 206 which projects through an arcuated slot 207 in the path of an end portion 208 of a lever 209 pivotally connected to the housing as at 210. To this lever there is connected one end portion of a spring 211, the opposite end portion of the spring being connected to the pin 206. The lower end portion of the lever is disposed between a fork 212 provided by a link 213 pivotally connected to the bottom wall 214 of the housing as at 215. The opposite end portion of this link is provided with an arcuated slot 216 adapted for connection to the end portion 217 of the rod 93, Fig. 1.

Positioned in the housing and attached thereto in any suitable manner is a terminal block 218 carrying spaced contact members 219 adapted to be connected together in circuit by a contact bar 220 pivotally supported as at 221 to an arm 222, which arm is pivotally connected, as at 223, to the limb 224 of the bracket 182. The arm 222 has a head portion 225 which is disposed in the path of a head 226 disposed on the periphery of the wheel 186. To the arm 202 there is connected a link 227 which is connected to a pin 228 carried on a shaft 229 of a registering device 230 of any approved construction.

The dog 205 is provided with a shoulder 231 which is adapted under certain conditions to engage a pin 232 carried by the housing 184.

The operation of the coin mechanism is as follows:

A coin is deposited in the chute 200, and in passing through the chute 200, it engages the stud 197. The weight of the coin will pivot the arm 194 in an anti-clockwise direction. The wheel 186 is rotated to place the spring 190 under tension. The spring 190 being under tension will tend to urge rotation of the wheel in an anti-clockwise direction. Rotation of the wheel in this direction is prevented by engagement of one of the pins 191 upon the head 194' adjacent the entrance 196 of the slot 195. As the arm 194 is pivoted in an anti-clockwise direction, this will dispose the entrance 196 of the slot 194 in a position to permit passage of the adjacent pin therethrough and permit the wheel to rotate in an anti-clockwise direction.

The rotation of the wheel in this direction will dispose the head 226 from engagement with the head 225 of the arm 222, and consequently permit the arm 222 to pivot downwardly to dispose the contact bar 220 in contact with the contact points 219. This operation will throw the motor 31 into circuit with a suitable source of electric energy, and such motor will be connected in circuit with the source of electric energy until the rod 93 is moved in a direction in its rearmost position, whereupon as the rod 93 reaches this position, the link 213 will be pivoted outwardly, and consequently pivot the lever 209 to cause the upper end portion 208 to act upon the pin 206 and elevate this pin in the slot 207. This elevation of the pin will elevate the arm 201, whereupon the dog will be disposed above one of the pins 190, as shown in Fig. 12. During reverse movement of the rod 93, the lever 209 will be pivoted in an opposited direction which will permit the dog to be urged downwardly by action of the spring 211, and consequently the wheel 186 will be rotated in a clockwise direction bringing the head 226 in contact with the head 225 whereby the arm 222 will be pivoted in a direction to move the contact bar 220 from engagement with the contact points 219 whereupon the electric circuit to the motor will be broken.

A predetermined number of coins may be deposited through the chute 200 to set the wheel into operation, but upon reaching this predetermined number the pin 197 will prevent further passage of coins through the slot, and this is by reason of the fact that as the wheel 186 is rotated in an anti-clockwise direction, the head 226 will abut a stop 233, and consequently the wheel 186 will be held against further movement by any action of the lever 194.

A conventional circuit arrangement which may be embodied in the invention is diagrammatically illustrated in Fig. 16. In this figure one of the contact points 219 is connected by a conductor 234 to one side of the motor 31. The other side of the motor 31 is connected by a conductor 235 to one side of a source of electric energy 236, the other side

of the source of electric energy being connected by a conductor 237 to the other terminal 219, thus completing a circuit between the motor and the source of electric energy.

Interposed in the circuit of the electric motor is an electric light element 238 which is intended to become energized when the contact bar 220 connects the contact points 219 in circuit.

A conductor 239 is connected to the conductor 235 and to a contact point 240, which contact point is illustrated in Fig. 1. This contact point 240 is adapted to be engaged by a contact strip 241 by means of a finger 242 operable upon the contact strip 241 when the bar 146 drops in a position to permit engagement of the reproducer needle with the grooves of the record received by the table 25.

As shown this finger 242 is carried by the plate 152 herein referred to. The contact strip 241 is connected by a conductor 243 to one side of the pick-up reproducer 139, the other side of the reproducer being connected by a conductor 244 in which a rheostat 245 is interposed to one side of an amplifying unit 246, which one side constitutes the input side of the amplifying unit. The other side of this input side of the amplifying unit is connected by a conductor 247 to the conductor 237, thus completing a circuit.

An amplifying horn which is intended to be mounted in the cabinet 23 is indicated at 248, and this amplifying horn is connected to the output side of the amplifying unit by conductors 249.

In Fig. 15 I have shown an arrangement which controls the outward pivotal movement of the reproducer 139 and the arm 141, and in this instance this means includes a door 250 hingedly connected as at 251 to the cabinet wall 252 of the cabinet 23 to close an opening 253 formed therein. On this door there is a spring leaf 254 which is adapted to engage the reproducer 139 when the reproducer is moved outwardly, thus positioning the needle of the reproducer at a proper point to engage the record upon the table 25.

By opening the door 250 the spring 254 will move to an outer position, thus permitting the reproducer 139 to be exposed through the opening 254, whereupon the reproducer needle may be conveniently changed.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A machine of the class described including a movable record supporting rack adapted for intermittent rotatable movement, a rotatable table adapted to receive a record from the rack, means for moving said record from the rack to said table and back to said rack, movable means for holding said record upon said table and for rotating said table and the record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, and means for moving said record holding and rotatable means from and into holding and rotatable position with respect to the record and table, and power driven operating means common to and for all of said means and to and for moving said rack and said table rotating means.

2. A machine of the class described including a movable record supporting rack, a rotatable table adapted to receive a record from the rack, means for moving said records from the rack to said table and back to said rack, means for holding said record upon said table and for rotating said table and the record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, and operating means common to said rack moving means, record removing means, said record holding means and said rotatable table rotating means.

3. A machine of the class described including a movable record supporting rack adapted for intermittent rotatable movement, a rotatable table adapted to receive a record from the rack, means for moving said record upon the rack to said table and back to said rack, movable means for holding said record upon said table and for rotating said table and the record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, operating means common to said rack moving means, record removing means, and record holding and rotatable means.

4. A machine of the class described including a movable record supporting rack, a rotatable table adapted to receive a record from the rack, means for moving said record from the rack to said table and back to said rack, means for holding said record upon said table and for rotating said table and the

record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, means for moving said record holding and rotatable means from and into holding and rotatable position with respect to the record and table, operating means common to said rack moving means, record removing means, and record holding and rotatable means.

5. A machine of the class described including a movable record supporting rack, a rotatable table adapted to receive a record from the rack, means for moving said record from the rack to said table and back to said rack, means for holding said record upon said table and for rotating said table and the record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, means for moving said record holding and rotatable means from and into holding and rotatable position with respect to the record and table, operating means common to said rack moving means, record removing means, record holding and rotatable means, and coin controlled means for controlling operation of said operating means.

6. A machine of the class described including a movable record supporting rack adapted for intermittent rotatable movement, a rotatable table adapted to receive a record from the rack, means for moving said record upon the rack to said table and back to said rack, movable means for holding said record upon said table and for rotating said table and the record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, operating means common to said rack moving means, record removing means, record holding and rotatable means, and coin controlled means for controlling operation of said operating means.

7. A machine of the class described including a movable record supporting rack, a rotatable table adapted to receive a record from the rack, means for moving said records from the rack to said table and back to said rack, means for holding said record upon said table and for rotating said table and the record thereon, means for intermittently moving said rack to dispose a record in position to be removed by said record removing means, a reproducer, means for moving said reproducer into and from contact with the record on said table, operating means common to said rack moving means, record removing means, record holding and rotatable means, and coin controlled means for controlling operation of said operating means.

8. In a talking machine, a table mounted for rotation, means for delivering a record to said table, means for positioning said record upon said table and for rotating said record and said table, said means including a flange bearing head movable into and from engagement with the record, means for moving said head, said last mentioned means including an oscillatory disc, a pin on said disc adapted for engagement with a portion of said head, and means for oscillating said disc.

9. In a talking machine, a table mounted for rotation, means for delivering a record to said table, means for positioning said record upon said table and for rotating said record and said table, said means including a flange bearing head movable into and from engagement with the record, means for moving said head, said last mentioned means including an oscillatory disc, a pin on said disc adapted for engagement with a portion of said head, means for oscillating said disc, said oscillating means including an oscillatory shaft supporting the disc and having an angled end portion, a wheel having a cam slot formed at one side thereof into which the angled end portion of the shaft is adapted to move, and means for rotating said wheel.

10. A talking machine comprising a rotatable table adapted to receive a record, means for delivering a record to and removing a record from said table, means including a head movable into engagement with the record for retaining the record upon said table and for rotating said record and said table, a reproducer including a pivotally movable arm adapted to engage the record, means for moving the reproducer into and from engagement with the record, means for moving said record and table rotating means from and into engagement with the record, said last named means including an oscillatory disc, and a pin on said disc adapted to engage said head.

11. A talking machine comprising a rotatable table adapted to receive a record, means for delivering a record to and removing a record from said table, means including a head movable into engagement with the record for retaining the record upon said table and for rotating said record and said table, a reproducer including a pivotally movable arm adapted to engage the record, means for moving the reproducer into and from engagement with the record, means for moving said record and table rotating means from and into engagement with the record, said last named means including an oscillatory disc, a pin on said disc adapted to engage said head, said reproducer removing means including a pivotal bar having a slotted end portion, and a

pin carried by the disc and engaging in said slot whereupon upon oscillation of said disc in a direction to move the record and table rotating means from engagement with the record, said bar will be elevated against the arm of the reproducer and elevate said arm and reproducer so that said arm and reproducer will move by gravity away fom the central portion of said record.

In testimony whereof I affix my signature.

JOSEPH KRIZ.