M. KRAUSS.

TALKING MACHINE.

APPLICATION FILED APR. 19, 1916.

1,199,192.

Patented Sept. 26, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

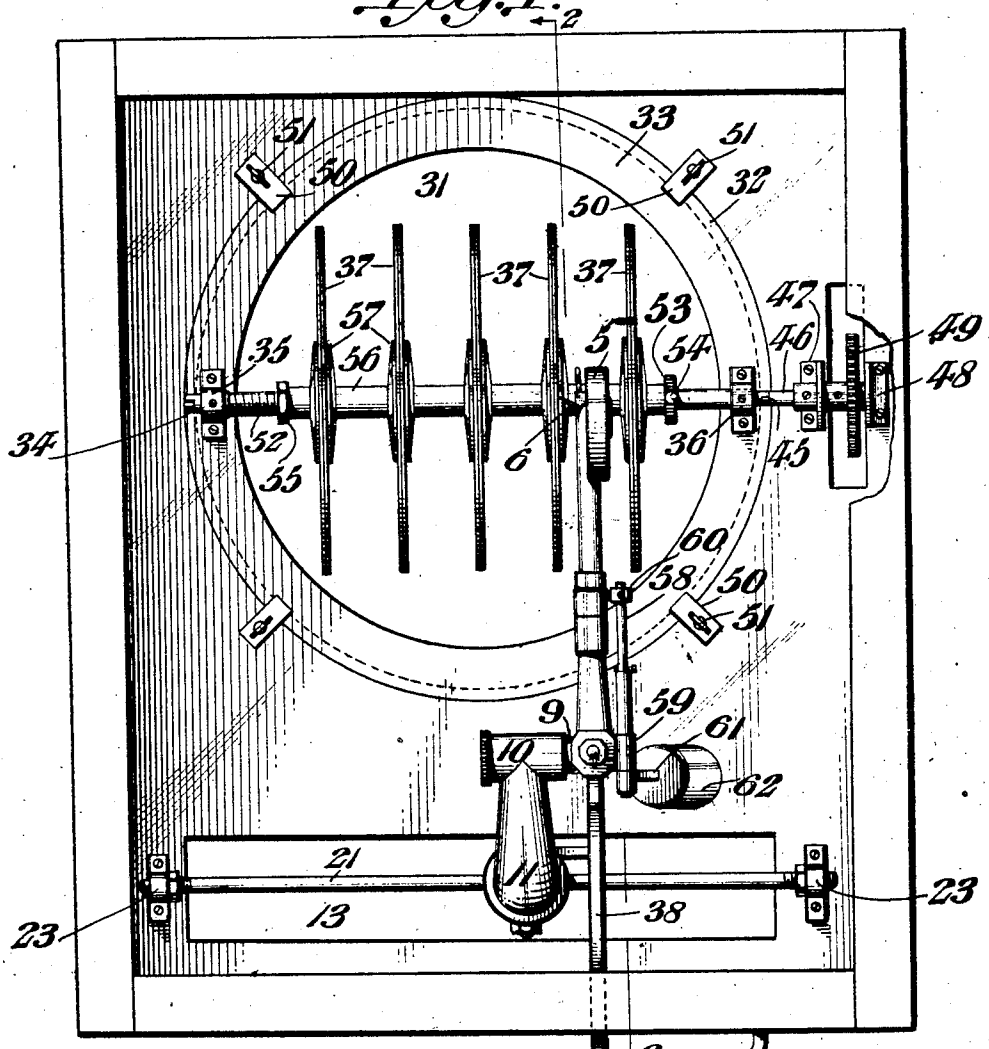
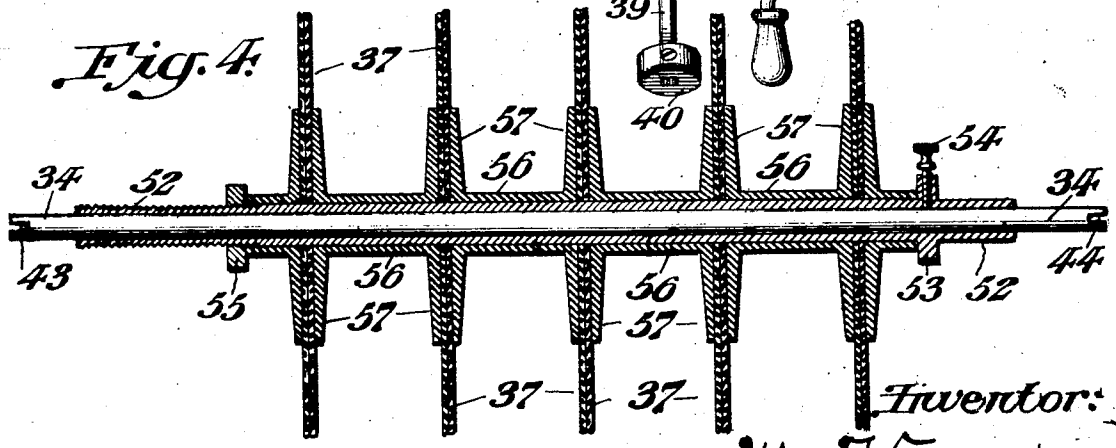


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 2.

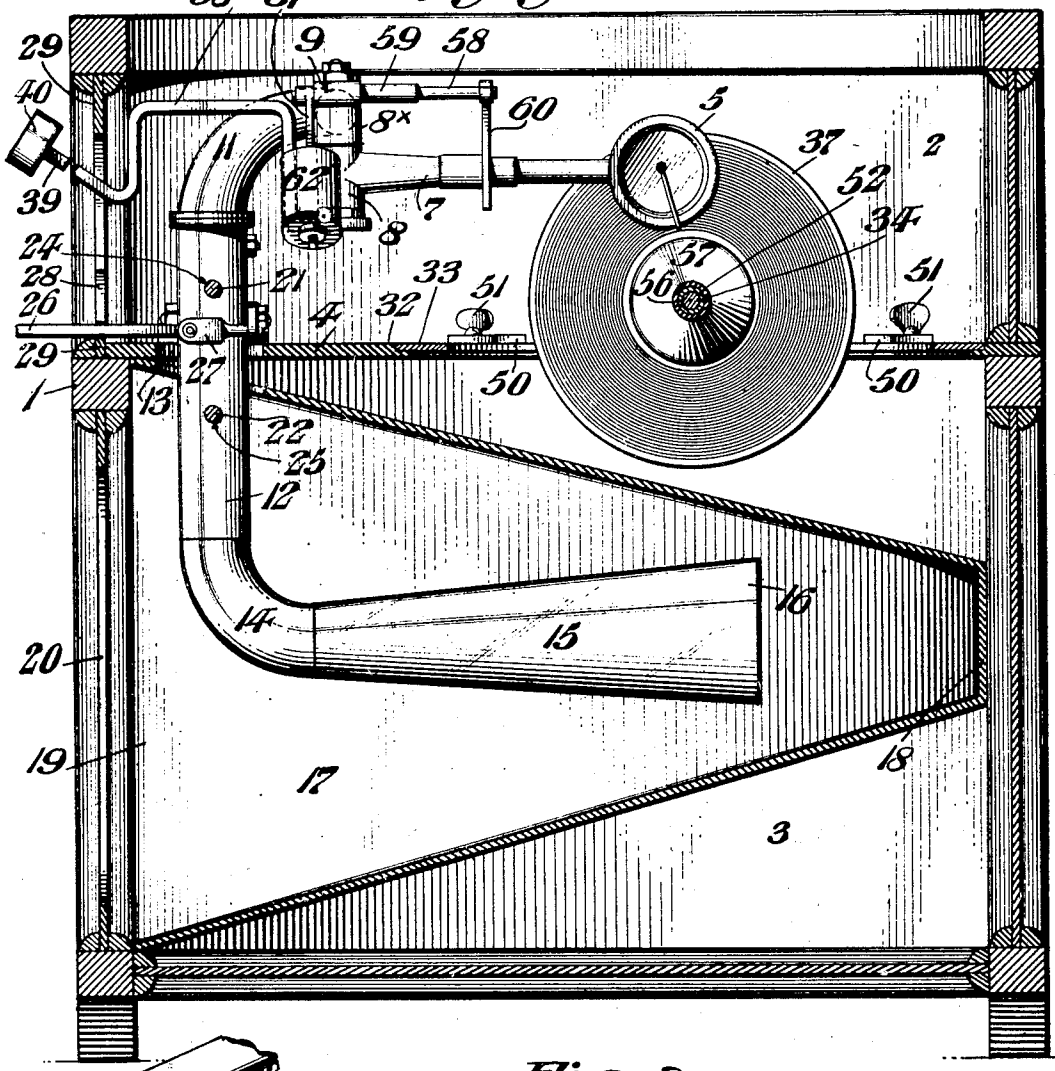
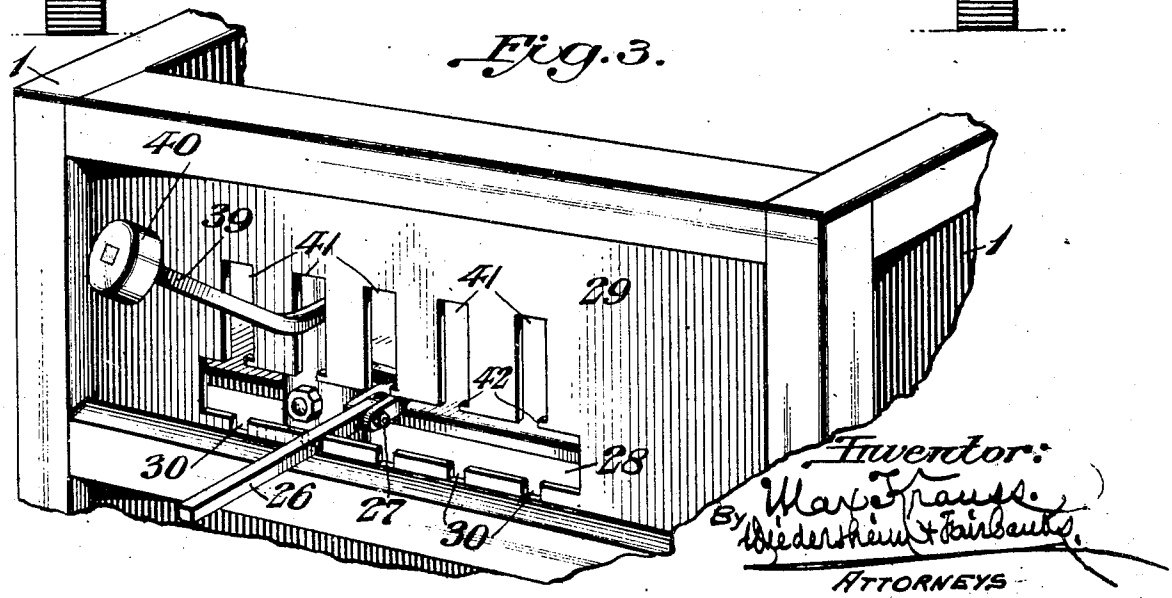


Fig. 3.



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UNITED STATES PATENT OFFICE.

MAX KRAUSS, OF PHILADELPHIA, PENNSYLVANIA.

TALKING-MACHINE.

1,199,192. Specification of Letters Patent. Patented Sept. 26, 1916.

Application filed April 19, 1916. Serial No. 92,073.

To all whom it may concern:

Be it known that I, MAX KRAUSS, a subject of the King of Bavaria, having resided in the United States one year last past and having declared my intention of becoming a citizen thereof, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Talking-Machine, of which the following is a specification.

My invention relates to the general class of talking or sound-reproducing machines which play records in the form of flat disks, and has for its primary object the construction of a machine in which a plurality of records, either single or double-faced, and of any desired diameter, can be set up, and any one of them, at the selection of the operator, be played,—the entire group being adapted to be turned around to present to the stylus their opposite faces, or be taken out and replaced by another group.

The general plan and organization of the machine is such that it is a mere matter of dimensions as to what number, or diameter or character of disk records it can play,—a large machine being capable of receiving and playing a larger number of records than a smaller machine. The machine, moreover, is adapted for use with any form of sound box, the stylus of which can operate upon either the up-and-down tone groove of the type of the "Edison" or the in-and-out tone groove of the type of the "Victor" machines, only one sound box being necessary to enable the operator to at will select and play any one of any desired number of records which happen to be set up in the machine. The machine, moreover, is capable of being operated by any preferred type of motor, mechanical or electrical, and in its construction but one amplifier is required, the organization of which is such that it is operative in connection with the tone arm and horn of the sound box, without regard to which of the records is that, for the time, being played upon.

With these primary ends in view and for the purpose of the construction of an inexpensive, mechanically simple and durable machine, I have resorted to a construction which I have hereinafter explained,—for the purpose of simplifying the description, having shown a machine adapted to operate with a plurality or group or series of five records only, all in vertical disposition, although of course the group may be disposed horizontally, the entire cabinet and motive mechanism being correspondingly reversely disposed. As already stated, moreover, it is a mere matter of the proportioning of the machine and the duplication of certain parts hereinafter described, to adapt the machine to play a much larger number of records than five.

In the accompanying drawings I have, for the purpose of illustrating my invention, shown a certain type and embodiment of it which is at present preferred by me, because in practice it has given satisfactory and reliable results. It is to be understood, however, that the various instrumentalities in which my invention is embodied can be variously arranged and organized and that my invention is not therefore limited to the precise arrangement and organization of such instrumentalities as are typified in the construction illustrated in the accompanying drawings and herein described.

In the accompanying drawings: Figure 1 represents in top plan, a talking machine embodying my invention. Fig. 2 represents in side sectional elevation on the dotted line 2—2 of Fig. 1, the machine of Fig. 1, certain of its component instrumentalities being shown in side elevation. Fig. 3 is a fragmentary perspective of the upper portion of the front of the casing, the view particularly illustrating the selector plate, the record selector lever, and the horn carrier adjusting arm. Fig. 4 represents a longitudinal, vertical, central, section through the record driving shaft, the record-carrying sleeve upon said shaft, the record-clamping hubs upon said sleeve, and a plurality of five disks.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings: 1 designates a vertically standing casing or cabinet of any preferred character, material and dimensions, which by means of a partition 4, shown as horizontally disposed, is divided into two hollow interior compartments, the upper of which I designate 2 and the lower 3.

Within the upper compartment is located a vertically-disposed sound-box 5, of any preferred type and carrying the usual laterally extending stylus 6. From the sound-box extends the tone arm proper, 7, in the form shown a horizontally-disposed

hollow tube, which at its outer or front end is connected by a compound, universal or swiveling, connection with the horn-carrier 12, hereinafter explained. This compound connection is conveniently composed of the following devices:—8 is a hollow vertical interior bushing into which the outer end of the tone arm merges and which is so fitted as to be rotatable within an outer carrying bushing 8^x. This carrying bushing 8^x is itself provided with a laterally extending or horizontal bushing 9, fitted and rotatable within a hollow horizontal boxing 10 into which merges and is fitted, or otherwise properly connected, the hollow upper elbow 11, or forty-five degree union, which extends downward so as to terminate in and be connected with a hollow horn-carrier 12, which extends down through a transverse slot or opening 13 through the partition 4 into the lower compartment 3, and is therein provided with the reversely or backwardly turned lower hollow elbow 14, from the inner end of which is extended a conveniently attached conical, preferably metal, horn 15, the sound-opening or throat 16 of which extends rearwardly within, and in transverse disposition to, a forwardly extending wooden amplifier 17 formed within the lower compartment, extending transversely or sidewise throughout said compartment so as to afford room for the transverse movement of the horn carrier from side to side within the lower compartment. At the rear or narrow end 18, the amplifier is closed to confine the sound, and at the front or outer enlarged end 19, the amplifier is opened preferably to the extent of the entire depth and width of the front of the lower compartment of the casing, which is formed with sound slots 20, or simply closed by doors or movable slats in a manner well understood in these machines.

21, 22 are a pair of fixed carrying rods or track bars, parallel with each other, and preferably one above and the other below the partition 4, to which they are connected conveniently by fastening devices, such as brackets 23, one of which above the partition is shown in Fig. 1, and the other of which, not shown, is presumed to be connected with the under surface of the partition. Each of these carrying rods passes through apertured bearings in the side walls of the horn-carrier 12, which may be supplied with opposite pairs of bearings 24, 25, not shown in detail, so that the horn-carrier is stayed upon, and supported by, said carrying rods and is capable of transverse or sidewise and preferably manual movement upon them in either direction within the casing, so as in such movement to carry with it in either direction the sound box and its tone arm connections 7, 8, 8^x, 9, 10, 11, and 14, and also the metal horn 15. The control of this lateral movement of the horn-carrier and its adjuncts is, as stated, preferably manual, and conveniently, effected by a horn-carrier adjusting-arm 26, which at its inner end is pivoted at 27 to the horn-carrier 12, and at its outer end extends through a horizontal, longitudinally-extending slot 28 cut through what I term a selector-plate 29, which is a plate or front wall closing the upper compartment of the casing. The longitudinal slot 28 in the selector plate is provided with notches 30 into any one of which the adjusting-arm 26 may be dropped to effect the locking of the horn-carrier in its then position, and out of any one of which the arm may be lifted so as to permit of the transverse movement of the horn-carrier already referred to.

The partition 4 of the casing at or near its front has as explained a transverse slot, 28, and at or near its back has a circular opening 31, which is circumferentially grooved or flanged, as at 32, so as to form a receiving seat within which is adapted to be placed and temporarily secured what I call a record-carrying-ring 33, to which is connected, a diametrically disposed driving shaft 34 removably mounted in two bearings 35, 36 upon said carrying ring. Upon this driving shaft are mounted in a manner later explained, and revoluble with it, any desired plurality of records 37, which, as will be understood from the drawings, occupy, when in position, adjacent parallel vertical planes, are apart the distance of the width of the sound box and extend through the circular opening 31 in the partition so as to be partly within the upper compartment and partly within the lower compartment of the casing. The sound box 5 itself when in place to play occupies a vertical plane parallel with the planes of the records, so that its stylus 6 extends horizontally, as best shown in Fig. 1. It is obvious, therefore, that in order to make use of a single sound box common to all of the records, for the playing of any one of the plurality or group of records mounted in parallelism, it must be possible to place the sound box at the will of the operator between any two selected records—or against the outside playing face of the outermost of the series,—so that it may be made available for use with any one or all of said records of said group. This disposition of the single sound box common to any one of the plurality of records and relatively to any selected one record, is accomplished, first, by means for lifting the sound box clear of the upper peripheries of all the records, so that it can be moved laterally,—second, by means for moving it transversely or laterally with respect to the plurality of records and above all of them,—and, third, by means for draft-

ing it into playing position with respect to the selected record. I find a convenient means for enabling me to effect these three movements to be the following:—It being understood that the tone arm 7 is capable of a laterally swinging movement by the rotation of its hollow inner bushing 8 within the hollow outer carrying-bushing 8^x, and that the latter bushing is capable of a rotary movement within the hollow boxing 10 of the upper elbow 11,—it will be further understood that the sound box and tone arm can be lifted and dropped upon the common axis of the bushing 9 and boxing 10 and be also swung laterally on the common axis of the hollow inner bushing 8 and the hollow outer carrying-bushing 8^x,—and that, therefore, it is possible to simply take hold of the sound box and lift it above, or drop it between any pair of records, or, when in the dropped position to swing it sidewise in either direction to a distance limited by the propinquity of the records of the given pair. To make it easy to effect these movements of the sound box from the exterior of the cabinet, I attach, conveniently to beneath the outward end of the tone arm, an outwardly-extending sound-box manipulating lever, which I term the selector lever 38, and to which, for convenience, I give the crooked form best shown in Fig. 2. While 38 applies to the entire lever, I have shown it as applied only to the upper crooked or bent-up part of the device, and have designated the outwardly-extending front arm or handle of it as 39, which at its outer end is provided with a preferably weighted thumb knob 40, by which it can be depressed within its slot 41, and be engaged by a lug or catch 42 with which the vertical slots 41 are respectively provided. This front arm 39 may, therefore, at the will of the operator, and by being moved sidewise in the slot 28, be caused to enter and move up and down within any one of a plurality of parallel vertical slots 41 in the selector plate 29 of the casing.

It will now be obvious that the selector lever can be manually operated within the range of the particular slot within which it has been introduced, so as to move up and down within said slot, and so lift or drop the tone arm and sound box, and that it can also, when pushed down, clear the slots and their catches, and be moved sidewise within the slot 28, in consonance with the movement therein of the horn-carrier as effected by its adjusting arm, already described,—and further obvious that the result of this movement of the horn-carrier through its adjusting arm and of the sound box and the tone arm through their common selector lever, will make it possible to introduce a sound box between any two of the plurality of records shown or to the outside of the right hand of the series of records. The sound box when so introduced between a pair of records, and lifted so that its stylus comes in line with the beginning end of the tone groove of the record to be played, must, as is obvious, be held in such position laterally that its stylus will be pressed against the groove to cause it in the rotation of the record to travel through said groove and this maintenance of position and contact I conveniently accomplish by the following device: 58 is a rock shaft rotatable within an extended bearing 59 integral with or attached to the outer carrying bushing 8^x, which rock shaft extends inward toward the sound box and in essential parallelism with the tone arm, and at its inner end nearest the sound box is provided with a depending trip 60 which bears against the tone arm 7. To the other or outer end of the rock shaft, that is the one farthest away from the sound box, there is connected with said rock shaft by means of a depending arm 61, a balanced counterweight 62, which being normally out of vertical dependency from the rock shaft, tends to swing inwardly toward the outer bushing 8^x, and in so doing, through the intervention of the depending trip, 60, to hold the sound box and its stylus up against the record with the groove of which the stylus is engaged. The counterweight serves also as a fore and aft balance, so to speak, to the sound box, tone arm and selector lever, to counterbalance any tendency to undesired up and down movement of the sound box.

Assuming, now, that the plurality of five records illustrated can be played by a sound box common to them all by its mere adjustment in the manner described, I will now explain a convenient means of mounting and operating the records, and when they happen to be double-faced, of so reversing the position of the series that the grooves upon their opposite sides can also be played.

At each end, the driving shaft 34 extends beyond the bearings 35, 36, on the carrying ring 33 and is conveniently formed with slots or notches 43, 44, which are adapted to catch into and lock with a lug 45 on a motor shaft 46, which is conveniently housed in the bearings 47, 48, and actuated through a driven spur wheel 49, geared by the usual connective mechanism to the motor, which, as explained, is not shown.

Obviously, as there is a notch in each end of the record driving shaft 34 and as these notches are counterpart in dimensions and radial distance from the center of the shaft, and the notch may be in the motor shaft 46—and the lugs 42 on the driving shaft 34,—if the shaft and records as an entirety are together with their carrying ring 33 turned around in or lifted from their flanged seat 32 in the opening 31 of the partition 4,—and this is easily accomplished, for in-

stance, by the tightening or loosening clips 50 controlled by thumb screws 51,—the sound box being first lifted clear of the records,—the entire device can be given a half turn so as to bring in apposition to the stylus the other side or groove faces of double-faced records, or for the matter of that, of single faced records when two single faced records are placed in pairs. It is also apparent that the shaft 34 with the records on it can be taken out of the bearings 35, 36, and reversed.

I find the following a convenient means for applying a plurality of records to the driving shaft 34: 52 is a hollow sleeve adapted to be fitted over the driving shaft 34 and connected with it at one end by a collar 53, being a part of or on the sleeve, which is locked by a set screw 54 to the shaft. 56 is a plurality of clamping hubs, as I call them, which are separate spools so to speak, having radially extending clamping faces 57, and which, as a group, are adapted to be slipped on the sleeve 52 from the left to the right, as shown in Fig. 4, the records which are hollow centered and whether single or double being slipped on between the faces of the hubs, as shown by the drawings, and which when the entire assemblage of hubs and records has been put upon the sleeve and closed up to the right, may be locked by the lock nut 55 which is threaded upon the left hand extended and threaded end of the hollow sleeve 52. Obviously, it is a question of the length of the driving shaft and sleeve and the width of the casing as to the number of records which can be applied and played in a machine.

Having now described a convenient construction typically embodying my invention, its operation so far as not already explained, will be easily understood. When the selected plurality and size of records, depending solely upon the dimensions of the machine as an entirety, have been put in place, the motor is started to occasion the rotation of the driving shaft 34 which carries the records, all of which are rotated, although one of which only can at one time be played. The operator, first, makes the desired lateral adjustment of the horn-carrier and its adjuncts including the sound box, by the lateral adjustment of the adjusting arm 26 after its release from the notch within which it happens then to be,—this selection having been made from a key or index of numbers corresponding to a numbered slot on the selector plate; the operator then selects the then appropriately placed selector lever, which normally is in the position shown in Fig. 2, and depresses it with the result of raising the sound box to a position in which its stylus will be adapted to enter the beginning of the tone groove of the selected record. When in this position, the operation of the counterweight, rock shaft and depending trip, will retain the stylus in the groove of the then traveling record, which will continue to rotate and be played until the operation of the sound box and stylus are stopped by the encounter of the front arm of the selector lever with the top of the slot 41 within which the lever then is. The movement of the sound box and the horn-carrier and its adjuncts with respect to the positioning of the sound box with relation to the selected record has already been described.

It will now be understood that I have devised a novel and useful construction which is adapted to carry out the objects of my invention as I have explained them, and while the embodiment which I have shown and described is one that is both desirable and satisfactory, it is to be understood that it is susceptible of modification in various details without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. A sound-reproducing machine of the character stated, which comprises in combination,—a casing,—a group of revoluble records disposed in adjacent parallel planes and in removable adjustment upon a common axis of rotation,—a motive mechanism for occasioning the rotation of the common axis of the records of said group so as to occasion the simultaneous rotation of all of the records,—a sound box common to all of the records of the group supported upon one end of a tone arm the other end of which terminates in a sound horn,—means for placing the stylus of the sound box against the tone-grooved face of any one of said records,—and a manually operated lever connected with the tone arm and sound horn for effecting said placement.

2. A sound-reproducing machine of the character stated, which comprises in combination,—a casing,—a group of revoluble records disposed in adjacent parallel planes and in removable adjustment upon a common axis of rotation,—a motive mechanism for occasioning the rotation of the common axis of the records of said group so as to occasion the simultaneous rotation of all of the records,—a sound box common to all of the records of the group supported upon one end of a tone arm the other end of which terminates in a sound horn,—a compound connection between the tone arm and the horn which permits of both the vertical and the horizontal movement of the sound box without affecting the movement of the horn,—means for placing the stylus of the sound box against the tone-grooved face of any one of said records,—a manually op-

erated lever for effecting said placement,—and means for occasioning the transverse travel of the sound box, tone arm, horn, and manually operated lever.

3. A sound-reproducing machine of the character stated, which comprises in combination,—a casing,—a group of revoluble records disposed in adjacent parallel planes and in removable adjustment upon a common axis of rotation,—a motive mechanism for occasioning the rotation of the common axis of the records of said group so as to occasion the simultaneous rotation of all of the records,—a sound box common to all of the records of the group supported upon one end of a tone arm the other end of which terminates in a sound horn,—means for together moving the connected sound box, tone arm and horn,—and means for raising and lowering the sound box so as to place its stylus against the tone-grooved face of any one of the records.

4. A sound-reproducing machine of the character stated, which comprises in combination,—a casing,—a group of revoluble records disposed in adjacent parallel planes and in removable adjustment upon a common axis of rotation,—a motive mechanism for occasioning the rotation of the common axis of the records of said group so as to occasion the simultaneous rotation of all of the records,—a sound box common to all of the records of the group and supported upon one end of a tone arm the other end of which terminates in a sound horn,—means for placing the stylus of said sound box against the tone-grooved face of any one of said records,—and a manually operated lever operating through slots in the casing for effecting the placement of the sound box.

5. A sound-reproducing machine of the character stated, which comprises in combination,—a group of revoluble records disposed in adjacent parallel planes,—means for occasioning the simultaneous rotation of all of the records of said group,—a combined sound box, tone arm and horn, common to all of the records of the group,—a reversely disposed amplifier within the casing of the machine,—and a means for controlling the movement of the sound box, tone arm and the horn referably to both the records and the amplifier.

6. A sound-reproducing machine of the character stated, which comprises in combination,—a cabinet divided into an upper compartment and a lower compartment,—a group of revoluble records disposed in adjacent parallel planes partly within one compartment and partly within the other,—means for occasioning the simultaneous rotation of all of the records of the group,—and a combined sound box, tone arm and horn disposed for lateral movement within the casing, the sound box and tone arm within the upper compartment and the horn within the lower compartment.

7. A sound-reproducing machine of the character stated, which comprises in combination,—a cabinet divided into an upper compartment and a lower compartment,—a group of revoluble records disposed in adjacent parallel planes partly within one compartment and partly within the other,—means for occasioning the simultaneous rotation of all of the records of the group,—a combined sound box, tone arm and horn disposed for lateral movement within the casing, the sound box and tone arm within the upper compartment and the horn within the lower compartment,—and a reversely disposed amplifier extending across the cabinet, within the breadth of which the horn is adapted to be laterally moved and retained,—and means for effecting the retention of the horn.

8. A sound-reproducing machine of the character stated, which comprises in combination,—a cabinet divided into an upper compartment and a lower compartment,—a group of revoluble records disposed in adjacent parallel planes partly within one compartment and partly within the other,—means for occasioning the simultaneous rotation of all of the records of the group,—a combined sound box, tone arm and horn disposed for lateral movement within the casing, the sound box and tone arm within the upper compartment and the horn within the lower compartment,—a reversely disposed amplifier extending across the cabinet within which the horn is moved,—means for locking the sound box in position between selected records of the group,—and means for moving the sound box and the horn transversely of the casing and locking them in a predetermined position.

9. A sound-reproducing machine, comprising in combination,—a casing divided by a partition into an upper and lower compartment,—a group of revoluble records disposed in adjacent parallel planes upon a common axis of rotation,—means for occasioning the rotary transposition of said group of records so as to transpose the presentation of their tone-grooved faces with relation to a sound box,—a sound box common to all of the records of the group,—and means for placing the stylus of said sound box against the tone-grooved face of any one of said records.

10. A sound-reproducing machine, comprising in combination,—a casing divided by a partition into an upper and lower compartment,—a group of revoluble records disposed in adjacent parallel planes upon a common axis of rotation,—means for occasioning the rotary transposition of said group of records so as to transpose the presentation of their tone-grooved faces with

relation to a sound-box,—a sound box common to all of the records of the group supported upon one end of a tone arm the other end of which terminates in a sound horn,—and means for placing the stylus of said sound box against the tone-grooved face of any one of said records.

11. A sound-reproducing machine comprising in combination,—a casing divided by a partition into an upper and lower compartment,—a group of revoluble records disposed in adjacent parallel planes upon a common axis of rotation,—means for occasioning the rotary transposition of said group of records so as to transpose the presentation of their tone-grooved faces with relation to a sound box,—a sound box common to all of the records of the group supported upon one end of a tone arm the other end of which terminates in a sound horn,—a compound connection between the tone-arm and the horn which permits of both the vertical and the horizontal movement of the sound box,—and means for placing the stylus of said sound box against the tone-grooved face of any one of said records.

12. A sound-reproducing machine, which comprises in combination,—a casing divided by a partition into an upper and a lower compartment,—a group of revoluble records disposed in adjacent parallel planes and in removable adjustment upon a common axis of rotation which is mounted upon the partition which divides the casing into two compartments by an axis,—carrying means capable of a semi-circular rotary movement to a fixed position,—means for retaining said axis-carrying means in either of its two positions,—a sound box common to all of the records of the group supported upon one end of a tone arm the other end of which terminates in a sound horn,—means for placing the stylus of said sound box against the tone-grooved face of any one of said records,—means for laterally moving the sound box and horn,—and means for raising and lowering the sound box so as to place its stylus against the tone-grooved face of any one of the records.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 18th day of April, 1916.

MAX KRAUSS.

In the presence of—
J. BONSALL TAYLOR,
JOHN A. WIEDERSHEIM.