

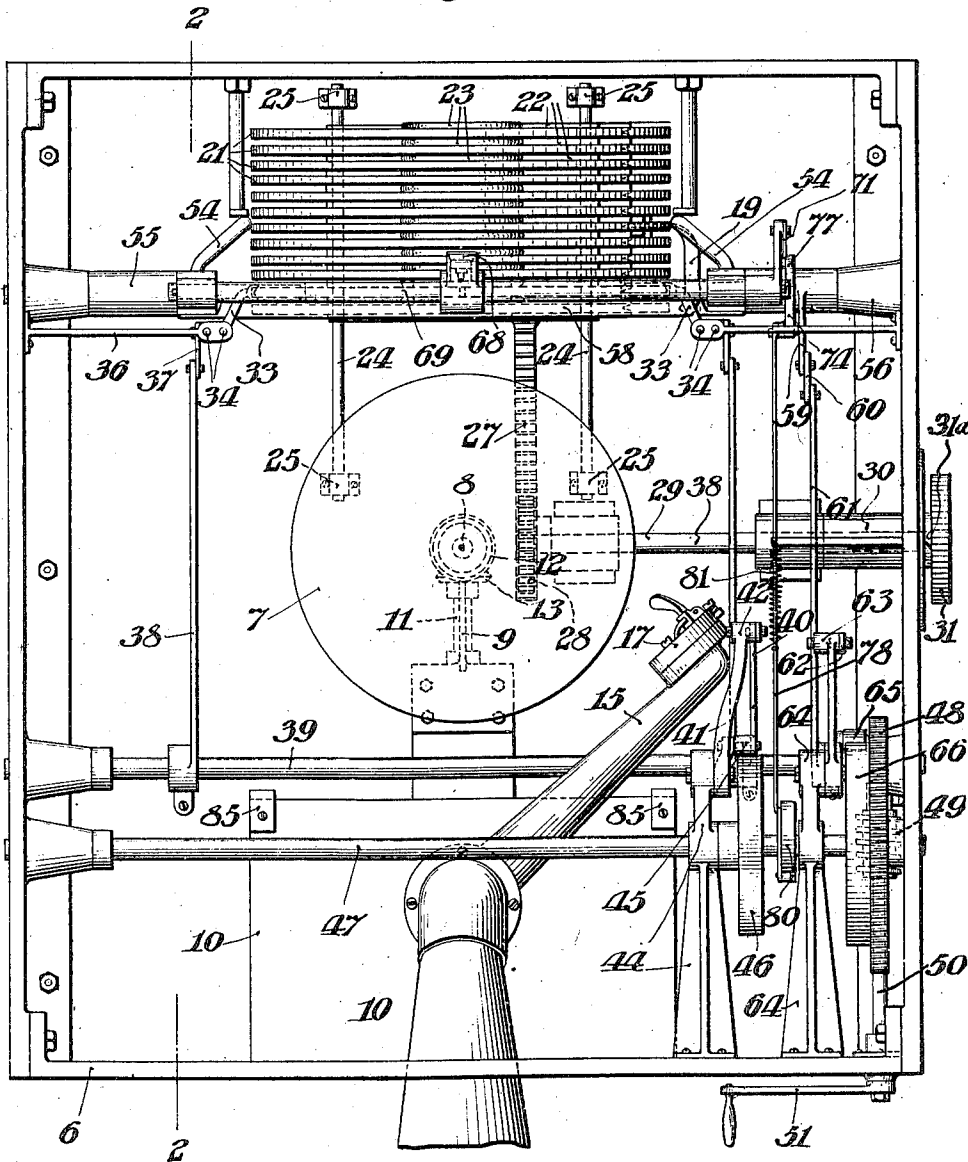
J. WELLNER.
 RECORD CHANGING MECHANISM FOR SOUND REPRODUCING MACHINES.
 APPLICATION FILED JAN. 23, 1912.

1,032,573.

Patented July 16, 1912.

3 SHEETS-SHEET 1.

Fig. 1.



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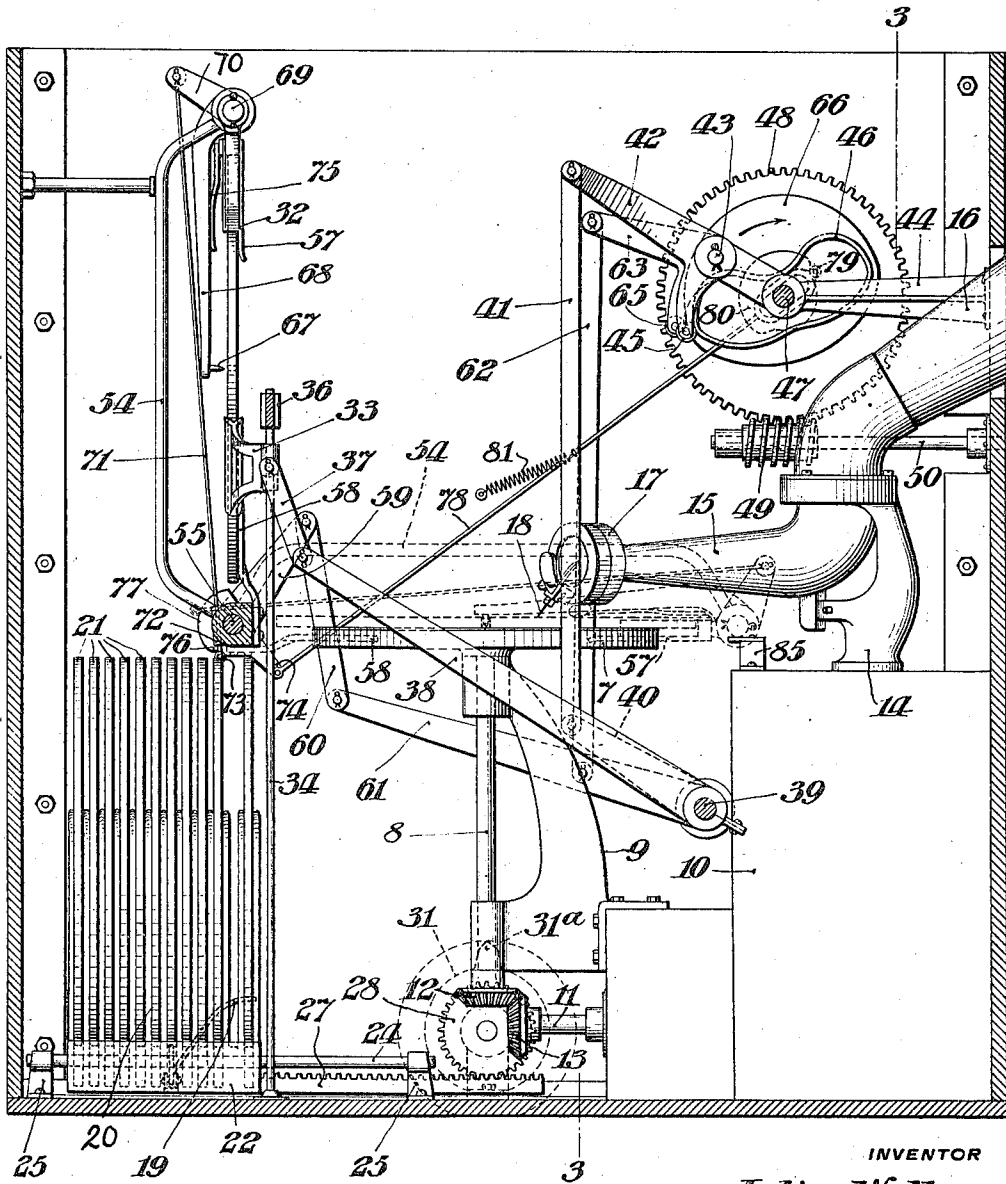
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3 SHEETS-SHEET 2.

Fig. 2.



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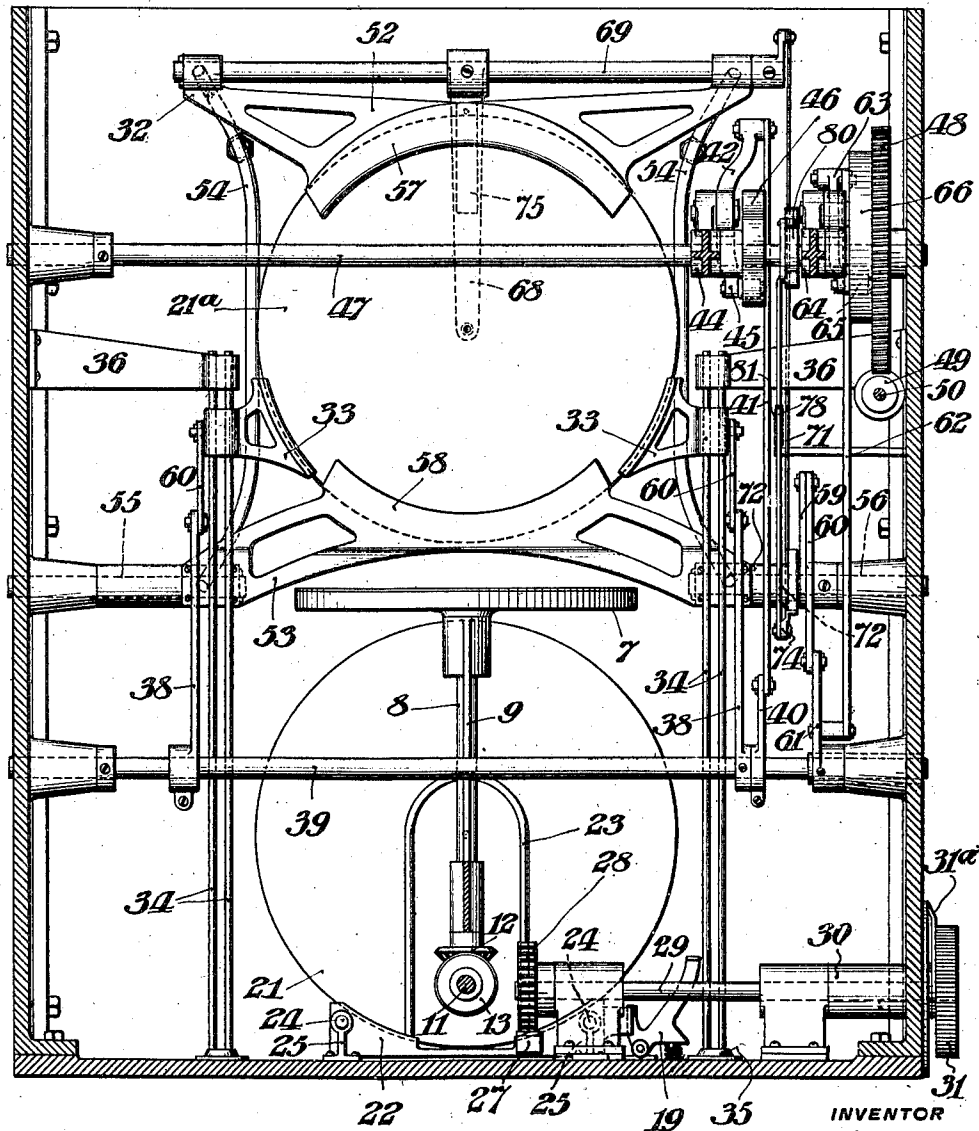
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3 SHEETS—SHEET 3.

Fig. 3.



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RECORD-CHANGING MECHANISM FOR SOUND-REPRODUCING MACHINES.

1,032,573.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JULIUS WELLNER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Record-Changing Mechanism for Sound-Reproducing Machines, of which the following is a specification.

10 This invention relates to sound-reproducing machines of the class in which are employed a series of record-disks, a magazine to support the series, a rotatable table to support and rotate a record during the reproduction thereof and mechanism to transfer record-disks from the magazine to the table, and from the table to the magazine.

15 The object of my present invention is to provide a novel, simple and efficient magazine and transfer mechanism for the record-disks, whereby the record-disks may be supported in vertical positions, or substantially so, in the series, and whereby a selected record may be first moved edge first from the series to a position away from the same and adjacent the rotatable table and then moved face first from said position to a horizontal position upon the table to be reproduced; and whereby the record, after being reproduced, may be first moved face first from the table to a position adjacent the magazine, and then returned edge first to the magazine.

25 With this object in view, the invention consists in the various novel features of construction and combinations of parts herein after fully described and claimed.

30 My invention in its broader aspect contemplates a record-disk transfer mechanism employing parts which may be operated to move a record-disk face first down upon the rotatable table in transferring the record-disk from the magazine to the table irrespective of the angular relation of the record-disk to the table when the record-disk is in the magazine.

35 In the accompanying drawings, illustrating my invention: Figure 1, is a plan view of a sound-reproducing machine, embodying my invention. Fig. 2, is a vertical section,

on line 2—2 of Fig. 1. Fig. 3, is a vertical section, on line 3—3 of Fig. 2.

Referring to the drawings, 6 designates the frame or casing of a sound-reproducing machine. This frame or casing may be of any shape or size for its intended purpose. Within the casing 6 is located a horizontal, rotatable table 7 adapted to receive and support phonograph record-disks. The table 7 is carried by the upper end of a vertical shaft 8 which is journaled in a bracket 9 secured to a motor box 10 supported within the casing 6. The box 10 is adapted to contain a motor of any suitable construction, 11 designating the driving shaft of the motor extending outwardly beyond the motor box 10 to a position adjacent the lower end of the shaft 8. The shafts 8 and 11 are provided with, co-acting miter gear wheels 12 and 13, whereby the shaft 8 and table 7 may be rotated by the motor shaft 11.

Mounted upon the motor box 10 is a bracket 14 carrying an adjustable hollow arm 15 and the inner end of a horn which extends outwardly through an opening in the casing 6. The free end of the arm 15 is provided with a sound box 17 carrying the usual stylus 18 adapted to engage the grooves of a record-disk for the reproduction of the record upon the table 7 during the rotation thereof, in the usual well known manner. The arm 15 is mounted in the bracket 14 in the usual manner, to permit the arm 15 to be raised and lowered and to be moved horizontally.

Within the casing 6 is located a magazine 20 adapted to contain a series of record-disks and support them in parallel relation to each other, as shown. The magazine 20 comprises a horizontal frame 22 having a curved upper portion provided with grooves adapted to the lower edges of the record-disks, and upwardly extending wire loops 23 arranged between the record-disks and supporting them in vertical position and in parallel spaced relation to each other. The frame 22 is mounted to slide horizontally upon a pair of rods 24 having their ends supported by brackets 25 rising from the floor of the casing 6.

Extending from the frame 22 is a toothed rack 27 which extends parallel to the rods 24. The teeth of the rack 27 are engaged by the teeth of a gear wheel 28 secured to the inner end of a shaft 29 which is mounted to turn in a bearing 30 secured to and extending inwardly from a side wall of the casing 6. The outer end of the shaft 29 extends beyond the casing 6 and is provided with a hand-wheel 31 by means of which the shaft 29 and gear wheel 28 may be turned by hand to cause the gear wheel 28 to engage the rack 27 and thereby move the magazine 20 and the series of records carried thereby, horizontally upon the rods 24, for a purpose hereinafter explained.

Arranged above the magazine 20 and adjacent the rotatable table 7 is a frame or carrier 32 adapted to receive and carry a record-disk to the table 7, as will be hereinafter explained. The magazine 20 is adapted to be moved by the hand wheel 31 to bring a selected record into proper position beneath the carrier, after which the selected record is moved or elevated from the magazine 20 to the carrier 32 by mechanism which I shall now describe.

Arranged one on one side and one on the other side of the magazine 20 is a pair of elevators or carriers 33, each carrier 33 being mounted to slide vertically on a pair of vertical rods 34 having their lower ends supported in a bracket 35 on the floor of the casing 6 and having their upper ends supported by a bracket 36 projecting from a side wall of the casing. These carriers 33 are adapted to be moved vertically from positions beneath the sides of record-disks 21 in the magazine to carry the selected record-disk 21^a edge first up from the magazine 20 to the position shown in the drawings and to lower it therefrom edge first back into the magazine.

To lock the magazine 20 against horizontal movement during the time that a record-disk is moved from and remains out of the magazine, I provide a spring pressed, pivoted latch 19 which engages one notch of a series of notches in the magazine 20 each time the carriers 33 are raised and which is moved from the engaged notch by one of the carriers 33 each time it is lowered, the notches of the series corresponding with the records in the magazine.

To raise and lower the carriers 33, I provide the following mechanism: Pivoted to the carriers 33 are the upper ends of a pair of links 37 having their lower ends pivoted to a pair of arms 38 which extend from and are fixed to a rockable shaft 39 mounted to turn in suitable bearings on the side walls of the casing 6. The shaft 39 is provided with a projecting arm 40 which is pivoted to the lower end of a link 41. The upper end of the link 41 is pivoted to a lever 42

which is fulcrumed at 43 on a bracket 44 projecting from the casing 6. The lever 42 is provided with a roller 45 bearing against a cam 46 carried by a rotatable shaft 47 journaled in the bracket 44 and in suitable bearings on the casing 6, whereby, during the rotation of the shaft 47, the carriers 33, under the influence of lever 42, will be raised and lowered by the roller following the contour of the cam 46, the roller being maintained in engagement with the cam by the weight of the movable parts connected to the lever 42.

The shaft 47 is provided with a worm wheel 48 coaxing with a worm 49 on a shaft 50 journaled in suitable bearings on the casing 6. One end of the shaft extends outwardly and is provided with a hand crank 51 by means of which the shaft 50 may be turned by hand to cause the worm gearing to rotate the shaft 47.

The frame or carrier 32 comprises upper and lower horizontal parts 52 and 53, respectively, and curved vertical rods 54 connecting the ends of the parts 52 and 53. The ends of the lower part 53 are secured to outwardly extending shafts 55 and 56 arranged in alinement with each other and mounted to turn in suitable bearings in the casing 6, thereby pivoting the lower end of the frame or carrier 32 to the casing 6 in a manner to permit the carrier to swing on its pivot from the vertical position, shown by full lines to the horizontal position shown by dotted lines in Fig. 2. The parts 52 and 53 of the carrier 32 are provided with flat curved portions 57 and 58, respectively, which are adapted to engage the back of the upper and lower portions of the record 21^a held in the raised position by the carriers 33. The parts 57 and 58 are also adapted to embrace the rotatable table 7 and lie below the upper face thereof when the carrier 32 is in the horizontal or dotted line position, shown in Fig. 2.

To swing the frame 32 on its pivot to raise and lower it to the full line and dotted line positions, I provide the following mechanism: Fixed to and extending from the pivot shaft 56 is an arm 59 which is pivoted to the upper end of a link 60. The lower end of the link 60 is pivoted to an arm 61 extending from and mounted to turn freely on the shaft 39. The arm 61 is pivoted to the lower end of a link 62 having its upper end pivoted to a lever 63 which is fulcrumed on a bracket 64 projecting from the casing 6. The lever 63 is provided with a roller 65 bearing against a cam 66 carried by the shaft 47, whereby, during the rotation of the shaft 47, the carrier 32 will be swung on its pivot and raised and lowered, under the influence of the cam 66, the roller following the contour of the cam and being maintained in engagement with the cam by

the weight of the movable parts connected to the lever 63. When the carrier 32 is in the down position, shown by dotted lines, it is supported by brackets 85 projecting from the motor box 10 and engaging the shaft 69. After a record-disk is raised from the magazine 20 to the carrier 32, the carriers 33 descend, and prior to the descent of the carriers 33, a pin 67 enters the hole in the center of the raised record-disk to maintain it in the raised position. The pin 67 projects from the lower end of an arm 68 which extends downwardly from a horizontal shaft 69 mounted to turn in the top part 52 of the carrier 32. By rocking the shaft 69, the pin 67 may be moved into and from the hole in the adjacent record-disk. To operate the shaft 69, I provide the following mechanism: Fixed to and extending from the shaft 69 is an arm 70 which is pivoted to the upper end of a flexible rod 71. The lower portion of the rod 71 extends through and is slidably fitted to a collar 72 secured to the shaft 56. The lower end of the rod 71 extends below the collar 72 and is provided with a roller 73 engaging the cam face of a cam lever fulcrumed on the shaft 56 adjacent the collar 72. The pin 67 is pressed normally away from the record-disk, and the roller 73 is maintained in engagement with the cam lever 74 by a spring having one end secured to the top part 52 of the carrier 32 and the other end pressing against the arm 68. When the parts are in the positions shown, the roller rests within a notch 76 in the cam lever 74 and when the lower end of the lever 74 is moved upwardly, the cam shoulder formed by the notch 76 forces the roller 73 downwardly, thereby moving the arm 68 inwardly against the spring 75 and causing the pin 67 to enter the hole in the center of the record-disk. After the roller 73 passes from the notch 76 it rests against a curved face 77 of the cam lever 74, the face 77 being concentric to the shaft 56 and maintaining the pin 67 within the hole in the record-disk during the lowering and raising of the carrier 32. The lower end of the lever 74 is pivoted to the lower end of a rod 78, the upper enlarged end of which is slotted and embraces the shaft 47. The upper end of the rod 78 carries a roller 79 engaging a cam 80 carried by the shaft 47, the roller 79 being maintained in engagement with the cam 80 by a suitable spring 81. During the rotation of the shaft 47 the cam 80 acts against the roller 79 to rock the cam lever to engage the roller 73 with the notch 76 and face 77 alternately.

The operation of the machine is as follows: When the machine is at rest and the parts are in normal position, after returning a record-disk to the magazine 20, the arm 15 is in a position slightly laterally of

the position shown to permit the free up and down movement of the carrier 32, and the carriers 33 are below the sides of the series of record-disks 21. Assuming the parts to be in this normal position and it is desired to play or reproduce the record on one of the record-disks within the magazine 20, the hand wheel 31 is turned to move the magazine 20 until the desired record-disk is brought into position beneath the carrier 32 and into the path of travel of the carriers 33. This operation is facilitated by the wheel 31 being provided with a pointer 31^a arranged to be brought into registry with suitable markings on a dial on the side of the casing 6, the position of the pointer with respect to the markings on the dial indicating which of the record-disks of the series has been brought into the path of the carriers 33. The crank 51 is now operated by hand to turn the cam shaft 47 in the direction of the arrow in Fig. 2. During the movement of the cam 46 it acts upon the roller 45 to elevate the carriers 33 to the positions shown, thereby causing the carriers 33 to engage the side edges of the selected record-disk below the center thereof and carry the selected record-disk edge first from the magazine 20 to the carrier 32. Immediately following the raising of the record-disk to the carrier 32, the cam 80 operates the roller 79 to move the pin 67 into the hole in the center of the record-disk to support the same when the cam 46 permits the carriers 33 to move down from engagement with the record-disk. This being done, the cam 66 permits the roller 65 to move toward the shaft 47 and thereby lower the carrier to the position shown by dotted lines in Fig. 2, thereby moving the record-disk face first to and depositing it upon the table 7. When the carrier 32 is in the down position the parts 57 and 58 thereof are below the top of the table 7 and the record-disk rests upon the table 7 and is free to be rotated thereby, being held centrally thereon by the pin 67.

The operation just described of transferring a record-disk from the magazine 20 to the table 7 requires one-half of a revolution of the cam shaft 47. The cam shaft 47 is now permitted to remain at rest and the arm 15 is raised, moved inwardly over the record-disk upon the table and lowered into engagement with the outer portion of the record groove by hand; whereupon the motor within the box 10 is started to rotate the table 7 and the record is played or reproduced in the usual manner. After the playing of the record, the motor is stopped and the arm 15 is raised, moved laterally and lowered, after the sound box 17 has cleared the carrier 32. The crank 51 is now operated by hand to again turn the cam shaft 47 in the direction of the arrow. During the

first movement of the shaft, the cam 66 operates the roller 65 to raise the carrier 32 and therewith the record-disk face first from the table 7 to the vertical position shown by full lines. The cam 46 then raises the carriers 33 into engagement with the record-disk and the cam 80 permits the spring 81 to move the cam lever 74 to engage the notch 76 with the roller 73 and thereby permit the spring 75 to move the pin 67 from the hole in the center of the record-disk leaving it resting upon the carriers 33. Following this, the cam 46 permits the roller 45 to move toward the shaft 47 and thereby lower the carriers 33 and the record-disk edge first into the place in the magazine from which it was taken, leaving the parts of the machine in position for a succeeding operation. The returning of the record-disk from the table 7 to the magazine 20 requires one-half of a revolution of the cam shaft 47. It will, therefore, be seen that each time the shaft 47 is turned a complete revolution, a record-disk will be taken from the magazine 20, placed upon the table 7 and returned to the magazine.

I desire it to be understood that my invention is not confined to a hand operated machine. The record changing mechanism may be operated by hand, as described; and when the invention is used in connection with a machine in which it is desired to change the records automatically, either the shaft 50 or the shaft 47 may be operated by any suitable automatic mechanism.

When herein I speak of "edge first" I mean in a direction parallel to the flat faces of a record-disk; and when herein I speak of "face first" I mean in a direction leading out from one of the flat faces of a record-disk substantially at right angles thereto.

I claim:

1. In a sound-reproducing machine, the combination of a rotatable table, means for supporting a record-disk in substantially a vertical position, means operative to move a record-disk edge first to a position away from the first named means, and means operative to move a record-disk from said position to a horizontal position upon the table.

2. In a sound-reproducing machine, the combination of a rotatable table, means for supporting a record-disk in substantially a vertical position, means operative to move a record-disk from the top of the table and into substantially a vertical position, and means operative to move a record-disk from the last named position to the first named means.

3. In a sound reproducing machine, the combination of a rotatable table, means for supporting a series of record-disks, a record-disk carrier, a second record-disk carrier,

and a common operating part for said carriers, said part being provided with means to operate the first named carrier to move a record disk edge-first from the series to the second named carrier and said part being provided with means to operate the second named carrier to move a record-disk face first to the turn table in prescribed order.

4. In a sound-reproducing machine, the combination of a rotatable table, means for supporting a series of record-disks, a record-disk carrier, a pivoted record-disk carrier, and a common operating part for said carriers, said part being provided with means to operate the first named carrier to move a record-disk edge first from the series to the second named carrier and said part being provided with means to operate the second named carrier to move a record-disk face first to the turn table in prescribed order.

5. In a sound-reproducing machine, the combination of a rotatable table, means for supporting record-disks in a series and in substantially vertical positions, a record-disk carrier, a second record-disk carrier, and a common operating part for said carriers, said part being provided with means to operate the first named carrier to move a record-disk edge first from the series to the second named carrier and said part being provided with means to operate the second named carrier to move a record-disk face first to the turn table in prescribed order.

6. In a sound-reproducing machine, the combination of a rotatable table, means for supporting record-disks in a series and in substantially vertical positions, a record-disk carrier, a pivoted record-disk carrier, and a common operating part for said carriers, said part being provided with means to operate the first named carrier to move a record-disk edge first from the series to the second named carrier and said part being provided with means to operate the second named carrier to move a record-disk face first to the turn table in prescribed order.

7. In a sound-reproducing machine, the combination of a rotatable table, means for supporting a series of record-disks, a record-disk carrier, a second record-disk carrier provided with means to receive and support a record-disk, and a common operating part for said carriers, said part being provided with means to operate the first named carrier to move a record-disk face first from the table to the second named carrier and said part being provided with means to operate the second named carrier to move a record-disk edge first to the series.

8. In a sound-reproducing machine, the combination of a rotatable table, means for supporting record-disks in a series and in substantially vertical positions, a pivoted record-disk carrier, a second record-disk carrier,

rier, and a common operating part for said
carriers, said part being provided with means
to operate the first named carrier to move a
record-disk face first from the table to the
5 second named carrier and said part being
provided with means to operate the second
named carrier to move a record-disk edge
first to the series.

In testimony whereof I affix my signature
in presence of two witnesses.

JULIUS WELLNER.

Witnesses:

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A. V. GROUPE.