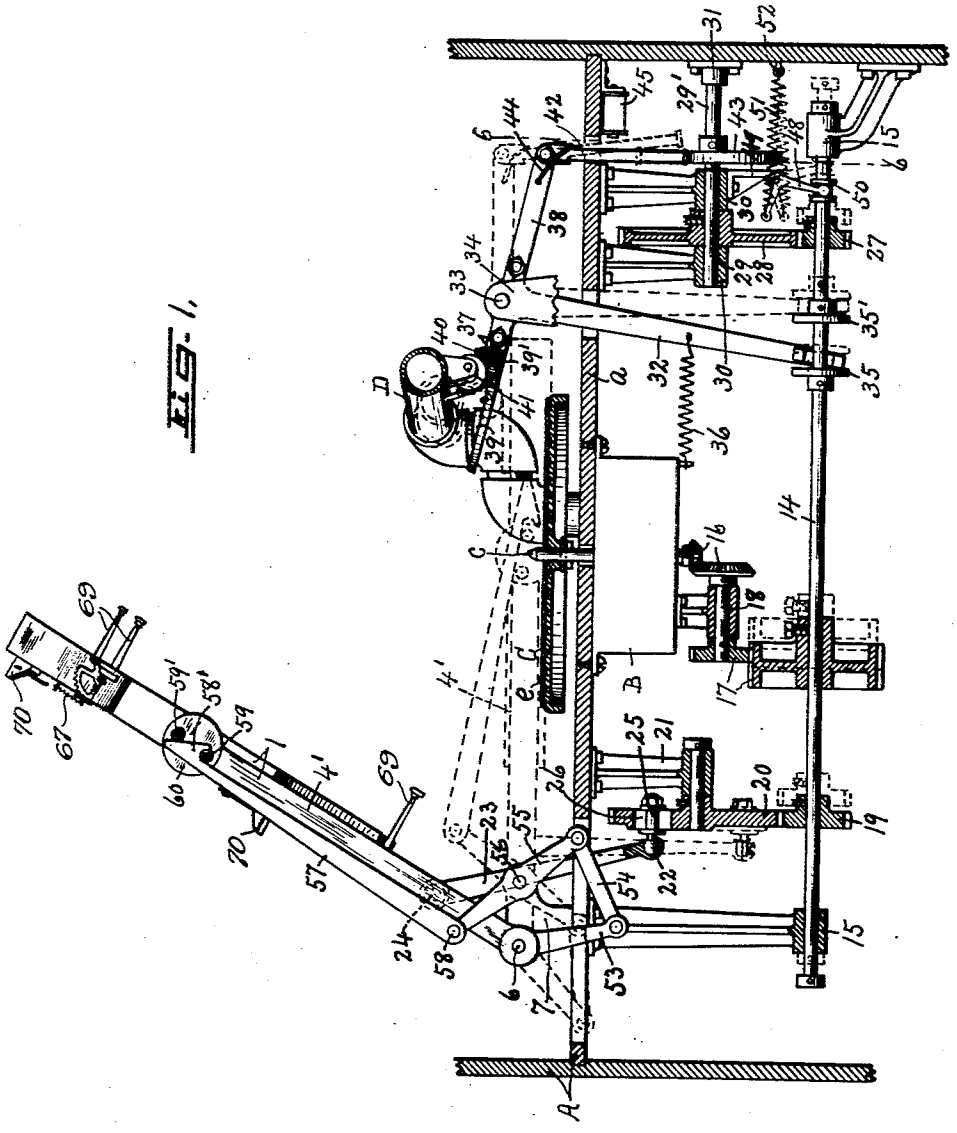
June 26, 1934. P. F. WILBER 1,964,336

PHONOGRAPH RECORD TRANSFER MECHANISM

Filed Aug. 16, 1927 3 Sheets-Sheet 1

FIG. 1.



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PHONOGRAPH RECORD TRANSFER MECHANISM

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Fig. 2.

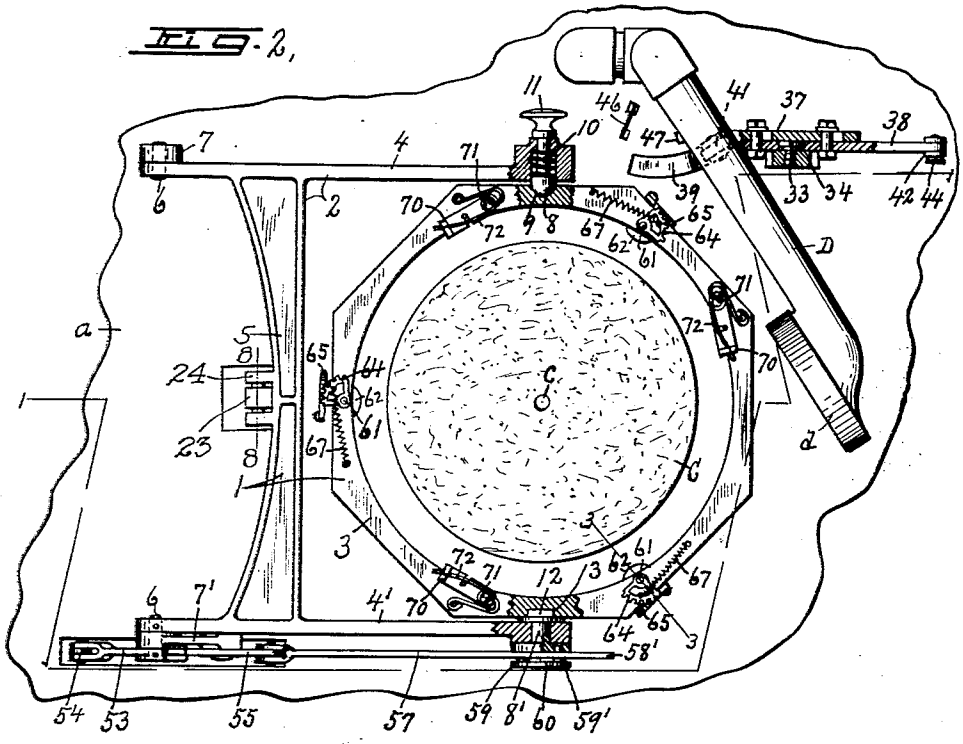


Fig. 3.

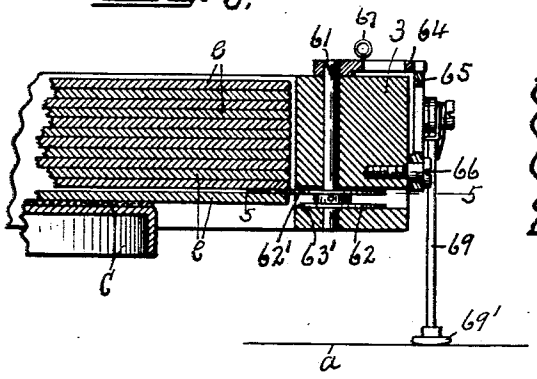


Fig. 4.

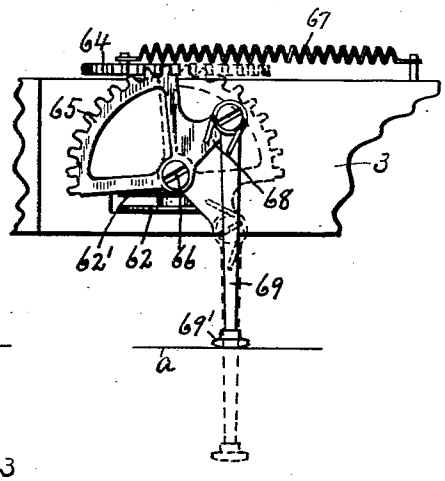
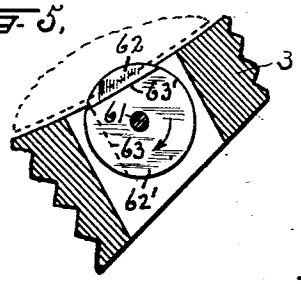


Fig. 5.



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PHONOGRAPH RECORD TRANSFER MECHANISM

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Fig. 6

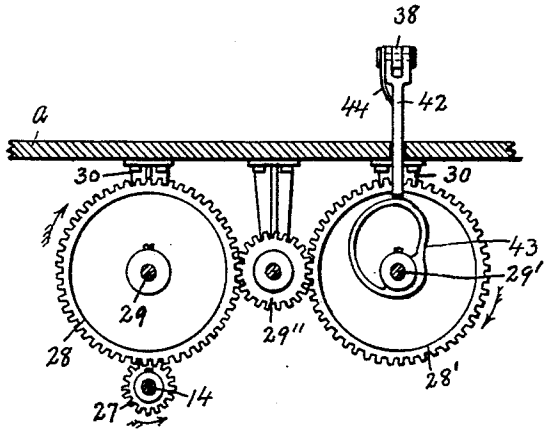


Fig. 7.

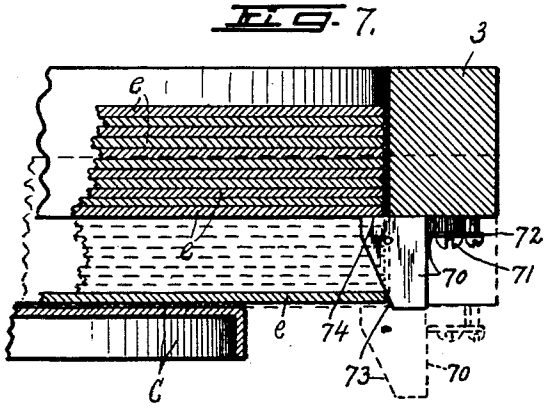


Fig. 8.

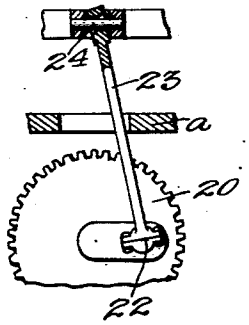
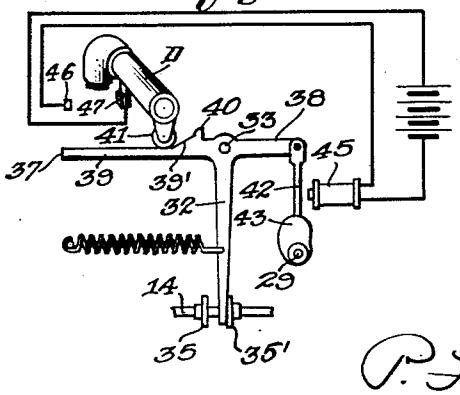


Fig. 9.



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1,964,336

PHONOGRAPH RECORD TRANSFER MECHANISM

Paul F. Wilber, Syracuse, N. Y., assignor, by direct and mesne assignments, to The Capehart Automatic Phonograph Corporation, Fort Wayne, Ind., a corporation of Indiana

Application August 16, 1927, Serial No. 213,268

26 Claims. (Cl. 274—10)

This invention relates to a phonograph record transfer mechanism adapted to be used more particularly for transferring disk records to and from the rotary table of standard types of phonographs, and involves the use of a record-carrier mounted upon or directly associated with a phonograph case or cabinet to move toward and from the table, and provided with means for removing, reversing or inverting and re-depositing the record from and upon the table so that the records on the opposite sides of a double-record disk or any number of such disks may be played in sequence without further attention of the operator other than the re-stacking of the same or different records in the record-supporting magazine of the carrier.

The main object of the present invention is to provide means actuated and controlled by the table-operating mechanism of standard types of phonographs for automatically removing, inverting or reversing and re-depositing a double record from and upon the rotary table of the phonograph so that both records may be played in sequence, and as many times as may be desired without further attention on the part of the operator.

Another object is to enable the same device to be used for successively and sequentially playing both records of a multiplicity of record disks, and repeating the playing of the same records as often as may be desired, and without liability of mutilation thereof.

In other words, I have sought to provide a device of this character in which the records may be stacked one upon the other, and successively removed and re-deposited upon the rotary table of the phonograph without sliding the records one upon the other, which has been found to be injurious to the intaglio parts of the records to such an extent as to impair their accuracy.

Other objects and uses relating to the specific parts of the apparatus will be brought out in the following description.

In the drawings:—

Figure 1 is a vertical sectional view taken partially in the plane of line 1—1, Fig. 2, of a portion of a phonograph equipped with my invention, the record-carrier being shown in its extreme upward position away from the rotary record-supporting table of the machine ready to descend for placing a record thereon.

Figure 2 is a top plan partly in section of the mechanism shown in Figure 1 except that the tone arm is shown in full with the reproducer thereon and the carrier in depositing position.

Figure 3 is an enlarged detailed vertical sectional view taken in the plane of line 3—3, Figure 2, showing the record-carrier in position for depositing a record upon the rotary table.

Figure 4 is a side elevation of the adjacent side of the mechanism shown in Figure 3 omitting the record-supporting table.

Figure 5 is a horizontal sectional view taken in the plane of line 5—5, Figure 3.

Figure 6 is a detailed vertical sectional view taken in the plane of line 6—6, Figure 1.

Figure 7 is an enlarged transverse vertical sectional view through a portion of the record-carrier and rotary table showing said carrier in position for removing a record from the table.

In Figure 8 is a detail vertical sectional view taken in the plane of line 8—8, Figure 2.

Figure 9 is a diagrammatic view of the electromagnet and switch circuit showing a portion of the tone arm and lever for controlling the operation of the tone arm.

In order that the invention may be clearly understood I have shown a portion of a phonograph cabinet A having the usual horizontal shelf *a* for supporting a motor B and a rotary record-supporting table C, and a tone arm D, together with other parts of the phonograph, and my improved record-transfer mechanism presently described.

The motor B may be of any desired construction, but is preferably electrical, and adapted to be connected in the usual house circuit in any well known manner not necessary to herein illustrate or describe. The table C is mounted upon the usual shaft *c* which is driven by the motor B through the medium of any suitable gearing or power-transmitting mechanism commonly used in machines of this character.

The tone-arm D and reproducer *d* carried thereby may also be mounted in any customary manner upon the horizontal partition *a* for connection with the usual amplifier (not shown), and to allow the reproducer *d* to swing in the usual way across the surface of a record *e* on the table C for reproducing sound from the record.

This movement of the tone arm and reproducer is utilized to control the operation of the record transfer mechanism at just about the time the reproducer reaches the limit of its inward movement by the record, or at the end of such record, as will be presently described.

The record-transfer mechanism comprises a carrier 1 consisting in this instance of a magazine-support or frame 2 and a record-support or magazine 3 adapted to carry a multiplicity of disk-

records *e*, as shown in Figures 3 and 7, together with suitable motor-actuated means for moving the carrier toward and from the rotary table C, and means controlled by the movement of the tone-arm D for connecting and disconnecting certain parts of the power-transmitting mechanism required for transmitting motion from the motor to the carrier.

As illustrated, the magazine-support or frame 2 is provided with transversely spaced arms 4 and 4' rigidly connected to each other intermediate their ends by a cross-bar 5, the arms 4 and 4' having one end pivoted at 6 to lugs or brackets 7 and 7' on the horizontal partition *a* some distance to one side of the rotary table C, as shown more clearly in Figure 1.

The other ends of the arms 4 and 4' extend across diametrically opposite sides of the table C in spaced relation thereto for receiving and supporting the magazine 3 between them in such manner as to permit angular movement of the magazine about an axis parallel with the axis of the pivots 6. For this purpose the ends of the arms 4 and 4' are provided with coaxial trunnions 8 and 8', one of which, as 8, is movable axially into and out of a bearing socket 9 in the adjacent side of the magazine 3, and is yieldingly held in operative position by a spring 10, the outer end of the trunnion being provided with a handle 11 by which it may be withdrawn when it is desired to remove the magazine from its supporting frame.

The other trunnion 8' is provided with an angular or rectangular inner end 12 normally seated in a correspondingly formed socket 13 in the adjacent side of the magazine 3 so that when the trunnion is turned about its axis in a manner hereinafter described, the magazine 3 will be correspondingly turned.

As illustrated, the magazine is made in the form of a ring having a circular opening of predetermined diameter corresponding approximately to the diameter of the disk records to be carried therein while the outer perimeter is symmetrical, and in this instance octagonal, with two of its diametrically opposite sides arranged closely adjacent the inner faces of the opposite arms 4 and 4' so that the magazine may turn freely about the axis of the trunnions 8 and 8' while the carrier 1 is being elevated from the dotted position to the full line position shown in Fig. 1.

This vertical rocking movement is preferably effected by means actuated by the motor B, and controlled by the position of the tone arm D, and its reproducer *d*. As illustrated, this means comprises a horizontal shaft 14 rotatably mounted in suitable bearings 15 on the cabinet A, as shown in Figure 1, to which rotary motion is transmitted from the motor B through the medium of bevel gears 16 and spur gears 17, one of the bevel gears 16 and one of the spur gears 17 being mounted upon a counter-shaft 18, while the other bevel gear is directly connected to the motor shaft, both sets of gears being of the speed-reducing type to impart relative slow rotary motion to the shaft 14.

This shaft 14 is movable axially, and is provided with a pinion 19 meshing with a relatively larger gear 20 which is journaled upon a bracket 21 on the under-side of the partition *a*. The gear 20 is eccentrically connected by a universal joint bearing 22 to the lower end of an upwardly extending link 23 having its upper end pivotally connected by a universal joint at 24 to the cross-bar 5 of the frame 2, and therefore, between the pivots 6 and magazine 3, whereby each half revolution of the gear 20 will cause the carrier 1 to move from the position shown by full lines to the position shown by dotted lines in Figure 1, or each complete revolution of the gear 20 will cause one cycle of movement of the carrier from the position shown by full lines to a position across the top of the table C and return. The eccentric bearing 22 is mounted upon a pin or stud 25 which is adjustable in a radial slot 26 in said gear to obtain the desired movement of the carrier, and is held in its adjustable position by the tightening of the bolt or stud 26.

The shaft 14 is also provided with an additional pinion 27 normally meshing with a relatively larger gear 28 which is mounted upon a counter-shaft 29 carried in suitable bearings 30 on the cabinet A, as shown in Figure 1.

The pinions 19 and 27 are movable into and out of engagement with their respective gears 20 and 28 by the axial movement of the shaft 14, while the gear 17 on the shaft 14 is movable axially therewith, but is of sufficient axial length to maintain engagement with its companion pinion 17 when the pinions 19 and 27 are dis-engaged from their gears 20 and 28, thereby establishing a continuous rotation of the shaft 14 by the motor B, and causing an intermittent rotation of the gears 20 and 28, resulting in a periodic movement of the carrier 1 to and from a position across the rotary table C.

The rotation of the shaft 14 and consequent rocking movement of the carrier 1 is arranged to take place only when the tone-arm D with the reproducer thereon is withdrawn from its playing position beyond the path of movement of the perimeter of the magazine 3, as shown more clearly in Fig. 2.

The axial adjustment of the shaft 14 for shifting the pinions 19 and 27 into and out of mesh with their respective gears 20 and 28 is effected by means of an upright lever 32 having its upper end pivoted at 33 to a suitable bracket 34 on the horizontal partition *a* and its lower end adapted to engage one or the other of a pair of axially spaced collars 35 and 35' on the shaft 14, said lever being actuated in one direction by means of a spring 36 for shifting the shaft 14 axially to engage the pinions 19 and 27 with their respective gears 20 and 28, as shown in Figure 1.

The upper end of the lever 32 is provided with oppositely projecting arms 37 and 38, one of which, as 37 is provided with cams 39 and 39' merging with each other, but of different degrees of inclination, the portion of the track 39' nearest the pivot 33 terminating in a stop 40.

The tone arm D is provided with the usual flexible or turning connection to permit it to be raised and lowered and swung horizontally, and is supported intermediate its ends upon one or the other of the cams 39 or 39' on the arm 37 through the medium of a roller 41 which is mounted upon the intermediate portion of the tone arm D. The other arm 38 of the lever 32 is provided with a pendant armature 42 pivoted thereto to swing into and out of engagement with the periphery of a cam or eccentric 43 on a countershaft 29' as the lever 32 and arms 37 and 38 are rocked in reverse directions, the shaft 29' being driven by the gear 28 through gearing 29'', Figure 6. The armature 42 is actuated in one direction for engaging the perimeter of the cam 43 by means of a spring 44, Figures 1 and 10, and in an opposite direction for disengaging it from said cam by

means of an electro-magnet 45, presently described.

This armature 42, or at least a portion thereof, is made of magnetizable metal adapted to cooperate with the electro-magnet 45 which is connected in an electric circuit deriving current from any available source of supply, Figure 10, said circuit having connected therein an electric switch composed of terminals 46 and 47, one of which, as 46, is mounted upon the upper surface of the partition *a* in the path of movement of the other terminal 47, which is mounted upon the tone arm D.

These terminals 46 and 47 are arranged in such relation that when the reproducer *d* reaches its innermost position at the end of the record being played, the terminal 47 will contact with the terminal 46 and thereby close the circuit through the electro-magnet 45 for withdrawing the armature 42 out of engagement with the perimeter of the cam 43 against the action of the spring 44.

For example, when the tone-arm has reached the limit of its inward movement due to the engagement of the reproducer needle with the record, the terminal 47 will engage the terminal 46 to close the circuit to the magnet 45 and thereby to trip the armature 42 from engagement with the cam 43, at which time the spring 36 will return the lever 32 to its starting position, thereby causing the inner end of the cam surface 39 to engage the roller 41 and lift the tone-arm away from the record, and at the same time allow the tone arm to ride down the incline 39 to bring the reproducer beyond the periphery of the record, with the roller 41 resting upon the cam surface 39' and against the stop shoulder 40.

This return of the lever 32 to its starting position and the resultant endwise movement of the shaft 14 to engage its pinions 19 and 27 with the companion gears 20 and 28 will cause the movement of the record-carrier 1 through two cycles, each toward and from the table C, one cycle for removing the record from the table and inverting it upon the carrier, and the other for replacing the inverted record, or another record, in an inverted position upon the table, as will be hereinafter more fully explained.

For this purpose gear 20 is rotated at twice the speed of the cam 43.

At about the time the carrier 1 is returned to its normal up position after its second cycle of operation, the spring 44 will have forced the armature 42 into engagement with the lower then underlying low portion of the periphery of the cam 43 so that the continued rotation of said cam will elevate the armature 42 and adjacent arm 38 of the lever 32, thereby rocking the lever against the action of the spring 36 to the position shown by dotted lines in Figure 1, and causing a corresponding axial movement of the shaft 14 to disengage the pinions 19 and 27 from their companion gears 20 and 28 for stopping the upward swinging movement of the carrier at its highest position indicated by full lines in Figure 1, and simultaneously tilting the inner end of the arm 37 downwardly to allow the tone arm D to return by gravity into engagement with the outermost part of the record on the table C for playing the record previously transferred thereto by the downward movement of the carrier.

This endwise movement of the shaft 14 for releasing the gears 20 and 28 is practically instantaneous, or at the time the highest part of the cam 43 reaches its uppermost position.

This instantaneous stopping motion is facilitated by a bell-crank lever 48 which is pivoted to a bracket 49 on one of the bearings 30, Figure 1, and has one arm engaged with a grooved collar 50 on the shaft 14, and its other arm connected by a spring 51 to one side of the cabinet A in such manner as to move to opposite sides of a direct line between the pivot of the lever 48 and point of connection, as 52, of the spring to the cabinet, so that when the shaft is in position to engage its pinions 19 and 27 with the gears 20 and 28, the spring will be above said pivot, but when the shaft is shifted endwise to the position shown by dotted lines, the spring will be moved to the lower side of the pivot, thereby producing a quick action of the shaft, endwise, just at the time that the high point of the cam 43 reaches its uppermost position.

The cam 43 is shown in Figure 1 with its high point at the bottom, and its lower side just about to engage the adjacent end of the pawl 42 or just about to begin the shifting of the lever 32 for disengaging the pinions 19 and 27 from their companion gears 20 and 28, and simultaneously releasing the tone-arm D for engagement with the record disk for playing, it being understood that the carrier 1 has previously been operated through both cycles to remove a record from the table C, and to deposit another record thereon, or to invert the record previously removed.

The magazine or record-holder 3 of the carrier 1 is turned one-half revolution at each cycle of movement of the carrier, and preferably during the movement of the carrier from the table C to its uppermost position, shown in Figure 1. This turning movement of the magazine or record-holder 3 with the record thereon is caused by the bodily movement of the carrier about the axis of its pivot 6, and for this purpose one side of the frame 2 is provided with a crank-arm 53 projecting downwardly from its pivot 6 and having its lower end connected by a link 54 to a secondary lever 55 which is pivoted intermediate its ends at 56 to the bracket 7 on the partition *a*.

A pawl 57 is pivoted at 58 to the other end of the lever 55 and has its free end provided with a hook-shaped member 58' adapted to alternately engage diametrically opposite pins 59 and 59' on a rotary disk 60 which is secured to the trunnion 8' of the magazine 3, Figures 1 and 2.

The connections between the crank-arm 53 of the carrier 1 and pawl 57 and also the relative positions of the hook 58' and pins 59 and 59' are arranged to effect a half revolution of the magazine 3 during each upward movement of the carrier 1 from its substantially horizontal position, as shown by dotted lines, to its full line position, Figure 1, the lower face of the hook 58' being beveled and of a greater length than the distance between the pins so that when the hook is engaged with one pin to complete the half turn of the magazine, the other pin will engage the beveled face of the hook and thereby limit the further turning movement of the magazine beyond the half turn, as shown in Figure 1.

For example, assume that the carrier 1 is in a position shown by full lines in Figure 1, and that it is just about to descend to deposit a record from the magazine 3 on to the table C. Then, as the carrier is moved downwardly, the hook 58' will be forced endwise from the pin 59 across the pin 59' as shown by dotted lines.

Now, as the carrier 1 is lifted from the table C, the hook 58' will engage the pin 59' and thereby rotate the magazine 3 a half revolution

from its previous position until limited by the engagement of the beveled face of the hook with the previously engaged pin 59'. The magazine 3 is adapted to carry a multiplicity of, in this instance a dozen records *e* in stacked relation, one upon the other, and is provided on one side with movable detents adapted to engage the lowermost record for holding all of the records in operative position within the magazine until the carrier is moved from its normal up position to approximately the plane of the table C, at which time the detents are automatically tripped to release the lower record on to the table, and to retain the remaining records in the magazine while the latter is being returned to its normal up position and inverted.

The opposite side of the magazine is provided with suitable means for picking up and removing a record from the table and transferring it to the magazine to be carried upwardly and inverted thereby on its return upward movement.

The magazine 3, as shown by full lines in Figure 1, is in the position assumed upon the second half cycle of movement of the carrier ready for releasing a record therefrom on to the table C upon its descent to the position shown by dotted lines. This release-mechanism comprises a plurality of, in this instance three upright shafts or spindles 61 Figures 2 and 3 journaled in suitable openings in the magazine 3 in uniformly spaced relation circumferentially, each shaft being provided with a pair of disk detents 62 and 62' Figure 3 in axially spaced relation corresponding to, but slightly greater than the thickness of one of the record disks *e* with the space between the detent disks in substantially the same plane as the end record at that side of the magazine.

The detent disks 62 and 62' are mainly circular, but each is provided with a flat side 63 and 63' Figure 5 arranged in planes at right angles to each other, and adapted to be alternately presented to the adjacent portion of the periphery of the record disks as the shafts 61 are rotated a quarter turn. The radial distance between the axis of the shaft 61 and flat sides 63 and 63' of their respective disks is less than the distance between said axis and the adjacent portion of the periphery of the record disk, whereby in turning of the shaft 61 to bring the flat side of the detent disk 62 into registration with the periphery of the adjacent portion of the lowermost record disk, as shown in Figure 3, the periphery of the other disk will be brought between the adjacent portions of the lowermost record disk and next adjacent record disk to allow the lower disk to be deposited on the table C and to hold the remaining disks in operative position in the magazine 3.

The upper ends of the shafts 61 are provided with toothed segments 64 Figures 3 and 4 extending laterally and outwardly therefrom to be engaged by upright toothed segments 65 which are pivoted at 66 to the outer sides of the adjacent portions of the magazine 3 to swing about axes at right angles to the axes of the shafts 61 against the action of suitable retracting springs 67, Figure 4.

The segments 65 are provided with crank-arms 68 to which are connected the upper ends of a corresponding number of thrust bars or legs 69 having their lower ends provided with feet 69' adapted to engage the upper surface of the partition *a* as the carrier 1 is moved from its normal up position to a horizontal position, as shown by dotted lines, Figure 1, thereby causing the rotation of the shafts 61 and disks 62 and 62' to effect the desired release of the lowermost record disk *e* upon the table C and the retention of the remaining disks in the magazine.

After depositing a record disk on the table C, the carrier 1 is returned upwardly, and the magazine 3 is turned one-half revolution for inverting the magazine with the disks therein. During this upward movement of the carrier, the tone arm D is released to allow the reproducer to engage the outermost part of the record disk to begin the playing of the record on that disk, and as previously explained, as soon as the playing of the record is finished, the tone arm with the reproducer thereon is lifted from the table and caused to return to its starting position along the track 39 and at the same time the shaft 14 will have been shifted endwise to re-engage the pinions 19 and 27 with their respective gears 20 and 28 for again operating the carrier 1 downwardly to pick up the previously played record disk from the table C.

For this latter purpose, the magazine 3 is provided with a plurality of, in this instance three pick-up pawls 70 arranged in uniformly spaced relation circumferentially substantially midway between the releasing disks, each pawl being pivoted at 71 to the face of the magazine opposite the detent disks 62 to swing in a plane parallel with the magazine, and to and from a position partially across the outer portion of the opening in the magazine against the action of a retracting spring 72.

Each pawl is provided with a beveled face 73 and a shoulder 74, the beveled face 73 being adapted to ride against the adjacent portion of the periphery of the record disk *e* on the table C to force it outwardly against the action of its retracting spring 72, while the shoulder 74 is adapted to be forced under the adjacent portion of the record disk by the same spring 72 as soon as said shoulder passes the lower face of the record disk, as shown by dotted lines in Figure 7 during the downward movement of the carrier.

Now, as the carrier is returned upwardly, the engagement of the pawls 70 with the lower edge of the record disk will cause the latter to be raised with the carrier away from the table and inverted to the position shown by full lines in Figure 1 ready for depositing another record upon the table during the next downward movement of the carrier.

As soon as this other record has been deposited upon the table C in the manner previously explained, the carrier is returned upwardly and the tone-arm D with the reproducer thereon is returned to its playing position in a manner previously described, thus completing one cycle of operation, it being understood that the entire series of records in the magazine may be similarly transferred from the table to the magazine, and vice versa, and that during each cycle of movement, the records will be inverted by the magazine to permit the successive playing of both sides of double records without further attention on the part of the operator.

I claim:

1. In a phonograph-record transfer-mechanism, the combination with a rotary table for supporting a record and means for rotating the same, of a record-carrier, means actuated by the first-named means for moving said carrier toward and from the table, said carrier having a reversible record-support, means for actuating said record-

support for presenting either side thereof to the table, movable detents on one side of the support for retaining a record thereon during one of the movements of the carrier toward the table, and means for tripping the detents to release the record upon the table when one side of said support is so presented.

2. In a phonograph-record transfer-mechanism, the combination with a rotary table for supporting a record and means for rotating the same, of a record-carrier, means actuated by the first-named means for moving said carrier toward and from the table, said carrier having a reversible record-support for presenting either side thereof to the table, movable detents on one side of the support for retaining a record thereon during one of the movements of the carrier toward the table, means for tripping the detents to release the record upon the table when one side of said support is so presented, and means on the other side of the record-support for removing a record from the table when the record-support is reversed and the record engaged thereby.

3. In a phonograph-record transfer-mechanism, a reversible record supporting device having radially movable means on one side for receiving the record, and additional means on the opposite side for discharging the record.

4. In a phonograph-record transfer-mechanism, a record-supporting mechanism rotatable about an axis for reversing the same and having one side provided with means for receiving and supporting the record and its opposite side provided with additional means for discharging the record.

5. In a phonograph-record transfer-mechanism, the combination with a turn table of a movable record carrier, means for moving said carrier toward and from the table, a record support carried thereby, means for reversing said support to present one side for receiving a record from the turntable and the other side to release a record thereon, movable detents on one side of the support for detaining a record thereon during one of the movements of the carrier toward the table, and means for tripping the detents to release the record upon the table when said support is so presented.

6. In a phonograph-record transfer-mechanism, the combination with a turn table of a movable record carrier, means for moving said carrier toward and from the table, a record support carried by said carrier, said support being reversible for presenting either side thereof to the table, movable detents on one side of the support for retaining a record thereon during one of the movements of the carrier toward the table, means for tripping the detents to release a record from the table when one side of said support is so presented, and means on the other side of the record support for removing a record from the table when the record support is reversed and the record engaged thereby.

7. In a phonograph-record transfer-mechanism, the combination with a turn table of a record carrier adapted to support a stack of records, means for reversing said carrier to present either side thereof to said turn table, mechanism for removing a record from said turn table to said stack when one side of said carrier is presented to the table, and mechanism for discharging a record from said stack to said turn table when the opposite side of said carrier is presented to the table.

8. In a phonograph-record transfer-mechanism, the combination with a turn table of a carrier adapted to support a plurality of records, mechanism for moving said carrier to and from said table, and means for removing a record from said table to said carrier and for removing another record from said carrier to said table.

9. In a phonograph-record transfer-mechanism, the combination with a turn table of a reversible record carrier adapted to support a stack of records, mechanism for moving said carrier to present one side of said stack of records to said turn table, mechanism operable when said stack is so positioned to remove a record from said turn table to said stack, mechanism operable thereafter to move said carrier to present the opposite side of said stack to said turn table, and means operable when said stack is so positioned to discharge a record therefrom to said turn table.

10. In a phonograph record transfer mechanism, the combination with a rotary record supporting table, of a record magazine supported at one side thereof for containing a stack of records in contact with each other, and means for moving said magazine over the table for depositing and removing records therefrom.

11. In a phonograph record transfer mechanism, the combination with a rotary record supporting table, of a reversible record carrier adapted to contain a plurality of records in stacked relation, means for reversing said carrier, and means for moving said carrier toward the table for depositing a record thereon when in one position, and removing a record therefrom when reversed to another position.

12. In a phonograph record transfer mechanism, the combination with a rotary record supporting table, of a reversible record carrier adapted to support a plurality of records in stacked relation, means for moving said carrier bodily toward and from the table, and means for reversing said carrier during its bodily movement for depositing a record on the table when in one position and removing the record therefrom when in the reverse position.

13. In a phonograph record transfer mechanism, the combination with a rotary record supporting table, of a reversible record carrier adapted to contain a plurality of records in stacked relation, means for moving said carrier bodily toward and from the table, means for reversing said carrier during its bodily movement, and means for causing said carrier to deposit a record on the table when in one position, remove the record therefrom after reproduction when in the reversed position and redeposit the record on said table when in its first mentioned position for causing the reverse side of the record to be reproduced.

14. In a phonograph record transfer mechanism, the combination with a reversible magazine for holding a plurality of records in contacting stacked relation, of a rotary record supporting table upon which records are adapted to be deposited from said magazine, mechanism for depositing a record from said magazine onto the table and returning it to said magazine after reproduction, and means for reversing the position of said magazine and record whereby the record may be reproduced first on one side and then the other.

15. In a phonograph record transfer mechanism, the combination with a rotary record supporting table, of a record magazine adapted to contain a plurality of records in contacting stacked relation, mechanism for depositing a

record from the magazine onto the table and removing the record from the table to the magazine, and means for reversing the position of the magazine for causing said record to be reversed on said table upon its being redeposited thereon.

16. In a phonograph record transfer mechanism, a rotary table for supporting a record, means for rotating the table, a record magazine movable toward and from the table, means on said magazine for depositing a record therefrom onto the table during its approach thereto, and means for returning a record from the table to the magazine upon its contacting therewith.

17. In a phonograph record transfer mechanism, a rotary table for supporting a record, means for rotating the table, a magazine for containing a plurality of records in contacting stacked relation, means for causing relative movement between said magazine and table to bring them into record exchanging position, means for separating the lowermost record from the stack and dropping it on said table in playing position, and means for engaging said record upon completion of the playing thereof and returning it to the other side of the stack.

18. In a device of the character described, a member adapted to receive a record, means for moving a stack of records over the record receiving member, means for removing a record on said member and placing it on one side of the stack of records, and means whereby the record from the other side is released to said member as the stack moves thereover.

19. In a device of the character described having a turntable, a carriage normally positioned to one side of the turntable and carrying a plurality of records, means for moving the carriage over the turntable and back to its normal position, and means whereby one record is deposited on the turntable as the carriage is moved thereover.

20. In a device of the character described having a turntable adapted to receive a record, a carriage normally positioned to one side of the turntable and carrying a stack of records, means for moving the carriage over the turntable and back to its normal position, means for removing a record from the turntable, and means for depositing one record of the carriage carried stack onto the turntable as the carriage is moved thereover.

21. In a device of the character described having a turntable, a carriage, means for carrying a stack of records on the carriage, means for moving the carriage over the turntable, and means whereby a record on the turntable is removed therefrom and placed on one side of the stack of records and a record from the other side of the stack deposited onto the turntable when the carriage is moved thereover.

22. In a device of the character described having a turntable adapted to receive a record and a tone arm, a magazine for carrying a stack of records normally positioned to one side of the turntable and movable thereover, means for moving the magazine over the turntable and back to its normal position to permit an interchange of records therewith, and means whereby the tone arm sets the carriage moving means in operation at the completion of the record on the turntable.

23. A device of the character described having a turntable adapted to receive a record and a tone arm, a carriage carrying a stack of records, means for moving the carriage over the turntable to remove a record on the turntable and deposit another thereon, means for raising the tone arm out of the path of the carriage as it moves over the turntable, and means for moving the tone arm to a position above the starting point of the record deposited on the turntable.

24. The combination with a rotatable record holding member, of a record stack carrying member, and means for moving one of said members relative to the other, said members being formed to effect an interchange of records during such movement.

25. In a device of the character described, a member adapted to receive a record, means for moving a stack of records bodily over the record receiving member from one side thereof, means for removing a record on said member and applying it to said stack, and means for removing a record from said stack and applying it to said member when said stack is positioned over said member.

26. In a device of the character described, a record turntable adapted to receive a record, means for moving a stack of superimposed records bodily into vertical alignment with the record turntable, means for removing a record on the turntable and applying it to the stack, and means for removing a record from the stack and applying it to the turntable.

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