May 9, 1933. E. CHIFFEY 1,907,500

TALKING MACHINE

Filed April 26, 1930 2 Sheets-Sheet 1

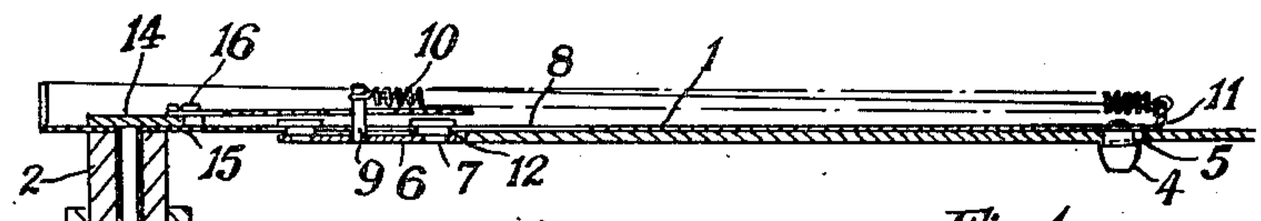

Fig. 1.

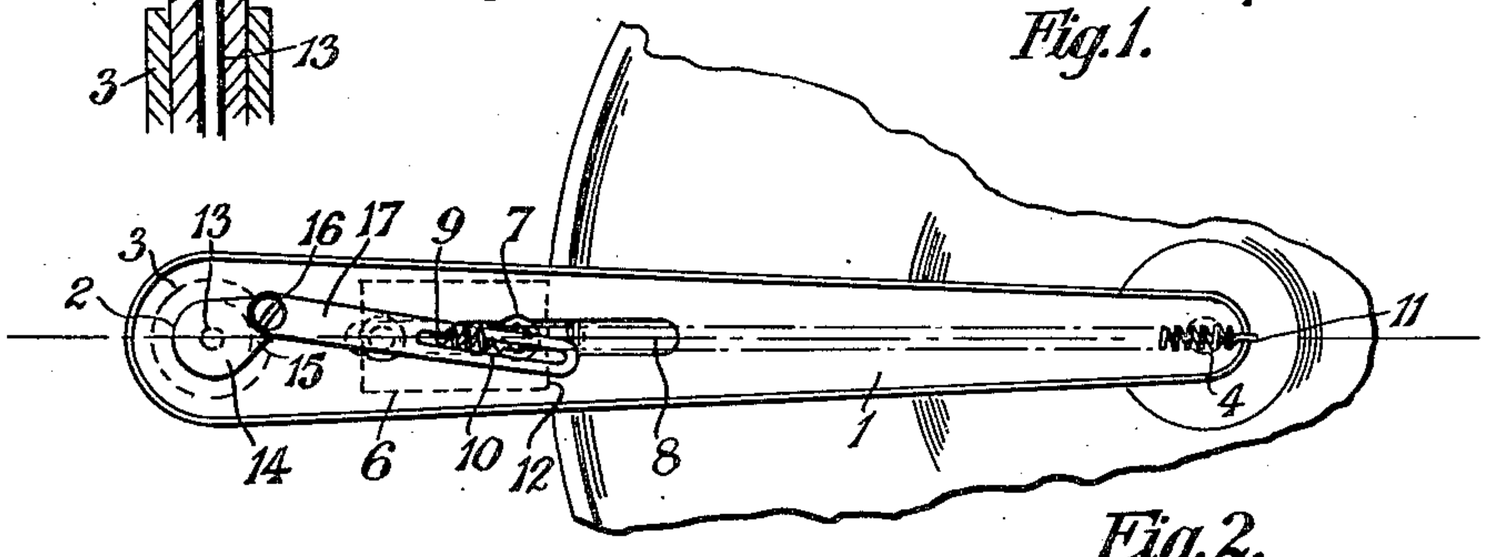

Fig. 2.

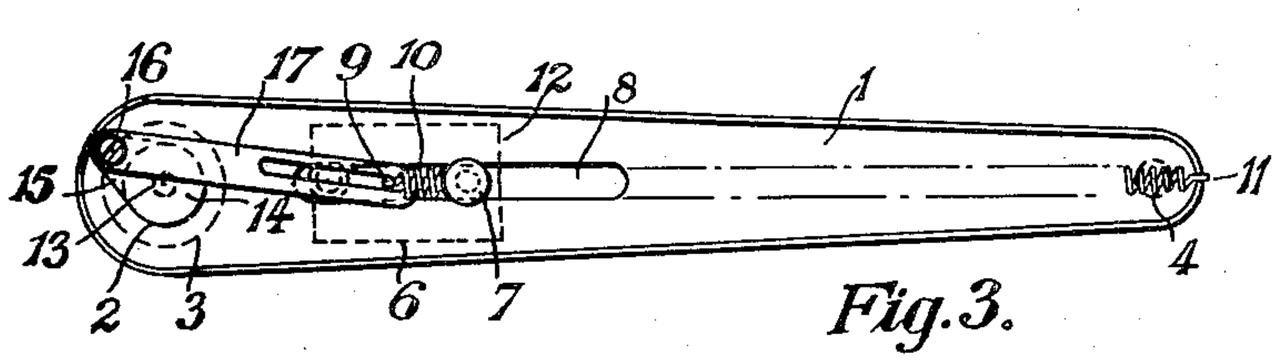

Fig. 3.

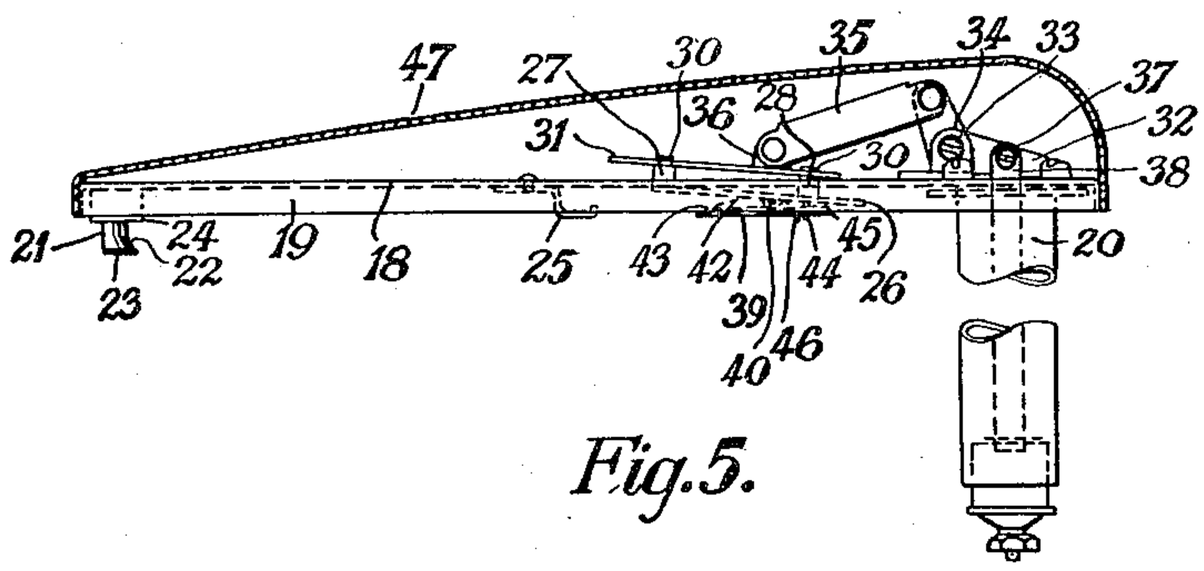

Fig. 5.

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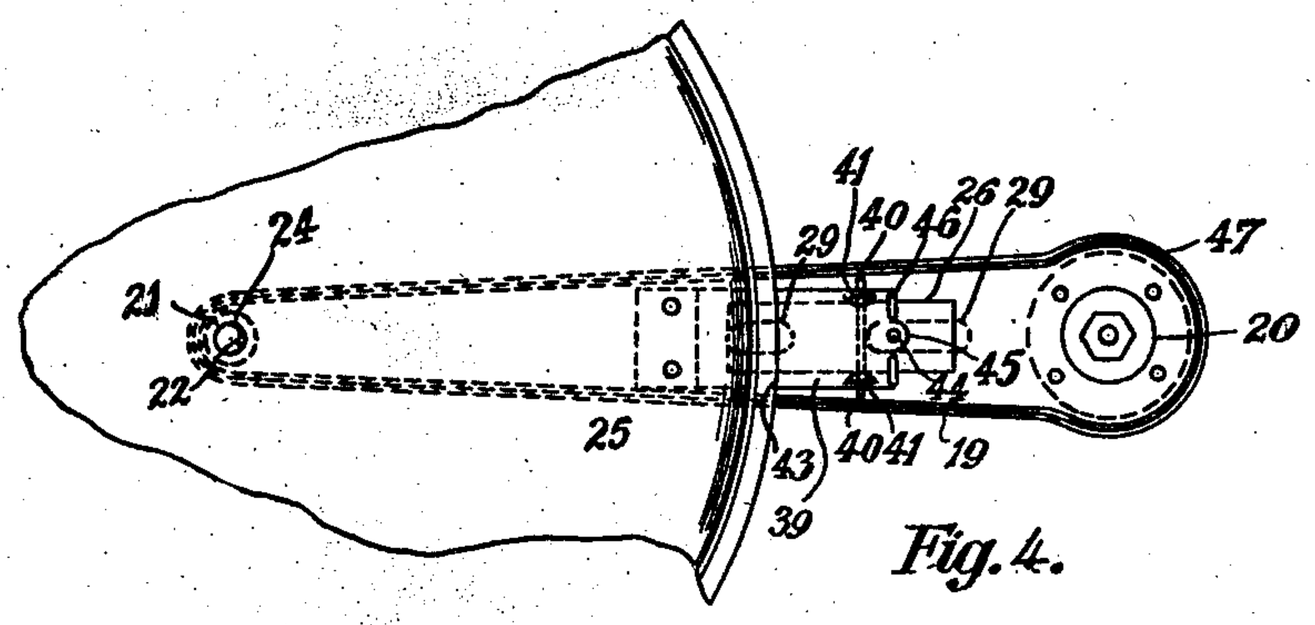

Fig. 4.

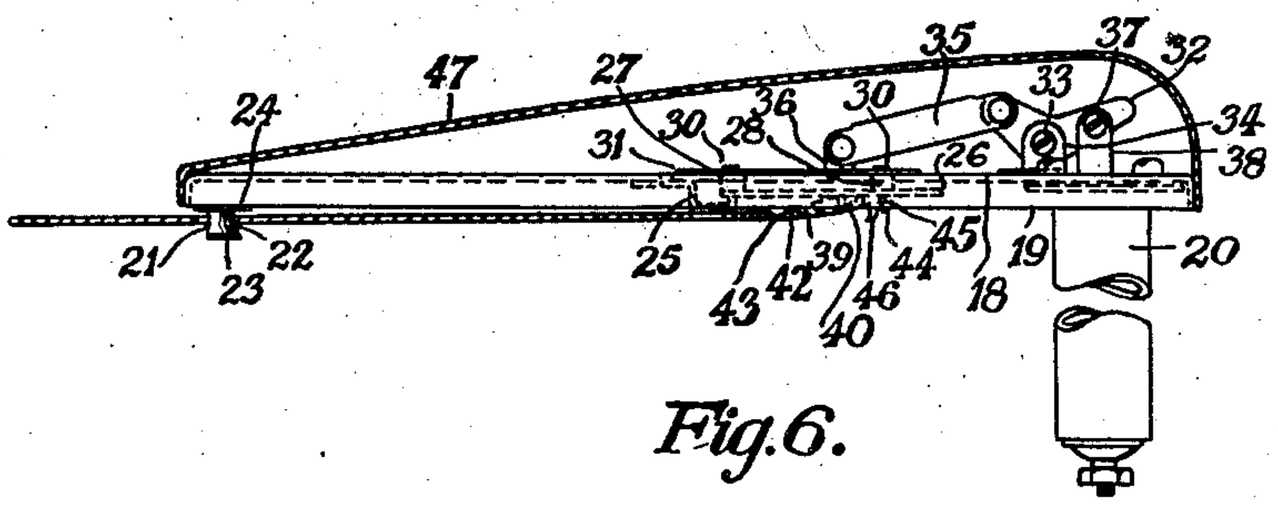

Fig. 6.

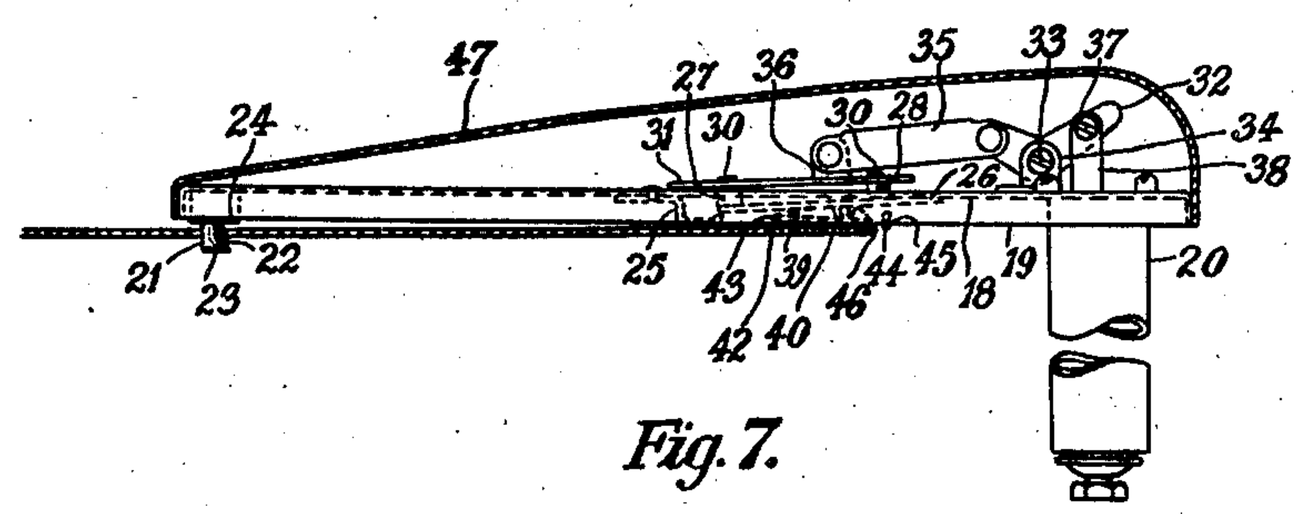

Fig. 7.

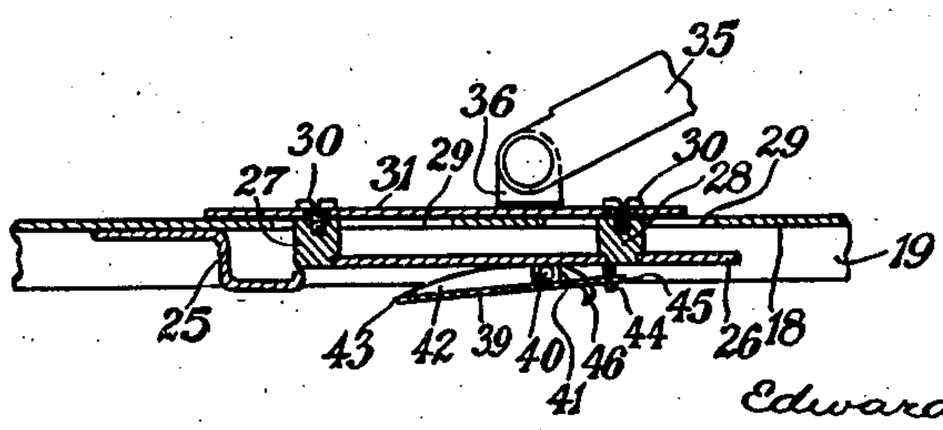

Fig. 8.

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UNITED STATES PATENT OFFICE

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TALKING MACHINE

Application filed April 26, 1930, Serial No. 447,690, and in Great Britain May 28, 1929.

This invention relates to improvements in talking machines, and in particular to talking machines of the kind which embody devices for mechanically engaging and conveying disc sound records. In magazine talking machines for example, it is usual to employ some form of record transferring device, to engage records singly and in succession and to feed them from a magazine to the playing position, and in some cases the transferring device may also be utilized to remove played records from the playing position and to deposit them in a suitable receptacle or to reverse the record preparatory to its being returned to the playing position.

The present invention is directed to providing improved means for effecting engagement between a transferring device and a record.

According to the present invention a record transferring device is provided with means adapted to engage the aperture at the centre of the record disc and a point on the edge of the record, so that the record is gripped between its centre and its edge.

The invention is illustrated by way of example in the accompanying drawings as applied to a talking machine having a record conveyor arranged to swing about a vertical axis.

In the drawings

Fig. 1 is a side elevation partly in section of one construction of record conveyor embodying the invention, a record being shown engaged therewith.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 is a plan view similar to Fig. 2 but with the parts moved to release the record from the conveyor.

Fig. 4 is an underside plan view of an alternative construction with a record in the engaged position.

Figs. 5, 6 and 7 are sectional side elevations of the construction shown in Fig. 4, but with the parts in different positions.

Fig. 8 is an enlarged sectional view of a part of the mechanism.

Referring to Figs. 1, 2 and 3 of the drawings, a tapering arm 1 is connected rigidly at its widest end with a hollow vertical post 2 mounted in known manner for both rotational and vertically sliding movements in a bearing sleeve 3, to swing the arm 1 horizontally at suitable intervals between a position, say over a pile of axially aligned records in a magazine (not shown) and a position over the turntable, and to move said arm 1 vertically when in either of those positions.

At the free or narrow end of the arm 1 is fixed a downwardly extending pin 4 of a size such as is capable of passing into the central aperture of a record. The pin 4 is provided with an inclined shoulder 5, so that an annular depression is formed between said shoulder and the under surface of the arm 1. The lower end of the pin 4 is tapered to facilitate entry into the central aperture of a record.

Beneath the other end of the arm 1 is mounted a plate-like member 6, this member being connected with the arm 1 by means of headed pins 7 which extend through and slide in a longitudinal slot 8 formed in the arm 1.

The plate 6 is provided on its upper surface with a pin 9 which extends upwardly through the slot 8 in arm 1, and a spiral tension spring 10 is connected between the pin 9 and a lug 11 extending upwardly from the free end of the arm 1, this spring tending to draw the sliding plate 6 towards the free end of the arm. The thickness of the sliding plate 6 is substantially equal to or slightly greater than the thickness of a record to be conveyed and the edge 12 of the plate towards the free end of the arm is slightly curved, the curve being struck substantially about an axis coincident with that of the pin 4. The curved edge 12 is also bevelled on the upper side as shown in Fig. 1.

Within the interior of the hollow post 2 is provided a spindle 13 capable of rotation within the post 2. The spindle 13 at its upper end extends through the arm 1 and to the upper end is rigidly secured a plate 14 having a part 15 extending radially from the spindle 13. The part 15 carries a pin 16 which serves for the pivotal connection

of the plate 14 with a slotted link 17, the slot of which engages over the pin 9 extending upwards from the plate 6.

In transferring records singly from the top of a pile in a magazine to the playing position, the arm 1 is moved in known manner into a position over the pile of records. At this point the spindle 13, plate 14 and link 17 occupy the positions, with regard to arm 1, indicated in Fig. 3, and the plate 6 is drawn away from the free end of the arm 1 against the spring 10 by virtue of the connection between the slot in link 17 and pin 9.

The post 2, arm 1 and parts supported thereby are now lowered in a manner similar to that shown in British Patent 291,480 until the pin 4 engages in the central apertures of the uppermost records of the pile. The spindle 13 is now rotated through any convenient means such as a cam (not shown) driven by the machine motor and the link 17 moves to permit the sliding plate 6 to be drawn towards the free end of the arm 1 under the pull of the spring 10. The movement of plate 6 continues until its bevelled edge 12 engages the edge of the uppermost record of the pile, whereupon that record is caused to move into the position indicated in Figs. 1 and 3, where the edge of the central aperture is engaged in the annular depression above shoulder 5. When this position is reached movement of plate 6 ceases but link 17 is permitted to continue its movement as spindle 13 rotates by virtue of its pin and slot connection with plate 6.

It will be readily understood that by this arrangement the member 6 will move along the arm through distances determined by the size of the top record and that records of various sizes can therefore be engaged.

The record is now gripped between its central aperture and a point on its edge by the pin 4 and the sliding member 6.

The arm 1 is next raised to lift the uppermost record from the pile, and then swung to a position over the turntable and lowered until the end of pin 4 engages or is close to the upper end of the turntable spindle. The spindle 13 is again rotated in post 2 until the end of the slot in link 17 engages pin 9 to draw member 6 away from the edge of the record engaged thereby, whereupon the record is permitted to slide off the shoulder 5 and to fall by gravity on to the turntable for playing.

The pile of records in the magazine may be centralized in known manner by a vertical spindle passing through their central apertures and this spindle may be so mounted as to be capable of being yieldably depressed by engagement with the pin 4 as the arm 1 is lowered over the pile, to permit said pin to enter the central apertures.

Similarly, when the device is required to remove a record from the turntable, a yieldably mounted turntable spindle may be used, the spindle being adapted to be depressed from the central aperture in the record when the pin 4 on the arm 1 engages the spindle upon entering the record aperture.

Figs. 4–7 illustrate an alternative arrangement according to the invention.

In the construction therein illustrated, an arm 18 having a downwardly extending flange 19 at its edge is secured at the upper end of a hollow post 20 mounted as in the previously described arrangement for longitudinal and rotational movements. At the outer end of the arm 18 is fixedly mounted a boss 24 from the centre of which a pin 21 extends downwardly. This pin has a cutaway portion 22 of a width which is slightly greater than the thickness of a record. This cutaway portion leaves a sloping shoulder 23 on the side of pin 21 towards the post 20. At a point about mid-way of the length of the arm 18 and between the side flanges is rigidly fixed a stop 25, formed by a piece of bent metal riveted to the arm 18, and this stop has a plane surface which projects just below the level of the flanges 19.

Beneath the arm 18 and on the side of the stop towards the post 20 is provided a plate 26 on the upper surface of which are supported two short pillars 27, 28, which project through elongated slots 29 formed in the arm 18.

The pillars 27, 28 at their upper ends are fixedly connected by screws 30 with a plate 31 above the arm 18 and the arrangement is such that plates 26 and 31 are capable of movement together both longitudinally of and towards and away from the arm 18.

Above the arm 18 a bell crank lever 32 is mounted for pivotal movements about an axis pin 33 carried in fixed lugs 34 fixed to the arm 18. One arm of the lever 32 is connected to a link 35 which in turn is connected with a lug 36 mounted rigidly on the upper surface of plate 31. The other arm of the bell crank lever is pivotally connected at 37 with the upper end of a rod 38 mounted for vertical movement in the hollow post 20.

It will readily be seen that as the rod 38 is moved up or down the plates 26 and 31 are caused to move longitudinally of the arm 18, the pillars 27, 28 sliding in the slots 29. The arrangement, however, is such that as rod 38 approaches its lowermost position, pillar 28 engages with the end of its slot 29, and the plates 26 and 31 are tilted into the position indicated in Fig. 5.

A plate member 39 is attached to the underside of the plate 26, for limited rocking movement with respect thereto, by means of a pivot pin 40 which is journaled in a pair of ears or lugs 41 formed on and depending from the side edges of the plate

26 and suitable apertures formed in the flanged sides 42 of the plate 39.

The member 39 is pivoted eccentrically so that its edge 43 which is bevelled on its upper side, tends to drop by gravity, and an adjustable stop screw 44 in a lug 45 at the other end of member 39 engages the surface of plate 26 so that the edge 43 when in its lowered position projects beneath the stop 25 a distance which is substantially equal to the thickness of a record.

A plurality of hook members 46 are formed on the plate member 39, adjacent the lug or ear 45, which project below the stop member 25 a distance substantially equal to the thickness of a record when the member 39 is in horizontal position.

In the position of member 39 indicated in Fig. 5 where no record is engaged, the edge 43 and the hooks 46 are respectively at distances from the pin 21 which are slightly greater than the radii of 10 and 12 inch records.

All the parts above the arm may be enclosed as indicated in the drawings, by a hood or cover 47.

The operation of this device is as follows:

Assuming the arm 18 to be in position over a pile of records, of which the uppermost is of say 10″ diameter, and resting thereon with pin 21 engaged in the central aperture of the uppermost record and the stop 25 resting on the surface of that record.

To take up the uppermost record, the rod 38 is moved upwardly within the hollow post 20 in any convenient manner to rock the bell crank lever from the position indicated in Fig. 5. As a consequence plates 26 and 31 move until plate 31 rests on the arm 18 and the end 43 of member 39 drops below stop 25. Further movement of rod 38 causes the plates 26 and 31 and member 39 carried thereby to move towards the free end of the arm 18 until the end 43 of member 39 engages the edge of the uppermost record. The latter is thereupon caused to slide to a limited extent until the edge of its central aperture engages with the cutaway part 22 of pin 21 above shoulder 23. The record is now held against the arm 18, between pin 21 and member 39 in the manner indicated in Fig. 6, and the arm can now be raised and swung, together with the record, by rotating post 20 in any convenient manner, to a position over the turntable and lowered to place the record on the turntable. The record is then freed from the conveyor arm 18 by moving the rod 38 downward within post 20, whereupon plates 26 and 31 and member 39 are drawn to the right in Fig. 6 to disengage the edge 43 from the edge of the record, so that the latter can fall from the sloping shoulder 23 on pin 21 on to the turntable. The parts 26 and 31 and member 39 again occupy the position indicated in Fig. 5 with regard to arm 18 and when the latter is raised and swung back over the pile of records in the magazine the member 39 is retained in this position, so that it cannot foul the upper record, the end 43 passing above it and the hooks 46 outwardly of its edge.

Assuming the next record in the pile to be a 12″ record, then, as the rod 38 is raised, bell crank lever 32 rocked and plates 26 and 31 moved toward the pin 21, the end 43 of member 39 contacts with the upper surface of the record (Fig. 7) whereby movement of member 39 about its pivot 40 is limited.

In consequence the hooks 46 are caused to occupy a position in the plane of the record and as movement of the parts 26, 31 and 39 towards the free end of the arm 18 continues, the record is caused to slide as before and is finally gripped between the recess 22 of pin 21 and the hooks 46, and is ready for transfer to the playing position on the turntable in the manner described above.

I claim:

1. A phonograph record transferring device comprising a movable transfer arm, means carried by said arm and adapted to engage the edge of the central opening in a record tablet, and means movable on said arm of engaging and supporting the outer edge portion of the record tablet.

2. A disc record transferring device comprising a movable transfer arm, a pin carried by said arm and adapted to engage the edge of the central opening in said record, and means movable on said arm for engaging and supporting the outer edge of the record.

3. A phonograph disc record transferring device comprising an arm mounted for movement about a pivot, a pin connected to said arm and adapted to engage the edge of a central opening in a record disc, a supporting member mounted on said arm for movement relative to said pin, and means urging said supporting member toward said pin to yieldingly engage the periphery of the record disc.

4. A phonograph record transferring device comprising a movable transfer member, a pin carried by said member and having a depression therein adapted to engage the edge of the central opening in said record, a member longitudinally movable on said transfer member adapted for yieldingly engaging the outer edge of the record and for urging the edge of said opening into said depression, and means for actuating said movable member.

5. A phonograph disc record transferring or conveying device including a pivotally mounted transfer arm, a pin carried by said arm having a shoulder formed thereon and

adapted to engage the edge of the central opening in said record, a member longitudinally movable on said arm adapted for yieldingly engaging the peripheral edge of the record and for urging the edge of said opening onto said shoulder, and means carried by said arm for actuating said movable member.

6. A record transfer or conveying mechanism comprising means for supporting a record at the edge of the central opening therein, and means urging said record laterally onto said first-named means and for supporting said record at a point on the periphery thereof.

7. A record conveying mechanism comprising means for supporting records of varying diameters at the edge of a central opening therein, means for urging said records onto said first-named means and for supporting said record at points on the peripheral edges thereof, and means for automatically positioning said last-named means to engage the periphery of the largest record to be transferred by initial contact with the surface thereof.

8. Means for transferring records from a pile to the turntable of a phonograph comprising a swingable arm, a pin depending from the free end of said arm and being engageable with the edge of an opening in a record, the free end of said pin being provided with an offset shoulder, and a supporting member longitudinally movable on said arm relatively to said pin and in spaced relation thereto for cooperation therewith.

9. Means for transferring records from a pile to the turntable of a phonograph comprising a vertically reciprocable swingable arm, a pin depending from the free end of said arm and being engageable with the edge of an opening in a record, the free end of said pin being provided with an offset shoulder, record engaging means adapted to be moved longitudinally of and along said arm toward and away from said pin for supporting and releasing a record therebetween and means for automatically actuating said record engaging means.

10. A record transfer mechanism comprising means for supporting a record disc at the edge of a central opening therein, means for engaging the peripheral edge of the disc, and means for automatically adjusting said last-named means in accordance with the diameter of the record to be transferred.

11. A record transfer mechanism comprising means for supporting record discs of varying diameters at the edge of the central opening therein, means for engaging the peripheral edges of said discs comprising alternative record disc engaging members, and means for automatically adjusting said last-named means in accordance with the diameter of the record disc to be transferred.

12. A phonograph record transfer device comprising an arm mounted for swinging movement about a pivot and having a slot therein, a pin having an offset shoulder connected to said arm and adapted to engage the edge of the opening centrally of a record, a crank lever pivoted on said arm, a plate slidably mounted in said slot, a link connecting said crank lever and said plate, and a hook member pivotally attached to said plate for longitudinal movement in response to movement of said lever to grip said record disc between said pin and hook member.

13. A phonograph record transferring device comprising a movable transfer arm, means carried by said arm and adapted to engage the edge of the central opening in a record tablet, means mounted on said arm for movement relative to said first-named means, and means for urging said last-named means toward said first-named means to yieldably engage the periphery of said record tablet.

14. A phonograph record transferring device comprising a movable transfer member, a depending pin carried by said member and having a surface formed thereon adapted to engage the edge of the central opening in a record tablet, a member longitudinally movable on said transfer member into engagement with the outer edge of the tablet whereby to urge the edge of said central opening upwardly on said inclined surface, means for actuating said movable member, and means carried by said transfer member for limiting the movement of said record tablet along said pin.

In testimony whereof I have signed my name to this specification.

EDWARD CHIFFEY.