May 15, 1923. 1,455,209

I. KARISH ET AL.

PHONOGRAPH

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Fig. 1

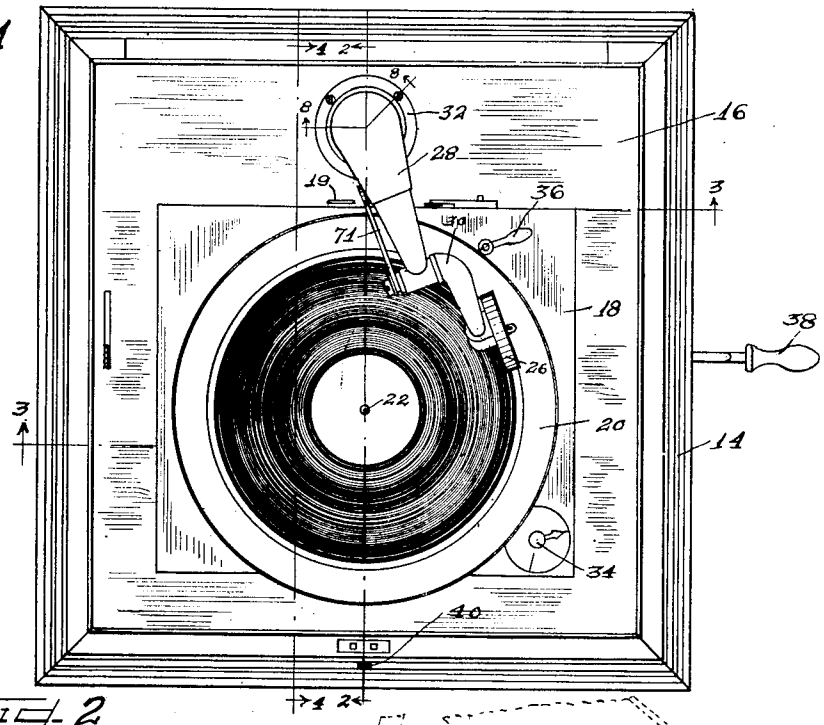
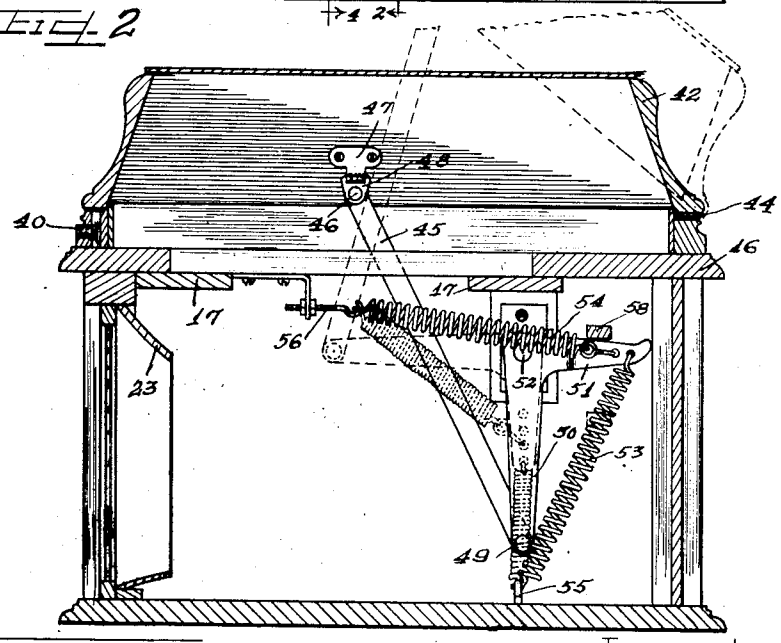


Fig. 2



Witnesses

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May 15, 1923.

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PHONOGRAPH

Filed Sept. 3, 1920

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Fig. 3

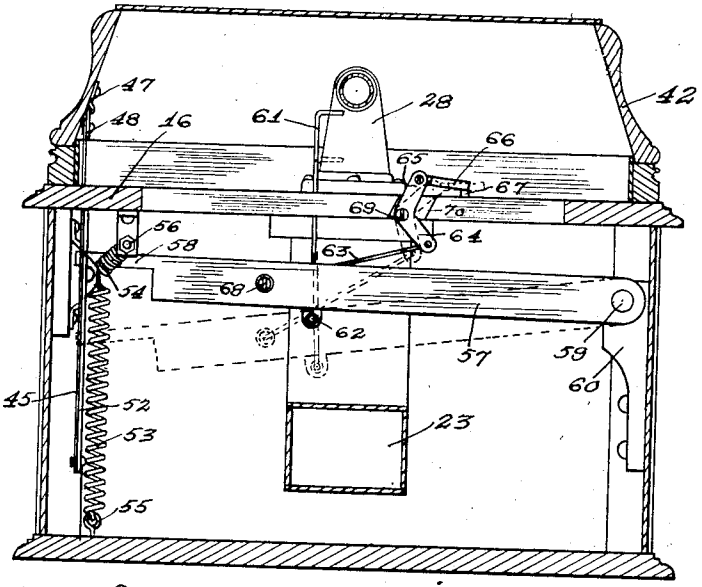
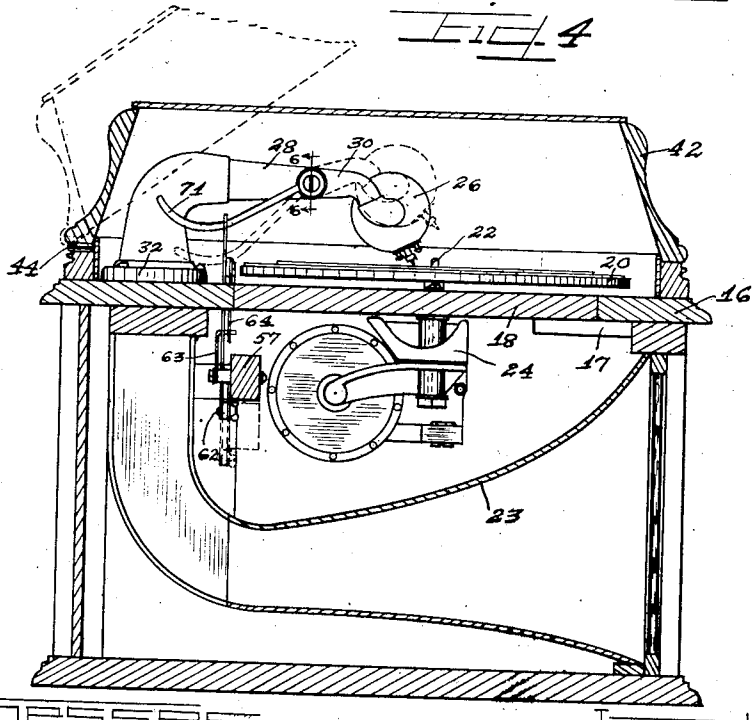


Fig. 4



Witnesses

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PHONOGRAPH

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Fig. 5

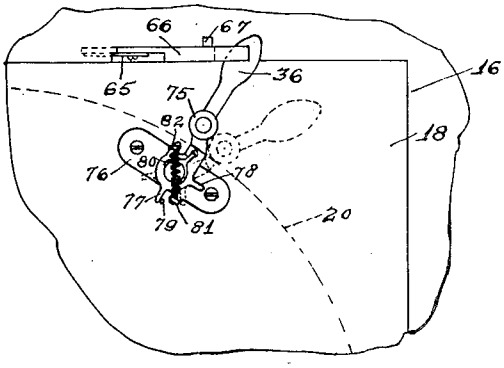


Fig. 6

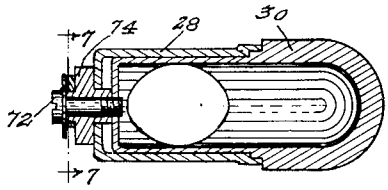


Fig. 7

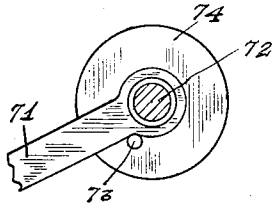
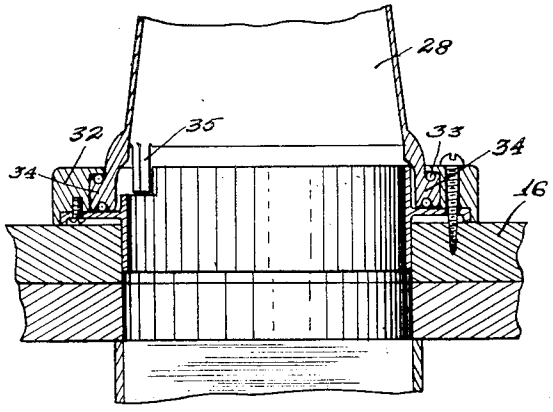


Fig. 8



Witnesses

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May 15, 1923. 1,455,209

I. KARISH ET AL

PHONOGRAPH

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Fig. 9

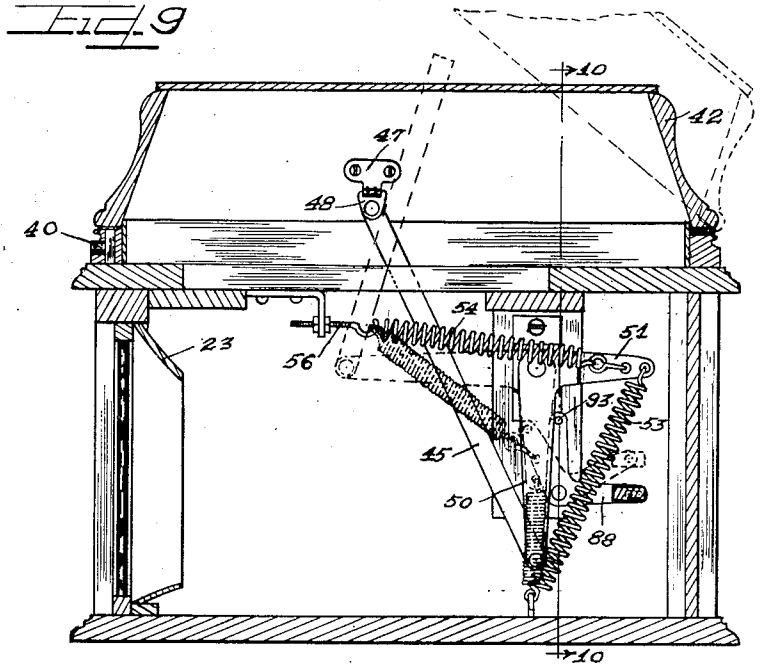
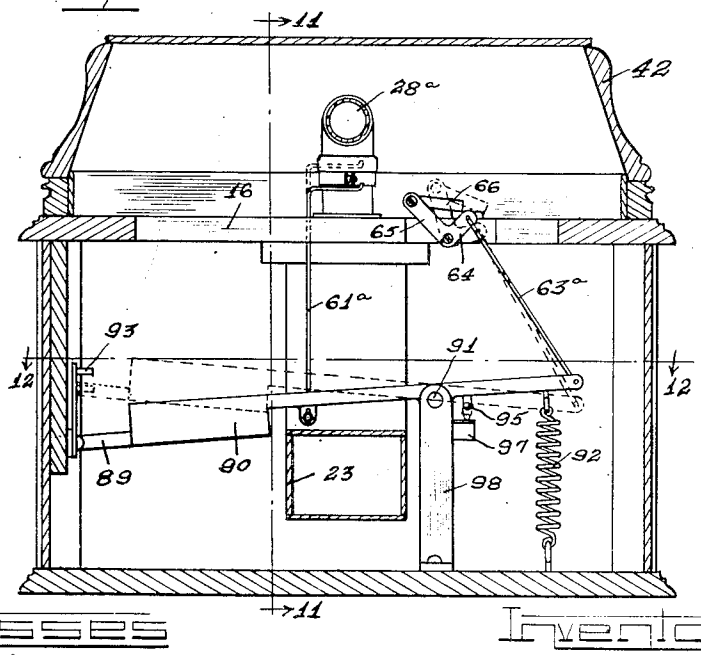


Fig. 10



Witnesses

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May 15, 1923. 1,455,209

I. KARISH ET AL

PHONOGRAPH

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Fig. 11

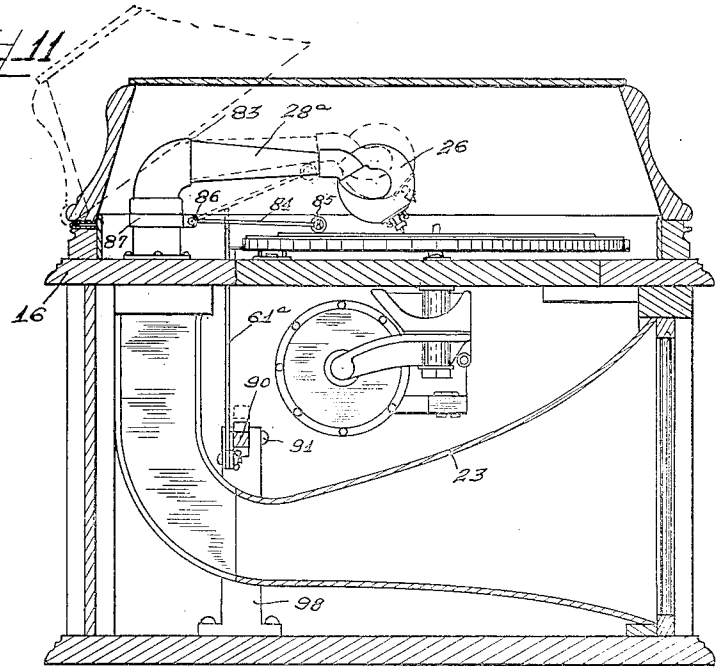
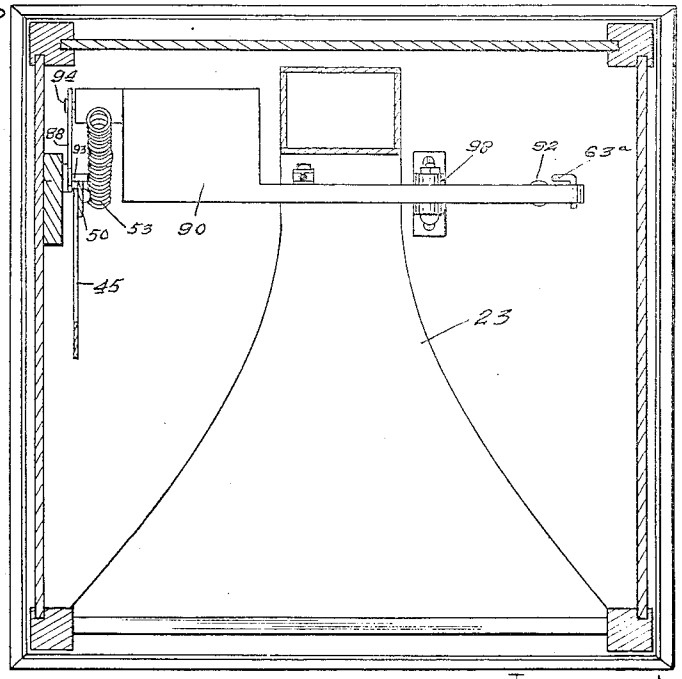


Fig. 12



Witnesses

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By Charles W. Kellogg Atty.

Patented May 15, 1923. 1,455,209

UNITED STATES PATENT OFFICE.

ISAAK KARISH AND JAMES KERNES, OF CHICAGO, ILLINOIS.

PHONOGRAPH.

Application filed September 3, 1920. Serial No. 408,015.

To all whom it may concern:

Be it known that we, ISAAK KARISH, a citizen of the Republic of Poland, and JAMES KERNES, a citizen of the United States, respectively, and residents of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Phonograph; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

Heretofore, in the use of phonographs such as are ordinarily distributed on the market, it has been necessary, upon the completion of the playing of the record, to open the top of the cabinet, stop the revolution of the record-holding turntable by means of a brake provided therefor, and lift up the reproducing tone arm before the record can be replaced or played over.

This invention has for its object the construction of a phonograph cabinet which has a spring operated top upon which a latch is provided which, after the playing of a record is finished, can be released allowing the top to spring up into open position, which thereupon automatically stops the rotation of the record-holding table and raises the tone arm together with the attached reproducer from the record, thereby putting the machine in a position to be reset for another record or for the replaying of the same record.

A further object of this invention is the provision of a phonograph cabinet which acts in the manner described above without the introduction of unnecessary or cumbersome apparatus and with the use of a simple construction which cannot ordinarily be distinguished from the construction now commonly in use in the ordinary phonograph cabinet, and which moreover can be readily installed in any make of phonograph now in use.

Other and further important objects of this invention will be apparent from the specification and the accompanying drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a top plan view of a phonograph cabinet showing the cover removed and with our invention applied thereto.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1, some parts being removed and showing the cover in place and looking in the direction indicated by the arrows.

Figure 3 is a section taken on the broken line 3—3 of Figure 1 looking in the direction indicated.

Figure 4 is a section taken on the line 4—4 of Figure 1 showing the cover in position and looking in the direction indicated by the arrows.

Figure 5 is a detail view showing the construction and operation of the braking mechanism.

Figure 6 is a section taken on the line 6—6 of Figure 4.

Figure 7 is a section taken on the line 7—7 of Figure 6 showing the operating arm in place.

Figure 8 is an enlarged section taken on the line 8—8 of Figure 1.

Figure 9 is a sectional view similar to Figure 2, showing a modified form of construction of my invention.

Figure 10 is a section taken on the line 10—10 of Figure 9, parts being omitted.

Figure 11 is a section taken on the line 11—11 of Figure 10 showing the motor in position.

Figure 12 is a section taken on the line 12—12 of Figure 10 looking in the direction indicated by the arrows.

As shown on the drawings:

The reference numeral 14 indicates a phonograph cabinet of ordinary construction having therein the usual horizontal shelf 16, which supports a motor holding board 18 by means of the extending brackets 17 glued or otherwise secured to the corners of the square openings in the shelf 16. An ordinary turn-table 20 is driven by the motor and is removably attached to a spindle 22 on the motor 24. A reproducer 26 is provided attached to a tone arm 28 to which is attached a jointed portion as shown at 30 in Figures 1 and 4. This tone arm is swiveled at 32 as is usual in this construction, and the end of the member 30 rotates in a cylindrical bearing in the end of the tone arm 28 and at right angles thereto.

A knob or latch 40 is provided at the front of the cabinet for locking the cover thereof in closed position. The cover is designated

by the numeral 42 and hinged to the cabinet 14 at 44 in the usual manner. Attached to the cover is a bracket lever or arm 45 pivoted at 46 to a plate 48 which in turn is jointed to a plate 47 fixed to the inside of the cover. At its lower end the lever 45 is pivoted at 49 to the longer arm 50 of a bell-crank lever 50—51, the bell-crank lever 50—51 being pivoted at 52 and the short arm 51 of which has fixed at its end two helical springs 53 and 54 which have their operative ends attached to rings or hooks 55 and 56 fixed respectively to the bottom and top of the cabinet as shown in Figure 2. Extending transversely across the back of the cabinet is a bar 57 of wood or other suitable material having an extending arm or end 58. This bar 57 is pivoted at 59 to a block 60 fastened to the inside of the cabinet. The end 58 of the bar 57 is adapted to ride over the end of the short arm 51 of the bell-crank lever as shown in Figure 2. Attached to the bar 57 at a point 62 located at approximately the middle portion thereof is an upwardly extending lifting rod 61 made of wire or other suitable material, having its end bent into a horizontal position as shown. A similar rod 63 is pivoted to the arm 57 at 68 by attachment to the end of a bolt extending therethrough. Pivotally attached to the other end of the arm 63 is the arm 64 of a small bell-crank lever 64—65 pivoted at 69 to the shelf 16 in a depression 70 cut in the edge thereof. Attached to the other end of the arm 65 of the bell-crank lever 64—65 is a latch or brake operating arm 66 adapted to slide upon a projection 67 attached to the top of the shelf 16.

As shown, the tone arm 28 has a pivoted portion 30 to which a reproducer 26 is attached. Fixed onto the inner end of the pivoted portion 30 is a washer 74 attached thereto by means of a screw 72 as best shown in Figure 6. Fixed in the washer 74 is a projecting pin 73 with which cooperates the end of the arm 71 which arm is rotatably mounted on the screw 72 and is adapted to move into cooperative relation with the horizontally bent over portion of the rod 61 at a predetermined moment. The tone arm 28 is swiveled at its rear end in a bearing flange 32 in an improved manner by mounting on the ball bearings 33 which coact with annular depressions provided therefor in the lower portion 34 of the tone arm 28. This provides a smooth joint with no interior projections which will interfere with the proper transmission of sound waves along the interior of the tone arm and is provided with a downwardly projecting stop 35 adapted to limit its movements between the desired points. The brake operating handle 36 is pivoted at one end to a plate 76 and is provided at its middle portion with an upwardly extending roller or block of rubber or other suitable material adapted to contact with the edge of the revolving turn-table 20 and stop the same. Two projections 77 and 78 are provided on the pivoted end of the brake lever 36 adapted to cooperate with a stop pin 79 and limit the movement of the handle. The brake lever 36 is resiliently held in either of two operative extreme positions by means of the helical spring 80 connected at one end to an upwardly extending hook 81 on the shelf 16 of the machine and at its other end to a lug 82 integral with the brake lever and substantially diametrically across the pivot thereof from the hook 81.

In the modification shown in Figures 9 to 12 inclusive, a tone arm 28^a having an ordinary ball and socket joint at 83 is illustrated and the following means are provided for lifting the reproducer from the record upon the completion of the playing of the record: An outwardly extending arm or rod 84 having a roller 85 of rubber or other suitable material on the end thereof is fixed to the swiveled portion of the arm 28^a by means of a band 87 and pivoted thereto at 86. Fixed inside the cabinet and mounted to operate in conjunction with the bell-crank lever 50—51 is an auxiliary bell-crank lever 88 having a pin 93 on the upper arm thereof adapted to be contacted successively by the arms 51 and 50 of the large bell-crank lever. The lower arm 88 of the small bell-crank lever likewise has an extending pin 94 adapted to operate in a transverse slot made in the end of an arm 89 extending from a long transverse lever 90 which is pivoted at 91 to an upright bracket 98 fixed to the bottom of the cabinet. The lever 90 is held in position at its other and shorter end by means of a helical spring 92 which tends to hold the short end always in a downward position. A rod 61^a is pivoted at about the middle portion of the lever 90 and extends upwardly through the shelf 16 in a manner similar to the arm 61 in the first described form. The arm 63^a for operating the brake mechanism is pivoted at the end of the lever 90 and operates the bell-crank lever 64—65 and its attached latch 66 in a manner practically the same as that shown in the preferred form of the device. A stop 95 is provided to limit the movement of the lever 90 and this stop contacts with a projection 97 on the bracket 98.

The operation is as follows:

Upon the completion of the playing of a record, the operator of the phonograph has merely to push the button or latch 40 which holds the cabinet top in closed position whereupon the top is released and allowed to swing upwardly on its hinges 44. This upward movement of the lid is caused by the tension in the helical springs 53 and 54 which operate through the bell-crank lever 50—51 and the bracket supporting arm 45.

The pull of these springs moves the bell-crank lever 50—51 into the position shown by the dotted lines in Figure 2 and as the bracket 45 is pivoted to the lower end of the arm 50 of the bell-crank lever the bracket is therefore pushed upwardly and pivots about the point 46 with the result that the lid of the cabinet is raised and held in an open position which is always the same due to the helical spring 53 which by its action limits the movement of the shorter arm 51 of the bell-crank lever. Adapted to contact with the top of the bell-crank lever arm 51 is the extending end 58 of the transverse lever 57, the end of which normally rests upon the arm 51 of the bell-crank lever. This arm is weighted sufficiently to bring it always into positive contact with the arm 51 of the bell-crank lever and consequently follows the same in its downward movement. The downward movement of the lever 57 is limited by contact with the sound amplifying horn 23 or a stop may be provided for this purpose. When the lever 57 drops down on account of the bell-crank lever 51 being withdrawn from underneath the projection 58 the arm or rod 61 which extends upwardly through the shelf 16 is likewise dropped, and the projecting arm 71 attached to the tone arm 28 has by this time been brought into a position underneath the horizontally extending portion of the arm 61 on account of the inward movement of the reproducer. The arm 61 when moving downwardly as a result of the downward motion of the lever 57 will pull down on the arm 71 forcing it into the position shown in dotted lines in Figure 4 whereupon the reproducer is lifted from the record as shown. At the same time the arm 57 brings rod 63 downwardly causing it to operate the bell-crank lever 64—65 and moving it into the position shown in the dotted lines in Figure 3. This operation of the bell-crank lever 64—65 pushes the attached latch 66 forwardly across the upwardly extending projection 67 and allows same to contact with the brake operating lever 36 whereby the brake operating lever 36 is given a slight push. This slight push is sufficient to carry the line of tension of the spring 80 across the center or pivot point of brake arm 36 whereby the continued pull of the spring 80 will then force the brake arm further along into the position shown in the dotted lines in Figure 5 and its motion will then be stopped owing to the contact of the projection 78 with the stop 79, or owing to the contact of the roller 75 with the turntable 20 which brings the table to rest.

In the modification shown in Figures 9 to 12 inclusive this same mechanism is slightly modified in order to adapt the principle of the invention to the use of a phonograph having a swiveled tone arm instead of one which is pivoted as in the first described form. In the operation of a swiveled tone arm the rod 84 is employed which is pivoted at 86 to the ring or clamp 87 which is firmly attached to the swiveled portion of the tone arm and therefore follows the same in its movement across the record. The roller 85 merely acts to support the rod 84 in proper position and has no action on the grooves in the record. In the construction shown in these figures, upon the completion of the playing of a record the latch 40 is released in the same manner as before and the cover 42 is raised, being operated by means of the springs 53 and 54 as in the preferred modification. However, the bell-crank lever arm 51 contacts with the pin 93 on the auxiliary bell-crank lever 88 pushing the same into the position shown in dotted lines in Figure 9 which then raises the arm 90 by means of the pin 94 positioned on the end of the bell-crank lever arm 88, which pin works in a slot in the end of the projection 89 of the arm 90 and raises the arm 90 about its pivot point 91 and thereby creates an upward push in the arm or rod 61^a which in turn contacts with the arm 84 thereby raising the same and as the fulcrum point 86 is close to the point of contact sufficient leverage is provided to lift the tone arm 28^a clear of the record. At the same time a downward pull is given to the rod 63^a on account of the dropping of the end of the arm 90 which therefore operates the bell-crank lever 64—65 and applies the brake 36 in the same manner as has heretofore been described. The stop 95 contacting with the projection 97 on the bracket 98 limits the movement of the arm 90.

In both the modifications described, when a new record has been placed upon the turn-table and the machine started, the cover is pushed down, with the result that all the parts are placed in a position so as to be operated in the manner described upon the release of the latch 40, this, of course, being accomplished by the tension in the springs 53 and 54 which is created on account of the retracted position of the bell-crank lever 50—51.

It will be seen that herein is provided a phonograph in which, upon the completion of the playing of a record all the necessary operations, including that of raising the cover, stopping the record, and lifting the tone arm from the record are accomplished at one step which consists in merely the releasing of the latch 40. After the cover is raised all that remains to be done is to lift the record from the turn-table and put in another or either reset the machine if the same record is to be played.

We are aware that numerous details of construction may be varied through a wide range without departing from the principles

of this invention, and we therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

We claim as our invention:

1. In a phonograph cabinet, the combination of a motor, a turn-table driven thereby, a jointed tone arm, a hinged cover, means for lifting said cover including a spring cover, said means including a gravity actuated lever controlled by said bell-crank, a to lift the tone arm and stop the rotation of the turn-table, said means including a transversely extending arm cooperating with said bell-crank lever.

2. In a phonograph cabinet, the combination of a hinged cover, a spring actuated bell-crank for lifting said cover, a motor driven turn-table and means to stop said turn-table upon upward movement of the cover, said means including a gravity actuated lever controlled by said bell-crank, a rod pivoted to said lever, an auxiliary bell-crank actuated by said rod, an operating arm pivoted on said auxiliary bell-crank, and a brake controlled by said operating arm.

3. In a phonograph cabinet, the combination of a hinged cover, spring actuated means for lifting said cover, means operated by said spring actuated means for lifting the tone arm from the record, said means including a pivoted arm, a rod attached thereto, and a lever with which said rod cooperates to lift the tone arm.

4. In a phonograph cabinet, the combination of a cover normally spring-held in upward position, a latch therefor adapted to lock the same in closed position, a swiveled tone arm pivoted at its middle portion, an arm attached to the pivoted portion of the tone arm and means for automatically bringing the said arm into position for raising the tone arm and the attached reproducer from the record when the latch is released to raise the cover.

In testimony whereof, we have hereunto subscribed our names in the presence of two subscribing witnesses.

ISAAK KARISH.
JAMES KERNES.

Witnesses:
CARLTON HILL,
SPENCER W. GIBBS.