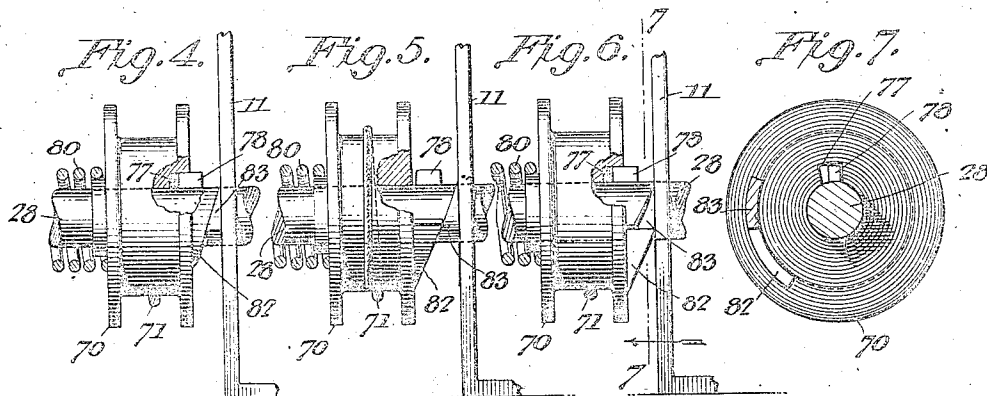
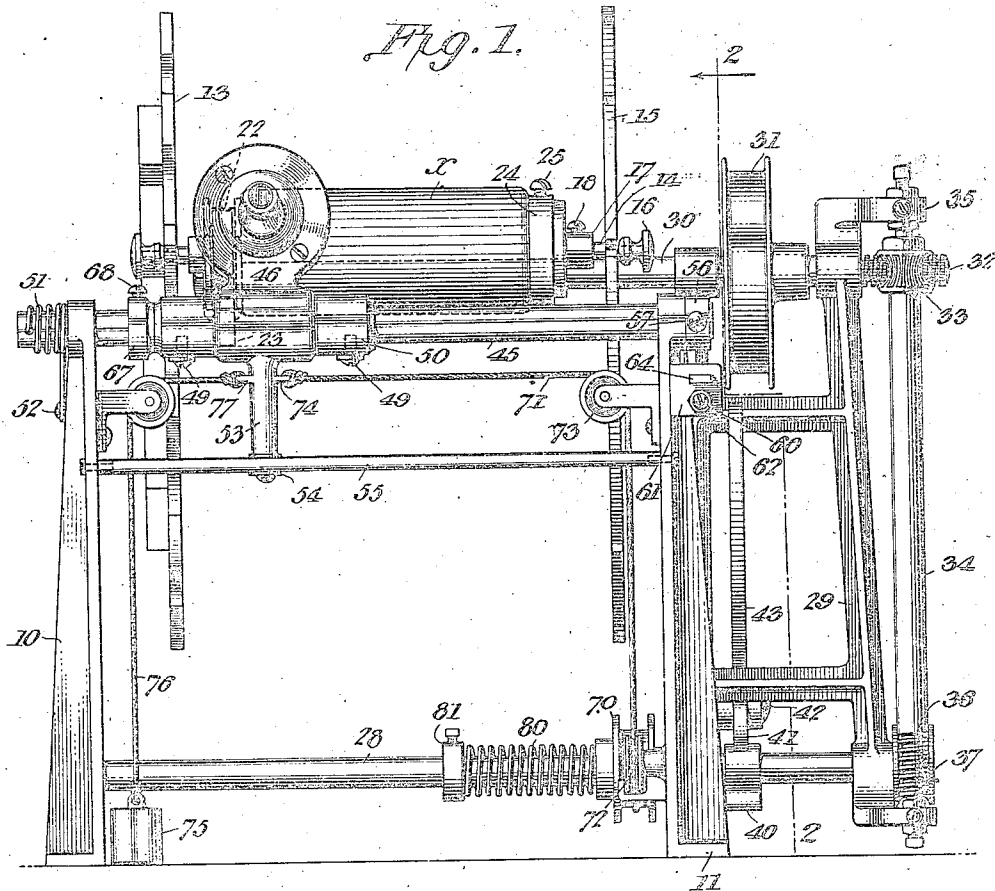


No. 817,756.

PATENTED APR. 17, 1906.

B. DUBINSKI.
PHONOGRAPH MACHINE.
APPLICATION FILED JUNE 5, 1905.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

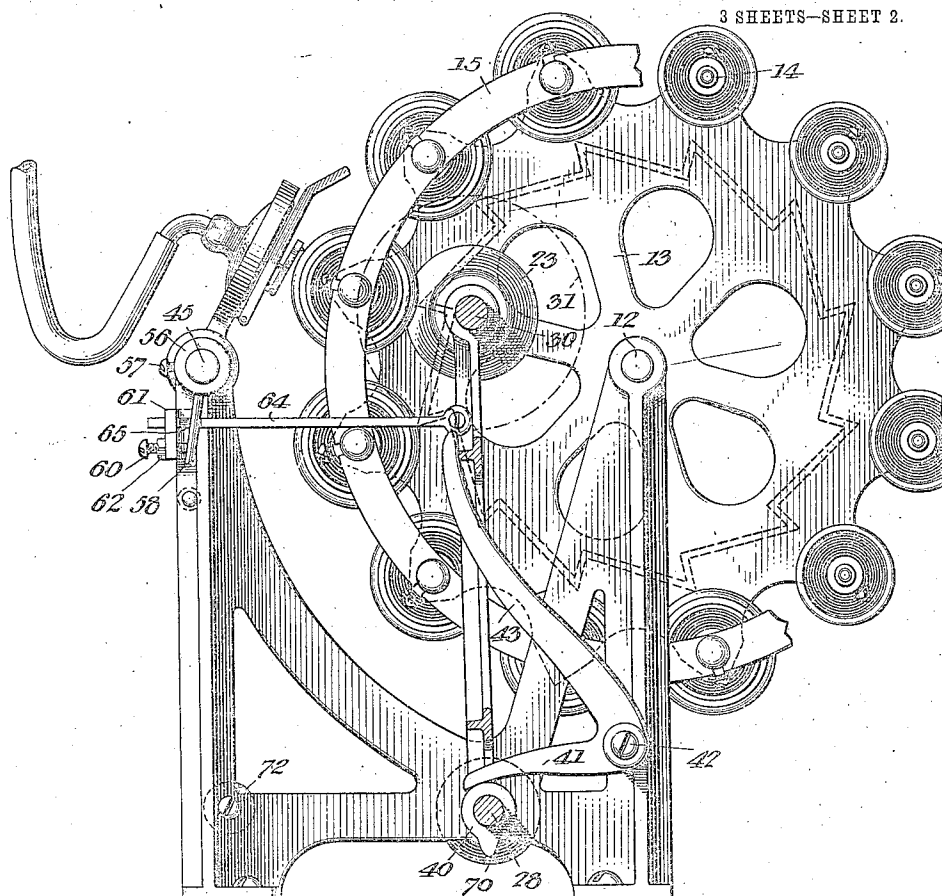


Fig. 2.

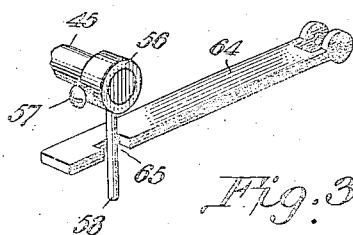


Fig. 3.

Witnesses

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2 SHEETS—SHEET 3.

Fig. 8.

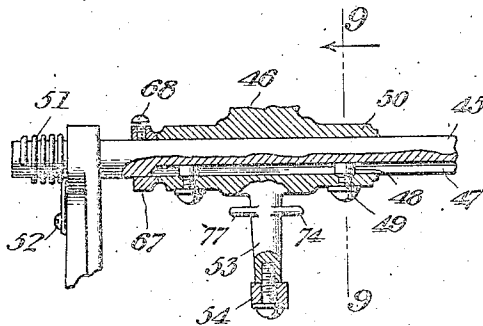


Fig. 9.

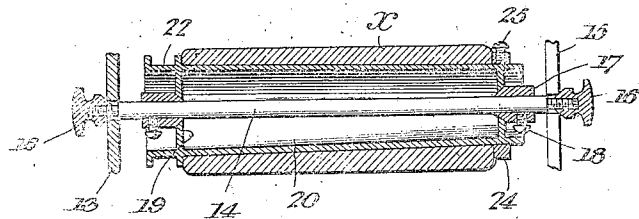
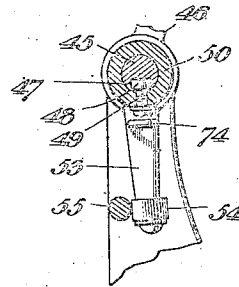


Fig. 10.

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UNITED STATES PATENT OFFICE.

BENJAMIN DUBINSKI, OF SAN ANTONIO, TEXAS.

PHONOGRAPH-MACHINE.

No. 817,756.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed June 5, 1905. Serial No. 263,856.

To all whom it may concern:

Be it known that I, BENJAMIN DUBINSKI, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Phonograph-Machine, of which the following is a specification.

This invention relates to sound-reproducing machines, and especially to a machine of that general class in which a plurality of records are presented successively to a single sound-box.

The principal object of the invention is to improve and simplify the sound-box-traversing mechanism and insure uniformity of movement of the same at each operation, a further object in this connection being to provide for the movement of the sound-box away from the record at precisely the same point on each record.

A further object of the invention is to provide for the returning of the carriage to its initial or starting position after each reproducing operation and to prevent premature return movement by so constructing the mechanism that the sound-box will be moved away from the record before the latter is released and allowed to start on its return movement.

A still further object of the invention is to provide for the accurate adjustment of the position of the sound-box with relation to the record in order to prevent excessive inward movement of the sound-box and to provide means whereby the sound-box is yieldably held and is free to move outward to a greater or less extent during the reproducing operation.

A still further object of the invention is to improve the construction of the record-carriers and to provide means for locking the records from longitudinal movement on the carrying cylinders or mandrels.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts herein-after fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing

from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a front elevation of sufficient of a sound-reproducing machine to illustrate the application of the invention thereto. Fig. 2 is an end view of the same, partly in section, on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of a portion of the sound-box-carrying shaft and the lever for rocking the same. Fig. 4 is a detail view, partly in section, of the mechanism for traversing the sound-box carriage during the reproducing operation. Figs. 5 and 6 are similar views of the same mechanism with the parts in different positions. Fig. 7 is a sectional elevation of the same on the line 7 7 of Fig. 6. Fig. 8 is a detail sectional view of a portion of the sound-box carriage and its rock-shaft. Fig. 9 is a transverse sectional view of the same on the line 9 9 of Fig. 8. Fig. 10 is a sectional view of one of the record-carrying mandrels, showing a record in position thereon.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The present application relates to certain improvements in sound-reproducing machines of that general type shown in Letters Patent No. 773,486, granted to me October 25, 1904, and to which reference may be had for specific details of construction not shown or described in the present application.

The principal working parts of the apparatus are supported on a suitable frame, including end standards 10 and 11, that are provided with bearings for the reception of a shaft 12, that carries at one end a disk 13, to which are secured a plurality of shafts 14, said shafts extending in parallel relation with the main shaft 12 and being connected at their opposite ends to a ring 15. The shafts 14 are provided with reduced threaded terminals adapted for the reception of thumb-nuts 16, by which they may be firmly clamped in place, and the ring 15 is provided with slots for the passage of said shafts in order to permit the convenient introduction and removal of the latter when it is desired to change the records.

The several shafts are non-revoluble and carry sleeves 17, that may be locked in any adjusted position by set-screws 18, these

sleeves forming conical bearings which fit in suitable openings formed in end disks 19 of the record-carrying mandrels 20; the latter being tapered in form and adapted to receive records x of the usual construction. The larger end of the mandrel, or that end adjacent to the disk 13, is provided with a grooved friction-face 22, which is engaged by a friction driving-disk 23 in the manner herein-
 10 after described for the purpose of imparting rotative movement to the mandrel. The record is held from longitudinal movement by a sleeve or ring 24, which is placed in position over the smaller end of the mandrel and locked by means of a set-screw 25, the record being thus held from longitudinal play during the reproducing operation.

Mounted in suitable bearings in the lower portion of the frame is a horizontally-disposed shaft 28, on which is pivoted the lower end of a frame 29, and said frame is provided at its upper end with bearings for a drive-shaft 30, which extends within the annular series of record-carrying mandrels and carries the friction driving-roller 23. This shaft is provided with a grooved pulley 31, to which movement may be imparted by a suitable driving-belt. At the outer end of the shaft 30 is a worm 32, that intermeshes
 30 with a worm-wheel 33, carried by an approximately vertical shaft 34, that is supported by brackets 35, projecting from the upper and lower portions of the rocking frame 29, and at the lower end of the shaft 34 is a worm 36, that intermeshes with a worm-wheel 37 on a shaft 28, the gearing being so proportioned that shaft 30 in rotating a sufficient number of times to effect the reproduction of an entire record will effect a single
 40 rotation of the shaft 28.

Secured to the shaft 28 is a cam 40, that is adapted to engage with the lower arm 41 of a bell-crank lever that is pivoted on a stud 42, projecting from the main frame. The upper arm 43 of the bell-crank lever extends through the rocking frame 29 and engages a cross-bar on said frame, so that when the shaft 28 turns the cam 40 to proper position and operates on the arm 41 of the bell-crank lever the rocking frame 29 will be drawn to the rear and the friction driving-pulley 23 will be forced out of engagement with the friction-pulley of the record-mandrel, and when the parts are in normal position—that is to say, with the sound-box out of contact with the records and at its initial starting-point—the projecting active surface of the cam 40 will hold the arm 41 of the bell-crank lever in elevated position, and the rocking frame will be in its rearmost position with the driving-pulley 23 inoperative. The starting of the machine due to the insertion of a coin or the operation of a push-button or the like imparts rotative movement to the

shaft 30, and this movement transmitted 65 through the worm-gearing to the shaft 28 causes cam 40 to move from the bell-crank lever 41, and the latter in descending allows the frame 29 to swing forward until the driving-pulley 23 engages with the friction-pulley 70 of the adjacent record-carrying mandrel. At the completion of each recording operation the projecting surface of the cam again engages the arm 41 and the rocking frame is moved back to inoperative position. The details of this mechanism, which form no part of the present invention, are fully described and illustrated in the Letters Patent hereinbefore referred to.

At the upper front portion of the machine 80 is a rock-shaft 45, that is held in suitable bearings in the main frame and serves as a support for the sound-box carriage 46. This shaft is provided with a groove 47, that extends for practically the entire length of the shaft and is adapted for the reception of a pair of antifriction-rollers 48, carried by screws or studs 49, that extend through threaded openings formed in an elongated sleeve 50, that constitutes a base for the sound-box carriage. To this shaft is secured one end of a helical spring 51, which is wound around the shaft, and has its opposite end secured to a pin or scrow 52 on the main frame, the spring tending to turn the rock-shaft and force the reproducing-stylus of the sound-box against the record and said spring allowing the sound-box to yield to a greater or less extent during the reproducing of the record. Depending from the sleeve 50 is an arm 53, that carries at its lower end an antifriction-roller 54, which when the sound box is in reproducing position travels against a stationary rod 55, that extends between the standards 10 and 11 to prevent excessive inward movement of the carriage in case of accidental breakage or imperfect adjustment of other portions of the mechanism.

Secured to one end of the shaft 45 is a collar 56, which may be revolvably adjusted on the shaft and locked in adjusted position by a set-screw 57. This collar is provided with a pendent pin 58, the lower end of which engages an adjustable stop in the form of a screw 60, that extends through a threaded opening in a bracket 61, carried by the standard 11, said screw being first adjusted to proper position and then locked by a nut 62 and serving as a means for limiting rotative movement of the rock-shaft in the direction necessary to effect engagement between the reproducing-stylus and the record.

Pivotaly connected to the upper portion of the rocking frame 29 is a bar 64, the outer end of which is guided in a suitable opening formed in the bracket 61, and in the outer face of the bar is a notch or recess 65, through which the pin 58 passes. This bar serves as

a means for moving the sound-box toward and from the record, and on reference to Fig. 2 it will be noted that the connection is such that when the friction-disk 23 is in operative position the sound-box is also in operative position. If the rocking frame 29 is thrown rearward to move the friction-disk 23 to inoperative position, the movement will be transmitted through the bar 64 to pin 58, and the shaft 45 will be rocked to such position as to throw the sound-box outward away from the record in a position to permit the return of the sound-box to its initial position, this position being determined by a collar 67, that is carried by the rock-shaft 45, and which may be firmly locked in any desired position of adjustment by a set-screw 68.

Mounted loosely on the shaft 28 is a grooved winding-drum 70, to which is secured one end of a flexible member 71 in the form of a cord or chain. This flexible member is guided by sheaves 72 and 73 and at its opposite end is secured to an eye formed in a lug 74, projecting from the pendent arm 53 of the sound-box carriage. When this drum is turned in one direction, the flexible member is wound thereon and the carriage is drawn lengthwise of the record during the reproducing operation. To restore the carriage to initial position, a weight 75 is connected by a suitably-guided flexible member 76 to an eye formed in a lug 77 at the opposite side of the pendent arm 53, the weight being elevated as the carriage is drawn to the right during the reproducing operation and descending to draw the carriage to the left at the completion of such operation.

The winding-drum is provided with a recess 77, which is adapted to receive a key or lug 78, projecting from the shaft 28, and said drum is constantly pressed in the direction of the key by means of a helical compression-spring 80, surrounding the shaft and bearing at one end against the drum and at the opposite end against an adjustable collar 81, carried by the shaft. On one of the flanges of the drum is a cam 82, which as the drum revolves comes into engagement with a stationary cam 83, carried by the frame, the arrangement being such that the drum will rotate a trifle less than a complete revolution at each operation, and this partial rotation will be sufficient to move the sound-box for the full length of the record.

When the parts are in normal position—that is to say, are not operating—the straight faces of the two cams or those faces parallel with the axis of the shaft 28, are in contact with each other, the stationary cam 83 acting as a stop for the cam 82, and at this time the key or lug 78 is not in the recess 77. As soon as shaft 28 commences to rotate the key or lug 78 will rotate until it is opposite the recess 77, whereupon spring 80 will force the drum

in the direction of the key and the latter will be entered in the recess, and thereafter during the remaining portion of the rotative movement of the shaft the drum will be turned and the movement will be transmitted to the sound-box carriage. As the sound-box nears the end of the record the inclined face of the cam 82 starts to ride against the inclined face of the cam 83, and at the completion of the reproduction the drum has been forced outward to such an extent that the key or lug 78 is wholly out of the recess, whereupon the weight 75 acts to return the sound-box carriage to its initial position, and previous to this operation the frame 29 has been rocked to the rear and its movement has been transmitted to the rock-shaft 45, raising the reproducing-stylus from engagement with the record, the cams 82 and 83 being so related to the cam 40 that the latter must act in advance of the cams 82 83 and positively move the sound-box outward from the record before the drum is released from the shaft. The descending movement of the weight 75 pulls the carriage to the left and at the same time rotates the winding-drum 70 in a direction opposite to that in which it turned during the reproducing operation. The movement stops when the straight face of the cam 83 engages against the corresponding face of the cam 82.

With a device constructed in accordance with this invention it is possible to produce absolutely-uniform results, the sound-box being traversed to precisely the same distance at each operation and returning to precisely the same point after each operation, and owing to the positions of the actuating-cams it is impossible for the carriage to start on its return movement until after the stylus has been moved from engagement with the record.

Having thus described the invention, what is claimed is—

1. In a sound-reproducing machine, the combination with a sound-box carriage, of a support on which said carriage is slidably mounted, a winding-drum, a flexible connection between the winding-drum and the carriage, means for operating said drum to feed the carriage in one direction, means operable on less than a complete rotation of the drum for stopping the winding operation, and means for restoring the carriage to initial position.

2. In a sound-reproducing machine, the combination with a slidably-mounted sound-box carriage, of a winding-drum, a flexible connection between the winding-drum and carriage, a drum-operating means, means operable on less than a complete rotation of the drum for stopping the winding operation, and mechanism for automatically releasing said drum from the operating means to permit un-

winding of said flexible connection as the carriage is restored to initial position.

3. The combination in a sound-reproducing machine, of a slidably-mounted sound-box carriage, a winding-drum, a flexible connection between the drum and the carriage, an operating-shaft, a clutching means between the shaft and drum, and means for disconnecting the shaft from the drum at the completion of each reproducing operation.

4. In a sound-reproducing machine, the combination with a slidably-mounted sound-box carriage, of a winding-drum, a flexible connecting means between the drum and carriage, a shaft on which the drum is loosely mounted, a clutching means between the drum and shaft, and means operable in advance of a complete rotative movement of the drum for releasing the drum from the shaft and permitting its return to initial position.

5. In a sound-reproducing machine, a slidably-mounted sound-box carriage, a winding-drum, a flexible connecting means between the drum and carriage, said drum having a recess or opening at one of its ends, a shaft on which the drum is loosely mounted, a key or lug projecting from the shaft and adapted to enter said recess, a spring tending to force the drum in the direction of the lug or key, and interengaging cams carried one by the drum, and the other by the fixed frame of the machine and serving to disconnect the drum from the shaft at the end of each reproducing operation.

6. In a sound-reproducing machine, a slidably-mounted sound-box carriage, a winding-drum, a flexible connecting means extending between the drum and the carriage, a shaft on which said drum is mounted, means for automatically clutching the drum to and releasing it from the shaft, and a cam also mounted on said shaft and controlling the movement of the carriage toward and from the records.

7. In a sound-reproducing machine, a frame, a rock-shaft carried thereby and provided with a longitudinal groove, a sound-box carriage mounted on the shaft and having a member entering such groove, an operating-shaft, and means operated from said shaft for traversing the carriage lengthwise of the shaft during the reproducing operation, and for rocking said rock-shaft to move the sound-box away from the record at the completion of the reproducing operation.

8. In a sound-reproducing machine, a sound-box carriage, a support on which said carriage is slidably mounted, said support being movable to adjust the sound-box to operative and inoperative positions, and a single shaft operatively connected to the carriage and its support and serving to move the carriage to reproducing position at the beginning of an operation; to traverse the car-

riage along the record, and to move the carriage away from the record at the completion of the reproducing operation.

9. In a sound-reproducing machine a sound-box carriage, a support on which the carriage is slidably mounted, a record-carrying mandrel having a friction-pulley, a movable frame, a friction driving-pulley supported thereby, and means connecting said movable frame to the carriage-support, whereby on movement of the driving-pulley into contact with the mandrel-pulley, the sound-box will be moved in the direction of the mandrel, and on disconnection of the friction-pulleys, the sound-box will be moved away from the mandrel.

10. In a sound-reproducing machine, a rock-shaft, a sound-box carriage slidably mounted thereon but held from independent rotative movement, a spring connected to the rock-shaft and tending through said shaft to force the sound-box in the direction of the record, and an adjustable means for limiting the extent of such movement.

11. In a sound-reproducing machine, a rock-shaft, a sound-box carriage free to slide thereon but held from independent rotative movement, a spring tending to move the sound-box in the direction of the record, a sleeve adjustably secured to the rock-shaft, a pin or arm extending from said sleeve, and an adjustable stop for engaging said pin or arm to limit the movement of the sound-box in the direction of the record.

12. In a sound-reproducing machine, a rock-shaft, a sound-box, a carriage slidably mounted thereon, but held from independent rotative movement, a spring tending to move the sound-box in the direction of the record, an adjustable sleeve secured to the shaft, a pin or arm depending from said sleeve, an adjustable stop for limiting the movement of the pin or arm, a rocking frame, a record-mandrel-driving pulley carried by the frame, and a bar pivotally connected to the frame and having a notch or recess in which said pin or arm is entered.

13. In a sound-reproducing machine, the combination with a rock-shaft having a longitudinal slot, of a sound-box carriage including a sleeve through which the rock-shaft passes, antifriction-rollers carried by the sleeve and entered in said slot, an arm depending from the sleeve, a rigid bar, an antifriction-roller carried by the arm and serving by engagement with said rigid bar to limit movement of the carriage in one direction, a spring acting on the rock-shaft and tending to throw the sound-box in the direction of the record, an adjustable collar carried by the rock-shaft, a pin or arm depending from said collar, an adjustable stop engaging said pin or arm to limit movement of the sound-box in the direction of the record, a rocking frame, a record-mandrel-driving pulley sup-

ported by the frame, a bar pivoted to said
frame and having a notch or recess in which
said pin or arm is entered, a shaft on which
the rocking frame is mounted, and a wind-
5 ing-drum carried by said shaft and having a
flexible connection with the pendent arm of
the carriage.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature
in the presence of two witnesses.

BENJAMIN DUBINSKI.

Witnesses:

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