No. 896,950. PATENTED AUG. 25, 1908.

J. H. STINSON.

REPEATING MECHANISM FOR SOUND REPRODUCING MACHINES.

APPLICATION FILED MAR. 16, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

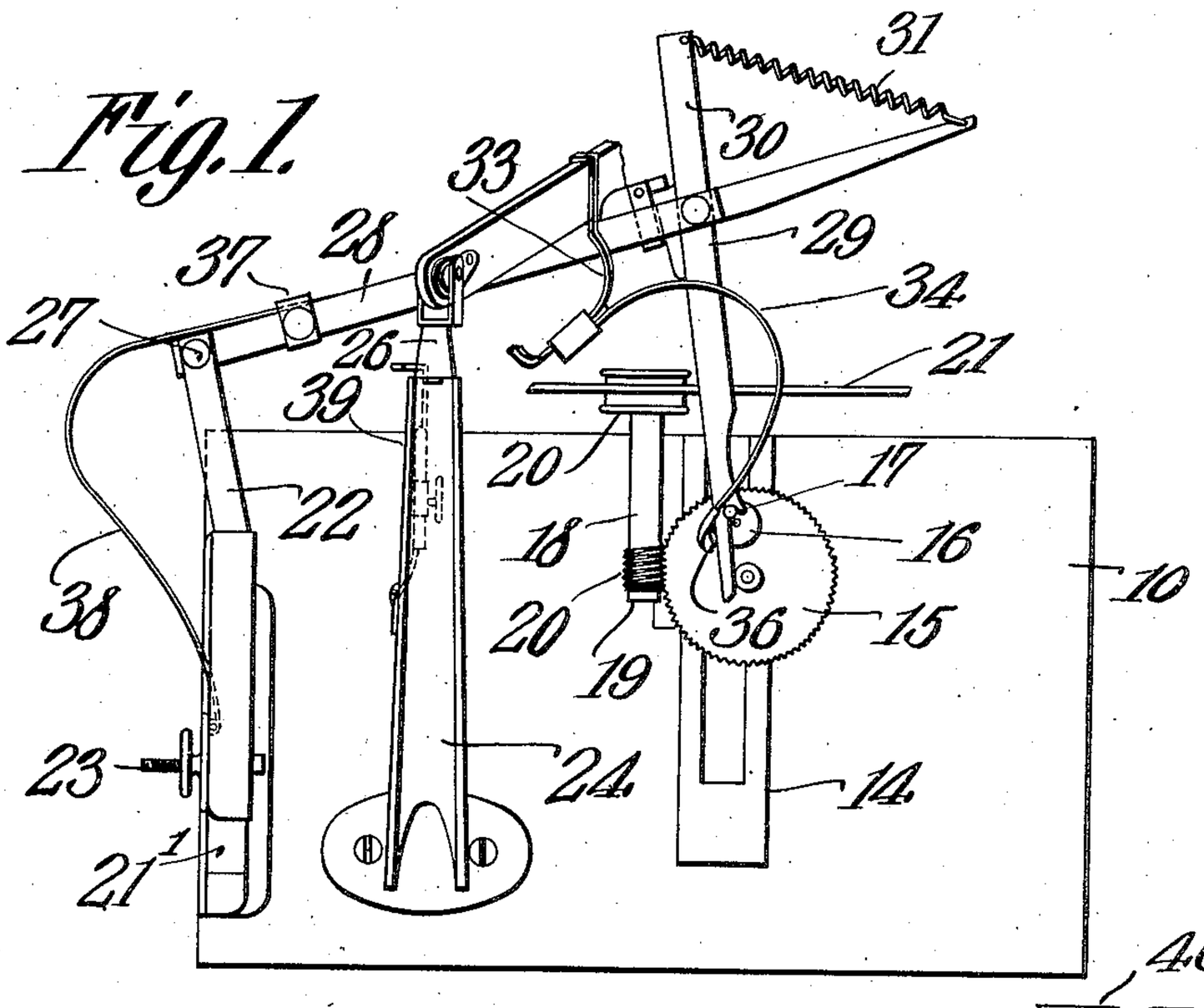

Fig. 5.

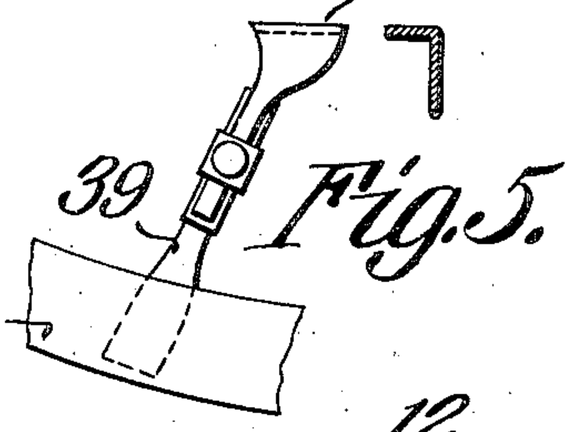

Fig. 2.

Witnesses

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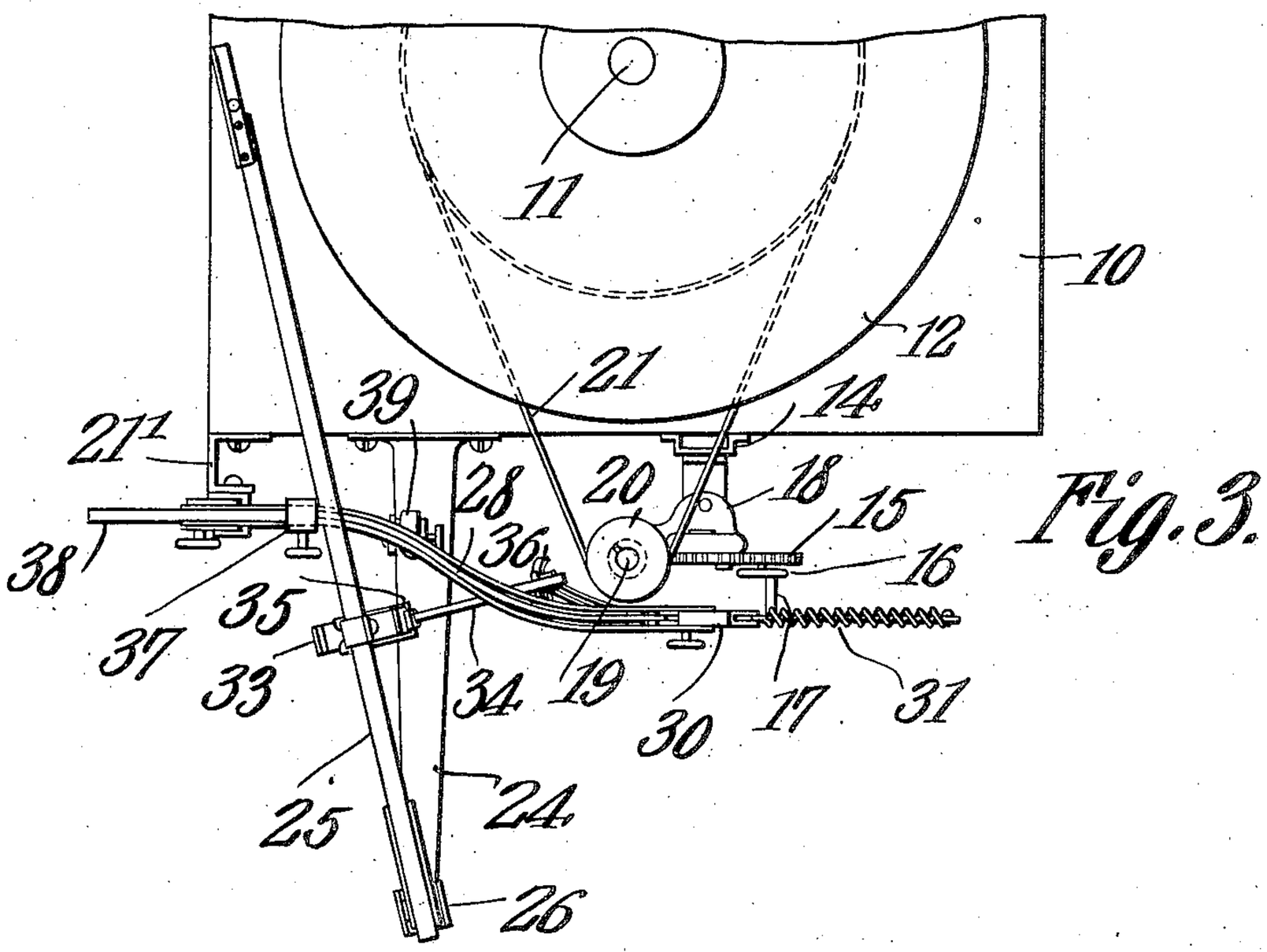

Fig. 3.

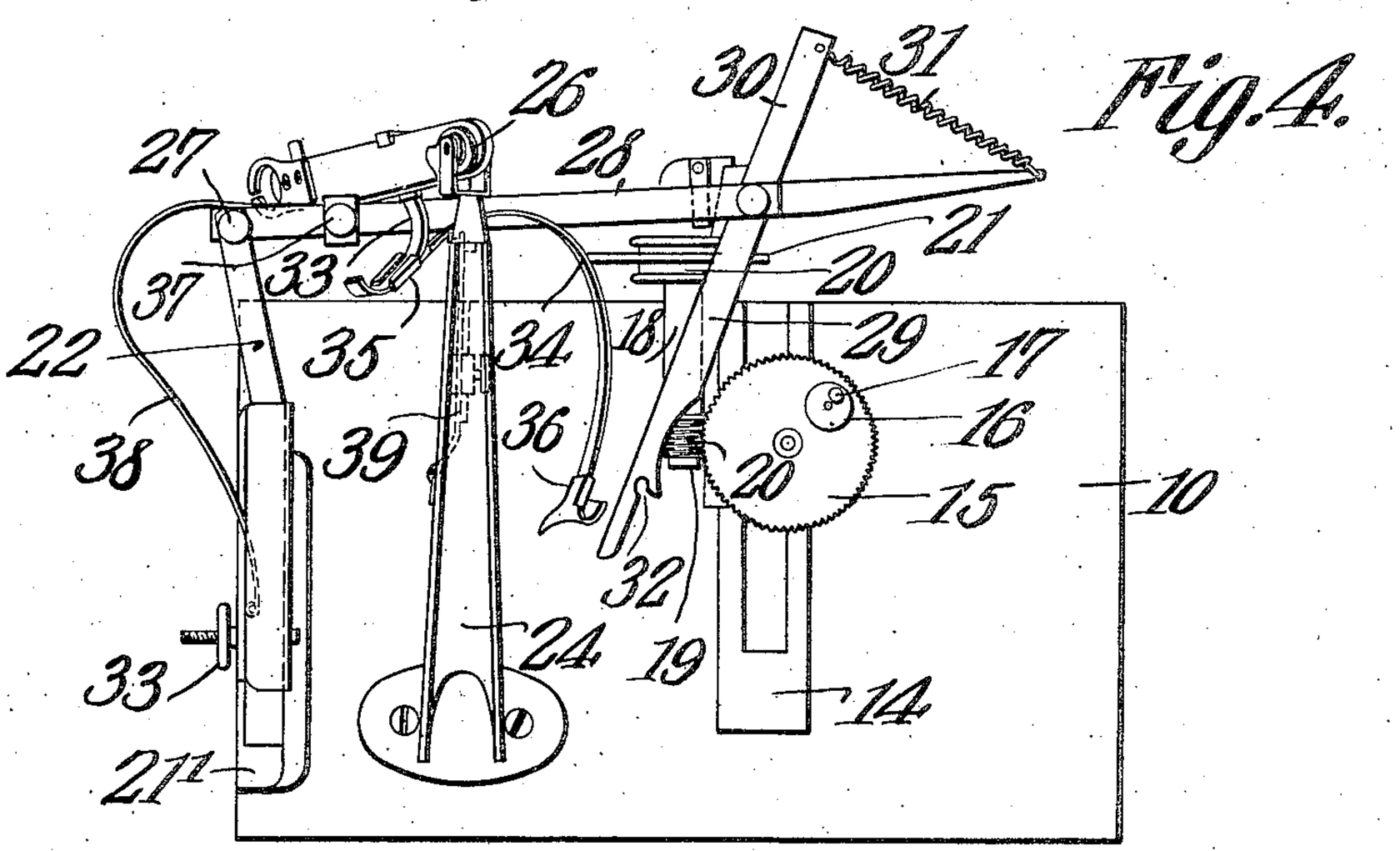

Fig. 4.

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REPEATING MECHANISM FOR SOUND-REPRODUCING MACHINES.

No. 896,950. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed March 16, 1908. Serial No. 421,311.

To all whom it may concern:

Be it known that I, JAMES H. STINSON, a citizen of the United States, residing at Cooke, in the county of Park and State of Montana, have invented a new and useful Repeating Mechanism for Sound-Reproducing Machines, of which the following is a specification.

This invention relates to machines for the reproduction of sound, commonly known as phonographs or graphophones, and its object is to provide an improved means whereby the needle commonly used in the reproducer will be caused to return to the point of starting automatically after a piece has been played.

A further object of the invention is to provide means by which this may be done without injury to the record or other parts of the machine.

The invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawing, and specifically claimed.

In the accompanying drawings:—Figure 1 is a front elevation of the machine constructed in accordance with this invention, the parts being in position for the return of the needle. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view thereof. Fig. 4 is a front elevation showing the parts in the position assumed when the needle has been returned and is ready to repeat the piece. Fig. 5 is a detail of one of the stops used in this device.

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

There is here shown a device attached to a phonograph of the disk type, although it will be obvious that by certain changes to be herein described, this device may be used equally well for machines of the cylinder type.

The box containing the driving mechanism is indicated by the numeral 10. At 11 is shown the driving spindle, provided with the usual platen 12.

The device in general comprises a trip arranged for synchronous movement with the record, a latch engaging the trip, a cam member or bar, and a horn supporting member arranged to be actuated thereby.

The trip and means for synchronously operating it comprises in the present form certain details now to be described. Held in any desired position, but preferably between said platen and the box, is a pulley 13. Mounted on a slide 14 attached to the side of the box is a worm wheel 15 whereon is pivotally mounted a disk 16 provided with a pin 17 projecting therefrom. The disk 16 is arranged so that it may be clamped to the worm wheel 15 in any desired position around the pivot, thus changing the distance of the pin 17 from the center of the worm wheel 15, as may be desired. The worm wheel 15 is mounted on the slide 14 so as to be adjustable in the direction of the length thereof. On the slide 14 is formed a bracket 18 supporting a worm shaft 19, provided with a worm 20, meshing with the worm wheel 15. Upon the shaft 19 is, also, mounted a pulley 20 and a cord 21 serves to connect the pulley 20 with the pulley 13 carried on the spindle 11. It will thus be observed that the rotation of the spindle 11 serves to drive through the pulleys and worm and gear connection the pin 17 in a circular path around the center of the worm wheel 15.

The details of the cam member and horn supporting member are here shown to consist of certain parts as follows. A slide 21′ is mounted on the casing 10, and in this slide is held a fulcrum bar 22 adjustable on said slide by any desired means, as the thumb screw 23. Between the slides 14 and 21 is mounted the usual horn arm 24 having a horn supporting member 25 pivoted thereto, as at 26, said member being, also, arranged to swing at the point 26 in the usual member. On this bar is supported the horn and reproducer which are not deemed necessary to be here shown.

At the upper end of the fulcrum bar 22 is provided a pivot 27 from which extends a cam member 28 arranged to pass beneath the bar 25. Pivoted at a point near the outer end of the bar 28 is a swinging latch 29, preferably provided with an upwardly extending arm 30 connected to the outer end of the bar 28 by a spring as at 31. The lower end of the swinging latch is provided with a notch 32, of such size and shape as to receive the pin 17 when in proper position. Mounted upon the bar 25 is an arm 33 carrying a spring 34 adjustably mounted thereon as at 35. The spring 34 is provided with a later-

ally extending head 36 arranged in the plane of the swinging of the latch 29. An adjustable stop 37 is, also, mounted upon the bar 28 and a counter-balance spring 38 connects the bar 28 with the slide 21 in such manner as to relieve the same of the effect of the weight of the bar 28 and latch lever 29. An adjustable stop 39 is mounted on the arm 24 and is provided with an enlarged head 40 lying in the path of motion of the bar 28.

In the operation of the device, at the beginning of the playing of a record, the parts will be in about the position shown in Fig. 4. The needle having been adjusted to the proper starting point, the stop 37 is moved along the bar 28 until it contacts with the bar 25 as shown in that figure. The machine is starting, and as the needle travels inward on the disk, or lengthwise along the cylinder record, the arm 25 will be moved in the same direction with the needle. This will cause the head 36 of the spring 34 to contact with the latch lever 29 and force the same in a position intersecting the path of the pin 17. At the same time motion transmitted from the pulley 13 to the worm wheel 15 will cause the same to rotate and the pin 17 to move in a circular path. As the pin comes into contact with the lever 29, it will slip into the notch 32 and hooking in that position will raise the bar 28 to the position shown in Fig. 1. The bar 25 will then slide along said lever until it contacts with the stop 37, the action of gravity being assisted by the spring 34. The motion of the pin continuing, that pin will then slip out of the slot 32 and release the latch bar 29, the action of the spring 31 drawing it away and permitting the bar 28 to fall and the parts to again assume the position shown in Fig. 4, thus placing the device in condition to repeat the record. It is to be observed that the pin 17 may be caused to revolve a number of times before contacting with the latch lever 29 and operating the device, so that it is not necessary to so exactly proportion the driving mechanism as to have but one revolution of the wheel 15. It is further to be observed that the adjustable stop 39 can be arranged so as to prevent the bar 28 from dropping too hard and thus permitting the needle to forcibly strike and injure the disk or other record.

In the use of the device with a machine of the cylinder type, it is simply necessary to arrange the pulley 13 in a suitable position, as, for instance, at one end of the cylinder, in place of underneath the platen 12 and the cord 21 may be conducted to the pulley 20 by any desired arrangement of guide pulleys.

It will be obvious that many minor changes in the form and construction of this device may be made without departing from the principles thereof, and it is not, therefore, to be confined to the exact form herein shown and described, but to include all that properly come within the scope of the invention.

What is claimed is:—

1. In a device of the character described, the combination with a record support, of a movable trip, and means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch mounted on said cam bar adapted to move into and out of the path of said trip arranged to coact with the trip and move the bar to operating position and means to move said latch into the path of the trip.

2. In a device of the character described, the combination with a record support, of a movable trip comprising a revoluble member provided with a latch contacting device, means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch mounted on said cam bar adapted to move into and out of the path of said trip arranged to coact with the trip and move the bar to operating position and means to move said latch into the path of the trip.

3. In a device of the character described, the combination with a record support, of a movable trip comprising a revoluble member and a latch contacting device adjustably mounted thereon, means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch mounted on said cam bar adapted to move into and out of the path of said trip arranged to coact with the trip and move the bar to operating position and means to move said latch into the path of the trip.

4. In a device of the character described, a movable trip comprising a revoluble member, a second member eccentrically and rotatably mounted thereon and arranged to be held in any desired position, and a latch contacting device carried by said second member.

5. In a device of the character described, the combination of a movable trip comprising a revoluble member, a second member eccentrically and rotatably mounted thereon and arranged to be held in any desired position, and a latch contacting device, means for operating the revoluble member synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch member mounted on said cam bar arranged to coact with the trip and move the bar to operating position.

6. In a device of the character described, the combination with a record support, of a revoluble trip, means to operate the same synchronously with the record support comprising a driven gear held to revolve with said trip, a shaft, a driving gear fixed on said shaft, pulleys on said shaft and record support, and

a belt connecting said pulleys, a movable horn support, a cam bar for swinging said support, a latch mounted on said cam bar adapted to move into and out of the path of said trip arranged to coact with the trip and move the bar to operating position and means to move said latch into the path of the trip.

7. In a device of the character described, the combination with a record support, of a movable trip, means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, means on said cam bar for limiting the motion of said support, a latch on said cam bar adapted to move into and out of the path of said trip arranged to coact with the trip and move the bar to operating position and means to move said latch into the path of the trip.

8. In a device of the character described, the combination with a record support, of a movable trip, means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, adjustable means on said cam bar for limiting the motion of said support, a latch on said cam bar arranged to coact with the trip and move the bar adapted to move into and out of the path of said trip to operating position and means to move said latch into the path of the trip.

9. In a device of the character described, the combination with a record support, of a movable trip, means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, adjustable means on said cam bar for limiting the motion of said support, an adjustable stop to limit the movement of said cam bar, a latch on said cam bar adapted to move into and out of the path of said trip arranged to coact with the trip and move the bar to operating position and means to move said latch into the path of the trip.

10. In a device of the character described, the combination with a record support, of a movable trip and means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch pivoted on said cam bar, a spring normally holding said latch out of the path of said trip, and means to move said latch into the path of the trip to coact therewith and move the cam bar to operating position.

11. In a device of the character described, the combination with a record support, of a movable trip and means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch pivoted on said cam bar, a spring normally holding said latch out of the path of said trip, and means mounted on said support to move said latch into the path of the trip to coact therewith and move the cam bar to operating position.

12. In a device of the character described, the combination with a record support, of a movable trip and means for operating the same synchronously with the record support, a movable horn support, a cam bar for moving said support, a latch pivoted on said cam bar, a spring normally holding said latch out of the path of said trip, and adjustable means mounted on said horn support to move said latch into the path of the trip to coact therewith and move the cam bar to operating position.

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

JAMES H. STINSON.

Witnesses:

NELS E. SODERHOLM,

W. A. BROWN.