

E. C. JORDAN.
 AUTOMATIC NEEDLE FEEDER FOR PHONOGRAPHS.
 APPLICATION FILED MAY 14, 1912.

1,060,551.

Patented Apr. 29, 1913.
 2 SHEETS—SHEET 1.

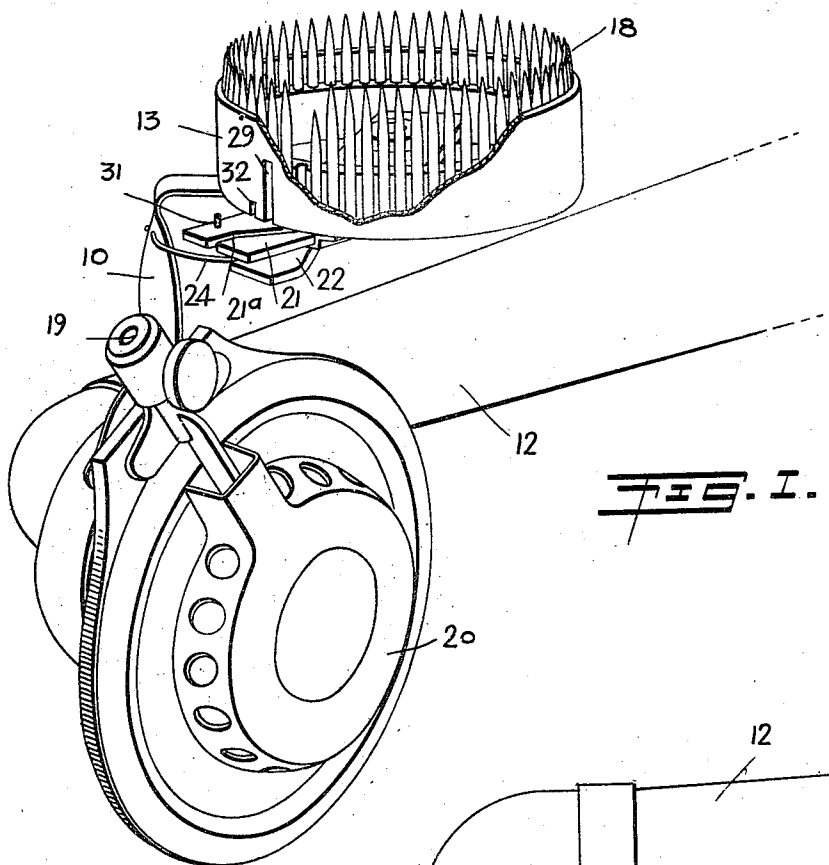


FIG. 1.

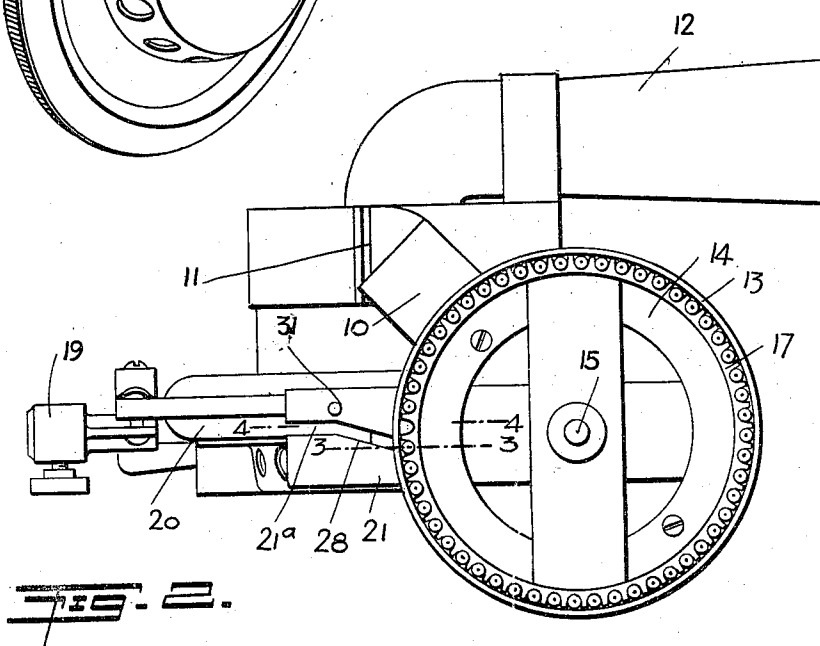


FIG. 2.

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2 SHEETS—SHEET 2.

FIG. 3.

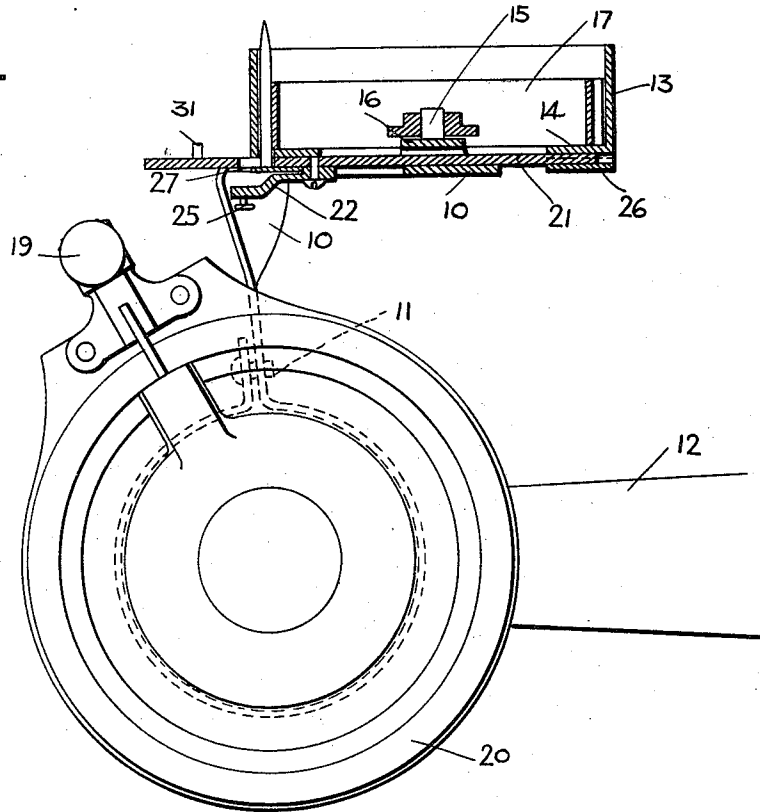


FIG. 6.

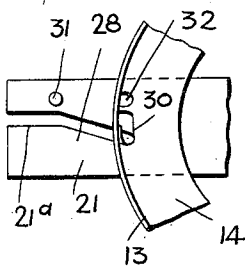


FIG. 4.

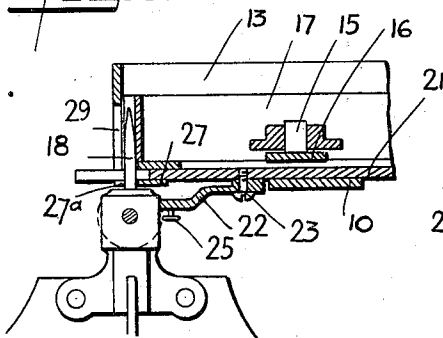
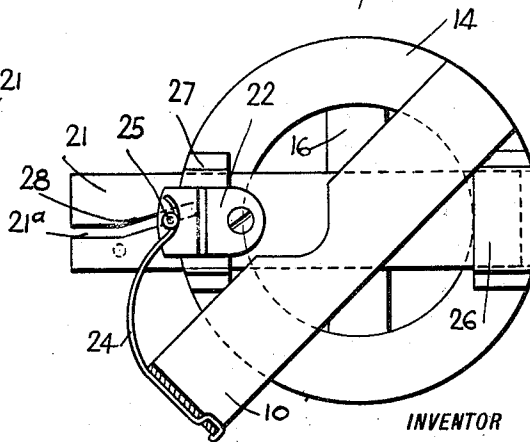


FIG. 5.



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UNITED STATES PATENT OFFICE.

ELMER C. JORDAN, OF SACRAMENTO, CALIFORNIA.

AUTOMATIC NEEDLE-FEEDER FOR PHONOGRAPHS.

1,060,551.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed May 14, 1912. Serial No. 697,177.

To all whom it may concern:

Be it known that I, ELMER C. JORDAN, a citizen of the United States, and a resident of Sacramento, in the county of Sacramento and States of California, have invented a new and Improved Automatic Needle-Feeder for Phonographs, of which the following is a full, clear, and exact description.

This invention relates to attachments for phonographs on which removable needles are used, and among the objects aimed at is to provide a device of this character which will insure the least possible delay and trouble in making the renewals of the needles. It is quite usual in operating phonographs for the same needle to be used repeatedly when the best results can be received only when a fresh needle is used on each record. By the use of a device of this character there is little or no excuse for not renewing the needles according to highest demands.

The invention consists in the novel details of construction hereinafter fully described and claimed and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the device attached to the tone arm of a standard phonograph, a portion of the magazine being broken away; Fig. 2 is a plan view of the same; Fig. 3 is a vertical section on the line 3—3 of Fig. 2, the parts being in normal position; Fig. 4 is a similar view on the line 4—4 of Fig. 2, the parts being in position for receiving a needle into the chuck; Fig. 5 is a bottom plan view; and Fig. 6 is a fragmentary detail of the parts shown in Fig. 2, the toothed wheel being omitted.

As a suitable embodiment of this invention I have devised a bracket 10 of any suitable form or construction which is adapted to be secured rigidly, as for example, by means of a clamp 11 upon the tone arm 12 of the instrument. Rigidly secured to the upper end of said bracket is a magazine 13 which is shown as of a cylindrical form with a bottom horizontal flange 14 and having an open top. In the center of the magazine is a stud 15 shown as carried by a cross bar 16, and on said stud is journaled a star or

toothed wheel 17 between which and the inner surface of the magazine wall are adapted to be carried a circular series of needles 18 in spaced vertical relation. These needles are supported upon the afore-said bottom flange 14 of the magazine.

In order to deliver or feed the needles successively into the socket or chuck 19 of the reproducer 20 in a most expeditious manner, I provide a slide 21 which is adapted to be reciprocated rectilinearly across the bottom of the magazine in one direction by contact of a portion of the reproducer, as for instance, the chuck aforesaid, being brought into engagement with a lug 22 connected or secured to said slide as by a screw 23. The slide is adapted to be maintained in its normal position by any suitable means such as a spring 24 connected to any suitable fixed part, as for instance, the bracket 10 and having its other end bearing outwardly against the stud 25 connected to the aforesaid lug 22. The slide 21 is guided in its reciprocations along the bottom of the magazine by a set of keepers 26, and 27, the latter of which embraces the slide above the lug 22, as shown. The front end of the slide 21 is provided with a slot 21^a, the outer end of which is parallel to the longitudinal axis of the slide and the rear end of which is offset to an extent substantially equal to the distance between the centers of two adjacent teeth of the wheel 17, or between the centers of two adjacent needles, such offset of the slot forming a cam shoulder 28.

As indicated in Fig. 4 more especially, the bottom of the magazine is slotted at 29, which slot extends into or communicates with a slot 30 in the bottom of the flange 14 of the magazine and extending circumferentially therein to an extent substantially equal to the distance between two adjacent needles. In the normal position of the parts, a needle will be seated in the slot 30 and groove 21^a and supported upon the keeper 27. When the reproducer is brought up to receive a fresh needle, the chuck 19 bearing against the lug 22 will cause the slide 21 to move from the position indicated in Fig. 3 to the position indicated in Fig. 4, and dur-

ing such movement the cam 28 bearing against the needle then in the slot will cause a rotation of the toothed wheel 17 and all of the needles carried by it, whereby the needle in the slot will be drawn along the slot 30 and into alinement with the outer parallel portion of the slot 21^a. During this operation the next needle in turn will be brought into the slot 30 in position to drop into the slot 21^a as soon as the slot is restored to its outer or normal position.

For the purpose of securing the toothed wheel in proper delivering position, and also to insure that the needle to be delivered will not be prevented by friction or otherwise from dropping into the chuck at the desired time, any suitable means may be provided. For this purpose, however, I have shown a pin 31 carried rigidly by the slide and adapted to be carried by it through a slot 32 in the magazine and into operative engagement with the tooth of the wheel in advance of the needle to be delivered. Any tendency of the toothed wheel to be retarded as by friction on its bearing stud 15 or the dragging incident to the large number of needles carried by it around the bottom flange 14, tending to hold the needle from dropping into the chuck, will be positively counteracted by the effect of the pin 31 operating upon the toothed wheel, as above set forth. By this time the needle to be delivered will be free to drop from the magazine through the slots 30 and 21^a, before described, and through the radial slot 27^a in the keeper 27. The needle in the chuck may then be turned outward from the magazine through the slot 29 and be secured in place as usual.

By the device in operation as above set forth all of the needles in the magazine may be delivered successively to the chuck of the reproducer, the star wheel being operated step by step by the successive reciprocations of the slide 21.

I desire not to be limited to the specific details of construction, reserving the right to modify the same with respect to relative sizes and proportions and to construct them of any suitable materials.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a device of the character set forth, the combination of a cylindrical magazine having a slot in its bottom, a toothed wheel, journaled for rotation in the magazine and adapted to support a circular series of needles therein in spaced relation, the needles being adapted to be supported upon the bottom of the magazine, and means associated with the magazine for delivering the needles successively therefrom, such means comprising a slide movable recti-

linearly across the bottom of the magazine and having a cam slot at one end cooperating with said slot in the bottom of the magazine, substantially as set forth.

2. In a device of the character set forth, the combination of a cylindrical magazine having a bottom flange, a toothed wheel journaled therein on a vertical axis, said magazine having a slot in its bottom, a slide movable across the bottom of the magazine and having a cam slot cooperating with the magazine slot whereby a needle is brought into delivering position and the toothed wheel caused to rotate on its axis, and means carried by the slide to momentarily lock the toothed wheel from rotation, for the purpose set forth.

3. In a device of the character set forth, the combination of a magazine having a bottom flange provided with a circumferential slot, a toothed wheel journaled in said magazine for rotation on a vertical axis and adapted to support a series of needles in spaced relation, a slide reciprocable across the bottom of the magazine and having a cam slot cooperating with the magazine slot aforesaid for delivering the needles singly and successively and to rotate the toothed wheel on its axis, and a pin carried by the slide and adapted to cooperate with the toothed wheel to momentarily lock the same from rotation and to insure the free delivery of the intended needle, substantially as set forth.

4. In a device of the character set forth, the combination of a magazine having a short circumferential slot in its bottom, a keeper secured to the magazine beneath said slot and having a radial slot registering with one end of the magazine slot, means within the magazine to support a series of needles for successive delivery through said slots, a slide reciprocable across the magazine between said keeper and the magazine and having a cam slot registering normally with the other end of the magazine slot and adapted to receive a needle therein for subsequent delivery, and means to reciprocate said slide whereby the needle received by the aforesaid magazine and slide slots will be moved circumferentially of the magazine for delivery through the keeper slot.

5. In a device of the character set forth, the combination of a cylindrical magazine having a circumferential slot in its bottom, a star wheel journaled in said magazine on a vertical axis and adapted to support a series of needles in vertical spaced relation, a keeper connected to the bottom of the magazine and having a radial slot registering with one end of the magazine slot, a slide reciprocable within said keeper and having a cam slot, one portion of which normally registers with the other end of

said magazine slot and adapted to receive one of said needles, means to reciprocate the slide whereby another portion of the slide slot is made to register with the keeper slot and cause the needle contained therein to rotate the star wheel, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELMER C. JORDAN.

Witnesses:

C. G. BARRETT,
MAY HARMON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."