

J. C. DUNTON.
FEED MECHANISM.
APPLICATION FILED NOV. 28, 1904.

2 SHEETS—SHEET 1.

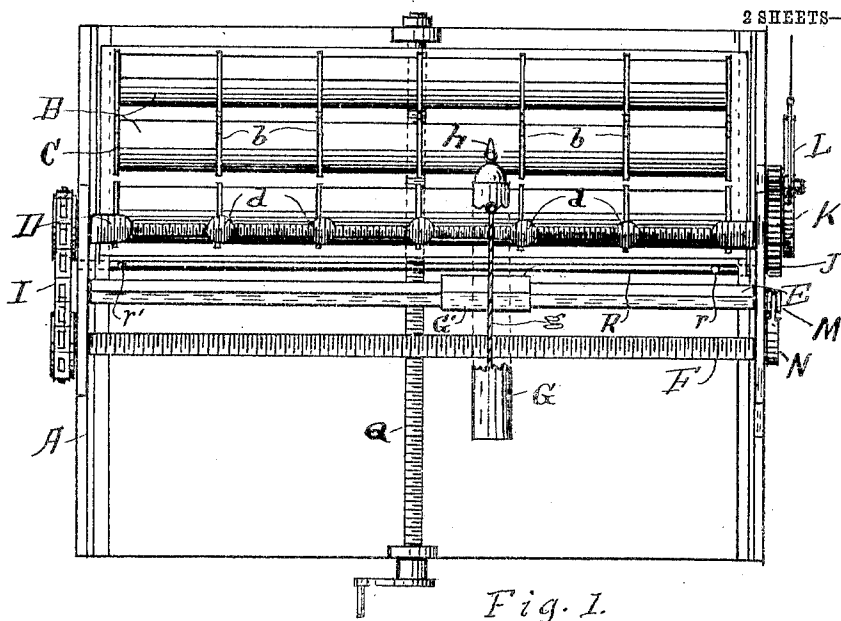


Fig. 1.

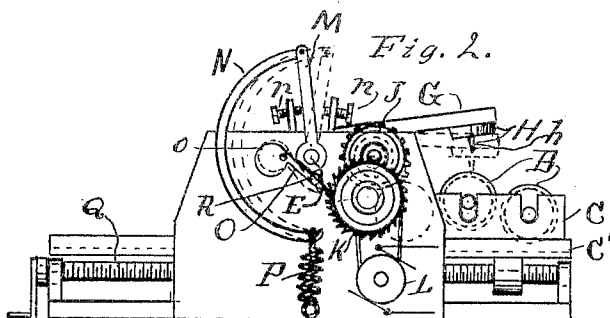


Fig. 2.

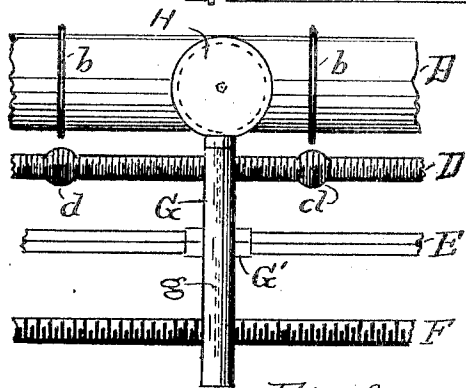


Fig. 3.

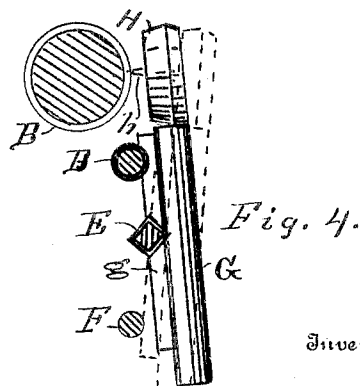


Fig. 4.

Witnesses

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No. 797,102.

PATENTED AUG. 15, 1905.

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2 SHEETS—SHEET 2.

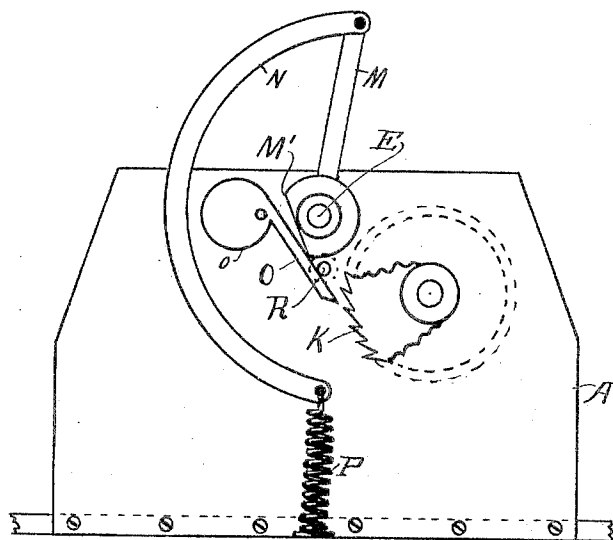


Fig. 5.

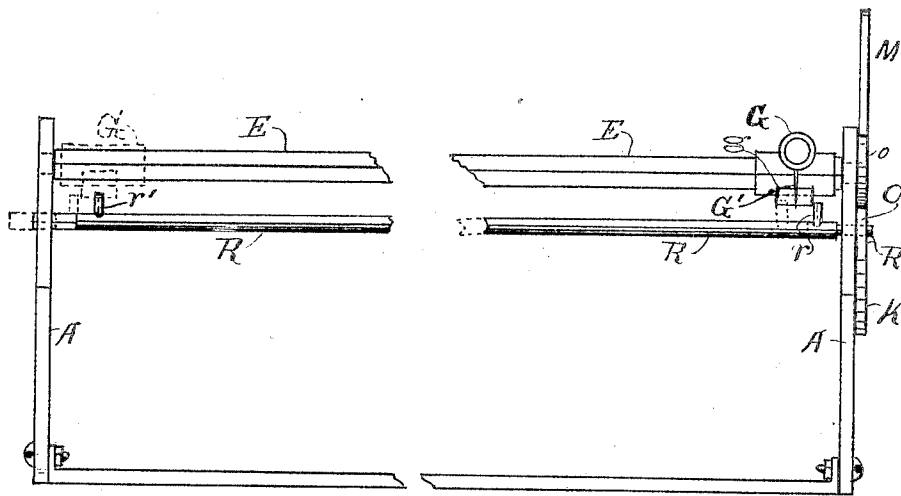


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN C. DUNTON, OF GRAND RAPIDS, MICHIGAN.

FEED MECHANISM.

No. 797,102.

Specification of Letters Patent.

Patented Aug. 15, 1905.

Application filed November 23, 1904. Serial No. 234,663.

To all whom it may concern:

Be it known that I, JOHN C. DUNTON, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Feed Mechanism, of which the following is a specification.

My invention relates to improvements in feed-screws; and its especial object is to provide a feed-screw that will at stated distances operate a lever to disconnect its bearing end from a given point of contact and also to reverse the motion and direction of the feed when desired. I attain these objects by the mechanism illustrated in the accompanying drawings, representing the feed-screw applied to a compound record-phonograph as being well designed to illustrate the operation of the screw, and in which—

Figure 1 is a plan of the phonograph, showing the application of the screw. Fig. 2 is an end elevation of the same. Fig. 3 is an enlarged plan of the feed-screw, the reverse-screw, the rocker-shaft, and the lever in connection with a section of a compound record-roller. Fig. 4 is the same turned up edgewise to show the action of the feed-screw upon the lever. Fig. 5 is an end elevation of the machine, showing an enlarged view of the pawl and the hub of the actuating-lever; and Fig. 6 is a side elevation of the machine dismantled of everything except the rocker-shaft and its attachments, the trip-rod, the pawl, and the ratchet-wheel.

Similar letters refer to similar parts throughout the several views.

In the accompanying drawings, A represents the supporting-frame of a phonograph.

B represents compound record-rollers having divisions *b* at given distances apart, the space between each pair of these divisions representing the full length of a complete record, by which means several complete records may be placed upon one roll, and the necessary object to be attained is to carry the point *h* of the reproducer H up and over the divisions *b* without necessarily stopping the travel of the lever or reproducer-holder G, and for this purpose I have invented the screw D, having enlargements *d* directly opposite each division *b* on the record-roll B, the screw-thread being continuous over these enlargements, so that the lever G continues to be carried longitudinally of the feed-screw as

long as the knife *g* is engaged by the screw-threads of the feed-screw, whether upon the body of the screw or climbing up or down over the enlargements.

With a phonograph built simply as above described it will be readily conceived that the reproducer will be carried the entire length of the record-roll, being carried over each division *b* as it approaches it, thus exhausting the entire set of records without stopping; but to utilize the feed-screw to the best advantage I have arranged a trip by means of which the machine may be stopped as the lever is being carried over the enlargements *d*, or may, upon reaching the end of the rolls, be reversed and the reproducer H carried back to the place of beginning on the record-rolls, as follows: In applying this feed-screw to a phonograph I have provided the variable feed-screw D, the rocker-shaft E, upon which the lever G is mounted by means of the slide G', so that it may be easily carried longitudinal of the rocker-shaft, and a reverse-screw F, all parallel with the record-roll B. To stop the machine, or at least the travel of the reproducer H as the lever G is carried upon the enlargements *d* of the feed-roll D, I attach a lever M to one end of the rocker-shaft E and arrange for carrying and holding it securely either side of the perpendicular by a link N, pivoted to the end of the lever M and the opposite end connected with a spring, as P, so that the lever M will be firmly held either in the position of the solid lines or of the dotted lines in Fig. 2, as the case may be, thus carrying and holding the reproducer to or from the record, as may be desired and as indicated in Fig. 2. To stop the machine as the lever is carried over by the knife *g* (shown in dotted lines in Fig. 3) climbing the enlargements *d* on the feed-screw, I have provided a ratchet-wheel K and a pawl O, pivoted to the frame in position to engage the same, so that it cannot turn when the reproducer H is in the position shown by the solid lines in Fig. 2; but the pawl is thrown out of engagement with the ratchet when the lever M and the reproducer are thrown to the opposite position by the hub of the lever pressing it back, as indicated by the dotted lines, as shown in Fig. 5, so that the ratchet may revolve and allow the wheel J to revolve, and with it the feed-screw D, which transmits motion to the return feed-

screw F through the medium of the chain I or other suitable mechanism, and when the slide G' is carried to the end of the rocker-shaft E after having traversed the entire length of the record-roll the slide coming in contact with the pin or other suitable catch, as *r* on the trip-rod R, may carry the end of the rod to position to hold the pawl from engaging the ratchet-wheel K, as shown in Figs. 5 and 6, so that when the lever G is carried over and the knife is thrown from contact with the feed-screw D, so that the other end engages the return feed-screw F, the lever and reproducer will be carried back to the opposite end of the rocker-shaft, when contact with the pin *r*' will disengage the pawl O by withdrawing the trip-rod R from behind it and allow it to again engage the ratchet-wheel K and stop the machine.

The carriage C is designed to carry several of the record-rolls B and may be moved to and from the reproducer H by the screw Q or any other suitable mechanism.

The lever G carries the reproducer H at one end, and the horn of the machine may be carried at the other end, though I do not deem it necessary to show the horn for the purpose of this invention.

While it is possible to cut the screw-thread of the feed-screw D of equal depth both upon the body of the screw and over the enlargements *d*, I find it much less difficult to cut them so that the bottoms of the threads will be uniform the entire length of the screw—that is, the screw-threads, or rather the furrows between the threads, are cut deep enough in the enlargements, so that the diameter of the metal at the bottom of the furrows will be uniform regardless of the diameter of the outer edges of the threads.

While so elaborate a description of the mechanism of the phonograph is not necessary to render the action of the feed-screw plain, as the feed-screw is designed for other lines of mechanism, I deem it desirable for a clear understanding of its application not only to the phonograph, but to other machines as well.

C' represents the track upon which the carriage C is supported, and L represents a motor for driving the several parts of the phonograph, the same being represented as connected by a belt with the gear-wheel J, which is secured to the feed-screw D and is coupled to drive the ratchet-wheel K, and *nn* are stops for the lever M, preventing it from passing beyond the desired position when being actuated by the variable feed-screw D and the spring P and link O.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine having movable parts, a feed-screw shaft having enlargements at intervals, the shaft and the enlargements being

uniformly threaded, as described and for the purpose set forth.

2. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, both the shaft and the enlargements being uniformly threaded, and a lever and knife to engage and be actuated by said feed-screw, substantially as and for the purpose set forth.

3. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, both the shaft and the enlargements being uniformly threaded, a rocker-shaft in position to engage the feed-screw shaft, substantially as and for the purpose set forth.

4. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, the shaft and the enlargements being uniformly threaded, a rocker-shaft, a sliding lever on said rocker-shaft in position to engage the feed-screw shaft, and a lever, a link and a spring connected to hold said rocker-shaft to position, substantially as and for the purpose set forth.

5. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, the shaft and the enlargements being uniformly threaded, a rocker-shaft, a lever slidingly mounted on said shaft and engaging the feed-screw shaft, an actuating-lever, a link and a spring connecting the rocker-shaft and the machine, and driving mechanism connected with the machine, substantially as and for the purpose set forth.

6. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, the shaft and the enlargements being uniformly threaded, a rocker-shaft, a lever slidingly supported on the rocker-shaft, in position to engage the threads on the feed-screw shaft an actuating-lever, a link and a spring connecting with the rocker-shaft and the machine, a reverse-feed-screw shaft, and driving mechanism, substantially as described.

7. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, the shaft and enlargements being uniformly threaded, a return-feed-screw shaft, a rocker-shaft between the feed-screw shaft and the return-feed-screw shaft, a lever slidingly supported on the rocker-shaft and arranged to alternately engage the feed-screw shaft and the return-feed-screw shaft a lever, link and spring for actuating the rocker-shaft, driving mechanism, and a pawl and a ratchet-wheel connected therewith, substantially as shown and described.

8. A machine having movable parts comprising a feed-screw shaft having enlargements at intervals, said shaft and enlargements being uniformly threaded, a return-screw-feed shaft, a rocker-shaft between the

feed-shaft and the return-feed shaft, a lever slidingly mounted on the rocker-shaft to alternately engage the feed-screw shaft and the return-feed-screw shaft, a lever, a link and a spring connected to actuate the rocker-shaft, driving mechanism, a ratchet-wheel and a pawl connected therewith, the pawl actuated by the rocker-shaft, a trip-rod parallel with the rocker-shaft and in the line of travel of

the pawl, and trips on the trip-rod in position to engage the lever on the rocker-shaft, substantially as shown.

Signed at Grand Rapids, Michigan, November 22, 1904.

JOHN C. DUNTON.

In presence of—

GEORGIA E. CILLEY,

ITHIEL J. CILLEY.