

G. WOOD.

AUTOMATIC RETURN FEED MECHANISM FOR PHONOGRAPHS.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

Fig. 1.

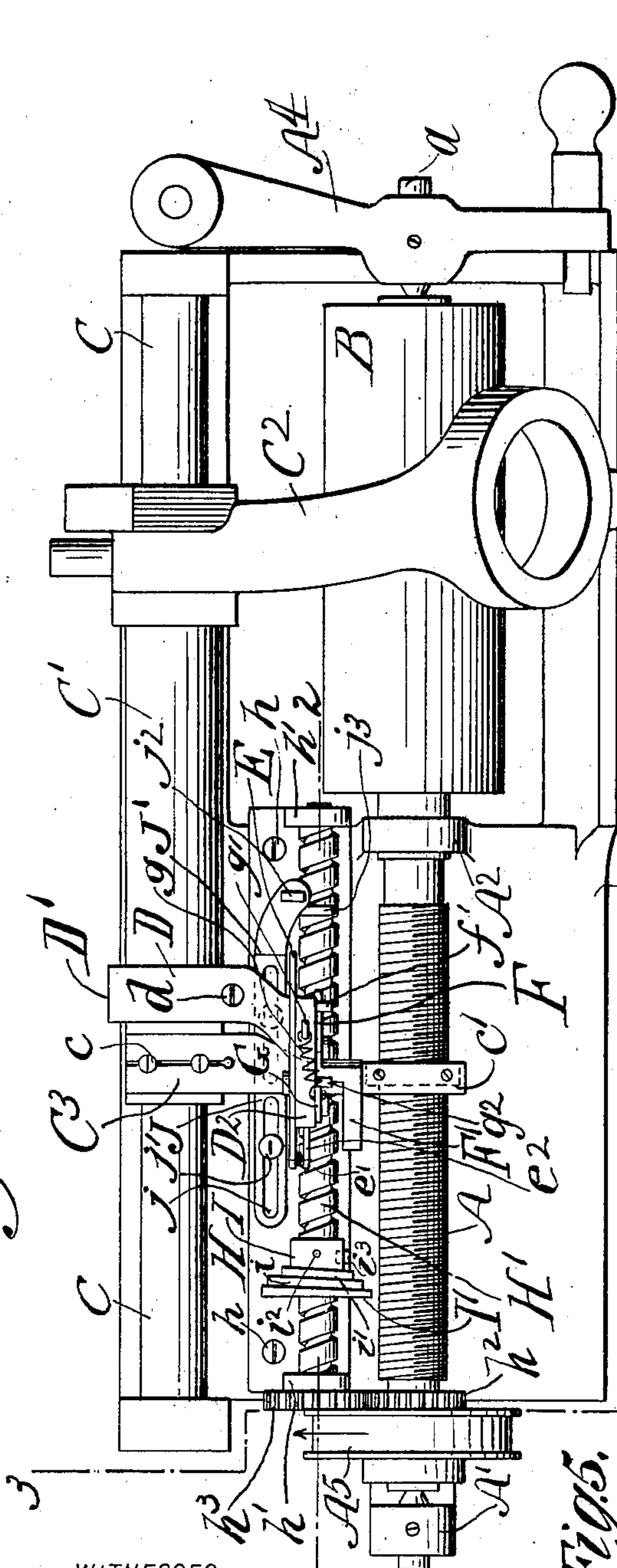


Fig. 2.

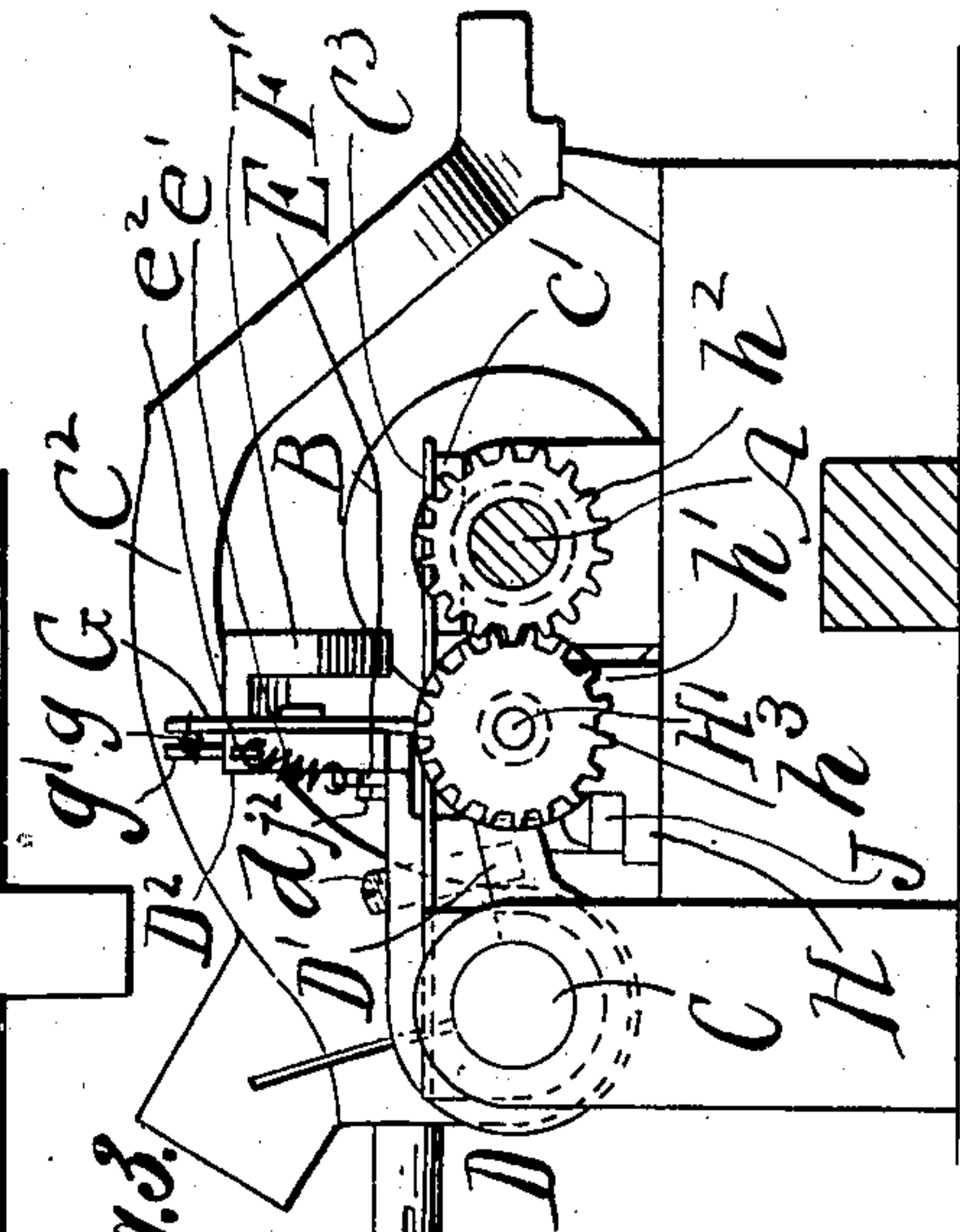


Fig. 4.

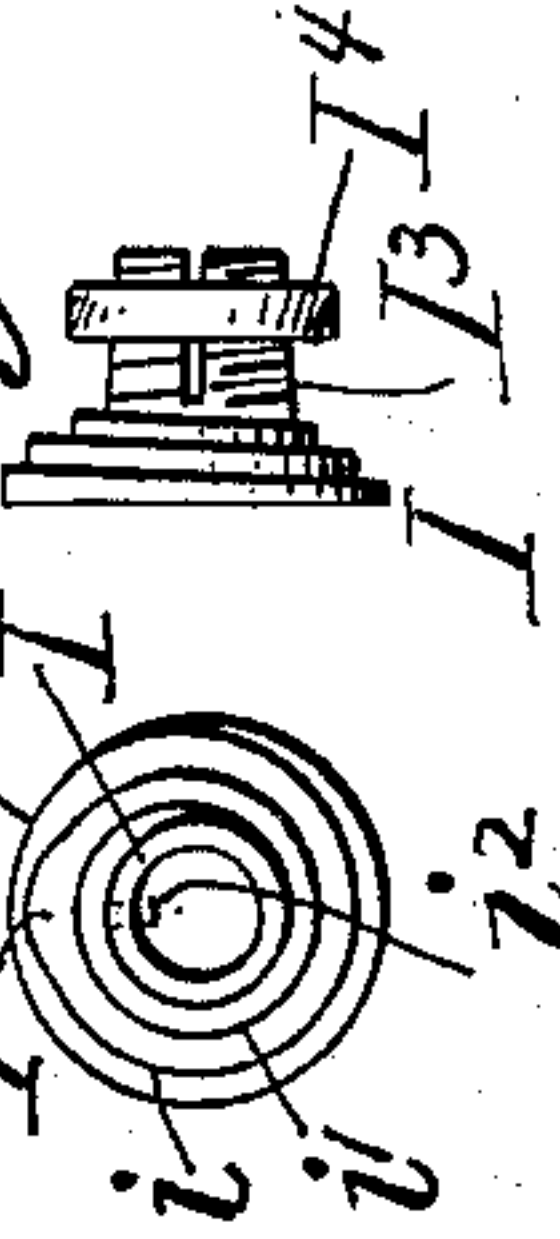


Fig. 5.



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AUTOMATIC RETURN-FEED MECHANISM FOR PHONOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 735,926, dated August 11, 1903.

Application filed February 24, 1903. Serial No. 144,601. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WOOD, a citizen of the United States, and a resident of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Automatic Readjusting Means for Phonographs, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

The present invention relates to automatic return-feed mechanism for photographs, and has for its more prominent objects simplicity of parts, positiveness of operation, and adaptability to existing constructions of phonographs.

With the above and other purposes in view the invention comprises novel readjusting means, preferably in a form designed for attachment to a phonograph, and which when the limit of the record-cylinder is reached are automatically thrown into action, causing the elevation of the resonator-arm to remove the tracker-pin from the cylinder, coincidentally interrupt the operative relation of the devices for forwardly feeding the arm, thereafter effect the regular reverse movement of and lowering of same to again bring the tracker-pin into engagement with the cylinder-surface at the starting-point thereof.

There are other important features and details connected with the invention which are fully explained in the subsequent detailed description.

The invention is particularly useful in connection with those constructions of phonographs wherein the primary motor medium is coin-controlled.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of so much of a phonograph as is necessary to disclose my invention. Fig. 2 is a vertical detail sectional view of the apparatus disclosed in Fig. 1, the section being taken in the plane indicated by the broken line 2 2 of said latter figure looking in the direction of the arrow. Fig. 3 is a vertical transverse section of the apparatus, the section being taken in the plane indicated by the broken line 3 3, Fig. 1. Fig. 4 is a detail face view

of an eccentric constituting an important feature of the invention, and Fig. 5 is a detail side view illustrating a modification of said eccentric.

As shown, the revolving record-mandrel, together with the threaded shaft A, constituting an extension thereof, is rotatably mounted in suitable bearings A' A² on the bed A³, the laterally-swinging keeper A⁴ at one end of the machine having the centering-journal α and permitting the application and removal of the record-cylinder B in an obvious manner. A belt-pulley A⁵ on the end of the shaft A provides for the rotation of the same by suitable primary power means.

On the guide-rod C, located on the bed at its rear, is slidingly and revolubly mounted the sleeve C', carrying at one end the forwardly-extending resonator-arm C², while at its other end it is equipped with the devices for engaging the threads on the shaft A and actuated by the same for causing the longitudinal movement of the sleeve to accomplish the traverse of the arm C² over the record and in the direction of the keeper A⁴. The devices referred to comprise a forwardly-projecting member C³, having a rear slotted portion by which it can be rigidly secured by screws c to the contiguous end of the sleeve C', while at its forward end said member has a nut-segment c', embracing the upper portion of the shaft A at one point thereof and engaging the threads of the same to be actuated when the shaft revolves.

A forwardly-extending hanger D, more immediately constituting one of the features of my invention, has a divided butt D', by which it may be mounted on the sleeve C' and rigidly clamped thereto by a screw d, said hanger being represented in Fig. 1 as being secured contiguous to the member C³. At its front end the hanger is provided with a vertical block or plate D², on the rear face of which is pivoted an elongated latch E, the hook end of which is normally maintained in the depressed position (illustrated in Fig. 2) by a contractile spring e', attached to the opposite end of said latch and to a small horizontal bracket e² on the block D². Dotted lines, Fig. 2, indicate that the body e³ of the latch is of such shape that the lower edge of said

body bears against the horizontal portion of the hanger adjacent to the block, and thereby limits the downward movement of the end e of said latch. Also pivotally mounted on the block D^2 , but on the front vertical face thereof, is a dog F , which below its pivot tapers to a lower point f . The swing of the dog is limited in either direction by small stops $f' f^2$, projecting from the block. The dog F is normally maintained in the inclined position (shown in Fig. 2) by a weight F' . Likewise pivotally on the front face of the block is a pawl G , the upper end of which extends for a short distance above the block and is connected by a contractile spring g to a fixed bracket g' on the block top, so that said pawl is normally held in the position indicated in Fig. 2, arrested at one of its edges by a stop g^2 , projecting from the block. The lower portion of the pawl G is shaped to present a depending nose g^3 , the end of which is slightly beveled.

On the bed A^3 at the rear of the shaft A is secured by screws $h h$ a carrier H , comprising the extended bottom plate of approximately rectangular configuration and provided at its ends with the vertical bearings h' , in which are revolubly mounted the ends of a return-feed shaft H' , which is spirally grooved and arranged counter to the shaft A and driven therefrom, but in a relatively reverse direction, by intermeshing gear-wheels $h^2 h^3$, keyed respectively, on said shafts A and H' .

It will be observed that the shaft H' is disposed in the same vertical plane with that in which are the dog F and pawl G .

Removably on the return-feed shaft is a small collar I , integrally carrying a disk I' , at one side of which is a spirally-arranged eccentric presented by shoulders $i i'$, merging with each other and vanishing at the collar, as illustrated most clearly in Fig. 4. It will be noted by reference to Fig. 4 that the eccentric presented by the shoulders $i i'$ vanishes in a direction opposite to that in which the shaft H' rotates. The shoulder i has at one point a distinct cam I^2 . The collar has in its upper side a small follower i^2 , which when the collar is in position extends within the spiral groove of the shaft H' at one point thereof. Said collar is adapted to be rigidly secured to the shaft H' by a clamp-screw i^3 , which bears in the collar and has its inner end in biting engagement with the contiguous surface of the shaft.

Located upon the base-plate of the carrier H is a gage J , having an extended flat body portion containing longitudinally-alined slots j , in which lie screws j' , engaging the said base-plate and adapted to adjustably clamp said gage in any position to which it may be moved relative to the carrier.

At its inner end the gage J has an angular standard J' slightly curved in a forward direction, so that the upper portion of a lug j^2 on the horizontal portion thereof will lie in the path of inward traverse of the hook end

c of the latch, said upper portion being beveled at its top, so that the curved edge of the end e will contact with and ride on said beveled top to effect the lifting of the latch on its pivot. The horizontal part of the standard also has a horizontal pin j^3 forwardly projecting therefrom, so as to be contacted with the edge of the dog F and effect the movement of the same on its pivot.

The gage J and the collar H are so adjusted that the threaded portion of the shaft A to be traversed by the nut c' will correspond with the traverse of the tracker-pin carried by the arm C^2 on the record-surface of the cylinder B , the position of the lug j^2 being such that the dog F will contact therewith at the predetermined limit of the record-surface.

Assuming that the dog F and pawl G are in the positions illustrated in Fig. 2 and the sleeve C' occupies a position whereby the nut c' is engaged with the shaft A , correspondent with the beginning of the record-surface, the proper rotation of the shaft A will not only occasion the revolution of the cylinder B , but coincidentally cause the inward movement of the nut c' , and consequently the longitudinal movement of the member C^3 , hanger D , sleeve C' , and resonator-arm C^2 , so that the tracker-pin traverses the entire record-surface. At about the time the limit of said record is reached the hanger D will have moved to such position that the hook end of the latch will ride upon the lug j^2 and drop over into engagement with the same. The further inward movement of the hanger will bring the dog F into contact with the pin j^3 , causing the dog to more nearly approach a vertical position and engage its lower end with the spiral groove of the shaft H' . The reverse rotation of the latter, combined with the purchase afforded by the latch engagement with the lug j^2 , will result in the block being for a short time held stationary while the dog is moved to a full vertical position, raising the hanger and releasing the latch, partially turning the sleeve C' in the guide-rod, lifting the nut c' out of engagement with the shaft A , and also lifting the resonator-arm to throw the tracker-pin out of operable relation with respect to the record-cylinder B . The further reverse rotation of the shaft H' will cause its spiral groove, through the medium of the engaged dog F , to retract the hanger and with it the member, sleeve, and resonator-arm, the sleeve meanwhile being still so partly turned that the nut c' and resonator-arm are retained in the elevated positions referred to. When the hanger D arrives adjacent to the collar, the lower end of its pawl G will be at such altitude that it will be brought in contact with the periphery of the eccentric-shoulder i , which in revolving will cause its cam I^2 to lift the pawl and elevate the hanger to such extent as will raise the end of the dog F out of engagement with the spiral groove and permit the weight F' to restore said dog to the incline position previously referred to clear of the shaft. The

further rotation of the eccentric causes the pawl to ride to the vanishing-point thereof, by which time the hanger will have become so lowered that the actuating-nut is again brought into engagement with the shaft A and the opposite traverse of the hanger and other parts effected. The arrangement of the eccentric, besides involving the other functions stated, provides for the reengagement of the actuating-nut unaccompanied by jar or vibration, as might be the case were the throwing off more abrupt.

In addition to the adjustability of the gage J the collar I and its parts can be adjustably secured at any point along the shaft H', so as to contribute to define the extent of traverse of the tracker-pin over the record-cylinder. The employment of the follower i^2 permits the collar and its parts to be nicely adjusted thereon before being clamped by the screw i^3 , since a very slight turning of the shaft H' in one direction or the other will occasion a correspondingly slight change in the longitudinal position of the collar and its parts, whereupon the same can be secured by the clamping-screw.

In lieu of the arrangement of eccentric-collar described I may employ an arrangement such as disclosed in Fig. 5, wherein the collar I³ is represented as being slightly tapering and longitudinally split, so that after its adjustment a tightening-ring I⁴ engaging its threads will positively secure it in position.

From the foregoing description it will be appreciated that the readjusting means embodying my invention are not only extremely simple and efficient in construction and operation, but are of such character that they constitute attachments readily applicable to all the existing constructions of phonographs with which I am familiar.

I do not desire to be understood as limiting myself to the particular features and details shown and described, but reserve the right to all modifications as may be fairly within the scope of my invention.

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

1. In return-feed mechanism for phonographs, a revoluble return-feed shaft, a normally inclined dog, adapted when in a vertical position to be engaged with the counter-shaft and be positively moved by and along the latter, said dog being capable for operable connection with the actuating-nut and resonator-arm, and provision for causing the dog to assume a vertical position and effect the inoperativeness of the nut and resonator-arm.

2. In return-feed mechanism for phonographs, a revoluble return-feed shaft, a normally inclined dog adapted when in a vertical position to be positively moved along the latter, said dog being capable for operable connection with the actuating-nut and resonator-arm, provision for causing the dog to assume a vertical position and effect the inopera-

tiveness of the nut and the resonator-arm, and means for adjustably limiting the traverse of the dog with respect to the provision for causing it to assume a vertical position.

3. In return-feed mechanism for phonographs, a revoluble return-feed shaft, a normally inclined dog adapted when in a vertical position to be engaged with said counter-shaft and be positively moved by and along the latter, said dog being capable for operable connection with the actuating-nut and resonator-arm, and provision longitudinally adjustable relative to the counter-shaft, for causing the dog to assume a vertical position and effect the inoperativeness of the nut and resonator-arm.

4. In return-feed mechanism for phonographs, a revoluble return-feed shaft, a normally inclined dog adapted when in a vertical position to be engaged with said counter-shaft and be positively moved by and along the latter, said dog being capable of operable connection with the actuating-nut and resonator-arm, provision at the limit of the traverse of the dog in one direction for causing it to assume a vertical position and effect the inoperativeness of the nut and resonator-arm, and means at the opposite limit of the dog traverse for permitting the dog to assume an inclined position and enable the nut and arm to become operative.

5. In return-feed mechanism for phonographs, a revoluble return-feed shaft, a vertically-movable hanger capable of operable connection with the actuating-nut and resonator-arm, a normally inclined dog carried by said hanger and adapted when in a vertical position to raise the hanger, and be positively moved by and along the counter-shaft, and provision for causing the dog to assume such vertical position.

6. In return-feed mechanism for phonographs, a revoluble return-feed shaft, a normally inclined dog adapted when in a vertical position to be engaged with said counter-shaft and be positively moved by and along the same, a pawl moving with the dog, the latter being capable of operable connection with the actuating-nut and the resonator-arm, and provision for alternately inclining the dog and engaging and throwing off the pawl to successively effect the inoperativeness of the nut and arm, the disengagement-dog with the counter-shaft, for permitting the nut and arm to become operative.

7. In return-feed mechanism for phonographs, a carrier and return-feed shaft revolvably mounted therein, a normally inclined dog adapted when in a vertical position to be engaged with said shaft and be positively moved by and along the same, said dog being capable of operable connection with the actuating-nut and resonator-arm, and provision on the carrier for causing said dog to assume a vertical position to effect the inoperativeness of the nut and arm.

8. In return-feed mechanism for phono-

graphs, a carrier and return-feed shaft revolvably mounted therein, a normally inclined dog adapted when in a vertical position to be engaged with said shaft and be positively moved by and along the same, said dog being capable of operative connection with the actuating-nut and resonator-arm, and a gage on said carrier, having provision for causing the dog to assume a vertical position to effect the inoperativeness of the nut and arm.

9. In return-feed mechanism for phonographs, provision for operable connection with the actuating-nut and resonator-arm, and means for causing said provision to render said nut and arm inoperative and for retractively moving said provision, a pawl G combined with said provision, and a device with which said dog engages to disengage the provision from retractive relation for permitting the nut and arm to become operative.

10. In return-feed mechanism for phonographs, provision for operable connection with the actuating-nut and resonator-arm, and means for causing said provision to render said nut and arm inoperative and retractively move said provision, a pawl G combined with said provision, and a revoluble eccentric with which said dog engages to disengage the provision from retractive relation for permitting the nut and arm to become operative.

11. In return-feed mechanism for phonographs, provision for operable connection with the actuating-nut and resonator-arm, and means for causing said provision to render said nut and arm inoperative and for retractively moving said provision, a pawl G combined with said provision, and a longitudinally-adjustable device with which said dog engages to disengage the provision from retractive relation for permitting the nut and arm to become operative.

12. In return-feed mechanism for phonographs, provision for operable connection

with the actuating-nut and resonator-arm, and means for causing said provision to render said nut and arm inoperative and for retractively moving said provision, a pawl G combined with said provision a revoluble collar carrying shoulders presenting a spiral eccentric and cam, said pawl adapted to engage said eccentric and be acted upon by the cam to disengage the provision from retractive relation and for permitting the nut and arm to become operative.

13. In return-feed mechanism for phonographs, a revoluble return-feed shaft having a spiral groove, provision, engaging said groove to be retractively moved by the revolution of the shaft, said provision adapted for operable connection with the actuating-nut and resonator-arm and capable of rendering the same inoperative when said provision is in retractive engagement, and a device for disengaging said provision from retractive engagement for permitting the arm and nut to become operative.

14. In return-feed mechanism for phonographs, a revoluble return-feed shaft having a spiral groove, a pivoted dog movable along said shaft and adapted for operative connection with the actuating-nut and resonator-arm, provision at one limit of the dog traverse for causing it to retractively engage the shaft-groove and render the nut and arm inoperative, and a device at the other limit of said traverse for disengaging the dog from its retractive relation for permitting the nut and arm to become operative.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 18th day of February, 1903.

GEORGE WOOD.

Witnesses:

B. PATTERSON,
J. GLEBA.