

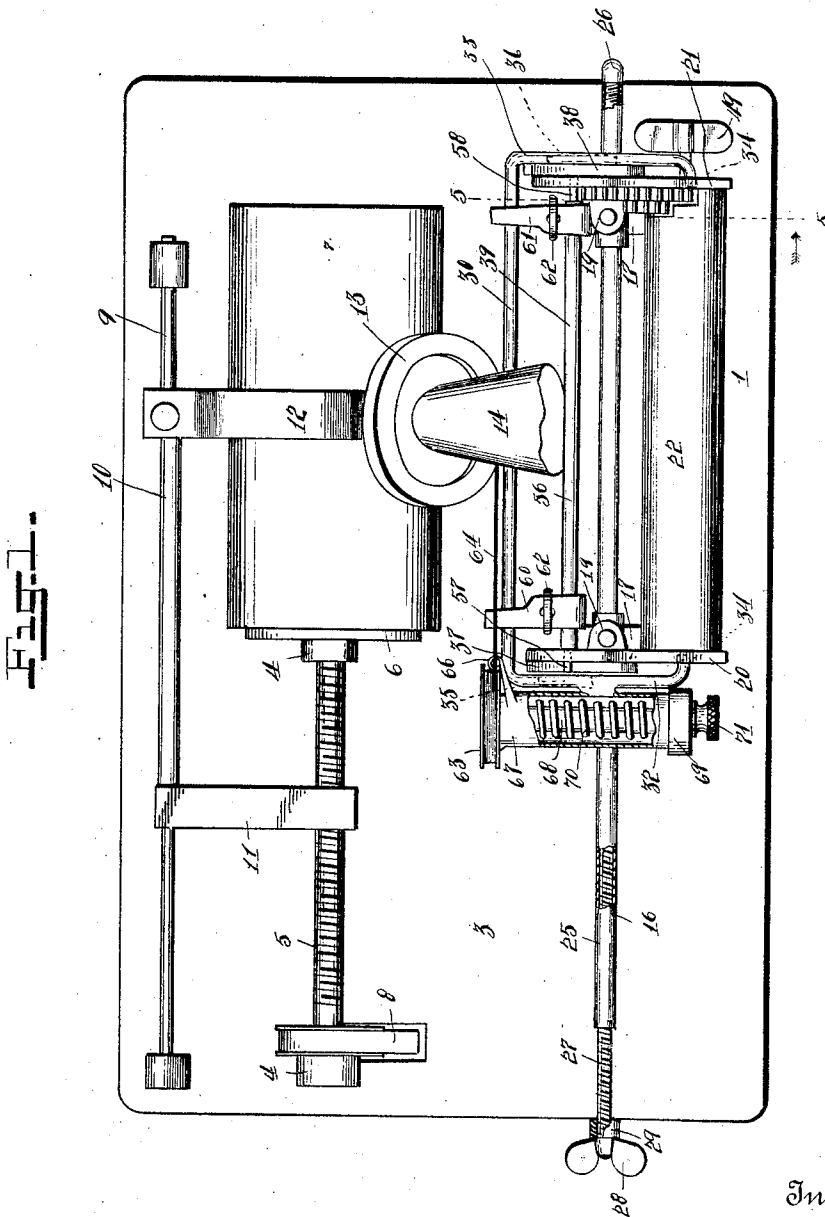
No. 858,184.

PATENTED JUNE 25, 1907.

C. L. HOLM.
PHONOGRAPH ATTACHMENT.

APPLICATION FILED SEPT. 20, 1906.

3 SHEETS—SHEET 1.



Witnesses
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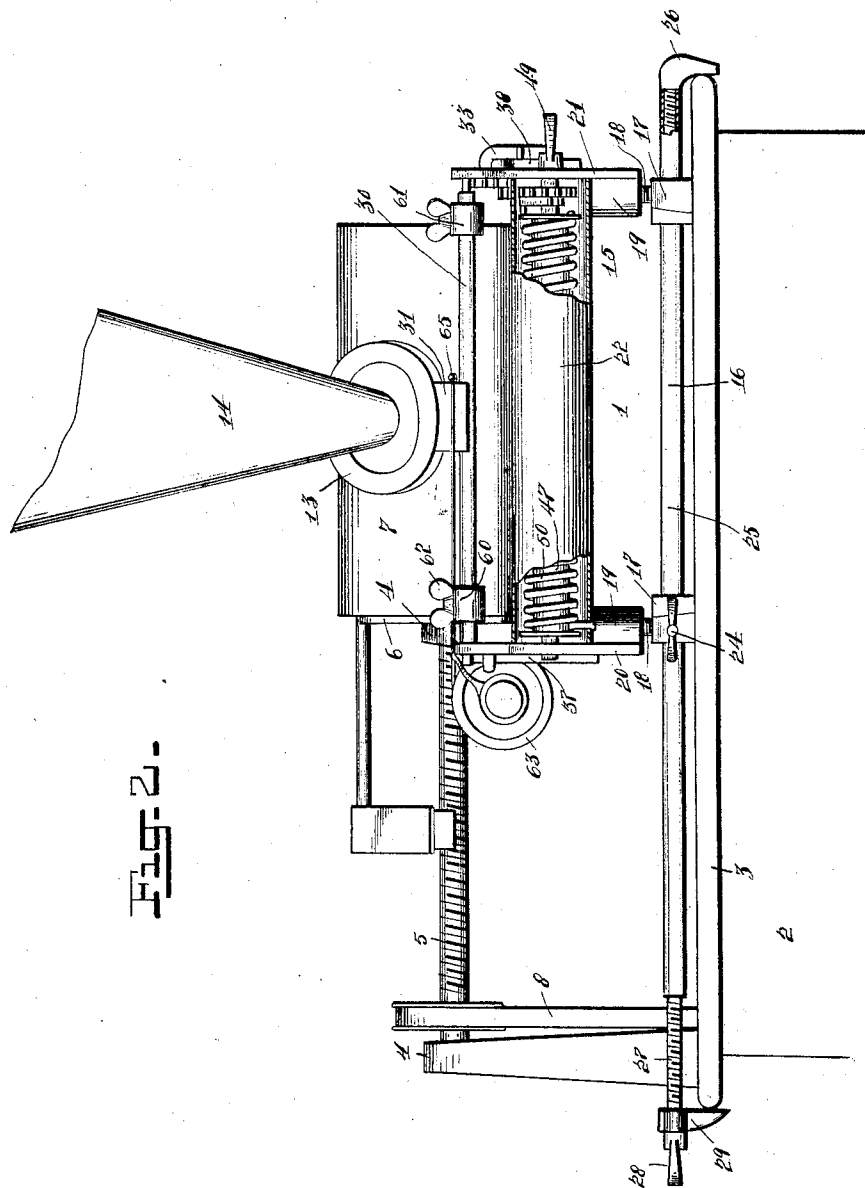


FIG. 2.

Witnesses

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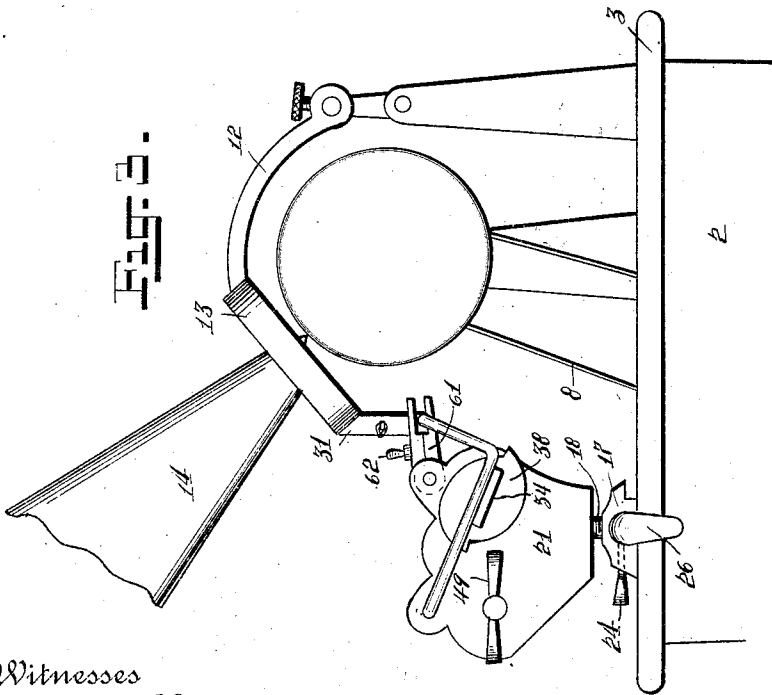
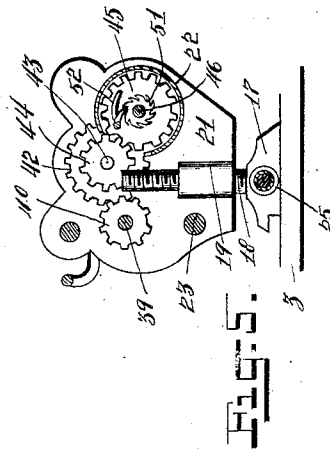
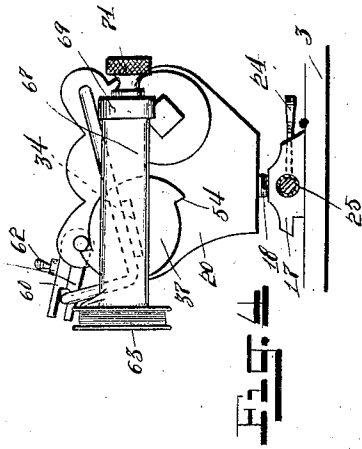
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHRISTIAN L. HOLM, OF SPOKANE, WASHINGTON.

PHONOGRAPH ATTACHMENT.

No. 858,184.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHRISTIAN L. HOLM, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Phonograph Attachments; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in mechanisms for repeating the records on phonographs.

The object of the invention is to provide a mechanism of this character of simple and compact construction, which may be quickly and easily adjusted for use upon various kinds and sizes of phonographs for repeating a record in full or in part as many times as may be desired.

With the above and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a top plan view of a phonograph, showing the invention mounted thereon, parts being broken away to more clearly illustrate the construction; Fig. 2 is a front elevation, with parts broken away; Fig. 3 is an end elevation; Fig. 4 is an elevation of the opposite end of the attachment or mechanism; and Fig. 5 is a vertical transverse sectional view, taken on the plane indicated by the line 5—5 in Fig. 1.

Referring to the drawings by numeral, 1 denotes the improved repeating mechanism, which is in the form of an attachment adapted for use upon phonographs of various kinds and sizes. As shown it is mounted upon a well known form of phonograph, consisting of a casing or cabinet 2, in which is mounted a suitable motor and controlling mechanism therefor. Upon the top 3 of the casing 2 are provided suitable bearings 4, in which is mounted for rotation the usual screw 5 provided at one of its ends with a holder 6 for the cylindrical record 7. The feed screw 5 is driven by a belt 8, which extends through a slot in the top 3 and connects wheels upon the motor and feed screw, as will be readily understood. Suitably mounted above the top 3 at its rear is a longitudinally extending guide rod 9, upon which is slidably mounted

a sleeve or tube 10 having at one end an arm 11 provided with a half-nut to engage the feed screw 5 and at its opposite end with an arm 12 carrying a reproducer 13 from which projects a horn or trumpet 14. The sleeve 10 is adapted to both slide and rotate upon the guide rod 9, so that when the reproducer is raised, the half-nut on the arm 11 will be disengaged from the feed screw. The above parts are old and well known.

The repeating mechanism or attachment 1 comprises a suitable supporting frame 15 adapted to rest upon the top 3 of the casing 2 and to be detachably secured thereon by a clamp 16. The frame 15 upon which the operative parts of the mechanism are mounted comprises two base blocks 17, which serve as supporting feet and which have projecting vertically from them screw studs 18. The studs 18 enter threaded sockets 19 provided upon two end plates 20, 21, which are rigidly connected by a cylindrical casing 22 and a rod 23. The parts 21, 22, 23 form a rigid upper frame, which is vertically adjustable owing to the screw studs 18. The base blocks or feet 17 are formed with openings through which the clamp 16 extends and slides, so that the supporting frame 15 may be moved to any point upon the clamp and thus adjusted horizontally. A setscrew 24 provided in one of the feet 17 is adapted to hold the frame and clamp rigidly together in an adjusted position. The clamp 16 comprises a tubular rod 25, which is internally screw threaded and has screwed into one of its ends a clamping jaw 26 adapted to engage one end of the top 3. In the opposite end of the tube 25 is screwed a threaded rod 27 having at its outer end a finger piece 28. A clamping jaw 29 is loosely mounted upon the rod 28 to engage the opposite end of the top 3, as clearly shown in Figs. 1 and 2. The clamp 16 is thus made extensible, so that it may be secured upon phonographs of various sizes.

The mechanism mounted upon the upper portion of the supporting frame 16 is controlled by the reproducer 13, and is adapted to automatically lift the reproducer from the record when the latter has been played in full or in part, as may be desired, then return the reproducer to its starting point and lower it upon the record, so that the latter may be repeated. This mechanism comprises a vertically swinging support 30, which is disposed normally beneath a projection 31 upon

the reproducer just out of contact with the same and is adapted to raise and lower the reproducer and serve as a guide for the same when it is elevated and being returned. This support 30 is in the form of a U-shaped frame or lever having a longitudinally extending portion and two end portions 32, 33, which are pivoted in longitudinal alinement at 34 upon the outer faces of the two side plates 20, 21. The frame 30 is adapted to be elevated and retained in such position by two cams 35, 36 upon which the ends 32, 33 of the frame are adapted to rest. These cams are in the form of straight ribs or projections upon plates 37, 38 disposed upon the outer faces of the plates 20, 21 and secured upon the outer ends of a longitudinally extending rod 39, which is mounted for rotation in said plates 20, 21. The rod or shaft 39 has secured adjacent to one of its ends a pinion 40, which meshes with a gear 41 loosely mounted upon a stub shaft 42 projecting from the inner face of the plate 21. Fixed to the inner face of the gear 41 is a pinion 44, which meshes with a gear 45 loosely mounted upon the shaft 46 of a spring drum 47. This drum 47 is disposed in the cylindrical casing 22 and has one end of its shaft seated in a bearing formed in a screw cap or plug 48, which closes one end of the casing 22. The other end of the drum shaft 46 extends through a bearing opening in the plate 22 and has upon it a winding key 49. Surrounding the drum 47 is a coil spring 50, which has one of its ends secured to said drum and its other end to the casing 22, as shown in Fig. 2. Fixed upon the gear 45 is a ratchet wheel 51 adapted to be engaged by a pawl 52 provided upon the adjacent end of the drum 47 and held in engagement with said ratchet wheel by a spring, as seen in Fig. 5. The cam plates 37, 38 are adapted to serve as escapements for the spring 50 and are formed at diametrically opposite points with stop projections 54, which coact with a trip device 55, which is in turn operated or controlled by the reproducer 13. This trip device comprises a longitudinally extending rod 56 arranged between the plates 20, 21 and having reduced ends 57, 58 which extend through and slide in openings in the plates 20, 21 and are adapted to coact with the stops 54 on the cam plates or escapements. These reduced ends 57, 58 form detents, which are alternately moved into and out of the path of rotation of the stops 54 on the two cam plates 37, 38. The reduction of the ends of the rod 56 form annular shoulders 59, which serve to limit the sliding movement of the trip device and the length of their stop ends 57, 58 is such that when the shoulder 59 at one end of the rod is engaged with its adjacent plate of the frame 15, the stop at the opposite end of the rod will be drawn into the opposite end plate of the frame 15 and will be

out of the path of the projection on the cam plate at such end, as will be readily seen upon reference to Fig. 1. The reproducer 13 shifts the trip rod 55 by engaging adjustably stop arms 60, 61 provided upon said rod. These stop arms are here shown in the form of clamps adjustable on the rod 56 by set screws 62 and having their inner ends bifurcated or slotted to loosely receive the supporting rod 30. By adjusting the stop arms 60, 61 upon the trip rod 56 any portion of the phonograph record may be repeated by the mechanism. In order to return the reproducer to its starting or initial position after it has been elevated from the record and the feed nut has been disengaged from the feed screw, I provide a spring-actuated winding drum or wheel 63 with a belt, cord or other flexible connection 64, which has its free end attached as at 65 upon the projection 31 of the reproducer. The cord 64 is wound upon the grooved periphery of the wheel 63 and passes through a guide-eye 66 upon a cylindrical casing 67 secured upon the end 32 of the reproducer support 30. The wheel or drum 63 is mounted upon one end of a shaft 68, which extends through the casing 67 and a screw cap 69 on one end of said casing. This shaft and its wheel 63 are actuated by a coil spring 70 surrounding the shaft within the casing. This spring may be tightened by holding the wheel or drum 63 against movement and turning a knob 71 upon the outer end of the shaft 68.

In operation, the projection 31 on the reproducer 13 when the latter has moved the desired distance, engages the stop arm 61 and shifts the trip rod 56 longitudinally from its normal position shown in Figs. 1 and 2, in which it will be observed the support 30 is disposed directly beneath and just out of contact with the said projection, the reproducer being in its lowered position. When the rod 56 is thus shifted, its end 57 is moved into the path of one of the stops upon the cam plate 38 while its opposite end 58 is retracted from one of said stops on the cam plate 37, the latter being thus released will be given a partial rotation owing to the train of gearing which connects its shaft 39 to the spring-actuated drum 47. The rotary movement of the cam plate 37 is limited by the engagement of one of the stops 54 on the other cam plate 38 with the end 58 of the trip rod. The partial rotation of the plates 37, 38 causes their cams 35, 36 to elevate the reproducer support 30 and hence the reproducer itself. The elevation of the reproducer causes the nut upon the arm 11 to be disengaged from the feed screw 5 and when this occurs, the spring 70 will rotate the drum or wheel 63 to wind the cord 64 thereon and shift the reproducer to its initial or starting position. When it reaches this position, its projection 31 engages and moves the stop arm 62, so that the

trip rod 56 is again shifted longitudinally but in the opposite direction. This movement of the rod causes its end 57 to project into the path of one of the projections 54 on the cam plate 37 and retracts its opposite end 58 from one of said projections upon the other cam plate 38. The latter is thereby released, so that the plates will be again partially rotated. This partial rotation will permit the cams to move to their normal positions shown in Figs. 3 and 4 and thereby lower the reproducer support 30. When this occurs the reproducer itself is lowered upon the record and the nut on the arm 11 again engaged with the feed-screw. This operation may be repeated as many times as desired.

It will be observed that the device or attachment is of very simple and compact construction and that its many adjustments permit it to be used upon phonographs of various kinds and sizes. By removing the clamp 16 from the feet 17, the latter may be turned to adjust their screw studs in the socket 19 and thereby permit of the vertical adjustment of the supporting frame 15 with respect to the phonograph. This frame may be adjusted horizontally with respect to the phonograph by shifting it upon the clamp and the latter is extensible so that it may be applied to a phonograph having a casing or cabinet of any size. By holding the wheel or drum 63 in turning the knob 71, the tension of the spring 70 may be varied, so that the reproducer will be returned as quickly, or as slowly as may be desired. By adjusting the stop arms 60, 61 upon the trip rod 56 the reproducer may be caused to repeat any desired portions of the record.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention, as defined by the appended claims.

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

1. In a mechanism for repeating phonograph records, the combination of a reproducer, a vertically-movable support to raise and lower the reproducer and serve as a guide for the same when elevated, a motor, a pair of revoluble devices operated thereby and each having a lifter and projections, said lifters coacting with said support to raise and lower the latter, and a longitudinally-movable trip device operated directly by the reproducer to alternately engage projections of the respective revoluble devices and control the revolution thereof.

2. In a mechanism for repeating phonograph records, a supporting frame, a spring actuated shaft therein, a second shaft in said

frame geared to said spring-actuated shaft, plates upon the ends of said second shaft having projections and cams, a substantially U-shaped swinging frame pivoted upon the first-mentioned frame and having end portions to engage said cams, and a connecting portion to raise and lower a reproducer and serve as a guide for the latter when elevated, a shiftable trip rod slidably mounted in said frame and having detents at its ends to be moved into and out of the paths of the projections on said plates, adjustable stop arms upon said trip rod adapted to be engaged by the reproducer, and means for returning the reproducer when elevated by said support.

3. In a mechanism for repeating phonograph records, a supporting frame, a spring-actuated shaft therein, a second shaft in said frame geared to said spring-actuated shaft, plates upon the ends of said second shaft having projections and cams, a substantially U-shaped swinging frame pivoted upon the first-mentioned frame and having end portions to engage said cams, and a connecting portion to raise and lower a reproducer and serve as a guide for the latter when elevated, a shiftable trip rod slidably mounted in said frame and having detents at its ends to be moved into and out of the paths of the projections on said plates, adjustable stop arms upon said trip rod adapted to be engaged by the reproducer, and spring-actuated means upon said support for returning the reproducer when the latter is elevated by said support.

4. In a mechanism for repeating phonograph records, a supporting frame, a spring-actuated shaft therein, a second shaft in said frame geared to said spring-actuated shaft, plates upon the ends of said second shaft having projections and cams, a substantially U-shaped swinging frame pivoted upon the first-mentioned frame and having end portions to engage said cams, and a connecting portion to raise and lower a reproducer and serve as a guide for the latter when elevated, a shiftable trip rod slidably mounted in said frame and having detents at its ends to be moved into and out of the paths of the projections on said plates, adjustable stop arms upon said trip rod adapted to be engaged by the reproducer, means for returning the reproducer when elevated by said shaft, and means for adjustably mounting said frame upon a phonograph.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHRISTIAN L. HOLM.

Witnesses:

W. F. HAHNERT,
C. E. BEAM.