

April 11, 1939.

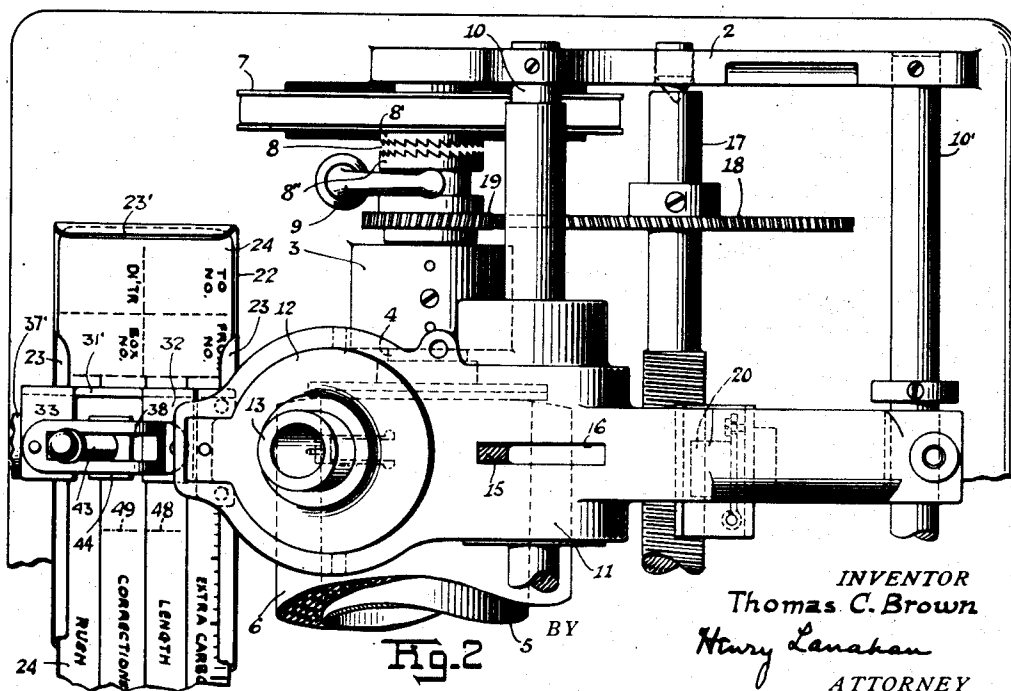
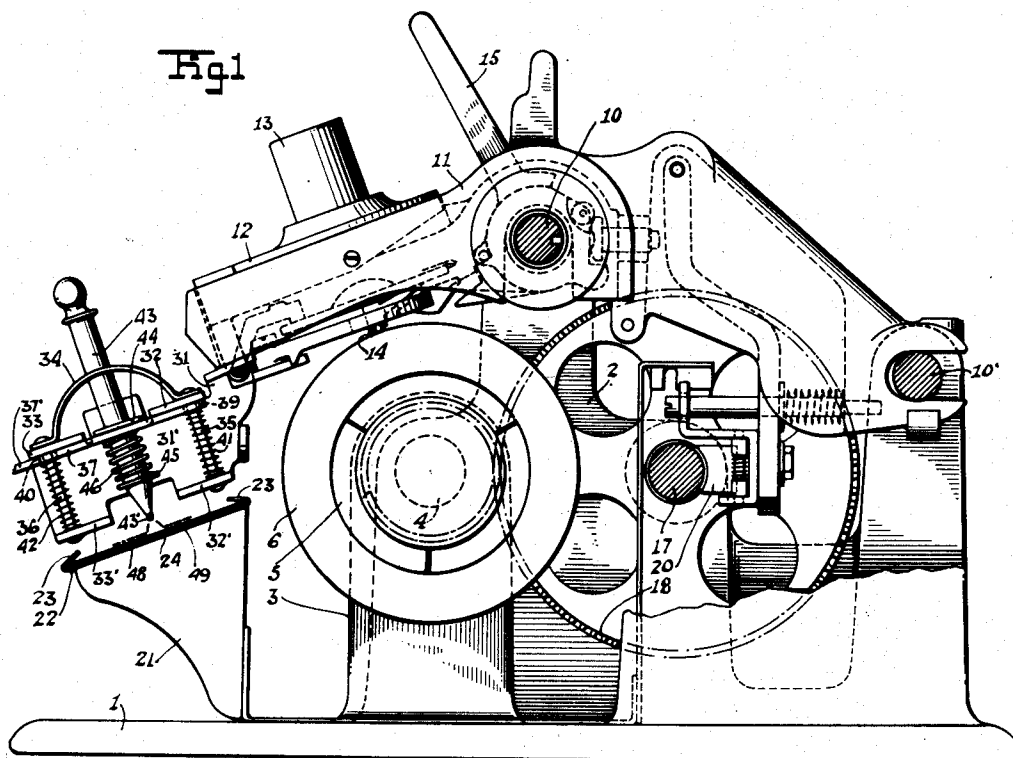
T. C. BROWN

2,154,029

MARKING DEVICE FOR INDEX BLANKS

Filed June 30, 1934

3 Sheets-Sheet 1



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April 11, 1939.

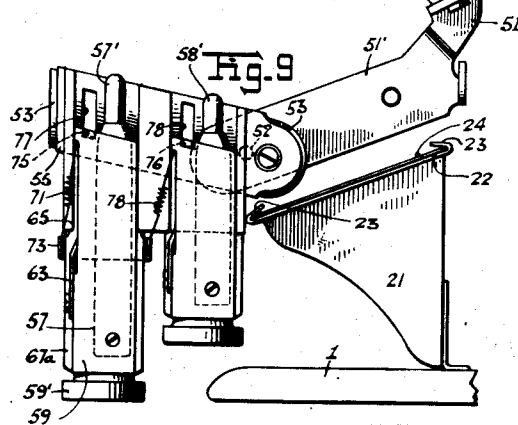
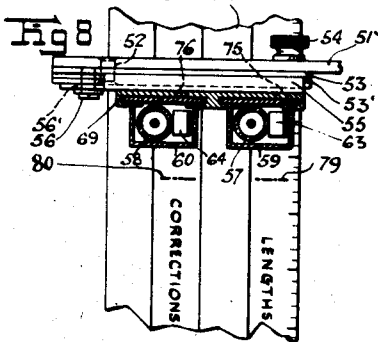
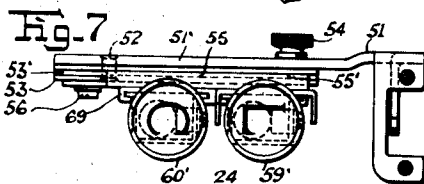
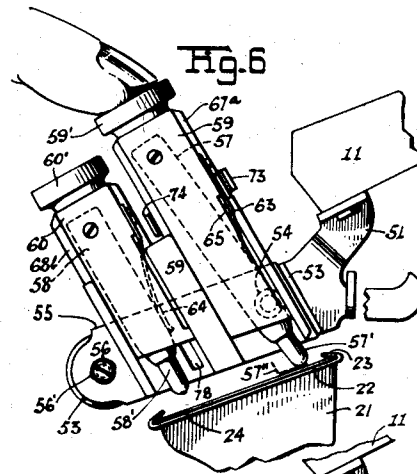
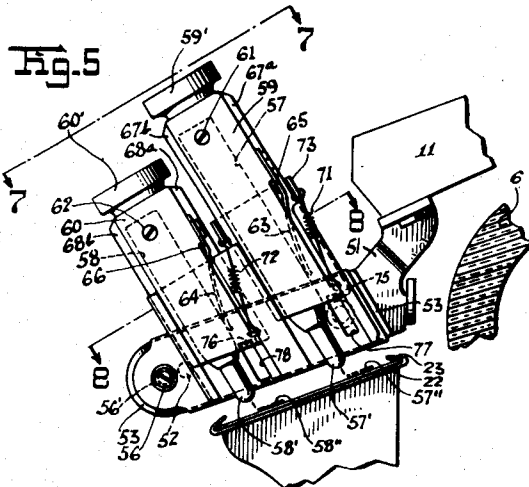
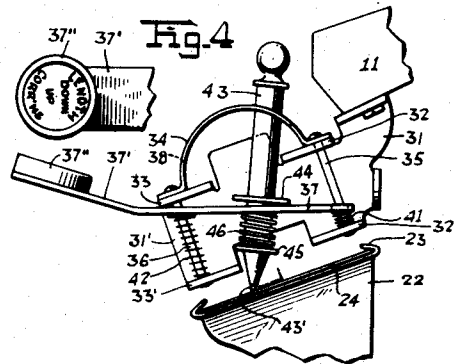
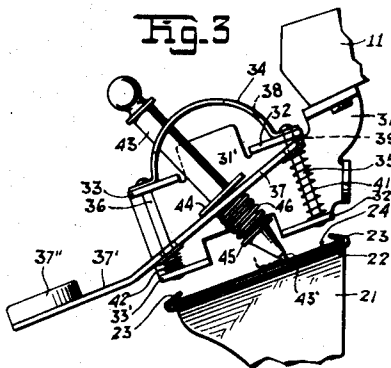
T. C. BROWN

2,154,029

MARKING DEVICE FOR INDEX BLANKS

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3 Sheets-Sheet 2



BY

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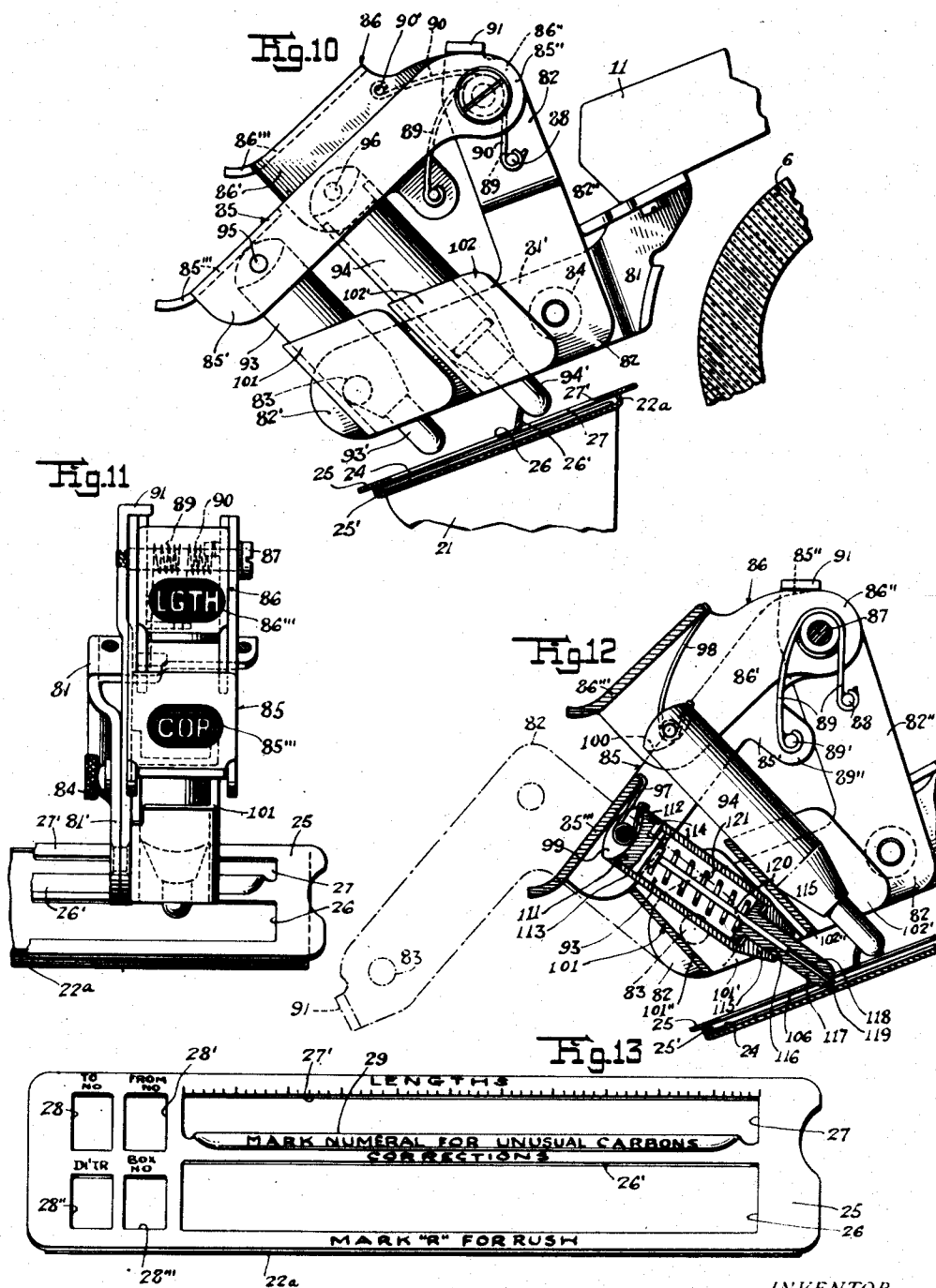
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2,154,029

MARKING DEVICE FOR INDEX BLANKS

Filed June 30, 1934

3 Sheets-Sheet 3



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2,154,029

MARKING DEVICE FOR INDEX BLANKS

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Application June 30, 1934, Serial No. 733,212

5 Claims. (Cl. 234—1)

This invention relates to marking devices for index blanks, such as may be employed in connection with phonographs adapted for the recordation, or recordation and reproduction, of dictation and the like.

In the use of such phonographs it is customary to provide, in association with each record blank on which recordation is to be effected, an index blank on which the dictator at the time of recordation may make indications of the points of beginning and ending of any particular recording, the points at which error exists in the recording, etc. While for the broader purposes of the instant invention the index blank might in suitable cases be a portion of the record blank, it is usually a separate paper or Celluloid strip. With cylindrical records, for example, it is ordinarily of length approximating that of the cylinder and is arranged to be held, both during recordation and during later reproduction, in predetermined longitudinal relationship to the record. As the recording or reproducing tool is moved longitudinally of the record a pointer or marking guide is correspondingly moved longitudinally along the face of the index strip; and when the tool is at a point of beginning or ending of dictation, a point of error therein, or the like, the dictator is intended appropriately to mark the index strip at the longitudinal position then occupied by the marking guide.

It is a broad object of the instant invention to provide, in phonographs of the class described, improved means for making indications of particular points in the recording.

It is a further object of the invention to provide in such phonographs improved and convenient means for marking an index blank.

It is still a further object to provide marking means operable at will to mark an index blank at a position positively corresponding to the point on the record occupied by the recording tool at the time of marking.

A further object is the provision of improved and simple marking means whereby there may be made on the index blank distinct indications of different classes of points in the recording.

A still further object is the provision of marking means wherein the marking device proper is conveniently accessible for adjustment, replacement and the like.

Other and allied objects will more fully appear from the following description and the appended claims.

In such description reference is had to the accompanying drawings, of which:—

Figure 1 is a partial elevational view of a phonograph equipped with an embodiment of my invention, the view being taken looking toward the center of the phonograph from a plane near the right-hand end;

Fig. 2 is a partial plan view of such phonograph so equipped, the left-hand end of the phonograph appearing at the top of this figure;

Figs. 3 and 4 are partial elevational views, from the right-hand end of the phonograph, of the mentioned embodiment of my invention illustrating positions assumed by certain of the parts in operation;

Figs. 5 and 6 are partial elevational views also from the right-hand end of the phonograph, of a second embodiment of my invention, Fig. 6 illustrating positions assumed by certain of the parts in operation;

Figs. 7 and 8 are cross sections respectively taken along the lines 7—7 and 8—8 of Fig. 5;

Fig. 9 is a partial elevational view similar to Fig. 5 but illustrating part of the assembly rotated away from its normal position;

Fig. 10 is a partial elevational view, also from the right-hand end of the phonograph, of a third embodiment of my invention;

Fig. 11 is a front elevational view of such third embodiment of my invention;

Fig. 12 is a partial elevational view generally similar to Fig. 10, but illustrating positions assumed by certain of the parts in operation and showing a few portions in section; and

Fig. 13 is a plan view of a cover for the index strip holder suitable for employment with either the second or third embodiment of my invention and illustrated in connection with the third.

Referring now specifically to Figs. 1 and 2, there will be seen a portion of a phonograph of the class described to which my invention has been applied. Briefly the pertinent portion of the phonograph may be described as follows:

A base 1 is provided with suitable standards, such as 2 and 3. A shaft 4 is journaled in the standard 3, and to this shaft is secured the mandrel 5 on which may be placed a cylindrical record blank 6, hereinafter referred to simply as a record. The shaft 4, with mandrel 5 and record 6, is adapted to be rotated by pulley 7 upon the engagement of clutch 8. The pulley 7 is journaled to standard 2 and driven in any suitable manner. The clutch 8 comprises the members 8' and 8'', respectively secured to pulley 7 and splined to shaft 4, and is selectively engaged or disengaged by movement of member 8'' longi-

tudinally of shaft 4, which movement is produced at will by swinging of the arm 9.

Parallel to the shaft 4, and secured between standard 2 and another standard not herein necessary to show, are the carriage rods 10 and 10'; along these rods is adapted to slide the carriage 11. In the forward portion of the carriage 11 is mounted the sound box 12 having the tubular flange 13 through which sound is passed—in recordation into, and in reproduction out of, the sound box. The sound box is provided with a recording tool 14 and with a reproducing tool. The recording tool, neither tool, or the recording tool may be engaged at will with the surface of a record 6 by adjusting the lever 15 to predetermined positions within the slot 16, which positions may be respectively identified as recording, neutral and reproducing.

In the operation of the machine for recordation upon or reproduction from a record 6 the appropriate tool is intended to move longitudinally of the record while the latter is being rotated. To produce such longitudinal motion, there is provided a feed screw 17 parallel to shaft 4 and rods 10 and 10', journaled to standard 2 and to a standard not herein necessary to show. This screw is rotated during rotation of shaft 4 by the engagement of screw-borne gear 18 with shaft-borne gear 19. Carried by the carriage 11 is a feed nut 20. This nut is adapted to engage the feed screw 17 whenever the lever 15 is adjusted to either recording or reproducing positions, and rotation of the mandrel will then produce a steady motion of the carriage and sound box, and hence of the tool, longitudinally of the record. It will be understood that the machine may be so arranged that when the lever 15 is adjusted to neutral position and both recording and reproducing tools therefor out of engagement with the record surface, the feed nut 20 will be disengaged from the feed screw 17 and the carriage will remain stationary unless manually moved along the rods 10 and 10'.

Secured to base 1 as by the bracket 21, and disposed in general below and parallel to the path of movement of the forward extremity of the carriage 11, is an index strip holder 22, the edges 23 and end 23' of which are folded over to provide grooves for retaining an index strip 24. In the illustrated embodiments of my invention this strip is the index blank upon which indications of points in a recording are to be made, it being understood that upon removal of a record 6 from the mandrel 5 the index strip then in the holder 22 will be removed and kept with that record, a new strip being inserted in the holder with each new record placed upon the mandrel. The apparatus thus far described is itself known, and does not form a part of the instant invention excepting in combination with further elements described hereinafter.

According to my invention there is provided, for travel longitudinally of the index blank, not a marking guide but a marking means. This is conveniently secured to the forward extremity of the carriage 11, thus providing the required correspondence of position with that of the recording tool. Such marking means may take a variety of forms, of which I have specifically illustrated three. The first is shown in Figs. 1, 2, 3 and 4, and may be described as follows:

A bracket 31 is secured to the carriage 11 underneath its forward extremity, the main portion 31' of the bracket extending forwardly and downwardly from the carriage and in a vertical plane

over the index holder 22. The bracket is provided with four lugs, extending rightwardly at right angles from the portion 31; these lugs are shown as 32 and 33 extending from the top, and 32' and 33' extending from the bottom, of the portion 31'. The lugs 32 and 32' are disposed in general over the rear of the holder 22, while lugs 33 and 33' are disposed in general over the front of the holder 22. Above the top lugs, and with its flattened extremities respectively secured thereto, may be provided an arcuate strip 34. The means securing the strip 34 to the top lugs may conveniently be the pins 35 and 36, which extend through the top lugs 32 and 33 to the bottom lugs 32' and 33', respectively. These pins may be secure with respect to the lugs and the arcuate strip, and form guiding means for a pencil mount 37. This mount is in the form of a plate, and is guided by pins 35 and 36 as these pins respectively pass through holes 39 and 40 therein, which holes are elongated forwardly and rearwardly of the phonograph—i. e., in a direction normal to that of the motion of carriage 11. The mount 37 may be termed floating, as it is supported by the compression springs 41 and 42, respectively surrounding the pins 35 and 36 above the bottom lugs 32' and 33'. Normally these springs bias the mount 37 to a position of contact with the top lugs 32 and 33—i. e. to a position illustrated in Fig. 1. In this position the mount is parallel to an index blank 24 held by the holder 22, the bracket 31 and its lugs being thereto suitably arranged.

A slot 38 is provided longitudinally of the arcuate strip 34—i. e. in a plane normal to the direction of carriage movement. This slot forms a guiding means for the marking device proper, which is illustrated as pencil 43 passing through the slot, the slot being preferably just wide enough to permit movement of the pencil therein. The pencil is assembled to the mount 37 by passage through a central hole therein; and although the pencil is ordinarily in perpendicular relationship to the mount, this hole is made enough larger than the pencil to permit a slight displacement of the latter from such relationship. Flanges 44 and 45 are secured to the pencil 43, the first above and the second below the mount 37, and between the mount and the flange 45 is provided compression spring 46; this normally maintains the flange 44 in contact with the mount and the pencil perpendicular to the mount. Under this condition, and with the mount in its normal position of contact with the top lugs 32 and 33, the tip 43' of the pencil is spaced slightly above an index strip 24 held by the holder 22.

The mount 37 is provided with a forward extension 37', as seen in either Fig. 3 or Fig. 4, and may conveniently terminate in a finger button or key 37''. Since the mount is floatingly supported it will be moved by either downward or upward pressure on the key. If downward pressure be exerted, the mount will pivot about the lug 32, or its own rear extremity, and will move downwardly along pin 36 against the pressure of spring 42. If upward pressure be exerted on the key, the mount will pivot about the lug 33, and will move downwardly along the pin 35 against the pressure of spring 41. In either case the elongation of the holes 39 and 40 obviates jamming of the mount on the pins 35 and 36.

The extreme position to which the mount may be moved by downward pressure on the key is illustrated in Fig. 3. As the mount is moved

from normal position toward this extreme position the pencil point 43' is first swung in an arc about the lug 32 until it contacts with the index blank at a point on the latter slightly behind the point toward which the pencil is normally directed, and at the time of contact the pencil will be inclined forwardly from perpendicular to the index blank. As the mount is further moved in response to the downward key pressure the pencil spring 46 will begin to compress. This spring however at all times urges the pencil point away from the central portion of the mount; and the point, although prevented from further moving downwardly by the index blank, and from moving sidewardly by the sides of the pencil guiding slot 38, is permitted to move transversely of the index blank or strip 24. The inclination of the pencil being forward of perpendicular to the index blank, the pencil point will move rearwardly along the blank, the pencil pivoting about the forward edge of the flange 44 and its upper portion moving forwardly of the slot 38—i. e., in a plane normal to the direction of carriage movement. Thus a transverse line is made on the rear portion of the index blank; this is illustrated by the line 48 in Fig. 2, it being understood that this represents a line made with the carriage 11 occupying a more rightward position (i. e., a position lower on the sheet) than it is illustrated as occupying in the figure.

Consideration now being given to the case of upward pressure on the key 37'', the extreme position to which the mount may be moved by such pressure is illustrated in Fig. 4. As the mount is moved from normal position toward this extreme position the pencil point again swings in an arc until it contacts with the index blank, but in this case the arc is about the lug 33. The pencil point will therefore contact with the index blank at a point on the latter slightly forward of the point to which the pencil is normally directed, and at the time of contact the pencil will be inclined rearwardly from perpendicular to the index blank. These effects are the converse of those described for downward key pressure, and indeed the further effects of upward key pressure are exactly the converse of the corresponding effects of downward pressure. Thus by the upward pressure a transverse line is made on the forward portion of the index blank; this has been illustrated by the line 49 in Fig. 2.

Since points of beginning and ending and points of error are frequently the two classes of recording points indications of which are desirable, I contemplate that the downward and upward key pressures may respectively be employed for these two classes. Accordingly in the Fig. 4 I have shown the key 37'' inscribed with the legend "Length Down, Corrections Up", and in Fig. 2 have shown an index blank 24 thereto appropriately printed. It will be understood, however, that this illustration is not to be taken in a limitative sense, the distinction between the markings effected by downward and upward key pressures being broadly useful for distinction between any two classes of recording points of which indications may be desired. It may further be noted that if desired the top of the pencil itself, rather than the key 37'', may be manipulated for marking of the index blank; if the pencil spring 46 is made of sufficient strength (relative to springs 41 and 42) to maintain the pencil perpendicular to the mount until the point 43' contacts with the index blank, simple forward

and backward pressures on the top of the pencil will respectively duplicate the effects of downward and upward pressure on the key. Further if desired the marking of one class of points may be effected by pressure on the key—say downward—while marking of the other class is affected by pressure on the pencil top—say rearward.

A second embodiment of my invention, wherein separate marking means are provided for each of two distinct markings of the index blank, is illustrated in Figs. 5, 6, 7, 8 and 9. In this embodiment there is again secured underneath the forward portion of the carriage 11 a bracket extending forwardly and in a vertical plane over the index holder; this bracket may be of simpler form, however, than the bracket 31 of earlier figures, and is identified in Figs. 5 through 9 as 51. Parallel to the main portion 51 of this bracket, and pivoted thereto as at 52, is provided a flat bar 53 having longitudinal grooves 53' along its two longer edges. While the bar 53 may be moved about its pivot 52 to such angular position as is illustrated in Fig. 9, it normally occupies the position illustrated in Figs. 5 through 8 in which position it may be maintained by the thumb screw 54 removably threaded into the bar through a hole in the bracket portion 51'. A plate 55 is adapted to rest against the face of bar 53 on the opposite side of the bar from the bracket 51, 55 being provided with doubly folded over edges 55' which are adapted to engage the grooves 53' in bar 53. Thus the plate 55 may be slid into place against bar 53; it may be there secured by means of the screw 55 threaded into the bar through a hole 56' in the plate. The hole 56' is preferably slightly elongated to permit a precise adjustment, forward and rearward of the phonograph, of the plate 55; this plate may be considered a vertical base, ordinarily overhanging the index strip holder 22 and stationary with respect to the carriage 11, to which are assembled the operating portions of the second embodiment of my invention.

In this embodiment two marking devices proper, or pencils 57 and 58, are provided respectively supported in individual mounts 59 and 60. These mounts are conveniently in the form of tubes of rectangular cross section, the larger internal dimension of the rectangle being arranged normal to the direction of carriage movement in manner more precisely described below, and the smaller internal dimension being preferably just enough larger than the pencil diameter to permit free movement of the pencil therein. The pencils are pivotally supported inside the mounts by the screws 61 and 62, disposed longitudinally of the phonograph, passing centrally through the respective pencils near their upper extremities, and passing through the upper portions of the mounts forward of the mount centers. The pencils are urged to a normal position of approximate contact with the forward walls of their respective mounts by the respective leaf springs 63 and 64, which may be terminally secured to the outside rear walls of the mounts and may pass through the respective apertures 65 and 66 therein to press against the pencils. The points 57' and 58' of the respective pencils protrude through the bottoms of the respective mounts, and it will be appreciated that by a suitably directed force the points and pencils themselves may be swung rearwardly within their respective mounts, about the

pivot screws 61 and 62 and against the forces of springs 63 and 64.

The pencil mounts are supported to the plate 55 above mentioned with the axis of each pencil parallel to and equally spaced from that plate, with each such pencil axis (when in the mentioned normal relationship to its mount) inclined slightly forward of perpendicular to an index strip 24 held by the holder 22, and with the two such axes respectively directed to forward and rearward portions of the index strip. In order that the mounts be movable in the approximate direction of the pencil axes, they are respectively provided with longitudinally extending flanges 67a-67b and 68a-68b which may if desired, as illustrated, comprise in each mount extensions of one of the two wider walls. These flanges are slidably retained in the grooved member 69, which is rigidly secured to the plate 55. An urge to upward motion is imparted to the pencil mounts by the tension springs 71 and 72 respectively secured between lower portions of the mounts and the lugs 73 and 74 formed from an upper portion of the grooved member 69. This upward motion is limited by the impingement of lugs 75 and 76 respectively formed from the bottoms of the mounts, against the tops of the slots 77 and 78 provided in the grooved member 69. The tops of the slots 77 and 78 are so located that the upward motion of each mount is terminated when the associated pencil point is slightly spaced above an index strip 24 held by the holder 22.

At the tops of the pencil mounts 59 and 60 are preferably secured finger-pieces or keys 59' and 60' respectively, the rear mount 59 being conveniently of slightly greater height to permit most convenient access to its key 59'. Pressure on either key sufficient to overcome the tension of the respective spring 71 or 72 will be understood to produce motion of the associated pencil mount downwardly in the grooved member 69, which motion will promptly carry the associated pencil point into contact with the index strip 24. Were the pencil axis exactly perpendicular to the index strip 24 at the time of this contact, all further key pressure would be simply pressure of the pencil point perpendicularly against the strip, and neither pencil nor mount could further move in response to the pressure. The pencil axis being inclined somewhat forwardly of perpendicular to the strip 24, however, further key pressure (in excess of that required to overcome spring 71 or 72) divides at the pencil point into two components—one downwardly perpendicular to the strip 24 and the other rearwardly along the surface of the strip—the second being greater in relation to the first, the greater the deviation of the pencil axis from perpendicular to the strip. A pencil movement within the mount about the pivot 61 or 62 can and does occur in response to the second of these force components, up to the limit provided by the rear bottom edge of the mounts, there being of course an attendant slight further downward movement of the mount itself. Thus the pencil point is moved rearwardly along the surface of the index strip 24, making a transverse mark thereon. The strength of the leaf spring 63 or 64, together with the angular relations of pencil axis and strip, determines the minimum required values of the second force component above mentioned, and these in turn establish the values of the first force component throughout the rearward motion of the point. The pencil point pressures on the strip are of course these first force component values, and

they can therefore be established at or above the minimum required for dependable marking of the strip by sufficiently tensioning the leaf spring 63 or 64.

The limit to which the mount and pencil point motion may be carried is illustrated for the rear pencil in Fig. 6, the dotted line 57'' denoting the approximate path of motion of the pencil point 57'. The pencil 57 is adapted to make a transverse line upon the rear portion, and the pencil 58 a similar line upon the front portion of the index strip or blank 24; such lines have been respectively illustrated as 79 and 80 in Fig. 8, it being understood that these represent lines made with the marking system occupying a more rightward position (i. e., one lower in the sheet) than that which it is illustrated as occupying in that figure. As in the case of the first embodiment, lines in the rear portion of the index strip may, if desired, be used for indicating lengths and those on the front portion for indicating corrections. In this case the key 59' may be labelled "L" the key 60' labelled "C", and the strip 24 thereto appropriately printed.

The desirability of the pivoting of bar 53 to the bracket 51 at 52 is illustrated in Fig. 9. Herein the thumb screw 54 has been removed; and the bar 53, with the thereto secured plate 55, guide member 69, pencil mounts 59 and 60, etc. has been rotated about the pivot 52 to render the pencil points 57' and 58' convenient of access, as for purposes of point replacement and the like. Upon such rotation of the bar 53 about the pivot 52 a portion of the apparatus assembled to the bar 53—e. g., the grooved member 69—will impinge upon the front edge 23 of the index holder 22 to limit the rotation. The point of pivoting is conveniently so chosen that this limitation will occur when the pencil points 57' and 58' are upwardly directed and thus most convenient of access; this obviates the necessity of holding the assembly during the operation of point replacement.

In the third embodiment of my invention, which is illustrated in Figs. 10 et seq., there are again employed two pencils. One of the principal points of difference, however, from the second embodiment lies in the pencil mounts, which are of different form and differently supported to the carriage. In this embodiment a bracket is again secured underneath the forward extremity of the carriage 11, its main portion extending in a vertical plane forwardly over the index strip holder. This bracket may be essentially similar to the bracket 51 of the second embodiment, and is shown in Figs. 10, 11 and 12 as 81, with main portion 81'. The index strip holder in these figures is denoted by the numeral 22a, it being optionally of slightly modified design from the previously described holder 22 and being hereinafter more fully explained. A generally L-shaped plate 82 is pivotally assembled near the extremity of one of its arms 82' to the forward part of the bracket portion 81', as at 83, to swing in a plane parallel to that bracket portion. The plate 82 may normally be retained with its arm 82' in contact with the main bracket portion 81' by the removable thumb screw 84 threaded into the plate through the bracket. When the plate is so retained its other arm 82'' will extend upwardly from the bracket. To the plate 82 are assembled the pencil mounts, pencils, etc. in this third embodiment.

The forward pencil mount 85 may comprise two parallel strips 85' each formed with a down-

wardly offset rear portion 85'' and held in mutually spaced relationship by the forwardly disposed cross member 85''', which may form a key for manipulation of the mount. Through the offset rear portion 85'' of each of the strips 85' is passed a horizontal pivot post 87, this being secured into the plate arm 82'' near its top extremity. Thus the mount is pivotally assembled to the plate 82; and an urge to upward motion, or clockwise rotation as illustrated, about its pivot is imparted to the mount 85 by the torsion spring 89 surrounding the pivot post 87 and terminally secured to post 88 on the plate arm 82 and to a post 89' secured to a lug 89'' depending from one of the strips 85'. This upward motion or rotation is limited by the impingement of the top edge of one of the offset rear strip portions 85'' against a horizontal lug 91 formed at the top of the plate arm 82''; and in the limit of such motion the mount 85 occupies its normal position, extending, as illustrated in Fig. 10, forwardly of the plate arm 82'' and over the index strip holder 22a.

The rear pencil mount 86 is generally similar to the mount 85, and may comprise two parallel strips 86' having downwardly offset rear portions 86'' and being held in mutually spaced relationship by the forwardly disposed cross-member 86''', which may form a key for manipulation of this mount. The strips 86' are pivoted at their rear offset portions 86'' to the pivot post 87, already described, between the strips 85' of the mount 85; the strips 86' are therefore more closely spaced to each other than are the strips 85'—in other words, the mount 86 is, as to dimension longitudinally of the phonograph, movable within the mount 85. The strips 86' are shorter than the strips 85' to permit motion about the pivot 87 without interference by cross-member or key 85''', and are widened at their forward extremities to raise the key 86''' appreciably above the level of the key 85'''. An urge to upward motion, or clockwise rotation as illustrated, about the pivot 87 is imparted to the mount 86 by the torsion spring 90 surrounding the pivot post 87 and terminally secured to the post 88 already mentioned and to a post 90' provided on one of the strips 86'. This upward motion or rotation is limited, as in the case of the mount 85, by the impingement of the top edge of one of the rear offset portions 86'' against the lug 91 already mentioned; and in the limit of such motion the mount 86 occupies its normal position, extending, as illustrated in Fig. 10, forwardly of the plate arm 82'' and generally parallel to the mount 85 when the latter occupies its normal position.

The forward pencil 93 is pivoted at its upper extremity to the horizontal pivot stud 95 passed between the strips 85' underneath the cross-member or key 85''', while the rear pencil 94 is pivoted at its upper extremity to the horizontal pivot stud 96 passed between the strips 86' underneath the cross-member or key 86'''. The two pencils are thus both disposed and also movable in a single plane normal to the direction of carriage motion. Urges to forward motion, or clockwise rotation as illustrated, about their respective pivots are imparted to the pencils 93 and 94 by the respective springs 97 and 98, passing around the respective pivot studs in respective slots 99 and 100 in the pencil tops and terminally impinging upon the respective pencils and the respective cross-members or keys 85''' and 86'''. These clockwise rotations of the pen-

cils are limited by the respective guides 101 and 102 which, when the mounts are in their normal positions, maintain the pencils in normal positions inclined slightly forwardly of perpendicular to an index strip 24 held by the holder 22a and respectively directed to the forward and rear portions of the strip 24. The guides 101 and 102 are of U-shaped cross section and are each secured to the plate arm 82' with one side of the U—101' and 102'—against that plate. The internal width of each U is just enough greater than the pencil diameter to permit free movement of the pencil therewithin. It will be understood that in their normal positions the pencils respectively impinge upon the bases of the U's—101'' and 102''.

The basic principles of operation of the third embodiment of the invention are quite similar to those of the second, the principal exception being that pressure on either key in the third embodiment produces a pivotal, rather than a sliding, movement of the associated pencil mount. By key pressure the respective pencil is moved downwardly, still impinging upon the base 101'' or 102'' of the U, until the point of the pencil—93' or 94', contacts with the index strip 24; further key pressure, as in the second embodiment and for the same fundamental reasons, causes the point and pencil to swing rearwardly about the pencil pivot and the point to make a transverse line on the index strip.

The pivotal assembly of the plate 82 to the main bracket portion 81' at 83 permits the plate, upon removal of the thumb screw 84, to be rotated counterclockwise to such a position as is dottedly illustrated in Fig. 12, this obviously rendering the pencil points easy of access.

The index holder 22a shown in Figs. 10, 11 and 12 is illustrated to show a modification of design, which is equally applicable to any two-pencil embodiment—e. g., to the second embodiment illustrated and described in this application. The completely folded-over edges 23 and end 23' of the previously illustrated holder are dispensed with, and there is substituted therefor a top 25 parallel with and slightly spaced from the bottom surface of the holder, providing a slot 25' into which the index strip 24 may be slid, for example from the right. The top 25—seen alone in Fig. 13—is provided with longitudinal apertures 26 and 27, through which the respective pencils 93 and 94 may reach the front and rear portions of an index strip 24 with the carriage 11 at any of its possible longitudinal positions. The top 25 may be printed with appropriate legends; and since the index strips are always placed in the slot 25' in similar relationship to the top 25, no legends on the individual index strips are required. Additional small apertures, as 28, 28', 28'' and 28''', may also be provided in the top 25, to the side of the apertures 26 and 27, through which as with a loose pencil may be made notations (other than recording point indications) appropriate to each individual index strip. If desired there may be provided along the front of each or either of the apertures 26 and 27 a flange formed upwardly from the top 25; such a flange has been illustrated as 29 along the front of the rear aperture 27. This may assist or if desired replace the previously described means for limiting forward motion of the corresponding pencil about its pivot 95 or 96. It may further be noted that in the absence of other means therefor specially provided, the rearward movement of the pencil points along the index

strip in response to key pressure may be limited by the impingement of the points against the rear edges 26' and 27' of the apertures 26 and 27, respectively.

5 While I contemplate no limitation of the broader aspects of my invention to use with lead pencils or any particular form of pencil or marking means proper, I have preferred to employ, in carrying out my invention, lead pencils of an automatically adjusting type. Such a type has been
10 specifically illustrated by the cross sectional showing of pencil 93 in Fig. 12, it being understood, however, that other pencils in the various embodiments of my invention may also be of this type. Reference being had to this pencil in Fig.
15 12, the top of the pencil is seen as 111; this is provided with the slot 99 and spring 97 and is pivoted to the stud 95, all as above described. The top 111 is provided with the shoulder 112,
20 and the casing 113 of the pencil is fitted around the top up to this shoulder and then pinned to the top, as by pin 114. The casing is tapered to a reduced diameter at its lower extremity 115, and there provided with an axial hole 116 of appreciably smaller diameter than the inside diameter of the casing proper. A lead holder 117,
25 of generally T-shaped cross-section, is adapted to slide within this hole, the top of the T slidably fitting the inside of the casing proper. The lead holder is provided with a small axial hole 118 adapted to hold a lead 119 with slight friction (sufficient to overcome the force of gravity on the lead), and freely to admit a thin plunger 120
30 secured at its upper extremity to the center of the top 111. Between the top 111 and the lead holder 117, and surrounding the plunger 120, is a compression spring 121 which, when the pencil is out of contact with the index strip 24, urges the lead holder to the most outward position permitted by the head of the T. The plunger will then protrude into the lead holder to a minimum extent.
35 The lead 119 is inserted under these conditions. As long as the lead is of length sufficient to reach from the end of the plunger to a slight distance beyond the lower tip of the lead holder, the holder will remain during operation of the pencil in its most outward position with respect to the pencil casing, and the lead will obviously be backed up by the plunger and thus adapted to mark the index strip. As the lead wears, however, it will
40 no longer project beyond the tip of the lead holder when the lead holder is normally maintained in its most outward position under tension of the spring 121. The lead holder, however, is movable within the casing upwardly against the force of spring 121, and in operation the lead holder will, after the lead has worn sufficiently, upon depression of the key such as
45 85'', engage the strip and thus be forced to move inwardly and against the tension of spring 121 so that the upper end of the lead contacts with the bottom of the plunger and the lower end of the lead will thus be exposed for contact with the index strip, under which conditions the lead is obviously adapted to mark the strip. It
50 should be noted, however, that the spring 121 should be weak enough, in relation to spring 97, to cause the mentioned upward motion of the lead holder in the casing before the pencil begins to move rearwardly about its pivot against the force of spring 97.
55 60 65 70

It will be understood that while I have disclosed my invention in terms of specific embodiments thereof, I intend no limitation of its broader

aspects by virtue of the details of those embodiments, and that the scope of the invention is intended to be expressed in the following claims.

I claim:

1. In apparatus of the character described, including a holder for an index blank and a support arranged for travel thereover: a mount carried by said support, arranged for movement relative to said support and transverse to said travel; means biasing said mount to a predetermined position relative to said support; and marking means, yieldably connected with said mount for rotational movement relative thereto, responsive to said mount movement to move rotationally relative to said mount and transversely across and with pressure against a blank in said holder.

2. In apparatus of the character described, including a holder for an index blank and a support arranged for travel thereover: a mount carried by said support, arranged for movement relative to said support and transverse to said travel; means biasing said mount to a predetermined position relative to said support; and marking means, yieldably connected with said mount for rotational movement relative thereto, responsive to said mount movement to move rotationally relative to said mount and transversely across said blank with a force thereagainst which is initially slightly inclined from perpendicular to a blank in said holder.

3. In apparatus of the character described, including a holder for an index blank and a support arranged for travel thereover: a mount carried by said support, arranged for movement relative to said support and transverse to said travel; means biasing said mount to a predetermined position relative to said support; and marking means, yieldably connected with said mount for rotational movement relative thereto, responsive to said mount movement first to contact a blank in said holder and then to move rotationally relative to said mount and transversely across a blank in said holder.

4. In apparatus of the character described, including a holder for an index blank and a support arranged for travel thereover: a mount carried by said support arranged for movement relative to said support and transverse to said travel and biased to a predetermined position relative to said support; a finger-piece, secured to said mount, for effecting said movement thereof; and marking means, yieldably connected with said mount for rotational movement relative thereto, responsive to said mount movement to move rotationally relative to said mount and transversely across and with pressure against a blank in said holder.

5. In apparatus of the character described, including a holder for an index blank and a support arranged for travel thereover: a mount carried by said support and arranged for rocking movement in a plane transverse of said travel in each of two angular directions; means biasing said mount away from said holder; and marking means, yieldably connected with said mount, responsive to said mount movement in one angular direction to move relative to said mount and in one transverse direction across and with pressure against said blank, and responsive to said mount movement in the other angular direction to move relative to said mount and in an opposite transverse direction across and with pressure against a blank in said holder.

THOMAS C. BROWN.

CERTIFICATE OF CORRECTION.

Patent No. 2,154,029.

April 11, 1939.

7

THOMAS C. BROWN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 44, for "isample" read simple; page 2, first column, line 13, for "recording" second occurrence, read reproducing; line 36, for "understod" read understood; page 3, first column, line 58, for "classes" read classes; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of June, A. D. 1939.

Henry Van Arsdale

(Seal)

Acting Commissioner of Patents.

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