Feb. 11, 1941. C. HUENLICH 2,231,431

PHONOGRAPH RECORD SHAVING MACHINE

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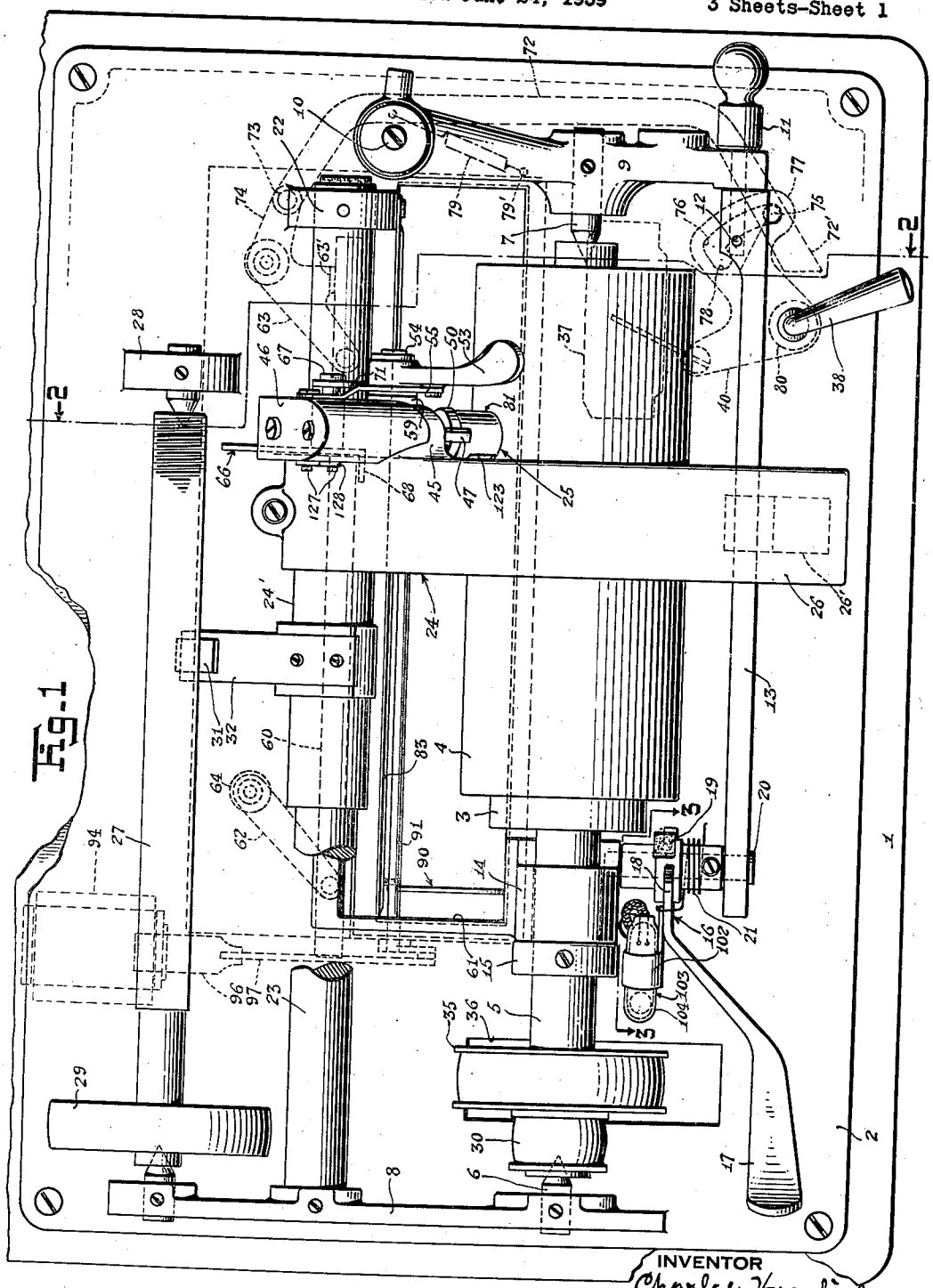


Fig. 1

INVENTOR
Charles Huenlich
BY Henry Lanahan
ATTORNEY

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Fig. 2

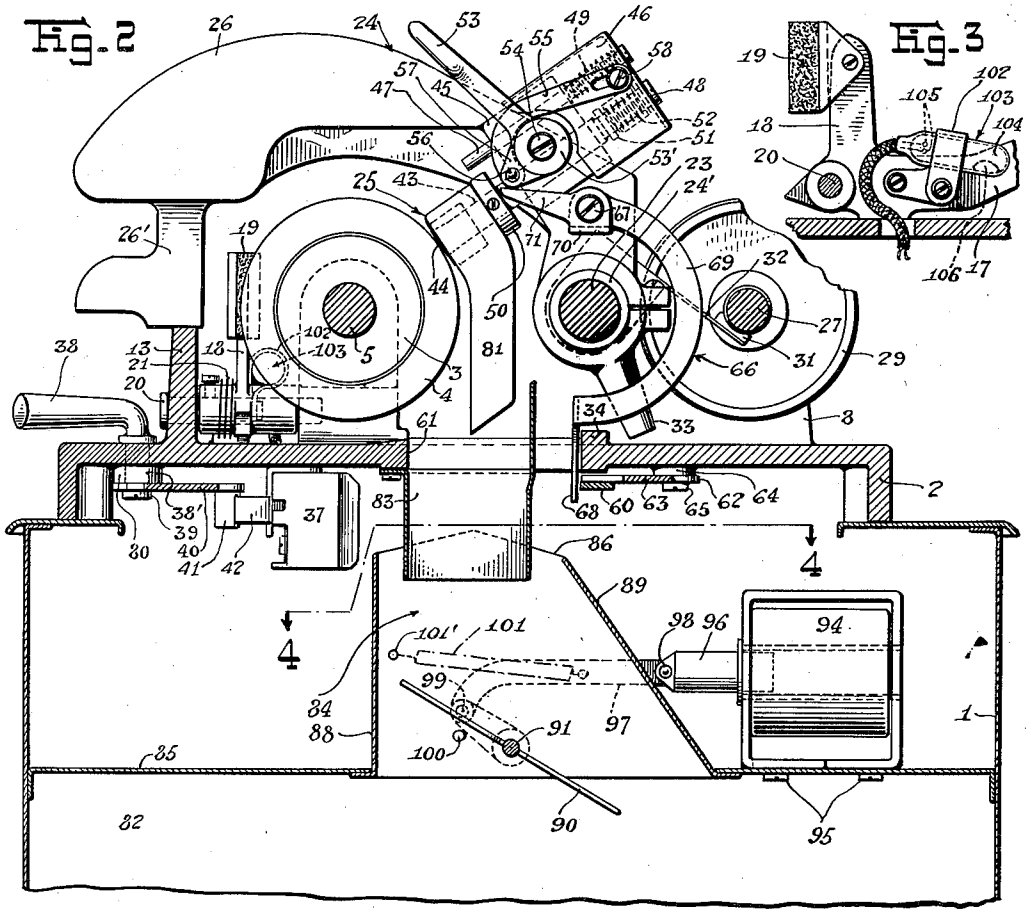
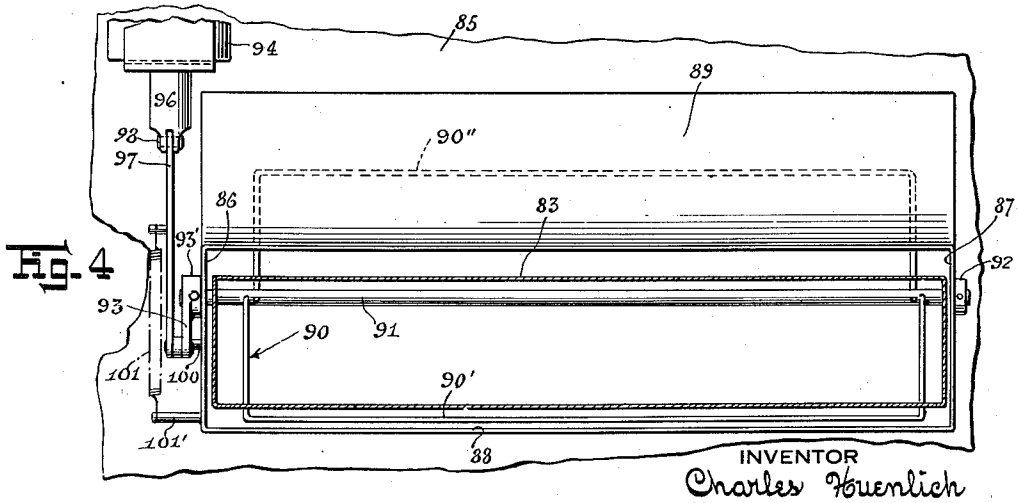


Fig. 3

Fig. 4



INVENTOR
Charles Huenlich
BY
Henry Lanahan
ATTORNEY

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PHONOGRAPH RECORD SHAVING MACHINE

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Fig. 9

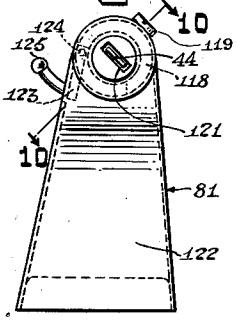


Fig. 12

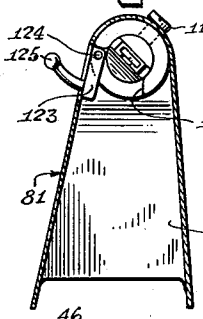


Fig. 11

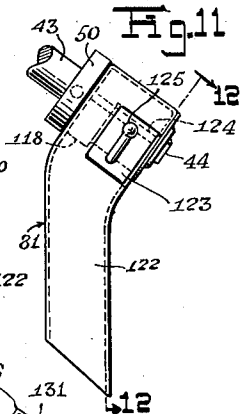


Fig. 10

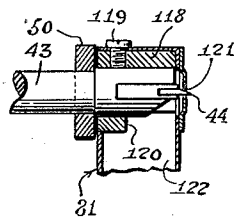


Fig. 7

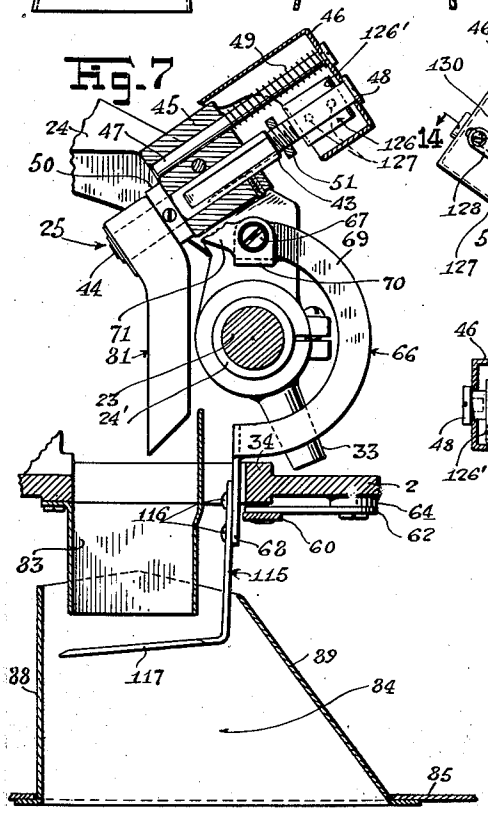


Fig. 13

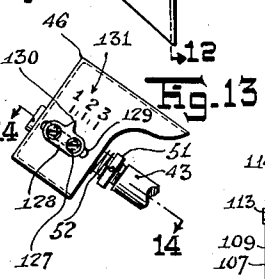


Fig. 5

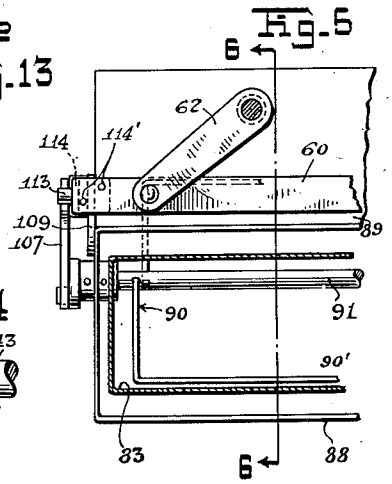


Fig. 14

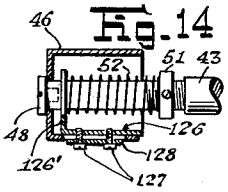


Fig. 6

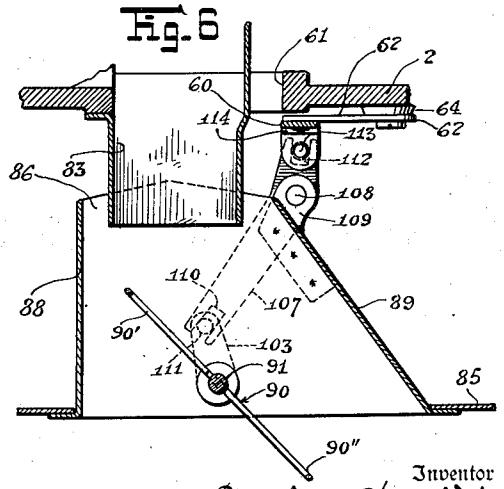
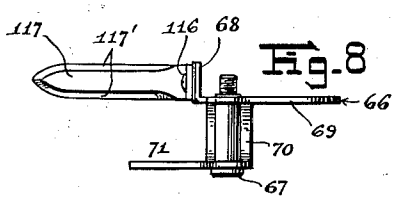


Fig. 8



Inventor
Charles Huenlich

By

Henry Lanahan

Attorney

Patented Feb. 11, 1941 2,231,431

UNITED STATES PATENT OFFICE

2,231,431

PHONOGRAPH RECORD SHAVING MACHINE

Charles Huenlich, Bloomfield, N. J., assignor to Thomas A. Edison, Incorporated, West Orange, N. J., a corporation of New Jersey

Application June 24, 1939, Serial No. 280,983

15 Claims. (Cl. 82—1.1)

This invention relates to phonograph record shaving machines, and more particularly to the provision of new and improved means in such machines for facilitating their use.

Phonograph record shaving machines are used to obliterate the recordations made on wax-like records, to prepare the records for reuse, by the process of shaving off the surface layer of the record bearing the recordation. This shaving operation involves rotating the record to be resurfaced, and concurrently and progressively moving a cutting or resurfacing tool, which has been set into contact with the record, along the surface of the record. As the tool is so moved there are cut from the record long shavings or shreds of a thread-like character which are directed, as by a chute, from the cutting tool into a collecting chamber or container. In this container the shavings usually accumulate in the form of a loose random mass. Because of the loose and random character of this formation of the shavings, the effective capacity of the container is greatly reduced.

It is an object of my invention to effectively increase the capacity of the container for the record shavings by controlling the character of the formation of the shavings in the container. One aspect of my invention is in the provision of means to break up the record shavings before they enter the container; another aspect is in the provision of means to distribute or to level the shavings within the container.

It is another object of my invention to provide means for breaking up the record shavings which is controllable for maximum effectiveness at any given ambient temperature with a given kind of record material.

It is another object of my invention to provide a means for breaking and distributing the record shavings, which is automatically and intermittently operated during the use of the machine.

Another object of my invention is to cause the distributing means to be operated in predetermined relation to the operation of the machine. A feature of my invention is to provide means to cause the distributing means to be operated during each operation of shaving a record.

It is a further object of my invention to provide an improved adjusting means, and indicating means therefor, for controlling the depth of cut, or thickness of shave, from the record.

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

In the description of my invention reference is had to the accompanying drawings, of which:

Figure 1 is a top plan view of a record shaving machine, such as is commonly used for shaving records of the type employed in connection with commercial phonographs or dictating machines, in which there is incorporated one form of my invention;

Figure 2 is a vertical sectional view taken substantially along the line 2—2 of Figure 1;

Figure 3 is a fractional vertical sectional view taken substantially along the line 3—3 of Figure 1;

Figure 4 is a fractional horizontal sectional view taken substantially along the line 4—4 of Figure 2;

Figure 5 is a fractional horizontal sectional view, generally similar to Figure 4, but showing a modification of my invention;

Figure 6 is a vertical sectional view taken substantially along the line 6—6 of Figure 5;

Figure 7 is a vertical view, partly in section, showing a breaking and distributing means for the record shavings which is operated by the tool-carriage;

Figure 8 is a vertical view showing in detail a portion of the mechanism of Figure 7;

Figure 9 is a view of the chute for directing the record shavings from the resurfacing tool, taken radially in an outward direction from the record and showing a controllable means carried by the chute for breaking the record shavings as they are cut from the record;

Figure 10 is a sectional view taken substantially along the line 10—10 of Figure 9;

Figure 11 is a left-hand side elevational view of the chute above-mentioned;

Figure 12 is a sectional view taken substantially along the line 12—12 of Figure 11;

Figure 13 is a left-hand elevational view of a portion of the tool-setting means showing an adjusting means, and indicating means therefor, for controlling the set position of the tool relative to the record; and

Figure 14 is a sectional view taken substantially along the line 14—14 of Figure 13.

Reference being had to Figures 1 and 2, there will be seen an upper portion of a cabinet 1 carrying at the top thereof a phonograph record shaving machine. This machine has a frame or base plate 2 which supports for rotation a mandrel 3 adapted to carry a cylindrical record 4 to be resurfaced. The mandrel 3 is provided with a shaft 5 which is supported at its left and right ends by a pair of thrust bearings 6 and 7

respectively carried by the base plate through a standard 8 and an endgate 9. This endgate is pivoted on the base plate (as at 10) and is releasably held in a closed position by an endgate bolt or latch 11 which is pivoted (as at 12) to the right end of a guide rail 13 extending along the mandrel forwardly thereof. With this arrangement the bearing 7 may be moved free of the right end of the mandrel by an opening of the endgate, thereby permitting a record to be mounted on, and removed from, the mandrel. When the endgate is open the shaft 5 is intermediately supported by a standard 14, through which the shaft freely passes, and is retained in engagement with the thrust bearing 6 by the abutment of a collar 15 on the shaft 5 against the left side of the standard 14.

The removal of a record from the mandrel is performed by a record ejector comprising a member 16 in the form of a bell crank, having a leftwardly extending handle 17 and an upright arm 18 carrying a shoe 19 located at the left of the record. The member 16 is pivoted on a shaft 20, carried at one end by the guide rail 13 and at the other end by the standard 14, and is biased into inoperative position, defined by the contact of the handle 17 with the base plate, by a torsional spring 21 constrained at one end by the base plate and at the other end by the handle 17. To operate the ejector the handle 17 is raised to move the shoe 19 into contact with the record so as to thereby push the record from the mandrel.

Supported by the base plate (through the standard 8 and another standard 22) is a rod 23 on which there is slidably and tiltably mounted a carriage 24 carrying a resurfacing tool 25. The carriage has a long sleeve 24' embracing the rod and an arm 26 extending forwardly over the mandrel and terminating in a shoe 26' which slidably rests on the guide rail 13. The tool 25 is movably mounted on the carriage for movement towards and away from the record. When the tool is held in operative position—a position in which the tool engages the record—a rotation of the record and a concurrent feeding of the carriage along the record (as from a start to a terminal position respectively at the right and left ends of the record) will cause a resurfacing of the record. Such feeding of the carriage is effected by a feed screw 27 rotatably supported at one end by the standard 8 and at the other end by a standard 28. This feed screw is adapted to be driven coordinately with a rotation of the mandrel shaft 5 by means of a belt coupling comprising a pulley 29 on the feed screw and a pulley 30 on the mandrel shaft. The coupling of the carriage 24 with the feed screw 27 is effected by means of a feed nut 31 carried by a resilient arm 32 extending rearwardly of the carriage sleeve 24'. When the carriage arm 26 is resting on the guide rail 13 the feed nut 31 is urged upwardly into contact with the feed screw 27; but as the carriage arm is raised (which raising is limited by the contact of a post 33 on the carriage with a ridge 34 on the base plate) the feed nut 31 is moved downwardly out of engagement with the feed screw, thereby rendering the carriage free to be manually moved along the mandrel. In the use of the machine the carriage is driven or fed in a leftward direction to its terminal position and returned manually in a rightward direction to its start position.

Rotation of the mandrel shaft 5 may be effected by a suitable electrical motor, not herein necessary to show, which may be located beneath the base plate and be coupled by a belt (not shown) to a pulley 35 on the mandrel shaft, the base plate having an opening 36 through which the belt may pass. Control of the motor may be effected by a suitable openable and closable switch 37, preferably of the toggle variety. This switch may be suitably located beneath the base plate in the forward right-hand portion thereof and may be controlled by a forwardly extending control lever 38 pivoted on the base plate, the lever 38 having a shaft portion 38' extending downwardly through the base plate. Connected by a headed screw 39 to the shaft 38' is a rearwardly extending arm 40. Pivoted to the arm 40 is a slotted post 41 through which slidably passes a forwardly extending operating arm 42 of the switch. With this arrangement as the control lever 38 is moved leftwardly and rightwardly into "on" and "off" positions (the "off" position being shown in Figure 1) the switch arm 42 is moved respectively rightwardly and leftwardly to effect the closing and opening of the switch 37.

The resurfacing tool 25 comprises a knife bar 43 and a knife blade 44 provided at the inner end of the bar. The knife bar 43 is slidably supported by an extension 45, provided in the right side of the carriage at a point directly above the carriage rod 23, for radial movement relative to the record. The means for controlling the knife bar to set the tool into operative position and to release the tool from a set or operative position, may, in its basic arrangement, be of a construction such as is disclosed in Brown Patent No. 2,137,383, issued November 22, 1938 and entitled "Record shaving machine." In this construction the knife bar 43 is biased away from the record, and, in the setting of the tool, is yieldably moved towards the record to bring the knife blade into engagement therewith, the knife bar being then locked in such position. To release the tool the knife bar is merely unlocked. The means for so controlling the tool comprises a cap 46 secured to a guide rod 47 which passes through the extension 45 in a direction parallel to the knife bar. The knife bar extends upwardly through the cap 46 and terminates in a head 48. When the cap is moved upwardly away from the record it contacts the head 48 to cause the knife bar to be moved therewith. The cap 46 is biased upwardly by a compression spring 49 coiled about the guide rod 47. By reason of this biasing of the cap the tool is normally maintained free of the record in an inoperative position defined by the contact of a collar 50 on the knife bar with the underside of the extension 45.

Coiled about the knife bar 43 between a collar 51 on the bar and the cap 46 is a compression spring 52 which urges the knife bar downwardly relative to the cap into a poistion defined by the contact of the head 48 with the cap. When the cap 46 is moved downwardly the knife bar is thus yieldably moved therewith, the knife blade 44 being thereby pressed into engagement with the record. To so move the cap 46 there is provided a lever 53 which is pivoted as at 54 to the right side of the extension 45. This lever is coupled by a link 55 to the cap 46, one end of the link being pivoted by a pin 56 to a short arm 57 of the lever 53 and the other end of the link having a slot and screw connection 58 with the side of the cap 46. When the lever 53 is moved in a counter-clockwise direction the cap 46 is moved downwardly to place the tool into opera-

tive position relative to the record, the terminal movement of the lever causing a lock 59, such as is described in the above-mentioned Brown patent, to be rendered operative to hold the tool in such position. The terminal position of the lever 53, shown in Figure 2, is defined by the impingement of the link 55 against the hub 53' of the lever 53. When the lever is in this terminal position, the pivot or pin 56 is slightly past dead center with respect to the pivot axes of the lever 53 and of the connection 58. The lever 53 is then urged towards, and thereby releasably held in, its terminal position by the upward biasing of the cap 46. When the lever 53 is, however, tripped—i. e., moved slightly out of its terminal position to return the pin 56 across the dead center line above-mentioned—the upward biasing of the cap 46 will cause the tool to be unlocked by the clockwise turning of the lever 53 from its terminal position and to be thereafter returned to inoperative position.

While the resurfacing tool may be manually released from operative position as above described, such release may be automatically effected as an incident to the stopping of the machine by means of a mechanism such as is disclosed in Huenlich Patent No. 2,095,332, issued October 12, 1937 and entitled "Record shaving machine." This mechanism is operated by the opening of the switch 37—i. e., by the movement of the control lever 33 to "off" position—and comprises a bar 60 which extends laterally of the machine slightly within the rear edge of a laterally extending opening 61 provided in the base plate, the bar being supported for movement from back-to-front, and vice versa, in parallel relation to the mandrel, by means of a pair of left and right links 62 and 63. Each of these links is pivoted to the bar 60 at one of their ends and to suitable bosses extending down from the base plate at their other ends, such as to the boss 64 to which the link 62 is pivoted by a shoulder screw 65 as is shown in Figure 2.

The bar 60 is operatively connected with the resurfacing tool so as to cause a release of the tool from operative position whenever the bar is moved forwardly from a resiliently biased position. The means so connecting the bar 60 with the resurfacing tool comprises a lever 66 pivoted on the right side of the carriage on a long shoulder screw 67, as shown in Figure 2. This lever has a lower vertical portion 68 slidably contacting the front edge of the bar 60, a central semi-circular portion 69 curved about the carriage rod 23 rearwardly thereof and pivoted at its upper end on the shoulder screw 67 adjacently of the right side of the carriage, a bail portion 70 extending along the screw 67, and a forwardly extending arm portion 71 pivoted on the outer end of the screw 67 and terminating at a point directly below the short arm 57 of the tool-controlling lever 53. Thus as the bar 60 is moved forwardly the lever 66 is turned in a clockwise direction, thereby causing the arm 71 of the lever 66 to be moved upwardly. As the arm 71 is so moved it contacts the underside of the short arm 57 of the tool-controlling lever 53 and moves the lever 53 in a clockwise direction so as to trip the lever 53 and to thereby cause the release of the resurfacing tool as hereinbefore explained.

A forward movement of the bar 60, such as is required to effect the release of the resurfacing tool is effected as an incident of moving the control lever 38 to "off" position. The coupling of the bar 60 with the control lever 38 comprises a link member 72 pivotally connected at its rearward end by a pin 73 to a rightwardly extending arm 74 of the link 63 and having at its forward end portion a pin 75 which engages an arcuate slot 76 provided in a rightward extension 77 of the arm 40. In the rearward end of the slot 76 there is provided a leftwardly extending notch 78. When the control lever 38 is in "on" position the pin 75 is held in engagement with the notch 78 by means of a tension spring 79 connected between the link member 72 and a pin 79' on the base plate and urging the link member both forwardly and leftwardly, the bar 60 being thereby urged rearwardly into a postion defined by the contact of a stop lug 63' on the link 63 with the rearward edge of the bar 60. Thus when the control lever 38 is moved to "off" position the link member 72 is moved rearwardly by reason of the engagement of the pin 75 with the notch 78, the bar 60 being thereby moved forwardly to effect the release of the tool. This release of the tool is effected before the control lever 38 has reached its "off" position; subsequent to this tool release a forward end portion 72' of the link member 72 is caused to impinge against a boss 80 (through which passes the shaft 38' of the control lever 38) to limit the leftward movement of the link member, thereby causing during the terminal movement of the control lever 38 to "off" position a movement of the pin 75 out of the notch 78. When the pin 75 is rendered free of the notch 78 the link member 72 is moved forwardly by the spring 79, the pin 75 moving forwardly along the slot 76 and the bar 60 moving rearwardly until limited by the stop lug 63'.

With the arrangement just described it is seen that the bar 60 is temporarily moved forwardly from its rearwardly biased position by the movement of the control lever 38 to "off" position, but that the bar 60 is not moved from such biased position by the movement of the control lever 38 to "on" position, the pin 75 merely sliding rearwardly relative to the slot 76 and coming to rest in the notch 78 by the movement of the lever 38 to "on" position. Thus the resurfacing tool is released by the stopping of the machine but is not disturbed in its setting by the starting of the machine.

During a shaving operation the record shavings are directed away from the record, by a chute 81 carried by the tool, downwardly through the opening 61 in the base plate. From the opening 61 the record shavings are further directed downwardly into a container 82 (see Figure 2) by means of a chute 83 carried by the base plate and extending from along the front portion of the opening 61 into a throat portion 84 of the container 82. The container 82 has for its sides the side walls of the cabinet 1 and is closed at the top, except for the throat 84, by a plate 85. The throat is formed by means of vertically extending left and right walls 86 and 87, a vertically extending forward wall 88, and an inclined rearward wall 89.

The above described structure and mechanism are common to record shaving machines heretofore manufactured and used, and form a part of the present invention only in so far as they are related to or combined with other mechanism hereinafter described.

As the record shavings flow into the container 82 from the chute 81 they form a loose random mass in the container which soon builds up into the throat portion 84. In order to effectively increase the capacity of the container I subject

the record shavings in the container to a compacting and distributing action. In accordance with my invention such effective increase in the capacity of the container is very simply accomplished by the provision of simple means for distributing or leveling and also for breaking up the record shavings which accumulate in the container. While the effective capacity of the container may be substantially increased by subjecting the record shavings to either a distributing or breaking action, I preferably employ both such actions. As shown in Figures 1, 2, 3, 4, 5 and 6, this distributing and breaking means is disposed along the upper portion of the container within and along the throat portion 84, and comprises a vane 90 of rectangular shape carried along its longitudinal axis by a shaft 91. The shaft 91 is pivoted at its left and right ends to the respective side walls 86 and 87 of the throat portion 84 and is restricted against longitudinal movement by a stop collar 92 on the right end of the shaft and by the hub 93' of an arm 93 on the left end of the shaft, as is shown in Figure 4. The vane 90 is preferably open along its central portion and may suitably comprise a pair of formed rods 90' and 90'' secured as by a press fit or by riveting to the shaft 91.

With the above arrangement it is seen that a turning of the vane 90 through substantially 90° in a clockwise direction from the position it occupies in Figure 2 will cause the record shavings as they flow from the chute 83 to be broken and also to be distributed in the container 82. While I contemplate a recurring or intermittent operation of the vane 90 during the use of the machine, this recurring operation need not necessarily be continuous but may be controlled in predetermined relation to the operation of the machine so as to cause a reciprocation of the vane during each record shaving operation. There are many parts of the machine which are cyclically operated or manipulated during each operation of shaving a record. In accordance with my invention the vane may be suitably operated by, or coincidentally with, any one of such cyclically operated parts.

In the embodiment of my invention as illustrated in Figures 1, 2, 3 and 4, the vane is electromagnetically operated and controlled by the record ejector 16. Reference being had particularly to Figures 2 and 4 there will be seen an iron-clad solenoid 94 secured by screws 95 to the top plate 85 of the container 82 and having a plunger 96 connected by a link 97 to the arm 93 on the shaft 91, the link being pivotally connected to the plunger 96 and to the arm 93 by the respective pins 98 and 99. The vane 90 is biased into a position defined by the contact of the arm 93 with a stop pin 100 on the wall 86 (the position the vane occupies in Figure 2) by means of a tension spring 101 connected between the link 97 and a pin 101' on the wall 86. When the solenoid 94 is energized the plunger 96 is propelled rearwardly to turn the vane 90 through approximately 90° from its biased position, the vane being returned by the spring 101 when the solenoid is thereafter deenergized. In order that the solenoid 94 will be energized by the operation of the record ejector 16 there is secured on the side of the handle 17, by a clamp 102, a mercury switch 103 sensitive to its positioning, which switch may be serially connected in the circuit of the solenoid 94 to cause the solenoid to be energized when the switch is closed and deenergized when the switch is open. The switch 103 may be of well known variety, comprising a glass bulb 104 having a pair of terminals 105 and a globule of mercury 106. The switch is mounted in an angular position on the handle 17 so that it will be open when the record ejector is unoperated, as shown in Figure 3, and closed when the handle 17 is raised to operate the ejector. Thus when the ejector is operated and then returned to unoperated position the vane is turned to and fro to cause both a distributing and breaking effect on the record shavings in the container 82, the vane being moved in one direction by the solenoid 94 and in the other direction by the spring 101.

In Figures 5 and 6 there is shown means by which the vane 90 is moved to and fro as an incident of moving the control lever 38 to "off" position to stop the machine. As hereinbefore described, the bar 60 is caused to be moved to and fro from a rearwardly biased position by the movement of the control lever 38 to "off" position; this bar may thus very suitably operate the vane 90. The means for connecting the bar 60 to the vane 90 comprises a lever 107 pivoted at 108 on a bracket 109 secured to the end wall 86. The lower end of the lever 107 terminates in a slot 110 which engages a cross pin 111 carried by the arm 103, the arm being secured to the shaft 91 at a slight angle relative to the vane, as shown in Figure 6. The upper end of the lever 107 terminates in a slot 112 which engages a pin 113 carried by a bracket 114 secured by the pins 114' to the left end of the bar 60. With this arrangement forward and rearward movements of the bar 60 cause clockwise and counter-clockwise movements of the vane 90. Thus the vane 90 is turned to and fro by the bar 60 as the machine is stopped; furthermore, since the resurfacing tool is released by the stopping of the machine the vane is moved coincidentally with the automatic release of the tool.

In Figures 7 and 8 there is shown a modified means for breaking the record shavings as they flow from the chute 83. This means comprises an L-shaped extension 115 secured by the screws 116 to the lower vertical portion 68 of the lever 66 carried by the carriage 24. The extension 115 has a blade 117 provided with left and right cutting edges 117' and extending forwardly across the lower end of the chute 83. As the carriage is moved along the mandrel the blade 117 traverses the path of the record shavings from the chute 83 to cause a breaking of record shavings which may have lodged in the throat portion 84. While this breaking action may be mild during a record resurfacing, by reason of the slow rate of feed of the carriage, the breaking action will be highly accelerated during the manual return of the carriage since the carriage return is ordinarily effected at a relatively high rate of speed.

In addition to the foregoing I provide a means carried by the chute 81 for subjecting the record shavings to a breaking action as they pass through this chute. The chute 81, which is illustrated in detail in Figures 9, 10, 11 and 12, comprises a collar portion 118 which embraces the inner end of the knife bar 43 and which is secured to the knife bar by a set screw 119. This collar portion has an open sector 120 of substantially 90° angular width and is closed at its lower and except for a slit 121 through which extends the knife blade 44 carried by the knife bar 43. Extending angularly downwardly from the collar portion 118 on the side of the open sector 120 is an outwardly flanged conduit 122, square-shaped in cross sec-

tion, which terminates in the upper portion of the chute 83. During a record resurfacing the record shavings pass through the slit 121 and into the conduit 122 by way of the open sector 120. Due to the high rotational speed of the record during a record resurfacing, the record shavings are caused to move into the conduit 122 at a high rate of speed. In accordance with my invention I take advantage of this high rate of speed of the shavings to cause the same to be broken up as they pass through the chute 81. This is done by providing, in the path of the shavings through the chute, a deflecting means which as the shavings impinge thereupon causes the shavings to be subjected to a bending and breaking action.

The deflecting means above mentioned is preferably made in the form of a baffle plate 123 which is movably mounted within the path of the shavings through the chute 81 for angular adjustment relative to such path. Such movable mounting of the baffle plate 123 may be effected by pivoting the plate to the collar portion 118, as on a rod or pin 124, so that the plate will control the opening of the sector 120, the plate being manually adjustable in position relative to the sector, or to the path of the shavings through the sector, by a fingerpiece 125 provided on the side of the plate. In operation, the plate 123 is positioned angularly relative to the path of the shavings through the sector 120 so that the shavings will impinge upon the plate and by such impingement be sharply deflected, thereby subjecting the shavings to such bending forces as will result in a breaking of the shavings. The feature of rendering the baffle plate 123 angularly adjustable relative to the path of the shavings is important in that it permits the operator to control the angle of impingement of the shavings on the plate for maximum breaking action, the angle of impingement for maximum breaking action depending upon the character of the record material and the ambient temperature during the record shaving operation.

It is an additional feature of my invention to provide an adjustable means, and an indicator therefor, for controlling the set position of the tool relative to the record and thereby the depth of cut or thickness of shaving which is taken by the tool during a record resurfacing. This adjustable means is shown in Figures 7, 13 and 14, and comprises a bracket 126 which is carried by and within the cap 46 of the tool-setting means hereinbefore described. The bracket has an arm 126' apertured to embrace the upper end of the knife bar 43 and is secured to the cap 46 by a pair of screws 127 which pass through an apertured plate 128 and then through a slot 129 in the side wall of the cap to thread into the bracket 126. The slot 129 extends longitudinally of the knife bar 43 to permit an adjustment of the bracket 126 on the cap 46 in directions longitudinally of the bar, the plate 128 having an indicating finger 130 to indicate relative to a scale 131, provided on the side wall of the cap 46, the adjustment of the bracket 126 relative to the cap. The spring 52, which yieldably connects the cap 46 to the knife bar 43, is disposed between the arm 126' of the bracket 126 and the collar 51 on the knife bar.

It has been seen that in a tool-setting operation the cap 46 is moved a predetermined distance towards the record, and that by such movement of the cap the resurfacing tool is brought into contact with the record and the spring 52 is then compressed to urge the knife blade 44 of the tool into the record material. The extent of the compression of the spring 52, in the setting of the tool, is controlled by the thickness of the record on the mandrel and by the adjustment of the bracket 126 relative to the cap 46, the compression being increased as the bracket is moved downwardly relative to the cap, the finger 130 then moving upwardly with respect to the numerals of the scale 131. When the compression of the spring 52 is increased the knife blade 44 is pushed further into the record material to cause the tool to be set for deeper depths of cut. Thus the finger 130 serves to indicate relative to the scale 131 the position in which the tool will be set relative to the record upon the operation of the tool-setting means. This indication is very advantageously highly magnified since a considerable increase in pressure of the tool against the record is necessary to effect a relatively small increase in the depth with which the tool is set relative to the record and since the pressure with which the tool is forced against the record is directly controlled by the adjustment of the bracket 126 relative to the cap 46.

Although I have herein shown and described certain embodiments of my invention it will be understood that these embodiments are illustrative of my invention and not limitative thereof, since these embodiments are subject to many modifications and changes without departure from the scope of my invention, which I undertake to express according to the following claims.

I claim:

1. In a machine for resurfacing phonograph records by the operation of cutting off shavings from the surfaces of the records: the combination of a member normally manipulated or operated during each record shaving operation of the machine; a container for collecting the record shavings; and movable means, associated with said container and operated by said member only in a path at a substantial distance from the bottom of the container, for distributing the flow of the record shavings into said container.

2. In a machine for resurfacing phonograph records by the operation of cutting off shavings from the surfaces of the records: the combination of a movable member cyclically operated during the use of the machine; a container for collecting the record shavings, having an opening in the top portion thereof through which the shavings pass; and means, restricted in operative movement to a path within the upper portion of the container and controlled by said member, for causing a leveling effect on the flow of the record shavings into said container.

3. In a phonograph record shaving machine comprising a record support and relatively movable means for cutting off shavings from a record on said support: the combination of a container for collecting the record shavings; means for directing the shavings into said container; and intermittently operated means associated with said container and reciprocated in a path at a level substantially above the bottom of the container for distributing the flow of record shavings into said container.

4. In a phonograph record shaving machine having a record support and relatively movable means for cutting off shavings from a record on said support: the combination of a container for collecting the record shavings; a chute for directing the record shavings into said container; and means, mounted for reciprocative movement in

a path at a level within the upper portion of the container and moved incidental to a record shaving operation, for causing the record shavings collected by said container to be subjected to both breaking and distributing actions.

5. In a phonograph record shaving machine having operating means for shaving off a surface layer of a record: the combination of control means operable to start and stop said operating means; a container for collecting the record shavings; means for distributing the flow of record shavings into said container; and means, controlled by said control means, for operating said distributing means.

6. In a phonograph record shaving machine having a support for a record and means for cutting off shavings from the record: the combination of a record ejector; a container for collecting the record shavings; means for distributing the flow of record shavings into said container; and means, controlled by said ejector, for operating said distributing means.

7. In a phonograph record shaving machine: the combination of a mechanism operable to cut off shavings from a record to be resurfaced; a container for collecting the shavings from the record; means for leveling the shavings within said container; and electromagnetic means, controlled by said mechanism for intermittent operation in the use of the machine, for operating said leveling means.

8. In a phonograph record shaving machine having a support for a record and a tool movable along the record to cut shavings therefrom: the combination of a container having a throat portion extending along the path of said tool; a chute carried with the tool and extending into said throat portion for directing the record shavings into said container; and means movably mounted in said throat portion and operable to distribute the flow of record shavings into said container.

9. In a phonograph record shaving machine comprising a support for a record: the combination of a tool for cutting shavings from the record, settable into operative position relative to the record; a container for collecting the record shavings; means for releasing the tool from operative position; and movable means, associated with said container and operated coincidentally with the operation of said tool-releasing means, for effecting a distributing action on the record shavings within said container.

10. In a phonograph record shaving machine comprising means for rotating a record and cutting means movable across the rotating record to shave off a surface layer of the record: the combination of a container for collecting the record shavings; a chute for directing the record shavings from said cutting means into said container; and means, disposed in the path of record shavings from said chute and intermittently moved transversely of this path, for breaking up the record shavings flowing from the chute.

11. In a phonograph record shaving machine adapted for cutting shavings from wax-like records; the combination of a record-cutting tool; a chute carried with the tool for directing the record shavings away from the record; and means, angularly disposed in the path of the shavings through the chute, for deflecting the record shavings from a normal path and thereby subjecting the same to a bending and breaking action.

12. In a phonograph record shaving machine adapted for taking shavings from wax-like records: the combination of a record-cutting tool; a chute carried by said tool for directing the record shavings away from the record; means for breaking the shavings by subjecting the same to bending forces, comprising a member within said chute upon which the shavings angularly impinge as they are cut from the record, said member being mounted for angular adjustment relative to the path of the shavings through said chute, whereby to control the angle of said impingement for maximum breaking action.

13. In a phonograph record shaving machine adapted for taking shavings from wax-like records; the combination of a record-cutting tool; a chute carried by said tool for directing the record shavings away from the record, said chute having a throat portion adjacently of said tool through which the record shavings pass; a baffle in said throat portion for deflecting the record shavings from a normal path and thereby subjecting the same to a breaking action; and means for angularly adjusting said baffle relative to the path of the shavings through said throat portion to permit control of said breaking action for maximum effectiveness.

14. In a phonograph record shaving machine having a support for a record and a resurfacing tool movable towards and away from the record into and out of contact therewith: the combination of means for yieldably moving said tool into contact with the record comprising a movably mounted member, means for imparting a predetermined movement to said member, and spring means yieldably connecting said member with said tool; means carried by said member for adjusting said spring means to control the pressure of contact of said tool with the record; and means on said member for indicating the adjustment of said spring means.

15. In a phonograph record shaving machine having a support for a record and of a resurfacing tool movable towards and away from the record into and out of contact therewith: the combination of means for setting said tool into record-contacting position comprising an actuating member and means operatively connecting said member with said tool, said connecting means being adjustable to control the set position of the tool relative to the record; and means, associated with said tool-setting means, for indicating the adjustment of said connecting means.

CHARLES HUENLICH.