

Oct. 20, 1942.

D. C. ROCKOLA

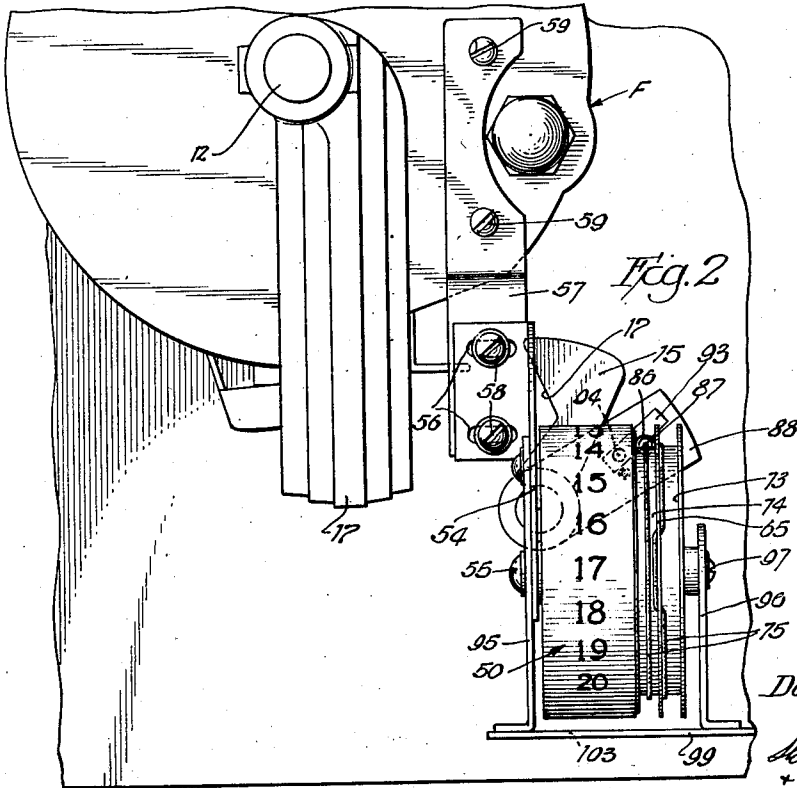
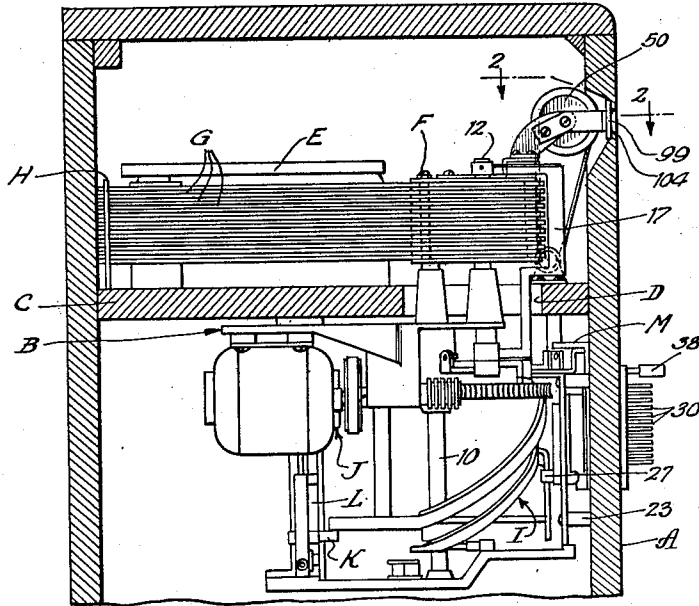
2,299,348

PHONOGRAPH INDICATOR

Filed Feb. 3, 1940

2 Sheets-Sheet 1

Fig. 1



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Oct. 20, 1942.

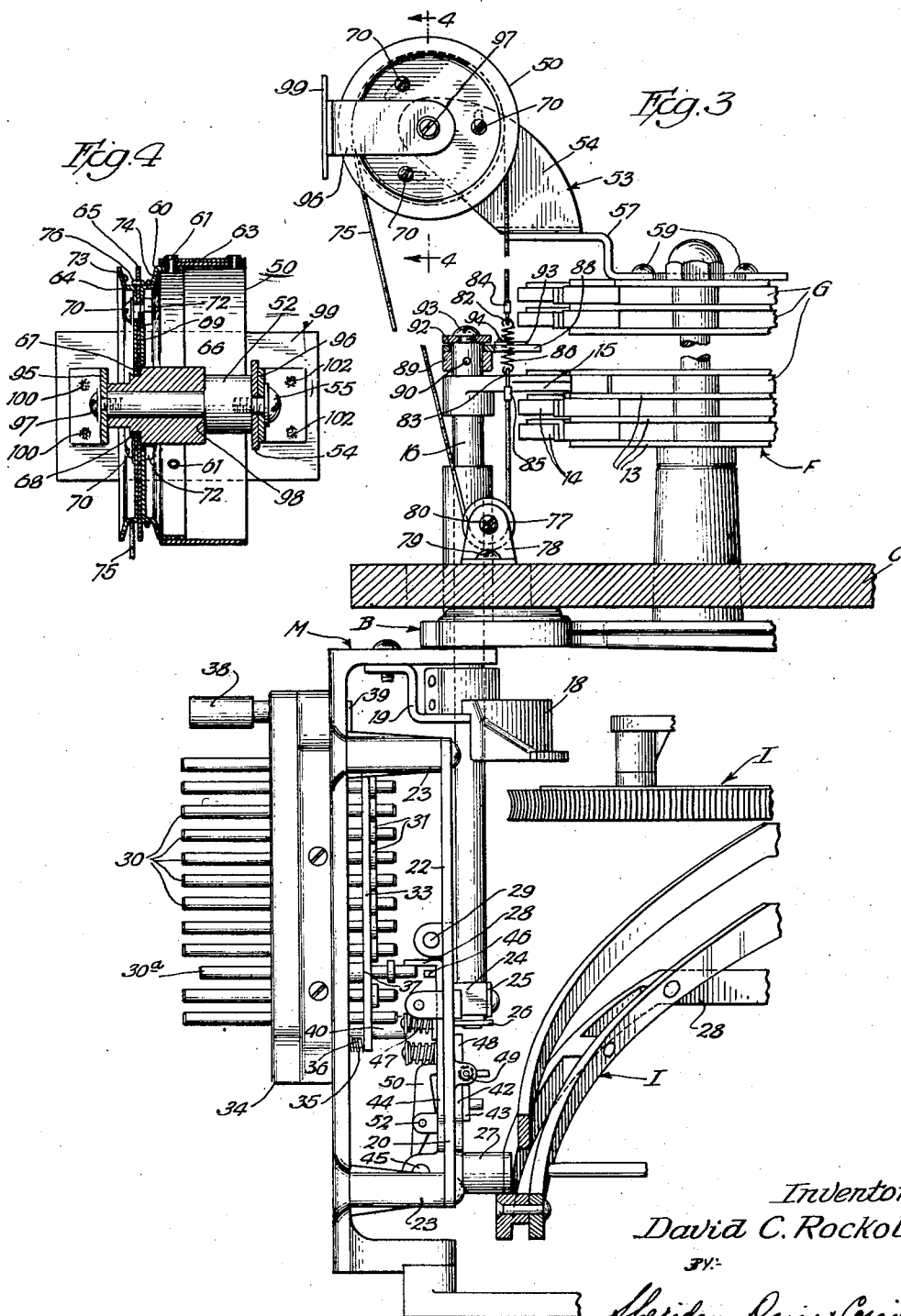
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PHONOGRAPH INDICATOR

Filed Feb. 3, 1940

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,299,348

PHONOGRAPH INDICATOR

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Application February 3, 1940, Serial No. 317,051

3 Claims. (Cl. 116—124)

This invention relates to phonographs, and more particularly to automatic multi-record phonographs having a selecting mechanism for effecting reproduction of a selected record.

It is the purpose of the device herein illustrated to provide an automatic multi-record phonograph including means for rendering a visual indication of the record being reproduced thereby. While a particular type of automatic multi-record phonograph mechanism has been illustrated herein to show the adaptation of the invention, it is to be understood that it is applicable to other types of phonograph mechanisms, all coming within the contemplated scope of this invention.

Music and musicians can seldom be identified by a person who is unfamiliar with a particular recording, although there is a very definite interest therein. Former automatic multi-record phonographs have not provided any indicating means by which the selection being reproduced is quickly ascertainable. It is becoming increasingly popular to enclose the operating mechanism, and although that mechanism might be observed, it is too difficult for an unskilled observer to determine the number of the reproduced record or the sequence of playing a group of selected records. Where there is no visual or other indication of the record being reproduced, the players who have made selections of groups of records sometime become confused, because the records are not reproduced in the order of selection. It is therefore a very desirable feature to provide means for automatically and clearly indicating the record being reproduced by such machines.

An object of this invention is to provide a selective multi-record phonograph including an indicating means which visually shows which record is being reproduced by the phonograph.

Another object of this invention is to provide a selective multi-record phonograph including an indicating device automatically controlled by a moving part of the record selecting mechanism of the phonograph for providing an indication of the record being reproduced, while it is being reproduced.

Other objects and advantages of the invention relate to features of construction and arrangement of parts which will be apparent from a consideration of the following specification and accompanying drawings, wherein

Figure 1 is a fragmentary vertical cross sectional view of one type of automatic multi-record

phonograph including a preferred embodiment of my invention;

Figure 2 is an enlarged fragmentary top view taken substantially on a line 2—2 of Figure 1, looking in the direction of the arrows;

Figure 3 is a fragmentary side view showing the adaptation of a preferred embodiment of my invention to the phonograph mechanism illustrated in Figure 1, but viewed from the opposite side.

Figure 4 is a sectional view taken substantially on a line 4—4 of Figure 3, looking in the direction of the arrows.

Although not considered to be limited to the particular type of phonograph mechanism disclosed, the mechanism herein illustrated to a sufficient extent to show, and for the purpose of showing the operation and adaptation of the invention, is substantially similar to that disclosed and described in United States Letters Patent No. 2,159,834. Reference is hereby and herein made to that patent for a more complete disclosure and description of the details of structure and operation of the phonograph mechanism. Having been described in detail in the said Letters Patent, such details of the phonograph mechanism will be more generally described herein.

General

In considering the phonograph as herein contemplated, the record reproducing means shall be understood to include the tone arm, amplifier, sound reproducer and such parts which are necessary for the reproduction of a record; the record changing mechanism shall be understood to include the record selecting and delivering mechanism which delivers a preselected record to the reproducing means for reproduction; the record selector or selecting mechanism comprises the part of the record changer which accomplishes the selection of a predetermined or preselected record to be delivered by delivery means to the reproducing means; and the record preselecting means or selector control comprises the manually operated elements by which records are preselected.

Having more particular reference to the drawings, the phonograph has a casing or cabinet A of suitable construction for accommodating the chassis or frame B. The amplifier means or speaker means which are generally housed in the same cabinet are not shown herein.

As shown in Figure 1, the chassis B includes a mounting panel C, commonly referred to as

a motor board, having an aperture D therein, and carries above the mounting panel a turntable, which is not shown, a tone or pick-up arm E which is a part of record playing or reproducing means, a record carrier supporting assembly F, a plurality of pivoted, ring-shaped record carriers or trays G arranged one above another in column or stacked relationship and swingable to and from cooperating relationship with the turntable, and record carrier supports such as H which provide individual supports for each record carrier or tray G.

Below the mounting panel C the chassis B carries a master cam I and driving means J for driving the cam I.

Phonographs of the class herein disclosed are usually, but not necessarily, controlled by coin operated or coin released means and have various control devices for effecting automatic operation of the record changing and reproducing apparatus. The operation of the control means is such that the cam driving means J effects movement of and controls the position of the master cam I. Rotation of the master cam I rotates the shaft 10 upon which the master cam is secured. Upon rotation, the master cam I engages a cam follower K to raise a reciprocable slide L and thereby control the position of the turntable in the changing or selection of records. With one of the record carriers G in position for cooperation with the turntable, the turntable in its movement passes through the record carrier and removes therefrom the record which is carried thereby. The turntable continues to move to bring the record into reproducing engagement with the tone-arm E. Upon completion of the reproduction of the record, the master cam I effects return movement of the cam follower K, slide L and turntable to replace the record in the record carrier from which it was removed.

In the phonograph disclosed herein, the record carriers G are pivoted on a post 12 between successive discs 13 in the supporting assembly F. Latch members 14 are provided on each of the record carriers G which are selectively operable by a selector 15 carried at one end of a rockable and longitudinally reciprocable shaft 16, which shaft is slidably journaled in a selector control frame M. The selector control frame M is secured to the front of the chassis B. The selector 15 is of plate-like construction and has a cam surface 17. Upon operation of the selector 15, the cam surface 17 effects release of the latch member 14 with which it is aligned. When any latch member 14 is released, rotation of the corresponding record carrier about the post 12 is effected to align that record carrier with the turntable. The record carrier swinging means includes a yoke 17 which extends around the discs 13 and is connected at one end to the post 12. This yoke member is actuated by the master cam I to control the movement and position of a selected record carrier.

For rocking the selector 15 to release one of the latch members 14, a cam lever 18 is keyed to the shaft 16. This cam lever 18 is secured against reciprocable movement with the shaft 16 by a bracket 19 which is secured to the selector control frame M. The keying means between the shaft 16 and the cam lever 18 permits the shaft 16 to reciprocate longitudinally with respect to the cam lever 18 and provides a driving connection between the cam lever and the shaft for rocking the shaft about its

longitudinal axis when the cam lever 18 is actuated. The cam lever 18 is actuated by means incident to the master cam I.

A reciprocable plate-like slide 20 is slidably mounted on a pair of spaced guide rails 22 which rails are secured to projecting lugs 23 on the selector control frame M. The lower end of the selector shaft 16 is rotatably mounted between spaced lugs 24 on the slide 20 and held in position by strap 25 which extends between the lugs 24 and is secured thereto. An arm 26 is secured to the lower end of the shaft 16 below the lugs 24 and extends into an aperture in the slide so that the slide and shaft reciprocate together. The arm 26 is rockable with the shaft 16 during the rotation of the shaft for operating the selector 15 and has an extending end which swings through the aperture in the slide during such rotary movement of the shaft for a purpose which will be more fully described.

A cam roller or follower 27 projects from the rear face of the slide 20 and engages the master cam M for effecting the reciprocating movement of the slide 20 and the shaft 16; the cam follower 27 being adapted to cooperate with the cam rail 28 of the master cam I. The cam rail 28 is adapted to raise the slide 20 to a position such that the selector 15 is moved to a level above the uppermost latch member releasing finger 14 where the selector is normally held during inoperative periods of the phonograph mechanism. Upon starting the phonograph mechanism the cam rail 28 effects rapid and silent lowering of the cam follower 27 and therewith the lowering of the selector shaft 16 and the selector 15 prior to the rotation of the selector for releasing a latch member 14.

A plate 28 is horizontally pivoted at 29 to the upper end of the slide 20 and is rotatable in one direction about its axis of support. A plurality of reciprocable rods 30, one for each of the record carriers G, are reciprocable, one or more at a time, to and from a position in the path of the pivoted plate 28. Each of the rods 30 has collars or flanges such as 31 to control the limits of movement thereof with respect to the selector control frame M. The rods 30 extend through openings in the plate 33 and the flanges or collars 31 normally engage one surface of that plate. The rods 30 are slidably mounted in a front selector frame member 34 and are slidable inwardly to a position such as that indicated by the rod 30a for the preselection of a predetermined record. The outer ends of the rods serve as push buttons for making the selection. The plate 33 is supported on pins for movement toward and away from the front selector frame member 34 and coil springs 36 which surround the pins 35 yieldably hold the plate 33 in spaced relation with respect to the selector frame member. Each of the rods 30 has a shoulder such as 37 which is adapted to engage the plate 33 when the rod is moved inwardly to the selecting position and movement of the plate 33 toward the selector frame member 34 by manual operation of a push button 38 restores all of the rods which have been moved to a selecting position to normal positions. The push button 38 is connected to the plate 33 through a lever 39. A plurality of the rods 30 may be moved into the path of the pivoted plate 28 by inward movement of a pin 40. As the slide 20 moves upwardly in the operation of the mechanism, the pivoted plate 28

engages the inner end or ends of any of the rods 30 which have been moved inwardly to a selecting position as described above and is swung downwardly from a horizontal position by such engagement. A bell crank lever 42, which is pivoted at 43, insures the return of the plate to the horizontal position when the slide 20 has reached the uppermost limit of its movement. Hence, as the slide 20 moves downwardly the plate 28 engages the uppermost rod 30 which has been moved to a selecting position to arrest the downward movement of the slide. Stopping of the downward movement of the slide stops the selector 15 at the elevation of the latch member 14 which controls the record carrier of the selected record. If none of the rods 30 have been moved to a selecting position, the downward movement of the slide will be arrested by engagement of the plate 28 with the pin 40 at the lower end of the travel of the slide plate.

A plate 44 is pivotally supported with respect to the slide 20 at 45 and has a projecting portion 46 below the plate 28 and opposite the end of the rod 30 upon which the plate 28 is resting. The plate 44 is biased toward the slide 20 by pin and spring construction illustrated at 47. Rotary movement of the selector shaft 16, which effects release of the selected record carrier, rotates the arm 26 and that arm engages the plate 44 to effect automatic restoration of the rod 30 against which the plate 28 is resting. It is important to note that the return of the rod is effected during the selection of a record so that the depression of a rod provides no indication of the record being reproduced during the time of reproduction.

The selector is supported subsequent to the return of the rod 30 by means including a reciprocable pawl 48 which is biased in one direction by a spring 49. A lever 50, which is pivoted at 52, controls the operation of the pawl 48.

Visual indicating means 50 is rotatably supported on a shaft 52, which shaft is supported from the top of the record carrier supporting assembly F by bracket 53. The shaft 52 is secured to an upper bracket 54 by a screw 55 which extends through an opening in that upper bracket and is threaded into the end of the shaft. The upper bracket 54 has elongated openings 56 therein and is secured to the lower bracket 57 by screws 58. The upper bracket is laterally adjustable with respect to the lower bracket when the screws 58 are loosened, due to the elongation of the openings 56. The lower bracket 57 is secured to the top of the record carrier supporting assembly by screws 59.

The visual indicating means 50 comprises a drum assembly 60 having secured thereto, by rivets or other suitable fastening means 61, an indication carrying means or rim 63 which is preferably transparent or translucent and has numbers thereon, as shown in Figure 2, which correspond to the record carriers of the phonograph mechanism. The drum assembly has a flanged outer plate 64 and a flat central plate 65 which are secured to a hub 66 between a shoulder 67 on the hub and an edge 68 which is swaged over against the plate 64. A second or inner flanged plate 69 is adjustably secured to the plates 64 and 65 by screws 70 which extend through openings in the three plates and have cooperating nuts 72. The openings in the flanged plate 69 are preferably arcuate and elongated so that the

flanged plate 69 and the indicating means or rim 63 may be circumferentially adjusted with respect to the plates 64 and 65. The three plates 64, 65 and 69 together provide a double drum or pulley having separated grooves 73 and 74 for the accommodation and winding of a flexible belt 75. The belt 75 is secured to the central plate 65 and extends through an opening 76 therein; the belt being wound in the grooves 73 and 74 in such a way that rotation of the drum 60 in one direction winds the belt around the drum in one of the grooves and unwinds the belt from around the drum in the other of the grooves. The belt extends around an idler pulley 77 which is rotatably secured to the mounting panel C by a bracket 78; the bracket 78 being secured to the mounting panel by a screw 79 and the shaft for the pulley 77 being secured to the bracket by a screw 80. The ends of the belt preferably have loops formed therein at 82 and 83 and secured by metal bands 84 and 85, respectively. A tension spring 86 having hooks on the ends thereof, which extend through the loops 82 and 83, connects the ends of the belt and keeps the belt taut.

The spring 86 extends through an opening 87 in an arm 88 which arm is rotatably secured to the upper end of the selector shaft 16 between a collar 89, which is secured to the shaft by a pin 90, and a plate 92, which is secured to the shaft by a screw 93. Longitudinal movement of the spring 86 with respect to the arm 88 is prevented by the strip 93 which is secured to the arm 88 by a screw 94 and engages the spring 86 between the turns thereof. The belt 75 consequently follows axial movement of the selector shaft 16 to rotate the drum 60 to a position corresponding to the elevation of the shaft.

Auxiliary brackets 95 and 96 are secured to the ends of the shaft 52, the bracket 96 being secured thereto by the screw 55 and the bracket 95 being secured thereto by a screw 97 which extends through an opening in the bracket and is threaded into the end of the shaft. The auxiliary bracket 95 holds the hub 66 in position on the shaft 52 between that bracket and a shoulder 98 on the shaft. The auxiliary brackets 95 and 96 have a bezel plate 99 secured thereto by spot welding as at 100 and 102, or other suitable means. The bezel plate 99 has an opening 103 therein through which the numbers on the indicating means 63 are viewed and which, when the belt and drum are properly adjusted, aligns with a number corresponding to the number of the record selected by the selector mechanism and the shaft 16. As indicated in Figure 1, the bezel plate 99 is mounted adjacent a suitable opening 104 in the cabinet A which houses the phonograph mechanism.

The drum 60 and pulley 77 are preferably so aligned that the side of the belt 75, which is connected to the arm 88 on the selector shaft 16, is substantially parallel to the axis of the selector shaft. Since the selector shaft moves vertically in the selection of a record and remains at a level corresponding to the level of a selected record carrier during the reproduction of the record and the indicating means has a position determined by the vertical position of the selector shaft, the indicating means provides a visual indication of the record which is being reproduced during the time that it is being reproduced. Since the arm 88 is rotatable with respect to the shaft 16, the rotary movement of that shaft in the selection of a record does not interfere with the proper alignment of the belt between the

pulleys. However, if the arm 88 should become locked on the shaft 16, the spring 86 would prevent breakage of the belt or interference by the belt with the proper rotation of the selector shaft.

While I have described a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

I claim:

1. In combination with an oscillatory and longitudinally reciprocable selector actuating shaft of a multi-record automatic phonograph adapted to reproduce selected records, means to visually indicate any record being reproduced comprising a movable indicating element, and flexible means interconnecting the movable indicating element and said selector actuating shaft, said interconnecting means being operative only for moving said indicating element upon reciprocation of the selector actuating shaft, whereby said shaft may be oscillated without altering the adjustment of said indicating element.

2. In combination with an oscillatory and longitudinally reciprocable selector actuating shaft of a multi-record automatic phonograph adapted

to reproduce selected records, means to visually indicate any record being reproduced comprising a rotatably mounted indicating element having a pulley thereon, an idler pulley, a belt extending over said pulleys and having its ends connected by a tension spring, the spring being disposed adjacent an end of said shaft, and a member connected to said spring and shaft for reciprocation with the shaft and being rotatable relative thereto.

3. In combination with an oscillatory and longitudinally reciprocable selector actuating shaft of a multi-record automatic phonograph adapted to reproduce selected records, means to visually indicate any record being reproduced comprising a rotatably mounted indicating element having a pulley thereon, an idler pulley, a belt extending over said pulleys and having its ends connected by a coil spring, the spring being disposed adjacent an end of said shaft, an arm reciprocable with said shaft and rotatable relative thereto having an opening therethrough for receiving said coil spring, and a member on said arm movable relative to the opening therein for engagement between convolutions of said spring for connecting said belt to said shaft for reciprocating movements therewith only.

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