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2,850,135

PLURAL-SELECTION WALL BOX FOR AUTOMATIC PHONOGRAPH

Filed Nov. 4, 1957

6 Sheets-Sheet 1

FIG. 1

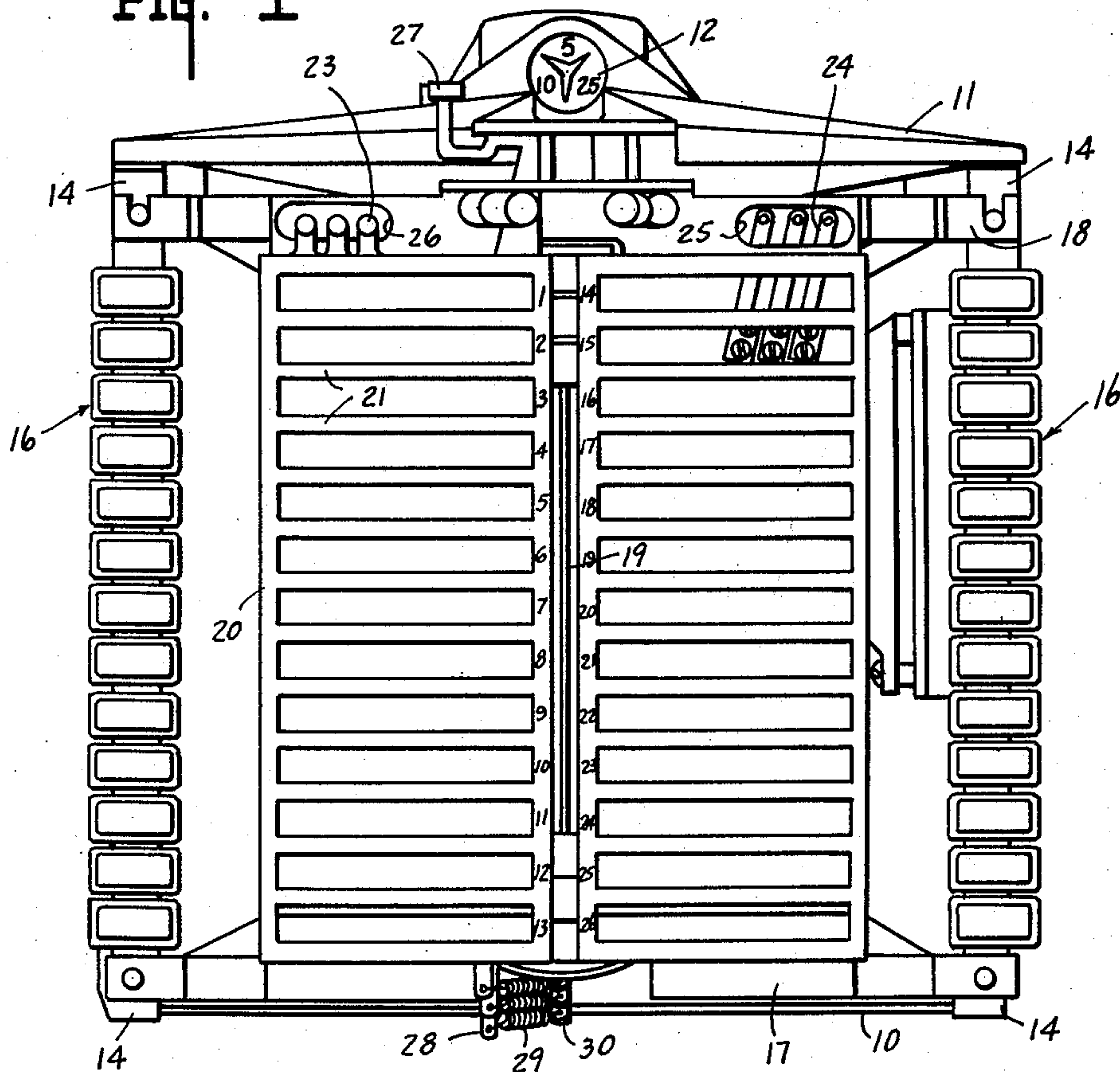
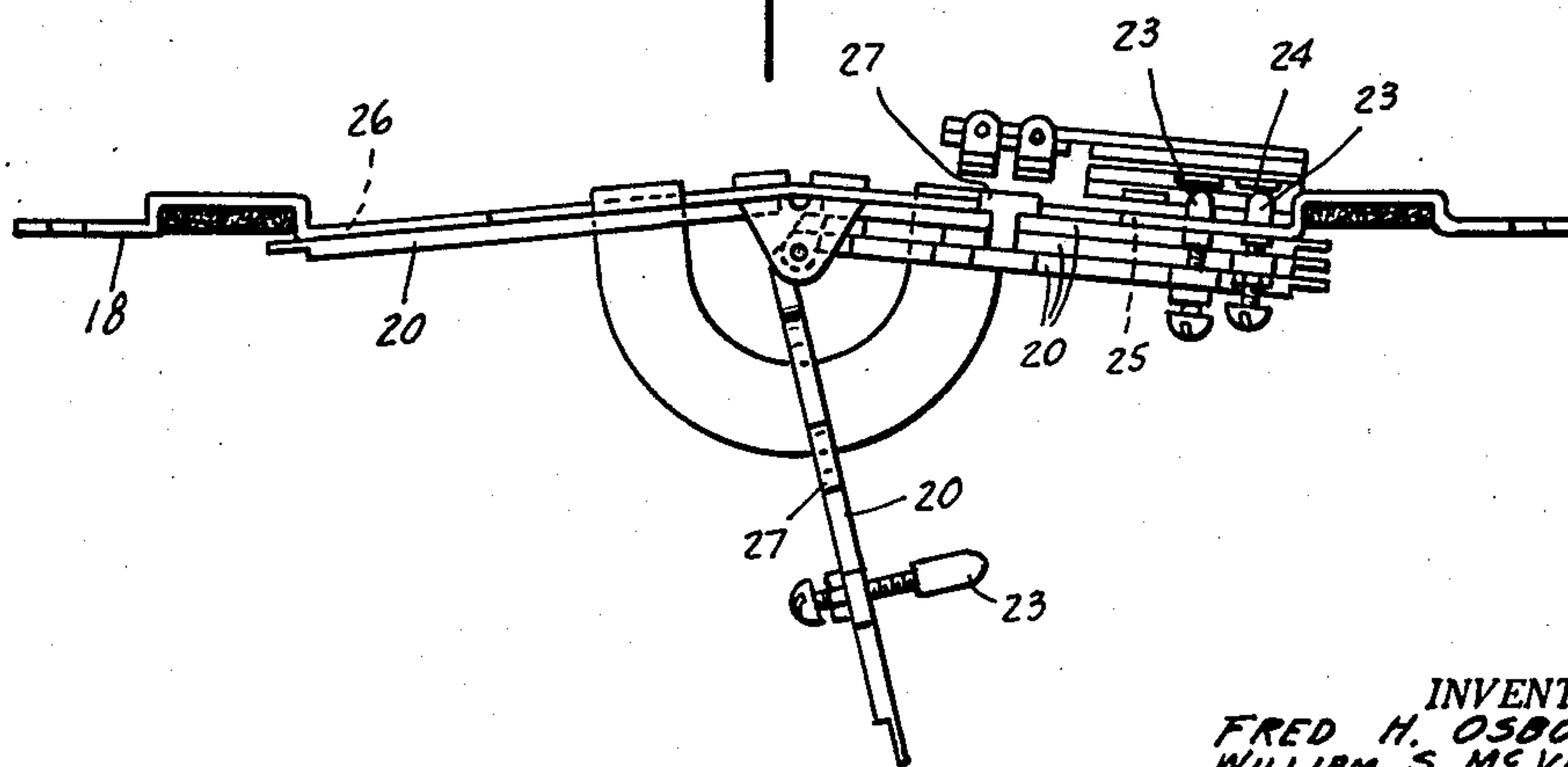


FIG. 2



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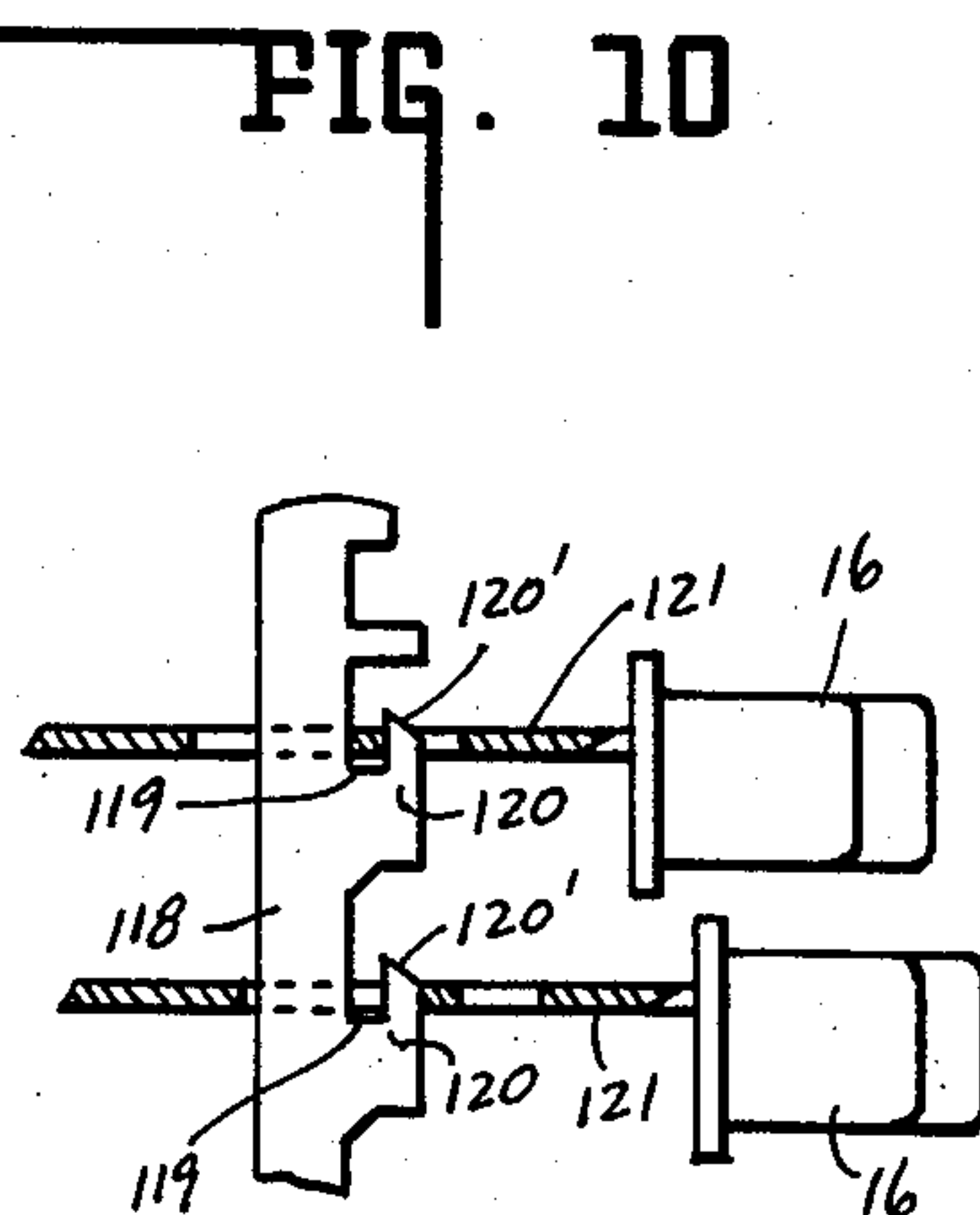
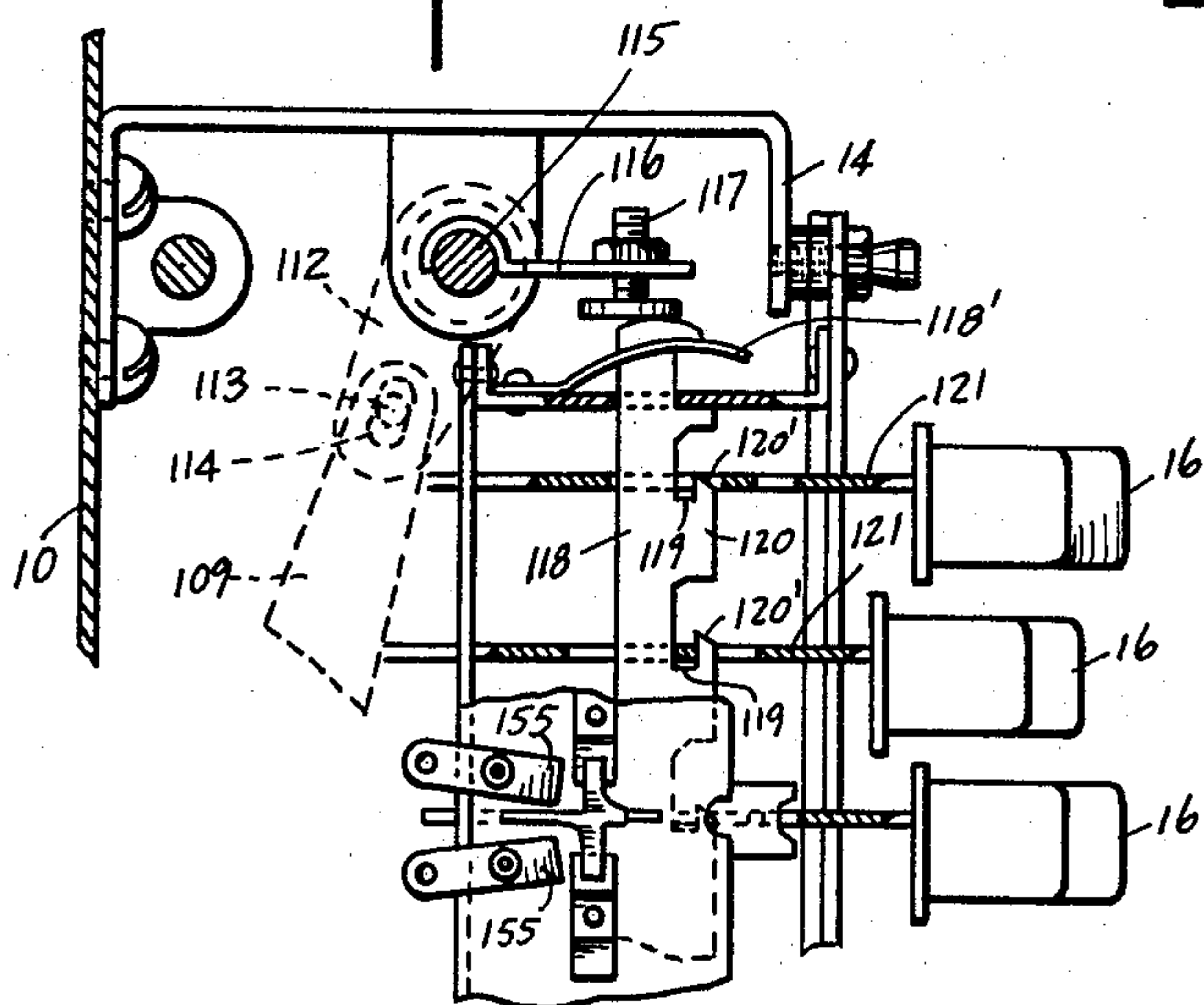
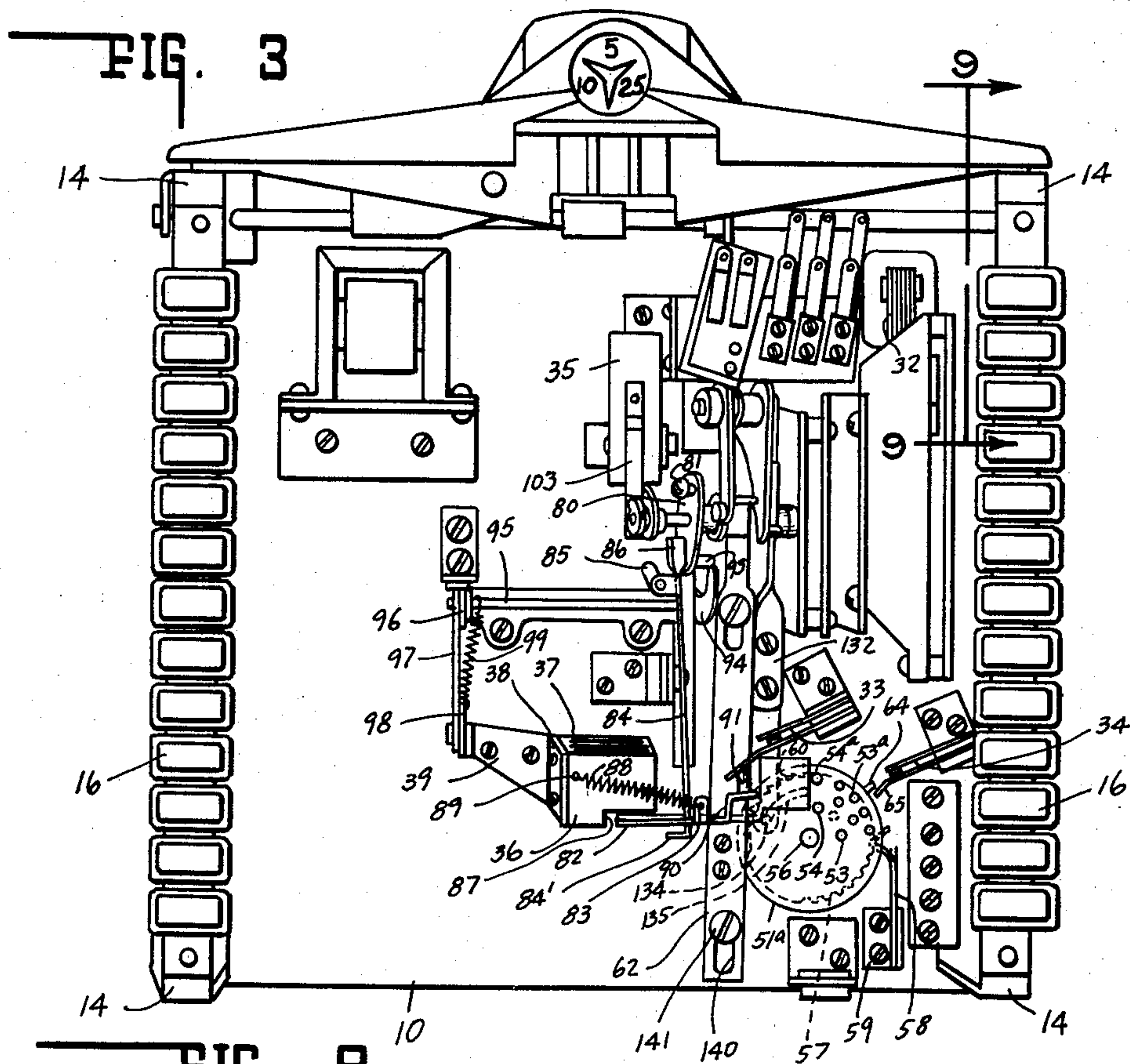
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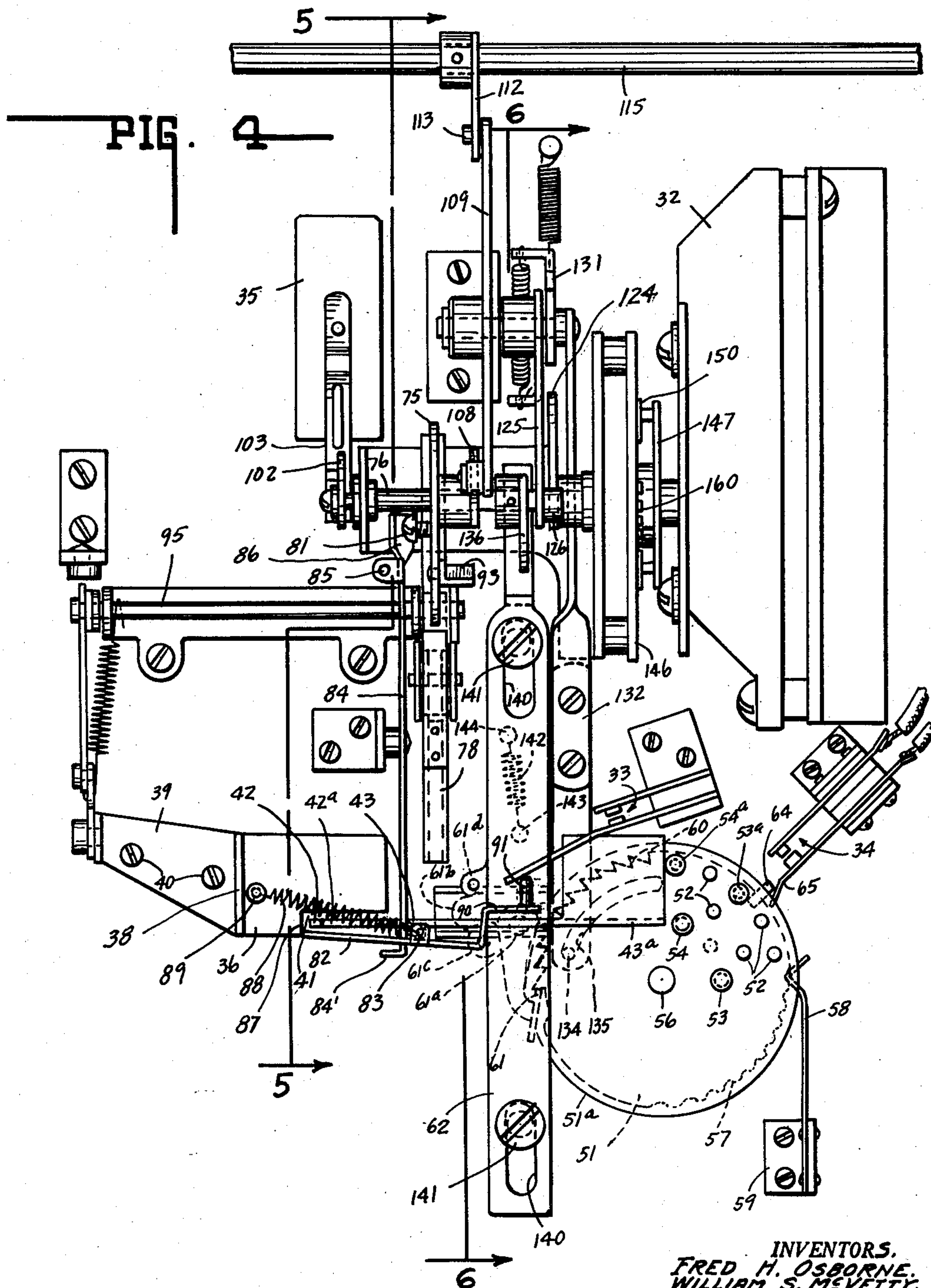
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6 Sheets-Sheet 3



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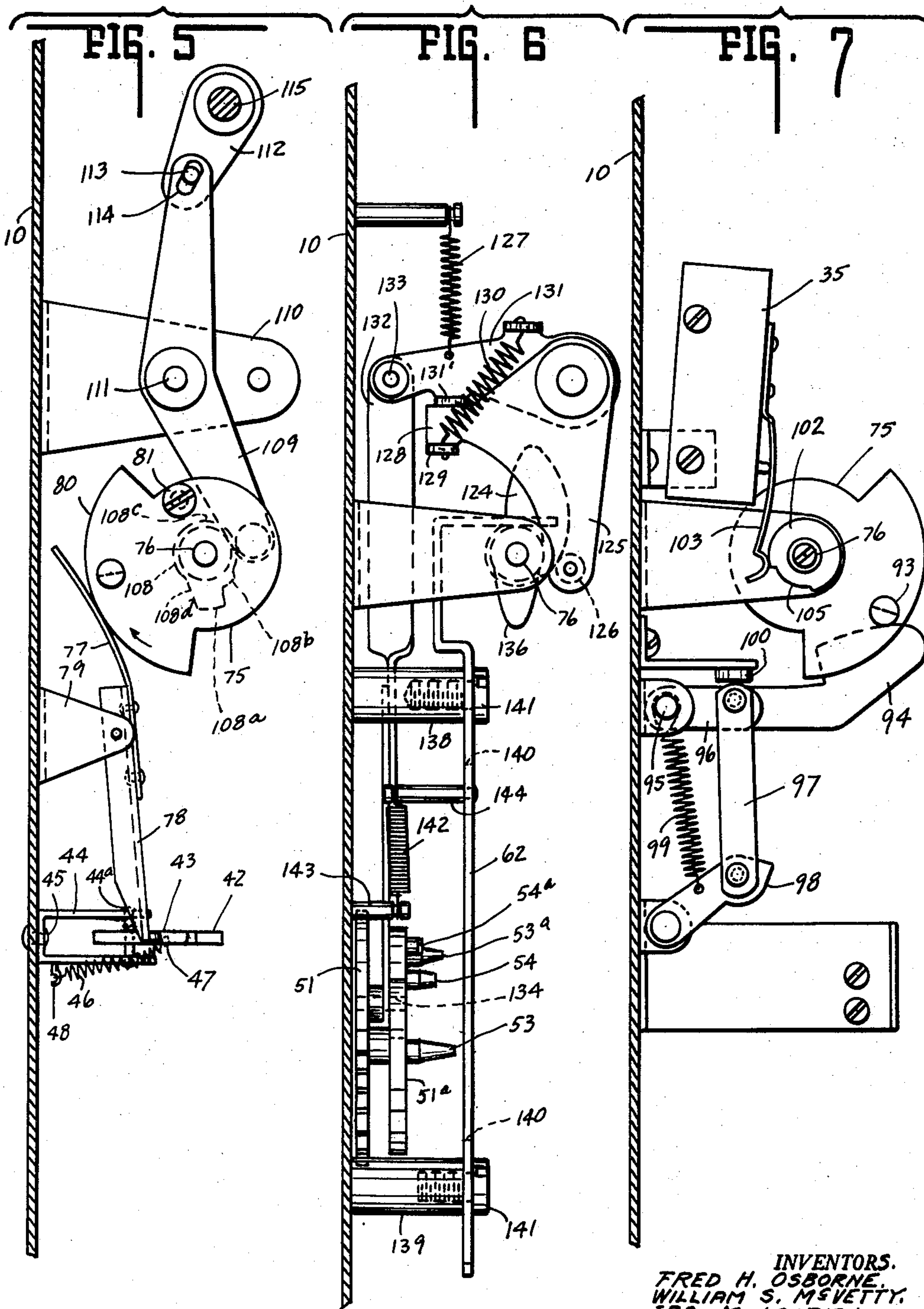
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PLURAL-SELECTION WALL BOX FOR AUTOMATIC PHONOGRAPH

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6 Sheets-Sheet 4



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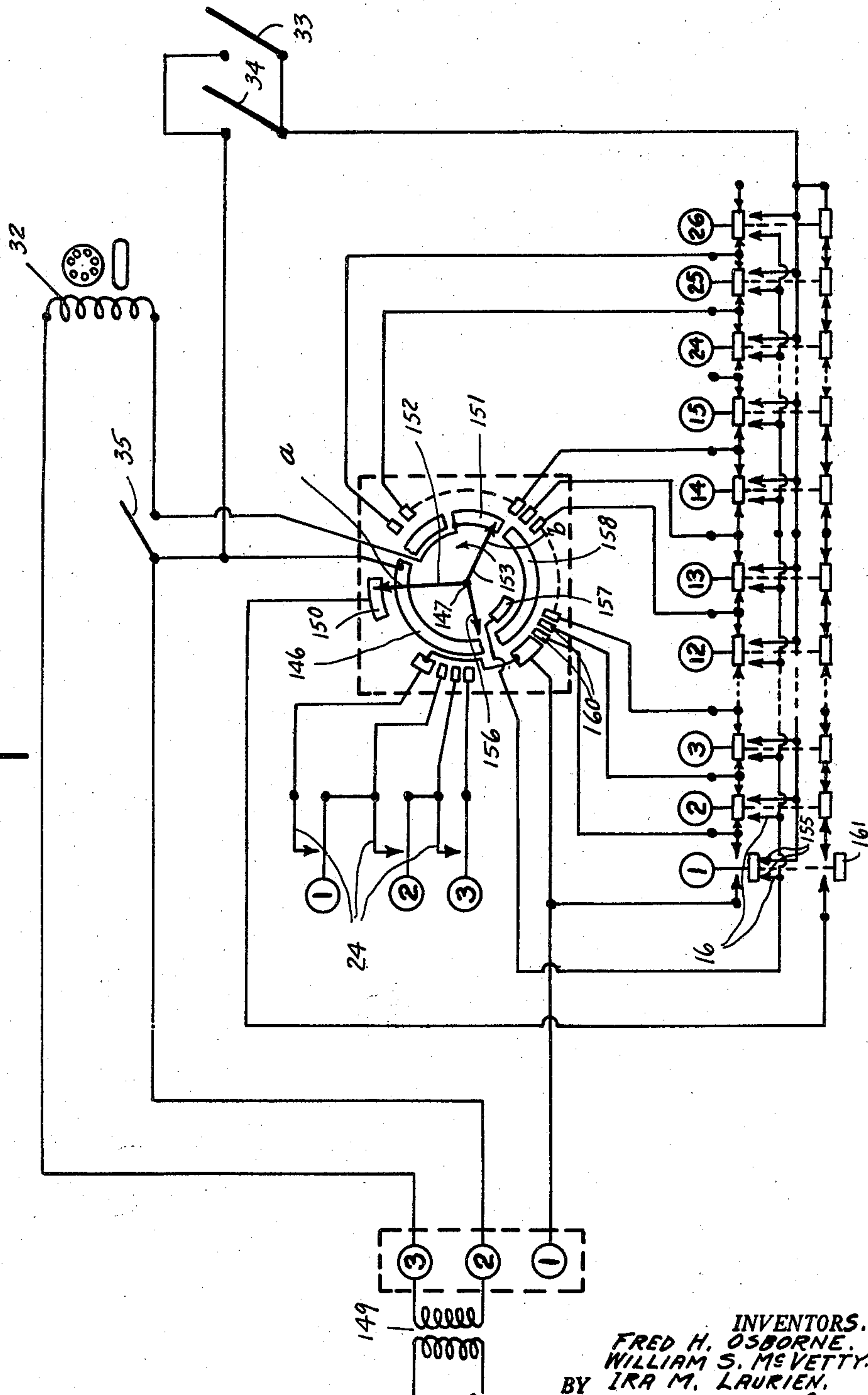
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PLURAL-SELECTION WALL BOX FOR AUTOMATIC PHONOGRAPH

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FIG. 8



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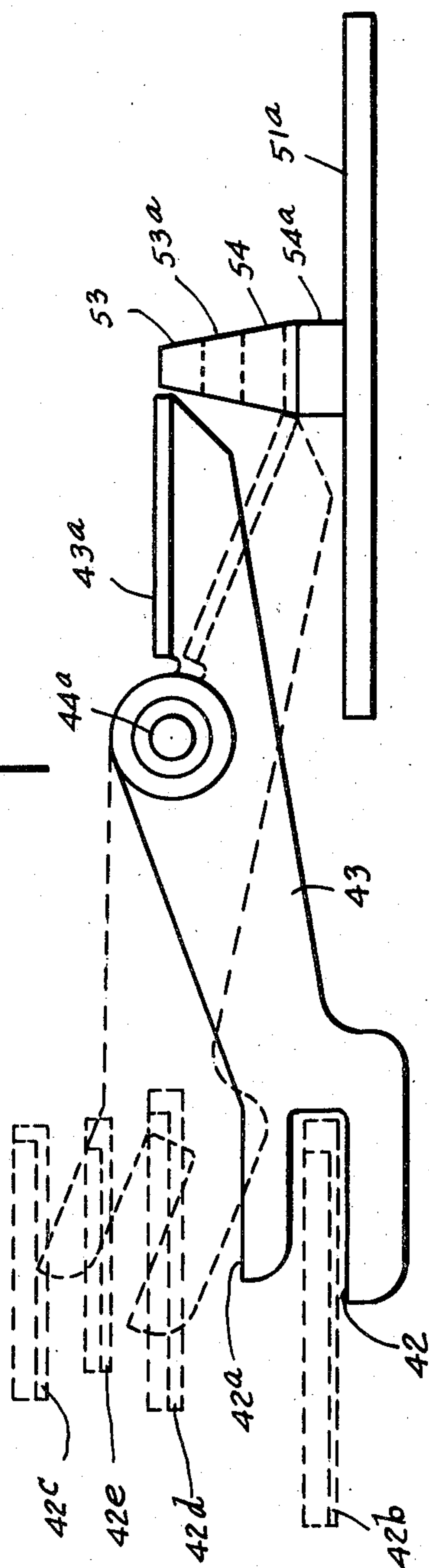
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PLURAL-SELECTION WALL BOX FOR AUTOMATIC PHONOGRAPH

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FIG. 11



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PLURAL-SELECTION WALL BOX FOR AUTOMATIC PHONOGRAPH

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Application November 4, 1957, Serial No. 694,227

13 Claims. (Cl. 194—15)

This invention relates generally to plural-selection wall box mechanisms for automatic phonographs, and particularly to an improved device for correlating the number of phonograph selections or "plays" effected by deposit of coins of various denomination in the wall box mechanism.

In the co-pending application, Serial No. 366,306, titled "Multi-Selector Wall Box For Automatic Phonograph" filed by Robert G. Gaul on July 6, 1953, and assigned to the assignee of the present invention, there is disclosed and claimed a remote control system for automatic phonographs which incorporates a multi-selector wall box having mechanism responsive to coins of different denominations for effecting remote selection of one or more records for playing in an automatic phonograph. The mechanism referred to utilizes a series of cams, adjustably movable with relation to each other, to determine the number of selections to be played for coins of various denominations.

The principal object of the present invention is to provide an improved form of the mechanism which correlates the number of selections to be played with the denomination of the coins inserted into the mechanism. The ease and simplicity of the adjustment characterizing this improved mechanism permits an operator or attendant relatively unacquainted with the mode of operation of the apparatus to successfully make changes in the number of selections which will be played for a coin of a given denomination and to determine the number of selection groupings available for playing.

A further object of the present invention is to provide an improved mechanism of the type referred to above in which the size and number of selection groupings provided may be varied over a relatively wide range.

A further object of the present invention is to provide a multi-selector wall box for automatic phonographs comprising a plurality of push button switches adapted to effect selection of records to be played including a mechanism which is conveniently adjustable to vary the number of push button switches which may be operated after insertion of a coin of given denomination.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a front view of a multi-selector wall box for automatic phonographs as provided by this invention.

Fig. 2 is a top plan view of the record selection leaf structure shown in Fig. 1,

Fig. 3 is a perspective view of the wall box illustrated in Fig. 1 with the record selection leaf structure shown in Fig. 2 removed to reveal the push button control mechanism,

Fig. 4 is an enlarged front view of the push button control mechanism illustrated in Fig. 3,

Fig. 5 is a side view taken on line 5—5 of Fig. 4,

Fig. 6 is a side view of the control mechanism taken on line 6—6 of Fig. 4,

Fig. 7 is a side view of the control mechanism shown

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in Fig. 4 taken from the left of Fig. 4 with parts omitted for the sake of clarity,

Fig. 8 is a circuit diagram illustrating the control circuit of the wall box,

Fig. 9 is a partial cross-section taken on line 9—9 of Fig. 3 showing the push button locking structure,

Fig. 10 shows the push button locking structure of Fig. 9 in button locking position; and

Fig. 11 represents a fragmentary bottom view of a portion of the coin feeler lever.

The apparatus forming the environment for the improved adjusting mechanism of the present invention may be the same as that described in the aforementioned Gaul application and is so described herein, it being understood that variations might be made in the environmental apparatus while yet retaining the features of the present invention.

Referring to Fig. 1, the multi-selector wall box comprises a base 10 at the upper end of which is mounted a head plate 11 having a centrally disposed coin receiving slot 12. At each corner of the base plate 10 there is provided a post 14. Between the posts 14 are supported a pair of switch assemblies 16, each of which comprises a plurality of conventional push button switches which may be connected to the record selector circuit of an automatic phonograph, as will be described subsequently. Also supported on the posts 14 is a program page assembly comprising end frame members 17 and 18, a hinge pin 19 connecting the end frames and a plurality of program page members 20. The program pages consists of a plurality of card supporting members 21 for removably supporting cards which may bear the names of record titles on records supported in the automatic phonograph for playing therein.

Each program page includes at its upper edge a lug bearing a contact operating push rod 23. The push rods on each page may be spaced a different distance from the hinge point, whereby each push rod will engage a different pair of contacts 24 supported within the wall box immediately below the program pages. End frame 18 is formed to provide a pair of apertures 25 and 26 through which the push rods may project. Each program page is provided with an operating handle 27, and a lug 28 at the bottom thereof to which a spring 29 is attached for retaining the page members in either one of their extreme positions. Spring 29 is attached to a lug 30 which is offset with respect to hinge pin 19, whereby each spring will be tensioned to pull its associated page into one of its extreme positions.

Figs. 3 to 7 illustrate the coin controlled mechanism for unlocking the push button switches to permit one or a plurality of record selections to be made, depending upon the denomination of the coin which is inserted within the coin slot. The coin control mechanism also controls an impulse transmitter which operates the selector mechanism within the automatic phonograph in accordance with the program page from which the selection is made and further in accordance with the push button aligned with a chosen selection.

For running the coin controlled mechanism through an operating cycle, there is provided an electric motor 32, the electrical circuit of which will be controlled by each of the switches 33, 34 and 35, together with the push button switches 16. For receiving coins of different denominations there is provided a coin chamber or gate chute 36 which includes four vertical slots 37, the foremost of which is dimensioned to receive a five cent piece, the second one of which is dimensioned to receive a ten cent piece, the next of which is dimensioned to receive a twenty-five cent piece, and the rearmost of which is dimensioned to receive a fifty-cent coin. The coin gate chute is mounted on a horizontal post 38 which includes

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a foot portion 39 riveted or otherwise fixed to base 10 by means of rivets 40.

Said chute 36 is provided with a horizontal cut-away portion 41 which receives the bifurcated end of a lever 43 in turn pivotally mounted in a channel bracket member 44 (Fig. 5) fixed to base 10 by rivet 45. As may best be seen in Fig. 11 the left end of lever 43 is bifurcated to provide coin engaging surfaces 42 and 42a and is spring biased into a normally rearward position by means of a spring 46 (Fig. 5) hooked to lever 43 at 47 and to bracket 44 at 48. Lever 43 extends to the right of its supporting pivot pin 44a and carries a flange or abutment 43a which extends into the path of movement of a coin register assembly consisting of a coin selection disc 51 mounted on a shaft 56 fixed to the base 10 for rotation thereon.

Disc member 51 comprises a ratchet wheel having a plurality of teeth 57 normally engageable with a spring 58 mounted on an angle iron 59 which is fixed to the base. Spring 58, in cooperation with teeth 57, serves to hold the disc member 51 in a series of stepped positions, as will be subsequently explained. The disc member 51 also includes a plurality of teeth 60 engageable by a pawl 61 pivotally mounted at 61a upon a reset slide 62, the operation of which will be subsequently described. A compression spring 61b anchored between an ear 61c carried by the pawl and a similar ear 61d carried by the reset slide serves to urge the pawl counterclockwise about its pivotal mounting. The disc member 51 is also provided with an arm 64 movable into and out of engagement with the contact arm 65 of switch 34 to open and close said switch, as will be hereinafter described.

As may best be seen in Figs. 4 and 6, the coin selection disc 51a is mounted on shaft 56 in overlying relation to disc member 51 and on its outer face has formed therein a series of apertures 52. The apertures 52 are disposed at varying distances from the center of the disc 51a and are positioned in the upper, right-hand quadrant (as viewed in Fig. 4) of the disc 51a so that radial lines drawn through the center of the disc and the center of each of the apertures 52 will define substantially equal angles, of the order of 9°. The apertures 52 are adapted to receive pins 53, 53a, 54 and 54a.

As may best be seen in Figs. 6 and 11, the pins are frusto-conical in configuration, the inclined surface of each having the same slope, but of varying heights, and are adapted to be selectively contacted by an extending flange 43a formed at the end of the lever 43. As may be seen in Fig. 4, the pins 53, 53a, 54 and 54a are positioned in various ones of the apertures 52, it being understood that all four pins need not be used in the operation of the apparatus and they may be positioned in different ones of the apertures 52. The purpose in placing the pins as shown is to permit, for example, a selected number of plays for a given coin of five, ten, twenty-five or fifty cent denomination. As shown diagrammatically in Fig. 11, the truncated pin 54a, being the shortest of the pins, is operative to be engaged by the flange 43a when a five cent piece is in the coin chute. The pin 54, being somewhat taller, is engaged by the flange 43a when a ten cent piece is in the coin chute. The pin 53a, being somewhat taller than the pin 54, is engaged by the flange 43a when a twenty-five cent piece is in the coin chute. The pin 53, being the tallest of the pins, is engaged by the flange 43a when a fifty cent piece is in the coin chute.

Referring to Fig. 11, it may be seen that with a fifty cent piece in the slot 42b of the chute 36, the surface 42 at the end of lever 43 will strike the coin, arresting the clockwise movement of lever 43 about its pivot 44a, thereby positioning the flange 43a rearwardly but a slight amount so that it will engage only the pin 53 as the disc 51a rotates counterclockwise. Similarly, with a five cent piece in the slot 42c, the surface 42a will engage the coin, arresting the clockwise movement of lever 43 about

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its pivot 44a, thereby positioning the flange 43a rearwardly a maximum amount so that it will engage the pin 54a preventing counterclockwise rotation of the disc 51. With a twenty-five cent piece or a ten cent piece in the slots 42d or 42e, respectively, it will be evident that the lever 43 will assume an intermediate position, with flange 43a in engagement with pin 53a or pin 54, respectively. It will be further evident that by placing the pins in differing ones of the apertures 52, the spacing between the pins may be varied. The manner in which this adjustment permits variation in the number of records played per coin will be made apparent subsequently.

For operating lever 43 there is provided a cam 75 (Fig. 5) mounted on the shaft 76 driven by motor 32, the cam 75 engaging with a spring extension 77 mounted at one end of lever 78, which projects beneath lever 43 for movement forwardly and rearwardly. Lever 78 may be pivoted on a double bracket 79 fixed to the base 10. The cam surface 80 of cam 75 has a radius sufficient to throw lever 78 forwardly to such an extent that lever 43 will move its coin engaging surfaces 42 and 42a across the base of the coin chute 36, this movement of lever 43 taking place against the force exerted by spring 46. When the coin engaging surfaces of the lever 43 are moved forwardly to this extent, the opposite end of the lever 43 carrying the flange or abutment 43a will have moved rearwardly into the plane of one or the other of the stop pins depending upon the denomination of the coin within the chute. If, for example, a five cent piece in the slot 42c stops the forward movement of the coin engaging surface 42a, spring 77 bearing on cam surface 80 permits over-run or lost motion between lever 78 and cam surface 80.

The cam 75 (Fig. 4) is provided with a horizontally projecting lug 81, the function of which is to operate the coin gate 82, pivotally mounted at 83 on the end of lever 84, which, in turn, is pivotally mounted on a horizontal post 85 fixed to the base 10. Lever 84 includes a cam surface 86 disposed at a slight angle with respect to the plane of lever 84 for camming engagement with the lug 81. Lug 81 imparts counterclockwise movement to lever 84 and coin gate 82, moving the gate out of engagement with coins in the coin chute 36 and permitting them to drop into a coin box (not shown). For the purpose of normally retaining the left-hand end of coin gate 82 in engagement with the abutment 87 on coin gate chute 36, there is provided a spring 88 fixed to the pivot 83 and a post 89 mounted on coin chute 36. The coin gate 82 includes as an integral part thereof an extension 90 having mounted thereon a contact operating member 91 of insulating material and extending into engagement with one of the contacts of switch 33 for closing those contacts when a coin rests on gate 82 within one of the slots in coin gate chute 36. The contacts of switch 33 are normally open, but the weight of a coin within coin chute 36 pivots gate 82 in a counterclockwise direction, moving insulating member 91 into engagement with one of the contacts of switch 33 to close the switch. This starts motor 32 to initiate a record selecting cycle, as will be hereinafter described.

Cam 75 also includes a lug 93 movable into engagement with a lever 94 mounted on a shaft 95, which in turn is connected to a crank 96, a connecting rod 97 and a cam 98. This mechanism consisting of cam 94 and members 95, 96, 97 and 98 is biased into the normal position shown in Fig. 7 by means of a spring 99 secured between cam 98 and shaft 95 whereby the connecting rod 97 normally rests in contact with a stop 100 mounted on base plate 10. Said mechanism is provided for the purpose of cooperating with a coin rejection device (not shown) which operates to reject a coin when there is a previously inserted coin within the coin gate chute 36, but as it forms no part of this invention, it is not completely disclosed herein.

On the outer end of motor driven shaft 76 there is

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mounted a cam 102 operatively associated with the actuating spring member 103 of full cycle switch 35 which may be what is commonly called a "micro-switch" connected in the circuit of motor 32, as will be described subsequently. Cam 102 is mounted on the shaft 76 so that in the idle position of the mechanism the depressed portion 105 engages the outer end of spring 103 in which position switch 35 is open.

In order to control the time interval during which one or more of the push buttons 16 may be operated, shaft 76 of motor 32 is provided with a cam 108 operatively associated with a lever 109 pivotally mounted on bracket 110 by means of a suitable pivot arrangement 111. Cam 108 is provided with cam surfaces 108a, 108b, 108c and 108d. Lever 109 is connected at its outer end with a crank 112 by means of a pin 113 fixed in the end of crank 112 and projecting into slot 114 in lever 109. Crank 112 is mounted on a shaft 115 in fixed relation thereto, whereby cam 108 rotates lever 109 to impart rotational movement of a few degrees to shaft 115. Cooperating with the push buttons 16 and shaft 115 are a pair of locking mechanisms operative from each end of shaft 115 by means of a crank member 116 and a push rod 117.

The locking mechanism comprises the plate 118 slidably mounted in the push button support structure and having a plurality of notches 119 formed to provide a locking lug 120 having cam surface 120'. Plate 118 is biased to the position shown in Fig. 9 by a leaf spring 118'. Plate 118 extends through apertures formed in each of the push buttons, and each push button includes cross bar 121 movable into and out of engagement with lug 120. Thus, surface 108a of cam 108 is normally positioned to engage the outer end of lever 109, thereby rotating shaft 115 to push plate 118 against spring 118' to such a position that lug 120 does not engage with or does not rest in the path of movement of the cross bars 121 on push buttons 16. As soon as operation of the mechanism starts, surface 108b of cam 108 engages lever 109, permitting the spring 118' to move the locking plate 118 upwardly far enough to align cam surface 120' of each lug 120 with cross bars 121 so that any push button may be pressed inwardly camming plate 118 downwardly until bar 121 passes lug 120, after which plate 118 will move upwardly to lock the push button due to engagement of lug 120 and cross bar 121. Further rotation of cam 108 engages surface 108c thereof with lever 109 permitting spring 118' to move plate 118 further upwardly to the position shown in Fig. 10 where cam surfaces 120' pass beyond cross bars 121 to prevent operation of more of the buttons 16. At the completion of a selection cycle, surface 108d of cam 108 will have lifted the end of lever 109, thereby to effect backward motion of plate 118 to release cross bar 121 and therewith the operated push button. It is to be noted that during a record selection cycle, lug 120 prevents inward movement of a push button other than the initially selected push button. This mechanism prevents selection and playing of more than a single record selection during a selection cycle.

As heretofore described, the disc 51a is rotated during a selection cycle until the end of lever 43 engages with one of the stop pins 53, 53a, 54 or 54a. For effecting rotation of the disc 51a, there is provided a cam 124 mounted on shaft 76 of motor 32 and a cooperating lever 125 having a cam follower pin 126 and being pivotally mounted on bracket 110. Lever 125 is approximately L-shaped, and the free end 128 thereof includes a turned out ear 129 to which is fastened a spring 120. The other end of spring 130 is connected to a crank arm 131, also pivotally mounted on bracket 110. Thus, cam 124 tends to move lever 125 in a counterclockwise direction, exerting tension on spring 130 and tending to move crank arm 131 in a counterclockwise direction. The free end of crank arm 131 is connected to connecting rod 132 by

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means of a hinge pin 133 (Fig. 6) and is also connected to disc 51a by means of a pin 134 extending through disc 51a, connecting rod 132 and through an arcuate slot 135 in disc 51.

When lever 125 is moved in a counterclockwise direction, spring 130 moves crank arm 131 in a counterclockwise direction imparting downward movement to connecting rod 132 and counterclockwise motion to disc 51a. This motion continues until the flange 43a at the end of lever 43 engages one of the stop pins 53, 53a, 54 or 54a and if, for example, the flange 43a engages stop pin 54a, spring 130 will absorb continued motion of lever 125, permitting the crank arm 131 to remain stationary. If on the other hand a ten cent piece, a twenty-five cent piece or a fifty cent piece has been inserted in coin chute 36, the disc 51a will stop with stop pins 54, 53a, or 53, respectively, in engagement with the flange 43a. In this case connecting rod 132 will have moved pin 134 to the lower end of slot 135, stepping the disc 51 two, four, or ten steps respectively, the magnitude of the stepped or incremental movement of disc 51 being, of course, dependent on which of the openings 52 accommodate the stop pins. At this point cam 124 will permit spring 127 to impart clockwise movement to lever 125 and likewise clockwise movement to crank arm 131 through engagement of the outer end of lever 125 with ear 131' on crank arm 131. Slot 135 in disc 51 permits the return movement of connecting rod 132 and disc 51a without imparting return movement to disc 51.

In order to reset disc 51 shaft 76 of motor 32 is provided with a reset cam 136 which cooperates with a ratchet slide 62 slidably mounted on two horizontal posts 138 and 139. The outer end of ratchet slide 62 is slotted as at 140 to receive a cap screw 141 whereby the slide 62 may move relative to screw 141 with the ratchet pawl 61 slipping downwardly past the teeth 60 in disc 51. In order to provide return motion of slide 62 as the cam 136 rotates away from the end of slide 62, there is provided a spring 142 secured between a post 143 mounted on base 10 and a post 144 mounted in slide 62, post 144 being out of line to the left of post 143, whereby spring 142 tends to pivot slide 62 about post 138 in a counterclockwise direction, thus tending to move the ratchet tooth 61 into engagement with teeth 60.

For controlling motor 32 and transmitting selection impulses to an automatic phonograph, there is provided a rotary impulse transmitting switch 146 having a three contact rotary arm 147 fixed on motor shaft 76 to be rotated thereby. Switch 146 is connected in the circuit illustrated in Fig. 8. This circuit comprises the motor 32 connected across a power supplying transformer 149 which may be located in the automatic phonograph. For controlling the operation of motor 32 there is provided a full cycle switch 35 connected in series with the winding of motor 32, the parallel connected key switch 34 and coin switch 33, the selector button switches 16, and the rotary impulse transmitting switch 146 being connected in series with one another and in parallel across full cycle switch 35. The rotary impulse transmitting switch 146 comprises spaced stationary concentric segmental conductors 150, 151, 157 which cooperate with the conductor arms 152, 153 and 156 of the rotary switch arm 147 to control operation of motor 32 during a selection cycle. The program page switches 24 are connected to stationary contacts on the rotary impulse switch 146 to cooperate in the transmission of selection impulses to the automatic phonograph. The automatic phonograph selection circuit forms no part of this invention and, hence, is not shown herein.

In operation, the mechanism described herein is normally in a quiescent position wherein the rotary contacts 152 and 153 connect the stationary contacts 150 and 151. The cam mechanism at the same time is in such a position that the full cycle switch 35, key switch

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34 and coin switch 33 are all open. The selector switch buttons 16 may be depressed since the selector switch latch bar is in the unlocked position. Cam 75 is in a rest position where cam surface 80 is out of contact with the spring member 77 so that the lever 43 is positioned with abutment 43a spaced outwardly from the disc 51a, being biased to this position by spring 46.

When a coin is dropped into the coin chute 12, it comes to rest within the proper slot in the coin gate chute 36 and is retained therein by the coin gate 82. However, the weight of the coin pivots gate 82 into engagement with the stop member 84' on lever 84 in which position the contact operating member 91 will have closed the contacts of coin switch 33. This establishes the circuit from motor 32 through switch 33, the closed contacts of switches 16, stationary contact 150, the arms 152 and 153 of the rotary switch, stationary contact 151 to power source 149, the circuit being thus completed to cause the motor 32 to rotate until such time as arm 152 moves off stationary contact 150. The opening of contact 150 stops motor 32, but during its rotation the selector switch latch bar will have been cam operated by cam 108, lever 109, crank 112 and shaft 115 to such a position that one of the push button switches 16 may be depressed and locked in a depressed position. The lug 93 on cam 75 will have operated lever 94, connecting rod 97 and crank arm 98 to block the coin chutes in the slug rejector mechanism (not shown) to prevent loss of coins which might be mistakenly inserted during the operating cycle.

When the push button switch is depressed, contacts 155, for example, are closed. The rotary contact 156 will have come to rest on segment 157 of switch 146 while contact 153 will still be connected with stationary contact 151. Thus, a circuit is established from the motor through stationary contact 151, arms 153 and 156 of the rotary switch 146, stationary contact 157, button switch contacts 155, and coin switch 33 to the power source 149, and motor 32 rotates. The rotary contact arms 152, 153 and 156 rotate with motor 32, arm 153 contacting the stationary contact 158 of switch 146, and arm 152 contacting the outer stationary contacts 160 to transmit a series of impulses to the selector mechanism of the automatic phonograph, thereby to select a record to be played. When the motor begins this period of its operating cycle, cam 105 on motor shaft 76 closes full cycle switch 35 by depressing the spring operating member 103, thereby to hold the motor circuit closed throughout the remainder of its operating cycle.

It will be noted that the bottom selector switches include a bank of contacts 161 and the circuit of this bank of contacts opens when contacts 155 are closed. The switch contacts of this bank are connected in series with the coin switch 33, and if a coin of more than one selection value were placed in the machine and the person making the selection held the selector button down throughout a complete selection cycle, inadvertent selection of the same number twice in succession is prevented.

Immediately after motor 32 commences the final period of its cycle, cam surface 80 of cam 75 depresses spring member 77 on lever 78, moving lever 43 across the slot 41 in the coin chute 36. If a five cent piece is in the coin gate chute, surface 42a permits lever 43 to rotate until the outer end of the lever is in the path of movement of stop pin 54a on accumulator disc 51a. At this point cam 124 rotates lever 125 in a counterclockwise direction, but the flange 43a carried by the end of lever 43 prevents any movement of the accumulator disc 51a and similarly prevents any movement of the ratchet wheel 51, whereby the key switch 34 remains open.

Motor 32 continues to rotate until the cam surface 80 eventually moves out of contact with spring 77, permitting lever 43 to return to its original position. Then lug 81 moves into engagement with the cam surface

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86 on lever 84, pivoting it in a counterclockwise direction and moving coin gate 82 out of the way of the coin in the coin gate chute, permitting the coin to drop into the coin box. Cam 75 will now have rotated to such a point that lug 93 thereon engages lever 94 to unblock the coin chutes in the slug rejector. Simultaneously therewith, cam 108 lifts lever 109 to effect release of the latch bar and a chosen selector switch button. After this operation is completed, cam 102 will have rotated to the point where surface 105 engages spring 103 and opens full cycle switch 35. This completes a cycle of operation where a five cent piece or a single selection coin is inserted in the coin gate chute. If two plays or selections are to be provided for five cents, stop pin 54a may be moved to the position of pin 54 in Fig. 4.

If a ten cent piece or a two selection coin is inserted in the coin chute, the coin feeler surface 42a will engage this coin, whereby the outer end of lever 43 will move into a position to engage stop pin 54. Such engagement will not occur, however, until after cam 124 has operated lever 125 and the connecting bar 132 sufficiently to effect rotation of disc 51 through two successive steps or until spring 58 rests in the third notch of ratchet 57. This operation moves switch operating member 64 out of engagement with the key switch leaf 65, permitting the contacts of switch 34 to close. The motor operates through the same complete cycle as described in connection with the use of a single selection coin except that cam 136 engages the left hand end of the slide 62, moving the slide and therewith the ratchet pawl 61 into engagement with the ratchet teeth 60 of wheel 51, moving this wheel one step or to such a position that spring 58 rests in the second notch of ratchet 57. Since the key switch 34 is closed, motor 32 is energized at the end of the cycle even though the full cycle switch 35 opens. Therefore, motor 32 starts another cycle of operation, coming to rest in the "make selection" position permitting the second push button switch to be operated to make a second selection of a record to be played. At the end of this selection cycle, pawl 61 is again operated to rotate accumulator wheel 51 back to its idle position where key switch 34 is opened, thereby terminating the operation of the cycle of the selection control mechanism.

If a five selection coin such as a twenty-five cent piece is inserted in the coin chute, surface 42a will contact the coin whereby the outer end of lever 43 carrying abutment 43a is raised to such a position that it does not engage stop pin 54 but permits the accumulator disc to rotate until stop pin 53a is engaged. This permits the ratchet wheel 51 to rotate to such a point that spring 58 rests in the sixth notch of ratchet 57, again permitting key switch 34 to close.

If a ten selection coin such as fifty-cent piece is inserted in the coin chute, surface 42 will contact the coin whereby the abutment 43a is raised to such a position that the accumulator disc will be permitted to rotate through its maximum travel, that is, until stop pin 53 is engaged. This permits ratchet wheel 51 to rotate to such a point that spring 58 rests in the eleventh or last notch of ratchet 57, again permitting key switch 34 to close.

As previously explained, the stop pins 53, 53a 54 and 54a may be placed in openings 52 on disc 51 so that they may effect a variable number of selections. For example, pin 54a might be placed in the opening 52 which is occupied by pin 54 as shown in Fig. 4. Under these conditions two selections could be made for a five cent piece. If pin 54 were located in the opening 52 occupied by pin 54a in Fig. 4, a ten cent piece would provide only one selection. Alternately locating pins 53a and 53 would, correspondingly result in variation in the number of selections effected by a twenty-five and fifty cent piece.

Since the stop pins, each identified with a particular

coin, may be easily moved to various ones of the openings 52, this arrangement provides a wide degree of choice in the number of selections offered for a coin of a given denomination. The ease with which this adjustment may be made makes it possible for the person attending the operation of the automatic phonograph to select the price to be charged for a given number of record selections even though he is relatively unfamiliar with the record changer's selector mechanism and its controlling apparatus.

Referring to Fig. 11, the pins 53, 53a, 54 and 54a are shown with their center lines coinciding to more clearly indicate the function of their inclined abutment engaging surfaces now to be explained, it being understood that when disposed for operation of the apparatus, they would not be so aligned but would be positioned, for example, as shown in Fig. 4. As will be evident from Fig. 11, the abutment 43a is swung in a slight arc as lever 43 moves about its pivot 44a, that is, in moving from its position of engagement with pin 53 into its position of engagement with pin 54a, the abutment 43a is moved both along and away from the coinciding center lines of the stop pins. If all of the pins were cylindrical rather than conical in configuration, and had, for example, a diameter the same as the upper end of pin 53, it will be evident that with the abutment 43a in a position to engage pin 53a, the disc 51a will be permitted to rotate counterclockwise a somewhat increased amount. When it is recalled that the angular spacing of the openings 52 on the disc 51a represent increments of rotational travel of the disc which must be coordinated with the seating of spring member 58 in successive notches between ratchet teeth 57 on disc 51, it will be apparent that the discrete characteristic of the increments of travel of the disc 51a would be destroyed by the variation in rotational travel of the disc 51a which would occur if all of the stop pins were of the same diameter. The configuration of the stop pins, providing them with differing diameters, thus permits the center line of each of the openings 52, when occupied by a stop pin, to determine the rotational travel of the disc and consequently the number of "plays" or selections, the incremental correlation between the positions of the disc 51a and the teeth 57 being thereby maintained.

The invention claimed is:

1. Apparatus for controlling the selector mechanism of an automatic phonograph comprising a plurality of selector switches operable for selecting one or more records in said automatic phonograph, means for transmitting selector impulses to said selector mechanism in response to operation of said switches and for energizing the circuits of said switches in response to insertion of a coin in said apparatus, a motor for driving said transmitting means to transmit a series of pulses, a coin operated mechanism including a switch connected to said motor to energize said motor and actuate said transmitting means for energizing said selector switches, coin feeling means operatively associated with said coin operated mechanism, said coin feeling means including a lever pivotally mounted intermediate its ends having a coin engaging surface at one of its ends and a stop-engaging abutment at its other end, said lever being pivotally movable through different distances corresponding to the coin denomination for detecting coins of different denominations, and an accumulator operatively associated with said motor and having a surface movable in a plane normal to the plane of movement of said lever, a plurality of stop members carried on said surface to be selectively engaged by said stop-engaging abutment depending on the position thereof, said members extending differing distances from said surface and spaced thereon to permit movement of said accumulator through discrete increments of travel in response to coins of different denominations, said members having inclined abutment engaging surfaces whose slope maintains the

discrete characteristic of said travel increments independently of which of said stop members is engaged by said stop-engaging abutment, and means associated with said accumulator for operating said motor to transmit one or more series of pulses in accordance with the total incremental travel of said accumulator thereby selecting one or more records depending on the detected coin denomination.

2. Apparatus for controlling the selector mechanism of an automatic phonograph comprising a plurality of selector switches operable for selecting one or more records in said automatic phonograph, means for transmitting selector impulses to said selector mechanism in response to operation of said switches and for energizing the circuits of said switches in response to insertion of a coin in said apparatus, a motor for driving said transmitting means to transmit a series of pulses, a coin operated mechanism including a switch connected to said motor to energize said motor and actuate said transmitting means for energizing said selector switches, coin feeling means operatively associated with said coin operated mechanism, said coin feeling means including a lever carrying a stop-engaging abutment, said lever being movable to provide arcuate movement of said abutment through different distances corresponding to the denomination of a coin placed in said apparatus and an accumulator operatively associated with said motor and having a surface movable in a plane normal to the plane of movement of said abutment, a plurality of stop members carried on said surface to be selectively engaged by said stop-engaging abutment depending on the position thereof, said members extending differing distances from said surface and spaced thereon to permit movement of said accumulator through discrete increments of travel in response to coins of different denominations, said members having inclined abutment engaging surfaces whose slope maintains the discrete characteristic of said travel increments independently of which of said stop members is engaged by said stop-engaging abutment, and means associated with said accumulator for operating said motor to transmit one or more series of pulses in accordance with the total incremental travel of said accumulator thereby selecting one or more records depending on the detected coin denomination.

3. Apparatus for controlling the selector mechanism of an automatic phonograph comprising a plurality of selector switches operable for selecting one or more records in said automatic phonograph, means for transmitting selector impulses to said selector mechanism in response to operation of said switches and for energizing the circuits of said switches in response to insertion of a coin in said apparatus, a motor for driving said transmitting means to transmit a series of pulses, a coin operated mechanism including a switch connected to said motor to energize said motor and actuate said transmitting means for energizing said selector switches, coin feeling means operatively associated with said coin operated mechanism, said coin feeling means including a lever pivotally mounted intermediate its ends having coin engaging surfaces at one of its ends and a stop-engaging abutment at its other end, said lever being pivotally movable through different distances corresponding to the coin denomination for detecting coins of different denominations, and an accumulator operatively associated with said motor and having a surface movable in a plane normal to the plane of movement of said lever, a plurality of stop members carried on said surface to be selectively engaged by said stop-engaging abutment depending on the position thereof, said members extending differing distances from said surface and spaced thereon to permit movement of said accumulator through discrete increments of travel in response to coins of different denominations, said members having inclined abutment engaging surfaces whose slope maintains the discrete characteristic

of said travel increments independently of which of said stop members is engaged by said stop-engaging abutment.

4. In an apparatus for controlling the selector mechanism of an automatic phonograph and having transmitting means operable when energized to transmit a series of selector impulses to the selector mechanism, coin engaging means including a coin receiving chamber, a lever pivotally mounted intermediate its ends having a coin engaging surface adapted to engage a coin in said chamber on one side of said pivotal mounting, a stop-engaging abutment carried by said lever on the other side of said pivotal mounting, said lever being pivotally movable through different distances corresponding to the denomination of the coin in said chamber, and an accumulator operatively associated with said transmitting means and having a surface movable in a plane normal to the plane of movement of said lever, a plurality of stop members carried on said surface to be selectively engaged by said stop-engaging abutment depending upon the position thereof, said members extending differing distances from said accumulator surface and spaced thereon to permit movement of said accumulator through discrete increments of travel in response to coins of different denominations in said chamber, said members having inclined abutment engaging surfaces with identical slopes which maintain the discrete characteristic of said travel increments independently of which of said stop members is engaged by said stop-engaging abutment, and means associated with said accumulator for energizing said transmitting means to transmit one or more series of selector impulses in accordance with the total incremental travel of said accumulator.

5. In an apparatus for controlling the selector mechanism of an automatic phonograph and having transmitting means operable when energized to transmit a series of selector impulses to the selector mechanism, coin engaging means including a coin-receiving chamber, a lever pivotally mounted intermediate its ends having a coin engaging surface adapted to engage a coin in said chamber on one side of said pivotal mounting, a stop-engaging abutment carried by said lever on the other side of said pivotal mounting, said lever being pivotally movable through different distances corresponding to the denomination of the coin in said chamber, and an accumulator operatively associated with said transmitting means and having a surface movable in a plane normal to the plane of movement of said lever, a plurality of stop pins carried on said surface to be selectively engaged by said stop-engaging abutment depending upon the position thereof, said pins extending differing distances from said accumulator surface and spaced thereon to permit movement of said accumulator through discrete increments of travel in response to coins of different denominations in said chamber, said members having inclined abutment engaging surfaces disposed at differing distances from the center lines of said pins to thereby maintain the discrete characteristic of said travel increments independently of which of said stop members is engaged by said stop-engaging abutment, and means associated with said accumulator for energizing said transmitting means to transmit one or more series of selector impulses in accordance with the total incremental travel of said accumulator.

6. In an apparatus for controlling the selector mechanism of an automatic phonograph, an element adapted to be moved a predetermined amount in response to the denomination of a coin placed in said apparatus, an accumulator, driving means for moving said accumulator through a travel stroke, said accumulator having a surface movable in a plane normal to the plane of movement of said element, a plurality of stop members carried on said surface to be selectively engaged by said element depending upon the position thereof, the element engaging portions of said stop members being spaced on said surface and disposed at differing distances therefrom to

permit movement of said accumulator through discrete increments of travel defined by engagement of the stop members with said element, said element engaging portions having inclined surfaces with substantially identical slopes which maintain the discrete characteristic of said travel increments independently of which of said stop members is engaged by said element.

7. In an apparatus for controlling the selector mechanism of an automatic phonograph, an element adapted to be moved a predetermined amount in an arcuate path in response to the denomination of a coin placed in said apparatus, an accumulator, driving means for moving said accumulator through a travel stroke, said accumulator having a surface movable in a plane normal to the plane of movement of said element, said surface having a plurality of stop member receiving openings therein, a plurality of stop members accommodated in selected ones of said openings and adapted to be selectively engaged by said element depending upon the position thereof, the element engaging portions of said stop members being disposed at differing distances from said surface to permit movement of said accumulator through discrete increments of travel defined by engagement of the stop members with said element, said element engaging portions having inclined surfaces disposed at differing distances from the center lines of the accommodating openings to thereby maintain the discrete characteristic of said travel increments independently of which of said stop members is engaged by said element.

8. In an apparatus for controlling the selector mechanism of an automatic phonograph, a pivotally mounted lever having a stop engaging abutment thereon, said lever being pivotally movable through different distances corresponding to the denomination of a coin placed in said apparatus, an accumulator disc mounted for rotation adjacent said lever in a plane normal to the plane of movement of the lever, driving means for rotating said accumulator through a travel stroke, said disc having a plurality of stop member receiving openings therein disposed at various radial distances and equally spaced in the direction of rotation of the disc, a plurality of stop members accommodated in selected ones of said openings and adapted to be selectively engaged by said abutment depending upon the position of said lever, each of said stop members having a configuration which corresponds to truncated sections of a single cone, engagement of said abutment with one or the other of said stop members terminating the movement of said accumulator through discrete increments of travel, the conical configuration of said stop members maintaining the discrete characteristic of said travel increments independently of which of said stop members is engaged by said element.

9. In an apparatus for controlling the selector mechanism of an automatic phonograph, a pivotally mounted lever having a stop engaging abutment thereon, said lever being pivotally movable through different distances corresponding to the denomination of a coin placed in said apparatus, an accumulator disc mounted for rotation adjacent said lever in a plane normal to the plane of movement of the lever, driving means for rotating said accumulator through a travel stroke, said disc having a plurality of stop member receiving openings therein disposed at various radial distances and spaced in the direction of rotation of the disc, a plurality of stop members accommodated in selected ones of said openings and adapted to be selectively engaged by said abutment depending upon the position of said lever, said stop members having abutment engaging surfaces disposed at differing distances laterally from the center lines of the stop member occupied openings, engagement of said abutment with one or the other of said stop members terminating the movement of said accumulator through discrete increments of travel, the disposition of said abutment engaging surfaces maintaining the discrete char-

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acteristic of said travel increments independently of which of said stop members is engaged by said element.

10. In an apparatus for controlling the selector mechanism of an automatic phonograph, a pivotally mounted lever having a stop engaging abutment thereon, said lever being pivotally movable through different distances corresponding to the denomination of a coin placed in said apparatus, an accumulator disc mounted for rotation adjacent said lever in a plane normal to the plane of movement of the lever, driving means for rotating said accumulator through a travel stroke, said disc having a plurality of stop member receiving openings therein disposed at various radial distances and spaced in the direction of rotation of the disc, a plurality of stop members accommodated in selected ones of said openings and adapted to be selectively engaged by said abutment depending upon the position of said lever, the area of engagement of said abutment with said stop members being disposed at differing distances laterally from the center lines of the stop member occupied openings, engagement of said abutment with one or the other of said stop members terminating the movement of said accumulator through discrete increments of travel, the disposition of said area of engagement between said stop members and said abutment maintaining the discrete characteristic of said travel increments independently of which of said stop members is engaged by said element.

11. In an apparatus for controlling the selector mechanism of an automatic phonograph, a lever having a stop engaging abutment thereon, said lever being movable to provide arcuate movement of said abutment through different distances corresponding to the denomination of a coin placed in said apparatus, an accumulator disc mounted for rotation adjacent said lever in a plane normal to the plane of movement of said abutment, driving means for rotating said accumulator through a travel stroke, said disc having a plurality of stop member receiving openings therein disposed at various radial distances and spaced in the direction of rotation of the disc, a plurality of stop members accommodated in selected ones of said openings and adapted to be selectively engaged by said abutment depending upon the position of said lever, each of said stop members having a configuration which corresponds to truncated sections of a single cone, engagement of said abutment with one or the other of said stop members terminating the movement of said accumulator through

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discrete increments of travel, the conical configuration of said stop members maintaining the discrete characteristic of said travel increments independently of which of said stop members is engaged by said element.

12. In an apparatus for controlling the selector mechanism of an automatic phonograph, an element adapted to be moved a predetermined amount in response to the denomination of a coin placed in said apparatus, an accumulator, driving means for moving said accumulator through a travel stroke which determines the number of selections to be played for a coin of a given denomination, said accumulator having a surface movable with relation to said element, a plurality of apertures in said surface spaced in the direction of travel of said accumulator, stop members interchangeably received in selected ones of said apertures and adapted to be individually engaged by said element depending upon the position thereof, said stop members thereby determining the magnitude of the travel of said accumulator, the interchangeability of said stop members with respect to said apertures permitting variation in the number of selections played in response to the placing of a coin of a given denomination in said apparatus.

13. In an apparatus for controlling the selector mechanism of an automatic phonograph, an element adapted to be moved a predetermined amount in response to the denomination of a coin placed in said apparatus, an accumulator, driving means for moving said accumulator through a travel stroke which determines the number of selections to be played for a coin of a given denomination, said accumulator having a surface movable in a plane normal to the plane of movement of said element, a plurality of apertures in said surface spaced in the direction of travel of said accumulator, stop members having differing heights interchangeably received in selected ones of said apertures and adapted to be individually engaged by said element depending upon the position thereof, said stop members thereby determining the magnitude of the travel of said accumulator, the interchangeability of said stop members with respect to said apertures permitting variation in the number of selections played in response to the placing of a coin of a given denomination in said apparatus.

No references cited.