

Aug. 13, 1963

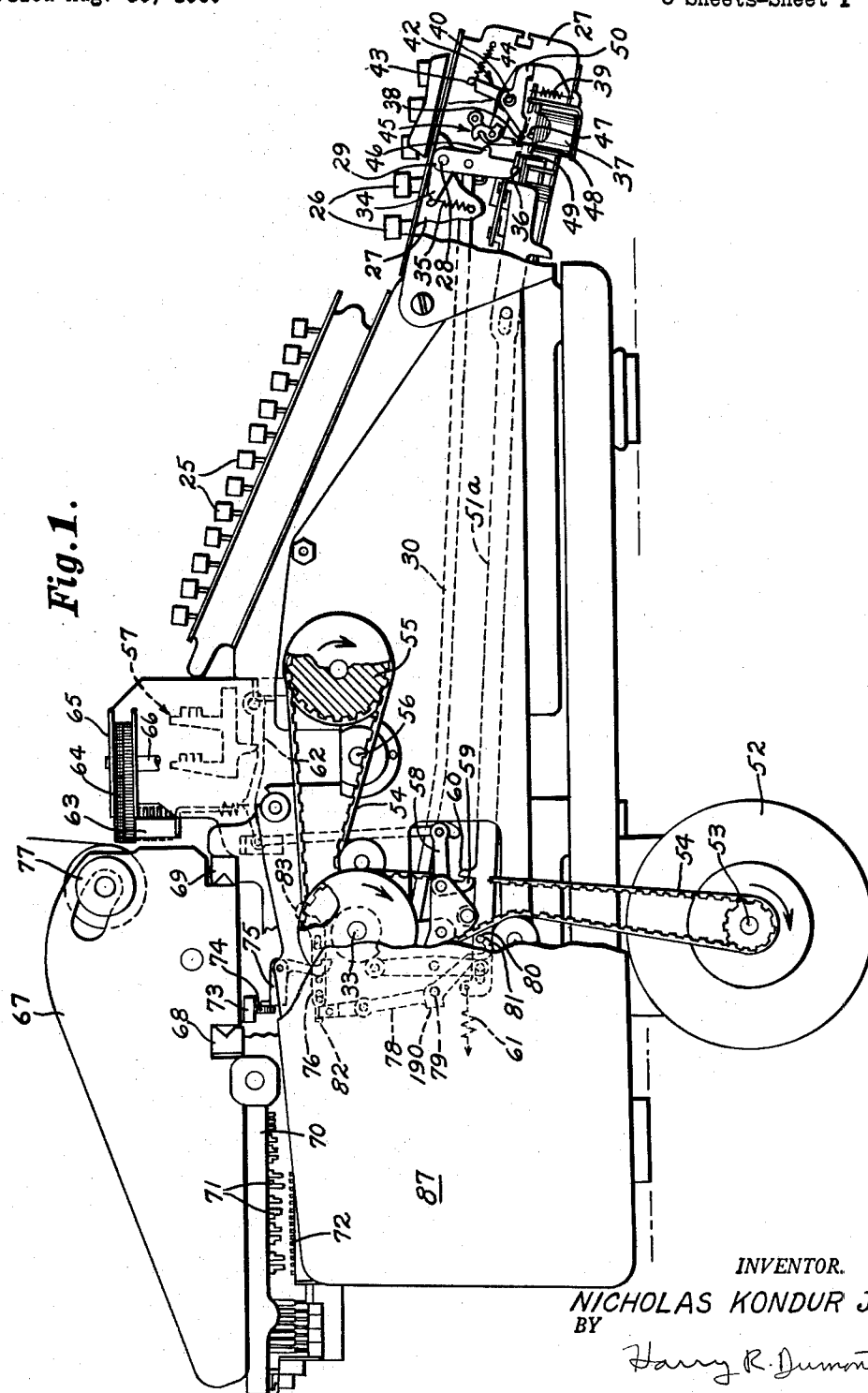
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3,100,560

INK-RIBBON CONTROL MECHANISM

Filed Aug. 18, 1960

3 Sheets-Sheet 1



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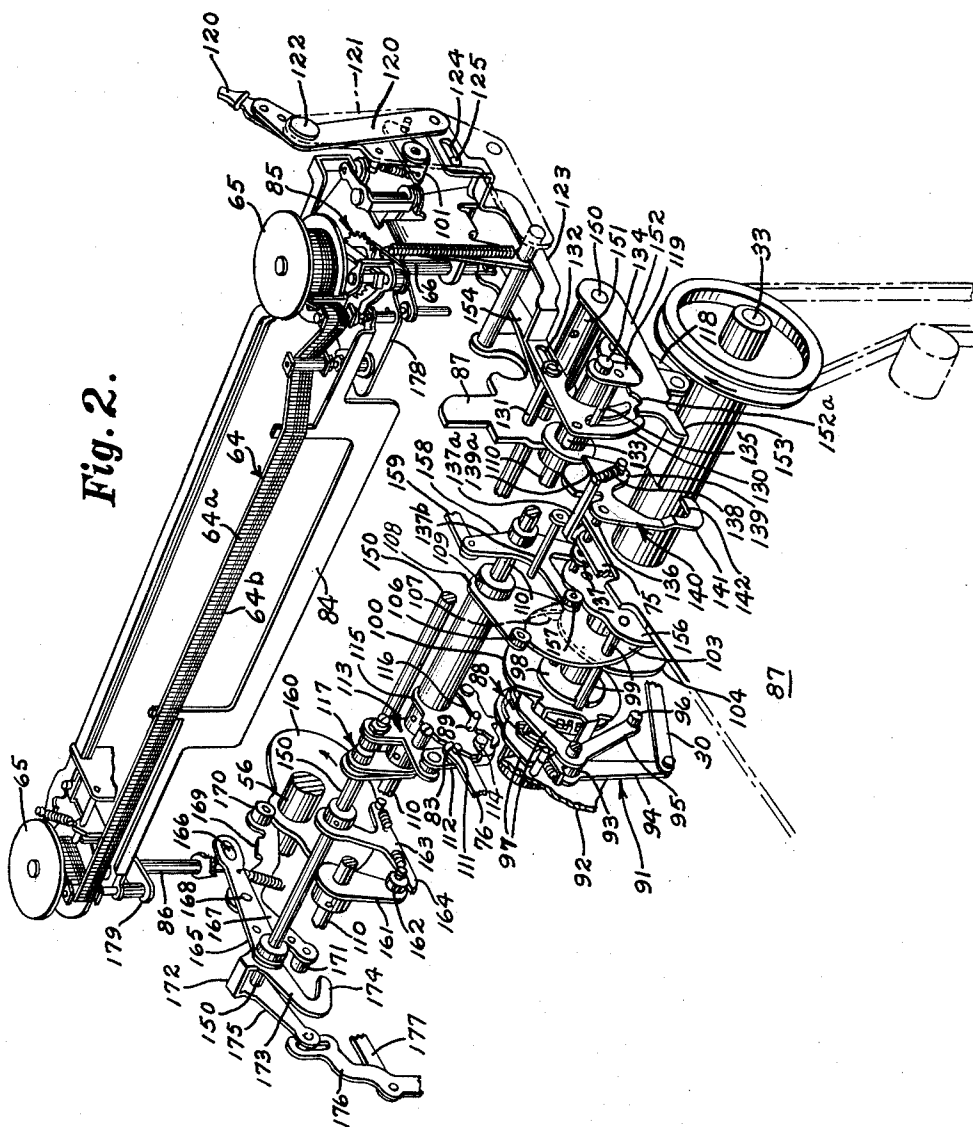
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INK-RIBBON CONTROL MECHANISM

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3 Sheets-Sheet 2



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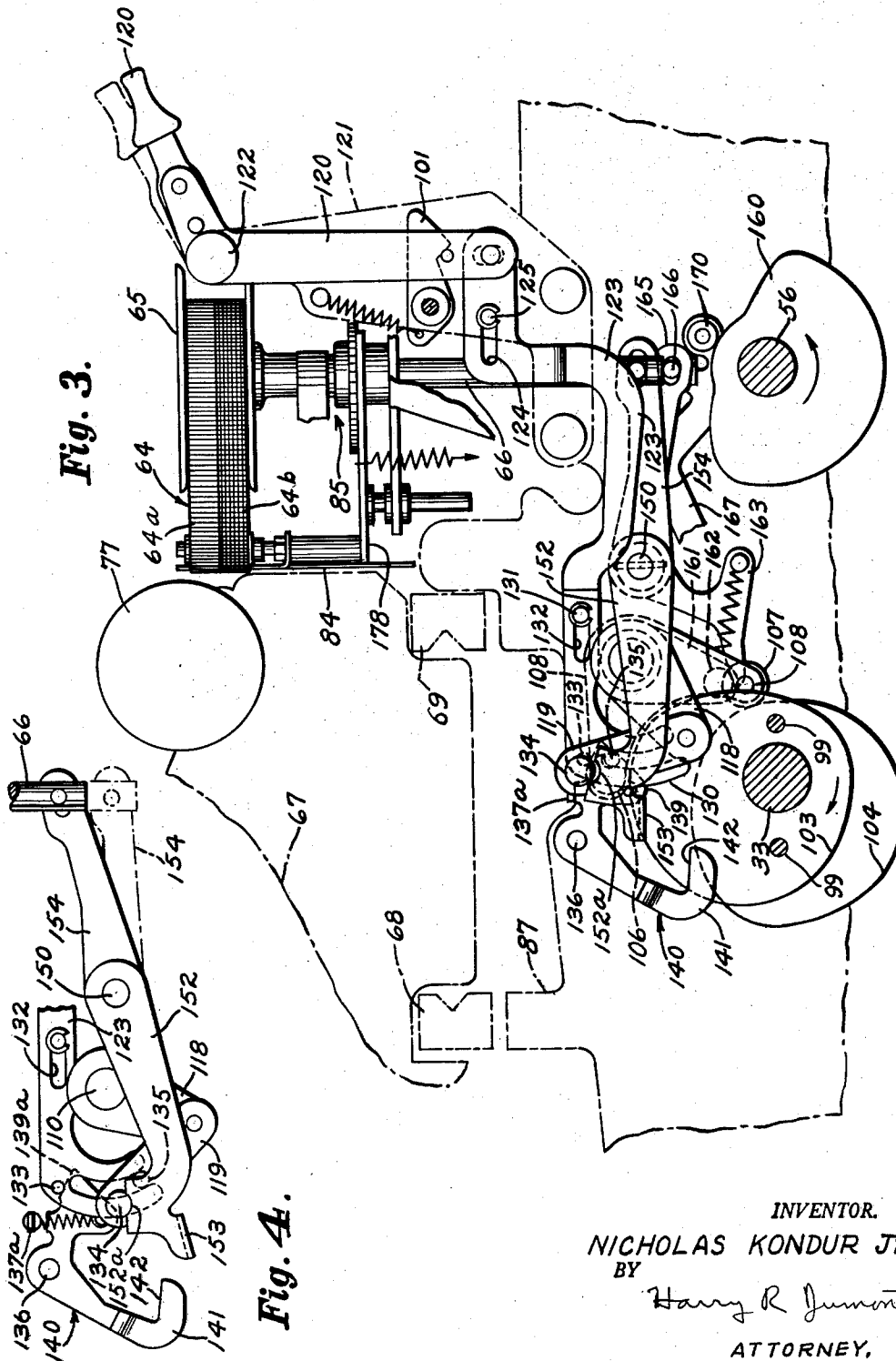
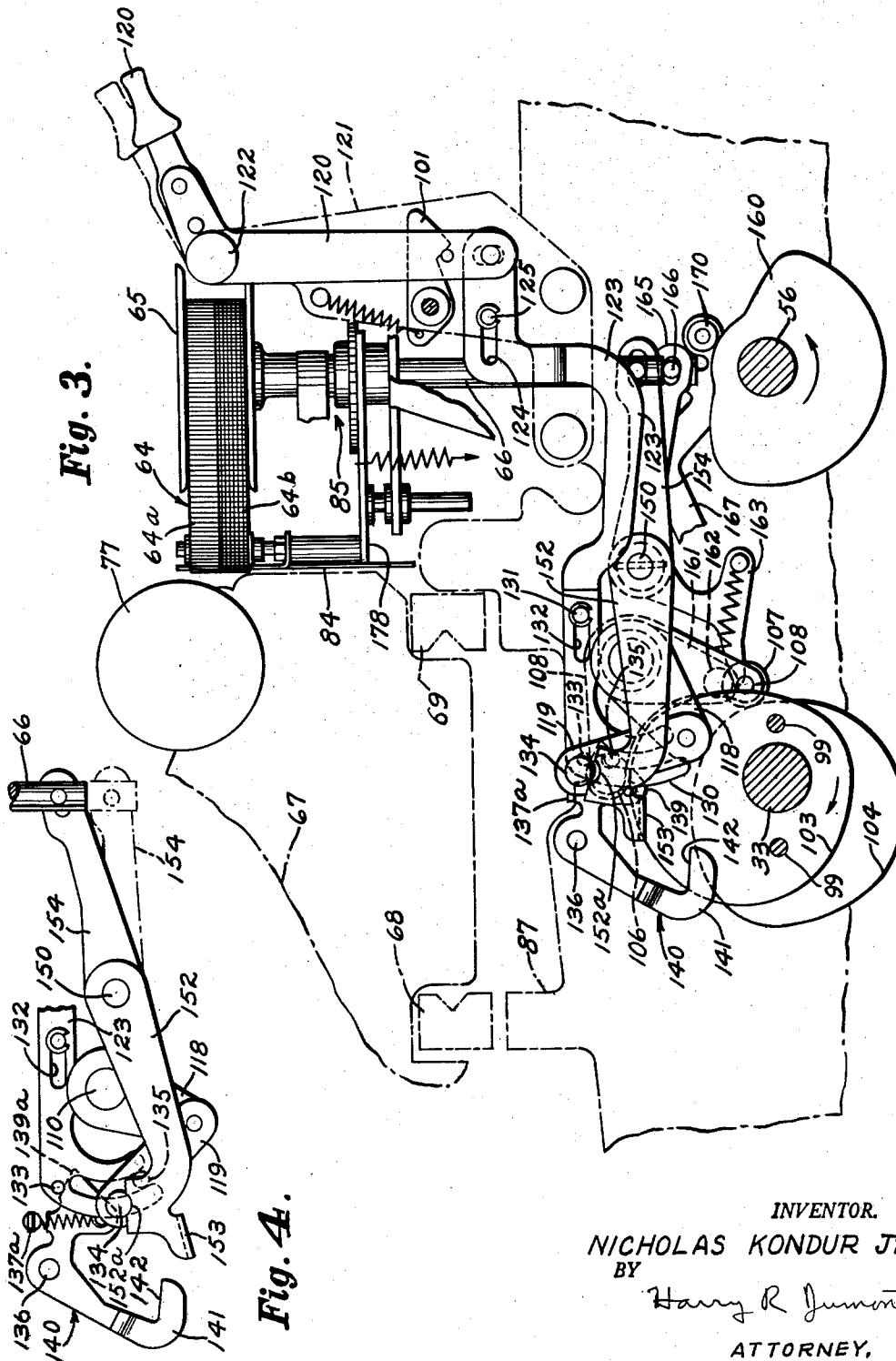
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INK-RIBBON CONTROL MECHANISM

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3 Sheets-Sheet 3



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1

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INK-RIBBON CONTROL MECHANISM

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Filed Aug. 18, 1960, Ser. No. 50,348

15 Claims. (Cl. 197—157)

This invention relates generally to a combined bookkeeping and typewriting machine and more particularly to an ink ribbon selection control mechanism therefor.

In many bookkeeping machine operations it is desirable to provide an adjunct for the bookkeeping machine in the form of a typewriter printing apparatus so that individual letters or other characters may be printed to the extent desired on the ledger or form being processed. A bichrome ink ribbon is ordinarily provided which will permit entries in black or red or in other distinguishing colors in accordance with the bookkeeping procedure employed. Since typewriter operation may occur intermittently with or between bookkeeping operations, it is desirable to provide an independent ribbon demand for both the typewriter and the bookkeeping machine.

It is an object of this invention to provide a common ribbon selection control mechanism independently actuable by a bookkeeping machine and a typewriter.

It is a further object of this invention to provide a common ribbon control mechanism for a combined typewriting and cyclically operable bookkeeping machine independently actuable to more than one color selecting position during the cycle of the bookkeeping machine.

It is an additional object of this invention to provide a common ribbon selection control mechanism for a combined typewriter and bookkeeping machine operable to be preset manually to more than one ribbon selection position during a typewriter cycle and operable to be subject thereafter to the ribbon selection control of the bookkeeping machine without alteration of the position previously set for the typewriter operation.

It is an additional object to provide a yieldable limit means for a typewriting bichrome ribbon shift operable during every cycle of operation and controlled by the ribbon selective mechanism of the typewriter.

It is still a further object to provide a ribbon shift mechanism for a typewriter operable by plural drive means to control ribbon field selection.

Further objects and advantages of the invention will become apparent from the following description and the accompanying drawings in which:

FIG. 1 is a left side elevation of the combined typewriting and bookkeeping machine with some elements of the machine broken away to more clearly reveal its mode of operation,

FIG. 2 is a perspective of the ink ribbon selection apparatus and control mechanism therefor,

FIG. 3 is a left side elevation of the ribbon selection mechanism for the typewriter; and

FIG. 4 is a view similar to FIG. 3 with parts broken away wherein a red ribbon position has been effected.

The present invention is herein described as applied to a combined typewriting and bookkeeping machine of the type disclosed in U.S. Patent 3,035,677 corresponding to U.S. application No. 825,123, filed July 6, 1959, as a continuation of application No. 609,112, filed September 11, 1956 in behalf of R. R. Henderson et al. and now aban-

2

done. A complete description of the bookkeeping machine is furnished in U.S. Patent No. 2,629,549 issued on February 24, 1953 to T. M. Butler, and the typewriter operating mechanism is disclosed in application No. 779,876 filed in behalf of W. B. Templeton et al. on December 12, 1958 now Patent No. 2,973,078. The aforementioned applications and patents are of common ownership herewith.

The bookkeeping machine may be described as a key-set, electric motor-driven, full keyboard machine with a movable paper carriage and both manual and automatic selection and control of machine functions. The automatic control means is a program panel pre-set to automatically controlled work programs and supported for reciprocal movement on the paper carriage. The typewriting apparatus is closely associated with the accounting machine as is shown by employment of a single or common drive motor, common carriage utilization, and other inter-related mechanisms.

FIG. 1 shows the keyboard of the bookkeeping machine with keys 25 and the typewriter keyboard with keys 26. A horizontal shaft 28 is journaled between a pair of sideplates of the typewriter, one of which sideplates 27 is shown in part. Shaft 28 has fixed to its outwardly projecting end the upper end of a lever 29 to which one end of a link 30 is connected. The link 30 extends rearwardly in the machine and is connected to a clutch release lever 91 cooperating with a clutch 88 mounted on shaft 33 as shown in FIG. 2 and will be described more fully in connection with FIG. 2 hereinafter.

Keyboard associated mechanism is provided for actuating a typewriter cycle which includes a lever 34 fixed to transverse shaft 28. Coupled to the free end of lever 34 is clutch release spring 35 which is anchored to side frame 27. The lower end of clutch operating lever 29 has a notch 36. An electromagnet 37 is provided to actuate the clutch 88. Electromagnet 37 is mounted forwardly of the lever 29 and the rearward end of its clapper 49 engages notch 36 to hold the lever against counter-clockwise rotation. In this manner spring 35 is restrained against actuating the clutch release lever 91 through link 30 until clapper 49 has been retracted. Spring 35 and spring 39 attached to clapper 49 cooperate to move the lever 29 and the clapper into normal holding relationship until a key depression initiates a typing cycle of operation. A shaft 40 is likewise journaled for rotation between the machine sideplates. Depression of any of the typewriter keys 26 through action of their respective key stems and associated linkage will cause a counterclockwise rocking of shaft 40 as shown in FIG. 2 of the aforementioned Templeton et al. application. Lever 42 is pinned to shaft 40 and has an upstanding arm 43 urged in a clockwise direction by spring 44 anchored to sideframe 27. A yieldable abutment member 45 is carried on lever 42 and is adapted to cooperate with a projection 46 on lever 29. The actuating switch for electromagnet 37 is mounted adjacent thereto with plunger 47 shown. Integral with the abutment member 45 is a downwardly projecting arm 48. A plate 38 is extended rearwardly from a rockable member 50 mounted above the plunger 47 on shaft 40. Responsive to the rocking movement of shaft 40, lever 42 through arm 48 will engage plate 38. Therefore, plunger 47 will be depressed, electromagnet 37 will be energized, and link 30 will be moved forwardly in the machine to engage clutch 88.

A plurality of seven coded slides 51a through 51g are horizontally arrayed and extending rearwardly in the machine with the non-print slide 51a being the outermost and only one shown in FIG. 1. It is the function of these slides to accomplish the selective positioning of the type box 63 through the type selection apparatus.

Also shown in FIG. 1 is the common drive mechanism for the bookkeeping machine and the typewriter which includes a single motor 52 with toothed pulley 53 driving a toothed belt 54. The belt 54 drives the main typewriter drive shaft 33 and the toothed pulley 55, which in turn is coupled to and drives the main drive shaft 56 of the bookkeeping machine in a manner best shown in FIG. 3 of the aforementioned Henderson et al. application.

The type selection apparatus is indicated generally by numeral 57. The operation of the type selection apparatus is controlled by means of a plurality of levers 58 each having a downwardly extending arm 59. Each of the coded slides 51a through 51g carries an upwardly extending lug 60 and is biased rearwardly in the machine by a spring 61. In accordance with the key 26 selected, one or more of the coded slides will be permitted to move rearwardly so that their individual lugs 60 will cooperate with the arms 59 of corresponding levers 58. Additional linkage members indicated at 62 accomplish the selective positioning of the type box 63 in a manner shown in the aforementioned Henderson et al. patent application.

The upper portion of the ribbon elevating mechanism is shown in part including a bichrome inking ribbon 64 mounted on one of a pair of spools 65, one of which is shown rotatably supported by shaft 66. The ribbon elevating mechanism is illustrating in an inactive position relative to platen 77.

The differentially positionable carriage 67 is mounted on rails 68 and 69 and carries thereon a control unit 70 which in turn carries a plurality of downwardly disposed control pins 71. These control pins are adapted to cooperate with opposing tappets 72 to exercise function control of the bookkeeping machine in the manner explained in the aforementioned Butler patent.

Mechanism is provided for disabling the ribbon elevating mechanism with includes the lower surface of a rack 73 which is coupled to an travels with the carriage 67 and which cooperates with a roller 74 mounted on a lever 75. The purpose of the above mechanism is to disable the printing mechanism for the typewriter until the carriage has carried the platen 77 to a position in opposition to the type box 63 for the typewriter. Similarly, the typewriter is disabled from printing during a non-print operation by linkage including lever 78 and yoke 190 coupled thereto and pinned to shaft 79. As the outermost coded slide 51a, the non-print slide, moves rearwardly, stud 80 mounted thereon will move from engagement with the lip of hooked end 81 of the yoke 190. Therefore, the lever 78 will be permitted to rock counterclockwise. Slide 76 has a projection 82 at its rearward end and a hooked portion 83 at its forward end. During the rocking of lever 78, its upper end enters into engagement with projection 82 on slide 76. Slide 76 will be moved rearwardly so that its hooked end 83 will pull the stud 111 rocking link 112 clockwise to disable the type box elevating mechanism from the drive means comprising shaft 110. The above mechanism is more fully shown and further described in connection with FIG. 2.

FIG. 2 shows the ribbon support structure which is of a rigid construction and which includes the frame 84. The ribbon feed and feed reversing mechanism indicated generally by the numeral 85 is substantially similar to that disclosed in the Butler patent and is of a type well known in the art. The frame 84 is mounted at opposite ends on plates 178 and 179. These plates are of a rigid

construction and are supported by the ribbon lift shafts 66 and 86 respectively at either side of the machine.

The major portion of the ribbon lift mechanism and the controls therefor are located upon or adjacent to three parallel spaced shaft indicated by the numerals 33, 110, and 150 which are laterally positioned in the machine and supported between machine side frames. The shaft rearmost located in the machine is the main typewriter drive shaft 33 which is continuously rotated in a clockwise direction and is journaled without and between the machine side frame 87 and auxiliary side frame 92. A spring-wound clutch 88 of a type shown in FIG. 1 of the aforementioned Templeton application and fully described therein is mounted on shaft 33. A clutch release device comprising a four armed lever 91 is pivotally mounted on stub shaft 93 which extends from auxiliary side frame 92. Lever 91 has a downwardly projecting arm 94 coupled to the rearward end of clutch releasing link 30 which is shown in its entirety in FIG. 1. Additionally, lever 91 has a downwardly and forwardly extending arm 95 carrying at its end a roller 96 and a pair of upper arms 97, which, when rocked counterclockwise, serve to engage the clutch 88 and cause a single revolution of cam carrier 100. A plurality of cams and required spacers 98 are secured to the cam carrier 100 by a pair of rods 99 which pass through aligned holes in the spacers and cams. Cam carrier 100 is adapted to cooperate with the roller 96 on arm 95 whereby the lever 91 will be restored and the clutch disengaged after one cycle of revolution.

A pair of complementary cams 103 and 104 are secured to and driven by the cam carrier 100 and are adapted to cooperate with a pair of said rollers 106 and 107 mounted on lever 108. Lever 108 is secured to a sleeve 109 rotatably mounted on the power transfer shaft 110. A cam 156 is likewise journaled on shaft 33 and secured to cam carrier 100 by shafts 99. Cam 156 is adapted to cooperate with a cam roller 157 carried by lever 158 which is pivotally supported on shaft 110 and is coupled to a link 159 shown in part. Additional linkages which operate the type selection mechanism have been omitted since they do not form a part of the present invention. These linkages are fully described in the aforementioned Henderson et al. application.

The drive means for the typewriter ribbon shift is shaft 110, which is journaled between two sideframes of which 87 is shown. Shaft 110, furthermore, is parallel to the aforementioned main typewriter drive shaft 33. It will be noted that shaft 110 derives its power from shaft 33 when cam carrier 100 on shaft 33 rotates in a counterclockwise direction to carry the cams 103 and 104 through one revolution. Lever 108 will be rotated first in a clockwise direction and then in a counterclockwise direction back to its starting point. It is the primary function of shaft 110 to receive motion from the main drive shaft 33 and transmit motion to shaft 150 which serves as the operating means for the ribbon frame.

FIGURE 2 shows a further detail of disabling mechanism for the ribbon elevating mechanism. Horizontal slide 76, which was shown in its entirety and described in connection with FIG. 1, is coupled at its hooked end 83 to a stud 111 fixed on a link 112. Link 112 is pivotally mounted on and downwardly disposed from a lever 113 which in turn is pinned to shaft 110. Also shown pivotally mounted on plate 115 is an upwardly biased arm 116 which engages stud 114 on link 112 to receive power to raise the type box 63. Power will be transmitted from the main drive shaft 33 to power transfer shaft 110 so long as the lower end of link 112 is in engagement with plate 115. Additionally type box elevating mechanism is indicated leftwardly of plate 115 on shaft 110 and identified by the numeral 117 which is fully disclosed in the aforementioned Henderson et al. application.

5

The mechanism which controls the ribbon selection for the typewriter is located proximate one side of the machine. It includes a manually settable lever 120 movable between two positions and shown in its upper or black ribbon selective position. The lever 120 is rockably mounted on stud 122 extending from vertical side plate 121 and is coupled at its lower end to a rearwardly extending slide 123. A horizontal slot 124 in slide 123 engages a stud 125 fixed on plate 121 providing a guide for longitudinal movement of the slide. An additional support for the slide is provided by a stub shaft 131. The stub shaft is fixed to sideframe 87 and extends through a second horizontal slot 132 in slide 123. Slide 123 terminates in a downwardly disposed hooked portion 130 which carries an inwardly disposed stud 133. Fixed to the end of shaft 110 is a crank member 118 as shown more clearly in FIG. 4. A coupling link 119 is pivotally connected to crank member 118. The coupling link has mounted near its upper portion an outwardly extending stud 134 and an inwardly extending stub shaft 135. Stub shaft 135 is engaged by the hooked portion 130 of slide 123 so that movement of the slide 123 in response to the setting of lever 120 will serve to position stud 134 relative to notched portion 152a of arm 152.

Mechanism for providing a yieldable limit for a black ribbon position is provided which includes lever 137. A stub shaft 136 extends on either side of sideframe 87 and provides a pivotal mounting for the lever at one end thereof. At the central portion of lever 137 is a laterally bent arm 137a which extends over sideframe 87 and is spring biased downwardly at its extremity by a spring 138. At its other end lever 137 has a stud 137b extending laterally in the opposite direction from arm 137a. The stud engages the upper surface of lever 158 pinned to shaft 110. Also journaled on stub shaft 136 but located on the opposite side of sideframe 87 from lever 137 is a lever 140. The lever 140 has a downwardly disposed portion 141 with a hooked end 142. Lever 140 has a forwardly extending arm 139 which has attached thereto spring 138. Arm 139 carries a lip portion 139a which is engageable with stud 133 mounted on slide 123. During each cycle of operation of the typewriter, lever 137 will be rotated counterclockwise by the action of lever 158 on stud 137b. This rotation of lever 137 will elevate its arm 137a whereby lever 140 will be rocked counterclockwise about stub shaft 136 to place its hooked end 142 into the path of lateral extension 153 of arm 152. Thus, lever 140 will provide a limit for the downward movement of arm 152.

The operating means for the ribbon frame is herein embodied as a third transversely extending shaft 150 which is rotatably supported in the machine at its ends. Shaft 150 has pinned thereto near one end a sleeve 151 with an arm 152 having one end rigidly fixed to the sleeve. The arm 152 extends rearwardly in the same direction as slide 123 and has a laterally extended portion 153 proximate its other end and an upwardly disposed notched portion 152a. Rigidly fixed to the sleeve 151, spaced from arm 152, and extending in an opposite direction is lever 154. Lever 154 is coupled at its end to the lower end of ribbon lift shaft 66 and adapted to raise the frame 84 with the ribbon into a print position.

The mechanism which controls the bookkeeping machine ribbon selection is located on or about the opposite end of shaft 150 from the typewriter selection mechanism. The main drive shaft 56 for the bookkeeping machine carries a cam 160 with its rotation indicated as being in a counterclockwise direction. A downwardly projecting arm 161 is pinned near the left hand end of shaft 110 and has fixed near its end a cam roller 162. A lever 163 projecting downwardly from and fixed to shaft 150 has a rearward arm 164 which is engaged by the cam roller 162. It will be noted that lever 163 has

6

an upper cam surface which receives the drive from lever 161 during the counterclockwise rotation of shaft 110. Therefore, shaft 150 may be considered to function operatively as a cam shaft. The contour of the upper curved surface of lever 163 is such that the action of roller 162 imparts first a gradually increasing torque and then a rapidly increasing torque to lever 163 to rotate the shaft 150. Spaced from lever 163 and similarly pinned to shaft 150 is a laterally extending lever 165. The lever 165 has a slot at its forward end which engages a stud 166 fixed to the base of ribbon lift shaft 86. Pivotaly mounted centrally on lever 165 is a bell crank 167. The forward arm of the bell crank has an abutment 169 formed on its upper surface and a cam roll 170 is near its end which cooperates with the cam surfaces of cam 160 and is given an upward movement thereby. On the rearward arm of bellcrank 167 is mounted a stud 171. A yoke 172 is journaled on shaft 150 and has a rearwardly extending arm 173 with a lower hooked portion 174 aligned with stud 171 on bell crank 167. Link 176 is coupled between arm 175 of yoke 172 and a slide 177, which extends forwardly in the bookkeeping machine and is adapted to be moved forwardly in response to a negative total in the bookkeeping machine crossfooter. The manner in which this is accomplished is explained fully in the Butler patent in connection with FIGS. 77 and 99 therein.

FIG. 3 shows the bi-chrome inking ribbon 64 which has a black upper half 64a and a red lower half 64b. It will readily be seen that the ribbon is movable upwardly to a black or red ribbon position relative to the platen 77 and type box by means of the upward motion of shaft 66 or 86. The bookkeeping machine main drive shaft 56, the cam shaft 150, and the main typewriter drive shaft 33 are shown in their relative positions. The manually settable lever 120 is shown in its lowered or red ribbon selective position with the slide 123 transferred rearwardly to place the stud 134 on coupling link 119 in a position above the notched portion 152a of lever 152, whereby the shaft 110 will be coupled directly to cam shaft 150 to transmit drive from crank 118. It will be appreciated that this coupling will serve to impart the additional movement required to elevate the ribbon beyond and above the black ribbon position to the red ribbon position. In addition, the stud 133 mounted on hooked portion 130 of lever 123 will engage the lip 139a of forward arm 139 of lever 140 whereby lever 140 will be restrained from counterclockwise rotation about its pivot on the end of shaft 136. This will disable the yieldable limit which is utilized only in connection with a black ribbon selection.

FIG. 4 shows the ribbon selective mechanism for the typewriter with parts in the active position wherein a red ribbon selection has been effected. The counterclockwise rotation of shaft 150 has rocked lever 154 raising shaft 66 to initiate the elevation of the ribbon. Additional movement from crank 118 through coupling 119 is conveyed through stud 134 to lever 152 through its notched portion 152a. Counterclockwise motion of lever 152 has rotated lever 154 in a counterclockwise manner to raise shaft 66 and the ribbon to place the lower or red half 64b of the inking ribbon into a print position.

Description of Operation

The bookkeeping machine ribbon selection with elevation of the ribbon to a black or red ribbon selective position is accomplished during each cycle of operation of the bookkeeping machine. With reference to FIG. 2, counterclockwise rotation of the bookkeeping machine main drive shaft 56 will rotate cam 160 whereby cam follower 170 will follow the cam contour and rotate lever 167 about its pivot 168 in a counterclockwise manner until it engages stud 166 with its abutment 169. This will cause lever 165 to rock cam shaft 150 counterclockwise and thereby elevate shaft 86 to shift the frame and lift the ribbon to a position where the black half 64a is in a print position. If the slide 177 has been moved forwardly in

the machine in response to a red ribbon demand for the bookkeeping machine, arm 175 and yoke 172 will be rocked counterclockwise about shaft 150. The hooked portion 174 will thus be moved forwardly to form a lower limit in engagement with stud 171 for the counterclockwise pivotal movement of lever 167 whereby the fulcrum is shifted from stud 168 to a stud 171. Lever 165 and shaft 86 and the frame will consequently be raised further by the action of cam 160 on roller 170 so that the lower half 64b of the ribbon will be raised to a red print position.

It is also necessary to raise the ribbon into printing position during each operation of the typewriter except when a non-print operation is indexed. As shown in FIG. 1, the main typewriter drive shaft 33 is continuously driven in a clockwise direction by the drive motor 52. With reference to FIG. 1, depression of any key 26 of the typewriter will rock shaft 40 counterclockwise. Since lever 44 is pinned to shaft 40, arm 43 coupled thereto will engage plate 38 which will be moved downwardly to engage plunger 47 whereby electromagnet 37 will be energized. Clapper 49 will be drawn downwardly from engagement with notch 36 in lever 29 whereby lever 29 can be rocked counterclockwise about shaft 28. This counterclockwise movement will be accomplished by the action of spring 35 on lever 34. As lever 29 is rocked counterclockwise, link 30 will be moved forwardly in the machine. As shown in FIG. 2, the lever 91 will thus be rocked counterclockwise about stub shaft 93 whereby upper arms 97 will be raised to release spring clutch 88 for engagement of the clutch in a manner well known to the art and cause a cycle of operation of cam carrier 100. This will impart an oscillatory movement to shaft 110 from the action of cams 103 and 104 upon cam followers 106 and 107. At approximately the time the lever 29 is actuated, its abutment 45 will engage the end portion of abutment member 45 whereby arm 43 will be pivoted to release plunger 47 and de-energize electromagnet 37. The key associated actuating mechanism will therefore be restored preparatory to another typewriter cycle.

As previously indicated, FIG. 2 shows the manually settable lever in its upper or black ribbon selective position with the slide 123 forward and stud 134 out of engagement with notched portion 152a of lever 152. Depression of a typewriter key will result in engagement of the clutch 88 and the resultant revolution of cam carrier 100 acting through cams 103 and 104 engaging the cam rollers of lever 108 will oscillate power transfer shaft 110 counterclockwise and then clockwise. Lever 161 will cam lever 163 and rotate cam shaft 150 counterclockwise whereby lever 154 will elevate the ribbon to a black position. Crank 118 will drive coupling link 119 downwardly, but since it is in its inactive position, coupling link 119 will not engage lever 152 during its downward movement.

As best shown in FIGS. 2 and 3, the red ribbon position for the typewriter is set by moving the lever 120 downwardly, positioning slide 123 rearwardly in the machine, and thereby moving stud 134 into engagement with notch 152a. Lever 120 is retained in its set position by the action of spring biased latch 101. The direct drive from crank 118 is thus transmitted through coupling link 119 to arm 152 and lever 154 to raise the ribbon to its upper or red ribbon position. It should be noted that the drive through the action of lever 161 on the cam surface of lever 163 initiates a rocking motion to rock shaft 150 which is supplemented by the drive from crank 119 to provide the additional throw of lever 154 upwardly to the red position. It will be appreciated that the cam driving from shaft 110 and lever 161 initiating the rocking of shaft 150 with the gradual acceleration characteristic thereof due to the contour of the cam surface on lever 163 is thus converted into a direct lever action through coupling link 119 and crank 118. Consequently, the initial shock which would be characteristic of immediate rotation of the shaft 150 through crank 118 and coupling link 119 is avoided.

Otherwise, stated, in the ribbon selective mechanism herein provided, two types of drive through cam means and direct lever means are advantageously combined in an operation wherein the cycle of operation of the two drives overlaps. The second or upper shift position of the ribbon is thereby achieved by enabling the operation of the second drive means through positioning of the manually settable means.

An additional feature provided is that of a yieldable limit member in the form of lever 140. By the action of cam 156 as shown in FIG. 2, the lever 158 will be rotated clockwise during each cycle of operation of the typewriter whereby stud 137b will be moved upwardly and arm 137a will rock lever 140 counterclockwise on shaft 136. In a black ribbon selective position of lever 120 and slide 123, stud 133 will be forward of engagement with lip 139a on lever 140, and the lever will be pivoted to place its hook portion 142 beneath extension 153 of lever 152 to form a yieldable limit for its pivotal movement with shaft 150. The provision of this limit is of particular importance considering that operation of the typewriter is exceedingly rapid and there is definite probability of overthrow beyond the black position. When the lever 120 is in a red selective position, the stud 133 will be rearward in the machine and in engagement with lip 139a to inhibit rotation of lever 140. This will prevent the interposition of the hook portion 142 beneath extension 153 of lever 152 and elevation of the ribbon to the red position will be permitted.

What is claimed is:

1. In a cyclically operable typewriter having a bi-chrome inking ribbon and a frame supporting said ribbon and being shiftable to two color positions, operating means coupled to said frame, drive means actuated during each cycle of operation of said typewriter operable to actuate said operating means, manipulative means movable between two positions for selecting a color position, and means mounted on said drive means for coupling said drive means to said operating means to transmit additional movement thereto, said manipulative means being operable to disable said coupling means in one color selective position and to enable said coupling means in its other color selective position.

2. In a cyclically operable typewriter having a bi-chrome inking ribbon and a frame supporting said ribbon and being shiftable to two color positions, a cam shaft coupled to said frame, drive means actuated during each printing cycle of operation of said typewriter to rotate said cam shaft by engagement therewith, means for selecting a color position and being movable between two positions, and means mounted on said drive means operable to couple said drive means to said cam shaft to transmit additional movement thereto, said selecting means being operable to disable said coupling means in one color selective position and to enable said coupling means in its other color selective position.

3. In a cyclically operable typewriter having a bi-chrome inking ribbon and a frame supporting said ribbon and being shiftable to two color positions, operating means coupled to said frame, first drive means operable to impart a movement to said operating means, manipulative means movable between two color selective positions, and second drive means operatively connected to said manipulative means and operable to impart an additional movement to said operating means in one of the color selective positions of said manipulative means.

4. In a cyclically operable typewriter having a bi-chrome inking ribbon and a frame supporting said ribbon shiftable to two color positions, operating means coupled to said frame, cam drive means operable to impart a movement to said operating means, a source of power therefor, manipulative means movable between two color selective positions, and direct drive means coupled to said source of power, said direct drive means being operable to impart an additional movement to said oper-

ating means and being coupled to said manipulative means whereby it is rendered active in one of the positions of said manipulative means.

5. In a cyclically operable typewriter having a bichrome inking ribbon and a frame supporting said ribbon shiftable to two color selective positions, means for operating said frame, yieldable limit means operable during each cycle of operation of said typewriter and cooperating with said operating means to limit the movement thereof, and multiple position means for selecting a color position, said multiple position means being operable to disable said limit means for one color selective position and to enable said limit means for the other color selective position.

6. In a cyclically operable typewriter having a bichrome inking ribbon and a frame supporting said ribbon shiftable between a lower and an upper color selective position, means for operating said frame, yieldable limit means operable during each cycle of operation of said typewriter and cooperating with said operating means to limit the movement thereof, and multiple position means for selecting a lower and an upper color position of said frame, said multiple position means being operable to enable said limit means in a lower selective position and to disable said limit means in an upper selective position.

7. In a cyclically operable typewriter having a bichrome inking ribbon and a frame supporting said ribbon shiftable to two color positions, a cam shaft coupled to said frame, drive means actuated during each cycle of operation of said typewriter to rotate said cam shaft by engagement therewith, means for selecting a color position being movable between two positions, and means mounted on said drive means operable to couple said drive means to said cam shaft to transmit additional rotational movement thereto supplementary to the initial rotation resulting from engagement of said drive means with said cam shaft, said selecting means being operable to disable said coupling means in one color selective position to enable said coupling means in its other color selective position.

8. In a cyclically operable typewriter having a bichrome inking ribbon and a frame supporting said ribbon shiftable to two color positions, a cam shaft operatively connected to said frame, drive means actuated during each cycle of operation of said typewriter and operable to rotate said cam shaft by engagement therewith, means for selecting a color position being movable between two positions, and means operable to couple said drive means to said cam shaft to transmit additional rotational movement thereto coincident with and supplementary to the initial rotation resulting from engagement of said drive means with said cam shaft, said selecting means being operable to disable said coupling means in one color selective position and to enable said coupling means in its other color selective position.

9. In a cyclically operable typewriter having a bichrome inking ribbon and a frame supporting said ribbon shiftable to two color positions, a cam shaft operatively coupled to said frame, drive means actuated during each cycle of operation of said typewriter operable to impart a torque to said cam shaft, means for selecting a color position being movable between two positions, and means operable to couple said drive means directly with said cam shaft to transmit additional torque thereto coincidently with the imparting of torque from said drive means to said cam means, said selective means being operable to disable said coupling means in one color selective position and to enable said coupling means in its other color selective position.

10. In a combined typewriter and bookkeeping machine having a common bichrome inking ribbon and a frame supporting said ribbon shiftable to two color positions, a cam shaft connected to said frame, drive means

operable to impart movement to said cam shaft, manipulative means settable between two color selective positions, a crank member controlled by said manipulative means and fixed to said drive means, said crank member being operable to connect said drive means to said cam shaft in one color selective position of said manipulative means and being held inactive in the other color selective position of said manipulative means, and means coupled to said cam shaft and being responsive to the control of said bookkeeping machine to initiate the movement of said cam shaft and operable at both color selective positions of said manipulative means.

11. In a combined typewriter and bookkeeping machine having a common bichrome inking ribbon and a frame for mounting said ribbon and shiftable to two color selective positions, operating means connected to said frame, drive means operable to impart a movement to said operating means, manipulative means settable between two color selective positions, coupling means connected to said manipulative means and operable to connect said drive means to said operating means in one color selective position of said manipulative means and to disengage said drive means from said operating means in the other color selective position of said manipulative means, and means responsive to the control of said bookkeeping machine and operable to shift said frame to a color position at both color selective positions of said manipulative means, said manipulative means retaining its setting during color selective operations controlled by said bookkeeping machine and controlling said ribbon frame operating means in accordance with its setting upon resumption of typewriter operations.

12. In a combined typewriter and bookkeeping machine having a common bichrome inking ribbon and a frame supporting said ribbon and being shiftable to two color positions, a cam shaft connected to said frame, a drive shaft operable by camming action to impart an angular movement to said cam shaft, manipulative means settable to two color selective positions, a crank member fixed to said drive shaft, said crank member being operable to connect said drive shaft to said cam shaft and being responsive to the control of said manipulative means in one color selective position and held inactive in the other color selective position of said manipulative means, and means coupled to said cam shaft and being responsive to the control of said bookkeeping machine to control the movement of said cam shaft and being operable independently of and at both color selective positions of said manipulative means.

13. In a combined typewriter and bookkeeping machine having a common bichrome inking ribbon and a frame supporting said ribbon and being shiftable to two color positions, a cam shaft connected to said frame, a drive shaft operable to impart a movement to said cam shaft, manipulative means settable between two color selective positions, a crank member fixed to said drive shaft and being operable to connect said drive shaft to said cam shaft to transmit additional movement thereto and being responsive to the control of said manipulative means, said crank member being rendered active thereby in one color selective position and held inactive in the other color selective position of said manipulative means, and means coupled to said cam shaft and being responsive to the control of said bookkeeping machine to shift said frame to a color selective position, said manipulative means being presettable during color selective operations initiated by said bookkeeping machine.

14. In a typewriter having a ribbon frame shiftable from an inactive position to a first and a second active position, drive means, cam means operable by said drive means to move said frame to said first position, second means operatively connected to said cam means and operable coincidently therewith to move said frame further to said second position, and manually settable means operable to condition said second means for operation.

15. In a typewriter having a ribbon frame shiftable from an inactive position to a first and a second active position, drive means, cam means operable by said drive means to move said frame to said first position, a crank member operatively connected to said cam means and operable coincidently therewith to move said frame further to said second position, and manually settable means operable to condition said crank member for operation.

5

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