The present invention relates to combined positioning and driving mechanism for bringing a revolving supportable member to any desired preselected one of a certain number of possible positions of rotation. During the angular positioning of the supporting member, a continuous driving connection is maintained for the operation of mechanically powered devices carried by the supporting member.

This application is a division of our copending application, Ser. No. 282,652, filed on April 16, 1952, for Paint Mixing Machines, now Patent No. 2,787,402, issued on April 2, 1957.

The positioning and driving mechanism which forms the subject matter of the present invention is illustratively disclosed herein as applied to a paint mixing machine. It will be obvious, of course, that this mechanism is readily adaptable for a wide variety of uses in apparatus other than paint mixing machines.

The paint mixing machine includes a revolving support structure which carries a plurality of storage tanks for holding differently colored pigments suspended in suitable liquid vehicles. Each storage tank has associated therewith a positive displacement pump, such as a gear pump. The revolving support structure includes a hollow shaft within which a drive shaft is disposed. The drive shaft is mechanically connected to drive all of the gear pumps in all possible positions of the supporting structure and is continuously maintained in driving connection therewith. The hollow shaft is driven by a motor which is independent of the motor which drives the pumps. Position selecting mechanism is provided for stopping the motor which is connected to the hollow shaft when a preselected reservoir has been brought to a fixed dispensing position so that its associated gear pump and dispensing valve are located above a container which is to receive a measured quantity of the pigment bearing vehicle held in the storage tank. As previously noted, the particular paint mixing machine which is hereinafter described in greater detail is merely an illustrative embodiment exemplifying a suitable environment wherein the positioning and driving mechanism of the present invention is particularly useful. For other applications, the gear pumps may be replaced by other power operated devices performing different functions.

The positioning mechanism includes a motor, a hollow shaft which is driven by the motor and which carries a supporting structure, a series of switches arranged in a circle concentric with the hollow shaft one switch being provided for each position in which the supporting structure is to be stopped, a preselectable switch having one position for each position of the supporting structure and connected to establish a control circuit for stopping the motor when a particular one of the switches in the circle of switches is actuated by a member carried by the supporting structure, a radially movable stopping arm carried by the hollow shaft, a series of stops carried by the hollow shaft, each stop corresponding to one of the preselectable positions of the supporting structure, the stopping arm being drawn into the path of travel of the stops for engagement with a particular stop when the control circuit is completed by actuation of the preselectable switch in the circle of switches, cushioning means connected to the stopping arm for retarding its travel through a limited angular displacement, and a motor stopping switch actuated by the stopping arm after it has completed its cushioned travel through the limited angular displacement at which time the supporting structure will have come to rest in the angular position selected by the preselectable switch.

Additionally, programming means are provided which include a plurality of preselectable switches and sequentially operated means for rendering each of the preselectable switches operative in succession so that the supporting structure will assume a series of positions established by the different settings of the several preselectable switches. In any of the positions which may be selected by the preselectable switches, a driving connection is continuously maintained for operation of the pumps, this connection including a shaft disposed within the hollow shaft and driven by a separate motor which is controlled independently of the positioning motor.

In addition to the programming means, limiting means are provided for individually controlling the extent of operation of the particular power operated device which is then effective in the preselected position of the supporting means. Thus, a program of preselecting the supporting means may be established together with a schedule determining the extent of operation of each power operated device which becomes effective in each of the several preselectable position of rotation of the supporting means.

In this manner a complete series of operations may be preselected so that each of the several power operated devices is brought into effective position in accordance with a program established by the preselectable switches and a separately predetermined amount of operation of each power operated device will occur while it is in its operative position.

Other features and advantages of the invention will become apparent upon reading the following specification together with the accompanying drawing forming a part hereof.

Referring to the drawing:

Fig. 1 is a perspective view, partly broken away, looking in an upward direction.

Fig. 2 is a sectional view in elevation.

Fig. 3 is a fragmentary plan view.

Fig. 4 is a bottom view.

Figs. 5 and 6 are diagrammatic views illustrating the action of a selective rotation stopping mechanism shown in Fig. 4.

Fig. 7 is a diagrammatic perspective view broken away to illustrate various elements of the complete device.

Fig. 8 is a schematic electrical circuit diagram.

Fig. 9 is a table illustrating contact operation sequence of electrically actuated counters shown in Fig. 8.

Fig. 10 shows a control panel arrangement for presetting the desired selection of different liquids and the individual quantities of each liquid.

Referring to Fig. 1, a plurality of liquid storage tanks or reservoirs 20 are shown individually secured at their inner upper edges to an upper supporting ring 21 by screws 22 which engage threaded collars 23 carried by the tanks 20. The tanks 20 are disposed in a generally circular arrangement and have flat converging sides.

The unit is provided with a support structure 26, a hollow shaft 25, a drive shaft 28, a motor 22, and a set of rollers 24. The motor 22 is connected to the hollow shaft 25 through the drive shaft 28. The support structure 26 is mounted on a base (not shown). The hollow shaft 25 is connected to the drive shaft 28 through a gear pump 30. The gear pump 30 is connected to a series of switches 31, which are used to select the desired position of the tanks 20. The switches 31 are arranged in a circle concentric with the hollow shaft 25. The driving connection between the hollow shaft 25 and the drive shaft 28 is maintained through the gear pump 30.

The unit is also provided with a preselectable switch 32, which is connected to establish a control circuit for stopping the motor 22 when a particular one of the switches in the circle of switches 31 is actuated by a member carried by the support structure 26. The stopping arm 33 is connected to the hollow shaft 25 and is provided with a series of stops 34, which are used to engage with the stops 29 of the tanks 20. The stops 29 are provided with cushioning means 35, which are connected to the stopping arm 33 for retarding its travel through a limited angular displacement. A motor stopping switch 36 is actuated by the stopping arm 33 after it has completed its cushioned travel through the limited angular displacement at which time the support structure 26 will have come to rest in the angular position selected by the preselectable switch 32.

In addition to the programming means, limiting means are provided for individually controlling the extent of operation of the particular power operated device which is then effective in the preselected position of the supporting means. Thus, a program of preselecting the supporting means may be established together with a schedule determining the extent of operation of each power operated device which becomes effective in each of the several preselectable positions of rotation of the supporting means.

In this manner a complete series of operations may be preselected so that each of the several power operated devices is brought into effective position in accordance with a program established by the preselectable switches and a separately predetermined amount of operation of each power operated device will occur while it is in its operative position.

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Fig. 10 shows a control panel arrangement for presetting the desired selection of different liquids and the individual quantities of each liquid.

Referring to Fig. 1, a plurality of liquid storage tanks or reservoirs 20 are shown individually secured at their inner upper edges to an upper supporting ring 21 by screws 22 which engage threaded collars 23 carried by the tanks 20. The tanks 20 are disposed in a generally circular arrangement and have flat converging sides. The
tanks 20 are convexly rounded at their outer end surfaces to form a smooth cylindrical periphery when mounted together as shown in Fig. 1. Their inner end surfaces are convexly rounded to conform to the curvature of supporting ring 21, and to bear against upper plate 24 of the same diameter as supporting ring 21.

Rigidly secured to upper plate 24, are a plurality of positive displacement pumps, shown by way of illustration as gear pumps 25, an individual pump being provided for each storage tank. No specific type of positive displacement pumps is shown since any type of pump is suitable for use with the present invention provided that it may be driven by a revolving shaft and that the volume of liquid pumped corresponds accurately to the number of revolutions of the driving shaft. A gear pump has been selected by way of illustration, since its characteristics meet these requirements, but its internal details have not been shown since they may be conventional in all respects.

Each gear pump 25 is supported by a supporting collar 26 secured to the under side of upper plate 24, the supporting collar including suitable bearings for the pump drive shaft 27.

The upper plate of upper plate 24 and fixedly secured to each pump drive shaft 27 is an individual pump drive gear 28, all of which mesh with a common main pump drive gear 29.

Each of the gear pumps 25 is provided with an inlet connection 30 from the bottom portion of its associated storage tank 20 and an outlet connection 31 which extends to a three-way valve 32. From valve 32 a further duct or connection 33 extends into the tank 20 to a point near its upper end, where it terminates in an outlet 34.

As shown in Figs. 1 and 7, the return duct 33 terminates in an outlet 34 which is located above the highest liquid level in each tank. In the embodiment illustrated, it is contemplated that the rate of flow of the recirculating liquid is sufficiently slow so that it will slowly ooze out of the cut-off end of duct 33 which forms the outlet 34, the outer surface of duct 33 acting as a surface for smoothly flowing the returning liquid back into the liquid in the tank without entraining air or creating air bubbles or undesirable turbulence in the liquid.

Where flow velocity is too great for the outer surface of duct 33 to act as a flowing surface, any desired known type of turbulence preventing device may be associated with the outlet 34. Outlet 34 instead of terminating above the liquid level may comprise a submerged nozzle or similar device for introducing one or more jets which create agitating currents within the liquid.

With the valve 32 in its normal position, liquid is drawn from the bottom of the tank 20 through the pipe 30 into the inlet side of gear pump 25. Gear pump 25 forces the liquid into the pump outlet connection 31 and through valve 32 into pipe 33 and outlet 34 from which the liquid drops back into the main supply contained in the storage tank 20. So long as gear pumps 25 are in operation, the liquid stored in each tank 20 is recirculated, thereby preventing the settling of any solids or the accumulation thereof at the bottom of any of the tanks 20.

Plate 24 is secured to a supporting flange 35 by bolts 36 and the upper plate 24 and flange 35 are carried by a hollow vertical drive shaft 37. Because hollow shaft 37 carries the entire weight of all of the storage tanks 20 together with their associated gear pumps 25 and valves 32, suitable thrust bearings must be provided, together with bearings to prevent lateral movement of the hollow shaft 37. These are not specifically shown, but may be any desired type and may be located in any desired positions in known manner.

Disposed within hollow shaft 37 is a pump drive shaft 38 which is fixedly connected to the main pump drive gear 29 at its upper end and at its lower end to a counting cam assembly designated generally as 39, which comprises a sheave 40 secured to the shaft 38 by a set screw 41. Sheave 40 is connected by a V-belt 42 to a further sheave 43 which is driven by a pump drive motor 44 through a speed reducing mechanism 45. Assuming hollow shaft 37 to be stationary, motor 44 will drive all of the pumps 25 through main pump gear 29 and pump drive shaft 38, since all of the individual pump gears 28 mesh with the main pump drive gear 29.

The hollow shaft 37, at its lower end, carries a peripherally grooved selector wheel 46 which is driven through a speed reducing pulley 47 by a motor 48, the driving connection to the motor 48 comprising a speed reducing mechanism and two V-belts 50 and 51, the V-belt 50 extending from motor speed reducer 49 to pulley 47 and belt 51 from pulley 47 to the periphery of the selector wheel 46.

Motor 48 thus drives hollow shaft 37, carrying with it all of the tanks 20, valves 32 and pumps 25. With pump drive shaft 38 stationary, all of the individual pump drive gears 28 will pass around the stationary main pump drive gear 29 in mesh therewith and will thus simultaneously operate their respective pumps 25 at a reduced speed suitable for recirculation of the liquids in the several storage tanks 20. By the addition to the group of tanks 20 of suitable color-coding, lettering, or the addition of indicia, this slow speed rotation of the group of tanks 20 may be utilized for a sales promotional display effect accompanying the slow rotary movement of the group of tanks.

Disposed on the under side of selector wheel 46 are a plurality of stop studs 52. A floating stop arm 53, provided with a slot 54 through which hollow shaft 37 passes freely, and is slidable retained positioned between an upper collar 55 and a lower collar 56, thus being freely radially movable inwardly and outwardly with respect to selector wheel 46 within the limits of travel imposed by the length of the slot 54. On its upper surface, floating arm 53 carries a stop-dog 57 which is selectively engageable with any one of the stop studs 52 when the arm 53 is in its radially outward position. In the inward position of arm 53 the stop studs 52 pass freely by the stop-dog 57.

Arm 53 is urged radially inwardly toward shaft 37 by a tension spring 58, one end of which is secured to a fixed bracket 59, the opposite end being secured to arm 53 at a hole 60 therein. A solenoid designated generally as 61 and comprising an operating winding 62 and a plunger 63 is shown provided with a link member 64 which extends to the floating arm 53. Upon energization of the operating winding 62, the plunger 63 is drawn radially outwardly within the solenoid 61 and link 64 thereupon draws the floating arm 53 outwardly into a position where the dog 57 is placed in the path of travel of the studs 52. One of these studs will thereupon engage the dog 57 and will force arm 53 to rotate along with the selector wheel 46. This action is retarded and damped by Launson mechanism illustrated shown as an air check 65, the air check 65 being arranged for quick return action in the usual manner.

Upon being drawn outwardly by solenoid 61, the floating arm 53 will travel along with the particular stud 52 engaged by dog 57 until it reaches its limit of travel at which point two switches 66 and 67 are actuated, the purpose of this actuation being to fully stop the power supply to the submersible motor 48.

Referring to the schematic electrical circuit diagram, Fig. 8, a three position main switch 71 is shown comprising two poles 72 and 73 which are mechanically interlinked to operate together. The main switch is shown in its "Off" position, in which the device is entirely deenergized. When the main switch 71 is advanced in a clockwise direction to its next, or "Display" position, pole 72 applies one side of the commercial power supply, designated "A.C." via a conductor 74, normally closed switch 67, and another conductor 75 to the selector wheel driving motor 48, the other side of motor 48 being connected to the other side of the commercial power supply,
represented by the conventional circuit symbol for ground.

This energizes motor 48 which drives the selector wheel 46 and thereby rotates hollow shaft 37 and the several storage tanks 20 together with the assembly of gear pumps 45. Some of the individual gear driving gears 28 are being rotated with respect to the main pump driving gear 29, which is stationary at this position of the main switch and with which they are in mesh, all of the gear pumps 25 are caused to be rotated about their axes at relatively low speed, thereby each circulating and recirculating the liquid in its associated storage tank 20. Apart from this action, the remainder of the device is not activated.

Upon again turning switch 71 further in a clockwise direction to its next, or "Dispense" position, "AC" is applied to a conductor 76 which energizes pump motor 44, thereby driving all of the pumps 25 whether or not the selector wheel and assembly is rotating, preparatory to the dispensing of the desired formulation of the several liquids. The desired formulation of different liquids stored in the tanks 28, is then, or previously preset upon three liquid or color selection dials 77, 78 and 79, and the amount of each liquid to be dispensed is likewise preset on three electrically actuated counters 80, 81 and 82 which determine the respective amounts of each liquid as selected on the color selection dials 77, 78 and 79.

If a particular total volume is desired, the setting of the several dials will be so arranged that the total number of units preset on the counters will correspond to this total volume, the total number of units being duly apportioned amongst the several colors or liquids in accordance with the desired formula which is to be dispensed.

The size of the container which is to be filled is then preset on a pole three position switch 83 comprising the three poles 84, 85 and 86. In the embodiment of the invention which is illustrated, the three positions correspond to gallons, quarts and pints, respectively, as the switch 83 is rotated in a clockwise direction.

A starting switch 87 of the locking push button type is shown provided with a releasing magnet 88, and the locking push button of this switch is now depressed to commence the dispensing operation.

Fig. 10 shows a simplified control panel arrangement. Assume for example that it is desired to produce a quart of paint of a particular shade, such as robin's egg blue. This color is to be produced by mixing of certain pigments of standard colors stored in tanks 28 with a quart of white paint in a standard container. Reference to a standard blue are required, 2 units of a standard green, and 1 unit of a standard yellow.

The operator then sets switch 83 on pole to quart position.
2,917,695

that each of the four notches of lower cam 113 will actuate the switches 110 and 111 at different time intervals, preferably equally spaced. This may be accomplished by raising cam 108 to a higher level and mounting an angularly adjustable actuating arm (not shown) on the upper surface of cam 112 which independently actuates only switch 108. This may also be accomplished by so mounting switch 108 that its position is circumferentially adjustable with respect to cam 112.

Assuming the total volume, or container capacity switch 83 to be in the "Gallons" or extreme counterclockwise position, the first passage of the single notch of upper cam 112 will first close the contacts of switch 108. A circuit is then established via a conductor 115, normally closed contacts 116 to 117 of relay 101, conductor 118, normally closed contacts 119 to 120 of relay 97, and conductor 121 to the "S" or "Start" terminal 122 of presettable counter 80. The internal connections of the three counters 89, 91 and 92 are shown only in the case of counter 92, the three counters being of identical construction.

Each counter comprises a clutch magnet 123 which becomes energized by the application of "AC" to the "S" terminal of the counter. Energization of the clutch magnet 123 conditions the counter to begin a count, and deenergization releases the clutch, resetting the counter to its initial or zero condition.

Energization of the clutch magnet 123 causes closure of a pair of locking contacts 124 which maintain the clutch magnet 123 in an energized condition from "AC" at conductor 89, after the original energizing circuit has been broken. Unless clutch magnet 123 is energized, the application of counting impulses to the counter will be of no significance since the counting mechanism will not operate.

With clutch magnet 123 energized, the counter 80 is prepared to start counting to its preset count, appropriately adjustable mechanism being provided for pre-setting the total number of impulses to be counted. The arrangement is generally similar to that shown in U.S. Patent No. 2,175,865, issued October 10, 1939, to C. L. Anderson, except that the counter used in the present invention operates with a ratchet type stepping magnet instead of a timing motor as shown in the Anderson patent.

With clutch magnet 123 energized, the counter is prepared to operate and to close contacts 125 between terminals L2 and 2. Terminal L2 was energized by connection to "AC" via conductor 89 when the start button 87 was pressed.

Switch 159 is then closed applying the initial impulse or zero count, which causes contacts 125 to close, establishing an energizing circuit via a conductor 126 to a valve actuating solenoid 127 having an operating winding 128 and a plunger 129. The plunger 129 is connected to an outwardly projecting actuating member 130 which is forced outwardly from the solenoid 127 as its magnetic plunger 129 is drawn inwardly upon energization of its operating winding 128.

The valve actuating solenoid 127 is fixedly secured to the upper end of a supporting column comprising a hollow cylindrical member 131 and four stay bolts 132 which clamp the supporting column against a base plate 133. The actuating member 130 is held between upper and lower column end plates 134, the valve actuating solenoid 127 being mounted on the upper column end plate 134 in operative relationship to any valve 32 in dispensing position. The upper column end plate 134 may conveniently be provided with a bearing 135 for the journaling of the hollow shaft 37.

At the time when the selector wheel 46 came to rest, the valve 32 of the selected tank 20 was accurately posi- tioned in close proximity and in juxtaposition to the actuating member 130 of the valve solenoid 127. Energization of the valve actuating solenoid 127, therefore, will cause the fluid to pass from the valve operating plunger 136, thereby terminating recirculation of liquid and permitting the liquid to flow out through nozzle 146. When solenoid 127 is deenergized, the valve position changes thereby terminating discharge through nozzle 146 and reinstituting recirculation.

While the solenoid 127 is energized and after the predetermined preset count of counter 80 has been reached as a result of the required number of impulses being applied to its counting magnet 152 via conductor 153 with its clutch magnet 123 in a continuously energized condition, the last impulse opens its contacts 125 which were closed during the count, and simultaneously causes closure of its contacts 154 thereby establishing a circuit between its terminals L2 and 1. The contacts 125 remain open, deenergizing the valve solenoid 32 and terminating the dispensing action. When contacts 154 close, this last contact condition will remain established until clutch magnet 123 is deenergized, this deenergization thereupon preparing the counter for a new cycle.

Closure of contacts 154 of counter 80 energizes relay 97. This transfers conductor 98, which controls selector wheel solenoid 61, from (normally closed) contact 95 to (normally open) contact 156 of relay 97 and hence the solenoid 61 from control by the first color selector switch 77 to control by the second color selector switch 78.

The counter clutch magnet control lead 118 will be transferred from (normally closed) contact 120 to (normally open) contact 156 of relay 97, thus preparing to count up to the preset count established on the record counter 81 for the second liquid, or color selection, by actuating and locking in its clutch magnet 123.

If a different color has been selected on the second switch 78, solenoid 61 will be deenergized, tension spring 88 will draw floating arm 53 radially inwardly disengaging dog 87 from stop stud 52. Floating arm 53 will then restore quickly to its normal position since air check 65 provides for quick return action, and switch contacts 66 will open. Simultaneously, contacts 67 will close starting motor 48 which drives selector wheel 46 and the selector wheel 46 will again start in motion.

It will come to rest at the selected color preset on the second color selector switch 78 as described above for the first color selector switch 77 which is now out of circuit.

The next, or initial impulse will close the contacts 154 of the second counter the first counter being out of circuit, and these will energize the valve solenoid 127 via conductor 126 which is connected to the terminal 157, this terminal also being designated "2."

At the completion of the preset count on the second impulse counter 81, its contacts 154 will close and energize relay 101 via conductor 158. This transfers the selector wheel control conductor 102 from (normally closed) contact 99 of relay 101 to (its normally open) contact 159, thus starting the color selected action described above, but under control of the third selector switch.

The third impulse counter 82 will now determine the number of impulses, and upon closure of its contacts 154 at the completion of the count, reset magnet 88 of the starting push button 87 is energized via conductor 160, unlocking the previously described circuits except the motors 44 and 48 which remain energized ready for the next dispensing action. If no further dispensing is required, the main switch 71 may then be turned back to its intermediate position or "Display" position where only motor 48 is in operation rotating the group of liquid reservoirs for display purposes.

It should be noted that all of the clutch magnets 123
were locked in through their own contacts 124 which are connected to "AC" via conductor 89. Deenergization of conductor 89 therefore simultaneously rese's all three counters, so that they are prepared to count again in sequence as described above. Although during each counting cycle some of the contacts 125 of all three counters are simultaneously energized by a common conductor 153, no counting action will take place in any counter until its clutch magnet 123 has first been locked in. As has been described this is controlled sequentially by means of relays 97 and 107.

This box has been described with the container size or total volume switch 84 in its first, or "Gallons" position. When turned clockwise to the next, or "Quarts" position, the switch contacts 111 which are actuated by lower cam 113 are substituted for contacts 109 which are actuated by the upper cam 112, to control the counting magnets 125 of the counters 80, 81 and 82. It should be noted that the lower cam 113 is provided with four notches, whereas the upper cam 112 has but a single notch. The counting magnets will therefore be actuated four times for each revolution of the pump drive shaft 38 instead of once as in the case of the gallons cam actuated switch 109. The volume of liquid displaced by any of the pumps 25 will therefore be one quarter as much for the "Quarts" position of the switch 83, as for the "Gallons" position.

When the container capacity switch 83 is operated to the position of a "Quarts" position, the counting magnets 125 are energized alternately by switch contacts 110 and 111, each contact being actuated four times producing eight impulses during each revolution of pump shaft 38 by the lower cam 113, thus reducing the total pump displacement required to reach any preset count to one-eighth the displacement required for gallons switch 109.

It should also be noted that the dispensing of liquid will not commence, except at a predetermined position of the counting cam assembly 39 with respect to the counting switches 109, 110 and 111. The position of the single notch in upper cam 112 is the same as that of one of the four notches in lower cam 113. This assures that the initial contact in the clutch magnet will not occur until immediately prior to the initial impulse to any counter, irrespective of the position of the container capacity switch 83. This is because no counter can be conditioned to accept the initial impulse until the clutch control switch 108 has first locked in the clutch magnet of the particular counter being used. This is immediately followed by the zero impulse from either gallons counting switch 109 or quarts counting switch 111, pistols counting switch 110 being open at this time.

Unless this precaution is taken the valve 32 which controls the dispensing action would not necessarily be actuated at the same point with respect to the position of counting cam assembly 39, and this would result in a random effect with respect to the beginning of the dispensing action relative to the counting action. This random effect would impair the desired accuracy of volumetric measurement.

We have shown what we believe to be the best embodiments of our invention. We do not wish, however, to be confined to the embodiments shown, but what we desire to secure by Letters Patent is the invention as defined in the appended claims.

We claim:
1. A position selecting mechanism of the class described, comprising in combination, a reversible supporting member which is to be positioned in any selected one of a predetermined number of angularly spaced positions of rotation, a motor for driving said supporting member, a first control circuit for controlling the operation of said motor, a series of first stop members each corresponding to one of said positions, said stop members being carried by said supporting member and arranged in a circle concentric with the rotational axis of said supporting member, a second stop member which is displaceable into the path of travel of said first stop members for engagement therewith, a series of stationary control switches arranged in a circle concentric with said rotational axis, an actuating member carried by said supporting members for successively actuating each of said control switches during the course of a complete revolution of said supporting means, said control switches being equal in number to said first stop members and each corresponding to one of said positions of said supporting member, a second control circuit, preselectable selecting switch means for successively actuating each of said control switches during the course of a complete revolution of said supporting means, said control switch means being connected to all of said control switches for including a preselected one of said control switches corresponding to said position in said second control circuit, said electromagnetic means connected for response to said second control circuit, said electromagnetic means being energized when the preselected one of said control switches is actuated by said actuating member, said electromagnetic means being mechanically connected to said second stop member to cause movement thereof to engage a predetermined one of said first stop members to the position of said second stop member, and said preselectable selecting switch means and said control switch means being energized when operation of said second stop member after engagement with said first stop member, said last-named switching means being included in said first control circuit for stopping operation of said motor when said supporting means has reached the position of rotation selected by said preselectable switch means.

2. A position selecting mechanism according to claim 1, further comprising cushioning means connected to said second stop member for decelerating said supporting member during engagement between said first and second stop members.

3. A position selecting mechanism according to claim 2 wherein said cushioning means is a fluid controlled check cylinder.

4. A position selecting mechanism according to claim 2 wherein said second stop member is an arm which is radially movable with respect to said rotational axis, said cushioning means being connected to impede angular displacement of said arm.

5. A position selecting mechanism for positioning a rotatable member in a fixed predetermined angular position, comprising: controllable means for driving said rotatable member; a first stop member carried by said rotatable member; a second stop member having a limited range of movement and movable to engage the first stop member and move therewith; and control means responsive to said last named movement disposed to stop operation of said driving means; said second stop member comprising an arm slideable outwardly with respect to said rotatable member, a portion of said arm being selectively engageable with said first stop member.

6. A position selecting mechanism according to claim 5, further comprising check means connected to said arm for retarding and cushioning its movement during engagement thereof with said first stop member.

7. A position selecting mechanism for positioning a rotatable member in any one of a plurality of fixed predetermined angular positions, comprising: controllable driving means for revolving said rotatable member; position selecting means operable to select a particular one of said positions; a plurality of first stop members, there being one of such members for each of said positions; a second stop member having a limited range of movement and movable to engage any of said first stop members; a first control means responsive to said position selecting means and disposed to cause relative movement between the first stop member corresponding to the particular position selected by the position selecting means and the second stop member, thereby producing engagement therebetween; and a second control means responsive to said
engagement and disposed to stop operation of said driving means, said first stop members being carried by and movable with the rotatable member, and said second stop member being relatively stationary and movable therewith only after engagement with any of the first stop members; said second stop member being an arm having check means connected thereto for retarding and cushioning its movement during engagement thereof with any of said first stop means.