

Oct. 23, 1956

C. E. PARKER

2,767,788

VENEER CLIPPER

Filed Dec. 19, 1951

4 Sheets-Sheet 2

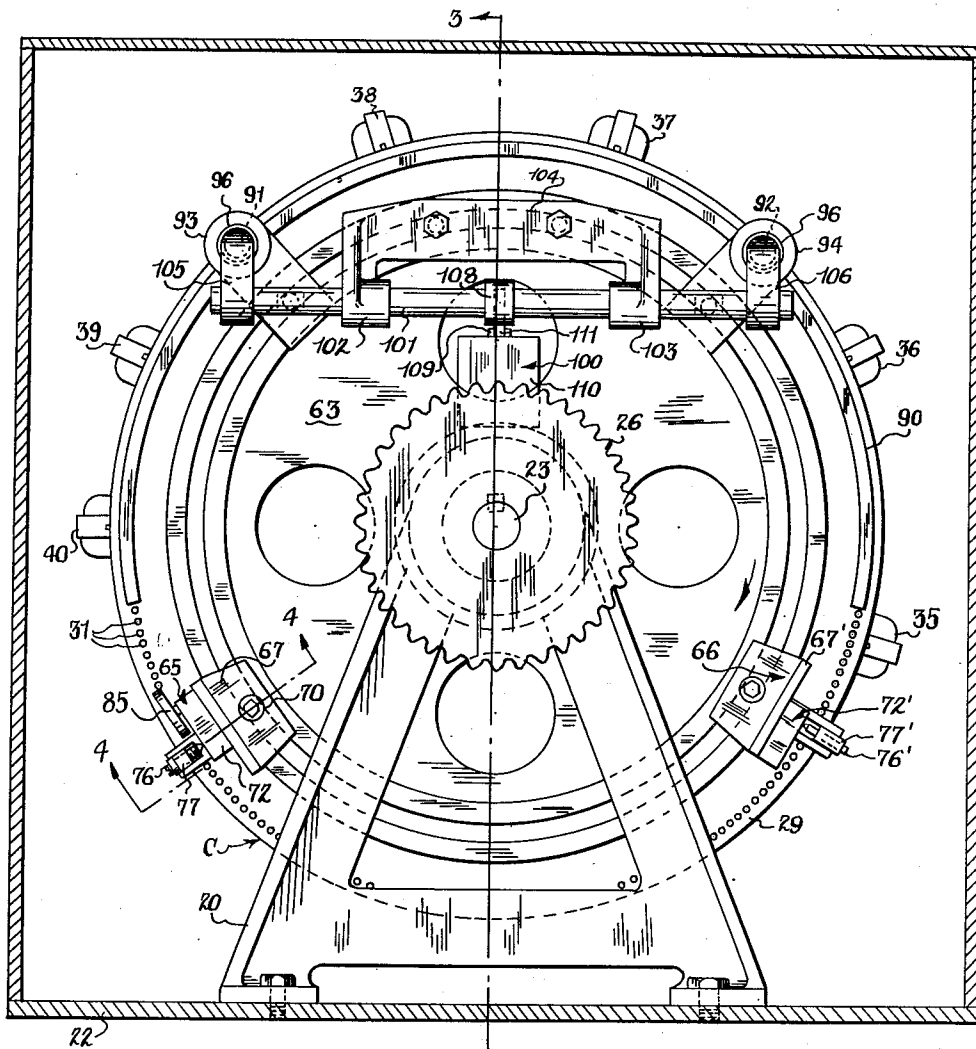


FIG. 2

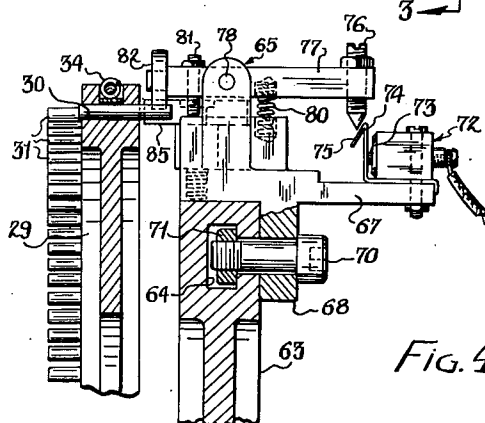


FIG. 4

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4 Sheets-Sheet 3

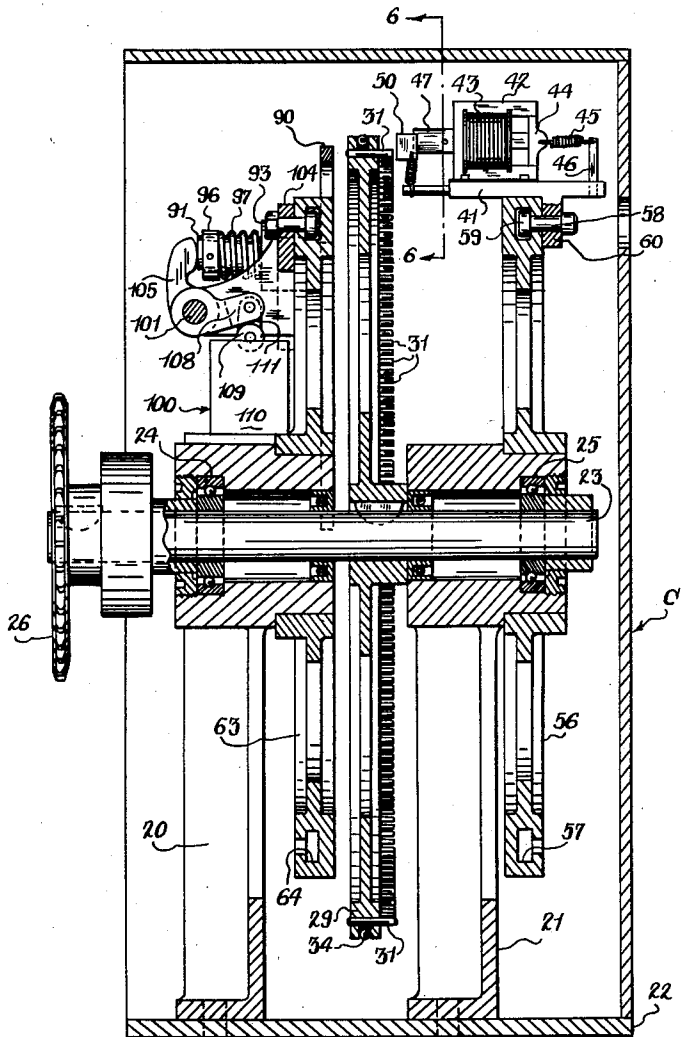


FIG. 3

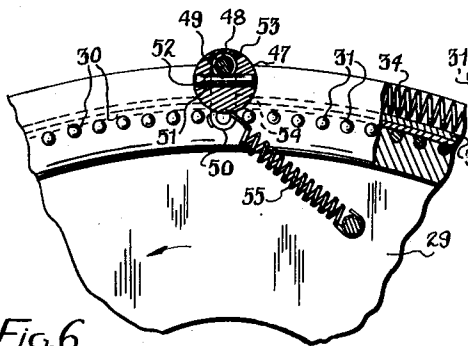
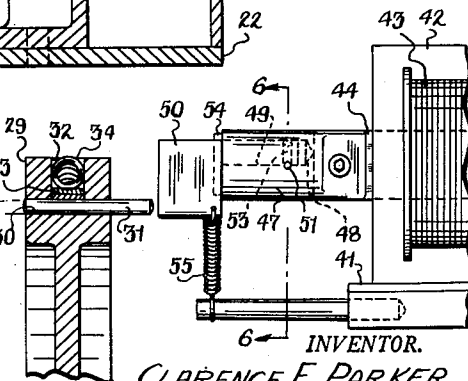


FIG. 6



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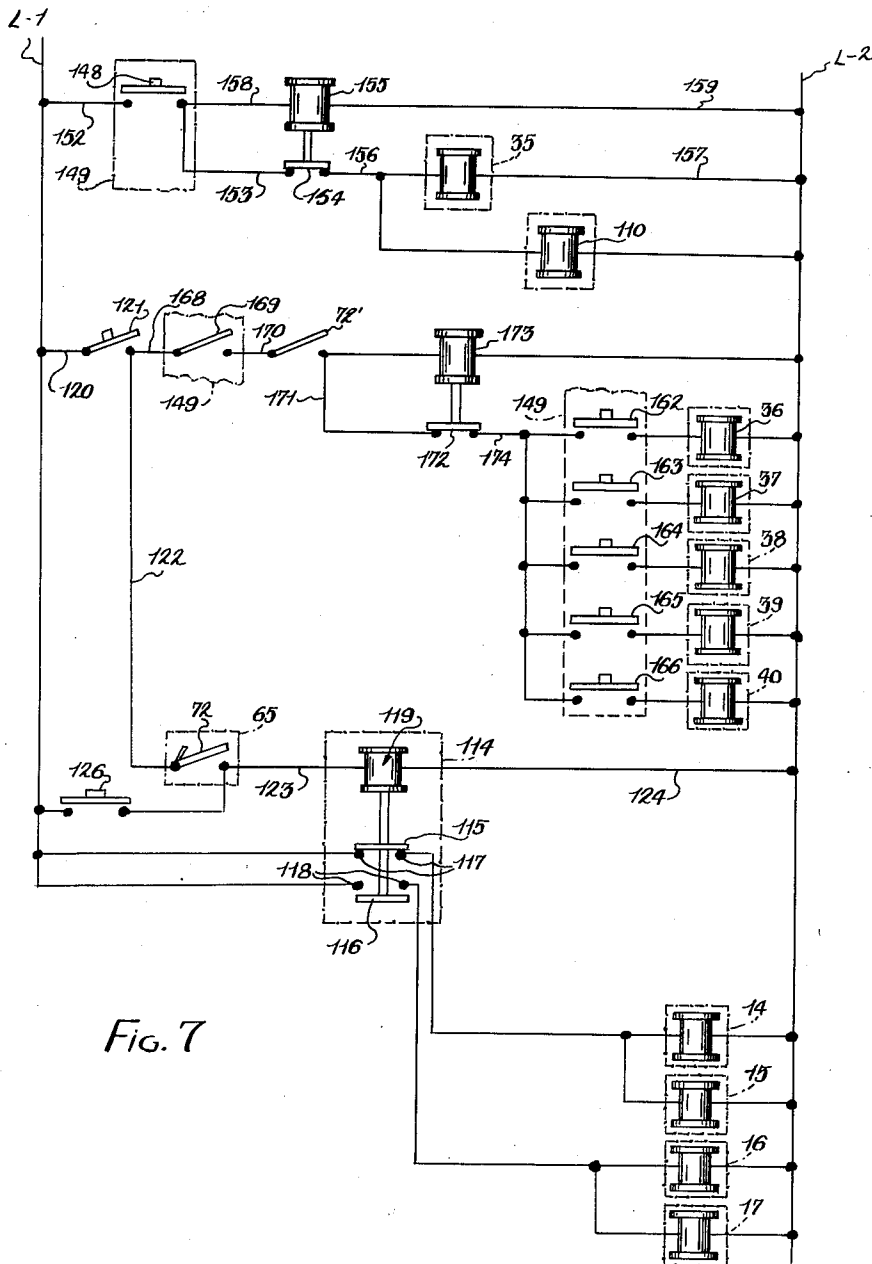


FIG. 7

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VENEER CLIPPER

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Application December 19, 1951, Serial No. 262,405

16 Claims. (Cl. 164—48)

The present invention relates to a power operated clipper, more particularly a veneer clipper and to mechanism for controlling the operation thereof.

In manufacturing wood veneer it is common practice to shave a continuous strip of veneer from a rotating log and direct the veneer onto a conveyor which carries it beneath a power operated clipper comprising a knife extending transversely of the veneer and which is periodically rapidly operated to clip the veneer into convenient lengths for further handling or processing.

The principal object of the invention is the provision of a novel and improved veneer clipper having control mechanisms for the knife thereof comprising means which may be set by the clipper operator so that the clipper will automatically cut preselected lengths of the veneer and manually operable means whereby the operator may selectively operate the clipper irrespective of the automatic setting so that defective portions of the veneer may be cut from the veneer strip and wherein the operator works with reference to a "sight line" extending transversely of the veneer some distance in advance of the clipper knife rather than with reference to the knife.

Another object of the invention is the provision of a new and improved control mechanism of the character referred to, which mechanism includes a control device movable in an endless path adjacent to a knife operating control member and in synchronism with the veneer conveyor and which control device carries a plurality of knife control member actuators that are normally inactive but which may be individually activated during movement of the control device by a plurality of actuator setting devices to cause certain of the actuators to be moved into position to actuate the knife operating controlling member as they move thereby, one of the setting devices being controlled manually and one or more of the other setting devices being controlled by manually preset mechanism to be automatically actuated by a preceding activated member, and means operative in synchronism with actuation of the manually controlled setting device to restore actuator members which have been activated by the automatically controlled device or devices to an inactive position prior to moving into operative relationship with the control member.

Another object of the invention is the provision of a new and improved control mechanism for a veneer clipper of the character referred to having a plurality of longitudinally movable pins carried in an endless path by an element moved in synchronism with the conveyor of the veneer clipper and movable axially and in a direction transversely of the endless path, and a device to move the individual pins axially while the pins are moved in the endless path comprising a member movable in a direction axially of the pins and pivotally supporting a pusher element on an axis at one side of the endless path and parallel with the axes of the pins, the pusher element adapted to be moved by said member and engage the ends of individual pins to move the latter axially

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and being swingable on the axis of its support to permit passage of succeeding unset pins thereby.

The invention resides in novel constructions and arrangements of parts and other objects and advantages of the invention will be apparent to those skilled in the art to which it relates from the following description of a preferred form of the invention described with reference to the accompanying drawing in which

Fig. 1 is a plan view of a veneer clipper embodying the present invention;

Fig. 2 is an elevational view of the control mechanism with a side of the housing therefor removed;

Fig. 3 is a sectional view of the control mechanism taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view taken substantially on line 4—4 of Fig. 2 but on a larger scale;

Fig. 5 is an enlarged fragmentary sectional view of a portion of Fig. 3 showing the pin setting mechanism;

Fig. 6 is a fragmentary sectional view taken on line 6—6 of Fig. 3 but on a larger scale, and

Fig. 7 is a wiring diagram of the control mechanism for the clipper knife operating mechanism.

While the invention may be embodied in any suitable type of veneer clipper, for purposes of illustration it is here shown as embodied in a veneer clipper mechanism similar to that disclosed in Haumann Patent No. 2,583,051 and comprises an endless conveyor 10 which receives veneer shaved from a log, not shown, at the right hand end thereof and moves the veneer beneath a knife 11 which is reciprocated through clipping strokes by a power mechanism indicated generally at 12. The mechanism 12 includes a pneumatically operated piston which operates a toggle linkage and gear and rack mechanism to reciprocate the knife to produce a clipping operation when the piston is moved in either direction through one complete stroke. The details of the knife operating mechanism are not here shown, since it is described in detail in the aforementioned patent. Suffice to say, the piston is controlled by solenoid-actuated valve mechanisms 14, 15, 16 and 17. When the solenoid valves 14 and 15 are energized, the piston is moved through a stroke in one direction and when solenoid valves 16 and 17 are energized the piston moves through a stroke in the opposite direction.

The solenoid valves 14—17 are controlled by a control mechanism designated generally as C. In the clipper shown, the mechanism C is located adjacent to the conveyor 10, although it could be located in any other suitable position. The control mechanism comprises a pair of upright supporting members 20 and 21 which are attached to the bottom wall of a suitable housing 22 and which have hub formations at the top thereof in which a shaft 23 is journaled by suitable antifriction bearings 24 and 25 located in the hubs. The shaft 23 is rotated in synchronism with the movement of the conveyor 10 and is driven by a sprocket 26 attached to one end thereof, which sprocket is driven by a chain 27 connected with a rotating sprocket 28 of the conveyor mechanism. In the form shown, the shaft 23 is rotated clockwise as viewed in Fig. 2.

A control member or disk wheel 29 is attached to the intermediate portion of shaft 23 and the outer rim portion of the wheel has a plurality of uniformly spaced cylindrical openings or bores 30 therethrough in which a plurality of conditionable control elements or pins 31 are slidably carried. As seen in the drawings, the length of the pins 31 is somewhat greater than the thickness of the rim portion of the wheel 29 so that the pins project a substantial distance from one side or the other of the wheel. Preferably the wheel has a circumferential groove 32 therein which intersects the openings 30 and

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a suitable friction band 33 is disposed in the groove which band encircles the wheel and engages the intermediate portions of the pins 31. A ring spring 34 encircles the friction band and tends to contract the band against the pins and frictionally hold the latter in their respective openings 30 in whichever position they may occupy as explained hereinafter. It will be seen that the wheel 29 carries the pins 31 in an endless path and at a rate having a definite relationship to the rate of movement of the veneer on the conveyor.

In its preferred form the radius about which the pins 31 are carried is such that the pins move at half the speed of the veneer on the conveyor. It will be understood, however, that this ratio of speed of the pins to the veneer could be different from that described, if desired.

The pins 31 are adapted to be individually moved in their respective openings 30 from an "inactive" or "inoperative" position, shown in full lines in Fig. 5, to a "conditioned" or "activated" position, shown in broken lines in Fig. 5, by any one of a plurality of electroresponsive conditioning or pin-setting devices 35, 36, 37, 38, 39 and 40, which devices in the illustrated embodiment are electroresponsive and magnetically operated and each comprises a supporting bracket 41 to which a frame 42 is attached and which frame has a solenoid 43 thereon and an armature 44 which moves to the left, as viewed in Fig. 3, when the solenoid is energized. The armature is normally maintained in the position shown by a coil spring 45, one end of which is attached to the armature and the opposite end of which is attached to a peg 46 on the bracket 41. The armature 44 has a rod 47 attached thereto, the outer end portion of which rod has a bore 48 forming a journal for a bearing shank 49 projecting from the end of a flat pusher member 50. The shank 49 is retained in the bore 48 by a pin 51 fitted in a bore 52 through the rod 47 and intersecting the lower part of bore 48 and which pin lies in a circumferential groove 53 about the shank. The pusher member 50 is normally urged about its bearing shank 49 to a shoulder 54 on the end of the rod 47 by a spring 55, and the outer end portion thereof below the axis of the bearing shank is adapted to contact the ends of the individual pins 31 when the armature 44 is moved to the left by the solenoid 43 and move the pins to their "conditioned" positions.

The width of pusher 50 is slightly greater than the space between the pins 31 so that at least one pin will be engaged by the pusher. It will be noted that the bearing shank 49 is to one side of the pins 31 so that in the event one of the pins 31 is moved to its "conditioned" position by the pusher member 50 and a next succeeding pin 31 strikes the side of the pusher member before the member is withdrawn, the pusher member merely rotates on its bearing shank and is moved to one side by the succeeding pin. By this arrangement, jamming or other interference with the operation of the pin setting devices is avoided.

The support brackets 41 of the pin setting devices are adjustably attached to a stationary ring 56 which is fixed to the hub portion of the bracket 21. The ring 56 has an undercut groove 57 which opens in one face thereof and which groove receives bolts 58 each having a nut 59 thereon located in the undercut portion of the groove. The bolts 58 extend through a flange 60 on the brackets 41 and clamp the flanges to the ring 56 when the bolts are threaded into the respective nuts. It will be seen that by this arrangement the setting devices 35, 36, 37, 38, 39 and 40 can be located at various angular positions about the ring 56. The ring 56 is concentric with the wheel 29 so that the actuating members 50 are always in alignment with the pins 31 as shown in Figs. 3, 5 and 6.

A second ring 63 which may be similar in construction to the ring 56, having an undercut groove 64 therein, is fixed to the hub portion of the bracket 20. Two switching devices 65 and 66 are carried by the ring 63 and since the switching devices are preferably identical, to avoid

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unnecessary repetition, only the switching device 65 is described and like parts of the device 66 are indicated by the same reference characters bearing a prime.

The device 65 comprises a bracket 67 having a flange 68 which receives a bolt 70 therethrough. The bolt projects into the groove 64 and has a nut 71 threaded thereon and located within the groove so that the bolt clamps the flange 68 to the ring 63 when the bolt is threaded into the nut. The bracket 67 has a normally open switch mechanism 72 carried thereon, which may be of any suitable construction such as the well known microswitch. The switch includes an actuator button 73 which is normally urged outwardly and which is adapted to be pressed inwardly by a spring member 74. The spring member 74 has a reverse bend therein to provide a sloping surface 75, which surface is adapted to be engaged by the conical end of a screw 76 carried in a beam 77 which is pivoted to the bracket 68 by a pin 78. The beam 77 is normally urged counterclockwise, as viewed in Fig. 4, by a compression spring 80 and against a stop comprising a screw 81 threaded through the beam and engaging a part of the bracket 67. The end of the beam 77 opposite that end carrying screw 76 projects adjacent to the wheel 29 and has a roller 82 thereon, the lower periphery of which is adapted to be engaged by pins 31 which have been moved to the left, as viewed in Fig. 5, by the pin setting devices. This arrangement is clearly shown in Fig. 4 wherein a set or activated pin 31 is about to engage the roller 82 and tilt the beam as the pin moves thereby. When the set pins 31 engage the roller 82, the beam 77 is tipped clockwise, causing the conical end of the screw 76 to be lowered and urge the spring 74 to the right and press the switch button 73, causing the switch 72 to close its contacts and complete an electrical circuit to actuate the clipper knife 11, as described more fully hereinafter.

As previously mentioned, the switching device 66 is similar to the device 65 just described and the normally open switching mechanism thereof corresponding to the mechanism 72 is indicated by reference character 72'.

Pins 31 which have been set or activated and which have actuated the switch 72 are returned to their inactive or non-operative positions as seen in Fig. 3 by a roller 85 rotatably supported on the bracket 67 of the switching device 65. The periphery of the roller 85 presses projecting ends of the pins 31 substantially flush with the face of the wheel 29 so that the pins are moved from the position of the uppermost pin shown in Fig. 4 to the left and to the position shown by the uppermost pin in Fig. 5. As explained previously, the band 33 frictionally retains the pins in the positions to which they are moved by the setting devices or the roller 85.

The pins 31 set by any of the pin setting devices 36, 37, 38, 39 or 40 and which have not yet reached pin setting device 35 may be moved to their inoperative positions by a substantially semicircular bar 90, the arc of which has a radius approximately that of the circle in which the pins 31 are arranged and which bar is supported in registration with the pins 31 intermediate the roller 85 and the pin setting device 35 so that the bar registers with any of the pins 31 which may have been set or activated by any of the pin setting devices 36, 37, 38, 39 or 40 before such pins move to the switching device 66. The bar 90 has two plungers 91 and 92 secured thereto which project through bushing members 93 and 94, respectively, attached to the ring 63 similar to the manner in which the switching devices 65, 66 are attached to the rings and the plungers and bushing members support the bar for movement toward and from wheel 29. The plungers 91 and 92 each has a collar 96 attached to the outer end thereof and a compression spring 97 is interposed between the collar and the bushing to normally urge the plunger and consequently the bar 90 to the left or from the wheel 29, as viewed in Fig. 3.

The pin return bar 90 is adapted to be moved to the

right or toward the adjacent face of wheel 29 and return any of the pins 31 which may have been moved to their switch actuating positions by any of the devices 36, 37, 38, 39 or 40 by an electrically-operated mechanism 100 actuated simultaneously with the actuation of the manually controlled pin setting device 35, as is fully described hereinafter. The mechanism 100 comprises a crankshaft 101 rotatably journaled in bushings 102 and 103 formed on a bracket 104 attached to the ring 63 in a manner similar to that by which the switching devices 65, 66 are attached to the ring. The shaft 101 has rocker arms 105 and 106 which engages the outer ends of the plungers 91 and 92, respectively. The shaft 101 has a crank arm 108 fixed to the central portion thereof and the outer end of which is attached to an armature 109 of a magnetic solenoid 110 by a link 111. When the solenoid 110 is energized, the armature 109 rocks the shaft 101 through the arm 108 and causes the rocker arms 105 and 106 to press the plungers 91 and 92 and thereby move the bar 90 against any of the pins 31 which may have been set by the setting devices 36-40 and to project toward the bar 90 from the wheel 29.

Alternatively, the bar 90 could be actuated to return the pins 31 to their inoperative positions by a pair of solenoids attached to the ring 63 in a manner similar to that by which the switching devices 65, 66 are attached to the ring and having the armatures thereof connected directly to the plungers 91 and 92. In that event, the shaft 101 and solenoid 110 could be omitted, and the solenoids would be connected in parallel circuit with respect to one another and controlled by the same control devices employed to control solenoid 110 and described hereinafter.

As mentioned previously, the clipper knife 11 is controlled by power mechanism which includes a pneumatically-operated piston, the reciprocation of which is controlled by two pairs of solenoid valves 14, 15 and 16, 17 and the knife is reciprocated each time switch 72 of the switching device 65 is closed by a pin 31 on the wheel 29 as described previously. Since the knife is reciprocated to clip the veneer by a single stroke of the piston, the pairs of solenoid valves 14, 15 and 16, 17 are controlled to be alternately energized by successive closures of the pin-operated control switch 72. Accordingly, the solenoids of each pair of valves are in parallel circuits as seen in Fig. 7, and the pairs are in parallel circuits which extend between power lines L1 and L2 connected to a suitable power supply, and are controlled by a relay mechanism 114 which has movable contacts 115, 116 which cooperate with fixed contacts 117, 118 respectively. The contacts 115, 116 are actuated by a solenoid mechanism 119 and are arranged so that when contact 115 closes on contacts 117, contact 116 is separated from contacts 118, and vice versa. The solenoid mechanism 119 has suitable mechanism, such as a ratchet device not shown, operative to cause the contacts 115, 116 to be shifted to and held in their alternate circuit controlling positions each time the solenoid mechanism is energized. Thus, the pairs of solenoids 14, 15 and 16, 17 are alternately energized by successive energizations of the solenoid mechanism 119 and thereby cause the knife 11 to be reciprocated in a clipping stroke. The details of the solenoid mechanism 119 are not shown since such mechanisms are commercially available.

The circuit for the solenoid mechanism 119 includes L1, wire 120, main switch 121, wire 122, control switch 72, wire 123, solenoid mechanism 119, wire 124 to L2. When the main switch 121 is closed, the solenoid mechanism 119 is energized each time the switch 72 is closed by a pin 31, as described. It will be seen that automatic operation of the clipper knife is obtained by closing the switch 121.

Preferably, the clipper knife can be operated manually and independently of the switches 121 or 72 by a normally open manually closable switch 126 connected in

shunt circuit around the switches 121 and 72; one contact of switch 126 is connected to L1 and the other contact is connected to wire 123.

Referring now to the control for the pin setting devices 35, 36, 37, 38, 39 and 40, the device 35 is adapted to be manually controlled by a push button switch 148 which is preferably supported on a suitable panel 149 at one side of the clipper and convenient to the operator. The circuit for the operating solenoid of the pin setting device 35 includes L1, wire 152, normally open control switch 148, wire 153, normally closed contacts 154 of a time delay relay 155, wire 156, to the operating solenoid and wire 157 to L2. The operating solenoid of the time delay relay 155 is energized when switch 148 is closed by a circuit including L1, switch 148, wire 158 connected to one lead of the operating solenoid, and wire 159 connecting the opposite lead with L2. The operating solenoid of relay 155 is arranged to open normally closed switch 154 a fraction of a second following energization thereof so that the circuit to the pin setting device 35 can only be energized momentarily regardless of the length of time switch 148 is held closed whereby the pin pusher member 50 is withdrawn from the path of the pins 31 immediately following a setting of a pin thereby to its switching device operating position.

Preferably, the pin setting device 35 is angularly positioned on ring 56, or about the path of travel of the pins 31, relative to the switching mechanism 65 a distance corresponding to that from the knife 11 to a datum location, in the present instance a "sight line" wire 160 which extends immediately above the veneer conveyor 10 and parallel to the knife. The wire 160 is used as a datum location or reference line for determining the proper instant to close the control switch 148 to energize the pin setting device 35 to set or activate one of the pins 31 carried by the wheel 29 which in turn actuates switch 72 when the portion of the veneer registering with the wire 160 at the time switch 148 is closed arrives beneath the knife 11. In operation, should the operator observe the leading edge of a defective portion of veneer moving beneath the wire 160, switch 148 is closed to actuate the pin setting device 35, and when the leading edge of the defective portion moves beneath the knife, the pin 31 set by operation of the device 35 closes switch 72 which causes actuation of the knife, as described. By providing a delay in operation of the knife following actuation of the control switch 148, the operator may refer to the sight line 160 to judge at which points the veneer should be clipped, rather than watching the veneer at the knife. The sight line wire 160 may be placed for convenient observation by the operator, thereby facilitating accurate control by the operator.

As mentioned previously, the control mechanism can be set to cause the knife to automatically clip the veneer at predetermined widths. This control is effected by providing a series of push button operated control switches 162, 163, 164, 165 and 166, arranged to control the circuits to the operating solenoids of the pin setting devices 36, 37, 38, 39 and 40, respectively. The control switches 162 to 166 are preferably located on the control panel 149 and have suitable mechanical interlocks arranged to cause the individual switches to remain closed when the operating buttons therefor are depressed and to release any other closed switch upon closure thereof. Such interlock mechanisms are well-known and are not here shown.

The operating solenoids for the pin setting devices 36-40 are connected in series with their respective control switches 162-166 and the circuit to the control switches includes line L1, wire 120, main switch 121, wire 168, an "on-off" switch 169, wire 170, switch 72' of the switching mechanism 66, wire 171, normally closed contacts 172 of a time delay relay 173 and wire 174.

The "on-off" switch 169 is preferably located on panel 149 and is closed when automatic operation of the clipper

knife is desired and opened to render the automatic control inoperative. When the switch 169 is closed, the circuit for the pin setting device having its control switch closed is completed when switch 72' is momentarily closed by a pin 31 tilting the operating beam 77' of the switching device 66. It will be noted that the switching device 66 is positioned in the path of travel of the pin 31 between the manually controlled pin setting device 35 and the knife operating control switch 72 of the device 65, and any pin set either by the manually or automatically actuated pin setting devices momentarily closes the switch 72' to cause a succeeding automatic actuation of the pin setting device pre-set for operation by closure of the corresponding one of the switches 162 to 166.

The pin setting devices 36 to 40 are spaced from the switching mechanism 66 to correspond to the several preselected widths of veneer desired so that any of these desired widths can be automatically cut according to whichever one of the control switches 162, 163, 164, 165 or 166 is closed.

It will be apparent that when the pin setting device 35 is actuated manually to cause a defective portion of the veneer to be cut, the removed defective portion will be taken from a width of veneer normally included in the automatically cut widths, and to economize or minimize wastage of veneer it is desirable to cause the width of veneer following the last manually controlled cut to be of a full preselected width. This condition is obtained by causing the pin returning bar 90 to be moved toward the wheel 29 each time the manually controlled pin setting device 35 is actuated so that any pin which has been set by any of the automatically controlled pin setting devices 36 to 40 will be returned to its inoperative position and when the pin set by operation of the manual pin setting device 35 subsequently actuates the switch 72' of the switching mechanism 66, the circuit closed by the switch 72' automatically energizes the preselected pin setting device to again set up or activate a pin 31 which will be a distance behind the pin set by the manual control device 35 corresponding to the preselected widths of veneer. Accordingly, the operating solenoid 110 is connected in parallel circuit with the operating solenoid of the manually controlled pin setting device 35, one lead of the solenoid 110 being connected to wire 156 and the other lead being connected with L-2.

The operation of the veneer clipper disclosed may be summarized as follows: The operator first selects the width of veneer to be cut by depressing one of the switches 162-166. This conditions the proper one of the pin shifting devices 36-40 for energization by the switching device 66 having switch 72' upon the actuation of the latter. As the leading edge of the veneer to be clipped passes under the sight line 160, the operator closes switch 148 to cause operation of the pin setter 35 and the shifting of a pin 31 to its active position to condition the pin for actuating the switching device 66 including the switch 72' and the switching device 65 including the switch 72. Since the pin which has been activated upon the actuation of the pin setting device 35 is moving in timed relation to the movement of the veneer, the activated pin actuates the switch 72 of the switching device 65 to cause the knife of the clipper to reciprocate and produce a clipping operation when the portion of the sheet veneer which was under the sight line when the device 35 was actuated is under the movable knife of the clipping mechanism. Therefore, in response to the activation of the pin referred to above, the movable knife will be reciprocated to trim the leading edge of the sheet veneer.

In traveling from the pin setting device 35 to the switching device 65, the pin which was activated by the operation of pin setting device 35 actuates the switch 72' of switching device 66 to complete a circuit to one of the pin setting devices 36-40 spaced along the path of movement from the pin setting device 35 in a direction opposite to the direction of movement of the wheel 29 to activate

or condition another pin by shifting it to its active position. Which of the pin setting devices 36-40 is operated, depends upon which switch of the switches 162-166 was depressed by the operator. Assuming the switch 162 was depressed, the pin setting device 36 will be actuated to set another pin in its active position each time an activated pin operates the switch 72' of the switching device 66. Thus, when a pin has been activated by the pin setting device 35 upon depression of the switch 148 by the operator, the switching device 66 including the switch 72', and one of the pin setters 36-40 operates to automatically activate another pin a predetermined distance behind the first activated pin, and the control mechanism, therefore, automatically and continuously resets itself. The particular pin setting device 36-40 selected to be connected to the switch 72' of switching device 66 depends upon the width of veneer which is to be cut.

If the operator notices that a faulty or defective section of veneer is passing through the clipper and desires to clip the veneer so that the faulty section is discarded, he depresses the switch 148 as the leading edge of the faulty section passes under the sight line 160 causing the setting of a pin on the wheel 29 to activate the knife as the leading edge of the faulty section is positioned thereunder. The pin-return bar 90 will operate upon the depression of switch 148 and the pin which has been set by the pin setting device 35 to actuate the knife will also operate the switch 72' of switching device 66 to set another pin in the manner described above. The setting of another pin at this time is immaterial for reasons which will appear hereinafter. When the trailing edge of the faulty section of the veneer reaches the sight line, the operator again depresses the switch 148 to operate the pin setting device 35 and the pin-return bar 90. The operation of the pin setting device 35 sets another pin to actuate the knife as the trailing edge of the faulty section of veneer is positioned under the knife and the operation of the pin-return bar 90 moves all activated pins which have not yet reached the pin setting device 35 to their inactive position so that when the pin, which was set as the trailing edge of the faulty section passed under the sight line 160, passes the switch device 66, the switch 72' of the switching device 66 will be operated to reset the control mechanism by causing another pin to be actuated which is a predetermined distance behind the pin actuating the switching device 66. It will be noted that each time the switch 148 is depressed, all activated pins which have not reached the pin setting device 35 are moved to their inactive position since the control circuit for returning the control bar 90 is energized each time the pin setting device 35 is energized. This enables the clipper to be readily operated to sever faulty sections of veneer from the sheet passing through the clipper and yet have the mechanism automatically operate the cut veneer at the preselected lengths after the faulty section has been severed.

It will be seen that the operation of the clipper knife can be controlled either manually or automatically and that after each manual operation of the knife, the following automatically controlled actuation will occur when the preselected width of veneer has passed beneath the knife according to the presetting of switches 162-166. It will be understood that the pin setting devices 36 to 40 are spaced from the switching mechanism 66 to correspond to the several preselected widths of veneer desired so that pins 31 are set at the intervals which operate the knife and produce the desired widths. Although four different automatically operated pin setting devices have been shown and described, more or fewer could be employed, if desired.

From the foregoing it will be apparent that the objects heretofore enumerated as well as others have been accomplished and that there has been provided a novel and improved veneer clipper having manual and automatic control of the knife thereof by which defective portions of

veneer can be eliminated with a minimum of wastage of usable veneer. While the preferred embodiment of the invention has been described in considerable detail, the invention is not limited to the particular construction shown and it is the intention to cover hereby all adaptations, modifications and uses thereof which come within the practice of those skilled in the art to which the invention relates and the scope of the appended claims.

Having thus described my invention, I claim:

1. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material a predetermined distance ahead of said movable machine element, a movable control element, means for moving said control element in synchronism with the movement of the driven conveyor, means to control the operation of the movable machine element comprising a control member actuatable by a signal or condition on said control element to cause operation of the movable machine element, a first device adjacent to the path of movement of said control element and adapted when actuated to impart a condition or signal to an individual part of said control element, control means for actuating said first device including a control apparatus spaced from said control member rearwardly along the path of movement of said control element and responsive to a signal or condition on said control element, a second device adjacent to the path of movement of said control element and adapted when actuated to impart a condition or signal to an individual part of said control element and located intermediate said control apparatus and said first device and spaced from said control member a distance proportional to the distance between said datum location and said movable machine element, and means operative in response to operation of said second device to render inoperative any signals or conditions intermediate said devices which have been imparted to said control elements by said first device.

2. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material a predetermined distance ahead of said movable machine element, a movable control element, means for moving said control element in synchronism with the movement of the driven conveyor, electrical means to control the operation of the movable machine element comprising a control member actuatable by a signal or condition on said control element to cause operation of the movable machine element, a first electrically actuated device adjacent to the path of movement of said control element and adapted when actuated to impart a condition or signal to individual parts of said control element, control means for actuating said first device including a control apparatus spaced from said control member rearwardly along the path of movement of said control element and responsive to a signal or condition on said control element, a second electrically actuated device adjacent to the path of movement of said control element and adapted when actuated to impart a condition or signal to an individual part of said control element and located intermediate said control member and said first device and spaced from said control apparatus a distance proportional to the distance between said datum location and said movable machine element, and means operative in response to operation of said second device to render inoperative any signals or conditions intermediate said devices which have been imparted to said control element by said first device.

3. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative

position relative to the movable machine element, means providing a datum location along the path of movement of the material a predetermined distance ahead of said movable machine element, means for controlling the operation of the movable machine element comprising a control member actuatable to cause operation of the movable machine element, means to move an endless succession of control member actuating elements into operative relation with said control member in synchronism with the movement of the driven conveyor, a first device adjacent to the path of movement of said actuating elements and adapted when actuated to render individual of said actuating elements operative, control means for said first device including a control element spaced from said control member rearwardly along the path of movement of said actuating elements responsive to an operative actuating element moving toward said control member, a second device adjacent to the path of movement of said actuating elements intermediate said control element and said first device and spaced from said control member a distance proportional to the distance between said datum location and said movable machine element and adapted when actuated to render individual of said actuating elements operative, and means operative in response to operation of said second device to render inoperative any actuating elements intermediate said first and second devices which have been rendered operative by said first device.

4. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material and located a predetermined distance ahead of said movable machine element, electrical means for controlling the operation of the movable machine element comprising a switch actuatable to cause operation of the movable machine element, means to move an endless succession of switch operating members in operative relation past said switch in synchronism with the movement of the driven conveyor, said switch operating members being selectively settable into switch actuating and non-actuating positions, a first electroresponsive device adjacent to the path of movement of said switch operating members and adapted when actuated to set individual of said switch operating members into operative position, control means for actuating said electroresponsive device including a control element spaced from said control member rearwardly along the path of movement of said switch operating members and responsive to an operative switch operating member moving thereby toward said control member, a second electroresponsive device adjacent to the path of movement of said switch actuating members and located intermediate said control element and said first electroresponsive device and spaced from said control member a distance proportional to the distance between said datum location and said movable machine element and adapted when actuated to set individual of said switch operating members into operative position, and means operative in response to operation of said second electroresponsive device to render inoperative switch operating members intermediate said electroresponsive devices which have been rendered operative by said first electroresponsive device.

5. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material and located a predetermined distance ahead of said movable machine element, electrical means for controlling the operation of the movable machine element comprising a switch actuatable to cause operation of the movable machine element, means to move an endless succession of switch operating members

in operative relation past said switch in synchronism with the movement of the driven conveyor, said switch operating members being selectively settable into switch actuating and non-actuating positions, a first electroresponsive device adjacent to the path of movement of said switch operating members and adapted when actuated to set individual of said switch operating members into operative position, control means for actuating said electroresponsive device including a control element spaced from said control member rearwardly along the path of movement of said switch operating members and responsive to an operative switch operating member moving thereby toward said control member, a second electroresponsive device adjacent to the path of movement of said switch actuating members and located intermediate said control element and said first electroresponsive device and spaced from said control member a distance proportional to the distance between said datum location and said movable machine element and adapted when actuated to set individual of said switch operating members into operative position, a member adjacent to the path of movement of said switch operating members and extending between said electroresponsive devices adapted when actuated to render inoperative switch operating members intermediate said electroresponsive devices which have been rendered operative by said first electroresponsive device, and means operative in response to the operation of said second electroresponsive device for actuating said member.

6. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material and located a predetermined distance ahead of said movable machine element, electrical means for controlling the operation of the movable machine element comprising a switch having a control element actuable to cause operation of the movable machine element, a member movable in an endless path adjacent to said control element of said switch in synchronism with the movement of the driven conveyor, a plurality of pins carried by said member and selectively shiftable into switch actuating and non-actuating positions, a first electroresponsive device adjacent to the path of movement of said pins and adapted when actuated to shift individual pins into operative position, control means for actuating said electroresponsive device including a second switch spaced from said control element rearwardly along the path of movement of said pins and responsive to a pin in operative position moving thereby toward said control element, a second electroresponsive device adjacent to the path of movement of said pins and located intermediate said second switch and said first electroresponsive device and spaced from said control element, a distance proportional to the distance between said datum location and said movable machine element and adapted when actuated to shift individual pins into operative position, and means operative in response to operation of said second electroresponsive device to shift into non-actuating position pins intermediate said electroresponsive devices which have been shifted into operative position by said first electroresponsive device.

7. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material and located a predetermined distance ahead of said movable machine element, electrical means for controlling the operation of the movable machine element comprising a switch having a control element actuable to cause operation of the movable machine element, a member movable in an endless path adjacent to said control element of said switch in synchronism with

the movement of the driven conveyor, a plurality of pins carried by said member and selectively shiftable into switch actuating and non-actuating positions, a first electroresponsive device adjacent to the path of movement of said pins and adapted when actuated to shift individual of said pins into operative position, control means for actuating said electroresponsive device including a second switch spaced from said control element rearwardly along the path of movement of said pins and responsive to a pin in operative position moving thereby toward said control element, a second electroresponsive device adjacent to the path of movement of said pins and located intermediate said second switch and said first electroresponsive device and spaced from said control element a distance proportional to the distance between said datum location and said movable machine element and adapted when actuated to shift individual pins into operative position, a member adjacent to the path of movement of said pins adapted when actuated to shift into non-actuating position pins intermediate said electroresponsive devices which have been shifted into operative position by said first electroresponsive device, and means operative in response to operation of said second electroresponsive device for actuating said member.

8. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material and located a predetermined distance ahead of said movable machine element, electrical means for controlling the operation of the movable machine element comprising a switch actuable to cause operation of the movable machine element, a wheel rotatable in synchronism with the movement of the driven conveyor, a plurality of pins carried by said wheel and selectively shiftable axially of said wheel into switch actuating and non-actuating positions, a first electroresponsive device adjacent to the path of movement of said pins and adapted when actuated to shift individual pins into operative position, control means for actuating said electroresponsive device including a second switch spaced from said first switch rearwardly along the path of movement of said pins and responsive to a pin in operative position moving thereby toward said first switch, a second electroresponsive device adjacent to the path of movement of said pins and located intermediate said second switch and said first electroresponsive device and spaced from said first switch a distance proportional to the distance between said datum location and said movable machine element and adapted when actuated to shift individual pins into operative position, means for operating said second electroresponsive device, and means operative in response to operation of said second electroresponsive device to shift into non-actuating position pins intermediate said electroresponsive devices which have been shifted into operative position by said first electroresponsive device.

9. In a machine comprising a power operated movable machine element for performing an operation on material and a driven conveyor to move material into operative position relative to the movable machine element, means providing a datum location along the path of movement of the material and located a predetermined distance ahead of said movable machine element, electrical means for controlling the operation of the movable machine element comprising a switch actuable to cause operation of the movable machine element, a wheel rotatable in synchronism with the movement of the driven conveyor, a plurality of pins carried by said wheel and arranged in a circle about the axis of rotation of said wheel, said pins being selectively shiftable axially of said wheel into switch actuating and non-actuating positions, a first electroresponsive device adjacent to the path of movement of said pins and adapted when actuated to

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shift individual of said pins into switch actuating position, control means for actuating said electroresponsive device including a second switch spaced from said first switch rearwardly along the path of movement of said pins and responsive to a pin in actuating position moving thereby toward said first switch, a second electroresponsive device adjacent to the path of movement of said pins and located intermediate said second switch and said first electroresponsive device and spaced from said first switch a distance proportional to the distance between said datum location and said movable machine element, means for actuating said second electroresponsive device, an arcuate member adjacent to the path of movement of said pins adapted when actuated to shift into non-actuating position pins intermediate said electroresponsive devices which have been shifted into switch actuating position by said first electroresponsive device, and means operative in response to operation of said second electroresponsive device for actuating said member.

10. In a machine comprising a power operated movable machine element for performing an operation upon material and a driven conveyor to move material into operative position relative to the movable machine element, means extending transversely of the path of movement of the material and providing a datum location a predetermined distance ahead of said movable machine element, a movable control element, means for moving said control element in synchronism with the movement of the driven conveyor, means to control the operation of the movable machine element comprising a control member actuable by a signal or condition on said control element to cause operation of the movable machine element, a first device adjacent to the path of movement of said control element and adapted when actuated to impart a condition or signal to an individual part of said control element, control means for actuating said first device including a control apparatus spaced from said control member rearwardly along the path of movement of said control element and responsive to a signal or condition on said control element, a second device adjacent to the path of movement of said control element and adapted when actuated to impart a condition or signal to an individual part of said control element and located intermediate said control apparatus and said first device and spaced from said control member a distance proportional to the distance between said datum location and said movable machine element, manual means for actuating said second device, and means operative in response to operation of said second device to render inoperative any signals or conditions intermediate said devices which have been imparted to said control element by said first device.

11. A control mechanism for performing a control function and comprising a control member endlessly movable in one direction along a predetermined path, first conditioning means adjacent to said path and actuable to apply a condition to a part of said member adjacent to said conditioning means at the time of actuation of the latter, a first device adjacent to said path and spaced from said first device in the direction of movement of said member and responsive to a conditioned part of said member for performing a control operation when the conditioned part is adjacent to said device, second conditioning means spaced a predetermined distance from the first conditioning means in a direction opposite to the direction of movement of said control member, a second device adjacent to said path intermediate said first conditioning means and said first device and responsive to the passing thereby of a conditioned part for actuating said second conditioning means to condition a part of said member adjacent to said second conditioning means, means for eliminating the conditioning on any and all parts of said member intermediate said first and second conditioning means, and manually operable control means

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for simultaneously actuating said first conditioning means and the last-said means.

12. A control mechanism for performing a control function and comprising a control member endlessly movable in one direction along a predetermined path, conditioning means adjacent to said path and actuable to apply a condition to a part of said member adjacent to said conditioning means at the time of actuation of the latter, a first device adjacent to said path and spaced from said first device in the direction of movement of said member and responsive to a conditioned part of said member for performing a control operation when the conditioned part is adjacent to said device, a plurality of conditioning devices spaced predetermined distances from the first conditioning means in a direction opposite to the direction of movement of said member, a second device adjacent to said path intermediate said first conditioning means and said first device and responsive to the passing of a conditioned part, means for selectively connecting said second device to one of said conditioning devices for actuating the latter in response to a conditioned part passing said second device to condition a part of said member adjacent to the conditioning device connected to said second device, clearing means for eliminating the conditioning of any part of said member intermediate said conditioning means and the most remote of said conditioning devices, and manually operable control for simultaneously actuating said conditioning means and said clearing means to respectively condition a part adjacent to said conditioning means and clear any conditioned part between said conditioning means and the most remote conditioning device, and means for clearing conditioned parts of said member after passing said first device and prior to reaching said conditioning devices.

13. In a control mechanism for electrically controlling the operation of a power actuated device, a plurality of pins, a movable member supporting said pins and movable to move said pins through an endless path to provide an endless succession of pins moving in one direction, each of said pins being supported by said member for movement with respect thereto from an inactive position to an active position, means for moving said member to move said pins through said path in one direction, said pins being normally in an inactive position, pin shifting means positioned adjacent to said path and actuable to shift at least one of said pins from its inactive position to its active position, a switch device adjacent to said path and spaced from said pin shifting means in the direction of movement of said member and actuable by a pin passing thereby in its active position for performing a control function, a second pin shifting means adjacent to said path and spaced from said first pin shifting means in a direction opposite to the direction of movement of said member, switch means positioned adjacent to said path intermediate said first pin shifting means and said switch device and actuable by a pin in its active position, means connecting said switch means to said second pin shifting means for actuating the latter upon actuation of said switch means, a clearing member adjacent to said movable member and supported for movement from a position clear of said pins into engagement with the pins adjacent to said member for shifting the pins adjacent to said member which are in their active position to their inactive position, the last-said member extending along said path of movement intermediate said second pin shifting device and said first pin shifting device, manually operable control means for actuating said clearing member to move pins in their active position to their inactive position and for actuating the first-said pin shifting means and means for shifting all pins in an active position to their inactive position upon their passing said switch device.

14. In a control mechanism for electrically controlling the operation of a power actuated device, a plurality of pins, a movable member supporting said pins and movable

to move said pins through an endless path to provide an endless succession of pins moving in one direction, each of said pins being supported by said member for movement with respect thereto from an inactive position to an active position, means for moving said member to move said pins through said path in one direction, said pins being normally in an inactive position, pin shifting means positioned adjacent to said path and actuatable to shift at least one of said pins from its inactive position to its active position, a switch device adjacent to said path and spaced from said pin shifting means in the direction of movement of said member and actuatable by a pin passing thereby in its active position for performing a control function, a second pin shifting means adjacent to said path and spaced from said first pin shifting means in a direction opposite to the direction of movement of said member, switch means positioned adjacent to said path intermediate said first pin shifting means and said switch device and actuatable by a pin in its active position, means connecting said switch means to said second pin shifting means for actuating the latter upon actuation of said switch means, a clearing member adjacent to said movable member and supported for movement from a position clear of said pins into engagement with pins adjacent to said member for shifting any pin adjacent to said member in its active position to its inactive position, the last-said member extending along said path of movement intermediate said second pin shifting device and said first pin shifting device, means for shifting any pin in an active position to its inactive position upon its passing said switch device, and manually operable control means for simultaneously actuating said first pin setting device to activate a pin and the last-mentioned member to shift all pins adjacent to said member to their inactive position.

15. In a control mechanism for electrically controlling the operation of a power actuated device, a plurality of pins, a wheel supporting said pins in series for movement through an endless path upon rotation of the wheel to provide an endless succession of pins moving in one direction, each of said pins being supported on said wheel for movement with respect thereto from an inactive position to an active position, means for rotating said wheel in one direction, pin shifting means positioned adjacent to said path for shifting at least one of said pins from its inactive position to its active position, a switch device adjacent to said path and spaced from said pin shifting means in a direction of movement of said member and actuatable by a pin in its active position for performing a control function, a second pin shifting means spaced from said first pin shifting device in a direction opposite to the direction of movement of said member, switch means positioned adjacent to said path intermediate said first pin shifting means and said switch device and actuatable by a pin in its active position, means connecting said switch means to said second pin shifting means for actuating the latter upon actuation of said switch means, an arcuate member supported adjacent said wheel and supported for movement from a position clear of said pins into engagement with said pins for shifting pins in their active positions to their inactive positions, said arcuate member extending along said path of movement intermediate said second pin shifting means

and said first pin shifting means, manually operable control means for simultaneously actuating said arcuate member and said first pin shifting means to clear active pins and to activate a pin respectively, and means for shifting pins in their active position to their inactive position after passing said switch device.

16. In a control mechanism for electrically controlling the operation of a power actuated device, a plurality of pins, a movable member supporting said pins in series for movement with the member through an endless path to provide an endless succession of pins moving in one direction, means for moving said member to move said pins through said path in one direction, each of said pins being supported on said member for movement with respect thereto from an inactive position to an active position, a plurality of pin shifting devices spaced from each other along said path and each actuatable to shift at least one of the pins adjacent thereto from its inactive position to its active position, a switch device adjacent to said path and spaced from the last one of said plurality of pin shifting devices in the direction of movement of said pins and actuatable by a pin in its active position for performing a control function, a first switch means positioned adjacent to said path intermediate said last one of said pin shifting devices and said switch device and actuatable by a pin in its active position, manually operable control means for actuating the pin shifting device immediately prior to said switch device when proceeding in the direction of movement of said pins and second switch means for selectively connecting said first switch means to any of the other pin shifting devices for selectively actuating the latter upon actuation of said first switch means, a clearing member supported adjacent to said movable member and supported for movement from a position clear of said pins into engagement with said pins for shifting all activated pins intermediate the end ones of said pin shifting devices to their inactive position, means for actuating the last-mentioned member to clear activated pins upon actuation of said last one of said plurality of pin shifting devices, and means for moving pins in their active position to their inactive position after passing said switch device.

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