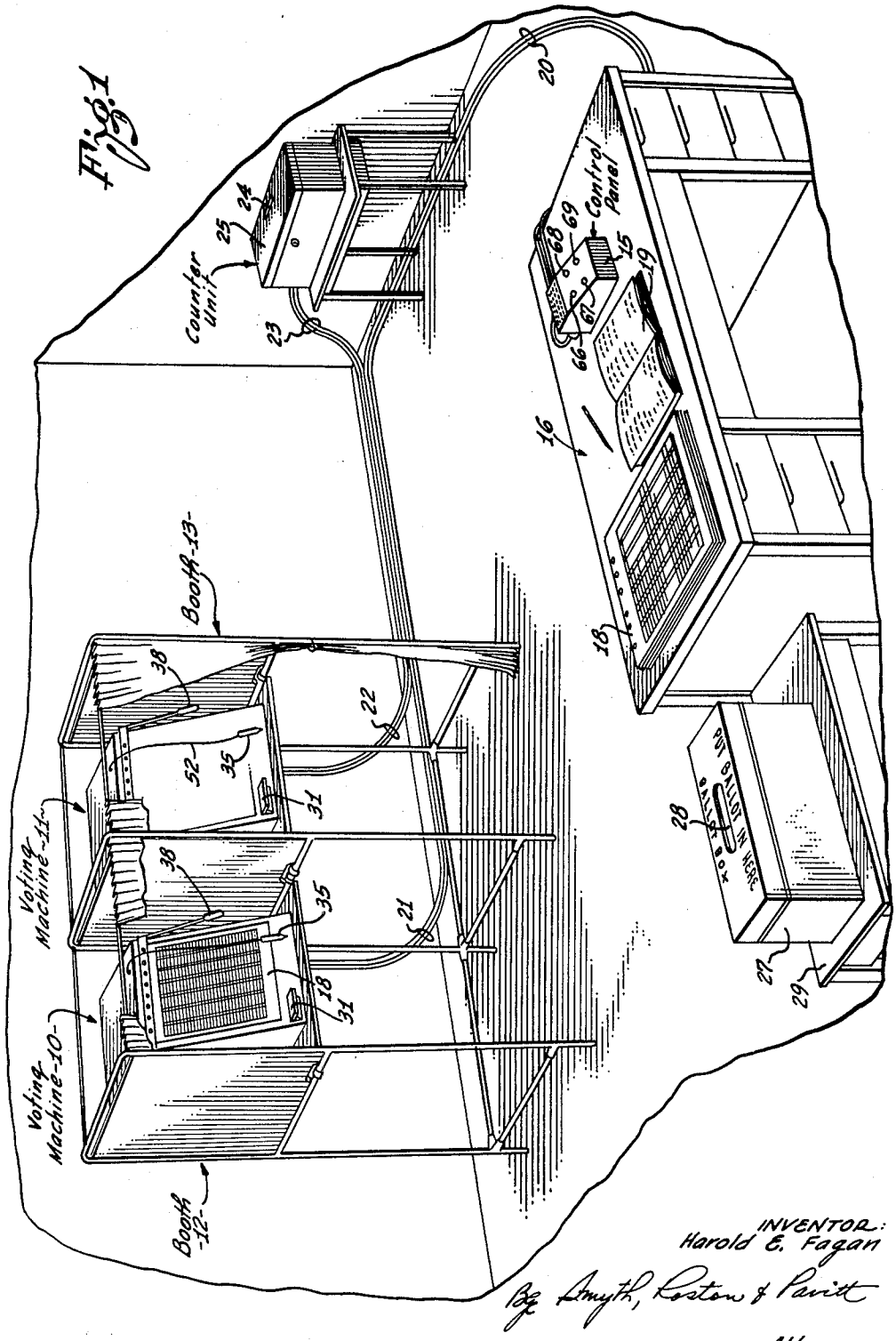
April 13, 1965 H. E. FAGAN 3,178,107

VOTING MACHINE

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Fig. 1



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Fig. 2

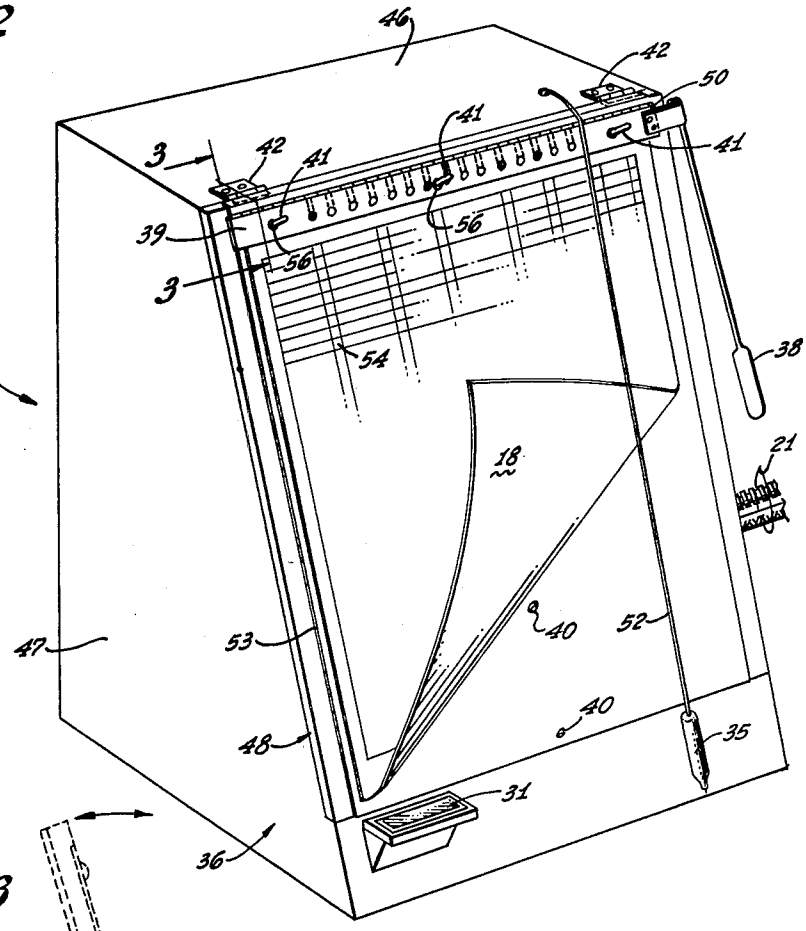
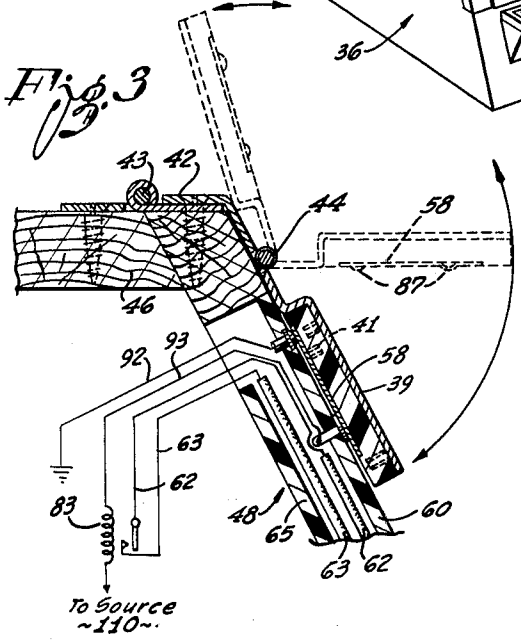


Fig. 3



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VOTING MACHINE

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Fig. 4

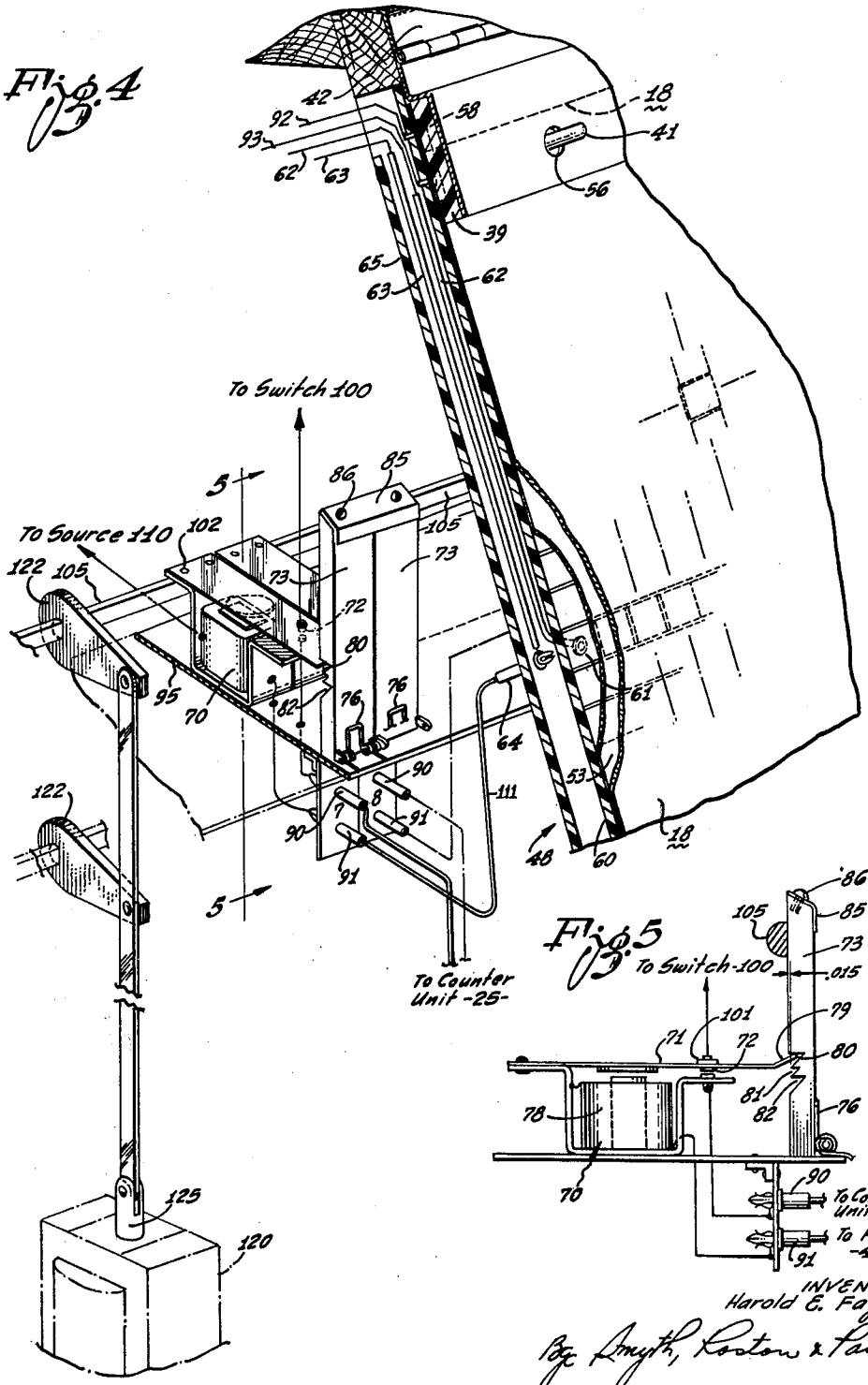


Fig. 5

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VOTING MACHINE

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Fig. 6

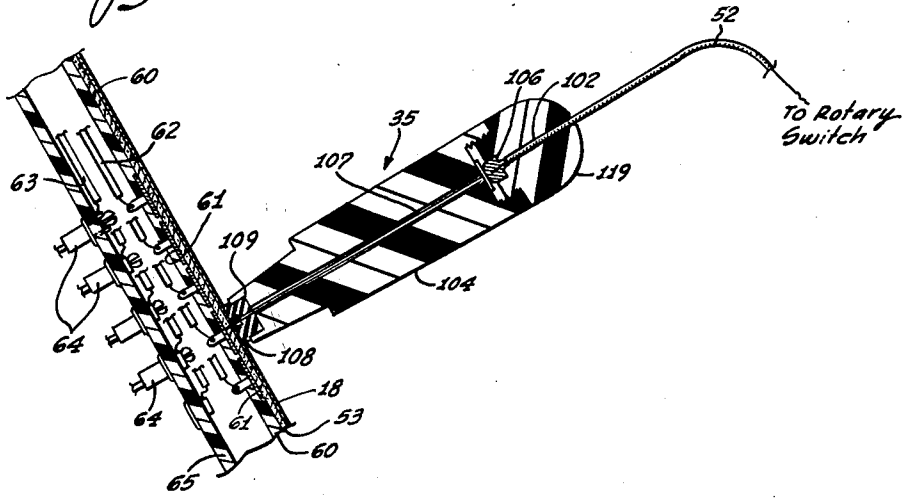
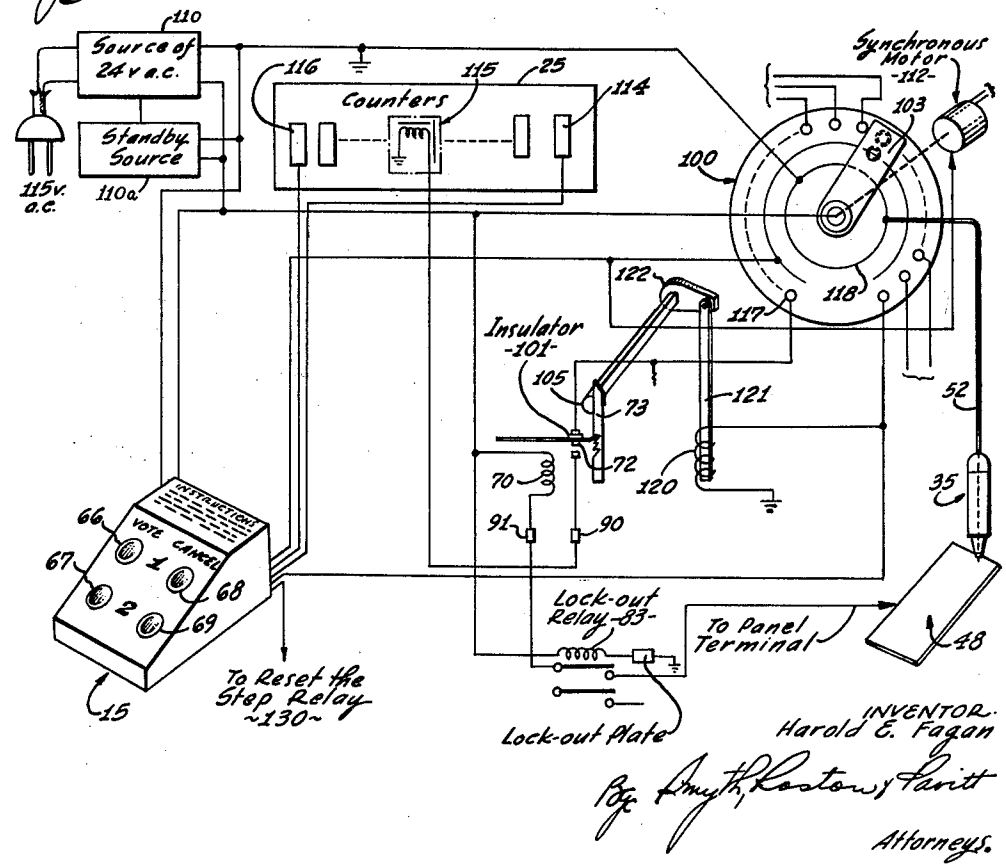


Fig. 7



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VOTING MACHINE

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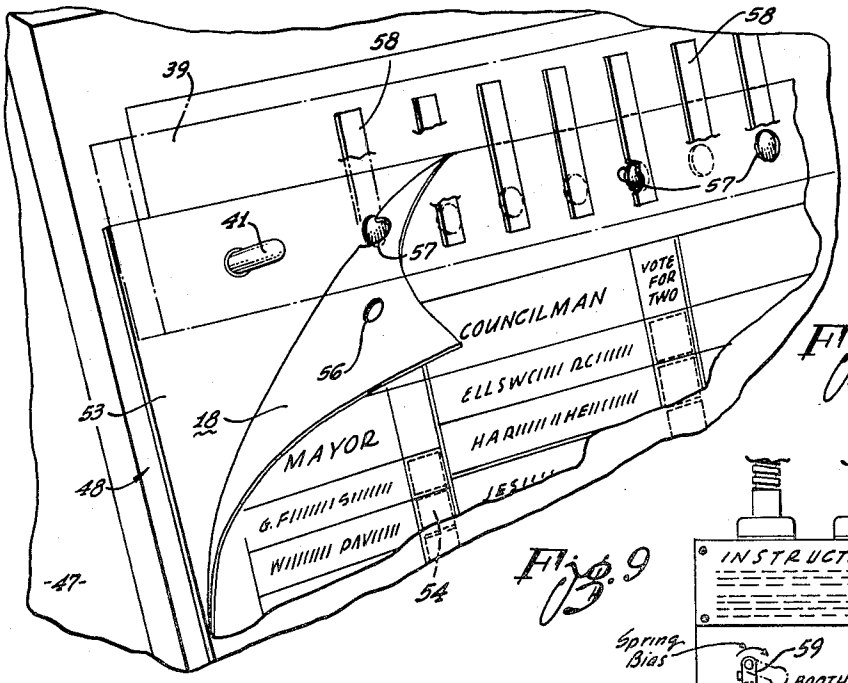


Fig. 8

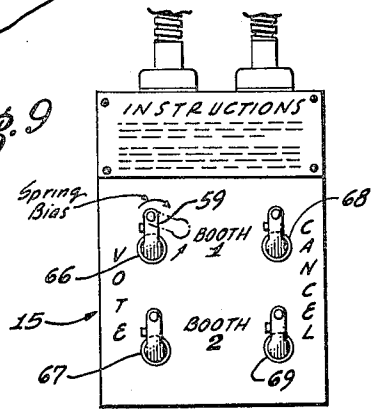
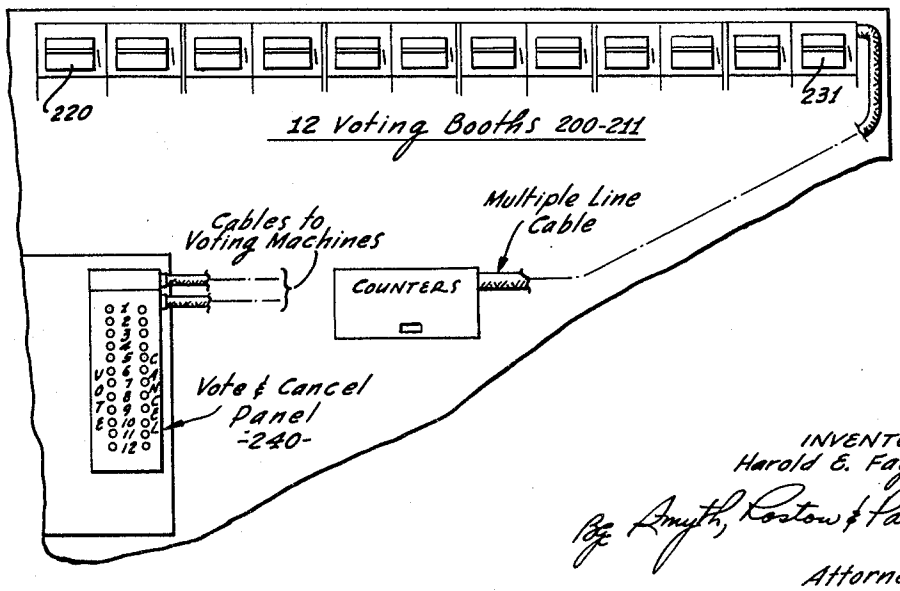


Fig. 9

Fig. 10



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VOTING MACHINE

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Fig. 11

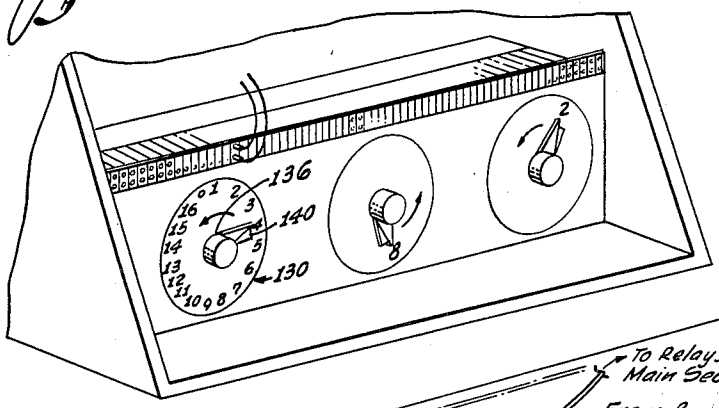


Fig. 12

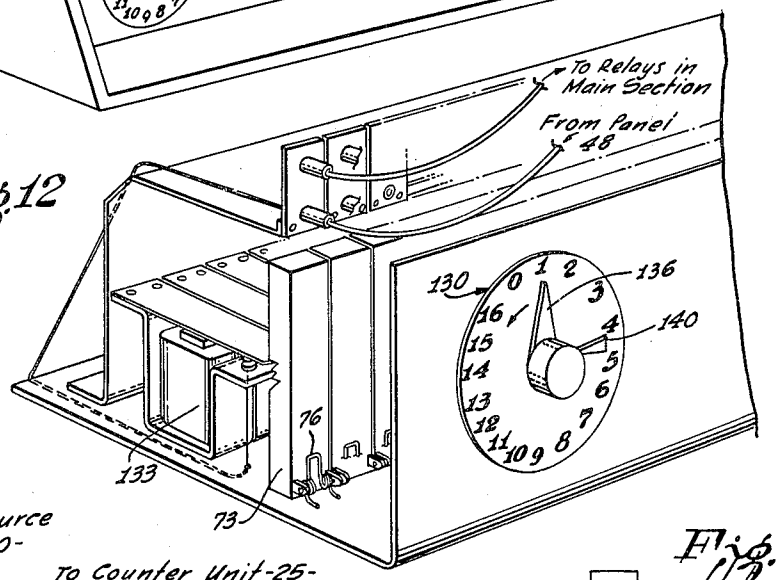
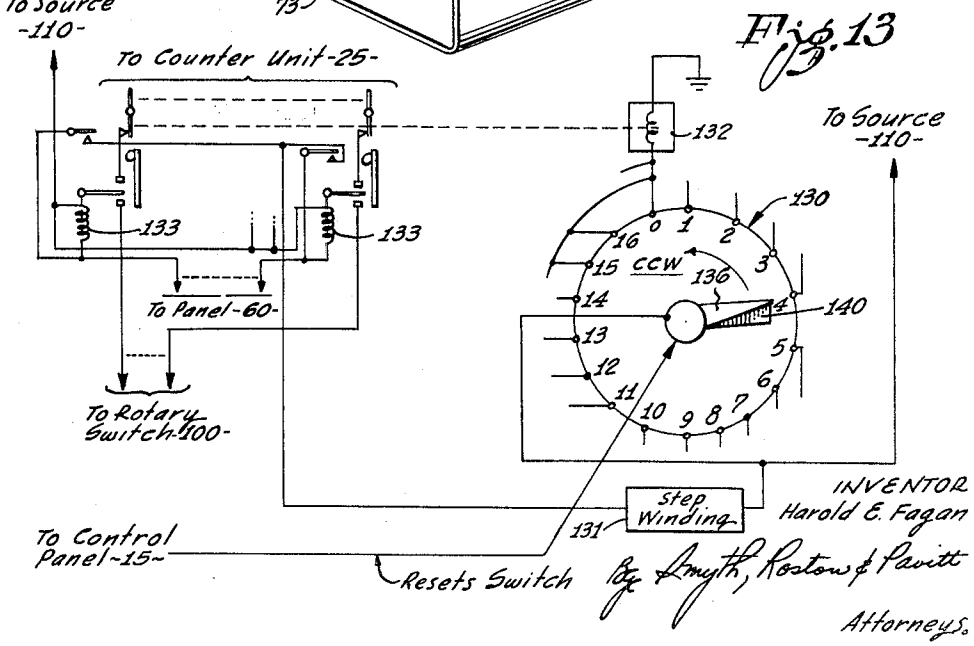


Fig. 13



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United States Patent Office 3,178,107 Patented Apr. 13, 1965

3,178,107

VOTING MACHINE

Harold E. Fagan, Torrance, Calif., assignor of one-eighth each to Henry P. Lopez and Norbert A. Schlei, both of Los Angeles, Calif.

Filed Mar. 25, 1960, Ser. No. 17,706
26 Claims. (Cl. 235—56)

This invention relates to voting machines and, more particularly, to a voting machine for use in counting individual votes which are represented by marks placed in appropriate boxes of a ballot.

In many States, such as California, the choices of a voter for candidates for elective offices, for various propositions, referenda and other measures submitted to the electorate for approval, are designated by marks, such as a cross or X, on the ballot. After the polls are closed, the votes are counted with invalid ballots or portions of a ballot being discarded and not counted. Examples of invalid votes are the improper placing of a cross relative to a box in the ballot, or marking a number of boxes in excess of the number permitted for a particular office. The excess, illustratively, may be in the form of votes for two different candidates for Governor of the State.

The process of counting the individual votes is a long and tedious one and subject to human error. Vote counting machines have been designed which are utilized after the polls are closed. These machines, however, do not automatically count the votes as the votes are cast, and generally require special ballots or marking devices. Voting machines which automatically count the votes as they are cast have also been developed and are in use in many States. Ballots, however, are not used in conjunction with these machines so that visible marks on the ballot are not provided. There is, accordingly, no check on the machine operation accuracy. For these reasons and also because the machines are not adaptable to handle large numbers of candidates and measures frequently submitted to the electorate, they are not in use in many States, including the State of California.

In a specific illustrative embodiment of this invention, a voting machine system is provided for use with conventional type ballots. The system includes a voting machine for each voting booth, a control panel at the voting supervisor's desk and a counter unit which totals the votes as they are cast. The ballots are selectively marked by the voters and, at the same time, the vote is registered by a memory circuit in the voting machine. The memory circuit registers each vote as it is marked on the ballot. The registration is effected by an electrical circuit through the rubber stamp utilized to mark the ballot. The voting machine includes a number of electrically conductive terminals, one for each voting box on the ballot which are contacted by a metallic probe forming part of the electrical circuit through the stamp. After the vote is cast and the ballot removed from the voting machine, the registered vote may be transferred under control of the control panel to the counter unit. In the event the ballot is incorrectly marked and the voter wishes it destroyed, the control panel may be operated to erase the memory. A record of the number of votes and cancelled ballots is maintained automatically at the counter unit.

Features of this invention relate to the provision of a single control panel for a number of voting machines so that one voting supervisor can control a number of voting booths. The voting machines, counter unit and control panel are all compact and readily facilitate the assembly and dismantling of the system.

Other features of this invention pertain to the provision of neutralizing means in the memory circuit for effectively cancelling all votes for a candidate or proposition if more than one is selected for the particular office or proposition. The neutralizing means is in the form of three-position, locking pawls each having a normal, an operated and a neutral position. A pawl, which is moved to its operated position to register a vote in the memory circuit, is moved to its neutral position when an associated pawl is moved. The coupling between pawls is flexible and can readily be changed to intercouple any number of pawls. The utilization of the mechanical registration in the form of the locking pawls provide for low power requirements. Power is only required momentarily when the voter stamps the ballot. The voting machine includes a rotary switch which is operated from the control panel to transfer the vote registered in the memory circuit to the counter unit. The utilization of the rotary switch and the particular couplings between the memory circuit and the electrically conductive terminals of the voting machine reduces the power requirements. A battery powered auxiliary unit may be provided as a standby source for operating the system.

Further features of the invention relate to the provision of stepping switch means for controlling the registration of a vote where a number of selections from a group of candidates is requested. Under control of the stepping switch means the memory circuit is operated to erase the registrations of all votes if more than the number of candidates is selected.

Safety features are provided in that means are provided for enabling only selected portions of the memory circuit to correspond with the particular ballot being utilized. The ballots are perforated along the top and, when locked in position on the voting machine, enabling circuits are completed through the perforations in the ballot. Different ballots may, accordingly, be successively utilized with different portions of the memory circuit being enabled for each.

Further advantages and features of this invention will become apparent upon consideration of the following description when read in conjunction with the drawing wherein:

FIGURE 1 is a perspective view of the various components of the voting machine system of this invention as set up in a typical arrangement at a polling place;

FIGURE 2 is a perspective view of the voting machine of this invention which is located in each voting booth of the system;

FIGURE 3 is a partial sectional view taken along lines 3—3 of FIGURE 2 illustrating the arrangement and operation of a locking plate utilized to secure the ballot on the terminal panel of the voting machine;

FIGURE 4 is a perspective view of a number of components included as part of the voting machine of this invention;

FIGURE 5 is a partial sectional view taken along lines 5—5 of FIGURE 4 illustrating the construction of the locking relays forming the memory circuit utilized in the voting machine of this invention;

FIGURE 6 is a partial sectional view through a portion of the desk panel of the voting machine of this invention and through the rubber stamp utilized for marking the ballot;

FIGURE 7 is a partially perspective and partially circuit representation of a number of components utilized in the voting machine system of this invention;

FIGURE 8 is a perspective view of the upper portion of the front panel of the voting machine of this invention illustrating how the ballot fits under the locking plate;

FIGURE 9 is a top view of the control panel utilized in the voting machine system of this invention;

FIGURE 10 is a functional representation of another embodiment of this invention in which a large number of voting booths are controlled from one control panel;

FIGURE 11 is a pictorial view of a portion of the

voting machine of this invention utilized for multiple selection;

FIGURE 12 is an enlarged pictorial view of some of the components of the voting machine of this invention utilized for the multiple selection; and

FIGURE 13 is a circuit representation of the multiple selection portion of the voting machine of this invention.

Referring first to FIGURE 1, a typical arrangement for the various components of the voting machine system of this invention is depicted. Two voting machines 10 and 11 are respectively located in two voting booths 12 and 13 at the polling place. In the arrangement depicted in FIGURE 1, only two booths are shown, but the present invention is not restricted to the utilization of only two voting machines as any number may be utilized. For example, as hereinafter described, and as illustrated in FIGURE 10, twelve voting machines may be utilized.

In FIGURE 1, the two voting machines 10 and 11 are controlled from a control panel 15 which is supported on a desk 16. A poll worker or vote supervisor may be seated at the desk 16 to control the operation of the voting machines 10 and 11 by means of the panel 15. The control panel 15 is electrically coupled by means of a cable 20 to two cables 21 and 22 extending respectively from the voting machines 10 and 11. As shown in FIGURE 1, the desk 16 may also support a number of blank ballots 18 and a signature book 19 for checking the identity of the voters. A ballot box 27 having an opening 28 may be supported on a table 29 adjacent the desk 16. After the voter has marked the ballot at one of the voting machines 10 and 11, the ballot may be folded and inserted into the ballot box 27.

In either of the booths 12 and 13, the voter may utilize a rubber stamp 35 supported on a wire 52 for marking his ballot 18. The stamping operation to indicate by a cross or X is the conventional procedure in many States, including California. As is hereinafter described, however, the rubber stamp 35 is utilized to stamp a cross in boxes or squares on the ballot 18 and also to establish electrical paths for registering a vote in a memory circuit, not shown in FIGURE 1, which is part of each of the voting machines 10 and 11. An ink pad 31 is provided at the front of each of the voting machines 10 and 11 for inking the tip of the rubber stamp 35. After the ballot 18 has been removed from the front of the voting machine, folded and inserted through an opening 28 of the ballot box 27, the poll worker at the desk 16 may operate the control panel 15 to count the vote. The vote may also be cancelled under control of the panel 15 when the voter wishes due to inaccurate markings on the ballot. The cancelled ballot is folded and kept separately for record purposes. The vote is counted by operating the control panel 15 to couple the registered information in the memory circuit at the voting machine through a cable 23 to a counter unit 25. The counter unit 25 includes, as is also hereinafter described, a ballot counter which can be seen through an opening 24 at the top of the unit 25 and one counter for each voting box on the ballot 18.

As shown particularly in FIGURE 9, the control panel 15 has two vote buttons 66 and 67 and two cancel buttons 68 and 69. All four of the buttons 66–69 are covered by spring-biased guards 59 to prevent the inadvertent operation of any one of the buttons 66 through 69. To operate one of the buttons 66 through 69, the respective guard 59 must first be pivoted in a counterclockwise direction away from the button. The poll worker generally must use two hands to operate one of the buttons 66 through 69; one to rotate the guard 59, and the other to depress the button.

The vote button 66 and the cancel button 68 are utilized to control the voting machine 10, and the vote button 67 and the cancel button 69 are utilized to control the voting machine 11. When one of the vote buttons 66 and 67 is depressed, the registered vote at the machine associated with the depressed button is transferred to and counted by the counter unit 25. When one of the cancel buttons 68 and 69 is depressed, registered vote at the machine associated with the depressed button is cancelled or erased. No indication of the marking of the ballot is provided at the counter unit 25 except that a running total of the number of cancelled ballots is maintained at the counter unit 25. When the vote is cancelled, the voter may take another ballot 18, return to one of the voting booths 12 and 13 and proceed to mark the new ballot. From the standpoint of the voter, the voting procedure is exactly the same as the usual stamping vote procedure. The various electrical and electro-mechanical components utilized to automatically count the votes as they are cast do not in way change the procedure for the voter except that the ballots must be locked on the voting machine.

The counter unit 25 may be coupled to telemetering equipment, not shown, for transmitting the vote as it is cast or for transmitting the totalized vote when the polling place is closed. Conventional telemetering equipment may be utilized with the transmission medium being either leased telephone wire or the like or radio waves. A central station may in that manner count the vote as it is cast at a number of different polling places.

Referring now to FIGURES 2, 3 and 8, the ballot 18 is provided with a number of openings 56 which are aligned with a number of protruding spindles 40 and 41 of the voting machine 10. Illustratively, as shown in FIGURE 2, there are three spindles 41 horizontally aligned across the top of a front or desk panel 48 of the voting machine 10 and there are five spindles 40 vertically aligned on the desk panel 48. In addition to the desk panel 48, the voting machine 10 includes a top panel 46, and two side panels 47 which together with a back panel and a bottom panel, both not shown in FIGURE 2, form a cabinet 35 for enclosing the various components of the voting machine 10. The two voting machines 10 and 11 are identical so that only the details of the machine 10 are described herein. The ballot 18 may be entirely conventional except for the holes 56 punched along the top and down the middle of the ballot. The particular arrangement and number of holes 56 and spindles 41 and 40 is not critical. The function of the holes is to accurately position the ballot 18 on the desk panel 48. Any particular arrangement and number may be selected and standardized for the voting system.

In order to place the ballot 18 on the desk panel 48 in position for voting, a locking plate 39 is raised by means of a control arm 38. The locking plate 39 may be made of plastic and the control arm 38 is attached thereto by means of a bracket 50. As shown in FIGURE 3, the locking plate 39 is pivoted at 44 on a double hinge 42. The entire desk panel 48 may be rotated on the double hinge 42 about a pivot 43 to permit access into the cabinet 36. The double hinge 42 is affixed partially to the top panel 46 and partially to the desk panel 48 to the locking plate 39. The ballot 18 is sliped over the spindles 41 when the control arm 38 and the locking plate 39 are raised or rotated out of the way. With the ballot 18 in position on the desk panel 48, so that the spindles 40 and 41 are inserted through the holes 56, the control arm 38 is rotated to its lower position rotating therewith the locking plate 39 to lock the ballot 18 on the desk panel 48. As is hereinafter described, the locking plate 39 functions also as enabling circuit means to permit the operation of predetermined memory components in the voting machine 10 when the ballot 18 is in position.

The desk panel 48 includes a terminal board 60 covered by a felt covering 53 shown particularly in FIGURE 4. The ballot 18 is placed on top of the felt covering 53. The terminal board 60 forms one side of the desk panel 48 which has a sandwich structure for enclosing a number of conductors or wires 62 and 63. The

other side of the sandwich structure consists of a back plate 65. The terminal board 60 consists of a rectangular array of conductive terminals 61. Each of the terminals 61 may have dimensions which are essentially the same as that of the voting squares 54 in FIGURE 8 on the ballot 18. Typically, these dimensions may be ⅜ inch by ⅜ inch. The terminal board 60 includes a larger number of terminals 61 than the number of voting squares 54 on any given ballot 18. The various ballots 18 for different elections or primaries are, of course, different. The voting squares 54 are arranged in columns adjacent the identification information for the particular selection. For one election, the columns of voting squares 54 may be at one set of particular positions on a ballot 18 and for another election, the columns may have a different set of positions. Not all of the terminals 61 on the terminal board 60 are, therefore, utilized for any particular ballot 18. As is hereinafter described, selected columns of the terminals 61 are energized or enabled under control of the locking plate 39 at the top of the terminal board 60.

As shown in FIGURE 8, the locking plate 39 includes one strip 58 of electrically conductive material for each of the columns of terminals 61 on the terminal board 60. When the ballot 18 is placed on the terminal board 60 in position with the holes 56 fitting over the spindles 41, some of the strips 58 of the locking plate 39 are aligned with the columns of voting squares 54 on the ballot 18. The ballot 18 need not have the same dimensions as the terminal board 60 as smaller ballots may be utilized. Illustratively, the terminal board 60 may have overall dimensions of approximately 2 feet by 2 feet so that ballots up to that size may be utilized with the voting machine 10. As indicated above, only the machine 10 is being described in detail with the machine 11 being identical.

In addition to the holes 56 in the ballot 18 which are utilized for positioning the ballot 18 on the terminal board 60, a number of other holes 57 are provided along the top of each ballot 18 above the columns of voting squares 54. In other words, one hole 57 is provided for each column of voting squares 54 on the ballot 18 with the opening 57 being aligned therewith at the top of the ballot 18. These holes 57 function together with the locking plate 39 to effectively enable the terminals 61 of the columns of terminals 61 under the columns of voting squares 54.

As shown in FIGURE 3, each of the strips 58 in the locking plate 39 has two contacts 87 which establish an electrical connection between two leads 92 and 93. One of the contacts 87 provides for a conductive connection between the plate 58 through a hole 57 in the ballot 18 to the lead 93. For each hole 57 along the top of the ballot 18, one strip or plate 58 establishes a connection between the pair of associated leads 92 and 93. As illustrated in FIGURE 7 as well as in FIGURE 3, the lead 92 is connected to the common ground connection and the lead 93 is connected to one side of an enabling relay 83. The other side or terminal of the enabling relay 83 is connected to a source of alternating current 110 depicted in FIGURE 7. The source 110 may provide 24 volts A.C. and be powered from the conventional 115 volt A.C. house supply. The present invention is not restricted to any particular voltage magnitude. Twelve volts for example may also be utilized.

There is one enabling relay 83 for each of the columns of terminal 61 of the terminal board 60 or one relay 83 for each of the metallic strips 58 of the locking plate 39. The holes 57 along the top of the ballot 18 function in this manner, when the locking plate 39 is closed over the ballot 18, to selectively operate a number of the relays 83 to enable selected columns of the terminals 61. The particular columns of terminals 61 which are enabled are those which are directly under the columns of the voting squares 54 of the ballot 18.

Each relay 83 which is operated functions to enable a column of terminals 61 by establishing connections between the pairs of leads 62 and 63 briefly mentioned above which are sandwiched between the terminal board 60 and the back plate 65 of the panel 48. The leads 62 and 63 are shown in FIGURE 4 and also in FIGURE 3. The electrical path completed through the contacts of the enabling relays 83, as illustrated in FIGURE 4, is from a terminal 61 through lead 62 and then through the operated contacts of the associated relay 83 back to lead 63 and to a banana plug 64 at the back plate 65. There is, accordingly, one banana plug 64 for each of the terminals 61 of the terminal board 60. The connection completed by the relay 83 is from a terminal 61 through the leads 62 and 63 through the banana plug 64 to a memory circuit in the voting machine 10. The memory circuit, which includes a number of memory relays 70, is hereinafter described. The connection completed by the operation of the relay 83 is not as yet a complete electrical circuit because the terminal 61 is neither grounded nor connected to a potential source. When, however, as is hereinafter described, the rubber stamp 35 is utilized to mark the ballot 18, the electrical connection through the closed contact of the relay 83 is extended from the terminal 61 through the rubber stamp 35 to a ground or common connection.

As illustrated particularly in FIGURE 6, the rubber stamp 35 is supported by the wire 52 which is also shown in FIGURES 1 and 2. The wire 52 passes through a central opening 102 in a plastic end 119 which is threaded onto a plastic handle or main portion 104 of the stamp 35. The wire 52 terminates at a connect terminal 106 which may be soldered thereto. The connect terminal 106 is attached to a probe 107 which is essentially at the center or longitudinal axis of the handle 104. The handle 104 and the end 119, in threaded engagement therewith, together form a convenient gripping member for the voter. The handle 104 supports a rectangular rubber stamp 108 which fits into a rectangular groove 109 at the end of the handle 104. The probe 107 passes through the sponge rubber pad 108 at the end of the handle 104 and the pad 108 extends for a short distance at the front of the handle 104.

When the rubber stamp 35 is pressed against a voting square or box 54 of the ballot 18, the pad 108 is compressed to imprint a cross or other symbol in the voting square 54 and the probe 109 passes through the felt covering 53 over the terminal board 60 to electrically contact the particular terminal 61 which is under the voting square 54. As the pad 108 compresses, it permits a greater portion of the probe 107 to extend from the rubber stamp 35 to readily pass through the felt covering 53.

As shown in FIGURE 7, the wire 52, which supports the rubber stamp 35 and which provides an electrical connection thereto, extends from a rotary switch 100. The rotary switch 100 includes a rotating arm 103 and three concentric sets of conductive members. The inner conductive member is a contiguous metallic ring 118. The wire 52 is connected to the ring 118 and the ring 118 is electrically connected in turn to the source of alternating current potential 110 briefly mentioned above. The arm 103 does not electrically contact the inner ring 118 so that the switch 100 is utilized merely as a terminal strip for establishing the connection between the source 110 and the wire 52. As is hereinafter described, however, the rotary switch 100 functions under control of the panel 15 in FIGURE 1 and also in FIGURE 7, to register the cast vote in the counter unit 25. The connection from the source 110 to the wire 52 is grounded as shown in the counter unit 25 in FIGURE 7.

By contacting the probe 107 of the rubber stamp 35 to a terminal 61 of the board 60, a ground potential is provided at the terminal 61 to complete a path for operating one of the memory relays 70 in the memory circuit of the

voting machine 10. The ground potential at the terminal 61 is extended through the respective lead 62, the operated contact of the associated enabling relay 83, a lead 63, the plug and jack 64 and a cable 111 to a plug 91 at the memory circuit. The jack associated with the plug 91 is electrically connected to one side of the winding of the memory relay 70.

There may be one memory relay 70 for each of the terminals 61 of the terminal board 60. In the illustrative example mentioned above for a two foot by two foot terminal board 60, there may be 2500 terminals 61 so that the voting machine 10 can include 2500 memory relays 70. The selective operation of the enabling relays 83, however, only permits the operation of only some of the relays 70. Illustratively, only 250 of the relays 70 may be enabled by the operated relays 83. The number of enabling relays 83 operated for a particular ballot 18 may illustratively be five. Two hundred and fifty relays 70 are selected by the five operated enabling relays 83 because each establishes connection from terminal 61 to fifty of the relays 70, since there are fifty terminals 61 in each column. Though 2500 memory relays 70 can be utilized as part of the voting machine actually as a practical manner a smaller number would be utilized. For different elections, the flexible connections to the relays 70 can be changed utilizing the various jacks and banana plugs. As an illustration, 500 relays 70 can be utilized for registering the vote from a number of different ballots in one particular election. Depending upon the particular different ballots, some of the memory relays 70 may be enabled for all the ballots. If the names of the candidates of the different ballots fall over the same terminals 61 on the terminal panel 60 there is no need to provide memory relays for these terminals because they would not in any event be enabled by the ballots. The present invention is accordingly not restricted to any particular number of memory relays 70.

As described above, ground potential is provided to the probe 107. By providing the ground potential from the probe 107 to a terminal 61, the ground potential is applied to one side of the associated relay winding 70. The other side or terminal of the memory relay winding 70 is connected to the source of alternating current potential 110. The relay 70, accordingly, operates.

As shown particularly in FIGURE 5, each of the memory relays 70 has a winding 78 and an armature 71 which is magnetically coupled to and movable by the winding 78. When the winding 78 is energized, the armature 71 is attracted thereto to close a pair of contacts 72. One of the contacts 72 is supported by an insulator bushing 101 on the armature 71. The stationary contact 72 is coupled through a jack and plug 90 to the counter unit 25. The contact 72 on the armature 71 is connected to a terminal on the rotary switch 100. When the relay 70 is operated, it accordingly provides an electrical connection from a terminal of the rotary switch 100 to the counter unit 25.

The relay 70 has actually three instead of two conditions. These conditions are an operated, a normal and a neutral condition. The condition of the relay is determined in part by the energization of the winding 78 and in part by the position of an associated pivoted locking pawl 73. The end 79 of the armature 71 engages the pivoted locking pawl 73. The locking pawl 73 has three notches 80, 81 and 82. The end 79 of the armature 71 is normally engaged in the notch 80. When the armature 71 is attracted to the energized winding 78, the end 79 is moved into the notch 82 of the locking pawl 73. The end 79 of the armature 71 remains engaged in the notch 82 by the locking pawl 73 when the winding 78 is de-energized. In other words, when the rubber stamp 35 is removed by the voter, after stamping a square 54 on the ballot, the relay winding 78 becomes de-energized but the armature 71 remains locked or latched in an operated position with the contacts 72 closed. When the armature 71 moves downward due to the energization of the winding 78, the locking pawl 73 rotates slightly in a clockwise direction in FIGURE 5 against a spring 76.

The locking pawl 73 associated with a number of the relays 70 may be mechanically coupled by tie members 85. As shown in FIGURES 4 and 5, a tie member 85 is attached by screws 86 to the top of a number of the locking pawls 73. The notches 80, 81 and 82 of the locking pawls 73 and the tie members 85 together function to prevent casting votes for two or more candidates for the same office. For example, for the office of governor, only a single candidate is to be selected. In the event that more than one candidate is marked by the voter, none are registered by the memory circuit. The tie member 85 mechanically couples the locking pawls 73 of the memory relays 70 associated with the terminals 61 which are adjacent to each other in the same column of the terminal board 60. Suppose that one voting square 54 is marked and then a voting square 54 adjacent thereto for another candidate for the same office is marked. For such a sequence, first one memory relay 70 is operated in the manner described above to close its associated contacts 72. When the winding 78 of the second memory relay 70 is energized, the registration by the first relay 70 is neutralized and the contacts 72 of the second relay 70 do not close. This is accomplished as indicated above by the tie member 85. When the second relay 70 of the two tied-together relays 70 is operated, its armature end 79 rotates its locking pawl 73. The end 79 of its armature 71 does not, however, remain in the operated notch 82 of the locking pawl 73 because the locking pawl 73 is held partially rotated to its normal position, being engaged by the armature 71 of the first relay and the tie member 85. The edge between the notches 81 and 82 is cut back shorter than the edge between the notches 80 and 81. The dimension may, illustratively, be 0.015 inch. With the locking pawl 73 held slightly in a rotated position due to the coupling to its associated locking pawl, the end 79 clears the shorter edge between the notches 81 and 82 when the winding 78 is de-energized. The contacts 72 are not closed when the armature end 79 is in the neutral notch 81. The second relay in the sequence of operation to operate relay 70, accordingly, moves its armature end 79 to the operated notch 82 but, when its winding 78 de-energizes, the end 79 moves up to the neutral notch 81.

The end 79 of the first-to-operate relay 70 also moves to its neutral notch 81 when the second relay 70 operates. When the end 79 of the second relay 70 moves over the edge between the notches 80 and 81 of its associated pawl, it rocks the pawl slightly in a clockwise direction. The end 79 of the first relay 70 is held by the edge between the notches 81 and 82 of its associated pawl 73. The edge, as described above, is cut back. When the pawl 73 of the second relay 70 is rocked, it moves therewith the pawl 73 of the first relay 70 to permit the end 79 of the first relay to clear the edge between the notches 81 and 82. The end 79 of the first relay 70, accordingly, moves to the neutral notch 81 when the second relay 70 operates. The depth of the neutral notches 81 is somewhat shallower than the other notches to hold the pawls 73 in a rotated position. The ends 79, therefore, of the armatures 71 of the two relays 70 remain in the neutral positions with neither relay 70 providing for the closure of its associated contacts 72. Any number of relays 70 may be intercoupled in this manner by tie members 85 as well as just two. For example, there may be four or five candidates running for office and only one is to be selected by the voter. If any combination of two or more are selected, the tie members 85 and the locking pawls 73 function to neutralize all of the votes. If a third candidate is selected, the ends 79 of the first two relays 70 remain in the associated neutral notches 81 and the end of the third relay 70 also returns to its neutral notch 81 when its winding 78 de-energizes. This is exactly the conventional procedure when the stamped ballots are manually counted. If

two or more candidates are selected by stamped crosses adjacent their names, neither is counted in the voting tabulation.

The sequence continues in this manner as the vote is cast with one relay 70 being operated each time the rubber stamp 35 makes a mark on the ballot.

Under control of the panel 15, the registration in the one relay 70 being operated each time the rubber stamp 35 makes a mark on the ballot. When the voter has completed marking his ballot 18, the memory relays 70 are selectively locked-operated to register the vote. The vote remains registered in the memory circuit until the control panel 15, shown in FIGURES 1 and 7, is operated.

Under control of the panel 15, the registration in the memory circuit may either be transferred to and totalized by the counter unit 25 or it may be erased. If the vote button 66 at the panel 15 is operated, the registration is transferred to the unit 25 and if the cancel button 68 is operated, the registration is erased. When the vote button 66 is operated, it completes a path for energizing a synchronous motor 112 shown in FIGURE 7. The control panel 15 is connected to the source of potential 100. When the button 66 is operated, the connection is extended to the motor 112. The synchronous motor 112 is mechanically and electrically coupled to the rotary switch 100. When the motor 112 is energized, it rotates the arm 103 of the switch 100 in a clockwise direction. The start position of the arm 103 of the switch 100 is at the bottom, as shown in FIGURE 7. When the arm 103 reaches the first contact or terminal 117 of the outer ring of switch 100, the middle ring of the switch 100 functions to energize the motor 112. The button 66 is only operated for a brief interval which is sufficient for energizing the motor 112 to rotate the arm 103 to engage the first terminal 117 and the split middle ring of the switch 100. The middle ring is split at the bottom which is both the start and the stop position of the rotary switch 100. After the arm 103 engages the middle ring, the potential is supplied from the source 110 through the middle ring and the arm 103 of switch 100 to the motor 112. The motor 112 is, in this manner, energized until the arm 103 reaches the stop position of the switch 100.

As the arm 103 rotates in a clockwise direction, it successively couples A.C. potential to the terminals 117 in the outer ring. The terminals 117 are connected to the contacts 72 on the armatures 71 of the memory relays 70. Those pairs of contacts 72 which are closed, function to establish connections from the terminals 117 of the switch 100 to the counter unit 25. The A.C. potential provided through the arm 103 of the switch 100 is, in this manner, successively coupled through the operated contacts 72 of the memory relays 70 to the counter unit 25. The counter unit 25 includes one counter relay 115 for each of the memory relays 70 and also a ballot totalizer relay 114. The relay 114 is operated each time one of the vote buttons 66 or 67 is operated. Actually, the contacts 72 of a number of relays 70 are connected to each of the terminals 117 of the rotary switch 100. As indicated above, there may be illustratively 2500 relays 70 and 25 terminals 117 so that 100 relays 70 are connected to each terminal 117. The relays 70 associated with a horizontal row of terminals 61 on the panel 60 are connected to the same terminal 117.

The rotary switch serves the function of reducing the power requirements of the voting machine 10 because the counter relays 115 in the counter unit 25 are successively operated in groups. The power requirements are less by connecting the relays 70 associated with a horizontal row instead of a vertical row of the terminals 61 to a terminal 117 of the switch 100. If the vertical rows were associated, the rows enabled by the enabling relays 83 would require more power on the average than any horizontal row. By distributing the connections in this manner, and utilizing the rotary switch 100, the voting machines may be readily operated from the conventional house supply.

The voting machine 10 includes a battery powered standby source 110*a* (FIGURE 7) which is disabled as long as power is being received at the source 110. The source 110*a* becomes operative in the event of a power failure to power the voting machine. Because of the relatively small power requirement of the machine, the standby source 110*a* may be relatively small.

Toward the end of the rotation of the rotary switch 100, the arm 103 engages the last terminal or contact 117 of the outer ring of the switch 100. Alternating current is coupled through the last terminal 117 to the winding of a release relay 120. The other terminal of the relay winding is grounded. When the winding of the relay 120 is energized, it moves a connector arm 121 coupled to a movable core 125 (FIGURE 4) of the relay 120. The memory relays 70 are arranged in banks at different levels with each level being positioned adjacent one of a number of rotatable cams 105. As shown particularly in FIGURE 5, each cam 105 is positioned against some of the locking pawls 73 of the memory relays 70. The cams 105 are rotated in a clockwise direction, as depicted in FIGURE 5, and looking from the left as depicted in FIGURE 4, when the relay 120 is operated. The cams 105 have a flat surface which is normally against the locking pawl 73. When they are rotated in a clockwise direction, they rotate the locking pawls 73 through a small angle to release the armatures 71 permitting them to return to their normal positions in the notches 80 of the locking pawls 73. At the end of the rotary motion of the switch 100 in this manner, the cams 105 are rotated in a clockwise direction to reset the operated ones of the memory relays 70. Spring means, not shown, function to return the resetting linkages and the cams 105 to their normal positions after the operated ones of relays 70 have been released. The voting machine 10, accordingly, automatically returns to normal when the rotary switch completes its rotation. The enabling relays 83 returned to normal when the locking plate 39 (FIGURE 2) was lifted to remove the ballot 18. The counter relays 115 are mechanically locking relays so that they retain their count as the switch operates and returns to normal.

As described above, the memory relays 70 may also be released under control of the cancel button 68 at the control panel 15. If the button 68 is operated instead of the button 66 to register the vote, the cancel button 68 functions to directly couple an operating potential to the winding of the relay 120 causing it to reset the operated ones of the relays 70. The motor 112 is not energized so that the rotary switch 100 does not function to selectively supply count potentials to the counter unit 25. When the cancel button 68 is operated, it also functions to operate a cancel totalizer relay 116 in the counter unit 25.

In addition to the provision of means for registering one vote for one candidate of a number of candidates for an office, the voting machine 10 also includes means for selecting a number of candidates from a large group of candidates and for neutralizing the vote in the event a greater number are selected. For example, in an election, selections for four out of ten candidates may be required. In the event that five are selected instead of four, the entire vote for the particular office is not counted. FIGURES 11 through 13 illustrate the equipment which forms part of the voting machine 10 and which is utilized for this function.

Referring particularly to FIGURE 13, which is a circuit representation of this portion of the voting machine 10, a stepping switch 130 is set to the particular number of maximum candidates for the office. For example, in the above illustration, the switch 130 will be set to position 4 to indicate that only four candidates and no more can be selected for the particular office. The switch 130 is mounted on a bracket 140 in the voting machine 10. The bracket 140 and the components supported thereby are on the bottom panel of the voting machine 10 and enclosed by the front panel 48. The

front panel 48 is lifted or rotated upwardly about the double hinge 42 depicted in FIGURE 3 in order to permit access to the selector switch 130. After the selector switch 130 is set, the front panel 48 is locked in its closed position. The front panel 48 is not lifted during the operation of the voting machine 10 in the polling place.

The switch 130 includes a settable stop member 140 which is set to position the switch. A contact arm 136 of the switch 130 is resiliently urged in a clockwise position against the member 140. The position of the arm 136 is controlled by a stepping ratchet during the successive operations of the switch 130. When the switch 130 is released or reset, however, as is hereinafter described, the arm 136 rotates in a clockwise direction until it engages the stop member 140.

For each of the candidates in the multiple section category, one memory relay 133 is provided. The memory relays 133 may be similar to the relays 70 described above. The relays 133, however, are not intercoupled by means of tie members and the neutral position is not utilized so that only two notches are required, one for the normal position and one for the memory operated position. There is one memory relay 133 for each of the positions of the stepping switch 130 except for a stepping position designated zero. In the particular illustration of FIGURE 13, the switch 130 provides for a maximum of sixteen possible candidates for which the switch 130 may be set. At the maximum position, position 16, sixteen candidates may be selected for different offices. Such a number is seldom utilized however.

When the rubber stamp 35, depicted in FIGURE 6 and in FIGURE 2, etc., is utilized to select one of the candidates for the multiple selection category, an associated memory relay 133 is operated. There is one relay 133 for each terminal 61 on the terminal board 60 utilized for the multiple selection category. The relay 133 latches or locks-operated in the manner described above in reference to the memory relays 70 to complete a connection between its pair fo contacts. At the same time that the memory relay 133 is operated, the stepping switch 130 is stepped by an associated step winding 131 in a counter-clockwise direction. The connections from the panel 60 to the different relays 133 are multiplied through contacts of the relays 133 through the winding 131. Each relay 133 has a latching armature similar to the armature 71 of the relay 70. The latching armature cooperates with the associated locking pawl. Each relay 133 also includes a nonlatching armature which functions when the relay winding is energized to step the relay 130. The nonlatching armature of the relay 133 remains operated only during the time that the winding of the relay 133 is energized. Thereafter, the armature releases. The latched armature of the relay 133, however, remains latched by the associated locking pawl. After the first candidate, therefore, has been selected by stamping the ballot 18, the stepping relay has stepped one step in a counter-clockwise direction and the selected memory relay 133 registers the selected vote.

After each vote, the stepping relay 130 steps once more in the counter-clockwise direction. When the arm 136 of the switch or relay 130 steps to the position designated 0 which occurs in the event that one more than the preselected number are selected, a disabling relay 132 is operated. The operating path is from the source 110 through the arm 136, contact zero of the stepping switch 130 to the grounded winding of the relay 132. There is one armature associated with the relay 132 for each of the memory relays 133. When the relay 132 operates, it disables the path of the contacts of the memory relays 133 to the counter unit 25. Thereafter, when the rotary switch 100 is operated, indications are not provided from the memory relays 133 to counter unit 25.

In addition to the terminal 0, the terminals 5 through 16 may also be connected to the winding of the relay 132. If two or three extra candidates are selected, the relay 132 remains operated to effectively disable the memory relays 133.

When the control panel 15 is operated to either count the vote or to cancel it, it also resets the switch 130 by permitting the arm 136 to return to the preset position 4. The stepping switch 130 is, accordingly, returned to normal and is ready for the next voting operation.

There may be any number of switches 130 in the voting machine 10 and three are depicted in FIGURE 11.

In the embodiment thus far described, the control panel 15 controls two voting machines 10 and 11. It is apparent, however, that one control panel may be utilized to control any number of voting machines. For example, in FIGURE 10, 12 voting machines 220 through 231, positioned respectively in 12 booths 200 through 211, are controlled by a panel 240. The control panel 240 includes one pair of buttons for each voting machine. Of each pair of buttons, one functions to count the registered vote and the other to erase it.

Although this invention has been disclosed and illustrated with reference to particular applications, the principles involved are susceptible of numerous other applications which will be apparent to persons skilled in the art. For example, the registration in the memory may be initiated magnetically instead of electrically with the rubber stamp 35 including a magnet instead of an electrical probe. The invention is, therefore, to be limited only as indicated by the scope of the appended claims.

I claim:

1. A voting machine system for use in conjuction with ballots to be marked, including, at least one voting machine including means for simultaneously marking the ballot and for electrically registering an indication of the marking, a counter unit for said voting machine and a control panel for said voting machine, said control panel including means for transferring the registered indications in said machine to said counter unit at the completion of the marking of the ballot for providing indications of the totals of the votes as they are cast, and means for cancelling the registered indications at the machine.

2. Voting apparatus for use in conjunction with ballots to be marked, including, a voting machine that may be one of a number of similar voting machines each including means for marking a ballot, and electrical means for simultaneously registering an indication of the marking on the ballot as the ballot is marked by said marking means, said electrical means including means effective upon predetermined combinations of markings on the ballot for cancelling the registrations for each of the markings of said predetermined combinations at the time the ballot is marked; a common counter unit for said number of voting machines and a common control panel for said number of voting machines, said control panel including means for transferring the registered indications in any one of said machines to said counter unit at the completion of the marking of the ballot for providing indications of the totals of the votes as they are cast, and means for cancelling the registered indications at any one of the machines.

3. A voting machine for use with ballots to be marked by a stamp having a pad at one end for marking the ballot when inked and brought into contact with the ballot and a probe of electrically conductive material for passing through said ballot when marked by said pad, said machine including a terminal panel for supporting the ballot and including an array of terminals made of electrically conductive material; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings by said stamp on the ballot, and circuit means for being electrically connected to said probe of said stamp for completing an operative electrical circuit through said probe and any one of the terminals of said terminal panel to said memory circuit when said stamp is brought into contact with the ballot over said one terminal.

4. A voting machine in accordance with claim 3, in-

cluding, in addition, output terminals from said memory circuit individually associated with said terminals of said terminal panel, means for selectively coupling output potentials from said memory circuit to said output terminals in accordance with the cast vote as indicated by the selective contacting of said terminals by said probe of said stamp, and means effective after the operation of said coupling means for erasing the registration in said memory circuit to return said memory circuit to normal.

5. Voting apparatus for use in conjunction with ballots to be marked, including, at least one voting machine for marking the ballots and simultaneously registering indications of the vote as it is marked on the ballot, each of said voting machines including first means for marking the ballot when brought into contact with the ballot, and second means for passing through said ballot during said marking; a terminal panel for supporting the ballot including an array of terminals; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings on the ballot; and circuit means electrically connected to said second means for completing an operative electrical circuit through any one of the terminals of said terminal panel to said memory circuit when said first means is brought into contact with the ballot over said one terminal; a counter unit for totalizing the votes registered in said memory circuit; manual control means for transferring the registration in said memory circuit to said counter unit for totalization; and manual control means for erasing the registration in said memory circuit without transferring it to said counter unit to cancel the cast vote.

6. A voting machine for use with ballots to be marked by a rubber stamp, including, a stamp having a pad at one end for marking the ballot and brought into contact with the ballot, and a probe made of electrically conductive material passing through said pad; a terminal panel for supporting the ballot including an array of terminals made of electrically conductive material; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings by said stamp on the ballot, and circuit means electrically connected to said probe of said stamp for completing an operative electrical circuit through said probe and any one of the terminals of said terminal panel to said memory circuit when said stamp is brought into contact with the ballot over said one terminal, said memory circuit including means responsive to any one of a number of predetermined combinations of markings on the ballot by said stamp for cancelling the registrations of the indications of all of said markings of said one predetermined combination.

7. A voting machine for use with ballots to be marked by a rubber stamp, including, a stamp for marking the ballot when brought into contact with the ballot, and a probe made of electrically conductive material for passing through said ballot during said marking; a terminal panel for supporting the ballot including an array of terminals made of electrically conductive material; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings on the ballot; and circuit means electrically connected to said probe for completing an operative electrical circuit through said probe and any one of the terminals of said terminal panel to said memory circuit when said stamp is brought into contact with the ballot over said one terminal, said memory circuit including a number of relays individually associated with said terminals of said terminal panel, a locking pawl for each of said relays having an operated, a neutral and a normal position, and means including tie members mechanically intercoupling predetermined ones of said locking pawls for moving any one of said predetermined locking pawls in its operated position to its neutral position responsive to the operation of the relay associated with any other one of the predetermined locking pawls.

8. A voting machine for use with ballots to be cast by a probe for piercing said ballot and made of electrically conductive material; a terminal panel for supporting the ballot including an array of terminals made of electrically conductive material; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings on the ballot; and circuit means electrically connected to said probe for completing an operative electrical circuit through said probe and any one of the terminals of said terminal panel to said memory circuit when brought into contact with said one terminal, lockout means for selectively enabling predetermined portions of the memory circuit in accordance with the particular ballot to be cast.

9. In combination, a ballot to be marked defining a number of perforations identifying the particular areas to be selectively marked on the ballot, and a voting machine for marking the ballot and registering indications of the markings on the ballot, said voting machine, including, a stamp for marking the ballot when inked and brought into contact with the ballot, and a probe made of electrically conductive material; a terminal panel for supporting the ballot including an array of terminals made of electrically conductive material; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings on the ballot; a lockout plate having a number of conductive strips for selectively establishing electrical control circuits through the perforation of the ballot to be marked from some of said terminals to said memory circuit for enabling portions of said memory circuit in accordance with perforations of the ballot to be marked; and circuit means electrically connected to said probe of said stamp for completing an operative electrical circuit through said probe and any one of said some of said terminals to the enabled portions of said memory circuit when said stamp is brought into contact with the ballot over said one terminal.

10. In combination in accordance with claim 9 wherein said memory circuit includes a number of relays individually associated with said terminals of said terminal panel, a locking pawl for each of said relays having an operated, a neutral and a normal position, and means including tie members mechanically intercoupling predetermined ones of said locking pawls for moving any one of said predetermined locking pawls in its operated position to its neutral position responsive to the operation of the relay associated with any other one of the predetermined locking pawls.

11. A voting machine for use with ballots to be marked by a stamp, including, a stamp for marking the ballot when brought into contact with the ballot, and a metallic member for initiating the registration of marking, a panel for supporting the ballot including an array of responsive devices selectively operated when the metallic member is proximate as the ballot is marked, and a memory circuit coupled to said devices for registering indications of the markings by said stamp on the ballot.

12. A voting machine for use wtih ballots to be marked by a stamp, including a stamp for marking the ballot when brought into contact with the ballot, and a metallic member for initiating the registration of marking, a panel for supporting the ballot including an array of responsive devices selectively operated when the metallic member is proximate as the ballot is marked, a memory circuit coupled to said devices for registering indications of the markings by said stamp on the ballot; output terminals from said memory circuit individually associated with said devices, means for selectively coupling output potentials from said memory circuit to said output terminals in accordance with the cast vote as indicated by the selective operation of said devices by said stamp, and means effective after the operation of said coupling means for erasing the registration in said memory circuit to return said memory circuit to normal.

13. In combination, a ballot to be marked having a number of voting squares arranged in columns separated by designations of the voting squares, said ballot defining a number of perforations along the top of the ballot one over each column of voting squares; and a voting machine for marking the ballot and registering indications of the markings on the ballot, said voting machine, including, a stamp for marking the ballot when brought into contact with the ballot, and a probe made of electrically conductive material; a terminal panel for supporting the ballot including an array of terminals made of electrically conductive material; a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings by said stamp on the ballot; a lockout plate for locking said ballot on said terminal panel, said lockout plate including contact members for establishing electrical control connections through the perforations of said ballot, and enabling relay means responsive to said established control connections for connecting the terminals under preselected voting squares of the ballot to said memory circuit; and circuit means electrically connected to said probe for completing an operative electrical circuit through said probe and any one of said terminals connected to the memory circuit when said stamp is brought into contact with the ballot over said one terminal.

14. In combination in accordance with claim 13 wherein said memory circuit includes means responsive to any one of a number of predetermined combinations of markings on the ballot by said stamp for cancelling the registrations of the indications of all of said markings of said one predetermined combination.

15. A voting machine for use with ballots to be marked by means brought into contact with the ballot, a terminal panel for supporting the ballot including an array of terminals for sensing the presence of said means when marking said ballot, a memory circuit coupled to said terminals of said terminal panel for registering indications of the markings on the ballot; and circuit means electrically connected to the terminals of said terminal panel and to said memory circuit for energizing portions of said memory circuit when a terminal senses the pressence of said means when said means is brought into contact with the circuit when said rubber stamp is brought into contact with the ballot over said one terminal, said memory circuit including a settable stepping switch for controlling a particular combination of markings on the ballot, and means including the stepping switch and responsive to a number of markings in the combination exceeding the setting of the switch for cancelling the registration in said memory circuit corresponding to all of the markings in the combination.

16. Data processing apparatus for use in conjunction with a sheet of material to be marked by a stamp brought into contact with the sheet and having a metallic member for electrically initiating the simultaneous registration of the marking; said apparatus comprising a panel for supporting the sheet and including an array of responsive devices selectively energized by the stamp when the metallic member is proximate as the sheet is marked, and a memory circuit coupled to said responsive device for registering indications of the markings by said stamp on the sheet, said memory circuit including mechanical latching means for maintaining the registrations without electrical power.

17. Data processing apparatus for use in conjunction with a sheet of material to be marked by a stamp brought into contact with the sheet, and having a metallic member for electrically initiating the simultaneous registration of the marking; said apparatus comprising a panel for supporting the sheet and including an array of responsive devices selectively energized by the stamp when the metallic member is proximate as the sheet is marked, a memory circuit coupled to said responsive device for registering indications of the markings by said stamp on the sheet, said memory circuit including mechanical latching means for maintaining the registrations without electrical power, a counter unit for totalizing successive registrations of said memory circuit for different marked sheets, and a rotary switch coupled to said memory circuit for first successively coupling the registrations of the indications of the markings of a sheet to said counter unit and then for resetting said latching means in said memory circuit.

18. A voting machine for use with ballots to be marked by a marker when brought into contact therewith, said voting machine comprising the combination of:

a panel for supporting a ballot in position for marking by said marker,

means in said panel positioned to register with preselected portions of said ballot when said ballot is positioned to be marked by the marker and responsive to the presence of said marker so as to be energized by said marker during said marking process, and

a memory circuit coupled to said means in said panel for being actuated in response to the energizing of said means during said marking process for registering indications of the portion of said ballot marked by said marker.

19. A voting machine for use with ballots to be marked by a marker when brought into contact with the ballot, and having a probe positioned to be disposed immediately adjacent said ballot during said marking process, said machine comprising the combination of:

a panel for supporting a ballot thereon for marking by said marker,

means in said panel positioned to register with preselected portions of said ballot and to be energized by the presence of said probe during said marking process,

a memory circuit for registering indications of the markings made on a ballot by said marker, and

circuit means electrically connected to said memory circuit and to said means and actuatable in response to the presence of said probe only when said marker is in position to mark a portion of said ballot, said circuit means being effective for energizing the portion of said memory circuit corresponding to the portion of the ballot marked by said marker.

20. A voting machine for use with ballots to be marked by a marker when brought into contact with the ballot and having a probe positioned to be disposed immediately adjacent said ballot during said marking process, said machine comprising the combination of:

a panel for supporting a ballot thereon for marking by said marker,

means in said panel positioned to register with preselected portions of said ballot and to be energized by the presence of said probe during said marking process,

a memory circuit for registering indications of the markings made on a ballot by said marker, and

circuit means electrically connected to said memory circuit and to said means and actuatable in response to the presence of said probe only when said marker is in position to mark a portion of said ballot, said circuit means being effective for energizing the portion of said memory circuit corresponding to the portion of the ballot marked by said marker.

21. A voting machine for use with ballots to be marked by a marker when brought into contact therewith and having a probe positioned to be disposed immediately adjacent said ballot during said marking process, said voting machine comprising the combination of:

a panel for supporting a ballot in position for marking by said marker,

means in said panel positioned to register with preselected portions of said ballot and to be energized by the presence of said probe during said marking process,

a first memory circuit coupled to said means in said panel for being actuated in response to the presence

of said probe during said marking process for registering the portion of said ballot marked by said marker,

a second memory circuit, and

control means for transferring said registerings from said first memory circuit into said second memory circuit and clearing the registerings in said first memory circuit.

22. A voting machine for use with ballots having preselected areas that may be marked by a marker when brought into contact therewith and having a probe positioned to be disposed immediately adjacent said ballot during said marking process, said voting machine comprising the combination of:

a panel for supporting a ballot in position for marking by said marker,

means in said panel positioned to register with said preselected areas of said ballot and to be energized by the presence of said probe during said marking process,

a memory circuit coupled to said means in said panel for being actuated in response to the presence of said probe during said marking process for registering the areas of said ballot marked by said marker, and

means responsive to energization of preselected combinations of said means and effective to prevent registering of any portion of said combination.

23. A voting machine for use with ballots to be marked by a marker when brought into contact therewith and having a probe positioned to be disposed immediately adjacent said ballot during said marking process, said voting machine comprising the combination of:

a panel for supporting a ballot in position for marking by said marker,

means in said panel positioned to register with preselected portions of said ballot and to be energized by the presence of said probe during said marking process,

a first memory circuit coupled to said means in said panel for being actuated in response to the presence of said probe during said marking process for temporarily registering the portion of said ballot marked by said marker,

a second memory circuit for accumulating a count of said temporary registerings, and

control means for being manually actuated upon the completion of said marking process for either clearing the temporary registerings in said first memory to reset said first memory for remarking the ballot or transferring said temporary registerings into said second memory circuit and setting said first memory circuit for marking of a new ballot.

24. A voting machine for use with ballots to be marked by a marker when brought into contact therewith and having a probe positioned to be disposed immediately adjacent said ballot during said marking process, said voting machine comprising the combination of:

a panel for supporting a ballot in position for marking by said marker,

means in said panel positioned to register with said preselected areas of said ballot and to be energized by the presence of said probe during said marking process,

a memory circuit coupled to said means in said panel for being actuated in response to the presence of said probe during said marking process for temporarily registering the areas of said ballot marked by said marker,

means responsive to the energization of preselected combinations of said means and effective to prevent retaining of registerings of any portion of said combination,

a second memory circuit for accumulating a total count of said temporary registerings, and

a control means for transferring all of the temporary registerings retained in said first memory circuit into said second memory circuit and clearing the registerings in said first memory circuit.

25. A voting machine for use with ballots to be marked by means brought into contact with the ballot, said machine comprising the combination of:

a terminal panel for supporting the ballot and including an array of terminals, each of said terminals being responsive to the presence of said means when marking a portion of the ballot registering with the terminal,

a memory circuit including a group of relays coupled to said terminals of said terminal panel for registering indications of the markings on the ballot by said means at the time the ballot is marked, and

interlocking means interconnecting a preselected combination of relays in said group for resetting all of the relays in said combination if more than a predetermined number of said relays in the combination are set.

26. A voting machine for use with ballots having a number of perforations identifying particular areas to be selectively marked on the ballot by a marker, said voting machine comprising the combination of:

a terminal panel for supporting the ballot and including an array of terminals at least a portion of which are positioned to register with said particular areas and to be energized by said marker marking said areas,

a memory circuit coupled to said terminals for registering indications of the markings on the ballot, and

a lockout plate having a number of conductive strips for selectively establishing electrical control circuits through said perforation of the ballot for enabling only the portions of said memory circuit corresponding to said portion of the terminals registering with said areas of the ballot to be marked for completing an operative electrical circuit between said portion of said terminals and said portions of said memory circuit.

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