

Oct. 29, 1963

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3,108,743

ELECTRIC VOTING MACHINE

Filed Dec. 18, 1957

4 Sheets-Sheet 1

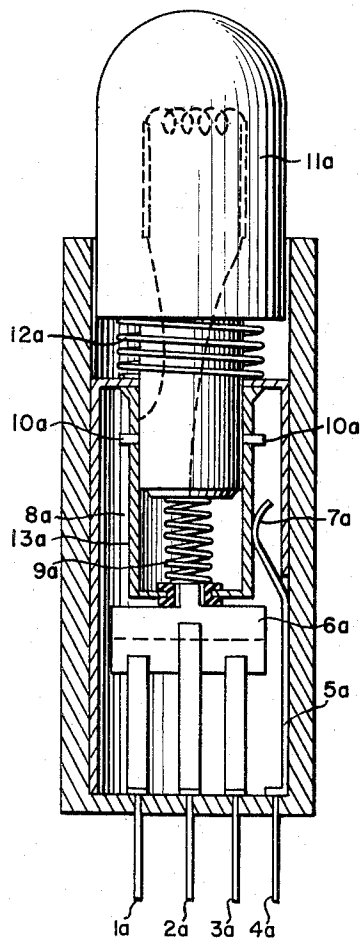


FIG. 1

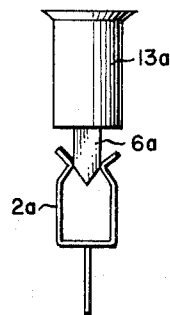


FIG. 1a

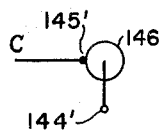


FIG. 3a

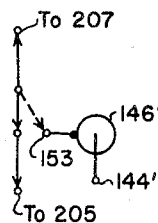


FIG. 3b

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4 Sheets-Sheet 2

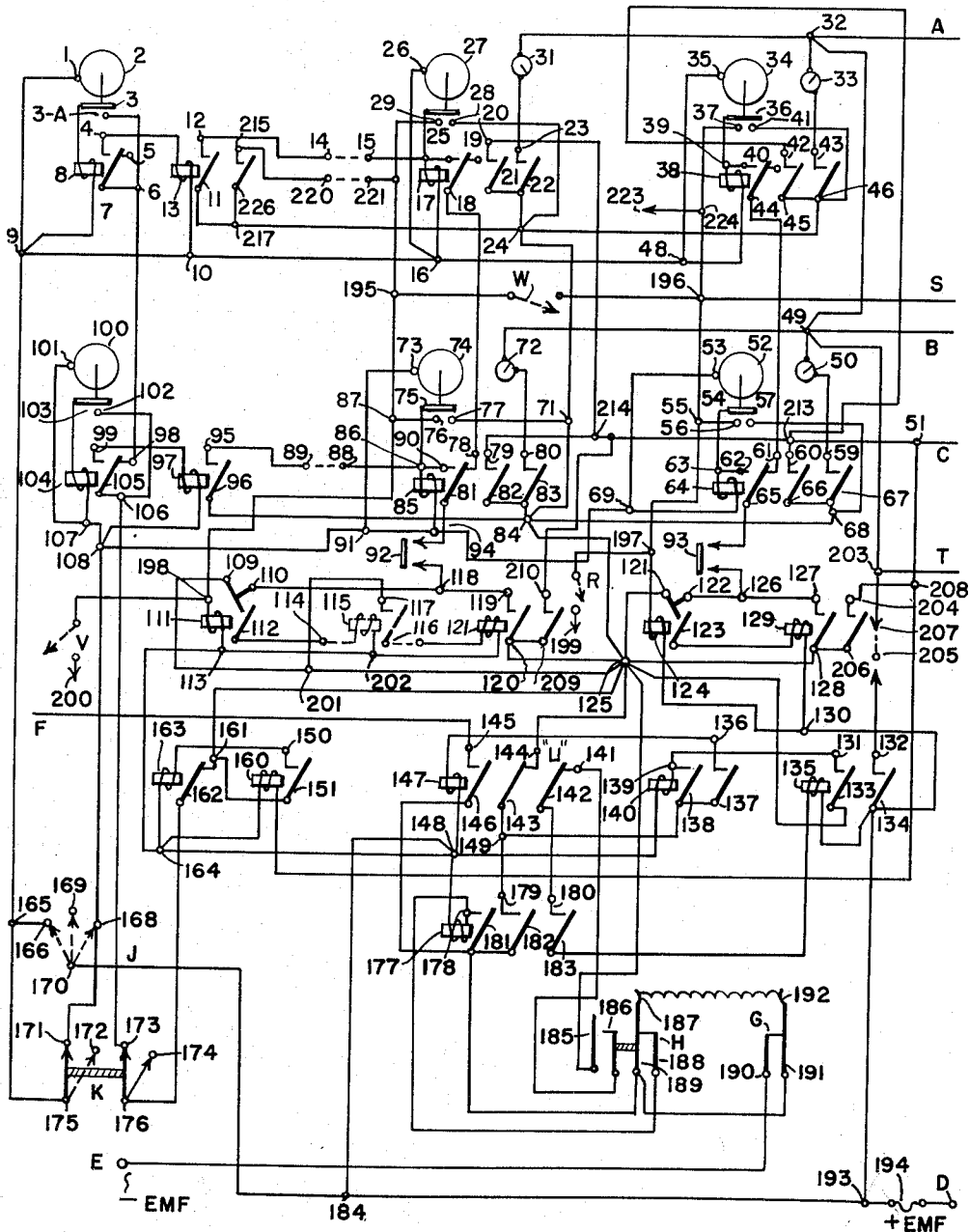


FIG. 2

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4 Sheets-Sheet 3

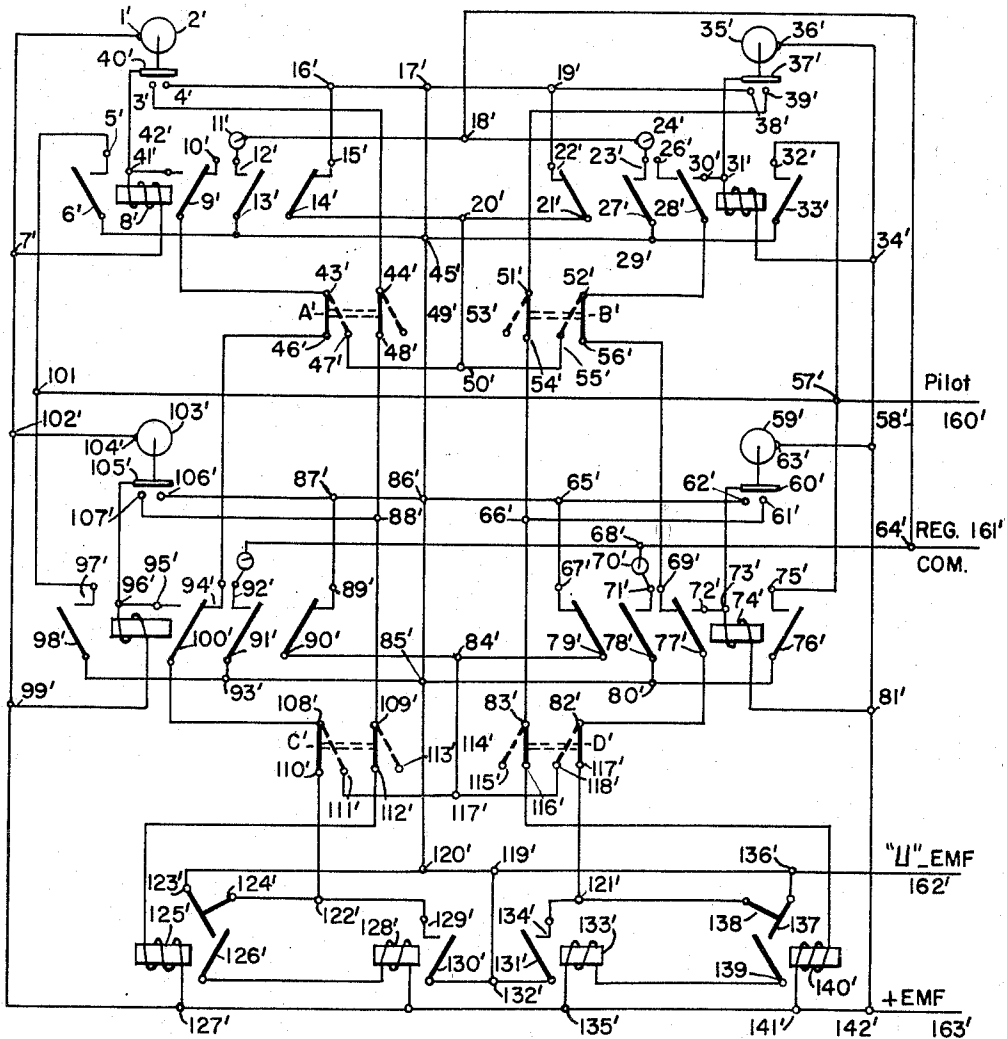


FIG.3

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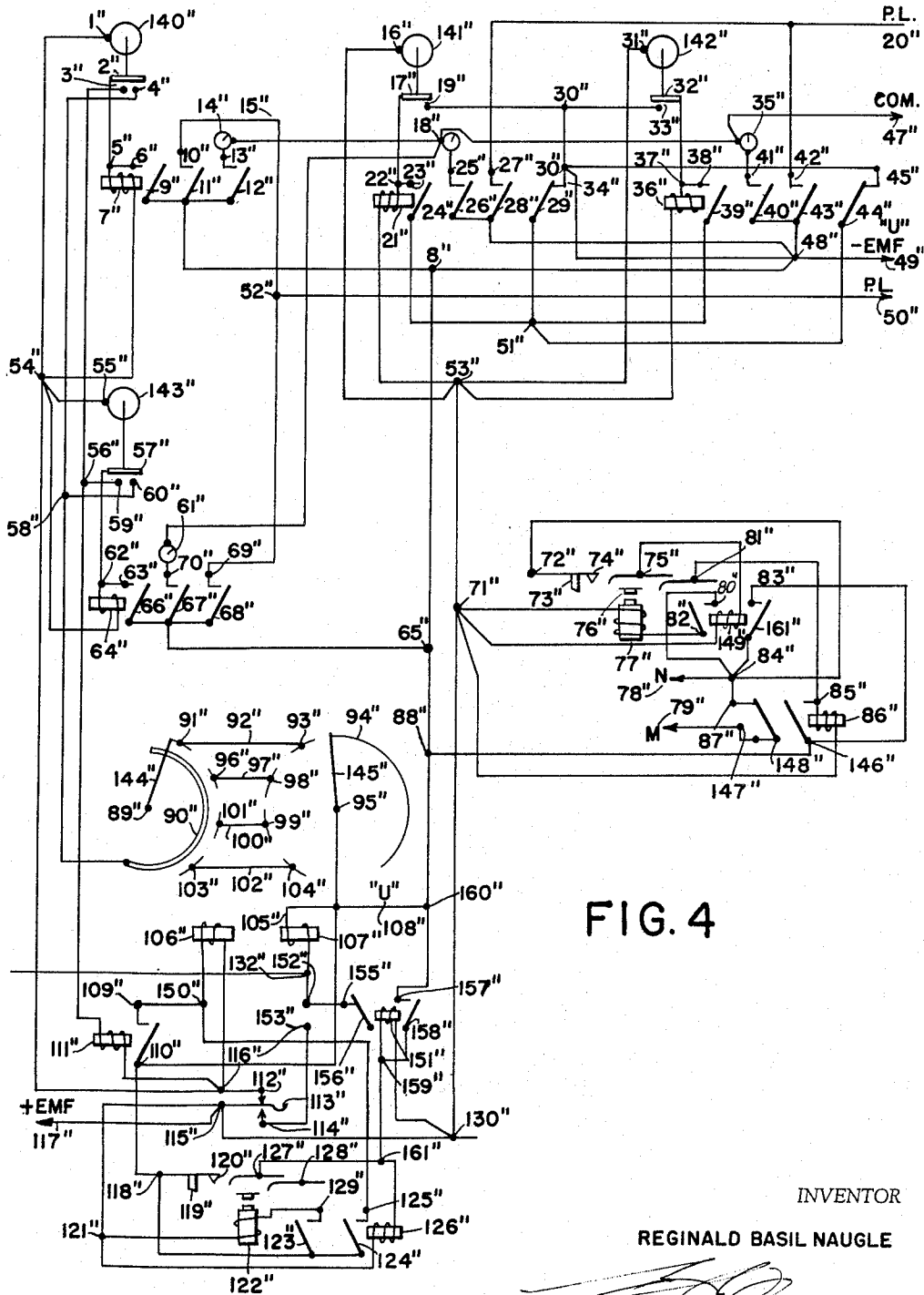


FIG. 4

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3,108,743

ELECTRIC VOTING MACHINE
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Filed Dec. 18, 1957, Ser. No. 703,695
2 Claims. (Cl. 235-54)

This invention relates to voting machines in general and more particularly to voting machine apparatus, segments and components in a completely new and useful method for the selection of candidates by a comprehensive electrical system utilizing the fullest phi power available under given magnetic characteristics, thereby securing an accurate registering of votes in a general, primary, municipal or other type of election.

A principal object of the present invention is to provide an electrical voting machine whereby the elector is enabled to select candidates for public offices under any given type of election, wherein the said elector is precluded from multiple or fraudulent selections.

Another important object of the instant invention is to provide a means for cancelling out selections of candidates in case of error on the part of the elector or alternate choice.

Another important object of the instant invention is to provide a means of selecting candidates for any office designated within the scope of this said electric phimax voter by means of a new and useful type of push button associated therewith with self contained electric bulb which is illuminated upon selection pressure by the elector.

And still another important object of this invention is to provide an electrical phimax voter which enables the elector to write in his choice of candidate or candidates whose name or names do not appear upon the face of the panel ballot by means of a phimax component.

A further important object of the instant invention is to provide an electric phimax voter with means of affording to the elector and the officers of the polling place a pilot signalling device to indicate that candidate selections are being made in normal sequences.

A still further important object of this invention is to provide such an electrical phimax voter with means of affording to the elector within the polling booth, a visual indication that the candidate selection has been made.

And a further object of this invention is to provide an electrical phimax voter which isolates and identifies the actual selection of candidates with the identical relation to the printed area of said candidates' names and related office designation, in a manner which will assure rapid candidate selection by the elector.

And another object of the instant invention is to provide an electrical voting device as herein described under the phimax unit, through which under specific and novel electric circuitry a mutually exclusive lock-out function of candidate selection is accomplished.

A further object of this invention is to provide an electrical phimax voter, the function of which is electrically operable in combination with cancelling out push buttons, separately designed and strategically mounted over the face of the panel in order to facilitate multiple selection of candidates for such offices as may be provided by law, by the elector without destroying the vital control of the above described selection in limited contrast to the cancellation described for single candidate selections by the said elector.

Another object of the instant invention is to provide an electrical phimax voter by which, through total electrical circuitry and related electrical components, a means is established whereby "Yes" and "No" stands on public issues may be expressed by the elector through horizon-

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tally adjacent push buttons described above for the selection of candidates.

And still another object of this invention is to provide an electrical means of recording the number of votes cast for any candidate whose name appears on the instant ballot, completely free from error and/or fraud through associated electrical apparatus operable in relation to and a part of phimax design.

Another important object of this invention is to provide an electrical phimax voter operable through electrical circuitry whereby an elector, in areas where such voting procedures are lawful, may be able to select all of the candidates seeking election under a particular party designation appearing on the ballot for such part designation, for all of the offices so designated, by merely pressing a "straight party" push button of the order above described for single candidate selections, or a related electrical switch, or he may be able to split his vote in a general type of election, or whereby he is precluded from voting for candidates who are seeking office nomination under party designations to which he is not registered, in a primary type of election.

And another important object of this invention is to provide an electrical phimax voter whereby, in the general type of election, the elector is precluded from the use of the straight party push button after he has made a single candidate selection for any office designation under any party label, and in like manner he is precluded from the use of the straight party push button media in the primary type of election or related switching device described above.

And still another object of the instant invention is to provide an electrical phimax voter of the type herein described whereby the elector simply moves the booth curtain across a suspended wire or rod at the polling booth opening to prepare the unit for operation under normal procedure as described above, and after all candidate selections shall have been completed by the elector, to provide a count of his selection.

And still another object of this invention is to provide an electrical phimax voter of the herein application whereby through electrical circuitry the elector and the election official is conscious of the normal functioning of the said electrical unit, and conversely, in the absence of this visual signal operating, the said unit is rendered inoperable, thus preventing so-called "dud" or blank voting during the voting period.

Another important object of this invention is to provide an electrical phimax of the herein application whereby, through electrical circuitry, the elector may select only the number of candidates to which he is lawfully entitled.

And another important object of this invention is to provide an electrical phimax voter of the herein application whereby a complete and composite ballot adapts to the face panel of the said unit and is installed by merely opening a transparent panel, placing it in place and closing this said panel under duly controlled locking devices.

A further object of this invention is to provide an electrical phimax voter which will enable the rapid replacement of defective candidate electric bulbs and at the same time present these bulbs from being disturbed or removed for fraudulent intent during the voting process.

Other objects and advantages will appear more fully hereinafter, it being understood that this invention consists substantially in the construction, combination, location and arrangement of parts in significant relative electrical interlocking and electrical timing sequences, all pointing the novelty and useful application as herein described in the appended claims and the accompanying drawings.

In the drawings:

The accompanying drawings identify the electric cir-

cuitry of the instant invention and are described generally as follows, but more particularly under "Method of Operation," forming a part of these specifications:

FIG. 1 shows a type of push-button used with this invention;

FIG. 1a is an end view of one of the contacts such as 2 of FIG. 1 for receiving the plunger;

FIGURE 2 shows the complete phimax voter system including a typical two party, two office ballot requirement which obviously provides space for two candidates for each office designation. The drawing includes the electrical switching under which "straight party" voting is possible, or the usual split party candidate selection under the type of election where such selections are lawful. There is also shown the electrical switching of the polling booth curtain controls as well as the electrical switching to preclude an elector from voting for candidates for whom he is not entitled to vote as in a primary type of election.

FIGURE 3 shows a segment of the electrical controls and electrical switching which enables the alternate use of candidate space area for candidate designations or as standard facilities for choice of "yes" or "no" on public issues to serve in schedules wherein a major number of public issues are to be presented to the elector at times when there is a relatively small number of candidates appearing on the ballot as in the general type of elections, all under the control of the simple electrical switches associated therewith.

FIGURE 3a shows a symbol of a pilot light connection through which both elector and the judge of election is informed that the phimax voter is functioning normally. In FIG. 3b is shown an electrical switching arrangement associated with the above segments when used as areas of "yes" or "no" choices on public issues to prevent certain electors from making such choices who are not entitled to do so in overlapping political subdivisions.

FIGURE 4 shows one candidate space for each of the two parties described under FIGURE 2, with the exception that the electrical circuitry comprises electrical controls under which the elector is enabled to select more than one candidate for any particular office designation as may be provided by law, together with electrical circuitry for a standard "yes" and "no" choice, multiple write-in facilities and control of multiple choice.

FIGURE 1 shows a type of electrical push button which utilizes a combination of miniature electric light bulb 11a and electrical switching, all a composite sub-miniature unit in which the said electrical bulb may be pushed into a downward motion against the spring loading of coil spring 12a; in so doing the plunger 6a protruding from an insulated contact on the bayonet socket or shell 13a and which is in constant engagement with the centre spring contact 2a, shunts spring contacts 1a and 3a together with contact 2a; it will be noted that the insulated contact of shell 13a engages with the lower terminal of the electric bulb through a spring 9a and in the downward stroke of the push button, a wiper contact 7a connecting to conductor 5a, is externally connected to the pin 4a; at opposite sides of the shell 13a are shown protruding ears 10a; these engage the slits of the shell and the spring 9a forces the twist action in placing the bulb into the bayonet receptacle and since the push button device has a crowned surface protruding only the very limited dimension (necessary to cause the plunger 6a to engage the related spring contacts) beyond the surface of the voter panel, it thus prevents the fraudulent removal of these bulbs during the voting process since there is insufficient area to grip the bulb; on the other hand they are easily removable by opening the transparent panel which covers the ballot for replacement.

FIGURE 2, shows a complete phimax voter system wherein there is in use a "straight party" voting facility

as well as an alternate split party selection of candidates, together with the related electrical switching and various control elements of the herein invention.

In the upper left hand margins will be seen the symbols of two push buttons of the type shown in FIGURE 1, above, or its equivalent as may be described hereafter; to their immediate right are two sets of similar push buttons and these comprise a typical application under which the related electrical control circuitry provides for each of two candidates seeking different office designations under each of two political parties.

These push buttons are indicated respectively as 2, 27 and 34; also as 100, 74 and 52. Each in turn is associated with their respective control phimaxes.

In the left hand lower corner of the drawing is shown the electrical switching respectively at J and K; to their right are the symbols of the electrical switching within the control of the polling booth curtain, H and G.

Between these two segments of the drawing are shown in relative areas, the relative control phimaxes.

When push button 2 is pressed by the elector, both push button lights as at 27 and 34 are lighted and remain lighted and this is typical of the selection of all of the candidates for said party seeking offices for such party designation. Likewise if the voter is operated by a registered elector for another party such as controlled by push button 100, then all of the push button lights will be lighted under the party as at 74 and 52.

Should an elector operate the straight party push button as at 100 and should wish to "cut out" the candidate as at 52, he may do so by pressing push button 34 which cancels out push button 52 and holds push button light 34 operated together with its associated control phimax circuitry. Alternately any of the push buttons are so inter-related that this feature of electrically splitting of the ticket is made possible.

It will be noted that positive power to the voter is supplied through the fuse at D and 194 at the lower right corner of the drawing and negative power is supplied through E at the lower left hand corner of the drawing.

When the elector enters the polling booth, he closes the curtain by hanging the curtain ring on a micro-switch as shown at the left near the lower right hand section of the drawing; this electrical switch is designated H, and the connections to the control circuitry are as shown. This will cause negative power from E to the normally closed contacts of curtain switch G at the right hand of the polling booth curtain, 190 and 191 to 189 and 183 of switch H to 178 of phimax 177 which is one side of the winding as well as the contact of the armature 181 of the phimax; positive power is traced from D, through 194, 193, 184, 148 to the other side of this phimax 177, causing it to operate and remain closed while the elector remains within the booth enclosure, or so long as the curtain switch remains in this operated position. It will be noted that negative power traced from E to switch G, through connection 189 of switch H, to armature 181, to armature 182 of phimax 177, through contact 179, through 149, through armature 143 of phimax 147, through a point 144 of this phimax which becomes the central connecting point for control circuitry germane to the system of the herein invention and which common connecting point we designate as "U"; as long as the phimax 147 remains in the unoperated position, this common source of negative "U" power is available to said control segments of the phimax voter. Here we note this common connecting point is extended to a point 125. We now note that so long as electrical switch G remains closed, phimax 177 will remain operated, since its armature 181 now locks up the phimax with respect to the winding of the energizing coil, no matter if the curtain switch is open or closed (H). Likewise, "U" power remains available to all of the negative power sources of supply as long as phimax 147 remains unoperated.

When the voter is prepared for the general election

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procedure, the electrical switch K at the lower left hand corner of the drawing is thrown as in the full lines, meaning that the blades are thrown to the left and the electrical switch J may be either to the left or to the right.

Pressing the push button 2, as above described, we now trace "U" power from 125 (noted above), normally closed contact 161 of phimax 163, armature 162, 176 and 173 of switch K, 106, armature 105 of phimax 104 through its normally closed contact 98, to 6 and armature 7, also to contact 3a of the push button 2; as soon as this push button is depressed, then we connect this "U" power to the blade of the push button and hence to the winding of the coil of phimax 8; since plus power is now traced from D, through 184, 170 of switch J through 163, to 171 and 175 of switch K to 165, to 9 and the other side of the coil of the phimax 8, thereby causing the phimax to close and in closing its connects "U" power from 6 as described above through the armature 7 to contact 4 to the winding of the phimax 13 and since the other side of this coil is now connected with plus power through 9 and 10, this phimax will also close, thereby connecting "U" power to its armature 11 (traced from 125, 84 and 71 to 24 to 11) and contact 12 through 14, 15 to 25 of phimax 17; the dotted line between 14 and 15 is a common connection to all of the phimaxes belonging to candidate designations associated with this political party as shown at phimax 17; it will be noted that plus power is permanently connected to the one side of the coils of each of the candidate phimaxes through the common connection at 9, and therefore all of these candidate phimaxes will operate and lockup under the following sequence of connections and electrical controls: "U" power from 125, through 201, 169 and 110 of phimax 111 (normally closed), 118, normally closed contacts 92 (to be described below for single candidate write-in choice) through normally closed armature 81 of phimax 85, its contact 78 to armature 18 and point 25 as noted above; likewise each of the candidate phimaxes will lock up under similar electrical circuitry, so that the operation of these candidate phimaxes no longer remain within the control of the elector pressing the push button under this straight party method of selection.

It is possible to cancel out any of the candidates so selected and substitute opposing candidates and this feature will be described below under the single choice of candidates instead of using the straight party push buttons. Since it is unlawful for electors to select candidates by the straight party method in certain states, the system would be the same as shown to the right of the dotted lines at 14 and 15, with the wiring to the left of these connecting points removed including the said straight party push buttons and their associated phimaxes.

We will now consider the selection of candidates by using the candidate push buttons, individually; pressing push button 27, causes "U" power to pass through 125, 84, 71, 24 to 28 of the said push button. This will cause the push button to light as well as cause the phimax 17 to close and lock-up as described above; closing phimax 17 causes "U" power from 24 to connect to one side of the phimax register 31 through armature 22 as well as through armature 21, contact 20, 214, 51 to "C," also 203 to the winding of phimax 160; since the other side of the coil of this phimax is connected to plus power through 164, 148, 184 and D, this causes the phimax 160 to close and in sequence causes phimax 163 to close, thereby opening a path from "U" power through the normally closed contacts 162 and 161 described above extending to the straight party push buttons, and thereby making the straight party push buttons unoperable as soon as a single candidate push button is operated. This same sequence obtains as soon as a straight party push button is operated, thereby making it impossible to sequentially operate more than one straight party push button by any elector.

It will be noted that a second contact series is associated with the phimax 13, which serves to control the electrical

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operation of the candidate control phimaxes as at 111; here we note that "U" power is connected to the winding of this control phimax 111 through the dotted connecting points at 220 and 221, originating from the point 125, 84, 71, 24, 217, armature 216 and contact 215 of phimax 13; this method of wiring is typical of the control phimaxes associated with each straight party push button.

The above reference to a "C" connection relates to an external tie with another drawing showing the associated pilot signalling device as an important segment of the herein invention.

The operation of phimax 111 serves as a transfer holding electrical control circuit in that the armature 112 in moving toward the core of phimax 111, makes connection with "U" power passing through 109 as explained above before it lifts this "U" power off contact 110; thus "U" power is transmitted to 114 and the winding of phimax 115 and in turn to the winding of phimax 121; this sequence removes "U" power from control by phimax 111 to the electrical circuitry from 125 through the armature 120 of phimax 121 to the lock-up circuitry explained above. The dotted lines showing phimax 115 indicates that this phimax is merely added to accomplish a greater margin of timing and in practice is ordinarily omitted. This feature is especially important in the event that the elector should haltingly push the straight party push button, and serves to control the electrical circuitry, the absolute procedure of candidate selection, error free so far as possible.

Phimax 121 employs a second armature 209 which connects "U" power through its contact 210 and 214 to "C" which operates the said pilot signalling segment of this invention.

After the elector has finished making his candidate selections, either by the use of the straight party push button or single candidate selection, he may wish to change his selection before leaving the polling booth; we may assume that he has selected a candidate associated with push button 27 and that he wishes to substitute the candidate associated with the opposing candidate push button 74. By depressing push button 74, "U" power from 125, through 84 and 71, now connects to contact 77 of this push button, thereby connecting this "U" power to contact 76 and thence to the winding of the phimax 111; likewise it causes the push button light to light and the associated phimax 35 to close and lock up, as explained above; however, "U" power is now disconnected from the heretofore closed electrical control circuit of phimax 111 at 109 and 110 to the locked up phimax 17, momentarily and thereby phimax 17 is released before armature 120 of phimax 121 can connect this "U" power through 118 to cause phimax 85 to lock-up; this timing function is so designed by the herein invention so that it is physically impossible to press the cancelling push button with sufficient rapidity and then release it to interfere with this electrical function. In the event that this function is delayed as against the alacrity of the elector in pushing and releasing the push button, the said phimax shown in the dotted area (115) is added to the electrical control circuitry to prevent failure of this voter performance in this area. This method of cancelling out is typical for this invention when the said candidates are associated with office designations in which a single candidate only is to be selected; obviously where more than one candidate is to be selected for such office as may be permitted by law, the ultimate number to be selected would not be achieved under this procedure. A modification will be described hereunder associated with FIGURE 4 in conjunction.

Another important segment of electrical control will now be described in connection with the operation and electrical switching of the polling booth switches; here we assume that the elector has completed his selections of candidates and is preparing to leave the booth enclosure. He now lifts the booth curtain ring at 187 from its electrical switch H and in so doing, he lifts the tension of the

sub-miniature switch to that of a normally open electrically operated position as opposed to that shown on the drawing. With the other booth switch G still remaining closed, as shown, switch contacts 183 and 189 are now open but no electrical change takes place through the winding of phimax 177, since it is locked up as previously described; however, contacts 186 and 185 are now closed in this electrical sequence which connects "U" power from 125 through these contacts to the normally closed circuit formed by the armature 142 and its contact 141 of phimax 147 and thence through the closed armature 183 and its contact 180 of phimax 177, to the winding of the coil of phimax 135, causing this latter phimax to close which in turn causes phimax 140 to close and lock up; this sequence is traced with "U" power from 125 through armature 133, contact 131 of phimax 135, to 139 contact of phimax 140, which is also the one side of the coil winding of this phimax; since this coil also now receives "U" power through its armature 138, 149, 179 and 182 of closed phimax 177, this phimax will lock-up; the sequential operation of phimax 140 will connect "U" power through its armature 137, contact 136 to the one side of the coil of phimax 147, which causes this latter phimax to operate and lift negative "U" power from all of the prevailing electrical circuitry, depending upon this source of negative power, thereby restoring all candidate phimaxes, lights, and in direct sequence, phimax 135 and then phimax 140. Before phimax 135 causes phimax 147 to close, it will be noted that plus power is connected through its armature 134 and contact 132 to all of the phimax registers connected through 205, 207, 203 to "T," external to this drawing, which will be described later for the protective and public counters, as well as to 50 of phimax 64, 49, 32 and 33 of phimax 38 and etc.

Obviously this plus power is a momentary impulse since the operation of phimax 147 sequentially opens this electrical circuit and the characteristic spring loading of the phimax register completes the cycle of advancing the accumulative numbers for a typical voting procedure.

Since the law makes it mandatory for the judge of elections to see the entire panel of this phimax voter, the polling booth curtain is now moved to its extreme open position, but before it reaches this operative position, phimax 140 remains locked up (tracing negative power from E, contacts of booth curtain switch G, to armature 182, contact 179, 149 to armature 138), as aforesaid and so long as booth curtain switch G remains closed, phimax 140 will remain locked up and thereby cause phimax 147 to disconnect "U" power from supplying any of the aforementioned electrical circuitry or controls; moving the booth curtain now to its extreme open position, opens the associated subminiature electrical switch G, which in turn removes negative power from the entire system, thereby restoring all of the electrical circuitry of this invention to normal. Herein may be noted the feature of preventing any elector from alternately lifting the polling booth curtain from its associated hook or eye H and then attempting to fraudulently multiply his choice of voting procedure.

Reference was made to the electrical switches at the lower left hand corner of the drawing as at J and K; looking at these switches, we will note a significantly important function in connection with this invention; with switch K thrown in the full line position as shown, the phimax voter may be used either as a straight party or a split party voting procedure; this was explained above. However if the system is to be prepared for a primary type of election procedure as compared to the general type of election described above, it is accomplished by the simple throw of the switch K to the right or as shown in the dotted lines.

It will be noted that the straight party push buttons are now rendered inoperable since no negative power is available to the related contacts 176 and 173 as described above; plus power to the various party circuitry is now

controlled through the relative position of the electrical switch J. With this latter switch thrown to the right (which is operable by the judge of elections or as in some areas by the elector himself) the said elector is now able to select candidates appearing in the group represented by the push buttons 74 and 52 and such others as may be identified with this political party (in the event of the elector turning the switch J to his desired party for purposes of secrecy, a controlling phimax is added to the pilot control circuit to increase the electrical timing which may be necessary to break the open circuitry which normally obtains when the said J switch is moved from one side to another, or from one political party designation, if such additional timing electrical control becomes necessary). Otherwise, if an elector were to throw this said switch to the right and proceeded to select candidates by means of the push buttons associated with said political party as described above and before leaving the booth were to throw the said J switch to the left for the purpose of illegally selecting candidates associated with another political party, the said plus power would automatically be broken in the switching process and all candidates and associated control phimaxes would be instantly restored to normal, thus cancelling out such previous selections and there would then remain the function of such selections as his designated position of the said switch J would finally remain.

It is therefore obvious that the position of this said switch determines the party candidates to which the elector may be able to select candidates by means of the associated push buttons, as aforesaid.

At the left hand margin will be seen an electrical switch designated V, and following through across the drawing toward the right will be noted another similar electrical switch R with numeral designations 199 and directly above another switch W; these switches are used to combine, respectively, electrical circuitry of one group of candidates to that of another in a vertical column relation as well as combining one vertical column with another vertical columnar designations as may be necessary to provide additional candidate area space where there is a multiplicity of candidates seeking particular office designations and thereby making the herein invention flexibly of greater candidate space capacity. The two switches V and R would connect respective windings of phimaxes similar to that shown at 111 and 124; tying these two electrical circuits enables simultaneous controls of the multiplied circuitry in the same manner as through they were single electrical circuits as described above.

Under FIGURE 3, we note a combination of push buttons and related phimaxes as described above with the addition of associated double pole, double throw electrical switches. As explained above, the circuitry contemplates their use interchangeably as candidate designation spaces or "yes" and "no" public issue spaces.

With switches A' and B' thrown as in full lines the circuitry is used as a candidate selection procedure; obviously switches C' and D' would be thrown in the same full line direction. Tracing the wiring of the phimaxes, we now note the same as was described for single candidate selection above. Throwing these switches to the right or in the dotted line positions, we have the circuitry which corresponds to that which will enable transferring the two adjacent phimaxes and their related push buttons in a horizontal relation so as to establish the kind of electrical controls necessary to make a "yes" or "no" choice on public issues.

Tracing the wiring diagram we now press the push button 2' which connects the push button plunger 40' to contact 4', which provides "U" power through 16', 17', 45', 36', 35', 120', 119', 136' and "U" (E.M.F.) at the right margin of the drawing; this will cause phimax 8' to close and lock up under "U" power from (above described) 17', 19', normally closed contact 22', armature 21' of phimax 31', 20', 50', 47' of switch A', 43', to armature 9'

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of the phimax 8'; obviously there is no need for any control features other than to cancel out one selection for another in the same issue and this is accomplished, by merely pressing the push button of the opposite choice. For instance, push button 2' has been selected above and the elector wished to change it to that of the choice represented by push button 35'. Here the elector merely presses the push button and in doing so causes the phimax which was locked up under the normally closed contact of phimax 31', to release since pressing the push button 35' causes the associated phimax 31' to close; in closing phimax 31' causes its armature 21' to draw away from its formerly closed position, thereby opening the electric circuitry which locked up phimax 8'. As phimax 8' is now in open circuit, its armature 14' establishes a "U" power path to the contact of the phimax 31' and its winding, thereby locking it up as described above for the corresponding or opposite choice. Likewise push buttons 103' and 59' are capable of performing the same combinations by C—D' switches thrown in the dotted line areas.

Since there is no need for control features in this type of voter application, the said switches disconnect the related control phimaxes described as make-before-break in single candidate selections above. Under FIGURE 3a, we note the external reference "C," connected to the symbol of a light, 146' with its one side 144', to be connected to plus power. This is the diagram for the pilot light circuitry. It will be noted that there are two of these pilot light circuits: one connects to the control circuitry as explained under FIGURE 2, and another similar circuit connects to the "yes" and "no" public issue segments.

In FIG. 3b is shown an electrical switching circuit which corresponds to the dotted line between the numerals 205 and 207 along the right hand margin of FIGURE 2. Here we note the switch cuts off the plus impulse power to the phimax registers and particularly concerns the application under which an elector is prevented from making a "yes" or "no" choice in the area of overlapping districts. Should the elector inadvertently or deliberately make such a choice, the corresponding phimax registers would not operate. This said electrical switch is mounted within easy reach of the Judge of Elections.

Under FIGURE 4, we now note another application of candidate selection electrical circuitry; here the elector may select a multiple number of candidates seeking office under a single office designation within the legal limits provided by law for such offices. Unlike the cancelling out process for single candidate selections as explained above, a different method of cancelling out must be established, otherwise there could not be achieved more than a single candidate selection. Associated with this figure are circuits which disclose the important function of multiple write-in facilities as well as the said cancel-out key 113.

FIGURE 4 shows an electrical phimax stepping device under number 89'; to its right is a rotary switch designated 95'; below is the phimax stepping coil 106" and to its right is a release coil 105".

In the preparation of the phimax voter before delivery to the polling place the said rotary switch is turned to the step corresponding to the highest number of candidates an elector may select for a given office designation, and being of the shunt type, as shown, we may assume for purposes of description that the elector may select two candidates; this means the rotary switch will be set at step 2 or in actual electrical circuitry, steps 93" and 98" are now shunted to "U" power through its wafer 145", at the point 95". With the wiper 144" of the stepping phimax 89" in its normal position as shown, the stepping contact 91" is shunted with the quadrant 90" as it moves from step to step. Thus "U" power is now connected from the rotary switch, through the strap 92" to the wiper and quadrant 90" to contact 4" of the push button 140"; pressing this push button, causes phimax 7" to operate and lock up

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through its armature 9"; also "U" power is transmitted to contact 3" of the push button to the coil of the phimax stepper 106 which causes the wiper to advance from step 91" to step 96", and since the rotary switch has been set a 93", "U" power passes from the shunt of the rotary switch through the strap 97" to the quadrant 90" and therefore the elector is able to push the push button 143", which causes the phimax 64" to operate and lock up under its armature 66". However, the wiper arm of 89" now advances to step 101", and since the shunt of the rotary switch does not pass beyond the point 98", the elector is prevented from selecting more than two candidates as stated above. The closing of phimaxes 7" and 64", close the respective phimax registers to one side of "U" power and the other side of these registers are connected to a common feed as designated by numeral 47" at the upper right hand margin of the drawing. Armatures 11" and 68", respectively connect "U" power to a common pilot light circuit as designated through 52" to 50" at the right hand margin of the drawing. This pilot circuit connects to the control circuit designated as "C" under FIGURE 2; another pilot circuit as designated by numeral 20" connects to all "yes" and "no" segments of the voter. This numeral 20" appears at the upper right hand corner of the drawing under FIGURE 4.

At the left hand margin of the drawing is shown the letter "T" which connects to the release coil 105" of the stepping phimax and this corresponds to the "T" at the right hand margin of the drawing under FIGURE 2 and is connected to the plus impulse which actuates the various phimax registers; obviously, this impulse of plus power will cause the release coil to restore the stepping phimax to normal after the required selections have been made by the elector as he leaves the polling booth as explained above.

A phimax 111" is inserted in the electrical circuit to permit the use of the write-in mechanism shown under FIGURE 4; obviously when a push button is pressed, this phimax 111 operates to actuate the stepper phimax wiper. Correspondingly we now find an auxiliary means of advancing the said stepper wiper so that if the elector chooses to select candidates within the limits provided by law under the push button method, he may do so; likewise he may choose to write-in the same number of names, or accumulatively he may choose by means of both applications, in which the total number of choices must not exceed the maximum number permitted by law.

The slide designated by the numeral 119" is moved to the right by the elector which opens the orifice, exposing the paper upon which he is able to write in a name of his choice for a particular office to which the write-in device is associated; in its excursion to the right (being connected to "U" power) its lip 126" makes contact with the guide 127" which operates phimax 126" as well as phimax 151"; the operation of phimax 126" causes the solenoid 122" to pull its interlock armature toward the core and permit the slide 119" to continue to full open to the right; phimax 151" sets up a locking out feature under which it is impossible to cancel out the stepping process as noted above. Obviously, so long as the elector chooses candidates by means of the associated push buttons, he is permitted to cancel out said choices, but once he has chosen a selection by means of writing in a name, this name no longer can be cancelled and from here on he is precluded from any cancelling out feature.

Looking at the cancel-out key at 113", we note that plus power is connected to the various phimaxes associated with candidate push buttons under the normally closed position of the said key. If the candidates associated with the push buttons, only have been selected, phimax 151" will remain open and plus power from the normally open contact of the switching portion of the said key will pass from 114" to the release coil 105", through the normally closed contacts 156" and 155" of phimax 151" and the related circuitry is restored to

normal and the elector may then begin over again to make changed selections. It will be noted that phimax 151" will lock up, once it is operated and will remain locked up as long as the elector remains in the polling booth.

Under FIGURE 4, we note another application of write-in facility; here the write-in circuitry is associated with the single candidate selection process. As explained we note the slide 72" with its contact lip 74" and two guides, 75" and 81" respectively. Under FIGURE 2, it will be recalled that there are two normally closed contacts indicated by the numeral 93", near the right hand margin. This segment of the phimax voter is designated by the letters N" and M" and refer to the contacts of the normally closed armature of the phimax 86" under the respective numerals 87" and 147"; obviously if the write-in device shall have been used in the single selection of a candidate for a particular office, the elector must be precluded from further selections by means of related push buttons or from using this segment a second time for the same office designation.

As soon as the slide 72" passes to the right so that its lip 74" comes in contact with the first guide 75", the phimax 149" is operated, causing the solenoid 77 to draw its armature interlock to clear for the dog 73"; before it has opened the writing in orifice sufficiently to permit the elector to write in a candidate's name, the lip 74" connects to the second guide 81" which in turn causes phimax 86" to operate and lock up; it will be noted that "U" power is normally connected to the point N", through the normally closed armature 148" to the control circuit described under FIGURE 2; we now note that this "U" power is cut off from the write-in device except as to the lock-up feature for phimax 86", which is connected directly to "U" power. This means that one name is capable of being written into the orifice and if the said slide is moved to the left beyond the second guide for the purpose of writing in a second name before it is returned to full left hand excursion, there is insufficient space to write in a name and the function would be discounted. If, on the other hand the slide is permitted to return to the left after the first name shall have been inscribed, the phimax 86" will have removed "U" power from the circuitry and hence phimax 149" becomes inoperable and therefore the said solenoid will be dis-powered from pulling the armature away from the path of the said dog 73" and the elector is thus prevented from opening the orifice a second time, fraudulently, or in error.

It will likewise be noted that as soon as the write-in device is opened for inscribing a name for any office designation under this application, the "U" power holding circuit to the push buttons associated therewith is likewise opened at these connecting points N" and M", so that if a candidate shall have previously been selected by this elector, the phimax associated with push button of the selected candidate will simultaneously be restored to normal, since its source of "U" power will have been opened at this N" and M" connecting point as soon as the write-in device shall have subsequently been moved to the open position.

Under FIGURE 4 is shown a standard "yes" and "no" public issue control circuitry under the herein invention as contrasting the combination of "yes" and "no" circuitry with candidate push button described under FIGURE 3. The related operation is identical to that explained thereunder with the related electrical control switches operated for this application.

A voting machine constructed in accordance with and embodying the principles of the instant invention, is comparatively small, compact and extremely light of weight, a principal reason being that the phimax components are sub-miniature in dimensions, may be so grouped as to occupy a negligible amount of space, may be hermetically sealed to prevent failure of operational

integrity due to atmospheric exposures affecting the various contacts and each group segment is adaptable to printed or pressed circuitry for simplification in fabrication, maintenance and indefinite trouble free function.

- 5 The initial investment is comparably small, the cost of maintenance is negligible since they may be stored, compactly in small area tiers. No special arrangement need be made for floor reinforcement in the storage facility, nor is it important in the selection of a suitable polling place, and no attention need be given the matter of
- 10 temperature controls throughout any season of the year in any area. This phimax voter is especially flexibly designed, being easily adaptable to local requirements with a minimum of time, effort and expense. It is capable of
- 15 high speed operation, effecting a very short period for each elector to make candidate selections, is contemporary in the use of push buttons in public and private applications and therefore less confusing than the use of conventional levers for the purposes of candidate selections. In direct sequence and consequence, a greater
- 20 number of electors may hereby cast their ballots in a shorter moment of time, important especially during peak load period.

It will be understood, of course, that the present invention as herein before described and shown on the accompanying drawings, is susceptible of various changes and modifications which may be found to become importantly related hereto, made from time to time, without departing from the general principles or real spirit of this invention, and accordingly, it is intended to claim broadly, as well as specifically, as indicated in the appended claims.

What is claimed as new and useful is:

1. In an electrical voting machine, a plurality of operable party vote members arranged in a row and each identified with a different political party, a transverse row of operable individual candidate elements associated with each operable party vote member, the corresponding candidate elements of each party being in a row parallel to the party vote members, a plurality of individual candidate vote registering elements, an individual circuit controlled by manual operation of each candidate element for actuating a respective registering element, cancelling means interconnecting the corresponding operable candidate elements to cancel a previous vote by a candidate element upon operation of a different candidate element to register a new vote, a separate circuit controlled by each party vote member upon operation thereof for simultaneously controlling all of the individual circuits normally controlled by the respective candidate elements of the corresponding party voted for in order to actuate the respective registering elements, a source of power for energizing all of said circuits, a first switch movable from a first position, in which it connects the source of power to all of the separate circuits controlled by the party vote members, to a second position for disconnecting the source of power from the separate circuits to prevent party voting, and a second switch operable to selectively connect the source of power to all of the individual circuits controlled by the candidate elements of only one party while the separate circuits are disconnected from the source of power by the first switch.

2. In an electrical voting machine as defined by claim 1, including a switch controlled by operation of an individual candidate element for disconnecting the source of power from all of the separate circuits controlled by the party vote members while the first switch remains in the first position.

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