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VOTING MACHINE.

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1,170,731.

Patented Feb. 8, 1916

2 SHEETS—SHEET 1.

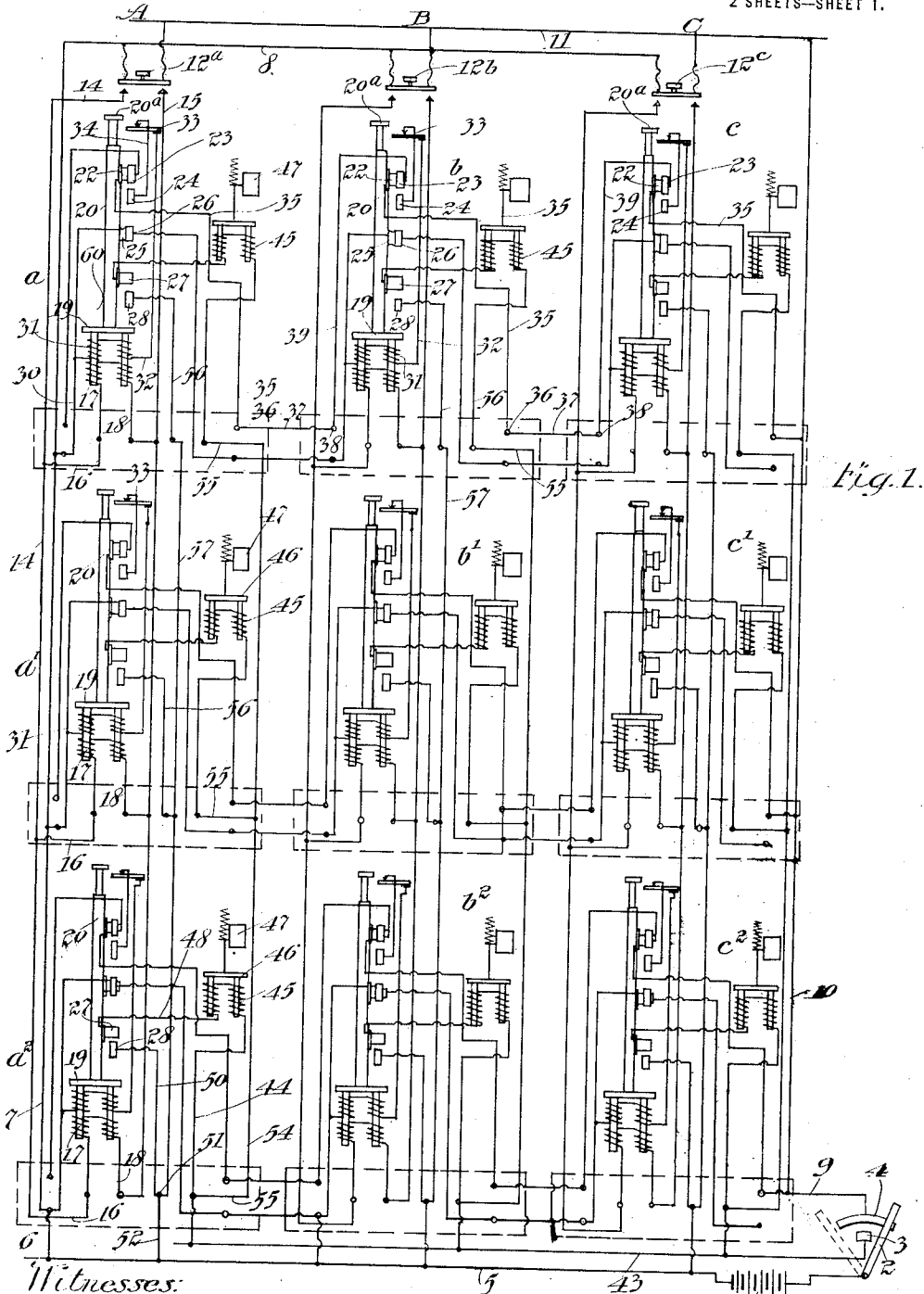


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

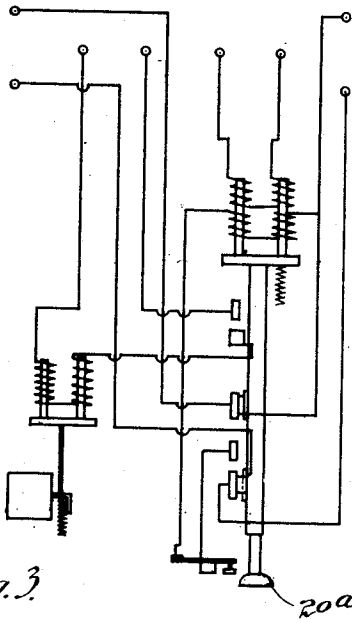


Fig. 3.

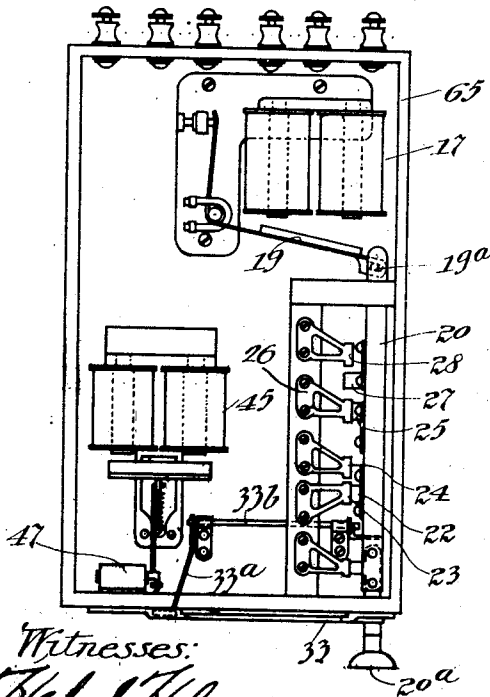


Fig. 4.

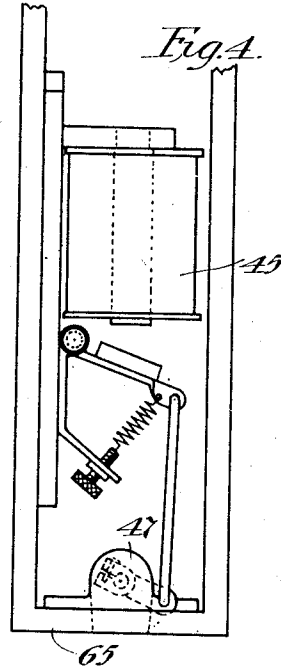
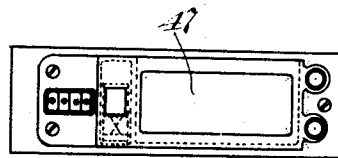


Fig. 5.



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UNITED STATES PATENT OFFICE.

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VOTING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM J. BOHAN and WAYBURN E. JOHNSTON, citizens of the United States, residing, respectively, at St. Paul and Sacramento, in the counties of Ramsey and Sacramento, and States of Minnesota and California, have invented a certain new and useful Improvement in Voting-Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to voting machines, and especially to voting machines adapted for electrical operation.

Prominent objects of the invention are to provide a simple and effective type of voting machine of the kind specified; to arrange for the easy and accurate operation of the same; to simplify and reduce the necessary mechanism and thereby cheapen the cost of construction and operation; to permit voting as desired, either by parties or individual candidates; to obtain accuracy and prevent mistakes or interference with the operation of the machine; and to secure the foregoing and other desirable results in a simple and expeditious manner.

In the accompanying drawings Figure 1 is a view of the apparatus embodying a portion of a voting machine containing our invention, said figure being largely diagrammatic and showing the electrical circuits; Fig. 2 is a view of a portion of the apparatus, showing the circuits for a single candidate's mechanism; Fig. 3 is an elevation of the mechanical structure comprising each candidate's set or box; Fig. 4 is a side elevation of the same; and Fig. 5 is a plan view of a portion of the same.

Referring first to Fig. 1, we show apparatus for nine candidates for office, divided into three parties, three candidates in each party. It will be understood of course that this arrangement is merely illustrative, as the apparatus permits extension to various numbers of parties and candidates. The three parties are represented by the three vertical rows A, B, and C. The candidates of party A are represented as a , a' , and a^2 . The candidates of party B are represented as b , b' and b^2 , while candidates of party C

are represented as c , c' and c^2 . It is desired among other things to be able to vote in "party" fashion, that is, press one button to vote for all of the candidates of one party. When this is done, it is desired of course to be able to "scratch" any one or more of the candidates of the party voted for, and substitute one or more candidates of another party. Also it is desirable to be able to "scratch" any one candidate of a party voted for in "party fashion", without voting for any other corresponding candidate of another party. As an arrangement for permitting this, we show the apparatus provided with a battery 1, shown at the lower right hand corner of Fig. 1. A switch 2 is understood to be operated automatically by the door of the voting booth in which the apparatus is located, it being understood that the apparatus shown in Fig. 1 is for a single voter, available to him when he is within a voting booth. The switch 2 cooperates with contacts 3 and 4, said switch being movable to the dotted position shown. One side of the battery 1 is connected to a lead 5 which in turn is connected by means of conductor 6 to a conductor 7 which extends up to the top of the apparatus and is connected with a lead 8. The other side of the battery 1 is connected to the switch 2 and thence by means of contact 4 on which the switch 2 normally rests, said battery is connected to conductor 9 and thence to conductors 10 and 11, the latter forming a corresponding lead at the top of the apparatus of polarity opposite that of the lead 8.

Buttons 12^a , 12^b and 12^c are provided at the top of the apparatus and arranged to be pushed or actuated by a voter in operating the machine. These buttons control the voting in "party fashion", it being intended that to vote all of the candidates of party A, the button 12^a shall be actuated, to vote all of the candidates of party B, the button 12^b shall be actuated, and so on. When the button or switch 12^a for example is actuated, connection will be made between the lead 8 and a conductor 14, and between the lead 11 and another conductor 15. The conductor 14 extends down to the bottom and is connected with branch wires 16, 16. These conductors 16, 16, run to electro-magnets 17, 17, and include one set of coils on

said magnets. The conductor 15 extends down and is connected by branch conductors 18, 18, with said magnets 17, 17. This arrangement is the same in apparatus for each of the parties A, B and C. Thus to vote any straight party ticket, as for example, the party A, the button or switch 12^a of that party will be actuated, thereby closing the circuits through the magnets 17, 17, and energizing the same. This causes each of said magnets to attract its armature 19, 19, and thereby draw down the bar or rod 20, 20, connected with or attached to said armature. Taking for example the actuation of one of these magnets, say the topmost magnet 17, and the drawing down of its armature 19, it will be seen that contact 22 on the bar or rod 20 will be moved out of contact with fixed contact 23 and into contact with fixed contact 24. Also contact 25 on the bar 20 will be moved out of contact with fixed contact 26, and contact 27 on the bar 20 will be moved into connection with fixed contact 28. By the connection of contacts 22 and 24 a circuit will be closed from the left hand side of battery 1, conductors 5, 6 and 7 to conductor 30, thence to coil 31 on magnet 17, thence by conductor 32 to switch 33, conductor 34, contact 24, contact 22, conductor 35, to terminal 36. From this terminal, conductor 37 normally extends to terminal 38 in the apparatus of candidate *b* of the next party B, and a conductor 39 is normally extended up from said terminal 38 to contact 23 of candidate *b* apparatus. In this apparatus no actuation by the voter having taken place, the rod or bar 20 is in elevated position, so that contact 23 is connected with movable contact 22. Thus the circuit is closed from conductor 39 by way of contacts 23 and 22 to conductor 35 of candidate *b*, and thence to terminal 36 and then by conductor 37 again to terminal 38 of candidate *c*. Here again the circuit is closed through conductor 39, contacts 23 and 22, conductor 35 to conductor 10, connected with the opposite or right hand side of the battery 1 through the switch contact 4 and blade 2. This closes permanently a circuit through the coil 31 of the magnet 17 of the candidate *a* of the party A, and this circuit serves to maintain the magnet 17 energized and the armature 19 thereof in a downward or actuated position. This circuit maintaining the magnet in such way may be called a "holding" circuit. In the same way the magnet 17 of the candidate *a'* of party A will first be energized through the lower coil and conductors 16 and 18, and will then be subsequently and permanently energized by the closing of the holding circuit through coil 31, and through connections for candidate *a'* through apparatus of candidates *b'* and *c'* as previously described. In this way

a party vote may be cast; that is by depressing button or switch 12^a, the magnets of all of the candidates of said party will be actuated and maintained permanently energized. Assuming that a straight party vote is to be cast, it still remains to finally actuate the apparatus so as to cause the registration of the vote. This will be done by operating the switch blade 2 so as to bring it into position indicated by dotted lines in Fig. 1. When this is done contact is first made with the contact strip 3 and then broken with said strip and then later with the strip 4. When the circuit is closed by switch 2 to contact 3 the right hand side of the battery will be connected with conductor or lead 43 to conductor 44 which extends to the coil 45 of a magnet 46 which is arranged to actuate a counting device 47. From the coil 45 a conductor 48 is extended to the contact 27 on the bar or rod 20 of the magnet 17 of the candidate *a'* of the party A. Inasmuch as this bar or rod is drawn down being actuated by the corresponding magnet, the contact 27 will be connected with the cooperating fixed contact 28, thereby closing a circuit through conductor 50, to terminal 51 and thence by conductor 52 to lead 5. This closes the circuit through the magnet 45 of candidate *a'*, and thereby causes said magnet to actuate the corresponding counting device 47. In the same way the circuit is closed by means of conductor 54 and branch conductors 55—55 through coils 45—45 of magnets of candidates *a'* and *a*, and inasmuch as the magnets 17 of these candidates are actuated, the circuits will be closed through the contacts 27 and 28 of these candidates and so through the conductors 56—56 to conductor 57 and thence to conductor 52, thereby actuating the counter magnets 46 and the counters 47 of said candidates *a'* and *a*. When the switch 2 has passed to the dotted line position all circuits are broken and the apparatus is restored to its normal condition. When the switch 2 is thrown back from dotted line position to solid line position to prepare the apparatus for another vote, no effect is had on the apparatus because the switches 12^a, 12^b and 12^c, are not actuated and no circuits are closed. The switch 2 may be operated as desired, preferably by arranging it so that the switch is in the solid line position when the voter is within the voting booth, and is thrown to the dotted line position when the door is operated so as to allow the voter to leave the booth.

Assume now that the voter does not wish to vote a straight party ticket, but wishes to omit one or more of the candidates of a party without voting for any corresponding candidate in any other party. To do this after having pressed the party button 12^a the

voter depresses the switch 33 for the candidate or candidates for whom he does not wish to vote. As a result the circuit is opened between conductors 34 and 32, and consequently the coil 31 is opened and the magnet 17 deenergized, thereby permitting the spring 60 to retract the armature 19, throwing the rod or bar 20 into released position. In such position of course the circuit is opened between the contacts 27 and 28, so that no circuit will be made through the counting device magnet 45 when the main switch 2 is thrown into registering position.

Assume now that the voter wishes to scratch one or more of the party candidates of the party for which he has voted, and substitute a candidate of another party. Assume, for example, that he has voted for the candidates of the party A, but wishes to substitute candidate *b* of party B for candidate *a* of party A, leaving his votes for the other candidates *a'* and *a''* of party A. Having voted for party A all of the apparatus of candidates *a*, *a'* and *a''* will be in holding position, with the armatures 19 of the magnets 17 duly attracted and the bars 20 drawn downwardly to make contact connections previously described. The voter now in order to substitute candidate *b* for candidate *a* depresses the end 20^a of the rod 20 of the candidate *b*, for example, for whom it is desired to vote, in preference to candidate *a*. The end 20^a of the rod 20 is to such end made in the form of a button or the like, so that it may be readily depressed by the finger or hand. This depression of the rod 20 of the candidate *b* has the effect on the circuits and contacts associated with said rod 20, previously described in connection with the rod 20 of candidate *a*; that is to say, the contact 22 on rod 20 of candidate *b* is separated from contact 23 and brought into contact with contact 24 and contact 25 is separated from contact 26, and contact 27 brought into connection with contact 28. This has the effect of closing the circuit through the coil 31 by way of conductor 32, switch 33, contact 24, contact 22, conductor 35, terminal 36, and thence to the next set of circuits. The energization of the coil 31 holds the armature 19 in the depressed position which was brought about manually by the depression of the key or button 20^a, thus retaining or locking said armature 19 with its rod 20 and contacts in holding position, as previously referred to. In this condition connection is made from lead connector 56 through contacts 28 and 27 to counting device 45; and thence to conductor 55 as previously referred to in connection with the circuits of candidate *a*; thus leaving the counting device circuit in such condition that the operation of the switch lever 2 will cause the actuation of the counting device of

the candidate *b* at the same time that the counting devices of the candidates *a'* and *a''* are actuated.

The depression of the key or button 20^a of the candidate *b*, to substitute *b* for *a*, by separating the contacts 22 and 23, causes an opening of the circuit through the coil 31 of the candidate *a*, said circuit having been closed through switch 33 and contacts 22 and 24 by the previous depression of the rod 20 of said candidate *a*. This opening of the circuit of coil 31 of candidate *a* causes the deenergization of said coil 31 and the consequent releasing of the armature 19 held thereby, with the result that the circuit through counting device 45 of candidate *a* is opened at contacts 27, 28, thereby preventing the actuation of said counting device when said switch lever 2 is operated. Thus it will be seen that this improved voting apparatus permits any desired voting method, all candidates of a party may be voted for, or one or more may be canceled, without voting for corresponding candidates in other parties, or such other substitute candidates may be voted for, or voting may be done by individual candidates.

In Figs. 2, 3, 4 and 5 we show individual devices and circuit conditions for an individual candidate; Fig. 2 being diagrammatic, and Fig. 3 showing a box or case containing the devices and circuit connections, Fig. 4 showing a part of the same on an enlarged scale, and Fig. 5 showing a registering or counting device also on an enlarged scale. The arrangement and connections as illustrated in Fig. 2 will be understood from the description already given, it being noted that in said Fig. 2 the circuit connections are upside down with reference to the way in which they are illustrated in the individual groups in Fig. 1, the upside down arrangement being the way in which the connections are made in the box shown in Figs. 3 and 4. In these latter figures the devices and connections are illustrated inclosed in a box or case 65. Terminals are shown on the top of this box for the various connecting wires. The electromagnet 17 is shown toward the upper part of the box, the rod 20 toward the bottom part, and the armature 19 interposed between the two, there being a loose or sliding pivotal connection at 19^a between the armature 19 and rod 20. The contacts 22, 23, 24, 25, 26, 27 and 28 are all as shown, the fixed contacts 23, 24, etc., being secured to the box. The counting device magnet 45 is shown also at the bottom and to one side of the box and the counting device 47 at the bottom of the box. The switch 33 is shown at the bottom of the box and connected with a rod 33^a and shaft 33^b, by which said switch may open the circuit, as described in connection with the description of Fig. 1.

It will be understood that changes and modifications may be made without departing from the spirit of the invention.

What we claim is:

5 1. The combination with a series of vote registering devices, of electromagnetic means for actuating the same, a series of movable members, one for each vote registering device, said members being combined with
10 means whereby by their movement they control the circuits for said electromagnetic means, said movable members being manually operable, and electro-magnetic means for actuating said movable members.

15 2. The combination with a series of vote registering devices, of electromagnetic means for actuating the same, a series of movable members, one for each vote registering device, said members being combined with
20 means whereby by their movement they control the circuits for said electromagnetic means, said movable members being manually operable, electro-magnetic means for actuating said movable members, and circuit connections and a switch whereby all
25 of said electro-magnetic means for actuating said movable members may be operated.

3. The combination with the vote registers, and the electromagnets therefor, of
30 push rods, one for each register, contacts on said push rods and cooperating stationarily mounted contacts, circuit connections whereby the movement of said push rods establishes circuits for said electro-magnets,
35 said push rods being adapted to be manually operated, and electromagnets arranged to operate said push rods.

4. The combination with the vote registers, and the electromagnets therefor, of push
40 rods, one for each register, contacts on said push rods and cooperating stationarily mounted contacts, circuit connections whereby the movement of said push rods establishes circuits for said electro-magnets, said
45 push rods being adapted to be manually operated, electro-magnets arranged to operate said push rods, circuit connections with said last mentioned electro-magnets and a switch for closing said circuit connections and causing
50 the operation of all of said magnets to operate all of said push rods.

5. The combination with the vote registers, and the electro-magnets therefor, of
55 push rods, one for each register, contacts on said push rods and cooperating stationarily mounted contacts, circuit connections whereby the movement of said push rods establishes circuits for said electro-magnets, said push rods being adapted to be manually operated, electro-magnets arranged to operate
60 said push rods, circuit connections with said last mentioned electro-magnets and a switch for closing said circuit connections and causing the operation of all of said magnets to
65 operate all of said push rods, said push

rods operating magnets being provided with local circuit coils whereby they are locked in holding position when operated.

6. The combination with a series of push rods, of contacts carried by said rods and
70 cooperating stationarily mounted contacts, electro-magnets for actuating said push rods, circuit connections and a switch whereby all of said magnets may be actuated by
75 operating said switch, and local circuit coils on said magnets, combined with local circuit connections which are closed by said push rods when the same are actuated to connect the contacts thereof with said stationarily
80 mounted contacts.

7. The combination with a series of push rods, of contacts carried by said rods and cooperating stationarily mounted contacts, electro-magnets for actuating said push
85 rods, circuit connections and a switch whereby all of said magnets may be actuated by operating said switch, and local circuit coils on said magnets, combined with local circuit connections which are closed by said push rods when the same are actuated to connect
90 the contacts thereof with said stationarily mounted contacts, in combination with another series of push rods, electro-magnets and connections as above set forth, and circuit connections between corresponding push
95 rods in the two series, whereby the operation of a push rod opens circuit connections established by the operation of a corresponding push rod.

8. The combination with a series of registering devices, of electro-magnets for actuating said devices, a switch, a series of
100 controlling magnets corresponding in number to the series of registering devices, circuit connections whereby circuits are closed through said controlling magnets by the actuation of said switch, contacts controlled by
105 said controlling magnets, supplemental coils on said controlling magnets, and circuit connections by which circuits are closed through said supplemental coils upon the energization of said magnets, whereby said magnets are held or maintained in energized condition, and contacts and circuit connections by
110 which said controlling magnets when actuated close circuits through said registering device actuating magnets.

9. The combination with a series of registering devices, of electro-magnets for actuating said devices, a switch, a series of
120 controlling magnets corresponding in number to the series of registering devices, circuit connections whereby circuits are closed through said controlling magnets by the actuation of said switch, contacts controlled by said controlling magnets, supplemental coils on said
125 controlling magnets, and circuit connections by which circuits are closed through said supplemental coils upon the energization of said magnets, whereby said magnets are
130

held or maintained in energized condition, and contacts and circuit connections by which said controlling magnets when actuated close circuits through said registering device actuating magnets, and a second switch by which battery is connected with the closed circuits of said actuating magnets.

10. The combination with a series of registering devices, of electro-magnets for actuating said devices, a switch, a series of controlling magnets corresponding in number to the series of registering devices, circuit connections whereby circuits are closed through said controlling magnets by the actuation of said switch, contacts controlled by said controlling magnets, supplemental coils on said controlling magnets, and circuit connections by which circuits are closed through said supplemental coils upon the energization of said magnets, whereby said magnets are held or maintained in energized condition, contacts and circuit connections by which said controlling magnets when actuated close circuits through said registering device actuating magnets, a series of keys, and means whereby the actuation of any one of said keys opens the circuit through the corresponding actuating magnet.

11. The combination with a series of registering devices, of electro-magnets for actuating said devices, a switch, a series of controlling magnets corresponding in number to the series of registering devices, circuit connections whereby circuits are closed through said controlling magnets by the actuation of said switch, contacts controlled by said controlling magnets, supplemental coils on said controlling magnets, and circuit connections by which circuits are closed

through said supplemental coils upon the energization of said magnets, whereby said magnets are held or maintained in energized condition, contacts and circuit connections by which said controlling magnets when actuated close circuits through said registering device actuating magnets, a series of keys, and means whereby the actuation of any one of said keys opens the circuit through the corresponding actuating magnet, and a second switch and means whereby the actuation of said switch will cause battery to be connected with all of the actuating magnets whose circuits are closed.

12. The combination of a series of electro-magnets, one for each candidate of a party, means whereby all of said electromagnets may be simultaneously energized, vote counting devices, one for each electromagnet, means whereby upon the energization of an electromagnet the circuit for the associated vote counting device is closed, said last mentioned means comprising armatures for said magnets and contacts carried by said armatures and cooperating with contacts included in said vote counting device circuits.

In witness whereof, we hereunto subscribe our names this 10th day of August A. D. 1914, and this 31st day of July A. D. 1914.

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WAYBURN E. JOHNSTON.

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