Aug. 26, 1930. M. F. THOMPSON 1,773,891

PARLIAMENTARY VOTING SYSTEM AND APPARATUS THEREFOR

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Fig. 10.

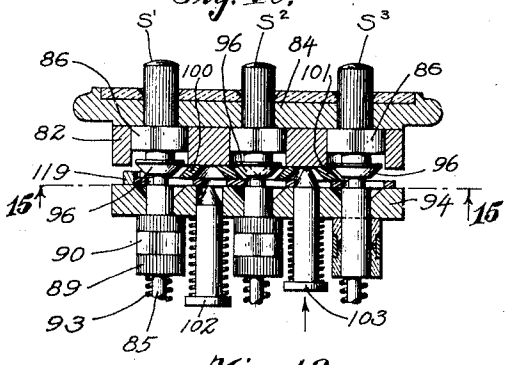


Fig. 11.

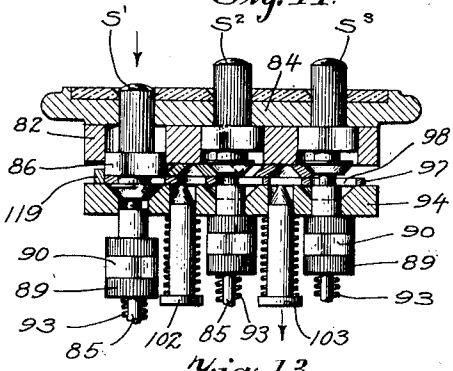


Fig. 12.

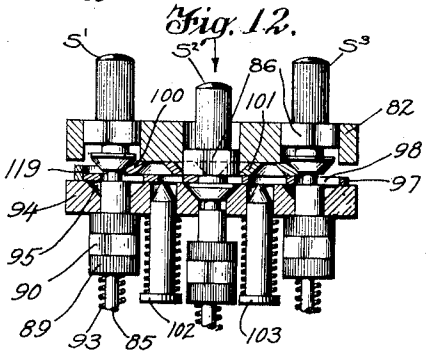


Fig. 13.

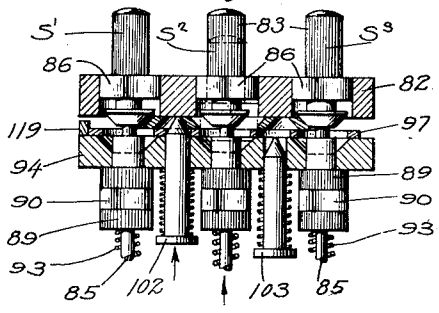


Fig. 14.

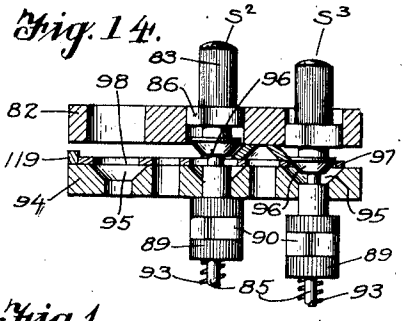


Fig. 1.

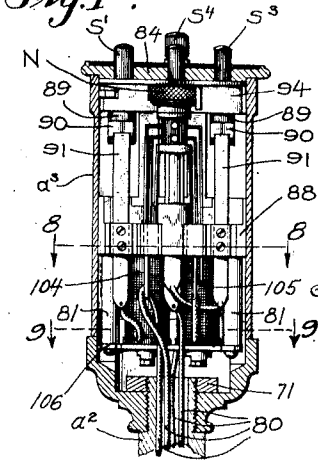


Fig. 2.

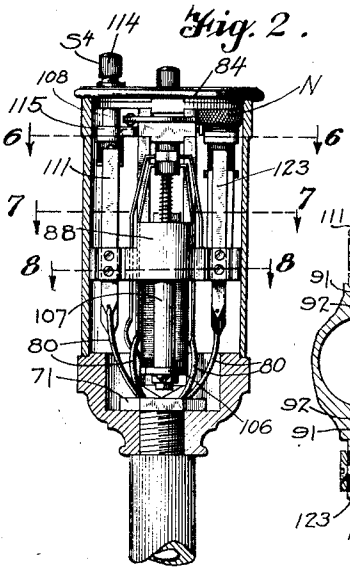
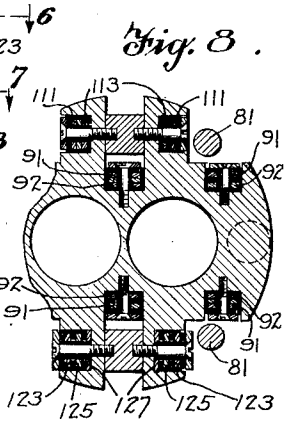


Fig. 8.



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Fig. 5

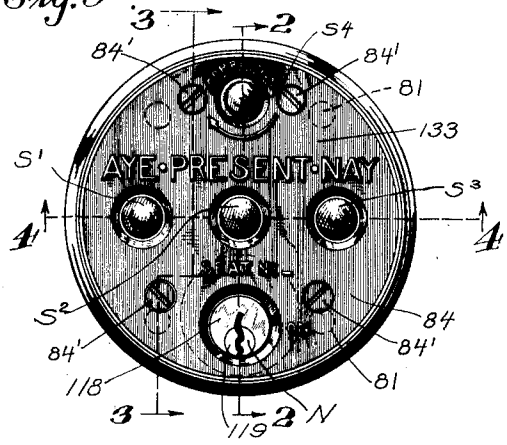


Fig. 15

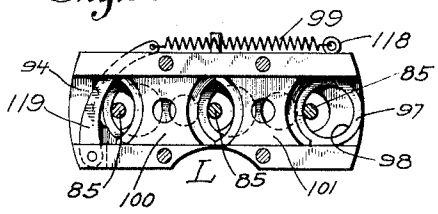


Fig. 9

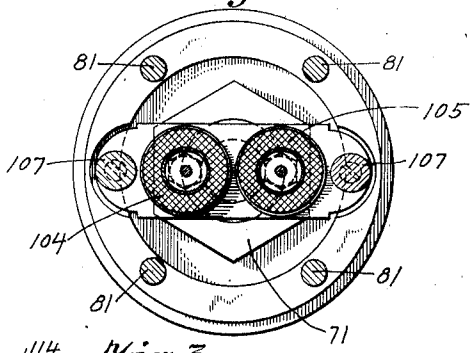


Fig. 6

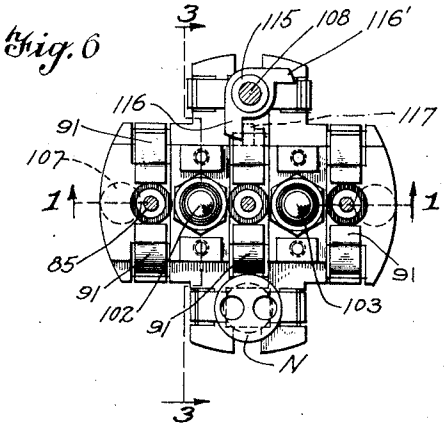


Fig. 3

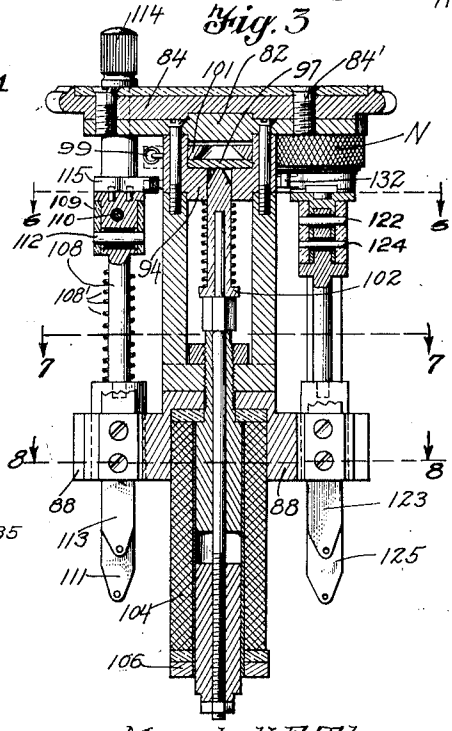
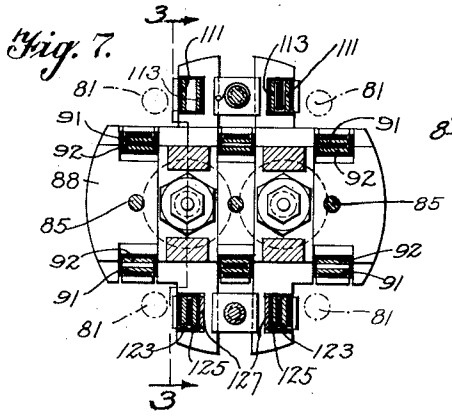


Fig. 7.



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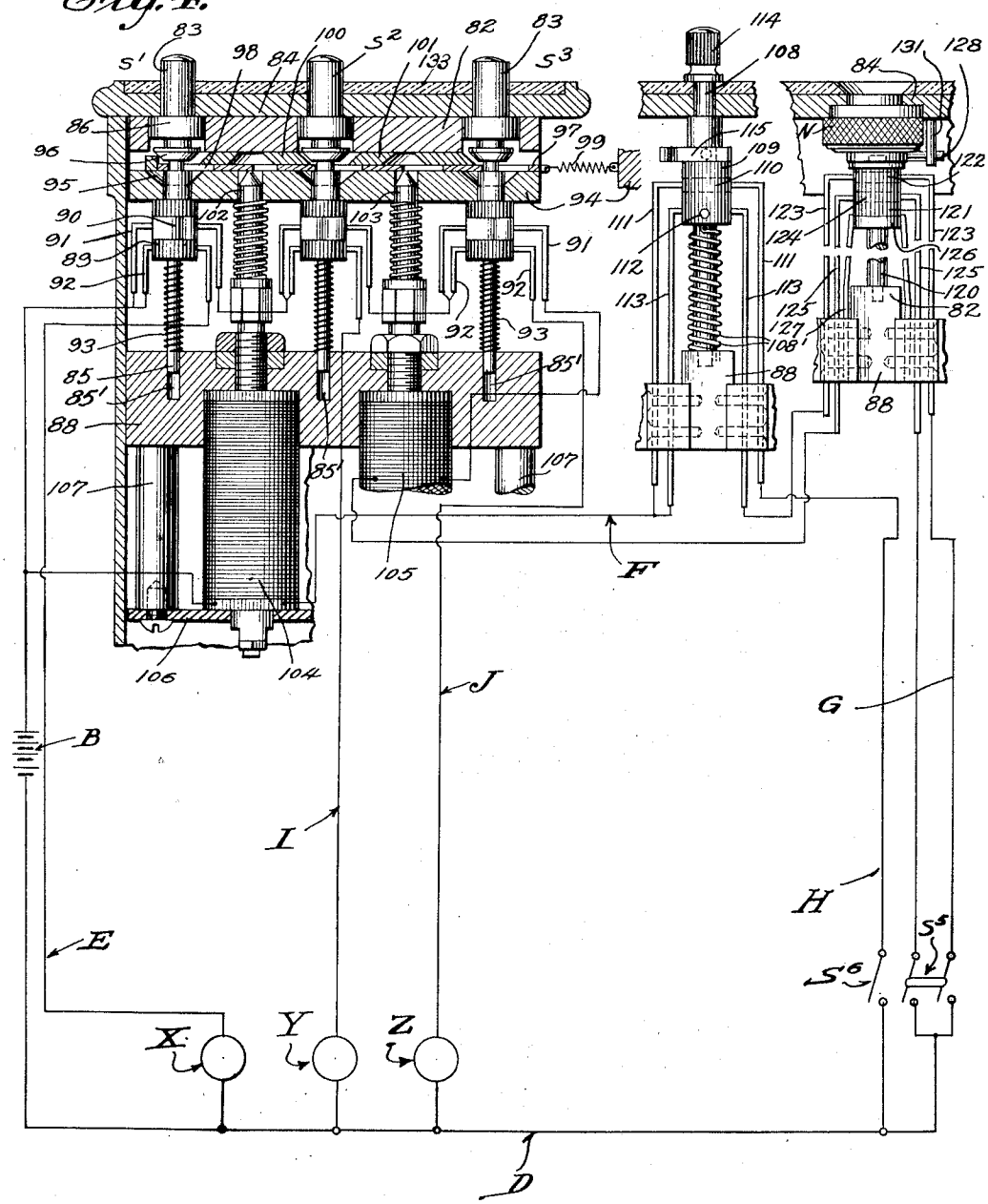
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Fig. 4.



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UNITED STATES PATENT OFFICE

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PARLIAMENTARY VOTING SYSTEM AND APPARATUS THEREFOR

Application filed September 11, 1923. Serial No. 662,115.

This invention relates to electrical voting systems, and more particularly to improvements in the mechanism comprising the individual voting stations, through which each member of the legislative body passes his vote.

Actual practice has demonstrated that a practical voting mechanism for the individual member of a legislative body, must provide for,

1st—The selective casting of any one of a plurality of different votes,

2nd—The casting of only one vote at a time,

3rd—Changing of the vote,

4th—Resetting of the mechanism by a remote control,

5th—and lastly, locking the mechanism against operation either at the individual station or by a remote control.

Numerous attempts have been made to accomplish the foregoing, but these have resulted in complicated mechanisms, requiring a great multiplicity of electro-magnets, resulting in bulky and costly structures, costly to maintain and constantly out of order.

It is therefore the primary object of the present invention to provide an individual voting unit, wherein simple mechanical means is combined with a novel arrangement of electro-magnets, the latter being common to both individual and remote control, thus reducing the number of magnets required, cost of manufacture and maintenance, and the possibility of the apparatus getting out of order.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawing is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

Figure 1 is a longitudinal section through a mechanism constructed in accordance with the present invention, the same being taken on the line 1—1 of Figure 5.

Figure 2 is a similar view taken on the line 2—2 of Figure 5.

Figure 3 is an enlarged fragmentary section taken on the line 3—3 of Figures 5, 6, and 7.

Figure 4 is an enlarged fragmentary section taken on the line 4—4 of Figure 5, the electrical circuits and other parts of the mechanism being shown diagrammatically.

Figure 5 is a top plan view.

Figure 6 is a transverse sectional view taken on the line 6—6 of Figures 2 and 3.

Figure 7 is a transverse section taken on the lines 7—7 of Figures 2 and 3.

Figure 8 is a transverse section taken on the lines 8—8 of Figures 1, 2 and 3.

Figure 9 is a transverse section taken on the line 9—9 of Figure 1.

Figure 10 is a transverse detailed section taken on the line 4—4 of Figure 5.

Figures 11, 12, 13, and 14 are similar views showing the parts in their various positions, and

Figure 15 is a detailed sectional view taken on the line 15—15 of Figure 10.

Referring now particularly to the accompanying drawings, a^2 (Fig. 1) designates a tubular standard having its end threaded into the bottom of a cylindrical housing a^3 and secured therein by means of a nut 71. The tubular standard A^2 serves to house the wires 80 which lead to the various switches contained within the housing, as will be hereinafter described more in detail. A plurality of spaced vertical posts 81 (Figs. 1 and 9), carried by the bottom of the housing interiorily thereof, support upon their upper ends a circular plate 82 (Figs. 10, 11 and 14), which carries the mechanism contained within the voting station. Formed diametrically of the plate 82, is a series of three openings in which are supported for vertical movement the three voting switches, S^1, S^2, and S^3. These voting switches S^1, S^2, and S^3, have

their upper ends provided with buttons 83 (Figs. 4, 13 and 14) which project through registering openings formed in a face plate 84 secured on the upper side of the supporting plate 82 by means of screws 84' (Fig. 5). Each of the switches S^1, S^2, and S^3, besides the cylindrical buttons 83, comprises a plunger 85 having an enlarged cylindrical portion 86 disposed immediately below the buttons 83 and engaged in the opening of the supporting plate 82 to render the same accurate and rigid in operation. The lower ends of the plungers 85 are engaged in circular bores 85 formed in a supporting plate 88, which is spaced below the supporting plate 82 and carried thereby. Mounted on each plunger 85 is a cylindrical block 89 of an insulating material which carries a metal contact band 90 adapted to form a connection between the brushes or contact members 91 and 92, respectively, the upper pair of brushes 91 being normally contacted with the band 90 when the plunger is disposed in normal and inoperative position. Surrounding the lower end portions of the plungers 85 are coiled springs 93 interposed between the lower supporting plate 82 and the insulating block 89, which serve to normally force the plungers upwardly and into their normally inoperative positions, whereby a circuit is completed between the contact bands 90 and the brushes 91 engaging the same, while the circuit is broken between the lower set of brushes. The cylindrical portion 86 serves to limit the upward movement of the plungers.

When one of the voting switches S^1, S^2, or S^3 is depressed, the circuit is broken between the upper brushes 91 and a circuit is closed through the lower set of brushes 92, which depression performs the voting operation, as will be later described.

Cooperating with the three voting switches, S^1, S^2, and S^3, is a mechanical locking device which comprises a lower member or plate 94 having openings therein through which the plungers 85 are movable, the upper ends of these openings being countersunk to provide recesses 95 for the reception of the conical enlargements 96.

Loosely mounted on the upper face of the plate 94 is the plate 97, provided with a series of openings 98, which correspond to the openings in the plate 94, but which are normally held out of alignment therewith by means of a spring 99 urging the locking plate 97 into engagement with the plunger 85. The openings 98, in the second or locking plate 97, are of a size to admit the passage therethrough of the conical enlargements 96 of the plungers 95, and when the latter are depressed, conical faces of the enlargements 96 engage the edges of the openings 98 and move the locking plate 97 against the tension of the spring 99, bringing the openings into alignment with the conical portions to permit the same to pass therethrough, after which the plate 97 snaps over the top of the conical portion and retains the depressed button in its operative position. In its normal position, the movable plate 97 is urged against the plungers 85 under the conical enlargements 96 and prevents depression of the plungers until the plate is moved from under the conical enlargements, as will be hereinafter described in detail.

Positioned upon the locking plate 97 intermediate the switches S^1, S^2, and S^3, is a pair of locking members 100 and 101, respectively, which locking members have their opposite ends bevelled, corresponding to the conical faces of the enlargements 96 of the plungers 85, so that upon the depression of any one of the plungers the adjacent locking member is forced laterally under the conical face of the adjacent button or buttons, thus preventing depression of the same. Should either of the outer buttons be depressed the plates 100 and 101 are so arranged with the adjacent ends abutting, as to cause lateral movement of both plates, thus locking the remaining switches against depression.

The plate 94 is provided, intermediate the openings for receiving the plungers 85, with an additional pair of openings for the reception of pins 102 and 103, respectively, which pins are actuated by the solenoids 104 and 105, respectively. These solenoids are carried by the lower plate 88 and are secured in position between the same and another supporting plate 106, which is spaced below the plate 82 and carried thereby by a plurality of spaced posts 107.

The operating pins 102 and 103 are mounted on the upper ends of the plungers of the solenoids 104 and 105, respectively. The upper ends of the operating pins are conically formed for engagement in the intermediate openings in the plate 97 for the purpose of camming the same laterally against tension of the spring 99 to permit depression of the switches or release the same from their depressed position. The locking members 100 and 101 are provided with a conical opening into which the ends of the pins 102 and 103 project when the solenoids 104 and 105 are energized, these openings being of a sufficient size to prevent disturbance of the members 101 when the pins are projected upwardly.

The solenoid 105 constitutes the resetting means, that is the means for releasing the buttons from their depressed position, and the same is controlled by operation of the correcting switch S^4 (Fig. 5) and a remote control switch S^6 (Fig. 4), which is actuated by the clerk at a central station. Obviously, where there is a plurality of individual voting stations, closing of the reset switch S^6 will actuate all of the solenoids 104

to effect release of the depressed buttons and permit their return to normal position ready for the next vote.

The correction switch S^4 is provided to permit a member to alter his vote, when he has through error or otherwise manipulated one of the voting switches S^1, S^2, or S^3, and this correction switch S^4 is located at one side of the intermediate voting switch S^2, as shown in Figure 5. The correction switch S^4 comprises a shaft 108 (Figs. 2, 3 and 6) journaled through the face plate 84 and has its lower end journaled in the supporting block 88. Mounted at an intermediate point on the shaft 108 is a cylindrical block of insulation 109, (Figs. 3 and 4) having disposed diametrically therethrough a contact member 110 which, in the normal position of the shaft 108, completes a circuit between a pair of contact fingers 111 connected in the circuit with the solenoid 104 to permit energizing of said solenoid upon actuation of the reset switch S^6 of the main station. Extending diametrically through the insulating block 109 at right angles to the contact member 110 is a second contact member 112, which when the spindle is given a quarter turn completes a circuit through a pair of contact fingers 113, which, as best shown in Figure 4, close the circuit energizing the solenoid 104.

The exposed free end of the shaft 108 is provided with a finger piece 114 imparting thereto the necessary rotary movement, which movement is limited to the desired quarter turn by means of a stop member 115 (Figs. 4 and 6), which is secured on the spindle immediately above the cylindrical block of insulation 109. The stop member comprises a pair of extensions 116 and 116′ arranged ninety degrees apart, and which cooperate with a lug 117 for effecting the desired limitation of movement of the spindle.

Encircling the spindle 108 and interposed below the lower end of the cylindrical block 109 and the opposed extension 82′ of the plate 88, is a coil of spring 108′ arranged to be placed under tension by the turning movement of the spindle 108 to that position forming a contact between the brushes 113. Thus, when the finger piece 114 is released the spring will return the spindle 108 to its normal position.

From the foregoing, it will be seen that within a given voting period, a member is permitted to change his vote any number of times and in a manner not to interfere with the casting of votes from other stations.

Referring now more particularly to the locking and retaining mechanism, as shown in Figure 15, the spring 99 is disposed at one side of the mechanical locking device and has one end engaged in an eye 118 projecting from the adjacent side of the lower member or plate 94, while the other end of the spring is fastened to the free end of a lever 119 having its opposite end pivoted to the lower plate 94. As shown in Figures 10 to 14 inclusive, the lever 119 engages one end of the plate 97 and normally urges the same into engagement with the plungers 85 for the purpose heretofore described.

Positioned adjacent the intermediate voting switch S^2, is an individual station lock N, (Figs. 1 to 5) comprising a tumbler lock of conventional type, and operable by means of a key: The lock end embodies a rotary cylinder 118 having its upper end exposed to the face plate 84 and provided with a key receiving opening, while the inner end of the same is provided with a spindle extension 120 which is journaled at its lower end in the extension 82 of the plate 88. Mounted on the upper end of the spindle 120 is a cylindrical block of insulation 121 which has passing therethrough an upper contact member 122, adapted to form a contact between the brushes 123. A second contact member 124, passing through the block 121 below the upper contact member, is adapted to form a contact between a second set of brushes 125. Below the block 121 the spindle is provided with a square extension 126 which cooperates with a pair of opposed spring members 127, to retain the spindle in either one of its positions. Projecting radially from the cylinder 118, is a pin 128, which engages a pair of stop pins 131 spaced apart substantially ninety degrees, to limit the rotary movement of the cylinder 118.

As will be later pointed out, the switch N controls the solenoid 105 and closes a circuit of the remaining switches when the key is inserted and the spindle rotated to that position shown in Figure 4.

When the solenoid 105 is energized upon closing the circuit to the switch N, the pin 103 is projected upwardly, as shown in Figure 10, which forces the plate 97 laterally so that the openings registering with the conical portions 96 of the switches S^1, S^2, and S^3, are withdrawn from under the shoulders of said projections 96, thus permitting the selected depression of any one of the voting buttons. Thus, it will be seen that when a member leaves his desk and the solenoid 105 is deenergized by opening the switch N, the pin 103 is withdrawn from the plate 97 permitting the same to be forced under the projections 95 and thus lock the station against operation.

As shown in Figures 4 and 5, the face plate 84, enclosing the upper end of the voting station casing A^2, is preferably flanged at its upper side to provide a circular depression for the reception therein of a transparent disc 133 to expose through the same the data applied to the face of the plate for the proper identification of the various switches and the station itself.

Briefly describing the operation of the present invention, with particular reference to Figure 4, wherein the voting mechanism is shown in its normal position, the locking switch N is first turned to that position shown, which closes a circuit from the battery B, the clerk having previously closed the double switch S^5 in the circuit D. This energizes the solenoid 105 which actuates the pin 103 to shift the plate 97 and permit the selective depression of any one of the voting buttons S^1, S^2, or S^3. After the member has voted, by depressing any one of the buttons as, for example, the button S^1, a contact is made through the brushes 92 which closes the circuit E from the battery and actuates a vote recording or indicating mechanism, which for the purpose of simplicity will hereinafter be referred to as the vote indicating means, designated by the letter X.

Should the member then decide to change his vote the correction switch is rotated, which makes a contact between the brushes 113, thus closing the circuit F from the battery and energizing the solenoid 104 which projects the pin 102 through the plate 97, as shown in Figure 13, which action forces the plate 97 laterally, releasing the button previously depressed. The member may then select any other button desired.

After the voting period has expired and it is desired to prevent further manipulation of the voting buttons in order that the vote may be properly recorded, the clerk opens the double switch S^5, which deenergizes the solenoid 105 and also breaks the circuit G passing through the lock N and to the brushes 113 of the correction switch S^4, thus preventing the individual from releasing the vote previously cast. A record may then be taken after which the clerk at the main station may reset the individual voting mechanism to the normal position by closing the switch S^6 in the circuit H, which through the brushes 111 will energize the solenoid 104, thus actuating the plate 97 to release the depressed button. The voting station is then clear and ready for the next vote.

As shown in Figure 4, depression of the button S^2 will close the circuit I, actuating the vote indicating mechanism Y, and depression of the button S^3 closes the circuit J, which actuates the vote indicating means Z, it being understood that the means X, Y, and Z, provide for the indicating or recording of different votes.

From the foregoing description taken in connection with the drawings, it will be obvious that a compact, comparatively simple and positive apparatus has been provided, which will permit each member to indicate any desired vote, or correct his vote, within a limited time, and that a simple arrangement has been provided whereby the individual voting station may be locked against operation, or resetting, by remote controls provided at a main station.

I claim:

1. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit, and a locking circuit, said mechanism comprising a plurality of manually operable switches for controlling said voting circuits, means for locking said switches against operation and retaining said switches in operative position, means for preventing actuation of two or more switches at one time, an electro-magnet for releasing said retaining means, a switch for controlling said electro-magnet, a second electro-magnet for actuating said locking means to permit actuation of said voting switches, and a switch for controlling said second magnet.

2. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit, and a locking circuit, said mechanism comprising a plurality of manually operable switches for controlling said voting circuits, means for locking said switches against operation and retaining said switches in operative position, means for preventing actuation of two or more switches at one time, an electro-magnet for releasing said retaining means, a switch for controlling said electro-magnet, said magnet also being controlled by said reset circuit, a second electro-magnet for actuating said locking means to permit actuation of said voting switches, and a switch for controlling said second magnet, said second magnet also being controlled by said locking circuit.

3. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, said mechanism comprising a plurality of manually operable switches for controlling said voting circuits, mechanical means for locking said switches against operation and retaining said switches in operative position, mechanical means for preventing actuation of two or more switches at one time, an electro-magnet for releasing said retaining means, a switch for controlling said electro-magnet, a second electro-magnet for actuating said locking means to permit actuation of said voting switches, and a switch for controlling said second magnet.

4. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, said mechanism comprising a plurality of manually operable switches for controlling said voting circuits, combined mechanical means for locking said switches against operation and for retaining said switches in operative position, an electro-magnet for actuating said mechanical means to permit operation of

said switches, and a second magnet for actuating said mechanical means to release said switches from their operative position.

5. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, said mechanism comprising a plurality of manually operable switches for controlling said voting circuits, combined mechanical means for locking said switches against operation and for retaining said swicthes in operative position, an electro-magnet for actuating said mechanical means to permit operation of said switches, a second magnet for actuating said mechanical means to release said switches from their operative position, and means for preventing actuation of two or more switches at one time.

6. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, said mechanism comprising a plurality of manually operable switches for controlling the voting circuits, combined mechanical means for locking said switches against operation and for retaining said switches in operative position, an electro-magnet for actuating said mechanical means to permit operation of said switches, a switch for controlling said electro-magnet, a second electro-magnet for actuating said mechanical means to release said switches from their operative position, and a switch for controlling said second magnet.

7. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit and a locking circuit, said mechanism comprising a plurality of manually operative switches for controlling said voting circuits, unitary mechanical means for locking said switches against operation and for retaining the switches in their operative position, an electro-magnet for actuating said mechanical means to permit operation of said switches, a switch for controlling said electro-magnet, said electro-magnet being also controlled by said locking circuit, a second elecro-magnet for actuating said mechanical means to release said switches from their operative position, a switch for controlling said second magnet, said second magnet being also controllable by said reset circuit, and means for preventing operation of more than one switch at a time.

8. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit and a locking circuit, said mechanism comprising a plurality of depressible switch buttons for controlling said voting circuits, means for normally locking said buttons against depression, electro-magnetic means for actuating said locking means to permit depression of said buttons, a switch for controlling said electro-magnetic means, said electro-magnetic means being also controlled by said locking circuit, a second electro-magnet for actuating said mechanical means to release said buttons from their depressed position, a switch for controlling said second electro-magnet, said second electro-magnet being controlled by said reset circuit independently of said switch.

9. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit and a locking circuit, said mechanism comprising a plurality of depressible switch buttons for controlling said voting circuits, means for normally locking said buttons against depression, electro-magnetic means for actuating said locking means to permit depression of said buttons, a switch for controlling said electro-magnetic means, said electro-magnetic means being also controlled by said locking circuit, a second electro-magnet for actuating said mechanical means to release said buttons from their depressed position, a switch for controlling said second electro-magnet, said second electro-magnet being controlled by said reset circuit independently of said switch, and means for preventing the depression of more than one button at a time.

10. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit and a locking circuit, said mechanism comprising a plurality of depressible switch buttons for controlling said voting circuits, combined mechanical means for locking said buttons against depression and for retaining said buttons in depressed position, an electro-magnet for actuating said mechanical means to permit depression of said buttons, a switch for controlling said electro-magnet, said electro-magnet being also controlled by said locking circuit, a second magnet for actuating said mechanical means to release said buttons from their depressed position, a switch for controlling said second magnet, said second magnet being also controllable independently of said reset switch by said reset circuit.

11. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit and a locking circuit, said mechanism comprising a plurality of depressible switch buttons for controlling said voting circuits, combined mechanical means for locking said buttons against depression and for retaining said buttons in depressed position, an electro-magnet for actuating said mechanical means to permit depression of said buttons, a switch for controlling said electro-magnet, said electro-magnet being also controlled by said locking circuit, a second magnet for actuating said mechanical means to release said buttons from their depressed position, a switch for controlling said second magnet,

said second magnet being also controllable independently of said reset switch by said reset circuit, and means for preventing actuation of two or more switches at one time.

12. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, said mechanism comprising a plurality of depressible switch buttons for controlling said voting circuits, a movable plate for normally preventing depression of said buttons and for retaining said buttons in their depressed position, a member for actuating said plate to permit depression of said buttons, an electro-magnet for actuating said member, a second member for actuating said means to release said buttons from their depressed position, and an electro-magnet for actuating said second member.

13. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, said mechanism comprising a plurality of depressible switch buttons for controlling said voting circuits, a movable plate for normally preventing depression of said buttons and for retaining said buttons in their depressed position, a member for actuating said plate to permit depression of said buttons, an electro-magnet for actuating said member, a second member for actuating said means to release said buttons from their depressed position, an electro-magnet for actuating said second member, and a second plate engageable upon depression of one button to prevent depression of the other buttons.

14. An individual voting mechanism for electrical voting systems having a plurality of different voting circuits, a reset circuit and a locking circuit, said mechanism comprising a plurality of depressible switch buttons controlling said voting circuits, a movable plate for normally locking said buttons against depression and serving to retain said buttons in their depressed position, electromagnetically controlled means for actuating said plate to permit depression of said buttons, a locking switch for controlling said electro-magnet, and a second electro-magnetically controlled means for actuating said movable plate to release said buttons from their depressed position, a switch for controlling said second electro-magnet, said second electro-magnet being also controllable by said reset circuit, and said first mentioned electro-magnet being controlled by said locking circuit, and a plate engageable on depression of any one of said buttons to prevent depression of any one of the remaining buttons.

In testimony whereof I affix my signature.

MARSHALL F. THOMPSON.