

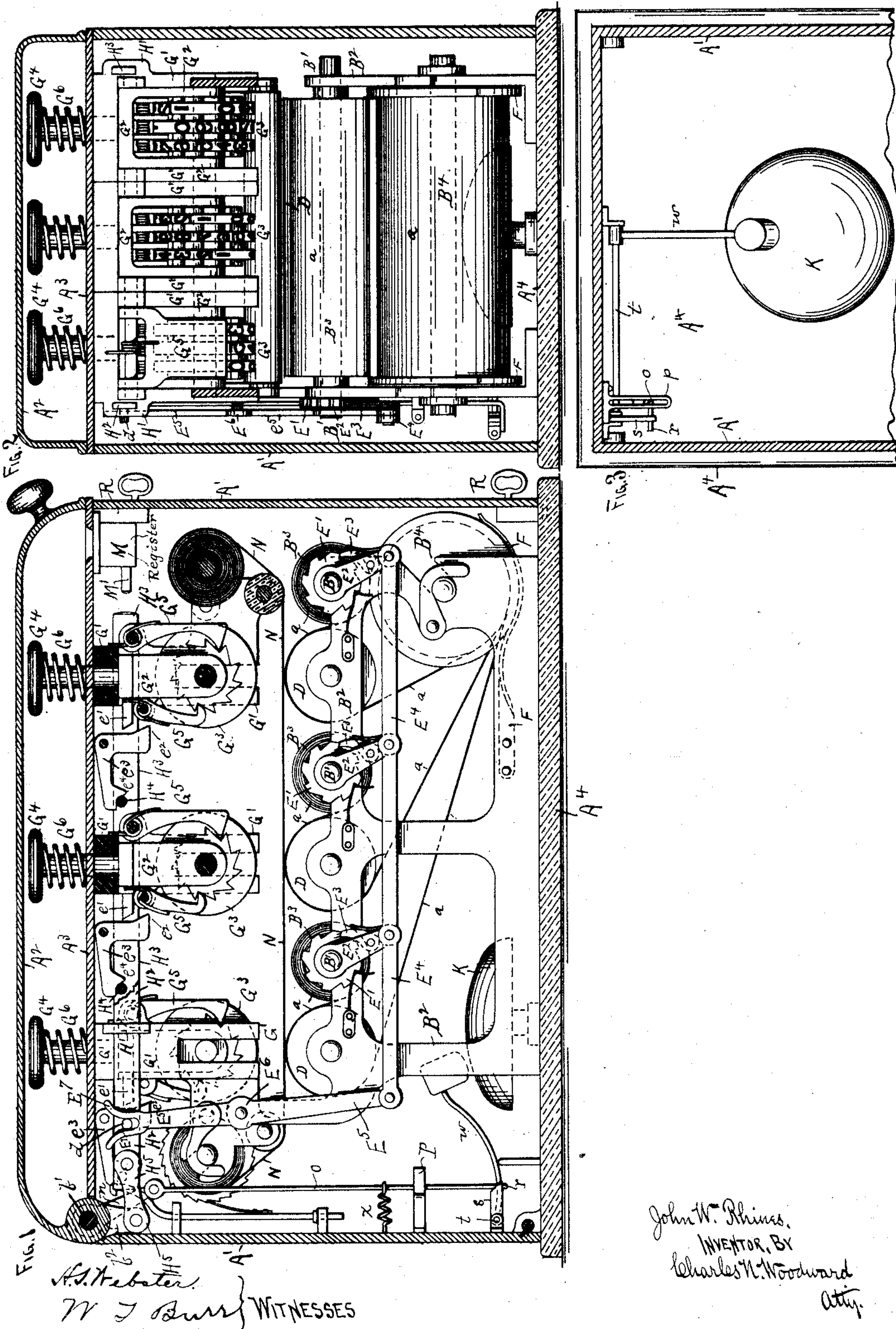
(No Model.)

2 Sheets—Sheet 1.

J. W. RHINES.  
VOTE RECORDING MACHINE.

No. 422,891.

Patented Mar. 4, 1890.





(No Model.)

2 Sheets—Sheet 2.

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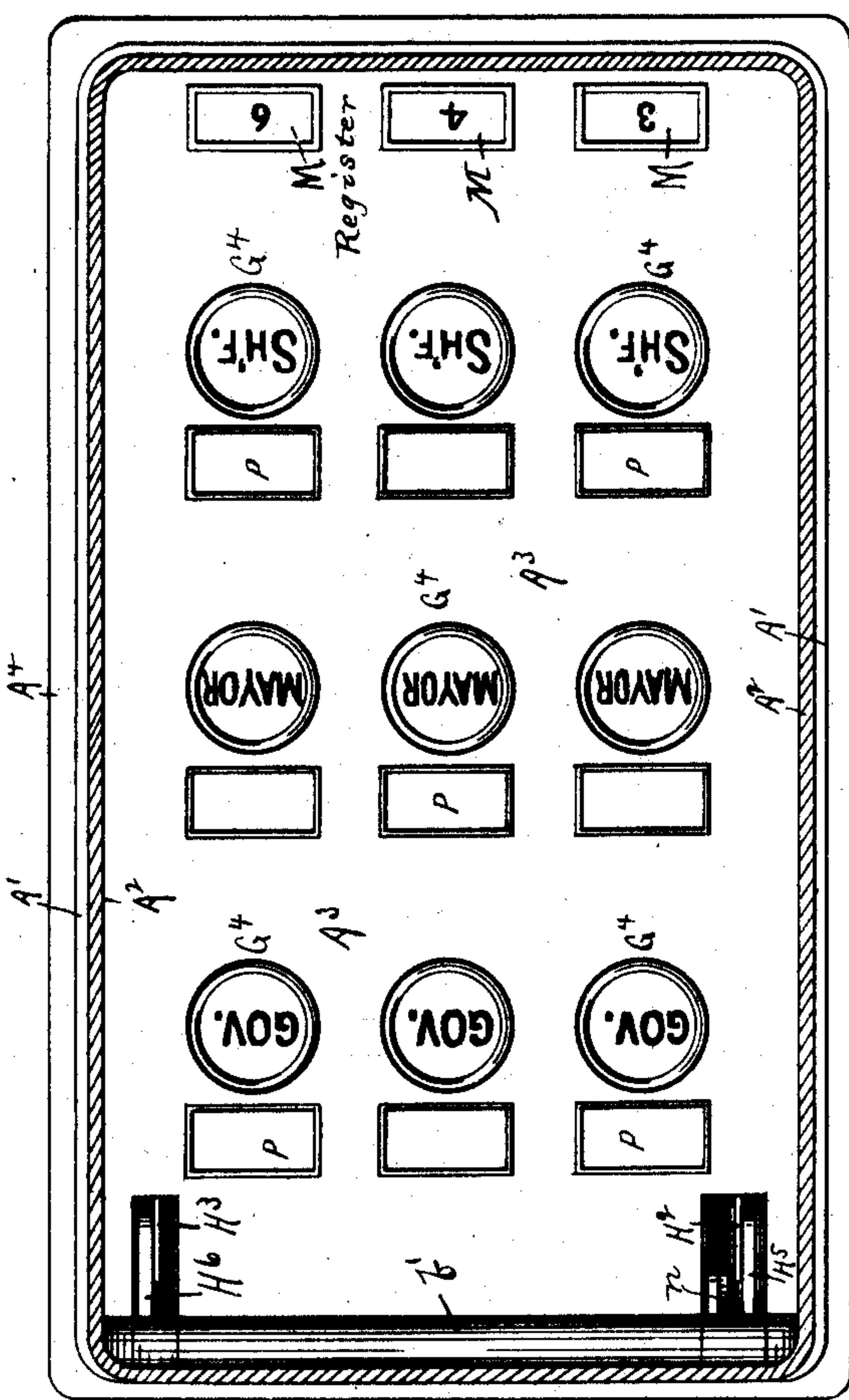
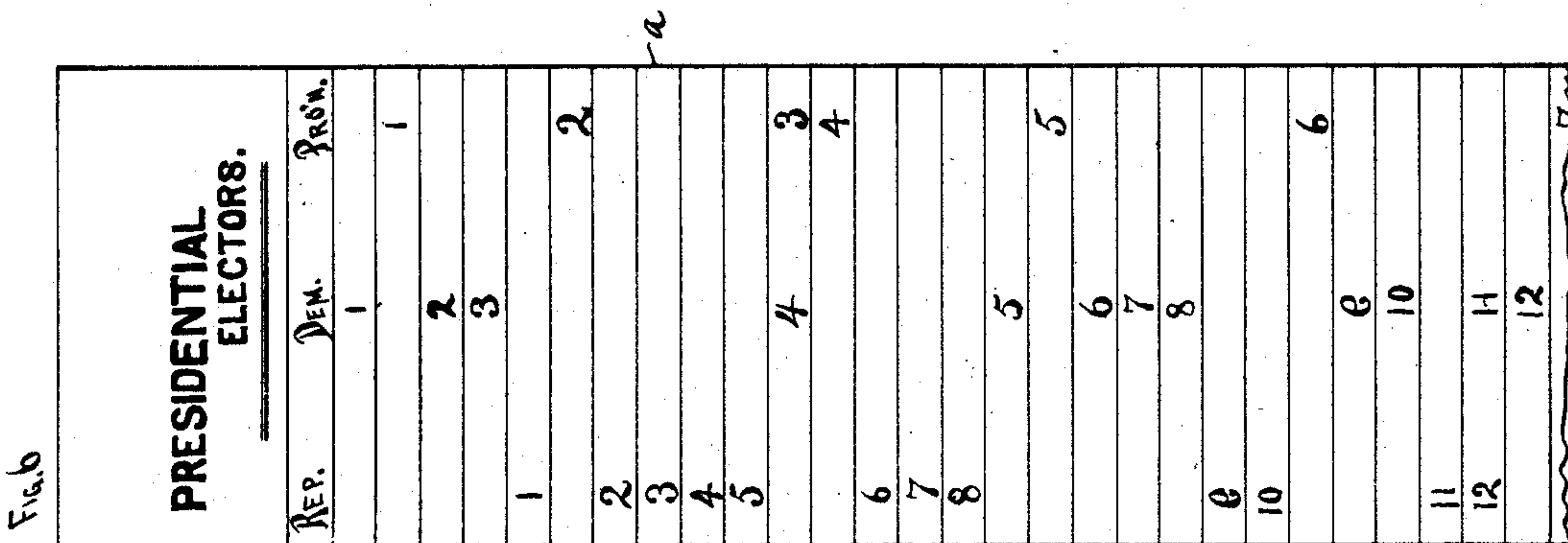
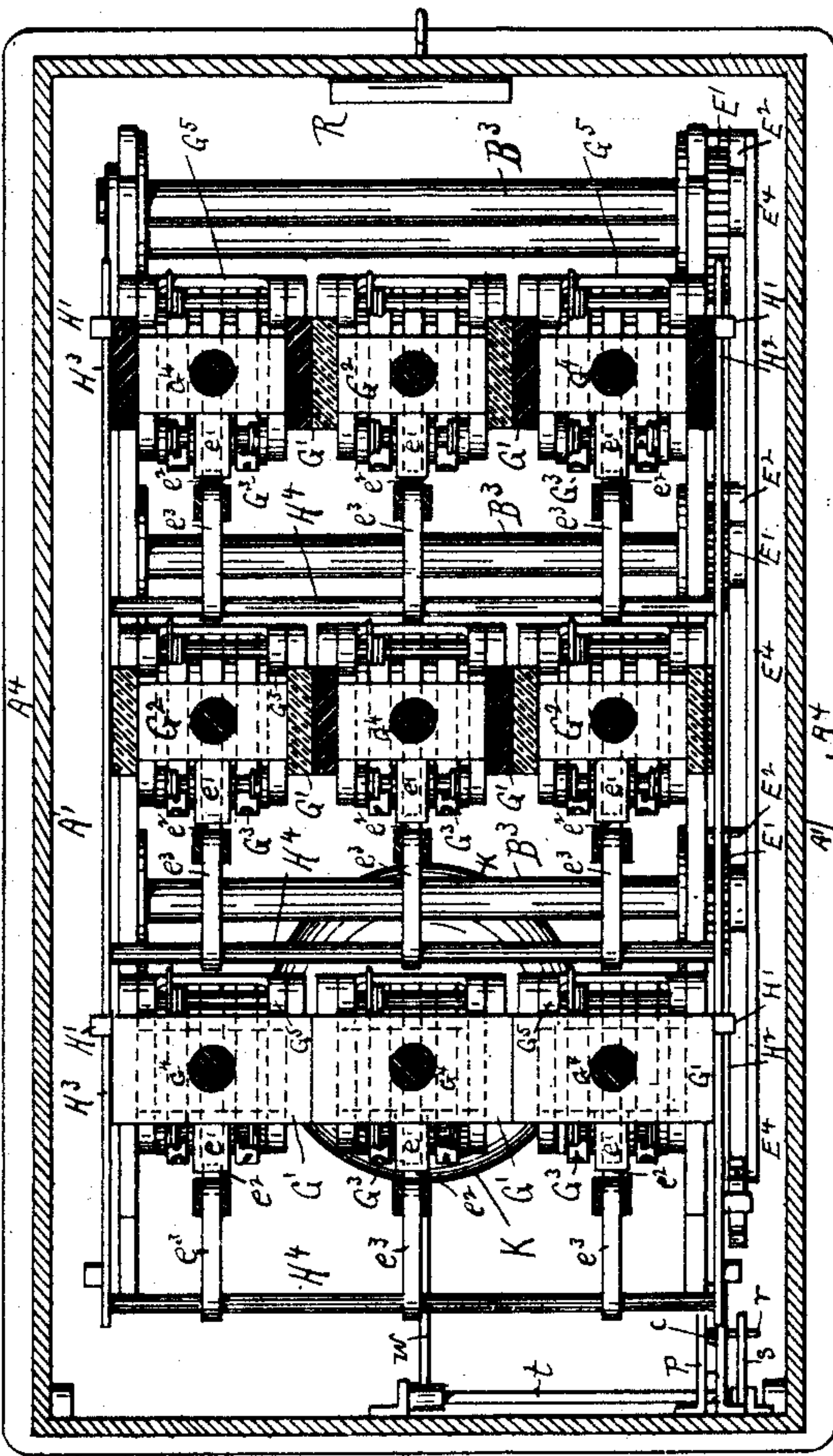


Fig. 4  
H. S. Webster  
W. J. Burr } WITNESSES.



John W. Rhines  
INVENTOR, BY  
Charles N. Woodward



# UNITED STATES PATENT OFFICE.

JOHN W. RHINES, OF ST. PAUL, MINNESOTA, ASSIGNOR TO THE RHINES  
BALLOT SYSTEM COMPANY, OF SAME PLACE.

## VOTE-RECORDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 422,891, dated March 4, 1890.

Application filed December 7, 1888. Serial No. 292,887. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. RHINES, of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and  
5 useful Improvements in Vote-Recording Machines, of which the following is a specification.

The object of this invention is to furnish a voting-machine for general election purposes,  
10 and for the use of legislative bodies and other organizations, which shall permit each voter to cast his own vote with absolute secrecy, which shall record and tabulate each vote as it is cast, and which shall furnish ample and  
15 unailing provision for detecting with certainty and dispatch any intentional or accidental erroneous voting.

To these ends the machine comprises a key-board, a cover closing said key-board, which  
20 must be raised by each elector before he casts his vote and must be closed by him before the next elector votes, a bell or sounding device which is sounded by the raising of the cover, a registering mechanism operated by the raising of the cover, which registers the total number of electors voting, a series of push-buttons or keys on the key-board, representing the several candidates, which are manipulated by  
25 the elector, and which, when once depressed, are locked in their depressed position and remain locked until released by the closing of the cover, numbering and recording devices operated by each key, and paper strips which are fed by the operation of the cover and on  
30 which the votes are recorded and tabulated by the depression of the keys.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional side elevation of the  
40 machine. Fig. 2 is an end elevation with the casing in cross-section. Fig. 3 is a plan view of a portion of the lower part of the frame, showing more clearly the signal-bell mechanism. Fig. 4 is a plan view, the cover being  
45 shown in horizontal section. Fig. 5 is a horizontal section in a plane immediately below the key-board. Fig. 6 is a view of a portion of one of the paper strips removed from the drum.

50 A' is the casing or frame, which may be constructed in any suitable form or size, and

across which are journaled by shafts B' in frames B<sup>2</sup> a series of receiving or winding-on drums B<sup>3</sup>, upon each of which one end of a strip of paper *a* is adapted to be wound, the other  
55 ends of all the strips being wound from one common delivery-drum B<sup>4</sup> in the lower part of the casing A'. Adjacent to each of the drums B<sup>3</sup> is a rubber or other flexible impression-roller D, each of the paper strips being  
60 passed around its respective roller D on its way from the large drum B<sup>4</sup> to the smaller drums B<sup>3</sup>, as shown. On one end of each of the shafts B' of each of the drums B<sup>3</sup> is a ratchet-wheel E' and lever E<sup>2</sup>, each lever having  
65 a pawl E<sup>3</sup> and each lever connected to a horizontal rod E<sup>4</sup>. The casing A' is provided with a hinged cover A<sup>2</sup>, the pintle *b'* of whose hinge is secured to the cover and revolves with it when the cover is raised, so that arms  
70 *b*<sup>2</sup>, attached to the pintle, will be operated when the cover A<sup>2</sup> is raised and lowered, the object to be hereinafter explained. Spring-brakes F on the lower drum B<sup>4</sup> keep the paper strips taut and prevent undue looseness.  
75

Above each of the impression-rollers D are a series of stationary frames G', in each of which a series of movable frames G<sup>2</sup>, carrying numbering-wheels G<sup>3</sup>, are mounted and are adapted to be operated by pushing buttons or keys G<sup>4</sup>, which are arranged beneath  
80 the cover A<sup>2</sup> and pass through a key-board A<sup>3</sup>, which constitutes the top of the casing A'. Each set of the numbering-wheels is provided with pawls G<sup>5</sup>, attached to the stationary  
85 frames G', so that when the buttons G<sup>4</sup> and frames G<sup>2</sup> are moved upward by the springs G<sup>6</sup> the pawls G<sup>5</sup> will turn the numbering-wheels to the next number. I have shown three sets of three each of these numbering-wheels and  
90 their push-buttons; but of course it will be understood that as many sets may be provided as may be required. I have shown merely the outlines of these wheels G<sup>3</sup>, as their construction is so well known that it is not necessary to  
95 show or describe them further. I do not wish to be limited to any precise form of the construction of the numbering-wheel mechanism, as I am aware that many forms may be employed. Suitable numbering-wheels are  
100 manufactured and for sale largely, and can be easily adapted to my system and machine.



In Fig. 2 I have shown the set of numbering-wheels at the left hand, with the pawls  $G^5$  in place; but in the other two sets the pawls are removed to exhibit more fully the arrangement of the wheels. In Fig. 1 also the set of wheels at the left hand and their frames are shown complete, while in the other two sets the frames  $G'$  are shown in section to exhibit more fully the arrangement of the wheels and pawls. In Fig. 5 the set of frames  $G'$  at the left hand are shown complete, while in the other two sets the frames  $G'$  are in section, the shafts of the push-buttons being in section on all the sets. Each of the frames  $G^2$  is shown provided with a small projecting arm or pin  $e'$ , each adapted to catch beneath the foot  $e^2$  of a small crank-arm  $e^3$ , the rear of the latter being provided with a downwardly-projecting lug  $e^4$ . Secured by bearings  $H'$  in the ends of the frames  $G'$  are two bars  $H^2 H^3$ , connected between each set of the frames  $G'$  by cross-rods  $H^4$ . In Fig. 5 these bars  $H^2 H^3$  and their cross-rods  $H^4$  are shown more fully. Each of the push-buttons or keys has a spring  $G^6$  surrounding its stem, by which the numbering-wheels will be moved upward when released.

As before stated, the pintle  $b'$  of the hinge of the cover  $A^2$  is provided with arms  $b^2$ , which move with it, and each of these arms is connected by connecting-rods  $H^5 H^6$  with the bars  $H^2 H^3$ , so that when the cover  $A^2$  is raised and lowered the bars  $H^2 H^3$  will be moved backward and forward in the bearings  $H'$ , and correspondingly move the rods  $H^4$  backward and forward beneath the horizontal ends of the crank-arms  $e^3$ . By this arrangement when the cover is raised the cross-rods  $H^4$  are moved beneath the lugs  $e^4$ , thus elevating the horizontal arms of the crank-arms and drawing the lower ends or feet  $e^2$  of the perpendicular arms backward and releasing the pins  $e'$ . Then when the cover is lowered down again the cross-rods will be moved backward again and cause the rods to again act upon the crank-arms and throw the feet  $e^2$  backward. By this construction when the buttons  $G^4$  are pushed down the pins  $e'$  will catch beneath the feet  $e^2$  of the crank-arms  $e^3$ , and thus retain the numbering-wheels locked in their downward position; but when the cover is lowered down the push-buttons which are locked downward will be released, ready for action again. One end of the rod  $E^4$  is connected to the lower end of a lever  $E^5$ , pivoted at  $E^6$  to an extension of the frame  $B^2$ , and is provided with a forked upper end  $E^7$ , in which a pin  $d$  on the bar  $H^2$  acts to move the lever  $E^5$  back and forth every time the cover  $A^2$  is raised and lowered, to cause the ratchet-wheels  $E'$  to be actuated, and thereby wind up a portion of each of the paper strips every time a vote is cast to prevent two votes being recorded on the same spot on the strips  $a$ . The paper strips are ruled with cross-lines at regular intervals, as shown in Fig. 6, the distances between the rule-lines corresponding

to the throw of the ratchet-wheels  $E'$ , so as to more readily "read" the record when the voting is completed, and also to more readily detect errors or attempts at fraudulent voting.

K is a bell, which is adapted to be sounded every time the cover is raised to signify that fact to the person having charge of the voting.

The bell is sounded by the following mechanism: On the shaft or pintle  $b'$  of the cover  $A^2$  is a crank-arm  $n$ , to the lower end of which a hanging rod  $o$  is pivotally suspended. This rod passes through a slotted guide-bracket  $p$ , and carries on its lower end a horizontally-extending finger  $r$ . When the cover  $A^2$  is closed, there rests upon the finger  $r$  the end of a crank-arm  $s$  on a rock-shaft  $t$ , which carries the bell-hammer  $w$ . When the cover is raised, the crank-arm  $n$  is lifted, thus lifting the rod  $o$ , finger  $r$ , crank-arm  $s$ , and bell-hammer  $w$  until the crank-arm  $s$  swings clear of the finger  $r$ , thus releasing the bell-hammer and sounding the bell. When the cover is lowered, the finger  $r$  rides upon the beveled end of the crank-arm  $s$ , and is guided thereby beyond the end of the crank-arm so as to pass below it. When the finger  $r$  has thus passed below the crank-arm  $s$ , it is drawn therebeneath by the spring  $x$ .

M represents a registering mechanism adapted to be operated by the action of the rod  $H^3$  to register the number of times the ratchets are operated. The forward movement of the rod  $H^3$ , which is effected by the lifting of the cover  $A^2$ , causes its forward end to abut against the end of a sliding rod  $M'$ , connected with the registering mechanism. The movement of the rod  $M'$  by this means causes the register to be moved. This "register" may be of any well-known pattern, such as are used in connection with printing and numbering machines.

N represents an inking-ribbon adapted to be moved beneath the numbering-wheels, and by which the numbers may be impressed upon the paper strips when the push-buttons are moved downward. The keys or push-buttons are arranged in parallel rows extending crosswise of the machine. The keys or push-buttons in each row are arranged to designate the candidates of the several parties for the same office, and by always arranging the candidates of the same party for different offices in the same order in each cross-row of the keys the lengthwise rows of keys will designate the "ticket" of each party. There are as many of the recording-strips as there are parallel cross-rows of keys, so that there will be as many strips as there are offices to be voted for, and consequently the several candidates for each office will have their respective votes recorded on the same strip. Provision may also be made for the insertion of a photograph or other picture of the candidate, or other means adopted for denoting his personality, as at P in Fig. 4. The groundwork of the buttons may also be of different



colors to designate the political parties, or any other means adopted to designate them.

When the elector wishes to vote, he raises the cover  $A^2$ , which sounds an alarm on the bell K and notifies the inspectors, and at the same time causes the register M to operate and register the fact that a vote is to be cast. The elector then pushes down one of the buttons in each row, or as many as he may wish to vote for, but must never push down two buttons in the same row crosswise of the casing, as in that event he would be voting twice for candidates for the same office. The buttons that are pushed down remain down by the coaction of the pins  $e'$  and crank-arms  $e^3$ , so that the same button cannot be operated twice, and the voter can tell at a glance just what vote he has cast, when the cover is again closed, which releases all the locked buttons, the upward movement of the buttons and their attached frames  $G^2$  causing the spring-pawls  $G^5$  to turn the numbering-wheels which have been operated, so as to "set" them ready for the next vote, and moves the paper strips  $a$  ahead one space by the action of the ratchets  $E'$ , so that the numbers will not be struck twice in the same place. After the polls close the paper strips will denote at a glance the total vote for each candidate individually, and also by means of the registering apparatus M the total number of electors who have voted may be noted as a check.

I do not wish to be limited to the specific mechanism shown for operating the parts, as I am aware that it may be varied to a very large extent. The top  $A^3$  of the casing  $A'$  is hinged thereto at one end, and the bottom  $A^4$  is likewise hinged to the casing.

The numbering-wheels and their frames and the inking-ribbon N are connected to the top  $A^3$ , while the frame  $B^2$  and the paper-strip drums and the signal-bell are attached to the bottom  $A^4$ , so that all the mechanism is easily accessible by turning back the cover  $A^2$ , top  $A^3$ , and bottom  $A^4$ .

The three parts of the casing will be secured by locks R of any suitable form.

In Fig. 6 is shown a portion of one of the paper strips removed from the machine after the vote has been cast, illustrating the manner of recording and tabulating the vote. The paper is ruled across its face, the distances between the rule-lines corresponding to the throw of the ratchets  $E'$ , the lines rendering the positions of the numbers more easily discernible, and errors or attempts at fraudulent voting more easily detected. Each of the strips will have printed or otherwise noted across the end next to the drum on which it is wound the title of the office to be voted for and the names of the candidates, or the title of the political party to which they belong, or marked in any other manner to designate and identify the vote. The strip shown in Fig. 6 is marked "Presidential Electors," and also with the words "Rep.," "Dem.," and "Pro'n," being the abbreviations of the

words "Republican," "Democrat," and "Prohibition." In the first space between the rule-lines, beneath "Dem.," is a figure "1," denoting that the first vote cast was for the Democratic electors, and in the second space, beneath "Pro'n," is a figure "1," denoting that the second vote cast was for the Prohibition electors, and so on down the strip, each column showing at a glance the vote as it is cast, the last number denoting the total vote less those stricken out for errors or fraudulent voting.

To illustrate how errors or attempts at fraudulent voting are detected it will be noted that after the fifth Republican vote was cast the figure "4" and figure "3" appear in the same space, one in the "Dem." and one in the "Pro'n" columns, clearly showing that two of the buttons  $G^4$  were pressed down at the same time. The same thing is shown when the eleventh Democratic and twelfth Republican vote were cast. This illustrates the ease with which errors, whether intentional or not, can be detected when the strips are removed from the machine and the record examined. Another point to be noted is that the numbering-wheels are only turned to change the numbers when making a full stroke and in moving upward, so that after the button has been once pushed downward and the frame  $G^2$  caught and held by the catches  $e'$   $e^3$  any further manipulation of the same button and its attached numbering-wheel is impossible until it is released by closing the cover  $A^2$ .

Having thus described my invention, what I claim as new is—

1. In a voting-machine, a key-board, a lid covering said key-board and a series of keys or push-buttons on said key-board, in combination with locking mechanism which locks said keys or push-buttons when the same are depressed, and which is actuated by the movement of said lid to unlock and release said keys or push-buttons, substantially as set forth.

2. In a voting-machine, a key-board, a lid covering the same, a series of keys or push-buttons on said key-board and recording-strips on the opposite side of said key-board from said keys or push-buttons, in combination with feed-rolls on which said strips are wound, said feed-rolls being actuated by the movement of said lid, substantially as set forth.

3. In a voting-machine, a key-board and a plurality of keys or push-buttons on said key-board arranged in a line or row, in combination with separate recording devices actuated by each of said keys or push-buttons, and a single recording-strip adapted to receive records from said several recording devices, substantially as set forth.

4. In a voting-machine, a key-board and a series of keys or push-buttons arranged in parallel rows or lines on said key-board, in combination with separate recording devices actuated by each of said keys or push-but-



tons, and a series of recording-strips corresponding in number with the number of said parallel rows or lines of keys or push-buttons, substantially as set forth, whereby the records  
5 from each row or line of keys or push-buttons are recorded upon a single recording-strip.

5. In a voting-machine, a key-board, a plurality of keys or push-buttons arranged on  
10 said key-board in a row or line, and separate recording devices actuated by each of said keys or push-buttons, in combination with a single recording-strip adapted to receive records from said several recording devices, and  
15 feeding mechanism for feeding said strip, said feeding mechanism being actuated each time a key or push-button is operated, substantially as set forth.

6. In a voting-machine, a key-board, a series  
20 of keys or push-buttons arranged in parallel rows or lines on said key-board, and separate recording devices actuated by each of said keys or push-buttons, in combination with a series of recording-strips corresponding in number  
25 with the number of said parallel rows or lines of keys or push-buttons, and feeding mechanism for feeding said strips, said feeding mechanism being actuated each time a key or push-button is operated, substantially as  
30 set forth.

7. In a voting-machine, a key-board, a lid covering said key-board, a plurality of keys or push-buttons arranged in a row or line on  
35 said key-board, and separate recording devices actuated by each of said keys or push-buttons, in combination with a single recording-strip adapted to receive records from said several recording devices, and feeding mechanism for feeding said strip, said feeding  
40 mechanism being actuated by the movement of said lid, substantially as set forth.

8. In a voting-machine, a key-board, a lid covering said key-board, a series of keys or push-buttons arranged in parallel rows or  
45 lines on said board, and separate recording devices actuated by each of said keys or push-buttons, in combination with a series of recording-strips corresponding in number with the number of said parallel rows or lines

of keys or push-buttons, and feeding mechanism for all of said recording-strips, said feeding mechanism being actuated by the movement of said lid, substantially as set forth. 50

9. In a voting-machine, a key-board, a lid covering the same, a register actuated by the  
55 movement of said lid, a sounding device actuated by the movement of said lid, a series of keys or push-buttons on said key-board, and locking mechanism which locks said keys or push-buttons when the same are depressed,  
60 and which is actuated by the movement of said cover to unlock and release said keys or push-buttons, in combination with recording-strips, feed-rolls on which said strips are wound, which are actuated by the movement  
65 of said lid, and numbering devices acting upon said strips and actuated by said keys or push-buttons, substantially as set forth.

10. In a voting apparatus, a casing A', having a cover A<sup>2</sup>, top A<sup>3</sup>, and bottom A<sup>4</sup>, each  
70 independently hinged thereto and inclosing a series of paper strips wound upon drums, and a series of sets of numbering devices corresponding in number to the candidates to  
75 be voted for, said top carrying and supporting said numbering devices and said bottom carrying and supporting said paper strips, whereby all parts of said apparatus are easily accessible, substantially as and for the purpose  
80 set forth.

11. In a voting-machine, a series of keys or push-buttons arranged in parallel rows, and a series of recording-strips corresponding in number to the number of the rows of keys, in combination with a delivery-drum on which  
85 all of the blank strips are originally wound, a series of impression-rolls over which the strips respectively pass, and a series of receiving or winding-on drums on which the strips are respectively wound, substantially as set  
90 forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. RHINES.

Witnesses:

C. N. WOODWARD,  
H. S. WEBSTER.