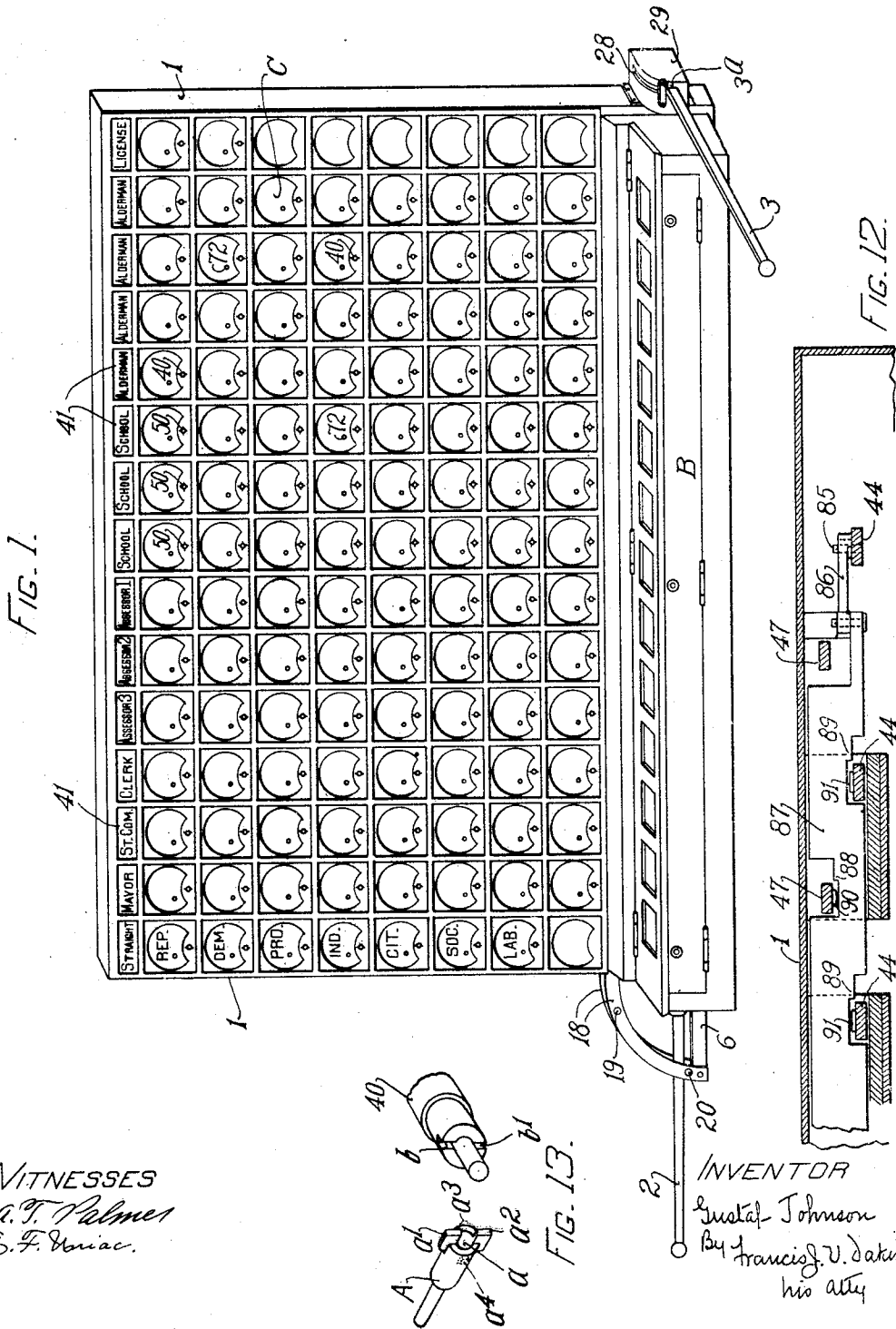


960,020.

G. JOHNSON.
VOTING MACHINE.
APPLICATION FILED AUG. 12, 1905.

Patented May 31, 1910.

4 SHEETS—SHEET 1.



APPLICATION FILED AUG. 12, 1905.

4 SHEETS—SHEET 3.

FIG. 3.

FIG. 3.

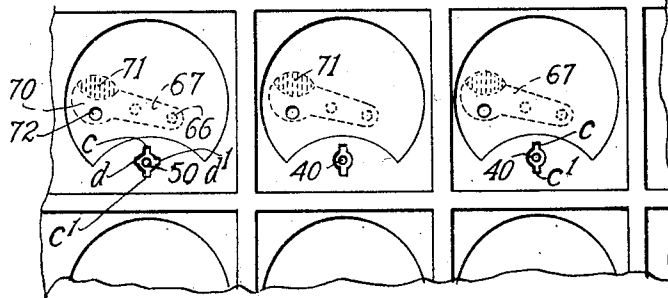


FIG. 8.

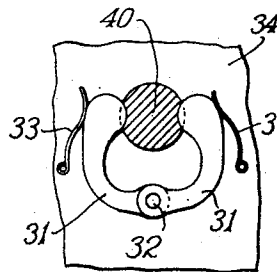


FIG. 9.

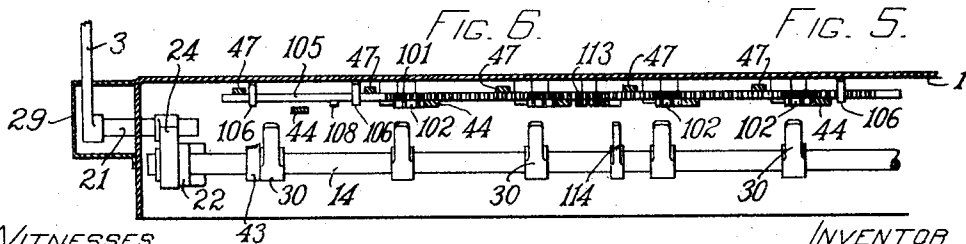
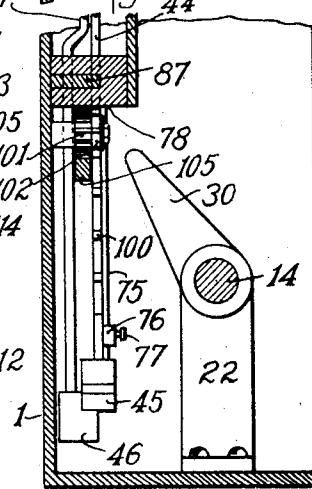
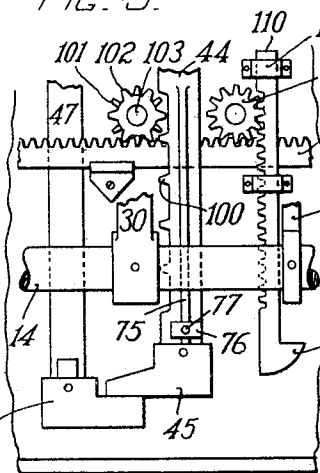
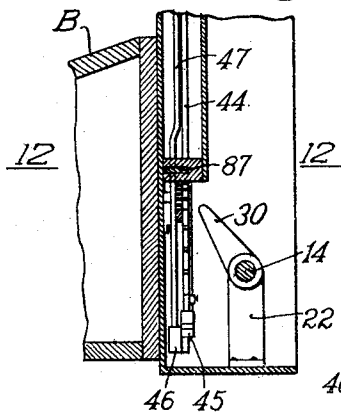
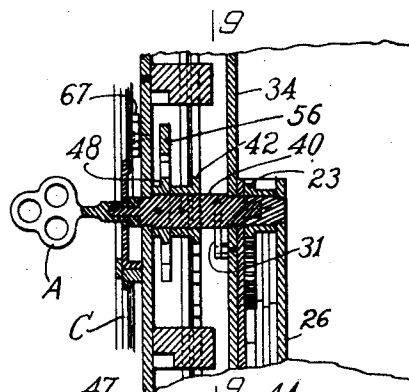


FIG. 4.

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4 SHEETS—SHEET 4.

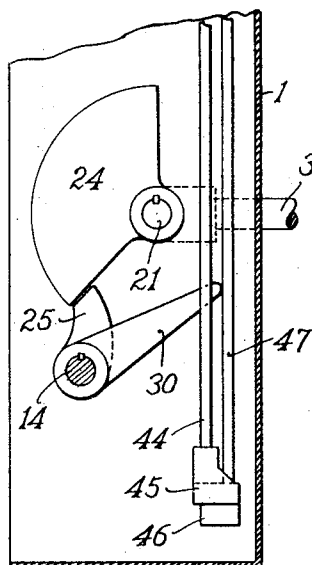


FIG. 10.

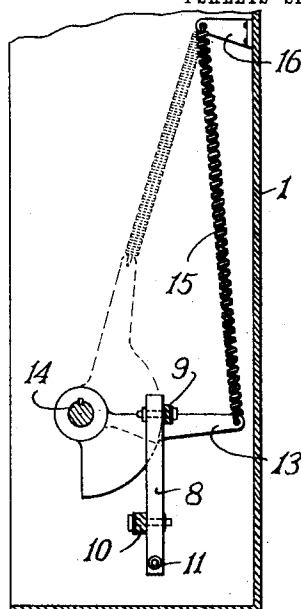


FIG. 11.

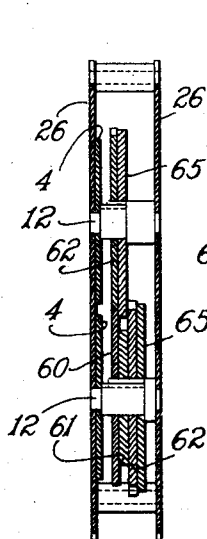


FIG. 16.

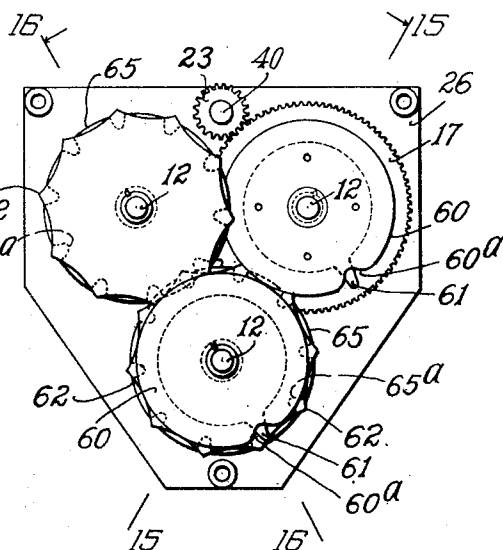


FIG. 14.

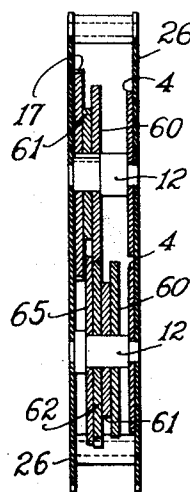


FIG. 15.

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VOTING-MACHINE.

960,020.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed August 12, 1905. Serial No. 273,914.

To all whom it may concern:

Be it known that I, GUSTAF JOHNSON, a citizen of the United States, and a resident of Pigeon Cove, in the county of Essex and State of Massachusetts, have invented a new and Improved Voting-Machine, of which the following is a full, clear, and exact description, reference being made therein to the accompanying drawings.

This invention relates to voting machines wherein errors in voting can be corrected by the voter without prejudicing his vote, at any time before he leaves the voting booth, and whereby group voting, in its widest scope, is made possible without chance of fraud or errors, and is an improvement upon my voting machine covered by Letters-Patent No. 737,412, and dated August 25, 1903.

In connection with the above noted improvements, I have provided new and improved mechanism for the entrance and exit levers, which is fully described, but not claimed herein, as it forms the subject matter of another application of even date herewith. I also provide means for automatically registering the total number of voters using the machine, thereby doing away with the uncertainty caused by some voters voluntarily neglecting to avail themselves of their full privilege. For illustration, some voters may not care to cast a ballot for mayor, others will pass over the clerk, etc., and consequently it would be difficult to determine from the dials how many persons had voted, were it not for this improvement.

There are other minor improvements which will appear in the following detailed description, and which are fully illustrated in the accompanying drawings, which form part of this specification, and in which similar reference characters are used for the same parts throughout.

Figure 1 is a general perspective view of my improved voting machine; Fig. 2 is a partial rear elevation of same, with parts removed here and there, for greater clearness; Fig. 3 is a vertical section corresponding to line 3—3 of Fig. 2; Fig. 4 is a partial plan section corresponding to line 4—4 of Fig. 2; Fig. 5 is an enlarged sectional detail of a portion of Fig. 3; Fig. 6 is an enlarged view of a portion of the machine as seen in Fig. 2; Fig. 7 is an enlarged rear view of the mechanism around one voting

spindle, as seen in Fig. 2; Fig. 8 is a partial view of the front or voting face of the machine, as seen in Fig. 1; Fig. 9 is a sectional detail corresponding to line 9—9 of Fig. 5; Figs. 10 and 11 are sectional details showing the mechanism for the entrance and exit levers, and correspond respectively to lines 10—10 and 11—11 of Fig. 2; Fig. 12 is a partial sectional plan view corresponding to line 12—12 of Fig. 3; Fig. 13 is a perspective detail of portions of the voting spindle and key; Fig. 14 is a rear view of one of my registering devices with the counting dials removed; Fig. 15 is a section on line 15—15 of Fig. 14; Fig. 16 is a section on line 16—16 of Fig. 14; Fig. 17 is a detail of the counting dial for number of voters.

In the drawings, referring to Fig. 1, it will be noticed that the first vertical column to the left is reserved for straight party voting, except the lowest space, which is blank. The lowest horizontal row is for the purpose of voting for candidates whose names are not mounted in the spaces C. The spindles controlling this row of spaces operate rolls of paper within box B, whereon the desired name can be written. The mechanism for this purpose is the same as shown in Letters-Patent No. 737,412, and claimed thereunder, and will not be further described in this application, reference being herein made to said patent. The spaces C are covered with a transparent shield, preferably of mica, behind which is a card bearing the name of one candidate. These names are inserted from the back of the machine when it is being prepared for an election, and after arranging the group mechanism as desired, all further access to the rear of the machine is prevented by locking the casing 1, until the closing of the polls. In this way the voter's control over the machine is limited to the legitimate use of key A and the writing on paper in box B.

My voting machine is mounted on a suitably constructed casing 1, arranged in a booth or like structure, and the entrance is guarded by an entrance-lever 2 arranged at one end of the casing, and an exit-lever 3, located at the other end of the casing, the voter standing in front of the casing between the said levers when voting. The entrance-lever 2 is normally in a lowermost position, and when the voter desires to vote,

he raises the lever 2 which unlocks the voting mechanism to permit voting and then steps in front of the casing, the lever 2 immediately swinging back to its normally horizontal position. Thereafter the lever 2 may be raised at any time before lever 3 is raised without affecting the voting mechanism in any way. In leaving the booth after voting, the voter raises the exit-lever 3 which resets the voting mechanism and sets the entrance lever 2 to permit the entrance of another voter. These levers 2 and 3 work alternately, and when one is set the other may be moved up and down freely without affecting the voting mechanism, but when the set lever is operated, the other lever immediately thereby comes into engagement with the voting mechanism, is set, and the operated lever is loose.

In order to accomplish the above results, I provide the following described mechanism, special reference being made to Figs. 2, 4, 10 and 11. The entrance-lever 2 is fulcrumed at 5 in a suitable support 6, secured to the outside of the casing 1 and at its pivoted end is turned to form a short arm 7, the end of which is connected to a locking-hook 8 within the casing 1 by a link 9 which extends through a slot in the casing 1. The locking-hook 8, pivoted in a support 10, has its lower end provided with a tension spring 11, for the purpose of retaining the locking-hook 8 in a locked position when possible. When locked, the locking-hook 8 engages the upper face of a transversely extending arm 13, fixedly mounted on the shaft 14, which extends longitudinally within the casing 1. To the end of the arm 13 is attached a tension spring 15, secured at its other end to a bracket 16 on the casing 1, in such a manner that when the locking-hook is disengaged from the upper face of the arm 13, the spring 15 contracts and draws up the arm, thus turning the shaft 14. When the voter is about to enter the voting booth, he swings the lever 2 upwardly, thus drawing out the link 9 and drawing the locking-hook 8 from engagement with the arm 13, which permits the spring 15 to draw up the arm 13, and turn the shaft 14 through an arc of about 90°.

Referring to Fig. 11 it will be noticed by the dotted lines, that the upward motion of arm 13 is limited as shown, by reason of the fact that further contraction of spring 15 must be on the axis passing through the center of shaft 14 and bracket 16; or in other words, when arm 13 reaches this dotted position, motion either way is against the action of spring 15. In this way the shock due to a sudden stop is eliminated, and the life of the parts is prolonged. Raising the lever through an arc of 30° is sufficient to release the arm 13 from the locking-hook and accomplish this result. The balance of

the movement of lever 2 has no effect upon the machine. The voter then passes in front of the voting-booth and drops the lever 2 which immediately falls back to a horizontal position. The swinging motion of the lever 2 is limited and for this purpose the lever moves between two segments 18, 18, and is restricted by two pins 19, 20, the upper pin 19 being placed in such a position as to prevent the lever 2 being raised to a vertical position, and thereby insure its return to a horizontal position, through the force of gravity when released by the voter. In Fig. 11 it will be noticed that the lower or sector portion of arm 13 is adapted to hold hook 8 in its withdrawn position during the time that said arm is up; consequently, means must be provided whereby lever 2 can be lowered while hook 8 is thus withdrawn. This is accomplished by cutting a slot in the inner end of link 9, and is shown in Fig. 2.

When the voter is through voting, he swings the lever 3 upwardly and thereby causes the shaft 21 upon which it is mounted, and which extends through the casing and rotates in a standard 22, to turn. Upon the shaft 21 is fixed a cam 24 which engages an arm 25 fixed upon the shaft 14, and when the shaft 21 is turned by the raising of the lever 3, the shaft 14 is also rotated through the medium of the cam 24 and the arm 25 in a direction opposite to the direction in which it was rotated when it was released by the raising of the lever 2. As the shaft 14 is thus turned, the locking-hook 8 again engages the upper surface of the arm 13 and locks the shaft 14 in that position so that it cannot be released except by raising the lever 2. The voter then passes out and the lever 3 drops back to a horizontal position. The machine is then prepared for the next vote. The swinging motion of the lever 3 is limited by a guideway 28 in which it moves, the ends of which form stops for the lever 3 in a similar manner as in the case of lever 2. The guideway 28 is preferably formed in casing 29.

Referring to Fig. 10 it will be seen that cam 24 impinges against arm 25 during the entire time of swinging of lever 3, and furnishes a lock which prevents lever 2 from operating the voting parts while lever 3 is up. This is advisable to prevent premature raising of lever 2 from locking arm 25 behind cam 24, in which case the machine would have to be opened and the parts replaced. I prefer to provide levers 2 and 3 with locks 2^a and 3^a for use when the machine is not in service.

On the shaft 14, are secured a plurality of transversely extending arms 30, for controlling, locking, unlocking and setting the voting devices arranged in the casing 1 and actuated by the voter using a key on a key-spindle 40, extending transversely, and

mounted to turn in suitable bearings arranged in the front of the casing 1. The key-spindles 40 are arranged in vertical rows, as shown in Fig. 1, and on the casing 1 at the top of each row is a legend 41 indicating straight tickets, offices of candidates to be voted for, licenses, schools, etc., the arrangement being such that the voter, for instance, can vote a straight ticket by turning the corresponding key-spindle in the first row, whereby the remaining key-spindles in the whole casing become locked and hence the voter cannot turn any other key-spindle in the casing.

In case the voter does not vote a straight ticket, he can turn in each row, following vertically, as many key-spindles as there are persons to be elected for the corresponding offices—that is, for instance, for mayor, a single voter can only turn one of the key-spindles 40, as only one mayor is to be voted for. In case three members of the school committee, for instance, are to be elected, then the voter can turn any three key-spindles, but no more under the heading "school." The three rows marked "School" are provided with key-spindles 50, having a different key slot for the use of a different key in the hands of a female voter, so that a female voter can vote under "school" but cannot use the key in any other row.

Referring to Fig. 13 it will be noticed that key A is provided with a central recess a , and two projecting lugs a^1 , a^2 . Key-spindle 40 is provided at its forward end with a reduced portion adapted to fit recess a , and near its forward end with two slots b , b^1 , formed to receive lugs a^1 , a^2 . Lugs a^1 , a^2 , pass through two slots c^1 , c^2 , in the casing 1, when the key A is inserted, and the key cannot be turned until the lugs have passed entirely within the casing 1 and entered recesses b^1 , b^2 . Likewise the key cannot be withdrawn after operating the spindle 40, until a half turn has been given to said spindle; although, as will be hereinafter described, should the voter wish to cancel any vote he makes, he has but to bring key A back to its original position, when it can be readily withdrawn.

Female voters are provided with a key similar to that already described, but having in addition two auxiliary lugs a^3 and a^4 , (see dotted lines in Fig. 13,) adapted to pass through openings d and d^1 , which are provided only for spindles where candidates are to be balloted for by females.

To insure register between recesses b , b^1 , and slots c^1 , c^2 , I provide a mechanism on the rear of spindle 40 which is illustrated in detail in Fig. 9. This consists of two spring pressed pawls 31, 31, pivoted to the back plate 34 at 32, and normally held by springs 33, 33, in engagement with recesses in spindle 40. These recesses are cut di-

rectly opposite each other so that a half revolution of spindle 40 will cause each pawl 31 to rest in the previously opposite recess.

On each key-spindle 40 and 50, is secured a wheel 42, within the casing 1, and the said wheel 42 is provided with two diametrically disposed teeth for meshing with the corresponding teeth on a rack 44, mounted to slide up and down in the casing, and on the lower end of each rack 44, is secured a laterally extending foot 45, adapted to be engaged on its top by a corresponding cross arm 30, on the shaft 14, and the free end of the said foot 45 rests on the foot piece 46 of the slide 47, disposed vertically on the other side of the key-spindle 40 in each row. Now when the cross bar 30 of the shaft 14 rests on the foot 45, then the shaft 14 is locked, and neither the rack 44 nor the slide 47 can be raised; when, however, the shaft 14 has been turned, on swinging the lever 2 upwardly, then the cross arm 30 swings upward and releases the supporting feet 45 of all the voting devices, to allow the voter to turn a key-spindle 40 or 50 half way around, for the corresponding tooth of the wheel 42 to lift the rack 44.

On each key-spindle 40 is secured a cam wheel 48, having two diametrically disposed teeth adapted to be engaged by a dog 49, pivotally mounted at 52 in the casing 1, the lower part of said dog 49 being weighted so as to normally hold it against a stop pin 51, in casing 1 and away from the lower tooth of wheel 48. The function of these teeth in wheel 48 is two fold, viz.—first, to raise forked lever 56 when spindle 40 is rotated in voting direction, and second, to present abutting surfaces alternately to dog 49 and arm 58 of lever 56, thus preventing, at proper times, forward or rearward rotation of spindle 40. Likewise, when lever 56 is up, a counter rotation of spindle 40, (which is possible only at such times) will cause the then upper tooth of wheel 48 to move lever 56 down around its pivot 57 in casing 1. Wheels 42 and 48 are both rigidly mounted on spindle 40. The free end 63 of the upper arm of forked lever 56, has, likewise, a two fold function, viz.—to raise slide 47 through the agency of pin 64 in said slide, and to depress the outer end of dog 49 and cause engagement of said dog with the teeth of wheel 48.

67 is an indicating lever pivoted to casing 1 at 68, and mounted between said casing and the card upon which the name of the candidate is written. (See Figs. 2, 5, 7 and 8.) The forward end of lever 67 is adapted to be operated by lever 56, through the agency of a pin 66 working through a slot 69 in casing 1, so as to present alternately the contrasting face portions 70 and 71 on the free end of lever 67 to the opening 72 in the card. The lower face portion 70 is

preferably white and the upper face portion 71, is preferably red; (see Fig. 8) so that when the spindle is ready to be voted, as in Fig. 7, the lower or white portion 70 is presented to opening 72, but when the spindle is voted, as at X in Fig. 2, the upper portion 71 is presented to opening 72. A voter can thus keep himself informed as to the spindles he has operated.

16 In Fig. 2, spindles X and Y have been voted, as has been one of those in vertical row Z. It will be noticed that in row Z, feet 45 and 46 have gone up together for a distance of one tooth on rack 44. In the vertical row containing spindles X and Y, foot 45 has ascended for the spaces of two teeth, leaving foot 46 at the same position as in row Z. This feature is a characteristic of group voting, which is more fully described hereinafter.

20 For the purpose of arranging the voting device in each vertical row to permit voting for one or more candidates in that row, I provide the following mechanism.

25 The lower portion of each rack 44 is provided with a rib 75, upon which is held, in sliding engagement, a collar 76, adapted to be fastened in any desired location on said rib by a set-screw 77, which collar 76 is adapted to abut against the under side of a bracket 78, through which the rack 44 and the slide 47 are free to move. When but one candidate in a vertical row is to be voted for, then the collar 76 of the particular rack 44 is set at such a distance from the bracket 78, that when the rack 44 is raised by the voter giving a half turn to the key-spindle 40, then the collar 76 abuts against the bracket 78, and the rack 44 cannot be raised up any further, which prevents any of the other key-spindles in that particular row being turned. If two candidates for one office or in a vertical column are to be voted for, then the collar 76 is set twice the distance from the bracket 78, and two key-spindles can be turned and the rack 44 raised two steps before the collar 76 prevents further voting by abutting against the bracket 78.

50 When the racks 44 are in the lowermost or normal position or after the key-spindle has been turned, the teeth of the wheel 42 are out of mesh with the teeth of the rack, and when the key-spindle is turned by the key for the purpose of voting, one of the teeth on the wheel 42 engages the teeth of the rack 44, and lifts it a certain space before it is turned out of mesh; but it will be noticed that in turning one spindle in a vertical row, thereby operating the rack 44 as described, said rack in moving upwardly does not engage any of the other wheels 42 in that row. This is clearly seen by an inspection of Fig. 7. It is therefore necessary to provide rack 44 with a plurality of

teeth adjacent to each spindle 40, so that there will always be a tooth of said rack ready to be engaged by any of the wheels 42. The first spindle voted will carry the upper tooth of each series by its corresponding wheel 42, and the second spindle will cause operation on the second tooth, etc. Likewise in resetting the machine, rack 44 will return to its lowest position without affecting any of the spindles, those voted being reset by slide 47 through the action of its pin 64 on end 63 of lever 56. In this manner, all the voted spindles are reset simultaneously.

When a voter desires to change a vote he has already made, he has but to reverse the motion of key A, and the parts are thus put back in their former positions. The method of accomplishing this will be best understood by an inspection of Fig. 7 and spindles X and Y of Fig. 2.

As before mentioned, Fig. 7 shows the parts ready for voting. By turning spindle 40 in the direction indicated by the arrow, the lower tooth of wheel 48 engages cam surface 41^a on lever 56, and raises said lever to the positions shown in X and Y. The raising of lever 56 brings foot 58 into the path of the lower tooth of wheel 48, and prevents more than one half a revolution of said spindle 40. Lever 56 also raises slide 47 through its pin 64, as before described, and acts to release dog 49, which revolves by gravity until it is in the position shown at X and Y. It is then possible to reverse the direction of rotation of spindle 40 for half a turn, the upper tooth of wheel 48 impinging against foot 58 and throwing it out to its first position, and bringing end 63 of lever 56 against the head of dog 49 and throwing the lower end of said dog into position to stop the backward rotation of spindle 40. I prefer to provide frictional means at pivot 57 for maintaining lever 56 in its raised position, although it is obvious that the same results would be obtained by the use of a spring. When a voter leaves the booth, he simultaneously and automatically resets all spindles voted, by means of pins 64, as before described.

In order to prevent the racks 44 from being propelled too far, and also to hold them in position, a brake device is provided, consisting of a brake-lock 80, hung on a pivot 81, supported from the casing, and the free end of the said brake-block is pressed in by spring 82 to hold the brake-block in frictional engagement with the rack. Whenever the rack 44 is raised by the turning of the key-spindle 40 and the wheel 42, the above brake device retains the rack 44 in the raised position after the wheel 42 has passed out of mesh with the teeth in the rack, and the rack is successively raised by the revolutions of the wheel 42. The slides 47 are

raised but one distance, no matter how many key-spindles are turned in one row, and when the rack 44 is pressed downwardly into the lowermost position by the arm 30, then the foot 45 of the rack engages the foot 46 of the slide 47 and also draws this slide back into a lowermost position.

The first rack 44 for the straight-ticket-voting device is provided with a pin 85, engaging the slotted end of a bell-crank lever 86, fulcrumed on the casing 1 and pivotally connected with a locking slide 87 having sets of shoulders 88 and 89 for engagement by tongues 90 and 91 formed on the racks 44 and slides 47 respectively. Thus when the voter turns one of the key-spindles in the straight-ticket-voting device, then the upward movement of the rack 44 imparts a swinging motion to the bell-crank lever 86, so that the slide 87 is shifted longitudinally to bring the shoulders 88 and 89 in register with the corresponding tongues 90 and 91, to lock all the remaining racks 44 and slides 47 of the other voting devices to prevent the voter turning any of the other key-spindles.

When the machine is reset by the turning of the shaft 14 as heretofore explained, then the downward movement of the rack 44 for the straight-ticket-voting device imparts a return swinging motion to the bell-crank lever 86 to move the locking slide 87 out of locking position relative to the tongues 90 and 91.

It is of especial importance that a voting machine permit what may be called, group voting, otherwise the voter is restricted in his choice of candidates in certain cases, and prevented from voting for certain combinations of candidates. For instance to illustrate, suppose four aldermen are to be elected, the voter has the right to vote for any four aldermanic candidates irrespective of party. But as the candidates of each party are in horizontal rows, the list of aldermanic candidates of all the parties would occupy four vertical rows in the machine, as shown in Fig. 1; therefore, if the voting mechanism is set to permit of but one candidate being voted for in each vertical row, the voter is restricted in his choice, and cannot vote for two aldermanic candidates of different parties, if they happen to fall in the same vertical column. In order to obviate this disadvantage and to permit a voter to vote for any four candidates in the four vertical rows, and for not more than four, I provide the following device which locks the four aldermanic rows, when any four key-spindles have been turned, whether they are all in one vertical row or one horizontal row or scattered in the different vertical and horizontal rows. Each rack 44 of the group is provided in its lower portion with a series of teeth 100, which engage star wheels 102 rigidly mounted on pins 103, set in the cas-

ing 1. Adjacent to star wheel 102 and also rigidly mounted on pin 103, is a pinion 101 engaging a horizontal rack 105, which is free to slide in brackets 106, secured to the casing. Star wheel 102 is here shown with exactly half the number of teeth that is contained by pinion 101. It is essential that all of these pinions 101 shall be alike, so that the action of any one upon rack 105 will cause exactly the same displacement of all the star wheels, thus insuring the proper presenting of a tooth in said star wheel to the teeth 100 of rack 44. It will be noticed that the pitch of teeth 100 is such that an impulse presented to one star wheel 102, by one rack 44, will permit the other star wheels to revolve freely without affecting their respective racks. Thus, each upward movement of any rack 44 will give rack 105 a definite movement to the right. (See Fig. 2.) The two brackets 106 at the left end of rack 105 act as stops for a block 108 mounted on said rack and limit the movement to, in this case, four votes. Collars 76 are not used unless there is to be a partial restriction in choice, as for instance, when there are but two parties in the field. When rack 105 has been moved for four votes, and is against the right hand stop 106, it is necessary that the resetting of the machine by lever 3 shall also return rack 105 to its original position against the left hand stop 106. To accomplish this, I mount a vertical rack 110 in brackets 111, so as to be engaged by a pinion 113 whose face is wide enough to also engage rack 105.

The lower end of rack 110 is provided with a foot 112 positioned to be engaged by an arm 114 on shaft 14 in a manner similar to that of arms 30 on feet 45. Lever 3 operates to bring rack 110 down, (it has of course, ascended with each movement of rack 105) and this movement will impart reverse motion to pinion 113 and thus move rack 105 to its starting position.

The mechanism for registering the number of voters using the machine, is illustrated in Figs. 2 and 17, and consists of a vertical rack 35 engaging a pinion 36 mounted on a stud 37, which carries a suitable registering dial 53. (Fig. 17.) Rack 35 is normally maintained in its upper position by spring 38, and has a foot 39 adapted to be engaged by arm 43 in a manner similar to that of arms 30. When lever 3 is raised, arm 43 impinges against foot 39, and moves rack 35 downward, operates pinion 36 and causes one advance in the registering device 53 on stud 37. This registering device will preferably be provided with an ordinary ratchet and pawl arrangement 54, to prevent retrogression of the registering device during the upward motion of rack 35.

The device for registering the number of votes cast for the various candidates, is illus-

trated in Figs. 2, 14, 15 and 16, and has for its underlying principle, the well known meter-registering device, consisting of three counting dials 4, 4, 4, arranged upon spindles 12, 12, 12, and adapted to cooperate in a manner to be described.

The units dial carries upon its spindle 12 a gear 17 which is in mesh with pinion 23 upon spindle 40. Of the two inclosing plates 26, 26, between which the registering device is mounted, the rear one has suitable openings 27 which expose the proper numbers on dials 4, 4, 4.

The foregoing is of old and well known construction.

It is essential to the successful operation of my registering device, that the dials can be counted either backward or forward with equal facility, and it is also important to have careful register of the proper numbers opposite openings 27.

I find in practice that the ordinary intermittent gears will not give sufficient locking surface to prevent slight movements of the dials, which, while not in any way conducive to defective register, is likely to cause errors in taking the readings, as the numbers are not always fully exposed. To overcome this defect, I construct my intermittent gears in the following manner.

The locking disk 60, and counting tooth 61, are made in separate pieces, both rigidly locked with gear 17 on the units spindle 12. On the tens spindle 12 is mounted a serrated disk 62, which is positioned to be locked by disk 60, and an operating disk 65 positioned to be operated by tooth 61. Disk 62 has for its circumference a series of ten arcs, having the same radius as disk 60, and disk 60 is provided with a notch 60^a for receiving the points made in the circumference of disk 62, by the meeting of these ten arcs. Disk 65 is provided with a series of ten recesses 65^a, each adapted to receive tooth 61. The operation is the same as in the ordinary intermittent gear; but by making the combination of four parts instead of two, I eliminate the necessity of shortening of length of the ten arcs on the circumference of disk 62, which would occur were the recesses 65^a cut at their meeting points, instead of beneath them, and thus secure a better lock on dials 4. The tens spindle 12 is also provided with a locking disk 60 and counting tooth 61, which engages a similar serrated disk 62 and operating disk 65 on the hundreds spindle.

What I claim is:—

1. In a voting machine, the combination of a manually controlled key-spindle, a rack having teeth, a toothed wheel mounted on said key-spindle and having diametrically disposed teeth for engaging said rack, means to lock said key-spindle, after it has been turned a half-revolution, against further

forward rotation until the machine is set for the next voter, and means to lock said key-spindle against rearward rotation when the machine is set for the next voter.

2. In a voting machine, the combination of a manually controlled key-spindle, a rack having teeth, a toothed wheel mounted on said key-spindle and having two diametrically-disposed teeth for engaging said rack, and means which lock said key-spindle to prevent more than a half revolution thereof by any one voter but permit the key-spindle to be turned back at any time before the machine is set for the next voter; said means comprising a cam-wheel mounted on said key-spindle, a locking lever and a dog all operatively arranged.

3. In a voting machine, the combination of a manually controlled key-spindle, a rack having teeth, a wheel having teeth for engaging said rack, a locking lever, and a cam-wheel turning with said toothed-wheel and engaging said locking-lever to prevent more than a half revolution forward of said key-spindle by any one voter but which permits the key-spindle to be turned back at any time before the machine is set for the next voter.

4. In a voting machine, the combination of a manually controlled key-spindle, a rack having teeth, a toothed wheel mounted on said key-spindle and having two diametrically-disposed teeth for engaging said rack, a locking lever, a cam-wheel turning with said toothed-wheel and engaging said locking lever to limit the rotation of the key-spindle after it has been turned to register a single vote, and a dog adapted to engage said cam-wheel to prevent its rotation rearward after the machine has been set for the next voter.

5. In a voting machine, the combination of a manually controlled key-spindle, a rack having teeth, a toothed wheel mounted on said key-spindle and having two diametrically-disposed teeth for engaging said rack, a locking lever, a cam-wheel turning with said toothed-wheel and engaging said locking lever to lock the key-spindle after it has been turned a half revolution and a dog adapted to engage said cam-wheel to lock the key-spindle against rearward turning after the machine has been set for the next voter.

6. In a voting machine, the combination of a plurality of manually controlled key-spindles, located one above the other, a rack having teeth, a toothed-wheel mounted on each key-spindle and having teeth for engaging said rack, a locking lever for each key-spindle, and a cam-wheel turning with each of said toothed-wheels and engaging a locking-lever to prevent forward rotation of the key-spindle after it has been turned to register a single vote without preventing rearward rotation.

7. In a voting machine, the combination

of a plurality of manually controlled key-spindles, located one above the other, a rack having teeth, a toothed-wheel mounted on each key-spindle and having diametrically-disposed teeth for engaging said rack, a locking lever for each key-spindle, a cam-wheel turning with each of said toothed-wheels and engaging the locking lever to lock the key-spindle against forward rotation after it has been turned to register a single vote, and a dog engaging each of said cam-wheels to lock the same against a reverse rotation after the machine has been set for the next voter.

8. In a voting machine, the combination of a manually-controlled key-spindle, a rack having teeth, a toothed wheel for engaging

said rack, a locking-lever provided with an abutment-shoulder, a cam-wheel having teeth adapted to engage said shoulder of said locking-lever to move the latter into locking engagement with said cam-wheel, and a dog adapted to be thrown by said locking-lever into engagement with said cam-wheel to lock the key-spindle against reverse movement after the machine has been set for the next voter.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses, this the 19th day of July, 1905.

GUSTAF JOHNSON.

Witnesses:

ROBERT ROGERSON,
E. F. NUIAC.