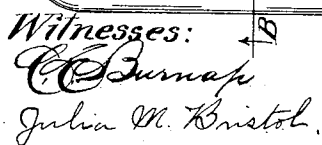


APPLICATION FILED JUNE 9, 1904.

Patented Nov. 30, 1909.

4 SHEETS—SHEET 1.



Inventor:

John Howard (McChoy)

APPLICATION FILED JUNE 9, 1904.

4 SHEETS—SHEET 2.

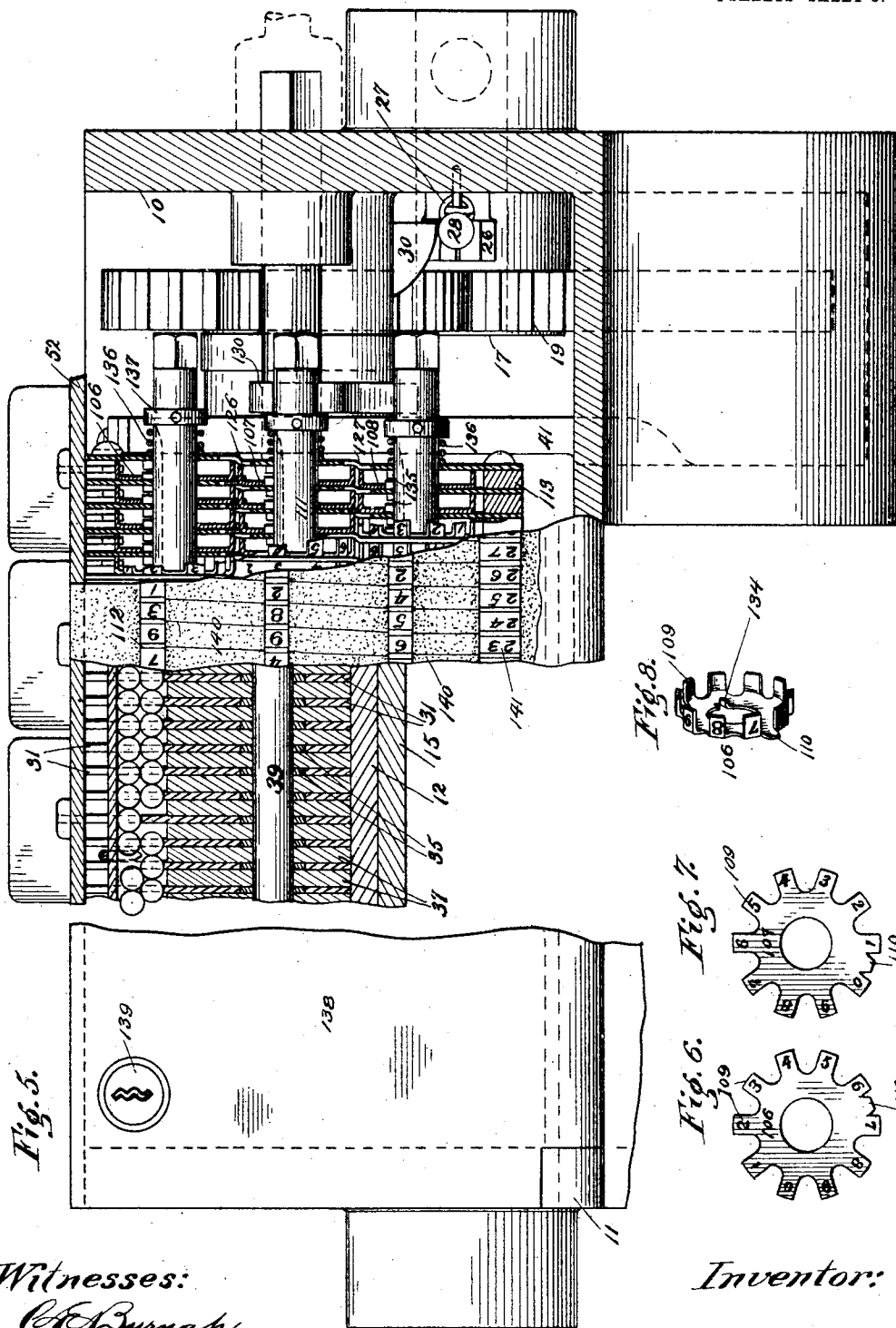
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VOTING MACHINE.
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 10.

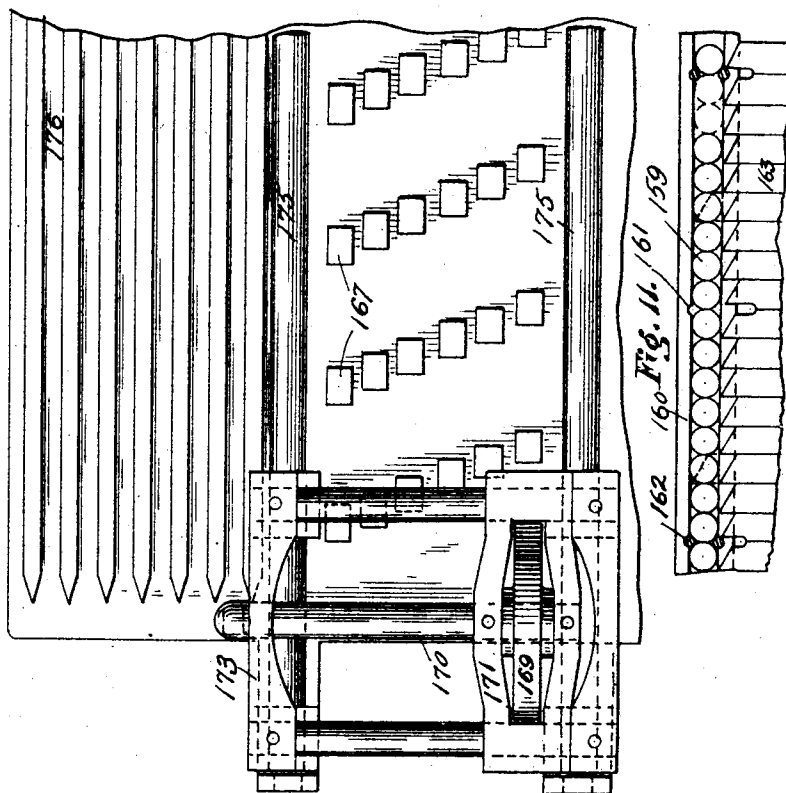
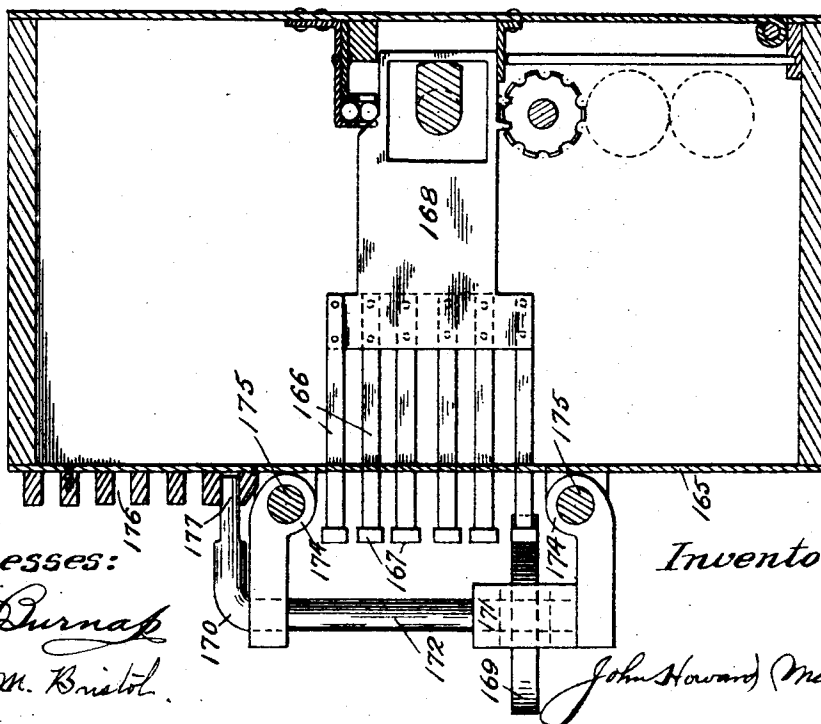


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN HOWARD McELROY, OF CHICAGO, ILLINOIS.

VOTING-MACHINE.

941,800.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed June 9, 1904. Serial No. 211,765.

To all whom it may concern:

Be it known that I, JOHN HOWARD McELROY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Voting-Machines, of which the following is a specification.

My present application is concerned with voting machines adapted for use in general elections, and is concerned primarily with a novel construction and arrangement of the keys, whereby I am enabled to vote a straight ticket with rapidity and ease without the employment of any additional mechanism for simultaneously actuating all the keys for all the candidates of any particular party.

My invention is further concerned with a novel construction and arrangement of the registers and re-setting mechanism therefor, which is adapted for use in other machines than voting machines, such as detail-adder cash-registers and machines for tabulating statistics.

My invention is further concerned with novel means for voting a straight ticket, in which while all the keys of a single party are actuated in a very short interval of time, so that the action is practically instantaneous, yet the keys are actually moved *seriatim*, i. e., one after another, thus permitting its employment in multi-office groups in connection with key-stop mechanism that might jam if a plurality of keys in a group were operated simultaneously, one form of such key-stop mechanism being illustrated in my application No. 8568, filed March 12, 1900.

My invention is further concerned with certain novel combinations and details of construction, which will be described at length in the specification and the novel features thereof particularly pointed out in the claims.

To illustrate my invention, I annex hereto four sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which,—

Figure 1 is a top plan view of the machine apart from the booth, with a portion of the center broken away and part of the cover removed, and with a portion of the irregu-

lar balloting mechanism in section; Figs. 2 and 3 are vertical sections on line A—A and B—B, respectively, of Fig. 1; Fig. 4 is a perspective view of a portion of the key stop mechanism; Fig. 5 is a view of the rear side of the machine, on an enlarged scale, in section on the line C—C of Fig. 1; Figs. 6 and 7 are side elevations of the units and tens register wheels, respectively, as they are first stamped and before they are finally formed; Fig. 8 is a perspective view of the units register wheel as it is completed; Fig. 9 is a vertical section on the line D—D of Fig. 10, illustrating, somewhat diagrammatically, a modification; Fig. 10 is a front elevation of a portion of a machine embodying said modification; Fig. 11 is a detail, in section on the line E—E of Fig. 12, illustrating a form of key stop with which my straight-ticket mechanism may be used; and Fig. 12 is a front elevation of the same with the keys removed.

The casing of the machine, as illustrated, is composed of the two end castings, 10 and 11, which are similar in design, but differ in that they are right and left handed, the mechanism they are adapted to inclose being the same at each end, except as reversed in order to bring the parts into proper relation with the key-plates upon which they operate. The end castings are connected by the bottom plate 12, which is supported and the frame strengthened by the two angle-irons 13 and 14 and the Z-bar 15 extending longitudinally of the machine and connecting the two end castings. An operating bail 16 is connected with the two short shafts 17 and 18 journaled in the end castings and carrying the actuating gear-wheels 19. I have designed the bail 16 and the connected shafts and wheels 19 to be swung through an angle of sixty degrees as the voter incloses himself in the booth, and to be swung back the same distance as he will open the booth to leave it, and this movement of the wheels serves to re-set the machine along with any other necessary operations. The wheels 19 have two sets of teeth 20 and 21, which mesh with the clutch pinions 22 and the driving pinions 23 of the irregular balloting mechanism and the main shaft, respectively. It will be understood that the gear wheels 19 might have the teeth cut entirely around them, and that

the blank portions are omitted merely for economy, inasmuch as only the teeth shown have any function. To compel a complete stroke of the re-setting mechanism in both
 5 directions, and prevent any possible attempt to beat the machine by pumping the bail back and forth over critical points, I provide one or both of the wheels 19 with the special set of teeth 24, which are conveniently cast
 10 or stamped upon a segment 25, and are riveted or otherwise secured to a pair of the spokes of the wheels 19, the teeth 24 being adapted to cooperate with the dogs 26, suitably pivoted to the castings 10 and 11, and
 15 provided with the tensile springs 27, which hold the dogs normally in the horizontal position shown, from which they are moved by the teeth 24 in the customary manner of the operation of these complete-stroke mechanisms. As a convenient indication of the
 20 completion of the movement in either direction, I provide the dog 26 at one end with a spring bell hammer 28, which will be thrown into contact with a sounding bar 29 at the
 25 completion of the opening of the booth; while the dog 26 at the other end will be provided with a similar hammer cooperating with a bell 30, or a differently-sounding bar, so that the alarms occurring at the completion of the opening or the closing of the
 30 booth will be different and distinguishable by the ear.

Each candidate register is provided with a key-plate 31, which is conveniently of the
 35 design shown, and is adapted to be quickly and cheaply stamped out of sheet-metal. Each plate is provided with the end notches 32 and 33 to accommodate the spacing washers 34 and 35 which separate the spacing
 40 plates 36 and 37, which, clamped together alternately with the washers by the rods 38 and 39, secured at their outer ends in the brackets 40 and 41 projecting upward from the inner faces of the end castings, form the
 45 grids which space the key-plates 31 apart the proper distance. Each of the key-plates is provided with the aperture 42, through which pass the rock shaft 43 and the positioning and locking bar 44, all of which
 50 will be described in detail later. They are also provided with the large aperture 45 open at the bottom, and through which passes the main shaft 46, which is journaled in suitable bearings 47 in the end castings
 55 10 and 11, and which has secured thereon, adjacent said bearings, the gear pinions 23 previously referred to, by which the shaft is given a reciprocating movement through one hundred and eighty degrees at each
 60 operation of the machine, the shaft being preferably arranged to rest on the bottom plate 12 to prevent any possible sagging due to the length of the shaft, which may be considerable in large machines. The key-

plates 31 may also be provided with other
 65 apertures 47, through which pass the limited-franchise rock-shafts 48. These rock shafts will have their ends extending from the ends of the machine, so as to be manipulated by
 70 the judges of the elections when a voter of the certain limited franchise is admitted to the machine, each of the rock shafts being provided with bars 49 attached to the portions of the machine necessary to lock out
 75 the candidates for which the limited-franchise voter cannot vote; and it will be apparent that when any of the shafts 48 is turned so as to bring the bar 49 in a horizontal position, as indicated in dotted lines,
 80 all the key-plates through which the bar 49 extends will be locked from possible operation, although free to be moved when the bars are in the full-line vertical position. I have indicated three of these limited-franchise rock-shafts 48, and it will be apparent
 85 that their number might be increased or diminished, and also that they might be divided transversely, in that case the parts being conveniently kept together by having one part in the form of a sleeve, while the
 90 other part might have an extension 50 journaled in the sleeve, as illustrated in the central one of the three shown. By this arrangement of limited-franchise mechanism, I can provide for a limited franchise not
 95 only for office candidates, but also for any questions that may be submitted to the public at general elections.

I have illustrated the key-plates 31 as arranged in groups of eight, seven of which
 100 are devoted to the single candidates of each party for the same office; while the eighth in the group, which I distinguish by the reference character 51, is devoted to the irregular balloting mechanism for that office.
 105 The top plate 52 is provided with a series of rectangular apertures 53 therein, one for each office group, and extending beneath these apertures are the plates 54, which may constitute extensions of the plates 51, being
 110 stamped out therewith, and turned over at right angles thereto, or which may be formed separately therefrom and riveted or otherwise secured thereto. These plates 54 have the apertures 55 therein, normally out of
 115 register with the apertures 53, and terminated at one end by the vertical projection 56, which is conveniently constructed of the part of the metal stamped out to form the aperture 55, and which projects up through
 120 the aperture 53, by which it is confined. The projections 56 form a means for moving the plate 54 and the attached plate 51 so as to bring the two apertures 53 and 55 into register and expose the sheet of record paper
 125 57 which passes over the table 58, formed of a long T-bar and suitably secured and supported at its ends by the brackets 59 project-

ing up from the base plate 60 of the irregular balloting mechanism, which is adapted to be removed bodily from the machine, when desired, by opening the door 61 constituting the adjacent side of the machine, and which, of course, will be provided with suitable locks. The inner faces of the brackets 59 are provided with the angle-iron strips 62 and 63, the horizontal portions of which form the ways in which run the anti-friction rollers 64 and 65 on the ends of the shafts 66 and 67, which support the spools 68 and 69, upon which the paper is wound in the two rolls, as shown. The shafts 66 and 67 have the collars 70 thereon adjacent to the anti-friction rollers, and provided with the pins 71, to which are attached the helically-coiled tensile springs 72, which serve to draw the rolls of paper toward each other and hold them in contact with the driving rollers or disks 73 secured upon the shaft 74, which is operated every time that an irregular ballot is cast by the mechanism to be described.

A rod 75 extends across the top of the machine, being supported by the arms 76, the lower ends of which are secured upon the short shafts 77, which extend through the end castings and have rigidly secured on their inner ends the cam segments 78. These cam segments have on their inner surface the low portion 79, the high portion 80 and the connecting cam-portion 81, and cooperate with the projections 82 secured on the outer face of the gear pinions 22. These gear pinions 22 have secured or formed on their inner faces one member 83 of a clutch mechanism, the other member of which, 84, is formed on the collar 85 rigidly secured near the ends of the shaft 74 adjacent its bearings in the brackets 59. The gear 22 is free to slide back and forth a limited amount on the ends of the shaft 74, the clutch members being normally held apart by the helically-coiled expanding-springs 86, which are conveniently positioned and secured by the annular grooves 87 and 88 formed in the adjacent faces of the gears 22 and collars 85. When no irregular ballot is cast, the rod 75 remains in the position shown in full lines, being held therein by the helically-coiled tensile spring 89 connected to the extension of the cam plates 78. When any of the plates 54 have been moved forward to expose the ballot sheet and permit the writing of the name of the nominated candidate thereon, the movement of the projection 56 compels the swinging of the rod 75 over to the dotted-line position shown in Fig. 3, where it is held by the pawl 90 engaging the ratchet teeth 91 on the lower side of the edge of the aperture 42. When the bail 16 is raised as the voter leaves the booth, the clutch being operative, the shaft 74 is ro-

tated, and the paper, by contact therewith, will be wound off of one roller until the plate 51 is returned by the action of the resetting mechanism, as will be subsequently described. When this occurs, the action of the spring 89 will be to draw the rod 75 back to its normal position, when the springs 86 will immediately uncouple the clutch mechanism, and the feeding movement of the rolls will cease and the parts of the irregular balloting mechanism be left in position for operation by another voter.

Each of the key plates 31, and the irregular balloting plate 51, is provided with the inclined surface 92, which coöperates with one of the balls 93 of the key-stop mechanism. This key-stop mechanism, described broadly, consists of a series of pockets, one for each of the plates 31 and 51, each of which pockets is adapted to contain a steel ball, which rests on the horizontal portion 94 of the plate. When the plate is operated in voting, the ball is raised out of the pocket into the main channel, which has a limited capacity for each office group, so that when the correct number of candidates has been voted for in that group the channel will contain no more of the balls 93 which may be attempted to be raised out of their pockets by the operation of the plates. As a convenient method of constructing the channel and pockets, I may employ a couple of metallic plates 95 and 96, best shown in Fig. 4, which are stamped out in their flat form, and subsequently bent at right angles along their length, and fastened together, as shown in Fig. 3, to form the channel. Both of the plates 95 and 96 are provided with the recesses 97, through which the cam portions 92 of the key-plates can pass, and between these recesses, as the recesses are stamped out, are formed slight inwardly-extending projections 98, which are sufficient to prevent the passage of the balls, and which thus serve to form pockets. The portions of the plates above the recesses 97, which portions constitute the channel, do not have the projections 98, so that the balls are free to travel along the channel, but not from one pocket to the other. At the end of each office group, the plate 95 is provided with a pair of apertures 99, through which a small U-shaped wire 100 can be inserted, the ends of the wire extending down into the channel so as to prevent a ball passing that point.

The operation of the key-stop mechanism will now be apparent: Supposing that one candidate is to be voted for in an office group, each of the eight pockets in the group will contain one of the balls 93, and seven of the balls 93 will be in the channel, leaving room for one more in that portion of the channel devoted to that group. When

a key is operated, the cam surface 92 will raise one of the balls out of its pocket into the channel, holding it there by the horizontal surface 101 on the key. The channel now containing eight balls, and being filled, no more keys can be operated. If, as occurs in multi-office groups, it is desired to throw sixteen or twenty-four, or more, of the plates 31 and 51 into a single group, all that is necessary is to withdraw one or more of the U-shaped pieces 100. The channels thus formed are supported and positioned as accurately as may be necessary by means of the threaded rods 102, screwed into the base piece 12 and extending up between some of the plates 31. The heads 103 and the adjusting nuts 104 beneath them serve to secure the channel at the desired height. To give access to the key-stop mechanism, to change the combinations as may be necessary in different elections, I provide the door 105 in the top of the casing, immediately above said mechanism.

Associated with each of the key-plates 31, and, if desired, with each of the irregular balloting plates 51, is a register, which I have shown as consisting of a units wheel 106, tens wheel 107, and hundreds wheel 108, these wheels being the same in design, and differing only in their numbering, the units and hundreds wheels being identical, and the tens wheel having the numbers arranged differently thereon, on account of the fact that it, being intermediate, rotates in a different direction from the other two wheels. Each wheel is made of a blank of sheet-metal, preferably of mild steel and first stamped into the shape shown in Figs. 6 and 7, the numbers on each of the projections 109 being conveniently stamped therein at the same operation. At a position varying with the sight apertures, but uniform for all of the units and hundreds wheels, and, as shown, between the numbers 6 and 7 of said wheels, and between the numbers 1 and 0 for the tens wheels, is formed a carrying tooth 110. The wheels thus stamped up are placed in a proper die and the projections 109 bent over so that they finally appear as shown in Fig. 8. These wheels are threaded on their supporting shafts 111, and are separated and slightly offset by the plates 112, which plates 112 are separated by the spacing blocks 113 and 114, and drawn together by rods 115, 116, 117, 118 and 119, so that by clamping them together properly a rigid structure is secured in which the register wheels rotate freely, with little friction. To position the wheels exactly, each one is provided with a small spring 120, which consists of the head 121 adapted to permit the wheel to rotate in either direction, together with a coil about its cooperating rod, and the tail piece 122,

by which the spring is held in position. This tail piece may cooperate with a lug formed in any suitable manner, as by extending the rods 123 throughout the series of registers. To prevent interference of the carrying teeth with the wheels of a lower denomination, the plates 112 are provided with the rectangular apertures 125, the plates when originally stamped out being flat, and having offsets 126 and 127 placed therein during the operation.

Each of the key-plates 31 is provided with the extension 128 terminating in the finger 129, which extends down between two of the projections 109 of the units wheel when the machine is in position for voting. As the key is operated, the register is advanced one space, and when the units wheel passes from 9 to 0 at the sight opening, the tooth 110 thereof engages the adjacent projection 109 of the tens wheel and advances it one space. Similarly, when the tens wheel passes from 9 to 0 at the sight aperture, the projection 110 thereof advances the hundreds wheel one space. As the wheels are designed to be moved in either direction, it will be apparent that the voter can, if he desires, change his vote by retracting the key of any candidate, and that the register will be moved back one space, and as the ball 93 in the channel over the key will fall by gravity into its pocket, another key, in place of the one withdrawn, can be operated. When the keys are finally re-set, the entire body of registers is lowered out of engagement with the fingers 129 before the keys are re-set, so that the registers for which the candidates were finally selected will be left in their advanced position to thereby register the vote. To lower the registers at the proper time, at the ends, I provide projections with which the forked end 130 of the levers 131, pivoted at 132 to the end castings, cooperate, the other ends of the levers cooperating with the cams 133 secured on the shaft 46. This cam is designed so as to hold the registers up in engagement with the keys when the booth is closed, and to lower them immediately when the booth is started to be opened, leaving it finally with the registers engaged or disengaged, as may be desired. It will be apparent that with the re-setting mechanism shown, and to be subsequently described, if the registers are left in engagement with the keys, they cannot be manipulated while the booth is open, because the key-plates are locked from movement.

To re-set the registers readily when desired, previous to conducting an election, I stamp out of each of the blanks the small projection 134, and provide on each of the shafts 111 a corresponding series of projections 135, which may be conveniently stamped

out at intervals on a narrow plate which can be set into a key-seat extending the length of the shaft. The shafts are normally held by the helically-coiled expanding-springs 136 interposed between the ends of the register frame and the collars 137 secured on the shafts, in an outward position, so that the projections 135 are out of the plane of the projections 134 and do not interfere with the rotation of the register wheels as they are operated by the voter. When the register wheels are to be re-set, a key is applied to the squared end of the units wheel shaft 111, and it is pushed in against the tension of the springs 136 until the two sets of lugs are brought into the same plane, when the shaft is given a rotation, the units shaft being moved first. The shaft, as it rotates, will pick up the register wheels at different times, depending upon their indication, and finally will bring them all to the same position. Then the tens wheels are re-set in the same manner, and finally the hundreds wheels, the offsetting of the different sets of wheels preventing the carrying teeth of the hundreds wheels (which teeth might be omitted, as they have no function, but are shown, inasmuch as the units and the hundreds wheels are manufactured from the same dies) interfering with the tens wheels, and correspondingly preventing the tens wheels from interfering with the units wheels.

The register wheels are normally invisible, the adjacent end of the casing being closed by the door 138, which will be provided with a plurality of locks, one of which is shown at 139, so as to require the presence of the officials of the different parties provided with the different keys. The register frame immediately adjacent the door is provided with a glass plate 140, which is preferably ground except along four narrow longitudinal spaces, which are left clear, and through which the units, tens, hundreds, and the figures 141, which identify the different registers, are visible. These figures 141 are conveniently formed upon the spacing blocks 113.

In the machine shown, the first, ninth, seventeenth, etc., key-plates 31 are devoted to the candidates for a certain party, and have the lugs 142 projecting upward therefrom, and formed with the shoulders 143, upon which are placed the keys 144, which consist of the horizontal portion having the aperture through which the upper portion of the lug 142 extends, and by which the key is riveted in place when the machine is assembled. The key, which is stamped out of sheet-metal, has the vertical portion 145 turned up, as shown, and this vertical portion extends substantially to the corresponding portion of the adjacent keys belonging

to that party column. These vertical portions are inclined, as shown, so that the two ends are separated by a distance equal to that which the key is moved through in its operation. The keys attached to the second, tenth, eighteenth, etc., plates, are arranged in the same party column, and so on throughout, so that the keyboard presents longitudinal party columns, and transverse office rows, which are nearly at right angles thereto, but inclined slightly, as shown in Fig. 1. The vertical portions of the keys are all inclined in the same way, preferably with their ends farthest away from the voter to the left-hand end of the machine, so that a voter desiring to vote a straight ticket will place his thumb against the left-hand key of that party column, and draw his thumb strongly to the right. As he does this, the movement will cam the first key to its operated position, and as his thumb leaves the first key it has been forced forward so that his thumb strikes the second key in the same plane, so that there is no perceptible jar in passing from the key that has been pushed in to the adjacent unoperated key. By this arrangement, a single swift stroke the length of the machine serves to move all of the keys in that party column to operative position; and if he desires to scratch any candidates, all he has to do is to retract the key for the candidate he desires to scratch, and then operate the key of the candidate in whose favor the scratching has been done. The names can be placed on ballot strips 146, which are secured between the office rows of keys, they being conveniently held down at one end by the clamping strip 147 and at the other end by the overlapping edge 148 of the door 93.

To accurately position the keys before the vote is finally cast, I provide on each key a triangular projection 149, the base of which is of a width equal to the length that the key-plate 31 is moved when correctly operated. A rocking frame loosely mounted on the shaft 43 has the bar 44 extending across all the keys, and supported by the arms 151 loosely mounted on the shaft 43. The arms 151 have their lower ends offset, as shown at 152, and strong helically-coiled expanding-springs 153 are provided to hold the arms 151 up, with the anti-friction rollers 154 carried thereby, against the under sides of the cams 155 secured on the shaft 46. These cams are so shaped that as soon as the opening of the booth begins, the cams force the bar 150 down, and it almost immediately engages the tooth 149; and it will be readily seen that if any of the plates 31 have been moved less than half way, they will be shoved back to initial position, while if they have been moved more than half way, they will be shoved forward to their full operative position. The cam 155 terminates

abruptly, so that the bar can be raised by the spring before the re-setting cam, to be described, begins to operate.

The irregular balloting plate 51 is allowed to be moved through twice the distance that the key-plates 31 are moved, in order to give a larger opening through which the name of the irregular candidate may be written. The ratchet teeth 91, which may be provided on all the plates 31 and 51, in order to secure uniformity in manufacture, are only useful in the irregular balloting plates 51, as only these plates are provided with the dogs 90, which are mounted on the shafts 43 by a slot and pin connection, so that the dogs are free to rise and fall as may be necessary to permit the moving of the plates 51 forward, and can be lifted entirely out of engagement to permit the resetting of the plates when the shaft 43 is rocked a sufficient amount during the re-setting operation, by the action of the arms 156 rigidly secured thereon, having their outer ends raised by the cams 157 on the shaft 46. The re-setting of the key-plates 31 and the irregular ballot plates 51 is effected by the cam bar 158 extending through all the keys, and secured on or preferably formed integral with the shaft 46. This shaft 46 is rotated through one hundred and eighty degrees during the re-setting operation; and from the shape of the cam it will be seen that during the first ninety degrees of its rotation, the key-plates and irregular ballot plates will not be affected, giving time for the registers to be moved out, the key plates to be positioned, and the dogs 90 to be lifted out of engagement with the teeth 91, while the actual re-setting is effected during the last ninety degrees of this movement.

From a consideration of Fig. 5, it will be apparent that if sixteen keys should be grouped together, leaving out two balls in the upper row, so that two keys might be operated in the same group, and the two keys were operated simultaneously, the probabilities would be that the two keys would jam, owing to the tendency of the two balls being simultaneously forced upward out of their pockets to force the intervening balls in the upper row together. In Figs. 11 and 12, I have illustrated another form of interlocking device in which this jamming is more certain to occur. In this form the balls 159 are arranged in a single, slightly inclined channel 160, just large enough to accommodate a single row of balls, and provided with the apertures 161 in which the U shaped stops 162 may be inserted to group them as may be desired. The keys or key plates 163 have the cam surfaces 164 on the ends and are wide enough to displace a single ball. Each group has as many balls fewer than keys as there are keys to be op-

erated, and it will be apparent that, owing to the inclination of the channel, the balls will lie as low as possible, and that as a key is operated the balls opposite and above it are moved up to make a place for the key in the channel. When the keys are re-set, the displaced balls roll back by gravity. It will be apparent that with this form used in multi-office groups, not only are the keys likely to jam if operated simultaneously, but that they will jam if operated separately provided they are not operated in order from left to right. With my inclined key faces forming a ratchet, as it were, the operation of the keys in voting a straight ticket is necessarily made not only *seriatim*, but also from left to right, in the proper direction, so that no jamming can occur if this type of key-stop mechanism be employed.

While I prefer the straight-ticket mechanism previously described, on account of its simplicity; it can be embodied in other forms, such as that illustrated in Figs. 9 and 10, where the ballot plate 165 is vertical and the key stems 166 project there-through, being provided on the outside with the heads 167 and having the key plates 168 secured to their inner ends. The key plates are designed to cooperate with the key stops and registers substantially as shown in the preferred form, and as will be apparent without further explanation. To operate all of the keys of any party rapidly and *seriatim*, I provide a disk 169 of the proper size mounted to rotate on a vertical spindle 170 secured in a frame 171 mounted to slide on the vertical guide posts 172 forming a part of the rectangular frame 173 which has the horizontal sleeves 174 adapted to slide on the rods or bars 175 extending across the face of the machine. As a convenient method of guiding the frame and keeping the disk in alinement with the desired row of keys, I provide the guide channels 176 extending across the top of the machine, and have the upper end of the spindle 170 turned back and its reduced end 177 arranged to enter any desired one of the channels. When it is desired to vote a straight ticket with this modified form, the straight-ticket mechanism, which will preferably be arranged so that it must be brought back to the position shown before the voter can leave the booth, is seized, and the frame 171 raised to the proper height to bring the disk 169 into the plane of the keys of the candidates of the desired party. The frame 173 is then moved to the right as rapidly as may be desired, and the disk 169 engaging the keys will depress them *seriatim*. It will be apparent that if I used a sliding member to contact with the keys, it would be advantageous to incline their ends as shown in the preferred form, but with a rolling contact

this is unnecessary, as the point of contact with each key rolling in a cycloid moves substantially in the direction of movement of the key and presses it squarely in with practically no bending stress.

I am aware that it has been proposed, prior to my invention, to have ordinary key-stop mechanism permitting the simultaneous operation of as many keys as may be necessary in a multi-office group, associated with keys which are rotated through a small angle, and arranged in close enough juxtaposition so that as the finger leaves one key it passes with considerable jar to the next key, and so on, and I do not claim such a structure as my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In a voting machine, the combination with the candidate registers, of the longitudinally-movable candidate-keys arranged in party columns, and having the inclined faces, substantially as and for the purpose described.

2. In a voting machine, the combination with the candidate registers, of the longitudinally-movable candidate-keys arranged in party columns and movable through a definite distance and having the inclined faces, the inclination of the faces being equal to the amount of the movement, substantially as and for the purpose described.

3. In a voting machine, the combination with the candidate registers, of the longitudinally-movable candidate-keys arranged in party columns and having the inclined faces, substantially as and for the purpose described, terminating immediately adjacent the corresponding parts of the next candidate keys in the same party column.

4. In a voting machine, the combination with the candidate registers, of the longitudinally-movable candidate keys arranged in party columns and consisting of the portion moving lengthwise, and the portion extending at right angles thereto and inclined at an acute angle to the line of movement.

5. In a voting machine, the combination with the sliding key plates arranged in office groups, and consisting of register controlling plates each provided with a key, and an irregular ballot plate carrying an apertured cover, of a series of interlocking or key stop members at one end of the group of plates, and a paper roll arranged at the other end, and means for re-setting the key plates and operating the paper roll.

6. In a voting machine, the combination with the sliding key plates arranged in office groups, and consisting of register controlling plates each provided with a key, and an irregular ballot plate carrying an apertured cover, of a series of interlocking or key stop members at one end of the group of plates,

an irregular ballot-receiving mechanism at the other end, and resetting mechanism comprising means for re-setting the key plates and operating the ballot-receiving mechanism.

7. In a voting machine, the combination with the key plates of substantially uniform length arranged in parallel office groups, of key stop mechanism extending transversely of said group, and keys attached to said plates at different distances from the key stop mechanism, all the keys belonging to the same party being at the same distance from the key stop mechanism to bring the keys into party columns.

8. In a voting machine, the combination with the key plates of substantially uniform length arranged in parallel office groups, of key stop mechanism extending transversely of said groups, and keys attached to said plates at different distances from the key stop mechanism, all the keys belonging to the same party being at the same distance from the key stop mechanism and arranged in the same relative order to bring the keys into party columns and office rows.

9. In a voting machine, the combination with the key plates having the recesses therein, of the locking bar extending through one set of recesses, and the re-setting shaft extending through another set.

10. In a voting machine, the combination with the key plates having the recesses therein, of the re-setting shaft extending through one set of recesses, and the limited-franchise bar extending through another.

11. In a voting machine, the combination with the key plates having the recesses therein, of the locking bar extending through one set of recesses, the re-setting shaft extending through another set, and the limited-franchise bar extending through another set.

12. In a voting machine, the combination with interlocking or key-stop members for preventing the simultaneous actuation of more than one candidate-selecting member in a multi-office group, of candidate-selecting members grouped according to parties and coöperating with the key-stop members, and a movable member forming a part of the machine and adjustable to different positions for setting all the candidate-selecting members of any party *seriatim* by a single movement.

13. In a voting machine, the combination with the candidate-selecting members grouped according to parties, of interlocking or key stop members for preventing the simultaneous actuation of more than one candidate-selecting member in a multi-office group, and means forming a part of the machine for setting all of the candidate-selecting members of any party *seriatim* by a single movement and always in the same order.

14. In a voting machine, the combination with the candidate-selecting members grouped according to parties, of the interlocking or key stop members for preventing the simultaneous operation of more than one candidate-selecting member in a multi-office group, and means for setting all the candidate-selecting members of any party *seriatim* by a single movement, said means consisting of engaging surfaces on said candidate-selecting members inclined at an acute angle to the direction of movement thereof.

15. In a voting machine, the combination with the candidate and irregular balloting plates, of the positioning bar cooperating therewith, a rock shaft upon which said bar is mounted, ratchet teeth on the irregular balloting plates, detent pawls cooperating with said teeth mounted on said rock shaft by pin and slot connections, an operating arm attached to the rock shaft, an operating shaft, and cams on said operating shaft cooperating with the positioning bar and operating arm to first position the plates and then release the irregular balloting plates.

16. In a voting machine, the combination with the candidate and irregular balloting plates, of the positioning bar cooperating therewith, a rock shaft upon which said bar is mounted, ratchet teeth on the irregular balloting plates, detent pawls cooperating with said teeth mounted on said rock shaft by pin and slot connections, an operating arm attached to the rock shaft, a re-setting shaft, and cams on said re-setting shaft cooperating with the positioning bar, operating arm, and plates, to first position the plates, then release the irregular balloting plates, and finally return all the plates to their normal position.

17. In a voting machine, the combination with the candidate and irregular balloting plates, of the positioning bar cooperating therewith, a rock shaft upon which said bar is mounted, ratchet teeth on the irregular balloting plate, detent pawls cooperating with said teeth mounted on said rock shaft, by a pin and slot connection, an operating arm attached to the rock shaft, a register frame, lever mechanism for moving the register frame into and out of operative relation with the candidate plates, a re-setting shaft, and cams on said shaft cooperating with the positioning bar, operating arm, register frame, lever, and plates, to control the engagement of the registers with the candidate plates and position the plates, release the irregular balloting plates, and return all the plates to normal position.

18. In a voting machine, the combination with the candidate and irregular balloting plates, of the positioning bar cooperating therewith, a rock shaft upon which said bar is mounted, ratchet teeth on the irregular

balloting plates, detent pawls cooperating with said teeth mounted on said rock shaft by pin and slot connections, an operating arm attached to the rock shaft, a register frame carrying candidate registers, a lever for moving said frame to bring the registers into and out of operative engagement with the candidate plates, a re-setting shaft, and cams thereon cooperating with the positioning bar, operating arm, frame moving lever, and plates, to first position the plates and move the registers out of engagement therewith, then release the irregular balloting plates, and finally return all the plates to normal position.

19. In a voting machine, the combination with the candidate plates, of the positioning bar cooperating therewith, a frame carrying the candidate registers, a re-setting shaft, and cams thereon cooperating with the positioning bar, register frame and plates, to first position the plates, disengage the registers from the plates, and finally re-set the plates.

20. In a voting machine, the combination with the candidate keys arranged according to party, of interlocking or key-stop members for preventing the simultaneous operation of more than one candidate-selecting member in a multi-office group a member adapted to be moved over said keys at a single motion to depress all of the keys of a certain party *seriatim*, for the purpose described.

21. In a voting machine, the combination with the candidate keys arranged according to parties, of interlocking or key-stop members for preventing the simultaneous operation of more than one candidate-selecting member in a multi-office group a member forming a part of the machine adapted to be moved over all of the keys belonging to any one of the parties at a single motion to depress them *seriatim*, for the purpose described.

22. In a voting machine, the combination with the candidate keys arranged in party groups, of interlocking or key-stop members for preventing the simultaneous operation of more than one candidate-selecting member in a multi-office group a member forming a part of the machine adapted to be moved over any one of said groups at a single motion to depress all the keys of a certain party *seriatim*, and guide mechanism for keeping the member in position during its movement.

23. In a voting machine, the combination with the candidate keys arranged according to parties, of the interlocking or key stop members for preventing the simultaneous action of more than one key in a multi-office group, and a member forming a part of the machine adapted to be moved over

said keys at a single motion to depress all the keys of a certain party *seriatim*, for the purpose described.

24. In a voting machine, the combination
5 with candidate keys arranged in party columns and office groups, of key-stop members coöperating therewith for preventing the simultaneous actuation of more than one key in a multi-office group, a member forming
10 a part of the machine adapted to be

moved over all the keys of any party column at a single motion to operate all of them *seriatim*, and means for preliminarily adjusting said member to bring it into position to actuate any one of the party columns.

JOHN HOWARD McELROY.

Witnesses:

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