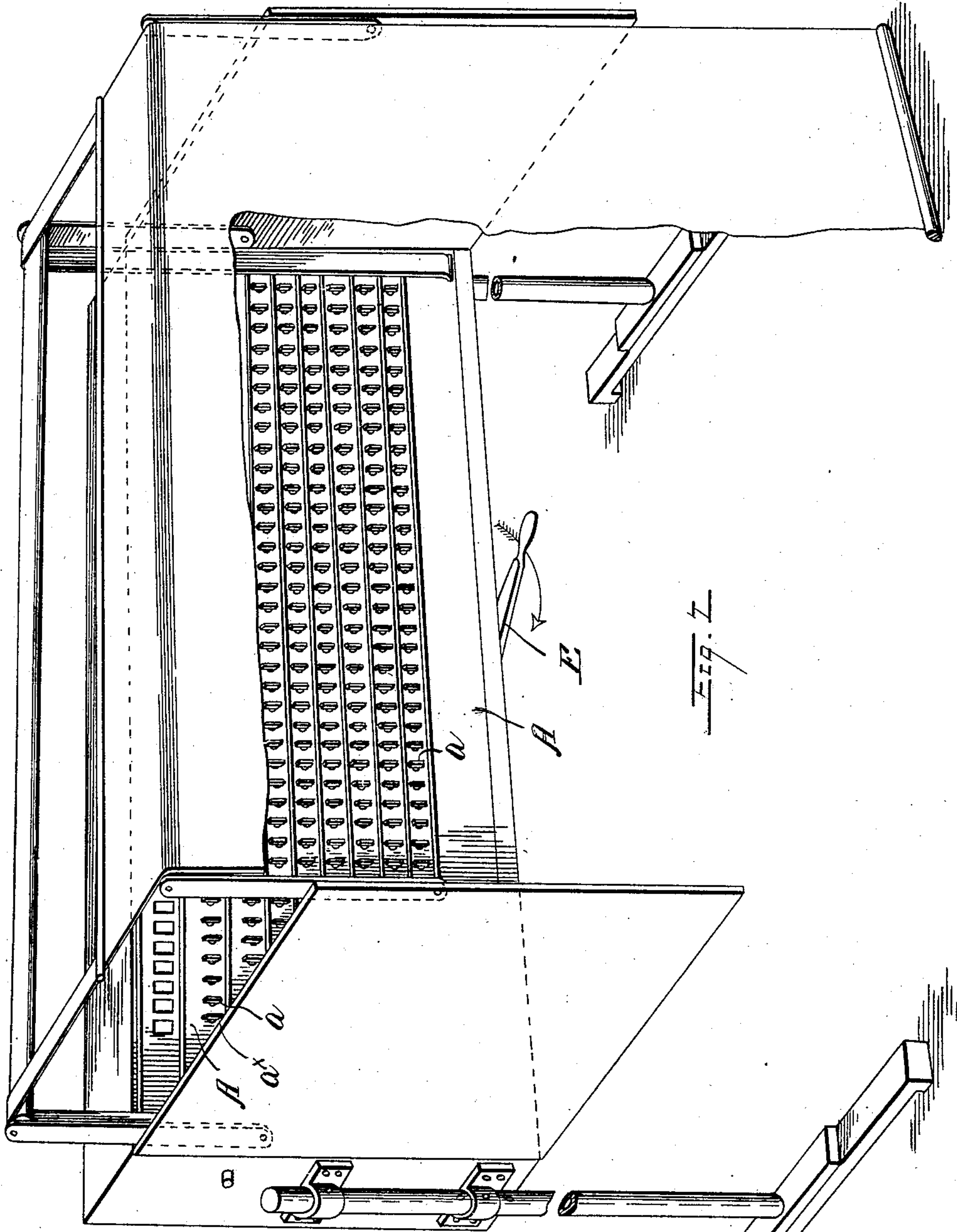


D. I. WHITESIDE.
INTERLOCKING MECHANISM FOR VOTING MACHINES.
APPLICATION FILED FEB. 6, 1906.

900,630.

Patented Oct. 6, 1908.
5 SHEETS—SHEET 1.



WITNESSES

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Geo. B. Pitts.

By

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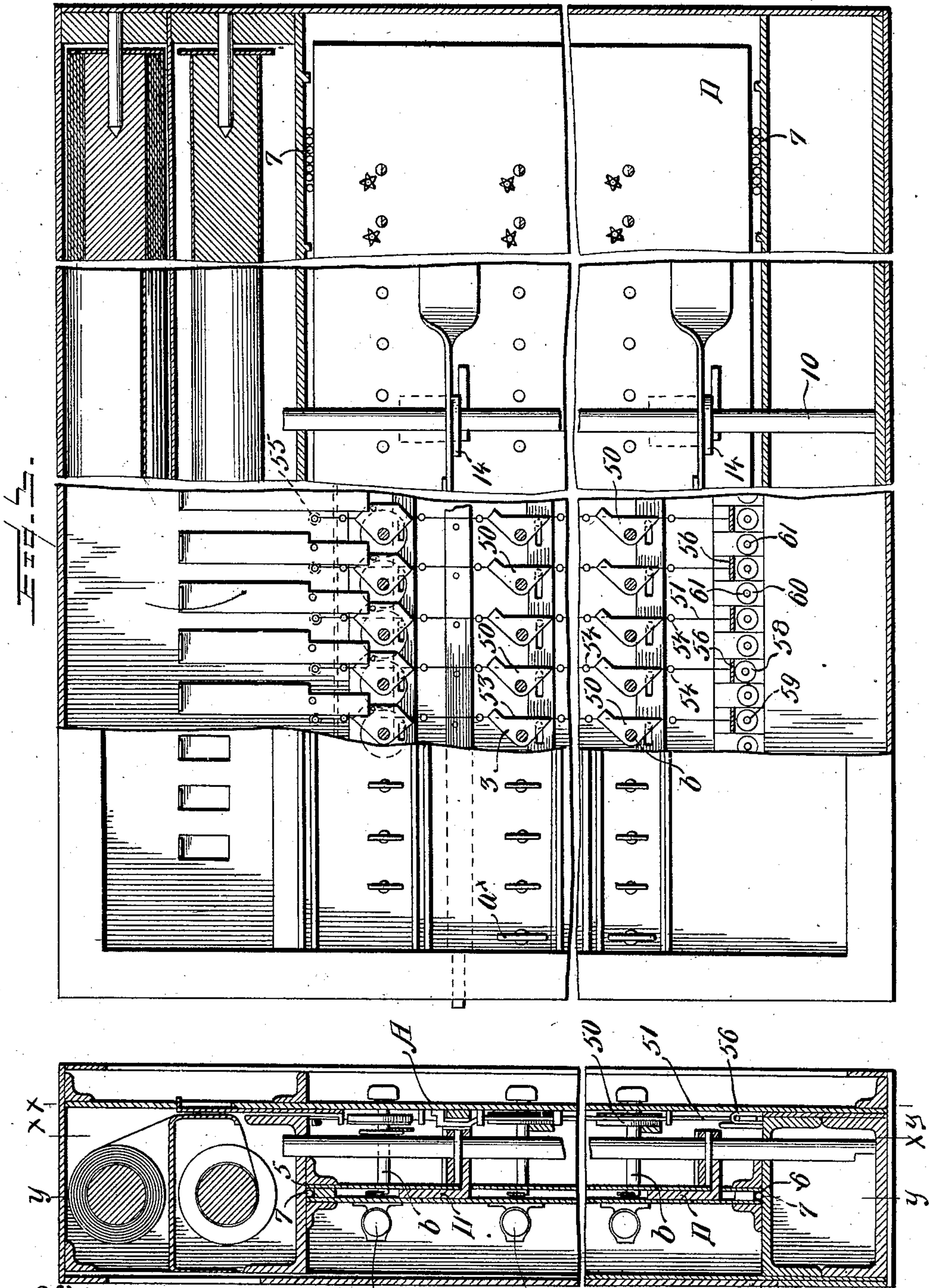
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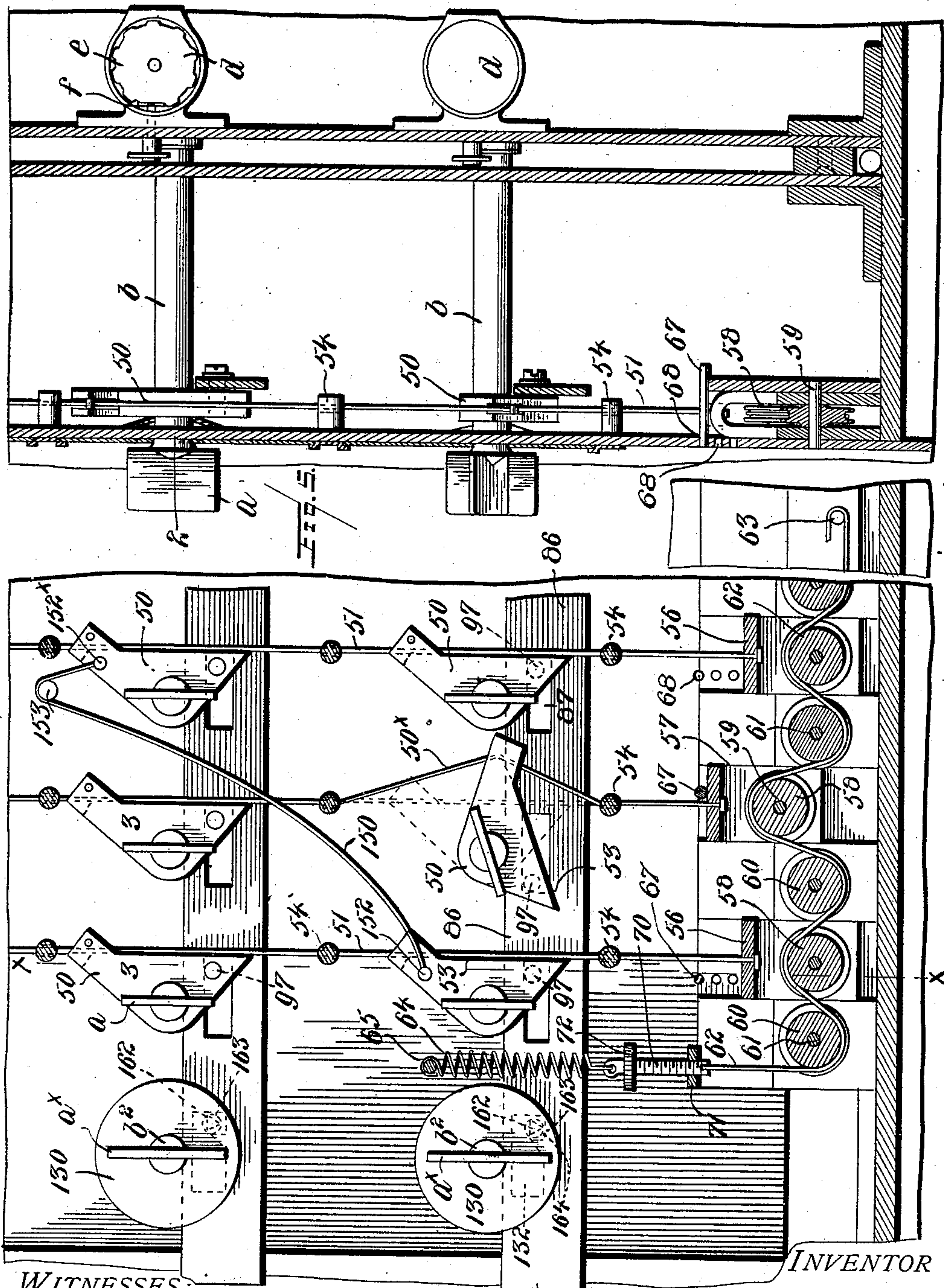
Witnesses.
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6 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.



WITNESSES.
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UNITED STATES PATENT OFFICE.

DONALD I. WHITESIDE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO GREEN MAJORS,
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INTERLOCKING MECHANISM FOR VOTING-MACHINES.

No. 900,630.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Original application filed May 15, 1905, Serial No. 261,444. Divided and this application filed February 6, 1906.
Serial No. 299,823.

To all whom it may concern:

Be it known that I, DONALD I. WHITESIDE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Interlocking Mechanism for Voting-Machines, of which the following is a specification.

This invention relates to improvements made in means for mechanically registering votes or ballots through the operation of keys, as a substitute for the ballot-box.

The invention has for its object to provide improved means for cutting out or rendering inoperative the individual registering mechanism of any one candidate, or of several candidates; also to provide means for temporarily cutting out any particular registering-mechanism to prevent the same from being operated by one voter but not by another, as for example, in situations where the laws allow women to vote for the candidates for certain offices and not for others.

To such ends and objects, chiefly, my present invention comprises novel construction and combination of register-actuating keys, check-wires, check-plates, slide-bars and means for operating and controlling the slide-bars, all as hereinafter fully described and pointed out in the claims at the end of this specification.

This case is a division of an application filed by me May 15, 1905, Serial Number 261,444.

The drawings accompanying this specification and forming a part thereof represent a construction of voting-machine in which the present improvements are combined for operation with other novel parts and features that are made the subject of separate applications for Letters Patent, and are therefore not particularly described and claimed herein.

Figure 1 of the drawings represents the machine in perspective; Fig. 2 is a vertical section taken transversely through the key-board and the case behind it; Fig. 3 is a front-view of a section of the key-board at the left side of the machine, and of successive sections or portions extending from left to right across the key-board in different parallel planes, one behind another; the portion at the extreme right of this figure being

a section on the line $y-y$ Fig. 2; the intermediate portions, or sections, taken respectively on the line $x-x$, and $x-y$ in Fig. 2. Fig. 4 is a front-view, on an enlarged scale, of a portion of the key-board below the part or section shown in Fig. 3. Fig. 5 is a transverse section through Fig. 4 on the line $x-x$. Fig. 6 is a front-elevation of portions of the mechanism that control the keys and the register-operating means. Fig. 7 is a horizontal section of Fig. 6, taken on the line $x-y$. Figs. 8, 9 and 10 are top-views, on an enlarged scale, of the parts connecting the key-re-setting means and the slide-plate and hand-lever of the register operating mechanism. These three figures represent the different positions of the parts when the hand-lever is at rest on the extreme right of the arc, ready to be operated by the voter when it has been moved towards the left and has reached the center; and when it has completed its throw to the left. Fig. 11 is a sectional top-view in detail, on the line $x-y$, Fig. 12 of the register-actuating mechanism, showing a portion of the end of a key. Fig. 12 is a front-view of a portion of the slide-plate and one of the registers. This figure is a section on the line $y-y$ Fig. 11. Fig. 13 is a section similar to Fig. 11, showing the position of the parts when the key has been set and the slide-plate is being moved from left to right. Fig. 14 is a section at $x-y$ Fig. 13. Fig. 15 is a side view of a vertical row or group of keys showing the means for cutting out one or more keys in such group. Fig. 16 is a front-view of Fig. 15. Fig. 17 is a view showing the group-voting means, whereby all the keys in a horizontal row may be operated by the turning of a single key. Fig. 18 is a detail view of the mechanism for cutting out any particular row of candidates.

In this machine, as in others of the same class, the keys appropriated to the candidates of the same political party are situated in the same row or group across the key-board, and the keys for those candidates in the different group who are nominated for the same office are disposed in vertical rows one under another, for convenience in voting a mixed ticket. The individual candidate keys in a group are all of the same construction, and operate in the same manner, so that the fol-

lowing detailed description of one key, and of all the keys in any group and their operation will apply as well to those in the remaining groups and to their operation, either singly or as a group. These keys, termed individual-candidate keys in this description, indicated by the letter *a*, on the drawing, are each composed of a stem *b*, rotatable in a socket 2 in the stationary front-plate A, and provided on the end behind the plate A with a bit or flat face 3 at right angles to the axis of the stem. The flat head *a* on the opposite end projecting from the front of the plate A furnishes a thumb-piece or means for rotating the stem a quarter turn, or thereabouts, in its socket. The flat face or bit 3, as I have termed it, forms when set in one position a stop or obstruction in the path of an actuating wheel or member 4 of a registering device or counter *d*, which being brought in contact with such stop by a longitudinal movement of the register in a plane parallel with the stationary plate A, causes the register-actuating wheel 4 to impinge and be turned by the stop. On the other hand, the stem *b* has no effect on the register when the flat-face 3 stands in a horizontal position, by virtue of the bit being set below and out of the path and in such position that the actuating-wheel 4 will clear and not be caught by the face of the bit in passing across it. The registers *d* are fixed on the back of a slide-plate D having a limited movement longitudinally of the machine or at right angles to the stem *b*, and confined in grooves 5—6 in the frame at top and bottom; small balls 7 being placed in the grooves to reduce friction.

The star-wheel 4 fast on the arbor of the units-wheels of the register, or connected to it by a gear-wheel and a pinion *e—f* projects through a slot 9 in the slide-plate D with its points set in such relation to the bit-carrying end of the key that the plane in which they are carried by a longitudinal movement of the slide-plate D from left to right will bring the points of the wheel 4 across the flat-face 3 of the stem *b* without being turned by it, excepting when the flat face is turned from a horizontal to an angular position.

A mechanical counter of any well-known make, such as may readily be obtained at the present time, with a capacity for registering to the required place of numbers, may be employed to advantage in this machine, simply by fixing a five-point star-wheel of proper diameter on the arbor of the unit-wheel of the counter, or connecting the wheel 4 with the units-wheel by gears *e—f*.

The slide-plate D is moved in the required direction and with the proper length of throw from left to right by a hand-lever E located preferably under the bottom of the case at the front of the key-board and connected with the slide-plate to move it lon-

gitudinally, the extent of movement in a direction from left to right and back again to the starting-point being produced by the throw of the lever E from its position at the left to the extreme right, and back to position at the left side by the following means:—A rock-shaft 10 supported at top and bottom in sockets 12—13 in the frame carries two disks 14 fast on it at points above the lower and below the upper bearing, and on each disk a pin 15 projecting from the underside of the disk sets in the slot 17 of a flanged plate 16 secured to the front side of the slide-plate D. The horizontal member of this piece 16 extends through a slot 18 cut in the stationary plate B, and the slot 17 is formed on one side with a portion concentric with the axis around which the pin 15 travels, as indicated at 19 in the details Figs. 8, 9, and 10, when the pin 15 is in the contracted portion 17 of the slot the disk will act on the slide-plate, but as soon as the pin 15 reaches the concentric portion 19, the movement of the rock-shaft will not affect the slide-plate, and the latter will remain at rest although the rock-shaft may continue its rotation as required to operate other mechanism. In the present machine the same movements of the rock-shaft is utilized to operate the shutter-mechanism and the means for restoring the keys to position for the next voter after each operation, and the mechanism is designed chiefly with a view to effect all the necessary movements of operating the registers, resetting the voting-keys and raising and lowering the shutter at the beginning and the end of each voting operation, all by movement of a single hand-lever. The normal position of this lever is at the extreme left of its arc when the key-board is covered by the shutter, before the voter enters the booth; and from that position it is thrown over to the right, as seen in Fig. 1, before the voter has access to the keys to record his vote. In that movement of the lever E the rock-shaft acts upon the shutter to elevate it at one end, and to lower it at the other and behind the voter. The return of the lever to its normal position raises the curtain to release the voter and at the same time lowers it over the keys to conceal them from view as the voter withdraws from the booth.

The means whereby the keys are controlled mechanically and their operation by the voter is restricted or limited as called for by the conditions governing the election or the use of the machine, which constitute the present invention will be described in detail with reference more particularly to Figs. 3, 4, 5, 6, 7, 8 of the drawings. Ordinarily, where every candidate may be represented on the key-board by a key individual to him alone, it will be necessary only to provide means to prevent the keys of several different candi-

dates running for the same office to be actuated after one key of the set or group has been selected and turned; and in like manner, where the voter is allowed to select and vote for a certain and fixed number of candidates less than the whole number in nomination for a given office, it becomes necessary to limit by mechanical means the number of keys that the voter may select and operate, so as to render the machine to that extent automatic or independent of control or adjustment by others than the voter during its use. These conditions are obtained by means of a check-plate 50 fixed on the stem *b* of each key, and a check-wire 51 secured at the ends above and below the groups of keys and held at a greater or less degree of tension between the points of attachment above and below the key. Each check-wire 51 is common to all the keys representing the candidates for same office in the different groups which are arranged one below another, as before described, and the check-plate 50 on each key in the same vertical row is set each with its straight edge 53 lying against the same check-wire when the key is out of operative position, as seen in Fig. 3. The check-wire is confined at points above and below the check-plate by slotted guide-pins 54 through which the wire passes loosely. By regulating the length of the check-wire so that the slack will permit all the check-plates in the row to assume an angular position as represented at 50* in Fig. 4 it will be evident that every key in the same row could be turned; or, by reducing the amount of slack in the wire it will be evident that the angular movement of any number of check-plates less than the whole number can be prevented, and their keys controlled accordingly. The operation of the keys in the same row is thus limited by the length of the wire, or the extent of slack provided at the time. Piano wire is a good material to use for the check-wire, as it possesses great tensile strength and is comparatively small in diameter. To regulate the extent of slack and restrict the same to the required limit, the upper end of each check-wire is secured to a fixed pin 55 on the front-plate, and carried downward from that point on one side of the check-plates in the same row. It is attached at its lower end to a stirrup-piece 56 that has limited movement in guides 57 in the casing. In the stirrup for each check-wire is a small sheave 58 loose on the axle 59, and in the spaces between the stirrups are similar sheaves 60 on stationary axles or studs 61 fixed on the front plate.

A cord or wire 62 passes alternately under and over the fixed pulleys and the movable pulleys and is secured at one end to a fixed pin 63, and its opposite end to a coiled spring 64 secured to a fixed pin 65 on the front plate. Under the tension of this

spring 64 the cord 62 is held taut or without slack while the stirrups remain at their lowest position in the guides, and the check-wire controlled by each stirrup is held thereby under sufficient tension to keep it in place against or in close relation to the straight sides of the check-plates 50 in the same row which are at such time turned up in their inoperative position. When one voting key, or a number of keys, in the same row are turned the change in the angular position of their respective check-plates will have the effect to bend the check-wire common to them all and press it out of a straight line between the guide-pins 54; and if sufficient slack be provided in the check-wire it will be seen that all the keys in that row along which the check-wire extends between its points of attachment could be turned and set in operative position at the same time. But, on the other hand, if the slack or looseness of the check-wire be taken up at the lower end the number of keys in the row capable of being turned by the voter will be governed by the extent of slack left in the wire, and when that number has been set for operation no more keys in the row can be turned. The degree of slack in each individual check-wire is regulated by inserting a stop-pin 67 in one of several holes 68 provided in the front-plate above the stirrups 56, as seen in Figs. 4 and 5, by which means any one check-wire can be separately controlled and its slackness varied separately of the other wires. Or, by means of the sheaves and cord 62 a number of different rows or sets of keys are controlled and their operation limited to any given number which the voter is allowed to select at will in making up his ticket from the whole number of keys in the several rows and which are coupled together by means of the cord and pulleys before mentioned.

The means employed for varying the number of keys to be selected for operation and preventing the operation of more than the required number at any time consists of an adjustable stop placed between the coiled-spring and the end of the cord 62, and composed of a screw-threaded rod 70 passing loosely through a hole in a fixed bracket 71 on the front-plate A, and an adjustable nut 72 on the screw-threaded portion above the bracket; the coiled-spring 64 being secured to one end of the rod, and the cord fastened to the opposite end, as seen in Fig. 4. By regulating and varying the extent of slack in the cord, the length of movement of the whole number of stirrups connected by the cord can be limited and the slack in the check-wires restricted to a given amount or extent. The stirrups and cord, and the adjustable stop on the end, provide a simple mode of adjusting the machine for multi-candidate voting, where a given number of

candidates less than the whole number in nomination for the same office may be selected by the voter. Single and separate adjustment of each stirrup to regulate the extent
 5 of slack of its own check-wire is also provided for in the adjustable stop-pins and spaced holes in the front-plate, already described.

A separate means for cutting out or rendering temporarily inoperative any one or
 10 several of the rows of keys consists of a slide-bar 75 movable in guides horizontally across the key-board behind the check-wires, and having a hole 76 situated on the left of
 15 every check-wire, as seen in Fig. 18. A coiled-spring 77 between the farther end of the slide-bar and the side of the casing holds the bar normally in such position that stop-pins 78 fixed in the holes in the slide-bar
 20 will stand clear of the check-wires without limiting their movement in any way; but on the other hand, each stop-pin will be pressed against the check-wire nearest to it on the right, when the bar 75 is itself moved
 25 longitudinally by applying pressure to its near end. The effect of such movement is to carry every check-wire laterally to the right wherever a stop 78 has been inserted in the hole to the left of the wire, and thus
 30 take up the slack of the wire to such an extent that it will not be possible to turn any of the keys in the row controlled by that wire, and the whole set will be held out of action as long as the bar 75 is retained in
 35 such position with the spring 77 compressed. In that position the bar 75 is retained by a pawl 80 loosely pivoted to the back of the front-plate over the bar 75, as seen at 81, Fig. 18, and engaging a notch 82 in the top
 40 edge of the bar. A push-pin 83 on the near end of the bar extends through the side of the casing to the outside, for moving the bar as before described. Provision is made for releasing the bar 75 from the pawl and
 45 throwing it out of action at the same time that the voting mechanism is reset after each voting operation, by fixing on the nearest connection-bar 90 of the key-releasing mechanism an inclined block 85 in proper
 50 relation or position with respect to the free end of the pawl 80, so that it will act to throw the pawl clear of the notch on the bar 75 whenever the releasing means of which the connection-bar 90 is a part moves
 55 to the right. As the bar 75 is released from the pawl the coiled-spring 77 returns it to position with the stop-pins standing away from the check-wires when the latter return to place. By inserting a stop-pin in the
 60 proper hole any particular check-wire can be set out of service and the keys in line with it will be rendered inoperative for the time being. This means for cutting out temporarily the voting-keys of any particular
 65 candidates from among those repre-

sented on the key-board is applicable for use more particularly in localities where women are given the right to vote for candidates for some offices and not for others.

The mechanism for resetting the voting-
 70 keys of each group after each operation is designed to be actuated from the same rock-shaft 10 that moves the register-carrying slide-plate and operates the plane-shutter, and to that end it is composed of a slotted
 75 bar 86 extending horizontally across the front-plate of the key-board behind the check-plates 50 of each set or group of keys *a*, and provided with a slot 87 behind each check-plate to take a stud 97 on the back of
 80 the plate. All the keys in each horizontal set are thus loosely connected by their check-plates to the bar 86.

At the right side of the casing the ends of all the bars pass through slots in an upright
 85 bar 89 which is, in turn, attached to the horizontally set draw-bars 90 one near the top and the other near the bottom of the upright bar 89, and at the end next the rock-shaft each draw-bar is provided with a slot 91 to
 90 take a pin 92 on the upper side of the disk 14 carried by the shaft. Through these parts a partial rotation of the rock-shaft will move the upright bar laterally, and parallel or at right angles to the slotted bars. The
 95 latter being connected to the upright bar are all drawn to the right at the moment that the upright bar 89 sliding on the slotted bars 95 strikes the stop pins 93 on the ends of the
 100 last-named bars and carries all the bars along with it. The length of this movement given to the upright bar 89 by the disks 14 and draw-bars 90 is sufficient to bring the turned-down check-plates back to place. In
 105 the present construction the extent of this movement required for the check-plate corresponds to an arc of about 90°, as will be seen by referring to Fig. 4, where both positions of the voting-keys in the same group are illustrated, and the length of
 110 throw is indicated by dotted lines. As the extent of motion of the rock-shaft exceeds that which is required to move the slotted key-resetting bars, the upright bar 89 is arranged to slide on the slotted bars in the first
 115 portion of its throw to the right, without acting on the slotted bars, and the time of this lost motion wherein the upright-bar moves without affecting the re-setting bars
 120 86, is represented by the first half of the throw of the hand-lever or from the position indicated in Fig. 8 to that shown in Fig. 9. During that portion of the throw the slide-plate D is drawn to the right with the effect to actuate the registering devices, and
 125 then by the remaining half of the movement required to bring the hand-lever over to its normal position on the left, the upright bar 89 draws the re-setting bars to the right, with a length of throw sufficient to reset
 130

the keys by acting on their check-plates as already described. The means connecting the parts with the rock-shaft are so adjusted and timed that the operations of actuating the register-carrying plate, resetting the voting keys and drawing the shutter over the key-board follow in quick succession and in a continuous manner, so that the vote is registered and the key-board is covered as soon as the hand-lever is brought to position to the extreme left. At that end of its arc it is left by the voter ready to be grasped and moved over to the opposite side by the next person entering the booth.

From the following description it will be obvious that the whole series or number of voting-keys in a group having a common re-setting bar 86 may be set for operation by a longitudinal movement of the bar in the opposite direction, or from right to left, and thus enabling the voter to set all the keys at one operation instead of turning each key in the group singly. This can be done by connecting a rotatable key α^x on the left of the key-board with the slide-bar 86 in such manner that a quarter-turn of the key will draw the bar to the left a sufficient distance to turn every check-plate 50 on its axis in the required direction to set the stems b on which the check-plates are fixed. A simple way to attach the key to the slide-bar is represented in Figs. 4 and 5, where the disk 130 fast on the stem b^2 of the key α^x is attached to the bar 86 by a stud 162 on the back of the disk working in a long slot 132 in the bar. As this key α^x is employed only for the purpose of setting all the voting-keys in a group by the movement of a single key, it has no other office or function, and consequently it has a simple stem without a bit, and no registering device is provided for it on the slide-plate D. The construction and arrangement of the other voting-keys and mechanism are such that the movement of each key in the group from an inoperative into an operative position to act on the registers is registered separately or individually and not collectively, as a group. Through the medium of the check-plates and check-wires already described the keys in the several groups are so interconnected that it is not possible for the same voter to set corresponding keys in two or more groups and thereby cast a vote either accidentally or purposely for two or more candidates for the same office. In such cases the amount of slack provided in the check-wire will be sufficient to allow the voter to set only one key in the same vertical row of keys, as represented at 50^x in Fig. 4, and the stirrups 56 and cord 62 will not be used. Those parts come into play in those conditions where the voter is allowed to select and set the keys of a given number of candidates

out of a greater number named on the ticket, as for example, to select four trustees from among eight or more candidates, and in such cases the length of the cord is so regulated by means of the adjustable stop 72 that the stirrups of any four check-wires may move in their guides under the strain put on their check-wires produced by turning one check-plate in each vertical row; but when four stirrups have been raised all the slack or play in the cord 62 will have been taken up, and all the check-wires controlled by the remaining stirrups will be held taut. Thus no greater number than four keys can be set by the voter, out of the whole number of vertical rows controlled by the stirrups and cord. This mode of controlling the voting-keys by check-plates and check-wires is particularly useful in adjusting the machine for operation in those situations where the same candidate has been nominated by different political parties for the same office, and it is applicable as well to those conditions or arrangements of the key-board wherein different keys appropriated for the same candidate may be situated in different vertical rows instead of one under the other. In such arrangement the check-plates of the keys to be controlled are coupled or connected together as seen in Fig. 4 by a slack check-line 150 attached at one end to a pin 152 on one check-plate, and laid over a stud 153 situated above the check-plate to be controlled in another row, and finally secured to a pin 152^x on that plate. The amount of slack provided in this check-line between the two keys is sufficient to let either check-plate take an angular position as its key may be turned by the voter, but when one is turned the other plate coupled to it cannot be moved until after the previously operated key of the pair has been turned back to position. This arrangement of check-line is illustrated in Fig. 4, wherein the lower key in the first row on the left is coupled to the top key in the first row on the right. The keys that may be situated in the same vertical row are coupled or connected in a similar manner by carrying a separate check wire 151 alongside of the main check wire 51 from a pin 155 above to a pin 156 at the bottom, and then placing the wire, as shown in Figs. 15 and 16, in such manner that it will lie against the straight edge of the check plates belonging to those keys which are to be controlled, and will pass around or alongside of the plates of the remaining keys.

The foregoing description gives in detail the relative construction and arrangement of mechanism and parts as represented in the present and preferred embodiment of my invention. I do not desire, however, to be understood as confining myself to such

specific details, as such changes and modifications may be made in practice as come within the scope of the invention.

I have illustrated in Figs. 11, 12, 13, 14 a simple locking-device for preventing the register from operating when it is not being operated on by the voting-key. This device consists of a flat-spring 160 fastened at one end to the front of the slide-plate D directly beneath the star-wheel 4 of the register and provided on its front side near the free end with a stop or projection 161 which is held between two spurs of the star-wheel by virtue of the curved form and the resiliency of the spring. This part 160 is situated directly behind the stem *b* of the voting-key and is so placed between the end of the bit 3 and the slide-plate D that the end of the bit is always in contact with the spring. These parts are so arranged also that the end of the bit will rest against the flat portion of the spring 160 to the right of the curved portion of the spring when the register is on the left side of the voting-key and before the slide-plate is moved to the right to operate the register. In that movement of the slide-plate, however, which takes place when the voter operates the hand-lever after having set the voting-key the bit 3 acts upon the spring to press its free end backward against the face of the slide-plate thereby withdrawing the stop 161 from the star-wheel just before the latter engages the bit 3. This spring is so placed and adjusted also that the end of the bit does not pass off the spring but simply moves from one end towards the other and back again in a longitudinal movement of the slide-plate. The bit thus has two functions, one of operating the register and the other of throwing the locking-device in and out of operation.

Where the condition under which this machine is used may require a group voting-key to be furnished by means of which the voter is enabled to set a number of voting-keys simultaneously by a single movement of one key, instead of being obliged to set each key separately, I connect the group voting-key in such manner with all the keys in the group to be operated and so control the group voting-key in each group from the corresponding key of other groups where there are two or more group voting-keys provided in the machine that when one group voting-key is operated all the remaining group voting-keys in the machine will be immediately, but temporarily disconnected, from their respective groups of voting-keys and the voter will be unable to set more than one group of individual candidate keys for operation.

The group voting-key is connected with and disconnected from its group of individual candidate-keys in the manner illustrated in Fig. 17 where the group voting-key α^* is

provided with a disk 130 fast on the stem b^* and having a small triangular pin 162 projecting from its rear face into a slot 132 in the slide-bar 86. A tooth 164 projecting upwardly from the slot 132 by engaging the pin 162 connects the bar and the disk together, and as the key is turned to the right it acts to draw the bar 86 to the left and thus set all the individual keys that are connected to that bar through the medium of their check-plates 50 and the pins 97 that set in the slot 87 of the slide-bar. A single movement of the key α^* , therefore, will set all the keys in that group or row. When such a group voting-key is provided in the machine the check-plates 50 of the individual voting-keys are set at a slight inclination from the vertical instead of having an upright position as they are represented in Figs. 4 and 5, and the straight edge 53 of each check-plate will stand normally away from the check-wire 51 and the latter will be held out of a straight line between its guide-pins 54 on the front-plate A. Such is the normal position of the check-plate 50 and the check-wire 51 when the keys α stand out of operative position and the check-wire is thereby under such degree of tension for its entire length that when one group voting-key is turned the check-plate 50 of all the keys in that row being turned by the movement of the bar 86 to the left will throw such degree of tension on all the check-wires that they will be drawn or tend to assume a straight line between the guide-pins 54 that are situated above and below every check-plate in the other row. The effect of drawing the check-line 51 into a straight line will be to bring all the check-plates 50, excepting those in the group which is set by the selected group voting-key, and as the check-plates are brought to the upright position their angular movement throws the pin 97 against the ends of the slot 87 thereby drawing the bar 86 to the right. This movement of the bar causes the tooth 164 to pass by and become disengaged from the pin 162 on the disk of the key α^* . The latter key may then be turned by the voter but it will not act on the bar 86 because its pin 162 will be on the left side of the tooth 164. The act of turning one group voting-key will disconnect or put out of operation all the remaining keys of the same kind. At the end of the voting operation when the bars 86 move to the right to reset the voting-keys these special or group-voting keys are connected again to the bar ready for operation by the next voter if required.

What I claim as my invention, and desire to secure by Letters Patent is:—

1. In a voting machine, the combination of a series of voting keys arranged in rows, a check wire for each row, means for putting under tension any particular check wire,

means for putting under tension all of the check wires simultaneously, and separate means for putting under tension any one or more check wires.

5 2. In a voting machine, the combination of a series of voting keys arranged in rows, a check wire for each row, means for putting under tension any particular check wire, means for putting under tension all of the
10 check wires simultaneously, separate means for putting under tension any one or more check wires, and means for automatically releasing the last mentioned means.

15 3. In a voting machine, the combination of a voting key, a check wire arranged to be engaged by the operation of a key, a sliding stirrup secured to one end of the check wire, guideways in which the stirrup is mounted and in which it is free to move whenever a
20 voting key is operated and engages the check wire, and a pin for limiting the movement of the stirrup, substantially as set forth.

4. In a voting machine, the combination of voting keys arranged in pairs side by side
25 and adjustable by a movement axially, and means for controlling one key of the pair by the other, comprising a disk on the axis of each key, and a link connecting the disks of every pair together, the link being positively secured to the adjacent sides of the
30 two disks, the said link by the axial movement of either disk being adapted to prevent the remaining disk of the pair from moving.

35 5. In a voting machine, the combination of a series of voting keys arranged in rows, registering devices for recording the votes upon the operation of the voting keys, a wire, 151, extending alongside of the keys
40 in each row, but normally out of engagement therewith, means for connecting it with selected keys in the row at will whereby the operation of one key to register a vote will prevent the operation of the other selected
45 keys, and means for returning the operated one of the keys to inoperative position, substantially as set forth.

50 6. In a voting machine, the combination of a series of voting keys arranged in vertical rows a separate check wire for each row, registering devices for recording the votes upon the operation of the voting keys, means for connecting a single key in one vertical
55 row with another single key in a different vertical row, whereby the operation of one connected key to register a vote will prevent the operation of the other key, and means for returning the operated one of the two keys to inoperative position, substantially
60 as set forth.

7. In a voting machine, a pair of voting keys arranged for operation side by side, movable axially, and coupling means for preventing the movement of one key when
65 the other is set in operative position, com-

prising a disk fast on the axis of each key, and a coupling link of definite length attached to the disks at points distant from the axes and on the adjacent sides of the axes.

8. In a voting-machine, the rotatable voting-keys situated in different groups, a check-plate to each key rotatable thereby, a slide-bar common to all the check-plates in the same group, means connecting the check-
75 plates to said slide-bar whereby all check-plates are simultaneously turned into angular position by a movement of the slide-bar in one direction, a separate check-wire common to all the check-plates in a group, means
80 for moving said slide-bar in one direction, to set the check-plates in angular position and means for moving it in the opposite direction to throw the check-plates out of angular position.

9. In a voting machine, the combination with two or more rotatable voting-keys situated in groups, of a check-plate to each key rotatable thereby, a check-wire to each check-plate having limited degree of tension and a
90 check-line connecting the check-plate of any selected key in one group with the check-plate in another group or groups, and adapted to be put in tension by the change in position of one check-plate and thereby
95 prevent the remaining check-plate or check-plates from being turned.

10. In a voting-machine, the combination with rotatable voting keys situated in the same perpendicular row on the key-board of
100 the machine, of a check-plate for each key, a check-wire common to all the check-plates having limited tension and a second check-wire under a fixed tension common to two or more check-plates in the row, but not to the
105 remaining check-plates.

11. In a voting-machine, a key-board, rotatable voting-keys arranged in a group at intervals apart across the key-board, a check-plate, on each key movable axially there-
110 with, a check-wire to each check-plate, and means for putting tension on any given check-wire or check-wires from the outside of the key-board and means for throwing off the said tension producing means.

12. In a voting-machine, a key-board, rotatable voting-keys arranged in a group at intervals apart across the key-board, a check-plate on each key movable axially therewith, a check-wire to each check-plate, and means
120 for putting tension on any given check-wire or check-wires comprising a slide-bar movable longitudinally in a plane behind the check-wires, and stop-pins on said slide-bar.

13. In a voting-machine, a key-board, voting-keys in parallel groups across the key-board, the keys in each group being aligned perpendicularly with those in the remaining groups, a check-plate on each key, a check-wire common to the check-plates of all the
130

keys in the same perpendicular row, and means for variably limiting the tension of any given number of check-wires comprising stirrups movable in guides on the key-board, one end of each check-wire being attached to a stirrup, a sheave on each stirrup, a series of sheaves on fixed bearings on the key-board alternating with the sheaves of the stirrups, a cord passing alternately under and over the stirrup-sheaves and stationary sheaves, and means for varying the length of said cord.

14. In a voting-machine, a key-board, voting-keys arranged in parallel groups across the key-board and in alinement perpendicularly up and down the same, a check-plate on each key movable axially therewith, a check-wire common to all the check-plates in the same perpendicular row, and means for variably limiting the tension on any

given number of check-wires comprising perpendicularly movable stirrups on the ends of the check-wires, a sheave on each stirrup, a stationary sheave on the key-board between the stirrups, a cord passing alternately under and over the stationary sheaves and the stirrup-sheaves said cord being secured at one end to a fixed point, a yielding connection between the other end of the cord and a fixed point on the key-board, and an adjustable stop situated between the sheaves and the yielding connection.

In testimony whereof I have hereunto set my name to this specification in the presence of two subscribing witnesses.

DONALD I. WHITESIDE.

Witnesses:

M. REGNER,

EDWARD E. OSBORN.