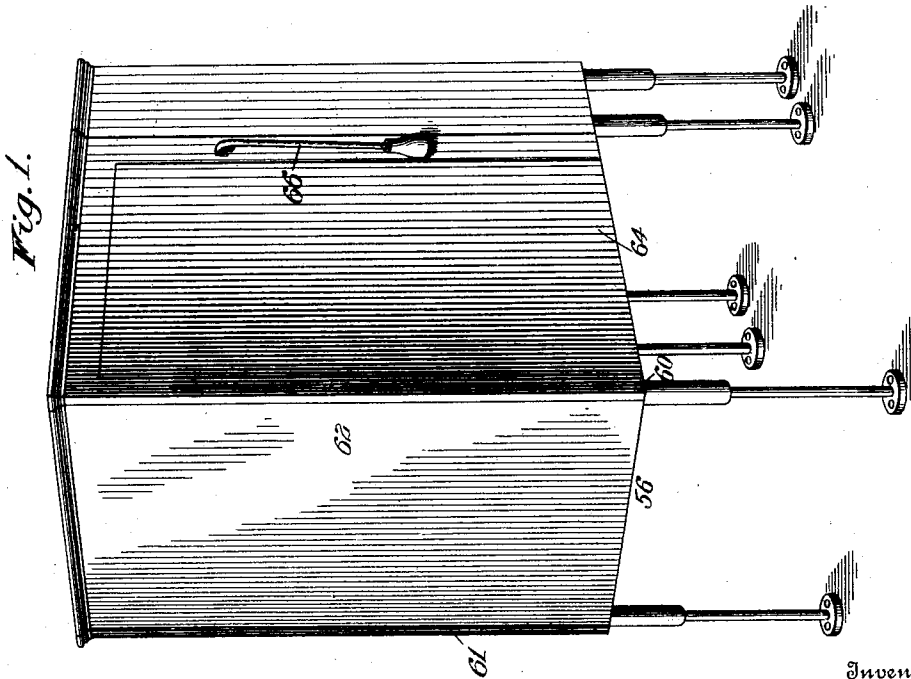
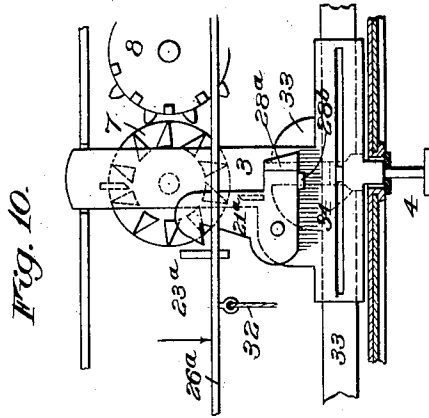
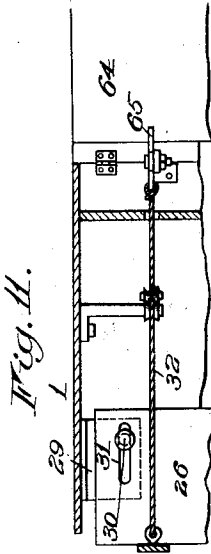


W. H. STRONG.
VOTING MACHINE.
APPLICATION FILED DEC. 3, 1906.



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Witnesses

Walter B. Payne
Russell Bluffete

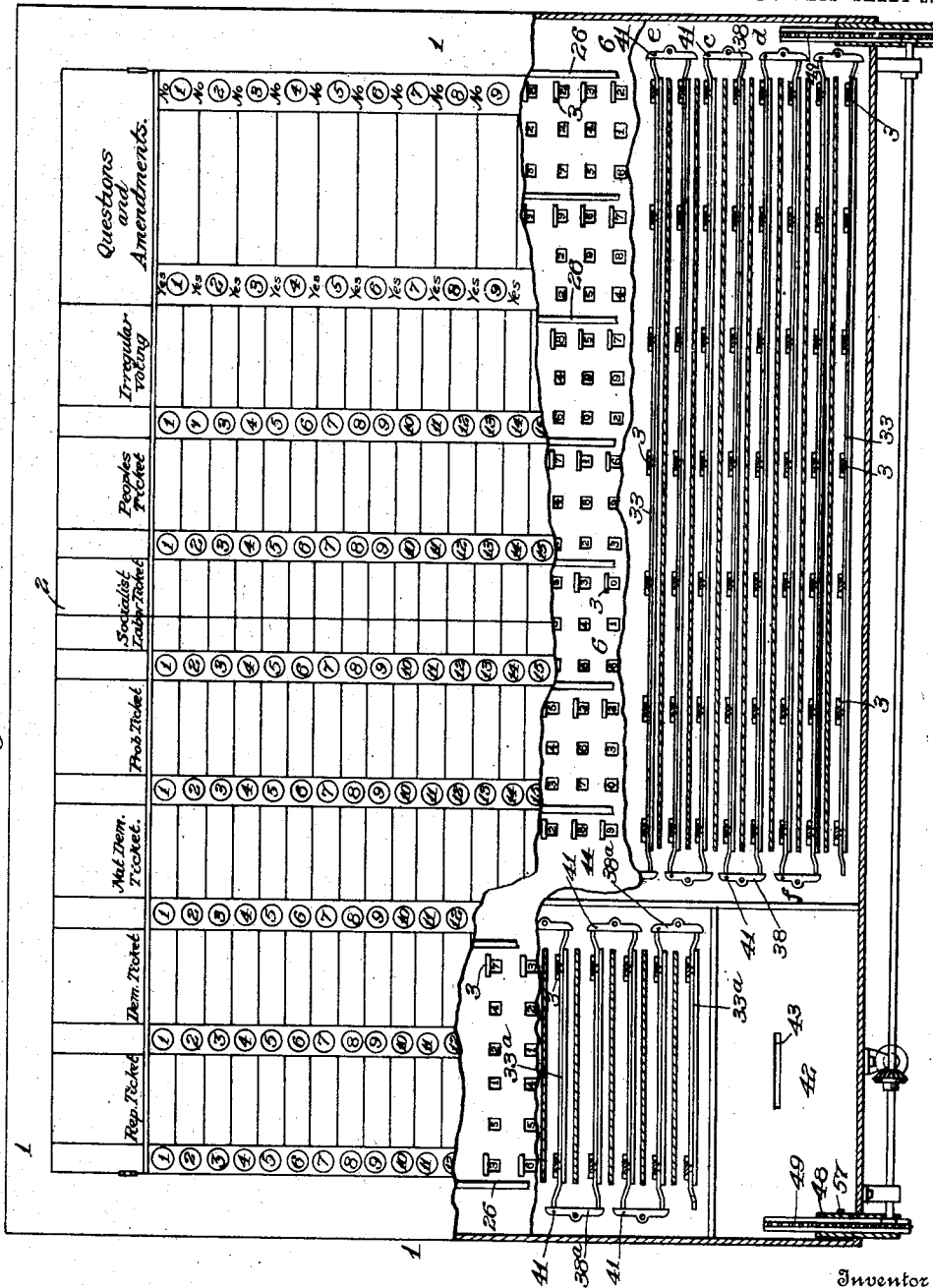
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W. H. STRONG.
VOTING MACHINE.

APPLICATION FILED DEC. 3, 1906.

4 SHEETS—SHEET 2.

Fig. 2.



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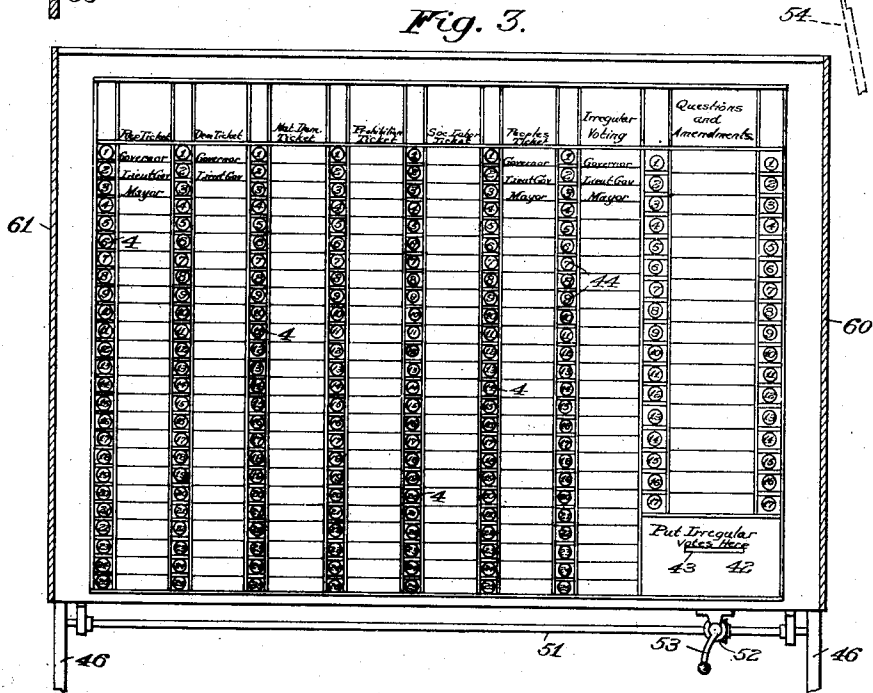
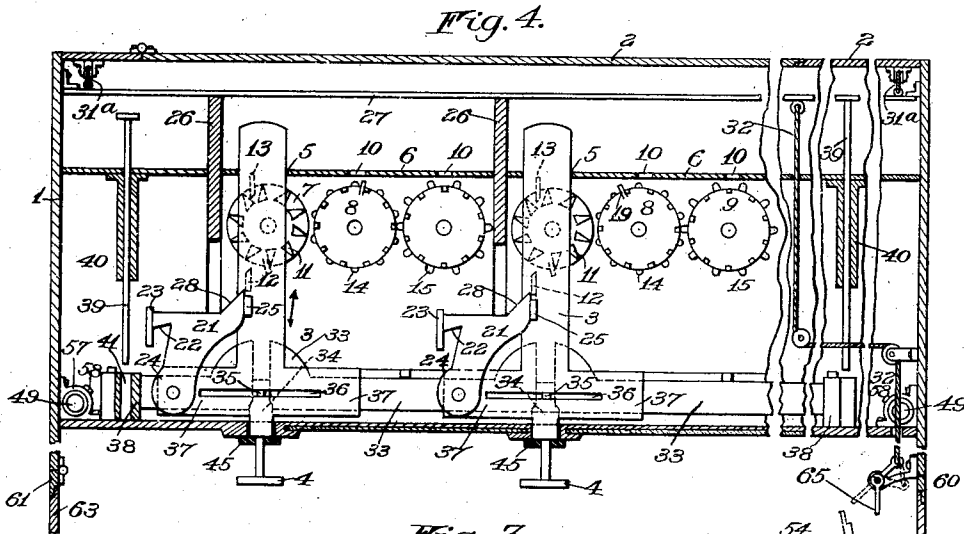
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4 SHEETS—SHEET 4.

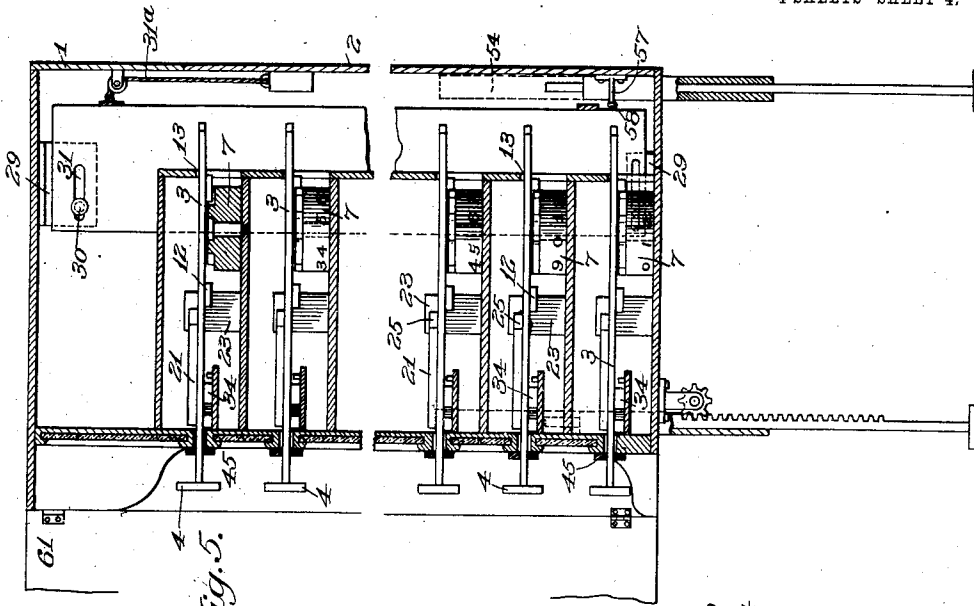


Fig. 5.

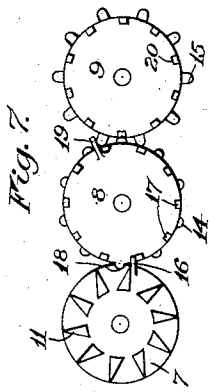


Fig. 7.

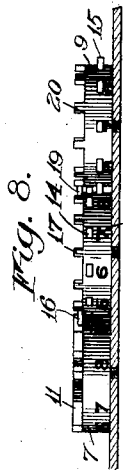


Fig. 8.

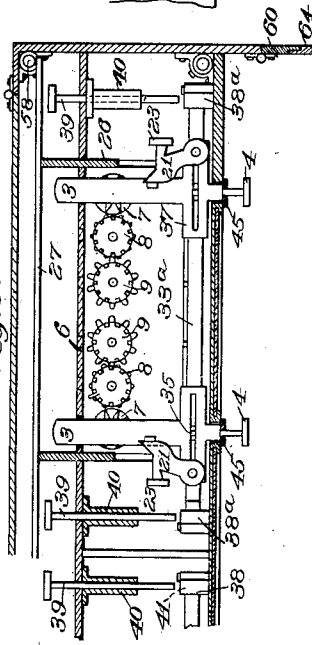


Fig. 6.

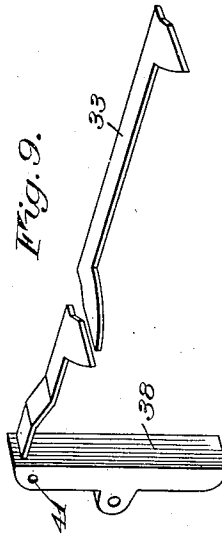


Fig. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM H. STRONG, OF ROCHESTER, NEW YORK, ASSIGNOR TO U. S. STANDARD VOTING MACHINE COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

VOTING-MACHINE.

No. 890,814.

Specification of Letters Patent.

Patented June 16, 1908.

Original application filed January 29, 1898, Serial No. 668,442. Divided and this application filed December 3, 1906. Serial No. 345,995.

To all whom it may concern:

Be it known that I, WILLIAM H. STRONG, a citizen of the United States, formerly residing at Sardinia, Erie county, New York, but now of Rochester, Monroe county, New York, have invented new and useful Improvements in Voting-Machines, of which the following is a specification.

My invention relates to voting machines, and has for its object to provide a simple, compact, and efficient combination and arrangement of parts wherein the voting operations, suited to the various conditions under which ballots may be cast, can be accomplished noiselessly, in order to obtain absolute secrecy, as required by the laws governing voting operations.

A further object of the invention is to provide such a construction as to secure the direct and positive operation of the tally mechanisms by the voting-keys, without relying upon springs or other automatically actuated devices for accomplishing a complete operation of the parts.

A further object of the invention is to provide simple and efficient means for locking each voting-key as it is operated, and for controlling a number of voting-keys which may be operated in a given series, or group of series, without the return of the mechanism to its original or normal condition, whereby the operation by a voter of a greater number of voting-keys than that to which he is entitled is prevented.

A further object of the invention is to provide a simple and efficient resetting device, capable of returning the movable parts or voting-keys of the mechanism to their normal positions in readiness for the operations of a succeeding voter.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a perspective view showing the exterior of a booth embodying a voting machine constructed in accordance with my invention. Fig. 2 is a rear view of the casing of the voting mechanism, the rear wall and false back being partly broken away to show the interior mechanism. Fig. 3 is a front view of the voting-mechanism casing, as seen from the interior of the

booth. Fig. 4 is a horizontal section of the voting mechanism. Fig. 5 is a vertical sectional view of the same in the plane of one of the vertical series of movable parts or voting-keys. Fig. 6 is a detail plan view of the tally mechanisms and cooperating parts used in connection with "amendment" and "question" voting. Fig. 7 is a plan view of a series of disks constituting a tally mechanism. Fig. 8 is an edge view of the same. Fig. 9 is a detail view in perspective of one of the tilting-stops and contiguous locking-bolts. Fig. 10 is a detail plan view of a slightly modified construction of voting-key lock and resetting device. Fig. 11 is a detail view, with the contiguous portion of the casing in vertical section, of the means for communicating motion from the booth-door trip to the resetting frame.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In a suitable casing 1, having a rear door or doors 2, are arranged horizontal series of movable parts consisting of voting-keys 3, arranged to slide horizontally, and having reduced neck-portions projecting beyond the face of the casing and terminating in buttons 4, or their equivalents. The rear ends of the voting-key blades operate in suitable guide-openings 5 in a partition 6, preferably spaced from the rear wall of the casing to form a compartment, for a purpose hereinafter explained, and arranged in front of this partition are tally mechanisms, one for each movable part or voting-key, each tally mechanism consisting of disks 7, 8, 9, of any desired number, and referred to hereinafter, respectively, as units, tens, hundreds disks etc. These disks are provided with peripheral series of numerals for exposure through inspection-openings 10 in said partitions 6, whereby, when the doors in the rear wall of the casing are closed, the result of the voting is concealed, whereas by opening said doors, the result of the votes cast for different candidates may be read through the inspection-openings. Obviously, this reading of the number of votes cast is made after the closing of the polls.

In the construction illustrated, the units tally-disk is mounted upon a vertical pivot, and is provided, on its upper face, with a plurality of beveled projections 11 forming

ratchet-teeth for alternate engagement by spaced operating-teeth 12 and 13 on the contiguous voting-slide, which preferably passes over the units-disk contiguous to the plane of the ratchet-teeth, said operating-teeth depending from the slide, and hence, operating in the plane of the ratchet-teeth. In practice I prefer to separate the bases of the ratchet-teeth a sufficient distance to allow the operating-teeth of the slide to pass therebetween, as shown in the drawings. Assuming that each units-disk has ten ratchet-teeth (the tally mechanism being preferably constructed in accordance with the decimal system), the movement of the cooperating voting-slide in one direction will cause the tooth 12 to engage the beveled face of the ratchet-tooth which is in the path thereof, and advance said units-disk a distance equal to one - twentieth of a revolution. This movement of the slide carries the rear tooth 13 out of the path of the ratchet-teeth to allow the apex of the contiguous ratchet-tooth to pass the inner end of said operating-tooth 13. Hence, upon the return movement of the voting-slide, the front end of the rear tooth 13 will engage the beveled surface of another ratchet-tooth, and will advance the disk through another twentieth of a revolution, thus completing a tenth revolution, necessary to indicate that a vote has been cast by the operation of the cooperating voting-slide. In other words, each units-disk is capable of a step-by-step movement, each step consisting of an angular movement of one-half that necessary for indicating a vote, whereby when a voting-key has been operated by the occupant of the booth, he communicates to each tally mechanism only one-half of the movement which is necessary to indicate a vote, and the return of the voting keys must be accomplished in order to complete the indication. This regular step-by-step movement of each units-disk to effect the proper operation of the succeeding disks is secured by reason of having the operating teeth disposed parallel with the longitudinal plane of the key and arranged at the same side of the axis of the units-disk. This is plainly shown in Fig. 4 of the drawings and is also true of the modification illustrated in Fig. 10.

The tens-disk 8 of the tally mechanism is provided with a series of radial stop-teeth 14, and the periphery of the tens-disk is arranged in such a position with relation to the periphery of the units-disk, that the two contiguous stop-teeth which are adjacent to the periphery of the units-disk are adapted to bear terminally against the surface of said units-disk, and thus lock the tens-disk against independent rotation, while the units-disk is free to rotate. In the same way, the hundreds-disk 9 is provided with peripheral radially-projecting stop-teeth 15 to bear ter-

minally against the contiguous rounded surface of the tens-disk, as shown clearly in Fig. 7, and thus lock the hundreds-disk against rotary motion, while the tens-disk is free to rotate independently thereof. Furthermore, the units-disk is provided with a trip-lug or arm 16 adapted to engage either of a series of operating-teeth 17 which project upwardly or parallel with the axis of the tens-disk, and in the periphery of the units-disk, slightly in rear of the trip-arm 16, is arranged a socket or depression 18. Hence, when the units-disk has made one complete revolution, lacking one double step, or has completed nine double steps (a "double step" consisting of that movement of a tally-disk which is necessary to indicate that a vote has been cast), the socket or depression 18 will come into alinement with one of the stop-teeth 14 of the tens-disk, and simultaneously the trip-arm 16 will come into contact with one of the operating teeth 17 of the tens-disk. Therefore, a further movement of the units-disk will cause the trip-arm to advance the tens-disk, while the stop-tooth of the tens-disk passes into the socket or depression 18. When the units and tens-disks have made a double step in unison, in order to carry the tens of the count to the tens-disk, the succeeding stop-tooth of the tens-disk will come in contact with the continuous or unbroken surface of a units-disk, and said tens-disk will be again locked against forward movement, until the units-disk has completed a second revolution. The communication of motion from the tens-disk to the hundreds-disk is accomplished by analogous mechanism, said tens-disk being provided with a radial trip-arm 19 for engagement with either of a series of operating-teeth 20 projecting axially from the hundreds-disk. Thus, it will be seen that the communication of motion from each disk of a tally mechanism to the next of higher denomination is accomplished by the positive engagement of a trip-arm on the disk of lower denomination with an operating tooth on the contiguous disk of next higher denomination, while, in the interval between such engagement of the trip-arm with an operating-tooth, the disk of higher denomination is positively locked against rotary movement by the engagement of two contiguous stop-teeth thereon with the continuous peripheral surface of the disk of lower denomination. In the drawings, I have illustrated tally mechanisms, each of which embodies only three cooperating disks, it but will be understood that any desired number thereof may be employed to suit the conditions under and localities in which a machine is to be used.

In order to prevent "repeating" or successive operations of the same voting key, I provide each key with a locking device consist-

ing, in the construction illustrated, of a pawl 21, having a shoulder 22 for engagement with a fixed stop 23, said shoulder being preferably undercut or beveled, to prevent the accidental disengagement of the pawl from the stop. I desire, however, to avoid the use of springs, or other yielding means, for throwing the pawls into engagement with the stops (as being liable to become disarranged or put out of order), and, therefore, each pawl is provided with a trip-cam 24, for contact with the front edge of the stop 23, or other equivalent fixed object in its path, to positively throw the pawl into the engaged position required. The opposite or releasing movement of each pawl is limited by a stop 25 carried by the voting-key.

Various means may be employed for disengaging the locking pawls from the stops and returning the voting-keys to their longitudinal or normal positions after the completion of the operation of each voted. That form of resetting mechanism which I have illustrated in Figs. 4 to 6, inclusive, and 11, consists of vertical bars 26 forming parts of a resetting-frame which is mounted for forward and rearward movement in the casing, and preferably in that compartment thereof which is in rear of the exposed partition 6, said upright bars being connected by suitable cross-bars 27, and projecting forwardly through suitable slots in the partition 6, for contact with the vertical series of locking pawls. These pawls are provided with bevel or cam-faces 28, which, when the pawls are in engagement with the stops 23, are located in the paths of the forward movement of the bars 26, whereby, when the resetting-frame is moved forwardly, the front edges of the bars 26 will first engage the bevel or cam-faces 28, to draw the locking pawls out of engagement with the stops 23, and will then bear against the pawls to push the voting-keys forwardly to the positions indicated clearly in Fig. 4. The means which I have illustrated in the drawings for operating this resetting-frame include guides 29 having pins 30 engaging slots 31 in the bars 26, yielding returning devices, such as weight-cords 31^a, (see Figs. 4 and 5), and an advancing or operating-cord or connection 32, adapted to be actuated by trip mechanism, fully explained hereinafter. The straining of the operating-cord 32 draws the resetting-frame forward to return the movable parts of the voting mechanism to their operative positions, and the release of said operating-cord allows the counterbalancing devices to return said frame to its normal position, as indicated in Fig. 4.

In the modified construction illustrated in Fig. 10, the locking-pawls 21^a are adapted to cooperate with a fixed stop 23^a, as hereinbefore described in connection with the preferred construction, but the resetting-frame

consists of bars or rods 26^a arranged respectively parallel with the horizontal series of voting-keys and adapted, when moved forward, as indicated by the arrows in Fig. 10, to engage trip-arms 28^a on the pawls, and thus (by swinging the trip-arms forward until checked by a stop 28^b) disengage the pawls from the stops 23^a and return the voting-keys.

Parallel with each horizontal series of voting-keys is a series of key-locking bolts 33, one bolt being arranged between each two contiguous voting-keys of a horizontal series; and interposed between the contiguous extremities of adjacent locking-bolts is a spreader 34 of wedge or analogous shape, for insertion between said contiguous extremities of the locking-bolts to separate the same. In general-ticket voting the locking-bolts in each horizontal series are of such lengths that there is space in each series for the advance of only one spreader, whereby when the voting-keys assigned to the candidates placed in the field by each political party are arranged in vertical series, as indicated in Figs 2 and 3, the corresponding candidates of the different parties being arranged in the same horizontal series, said relative arrangement of the locking-bolts and spreaders prevent a voter from casting more than one vote for a candidate for any particular office. For instance, if he votes for the candidate of the Republican party for governor, all of the voting-keys in the same horizontal series, and representing the several candidates, for governor, of the other political parties, are locked. These spreaders are carried and actuated, respectively, by the voting-keys, and the contiguous extremities of the locking-bolts are held in their normal alined positions, against vertical displacement, by the contact of the voting-keys with the upper surfaces of the locking-bolts, as will be seen by reference to Fig. 5. In the construction illustrated, the spreaders are provided with upwardly-extending lugs or slides 35, which engage guides or slots 36, formed transversely in the voting-keys, said keys being provided with suitable lateral guide extensions 37 for this purpose. Therefore, when the voting-key is pushed to indicate a vote, the spreader which is connected therewith is carried between the contiguous extremities of the adjacent locking bolts and the locking-bolts in that horizontal series are adjusted to exclude the spreader belonging to any other voting-key, as hereinbefore explained, and the slotted connection between each spreader and its voting-key, allows that lateral movement of the spreader with relation to its voting-key, which will permit the required adjustment of the locking-bolts without imparting lateral pressure to the voting-keys. Arranged at the ends of the horizontal or

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longitudinal series of locking-bolts are stops 38, against which the outer extremities of the terminal locking-bolts abut, but for the purpose of class voting these stops are pivotally mounted for tilting movement, the same being adapted to be locked in fixed positions, during general ticket-voting, by means of locking-pins 39, of which the heads are accessible from the compartment in rear of the inspection-partition 6, as shown in Fig. 4. These locking-pins are fitted in suitable guides 40 in the casing, and are adapted to engage openings or sockets 41 in the tilting-stops. (See Fig. 9). In group-voting, as for presidential electors, constables, etc., it is necessary to provide means whereby a voter may cast ballots for a given number of candidates, irrespective of party, and hence it is necessary to provide means whereby voting-keys in the same horizontal series may be operated. If, for example, a voter is entitled to cast votes for five electors, or other officers, a sufficient number of the tilting-stops should be released, by disengaging the locking-pins 39 therefrom, to connect five horizontal or longitudinal series of locking-bolts to form a single group. For instance, referring to Fig. 2, it will be necessary, in order to connect five horizontal series of locking-bolts in a group, to release the tilting-stop *a* and *b* at one end of the series, and *c* and *d* at the opposite end of the series, leaving *e* and *f* locked. Now, as there is only space in each horizontal series of locking-bolts to receive one spreader (when the stops are fixed), it is obvious that by releasing the stops *a*, *b*, *c* and *d*, there is sufficient space in the five connected series of locking-bolts to receive five spreaders, and in operation the votes may be distributed, as desired; that is, any five voting-keys comprised in the five connected series, may be operated. But when the fifth voting-key has been actuated, all of the space allowed for the voter will have been filled, and hence, all of the remaining voting-keys in the said connected series will be locked against repression. In the same way, any desired number of horizontal series of voting-devices may be connected to form a group, to suit the number of votes to which each occupant of the booth is entitled, or, in other words, to suit the number of representatives or candidates to be elected from that district, ward, or other electoral section. No further description of this interlocking device is needed herein, as the subject matter thereof is claimed in the parent application of which this is a division.

On the rear or exposed face of the casing which incloses the voting mechanism is placed a guide or instruction sheet, shown in Fig. 2, representing the plan of the push-buttons and the offices for which candidates are nominated by the several parties, whereby a voter, before entering the booth, may be

instructed by a suitable inspector or other officer of the election, as to how to operate the push-buttons in order to produce the result which said voter may desire. After receiving such instructions, the voter is in possession of sufficient information to enable him to vote intelligently and without asking specific questions after entering the booth, or after having commenced the voting operation. The face or front surface of the casing, which is exposed within the booth, corresponds exactly, in the plan of its push-buttons, names, etc., with the instruction plat upon the exposed rear side of the casing, the keys being numbered consecutively from top to bottom to serve as a guide for the voter. At the right of the machine below the questions and amendments column is an irregular-ballot receptacle 42 having a ballot-receiving slot 43, and arranged contiguous to said box is a vertical column or series of irregular-voting keys 44. For each irregular vote which an occupant of the booth desires to deposit in the receptacle 42, he must operate a push-button in the irregular voting-column corresponding with the office for which said irregular vote is to be cast, thereby locking out the remaining voting-keys in the same horizontal series. Upon pressing a key in the irregular-voting column, a ballot, suitable for casting a vote, for that officer, such as governor, lieutenant-governor, mayor, etc., will be furnished to the voter by the inspectors or judges of the election, whereupon, without leaving the booth, the desired non-nominated name, selected by the voter, may be written upon the ballot, and the latter deposited in the receptacle.

The construction and operation of the questions and amendments voting devices are identical with those of the voting mechanisms hereinbefore described, with the exception that the relative positions of the tally mechanisms for "yes" and "no" keys or slides are reversed, to dispose said keys or slides at a greater interval, as will be seen by reference to Figs. 2, 3 and 6. Also, as shown in Fig. 2, locking-bolts 33^a are used in connection with the questions and amendments voting-keys, with the movable or pivotal stops 38^a arranged in the paths of the outermost members of the bolts, as hereinbefore described.

In order to insure the strict secrecy desired and required in the casting of the votes, I have constructed a machine wherein the operation of each voting-key or movable member is independent of that of every other key or movable member, whereby each vote must be cast separately, and in the path of each voting-key button, as will be seen by reference to Figs. 4 and 5, I arrange cushions 45, of rubber, or its equivalent, to receive the impact of said button, when a key is repressed, and thus absorb the jar. Furthermore, the

use of springs is avoided, in order to dispense with any snap or rebound in the movement of the parts. When a voting-key is repressed, the trip 24 of its locking-pawl comes in contact with the fixed stop arranged in the path thereof; and the pawl is thereby thrown laterally into position for engagement with the stop 23, said operation being accomplished noiselessly. The trip 24 is arranged at one side of a line parallel with the direction of movement of the pawl taken through the pivot thereof, or, in other words, is arranged eccentrically with relation to the pivot of the pawl, and hence when said trip comes in contact with a fixed object it is obvious that the portion of the pawl in advance thereof receives a lateral movement, which causes its engagement with the rear end of the stop 23. Thus, all of the voting operations of the machine may be accomplished without producing any distinctive sound which may be detected from the outside of the booth, or interpreted to indicate to persons in the vicinity, what votes are being cast by the occupant of the booth.

The booth and casing of the machine may be supported upon suitable standards and if desired, adjustable vertically thereon to suit persons of different heights. The construction of booth which I prefer embodies side walls 60 and 61, respectively hinged to the frame of the casing 1, and an end wall 62 which is hinged at one edge to the wall 60, said walls 61 and 60 being preferably provided respectively, with inwardly-opening entrance and exit doors 63 and 64; and in the path of the latter is arranged a trip-lever 65, of bell-crank or analogous construction, connected with the resetting cord 32. When the exit door 64 is opened to allow the occupant of the booth to pass out, it engages the contiguous arm of the trip-lever and draws upon the cord 32 to advance the resetting-frame, and thus return the voting devices to their normal or operative positions. Also arranged in connection with the booth is a speaking-tube 66, of any ordinary construction, see Fig. 1, through which communication may be had by a judge or inspector of the election with the occupant of the booth, to give instructions or answer inquiries, in connection with the casting of irregular votes, etc.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

This application is a division of my application, Serial No. 668,442, filed January 29, 1898, and such of the subject matter herein shown and described which is not claimed is claimed in said patent application.

I claim as my invention:

1. In a voting machine, the combination

with a casing having at its rear side a normally-closed compartment separated from the body-portion of the interior of the casing by an inspection partition provided with inspection-openings, tally mechanisms housed in front of said partition and having indicating disks arranged respectively for exposure through said inspection-openings, voting-keys operatively connected respectively with the tally mechanisms, interlocking devices including series of bolts for actuation by the voting-keys, tilting stops arranged at the extremities of the series of bolts for communicating motion from those of one series to those of another, and locking-pins accessible in rear of said partition, for engaging sockets in the stops to secure them in fixed positions, substantially as specified.

2. In a voting machine, the casing having at its rear side a partition, tally mechanisms housed in front of said partition, voting keys operatively connected respectively with the tally mechanisms, locking bolts cooperating with the voting-keys, tilting stops arranged at the extremities of the series of bolts for communicating motion from those of one series to those of another, and locking pins accessible in rear of said partition for engaging sockets in said stops to secure them in fixed positions, substantially as described.

3. In a voting machine, the combination with tally mechanisms, of voting-keys operatively connected with the tally mechanisms, fixed stops, and locking-pawls carried by the voting keys for engagement with said stops, and provided with trips in the paths of which said stops are disposed, to move the pawls into locking engagement with the stops.

4. In a voting machine, the combination with tally mechanisms, of voting-keys operatively connected with the tally mechanisms, fixed stops, and locking-pawls carried respectively by the voting-keys for engagement with said fixed stops, and provided contiguous to their fulcrums with trips for engaging the stops to throw the pawls into engagement therewith, substantially as specified.

5. In a voting machine, the combination with tally mechanisms, and voting-keys operatively connected therewith, of fixed stops, locking pawls carried by the voting-keys having shoulders for engagement with said stops, and provided with trips for engaging the stops to throw the shoulders thereof into engagement with the stops, and a trip-frame for contact with the pawls to disengage them from the stops, substantially as specified.

6. In a voting machine, the combination with tally mechanisms, and voting-keys operatively connected therewith, of locking-pawls carried by the voting-keys, fixed stops for engagement by the locking-pawls, said pawls being provided with cam-faced trips,

and a resetting frame having bars for engagement with said cam-faced trips to disengage the pawls from the stops, substantially as specified.

- 5 7. In a voting machine, the combination with tally mechanisms, of voting - keys mounted for horizontal sliding movement, pivotal shouldered locking pawls mounted
10 respectively upon the voting-keys for horizontal swinging movement and provided with trips for engaging fixed objects to swing the pawls into locking position, and stops for engagement by the shoulders of the pawls, substantially as specified.
- 15 8. In a voting machine, the combination with the tally mechanisms and the independent voting-keys for operating the same, of locking devices for the voting-keys, a resetting frame having bars for engagement
20 with said locking devices and adapted to communicate motion therethrough to the voting-keys, means for returning the resetting frame to its normal position, a trip lever operatively connected with the resetting frame and means for actuating the
25 latter.
9. In a voting machine, the combination with tally mechanisms, and voting-keys operatively connected therewith, of locking
30 devices for the voting-keys, including pivotal pawls mounted upon the voting-keys for engagement with fixed stops, a resetting frame

having bars for engagement with said pawls and adapted to communicate motion there-
35 through to the voting-keys, yielding counterbalancing devices for returning the resetting frame to its normal position, a trip-lever operatively connected with the resetting-frame and means for actuating the latter.

10. In a voting machine the combination 40 with tally mechanisms, of voting keys for cooperating with the tally mechanisms, locking devices for holding the keys when operated and positively actuated to locking position by the movement of the keys to voted position and movable means for positively actuating the locking devices to release the
45 keys and positively return the keys to normal position.

11. In a voting machine the combination 50 with tally mechanism, of voting keys for cooperating with the tally mechanisms, locking devices for holding the keys when operated and positively actuated to locking position by the movement of the keys to voted position and means coöperating with the locking
55 devices and keys to positively disengage the locking devices and positively return the keys to normal position by a continuous movement in one direction.

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Witnesses:

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