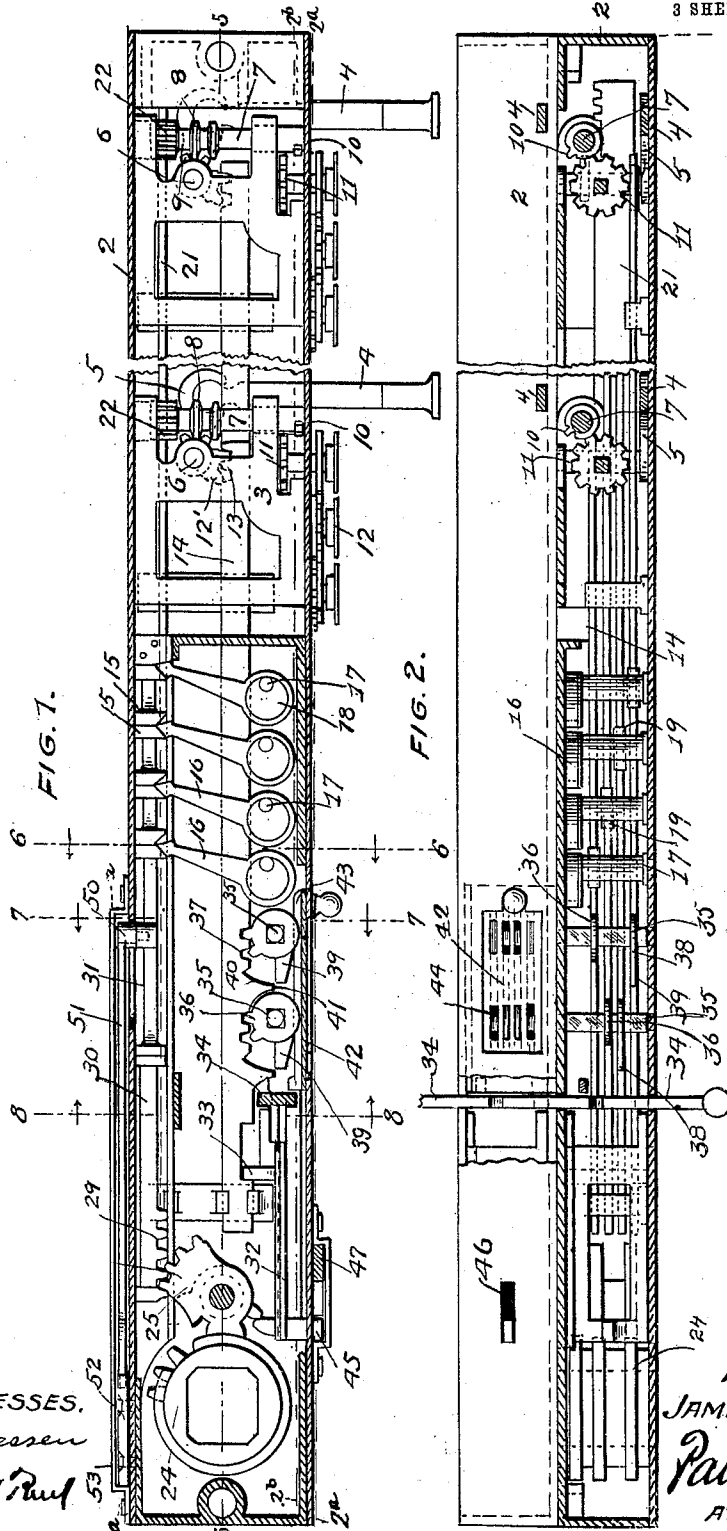


995,332.

J. H. DEAN.
VOTING MACHINE.
APPLICATION FILED NOV. 6, 1899.

Patented June 13, 1911.

3 SHEETS-SHEET 1.



WITNESSES.

J. Jensen
Richard Paul

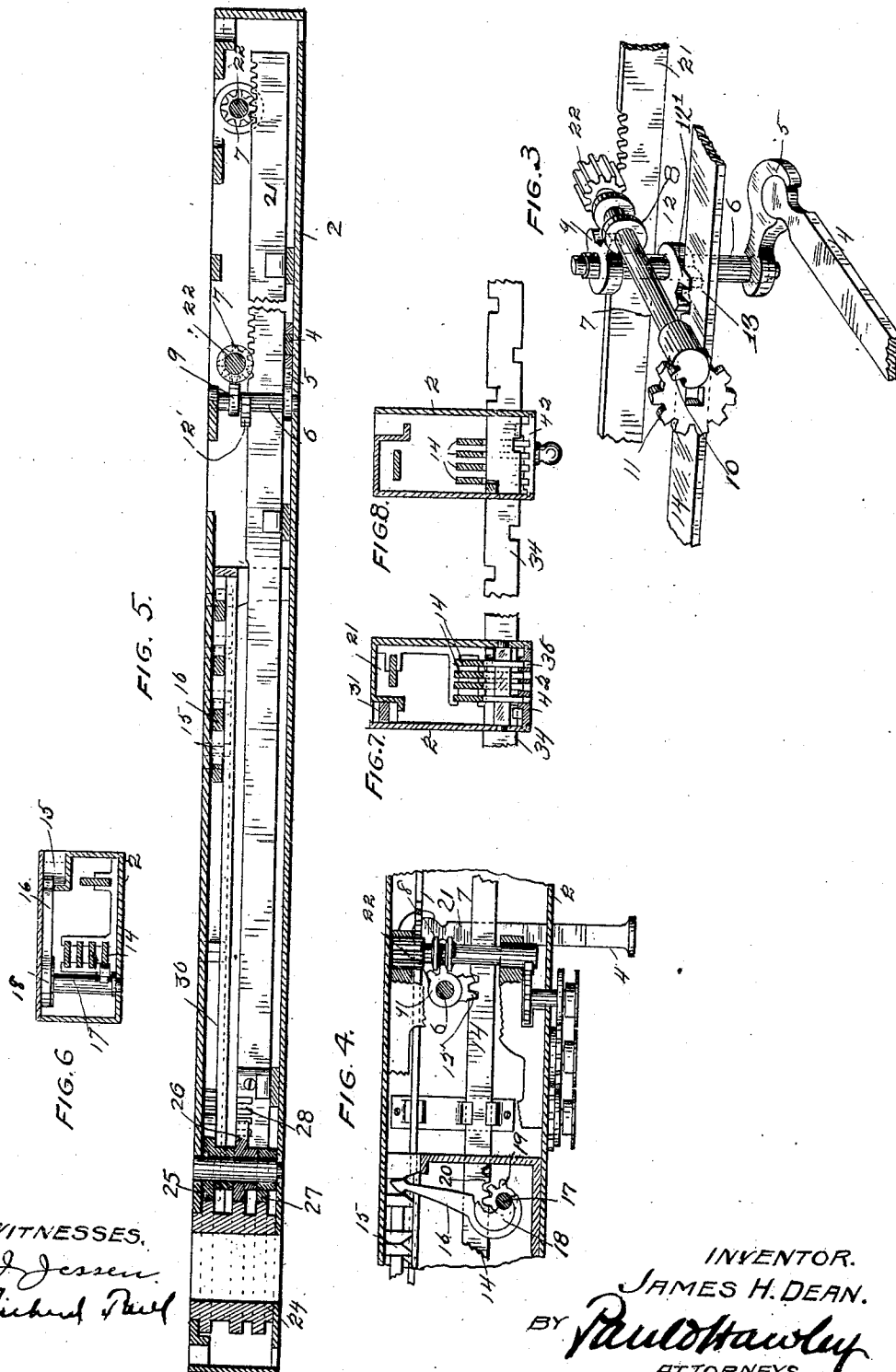
INVENTOR.
JAMES H. DEAN.
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3 SHEETS-SHEET 2.



WITNESSES.
J. J. J.
Richard Paul

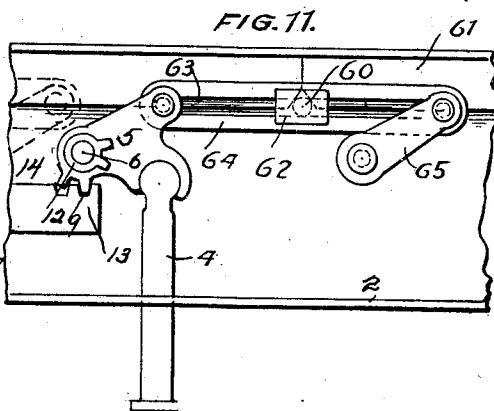
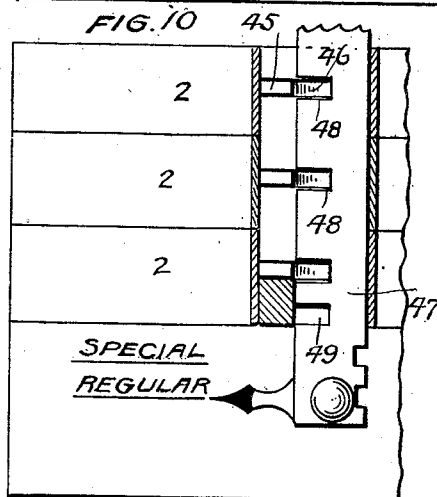
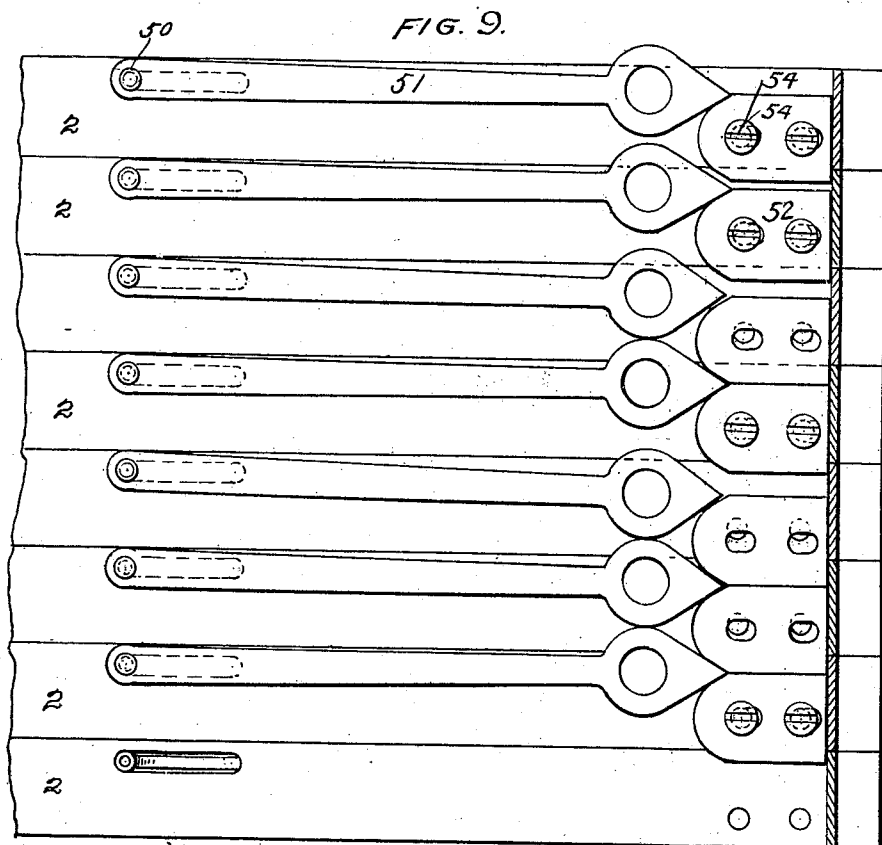
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3 SHEETS-SHEET 3.



WITNESSES.
J. Jessen.
Richard Paul.

INVENTOR.
JAMES H. DEAN.
BY Paul & Hawley
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UNITED STATES PATENT OFFICE.

JAMES H. DEAN, OF ST. PAUL, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
EMPIRE VOTING MACHINE COMPANY, A CORPORATION OF NEW YORK.

VOTING-MACHINE.

995,332.

Specification of Letters Patent. Patented June 13, 1911.

Application filed November 6, 1899. Serial No. 735,932.

To all whom it may concern:

Be it known that I, JAMES H. DEAN, of the city of St. Paul, county of Ramsey, State of Minnesota, have invented certain new and
5 useful Improvements in Voting-Machines, of which the following is a specification.

This invention relates to voting and ballot machines to automatically count or register the votes of voters who are permitted access
10 thereto.

The objects of this invention are to simplify and cheapen the construction of voting machines, to reduce the size and weight thereof, particularly as compared with that
15 type of machine shown and described in Letters Patent heretofore granted to me.

A further object of the invention is to provide a voting machine that will be positive, accurate and reliable in each and every operation, and will prevent ignorant, mistaken or dishonest voting or false manipulation of the machine.

Another object of the invention is to wholly dispense with springs in the construction of voting machines.

Another object of the invention is to provide a voting machine made up of units or sections, each of which is complete in itself and may be used alone or with other like
30 whole parts or units.

Another object of the invention is to so construct the counting mechanism as to prevent the direct operation thereof by the voter, leaving such operation to the machine; and a further object is to provide a machine having voting keys or indicators that may be moved into or out of operative position, or in other words, enable the voter to either indicate or retract a vote for any candidate, so that he may correct or change his ballot at will.

Another object of the invention is to so arrange and associate all of the mechanisms of any given tier or row in the machine, that
45 the same may be readily identified, thereby avoiding many errors in assembling the parts or mistakes in altering the same.

Another object of the invention is to provide means particularly adapting the machine to multi-candidate voting by tying or
50 holding the limiting parts of the limiting

mechanism together, whereby the relations of said parts are made constant regardless to the degree of movement imparted to the mechanism by the operation of a number of
55 keys in a multi-candidate vote.

Another object of the invention is to provide a machine having rotary counters and oscillatory actuators, the latter having either reciprocating or crank-like keys or
60 indicators, that are moved by the voter in casting his ballot.

With these ends in view my invention consists in a voting machine of the construction and combinations of parts all as
65 hereinafter described and particularly pointed out in the claims; and the invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in
70 which;

Figure 1 is a plan view of a unit section embodying my invention. Fig. 2 is a vertical sectional view of two adjoining units or sections, the section of the upper unit being
75 taken on the line 2^a—2^a of Fig. 1, and the section of the lower unit being on the line 2^b—2^b of Fig. 1. Fig. 3 is a sectional perspective view of the counter actuator and the means for setting and operating the
80 same, and also shows the locking bar. Fig. 4 is a sectional plan view of the actuator and the counter mechanism, showing the actuator set for operation and illustrating the connection between the voting key and
85 the limiting mechanism. Fig. 5 is a longitudinal section on the line 5—5 of Fig. 1. Fig. 6 is a vertical cross-section on the line 6—6 of Fig. 1. Fig. 7 is a cross-section on the line 7—7 of Fig. 1. Fig. 8 is a cross-
90 section on the line 8—8 of Fig. 1 with the grouping mechanism at the back omitted. Fig. 9 is a rear sectional elevation of a series of unit sections on the line *a*—*a* of Fig. 1, and showing the grouping mechanism. Fig.
95 10 is a detail illustrating the means for adjusting the machine to either regular or special voting. Fig. 11 illustrates a modification in the means for connecting or holding the key-operated separator and the limiting blocks in constant relation.

The frame of the machine may be a struc-

ture of sufficient size to contain all of the voting and other mechanisms for a large number of offices, but I prefer to and do provide each office row of mechanisms with a separate and independent frame, constituting with such mechanisms a complete machine unit. This frame 2 is preferably in the form of a channel, with closed ends and contains the auxiliary frames for the mechanisms within it. The frames 2 rest one upon or against the other in succession and are tied together by bolts or other suitable means, and also have interlocking or interengaging parts or hooks to prevent either lateral or longitudinal movement between the units or sections. The units are all alike with the exception of the top and bottom or end sections, one of which may be considered the base and contains the operating devices that are common to all of the units. The number of counting mechanisms may be varied. The unit shown has four, two being broken away.

4 is the key which operates upon the crank 5 to turn the shaft 6.

7 is the actuator, provided with the circumferential teeth 8 that engage with the teeth 9 on the shaft 6, so that as the key is pushed in the actuator will be moved back to position its tooth 10 for operation upon the unit-wheel gear 11 of the counter 12. The shaft 6 also has teeth 12' that mesh with the short rack 13 upon the bar 14 that extends to the end of the sections. One of these bars is provided for each counting mechanism, and the same vary in length according to the distance of respective counters from the operating end of the unit.

15—15 represent the wedge-blocks of the limiting mechanism in and belonging to the unit, and which mechanism is completed by the separators 16—16, one for each bar 14, and operated thereby. When a key is pushed in the corresponding separator is forced between the wedge-blocks 15. The series of wedge-blocks has a determined movement, that is, a stop is provided to prevent more than a given number of steps thereof and the position of this stop determines the number of keys that may be pushed in by a voter in one unit. Ordinarily but one step is allowed, but where several units are assembled in a multi-candidate group as many steps are allowed as there are units in said group. Said stops, or in other words the grouping mechanism, will be described hereinafter. The coupling between the separator 16 and respective bar 14 (see Fig. 4) comprises a shaft 17, having a cam 18 upon which the separator is mounted and by which it is differentially held with relation to the wedge-blocks and by which it may be forced between said blocks. The shaft 17 is joined to the bar 14 by the gear

19 and the rack 20 on the bar 14. None of the connections interposed between the key and the limiting mechanism prevent the withdrawal of the key after it has been pushed in by a voter; hence the key and the actuator 7 may be retracted to change or take back a vote previously indicated, and this movement will restore the separator associated with the key.

For the operation of the actuators I provide a bar, preferably a rack bar 21, extending longitudinally of the row of counters and preferably in constant engagement with the actuators, that is, each actuator is provided with a pinion 22, meshing with the rack on the bar 21 and long enough to be in engagement therewith whether the actuator is in its forward or its set position; obviously as the actuator cannot at any time be operated directly by the voter the same might be withdrawn from engagement with the operating bar instead of being left in engagement therewith when in the inoperative position, but I prefer the more positive construction. For the operation of the rack-bar 21 and for thereafter returning the bars 14, I provide an operating or motor part 24 in each unit, said part being preferably in the form of an intermittent gear, and associated with the intermittent gears 25, 26 and 27. The gear 26 has regular teeth engaging with the rack 28 upon the end of the bar 21. (See Fig. 5). The gear 25 engages with the rack 29 upon a block 30, which with the block 31 forms a continuation of the system of wedge-blocks. The latter are locked and unlocked by the operation of the gear 25. This operation is preferred but is not necessary, except as an additional lock upon the machine. Both the bar 21 and the bars 14 serve also as locking bars, inasmuch as the same are operated through the intermittent gears and the motor gear 24, the locking surfaces of which prevent independent movement of the parts. The bars 14 are returned, that is drawn toward the motor gear 24, by the block 32, to be engaged by the gear 27 and having a lug 33 to engage with shoulders upon such bars 14 as have been drawn back by their keys, said bars are also locked in this way when the parts are in the position shown in Fig. 1, and may be permanently locked by means of the bar 34 that extends up through all of the units, being fastened in the base and operable only by the clerk or other city official.

The portions of the bars 14 between the separators 16 and the motor gears, are utilized for the mechanisms or interlocking devices by which, after one bar 14 has been moved, another is locked against movement, as required in multi-candidate groups when a candidate is indorsed by two or more po-

litical parties with his name appearing more than once upon the machine. By means of half as many interlocking devices as there are bars I am able to make any required number of "indorsing" arrangements, and if desired these devices may be coupled together vertically through adjoining units, but as indorsements can almost always be arranged in the same office row this is not necessary. These interlocking devices comprise the square shaft 35, having round ends provided with suitable bearings so that the shaft may rotate. On each shaft is a small gear-wheel 36, slidable up and down thereon to engage with the rack-teeth 37 in any of the bars 14. Each shaft also bears a disk 38, provided with an arm 39 and also slidable upon the shaft and adapted to be moved into position to intercept and lock any bar 14 except the one with which the gear on the same shaft 36 engages. The movement of one bar 14 will rotate the square shaft and move the arm 39 into engagement with the curved shoulder 40 upon the other bar 14. On the other hand, if the lower bar is first operated the end 41 of the shoulder 40 thereon will be drawn back into engagement with the side of the arm 39, not moving the upper bar 14 but locking the same against movement by making it impossible to turn the square shaft. All or any one of the slidable parts upon the square shafts of the indorsing or interlocking mechanism may be moved above or dropped below all of the bars 14, or any one may be thus removed from the path of the bars. All of the bars may be thus interlocked or all but one, or so on, to the simple interlocking of two, where a candidate is indorsed by but one other political party.

Instead of having set screws or like devices for fastening the gears 36 and the arm disks 38 upon their square shafts, I prefer to use a slide 42, closing a hole in the front of the unit frame normally, locked by the bar 34 and provided with longitudinal ribs 43, between which the parts 36 and 38 may be placed and held. Furthermore the slide 42 is provided with slots 44, through which the inner interlocking parts may be seen so that the attendant or a voter may tell at a glance whether certain counting mechanisms are interlocked or "indorsed" properly. This indicator is a valuable feature of my invention. It will be noted that each block 32 is provided with a lug 45 extending through the front of the case, and movable in a slot 46 therein. (See Figs. 1, 2 and 10).

47 is the special class bar, provided with a series of notches 48, which are equidistant. When the bar is in one position these notches register with the slots 46 and permit the unlocking of the unit mechanism. When the bar is in the other position solid

parts thereof are interposed and the lugs 45 will be locked, preventing the operation of the unit mechanisms. The bar is provided with one or more notches 49, one for each unit or office row in which the special class voter is entitled to register votes, and when the bar is moved only the units for which notches 49 are provided will be open for use.

The grouping mechanism will be understood by reference to Figs. 1 and 9. As therein shown the block 31 of each unit is provided with a stud 50, extending through a slot in the back of the frame and to which the long arrow or spreader 51 is attached. 52 are the grouping blocks, which, with the arrows, are mounted upon the backs of the sections and concealed by the cover plate or plates 53. One or more screws 54 are provided for each plate and there are holes in the unit frames to receive them. The boundaries of the single and multi-candidate groups are determined by fastening the blocks 52 by their screws. A loose block permits communication of movement from the limiting mechanism of one unit to that of the adjoining unit, as required for multicandidate voting. When adjoining blocks 52 are fastened there is sufficient space between them to allow the arrow to move one step only. This is the case where but one candidate is to be elected to an office. When the middle blocks 52 are left loose, as in multicandidate grouping, any spreader 51 is free to advance step by step between blocks 52 adjacent, even to the limit. Thus, in the case of a group of four, for example, the counters appropriate to the full quota chosen by the particular voter, might chance to belong to the same machine unit. The local limiting mechanism common to the unit, would advance its spreader 51 the distance of one step between blocks, simultaneously with the advance of each one of the four individual keys selected. Should the voter retract any one of the keys in favor of a substitute, located at some other unit, the advance of the newly chosen key must result in a responsive shift of its local limiting mechanism followed at once by a shift of the corresponding spreader 51. As the latter makes its way between adjacent blocks 52, the cam-like bearing, serves at the companion spreader to force it back or out again, one step from the extreme position it had before occupied. The spreader has, so far, been retracted and may be fully withdrawn, by successive steps, should the voter cancel his original keys, in favor of other four substitutes. The voting machine usually comprises units to the number of the offices to be filled in the largest elections held in the locality for which the machine is purchased. At other elections only part of the units are used, and in order that the units

not used may be locked out I prefer to provide the blocks 52 with the slots shown, so that by moving them toward the arrows and then fastening the blocks by means of the screws the corresponding units may be locked through the locking of the limiting mechanisms, which through the separators lock the keys. This prevents confusion or the wilful waste of the time by the voter in operating useless counters.

An important part of this invention is the differential or compensating connection between the key and the limiting mechanism, the same being particularly important in all machines wherein the limiting devices are arranged to move longitudinally with respect to the office rows. For it is evident that if the separators are maintained in constant relation to the keys, which are stationary, except for the voting movements, an extended movement of the wedge-blocks might so far separate or remove the blocks from one or more separators as to permit voting movements of their keys without affecting the wedge-blocks and hence permit the voter to deposit one or more votes than he is entitled to cast. I have shown a number of ways of maintaining constant relations between the separators and the blocks or equivalent devices. This portion of my invention may be defined as follows; means for holding the separators and the blocks together for common movement, whether in separated relations or not, while leaving or keeping the separators within the control of the keys, that is, movable therewith or thereby to project the blocks or retract the separator. The separator may be a pin 60, and the limiting blocks 61 may be arranged back of the counters in the frame, as shown in Fig. 11. The pin is on a block 62, that is slidable in the slot 63 of the transverse guide or parallel bar 64. This bar is pivoted to the crank 5 and its other end is held by parallel links 65, so that when the key 4 is pushed in the pin will be forced between the blocks and will thereafter be movable with the blocks, being at all times in firm engagement therewith without the possibility of lost motion between the same. The sliding of the pin by movement of the blocks before the separator is between the blocks compensates for such movement and keeps the pin in contact ready to be entered.

It is obvious, as in the case of the keys and separators, the actuators may be more closely associated with the keys. Further, I may make the keys in one part, that is, the crank 5 and the key portion 4 may be rigidly connected or be made integral. It is not necessary that the movement of the key be confined to simple reciprocation. It is obvious that the key may be attached directly to the shaft 6 by a slight change in

the position thereof and the substitution of a worm for the gear.

Other evident modifications of my invention will readily suggest themselves to one skilled in the art, and I therefore do not confine the same to the specific construction herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination with the series of machine units, each comprising a plurality of voting mechanisms separately devoted to individual candidates for the same office and a limiting mechanism common thereto but disconnected and separate for respective units, of the set of retractile grouping devices located intermediate the unit limiting mechanisms, and the stops, co-acting therewith to variably control the play of said grouping devices, as in multicandidate voting, substantially as described.

2. The combination with the series of machine units, each comprising a plurality of retractile indicator keys with counter mechanisms separately devoted to individual candidates for the same office and a limiting mechanism common thereto but disconnected and separate for respective units, of the set of retractile grouping devices located intermediate the unit limiting mechanisms and the stops co-acting therewith to variably control the plan of said grouping devices, as in multicandidate voting, substantially as described.

3. The combination with the series of machine units, each comprising a plurality of voting mechanisms separately devoted to individual candidates for the same office and a limiting mechanism common thereto but disconnected and separate for respective units, of the set of retractile grouping spreaders each pivoted upon a member of the unit limiting mechanism next adjacent and the adjustable stop-blocks co-acting therewith to variably control the play of said grouping spreaders, as in multicandidate voting, substantially as described.

4. The combination with the series of machine units each comprising a plurality of counter mechanisms separately devoted to individual candidates for the same office, of a limiting mechanism common to each unit and formed in separable sections for mutual interplay, the retractile push keys having transverse guides movable freely back and forth therewith and the spreaders shifting along said guides to co-act with adjacent sections of such limiting mechanism, substantially as described.

5. A multi-candidate group of voting mechanisms, in combination with the usual limiting mechanism therefor, a further interlocking mechanism preventing more than

one vote for an indorsed candidate whose name appears twice in connection with said group, and an indicator showing the voter that the interlocking mechanism is in position, substantially as described.

6. A multi-candidate group of voting mechanisms, in combination with the usual limiting mechanism therefor, a further interlocking mechanism preventing more than one vote for an indorsed candidate whose name appears twice in connection with said group, an indicator showing the voter that the interlocking mechanism is in position, and a slide whereby the interlocking mechanism is secured and may be released, substantially as described.

7. In a voting machine, the combination, with the row of keys and counters and a limiting mechanism therefor, the separators and the separator bars for operation by said keys, interlocking means adjustable with relation to said bars and operable therewith to prevent more than one vote for an indorsed candidate, and means removed from the control of the voter or election officials locking but showing the interlocking mechanism after its adjustment, substantially as described.

8. The combination, with a frame, of a plurality of rows of voting mechanisms having bars extending to the ends thereof, a limiting mechanism, and a locking bar for each unit to engage and lock said bars to prevent the operation of the voting mechanisms, substantially as described.

9. In a voting machine, the combination, of a counter, with an oscillating actuator therefor, a crank for movement by a voter to indicate his ballot, said actuator being dependent upon said crank and operable upon the counter only when said crank is moved by the voter, substantially as described.

10. In a voting machine, the combination, with a counter, an oscillating actuator therefor, a frame holding said actuator for longitudinal movement, a key to move the actuator, and a bell-crank-rotary connection between said key and actuator permitting the oscillation of said actuator without moving said key, substantially as described.

11. In a voting machine, the combination, of a series of counters, with a series of oscillating actuators therefor, a like series of cranks for movement by a voter to indicate his vote and whereon said actuators are dependent for the operation of their counters, and means for simultaneously moving the actuators and counters for which cranks have been set, substantially as described.

12. In a voting machine, the combination, of a series of counters, with a series of oscillating actuators therefor, a like series of cranks for movement by a voter to indicate his vote, and whereon said actuators are de-

pendent for the operation of their counters, means for simultaneously moving the actuators and counters for which cranks have been set, and means for returning or resetting said crank, substantially as described.

13. In a voting machine, the combination, of a series of counters, with a series of oscillating actuators therefor, a like series of cranks for movement in both directions by a voter to indicate or retract his vote, and whereon said actuators are dependent for the operation of their counters, and means for simultaneously moving the actuators and counters for which cranks have been set, substantially as described.

14. The combination in a voting machine of a key, a crank connected to said key and operated thereby, a shaft on which said crank is rigidly mounted, a mutilated gear on said shaft, a rack bar engaging with said gear, an eccentric shaft having a gear thereon, said gear engaging with said rack bar, a wedge mounted on said eccentric, said wedge engaging with interlocking blocks, and a progressively movable spear head mounted on one of said interlocking blocks.

15. The combination in a voting machine of a series of interlocking blocks normally in contact, interlocking wedges positioned to separate said blocks, eccentrics to drive said interlocking wedges forward between said blocks, and rack bars to operate said eccentric.

16. The combination in a voting machine of a series of interlocking blocks normally in contact, interlocking wedges positioned to separate said blocks, eccentrics to drive said interlocking wedges forward between said blocks, said eccentrics being mounted on a series of parallel shafts, and means for operating said eccentric shafts.

17. The combination in a voting machine of a series of interlocking blocks normally in contact, interlocking wedges capable of separating said blocks, eccentrics to drive said interlocking wedges to separate said blocks, said eccentrics being mounted on a series of parallel shafts, means engaging said eccentric shafts for operating them, said means consisting of a series of parallel bars.

18. The combination in a voting machine of a grouping device comprising a series of progressively movable spear heads, a series of interlocking blocks interlocking with said spear heads, means for fastening each of said blocks in a fixed position for single candidate voting, said blocks being capable of being released for multi-candidate voting, said released blocks being capable of movement in any direction in a plane, being held in position by the spear heads and the surrounding casing and the end blocks of the series.

19. The combination in a voting machine of keys, an interlocking mechanism therefor,

said interlocking mechanism comprising interlocking wedges and interlocking blocks, said wedges moving in a direction substantially parallel to the movement of the keys,
5 all of said keys being carried in one compartment and the wedges therefor being carried in an adjacent compartment beyond the end of the line of keys and in line therewith.

In testimony whereof, I have hereunto set my hand this 3rd day of November, 1899, at 10 Minneapolis, Minn.

JAMES H. DEAN.

In presence of—

C. G. HAWLEY,
RICHARD PAUL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
