

S. LOE.
VOTING MACHINE.

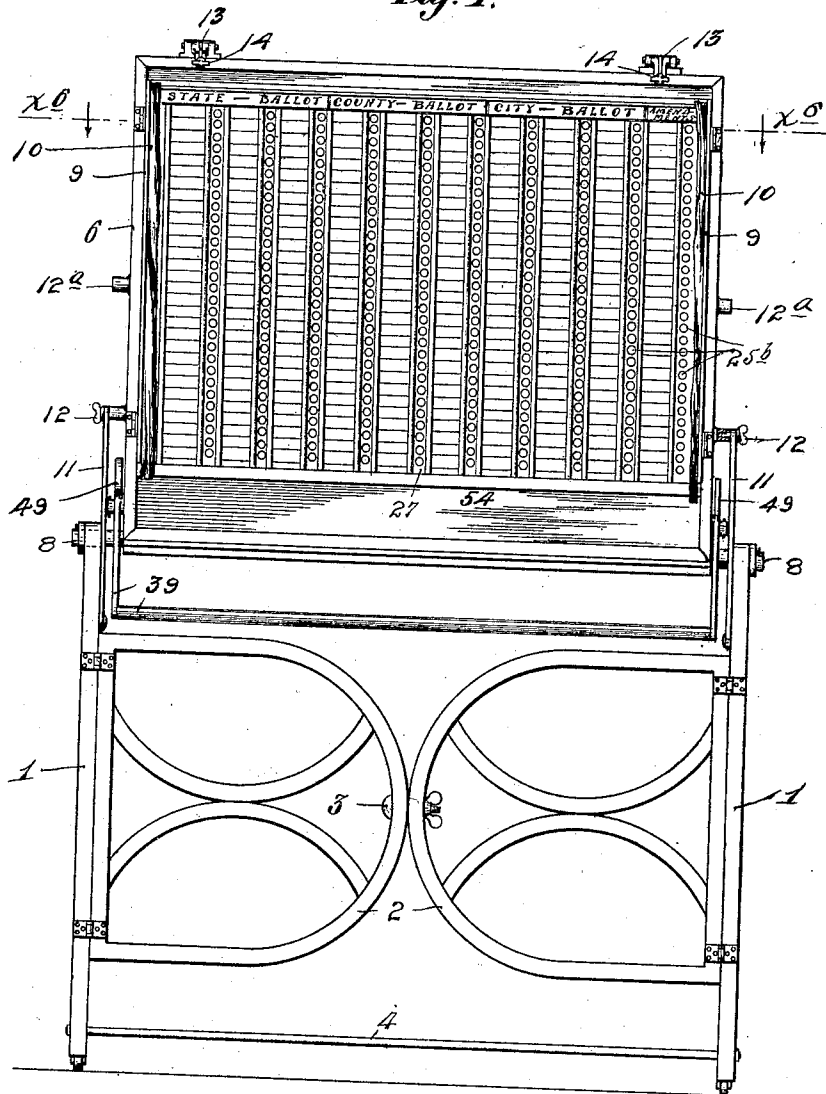
APPLICATION FILED FEB. 4, 1907. RENEWED MAR. 4, 1910.

994,763.

Patented June 13, 1911.

8 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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A. H. Opsahl.

Inventor.

Syver Loe.

By His Attorneys.

William Merchant

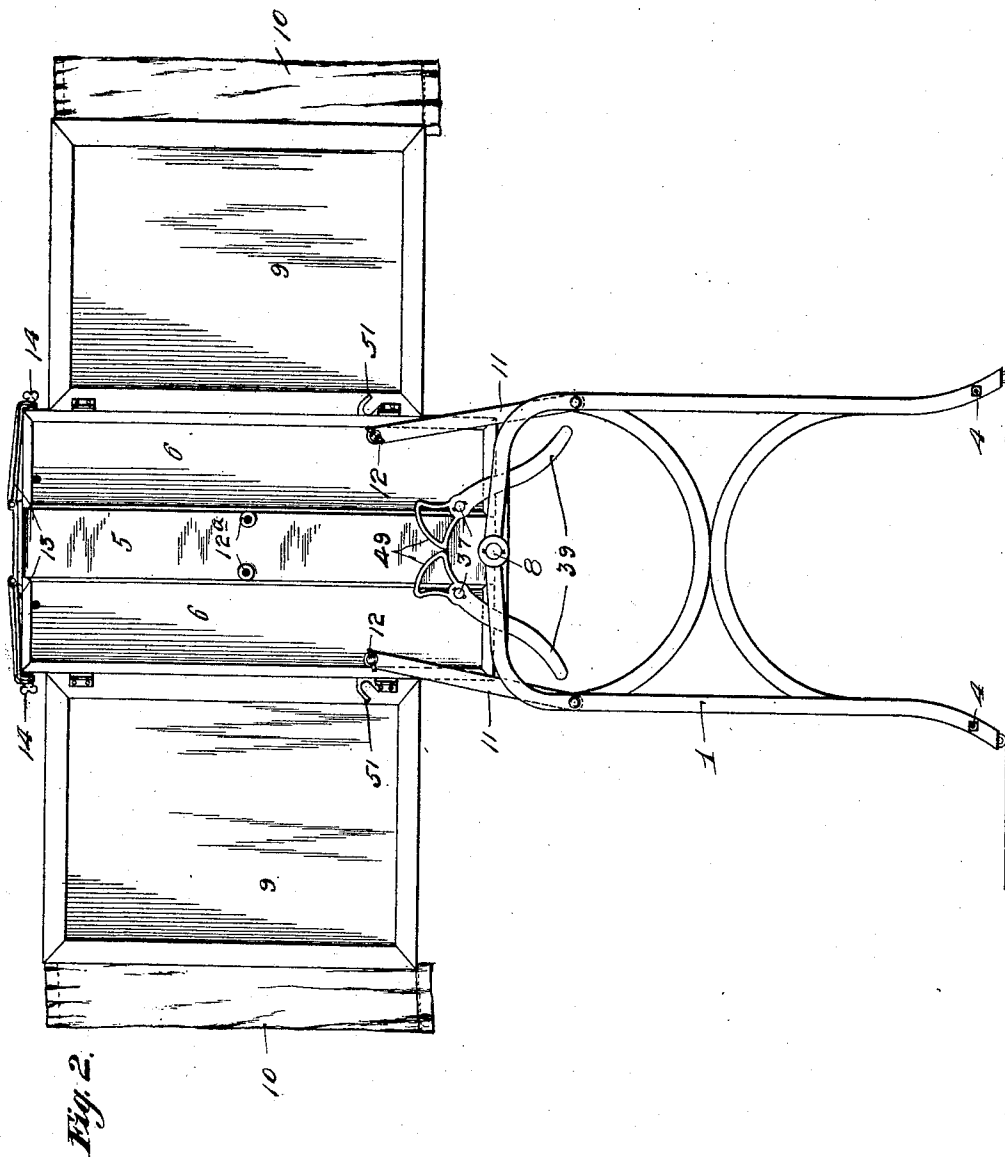
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8 SHEETS—SHEET 2.



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8 SHEETS—SHEET 3.

Fig. 3.

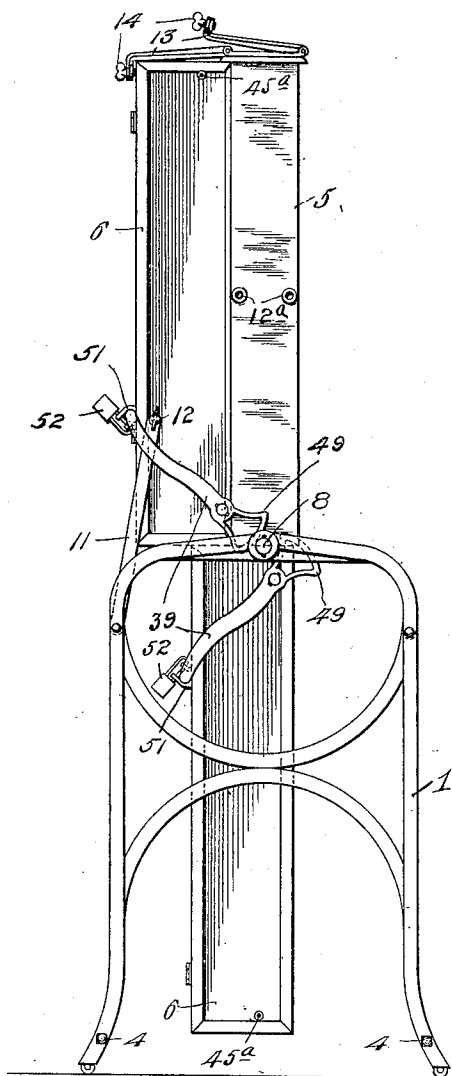
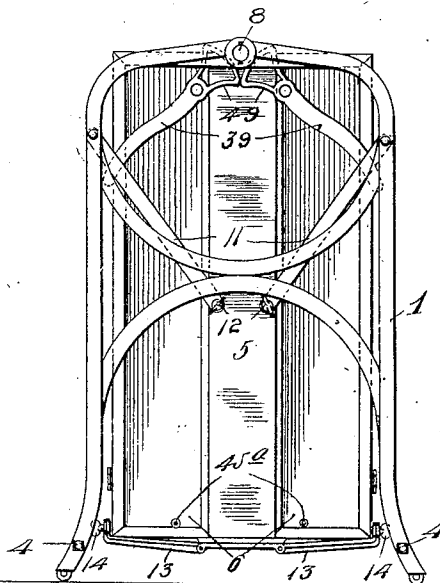


Fig. 4.



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S. LOE.
VOTING MACHINE.

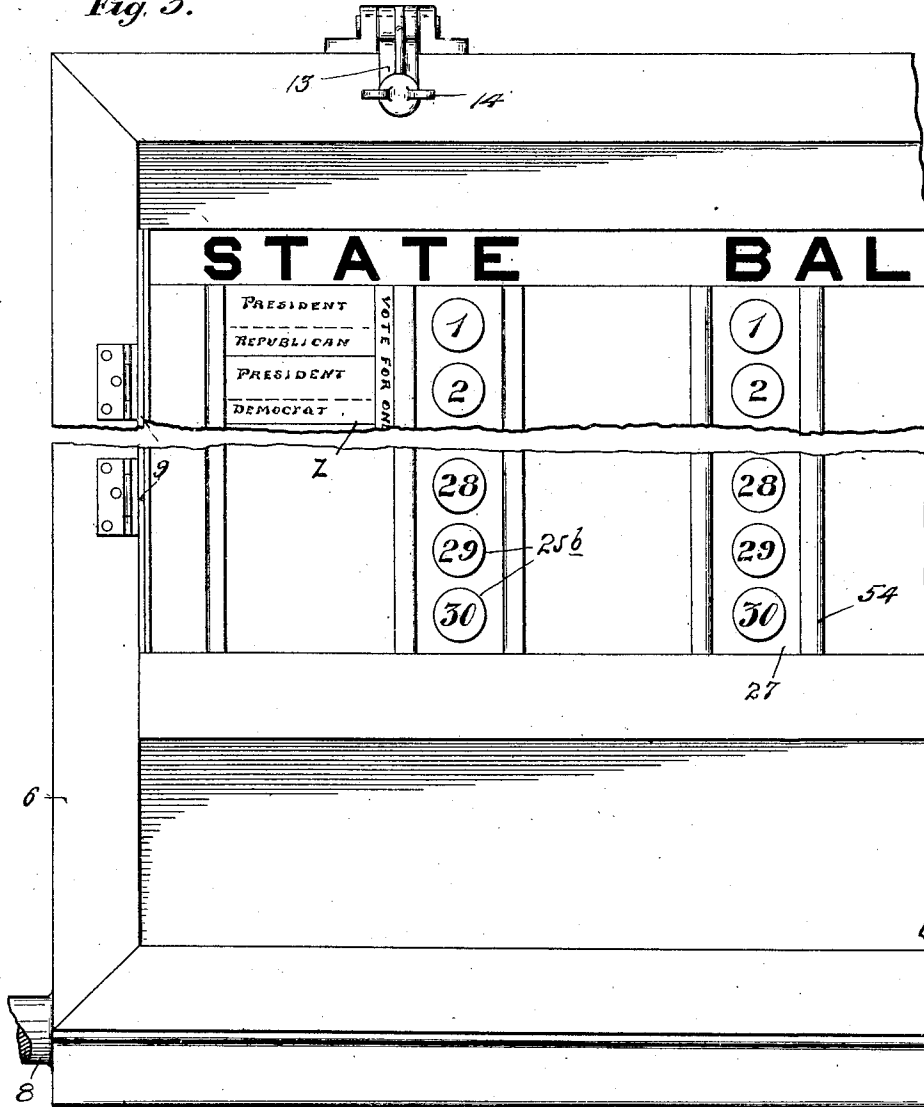
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8 SHEETS—SHEET 4.

Fig. 5.



Witnesses.

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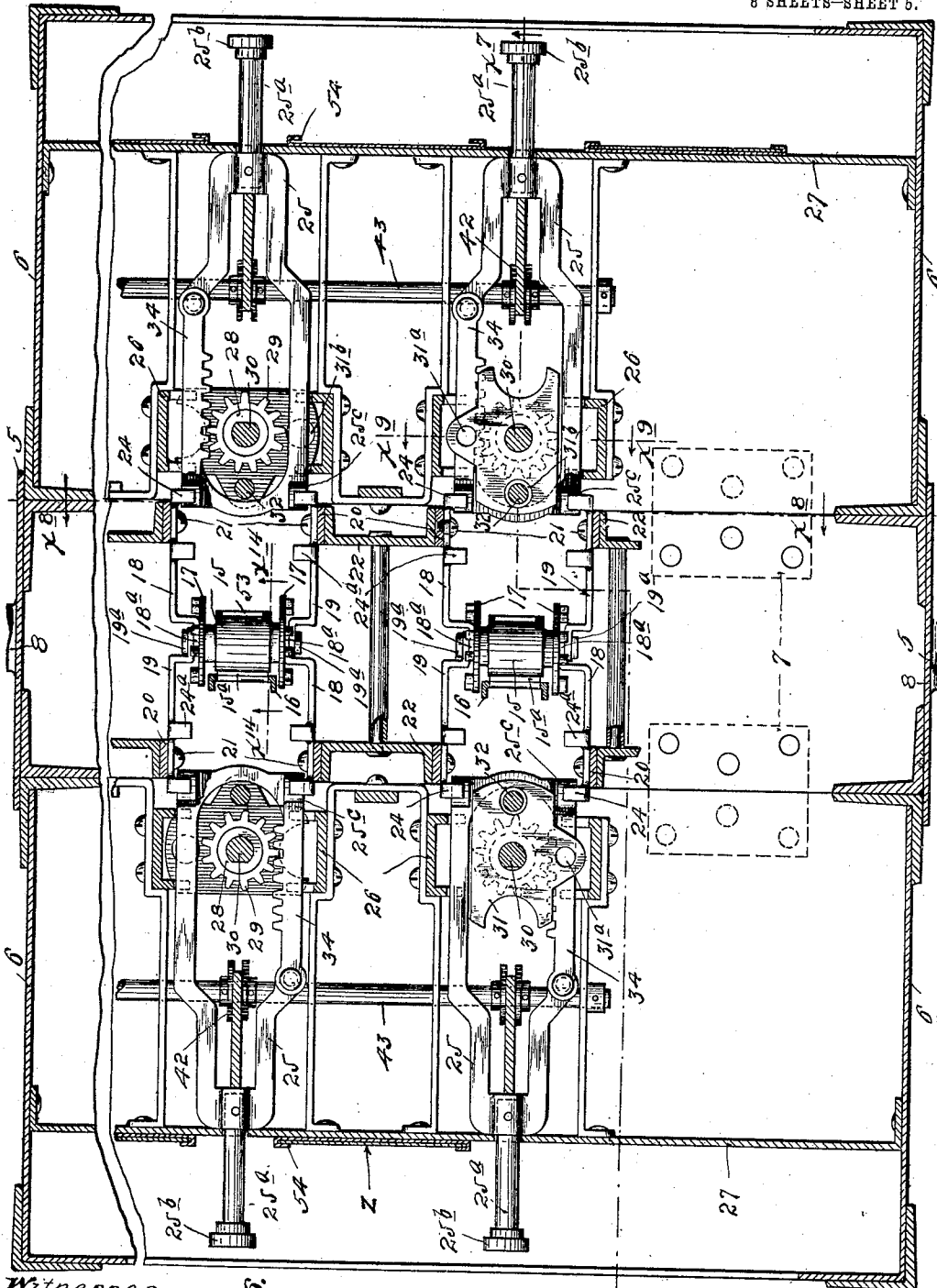
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8 SHEETS—SHEET 5.



Witnesses:
J. D. Kellogg.

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Fig. 6.

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By his Attorneys

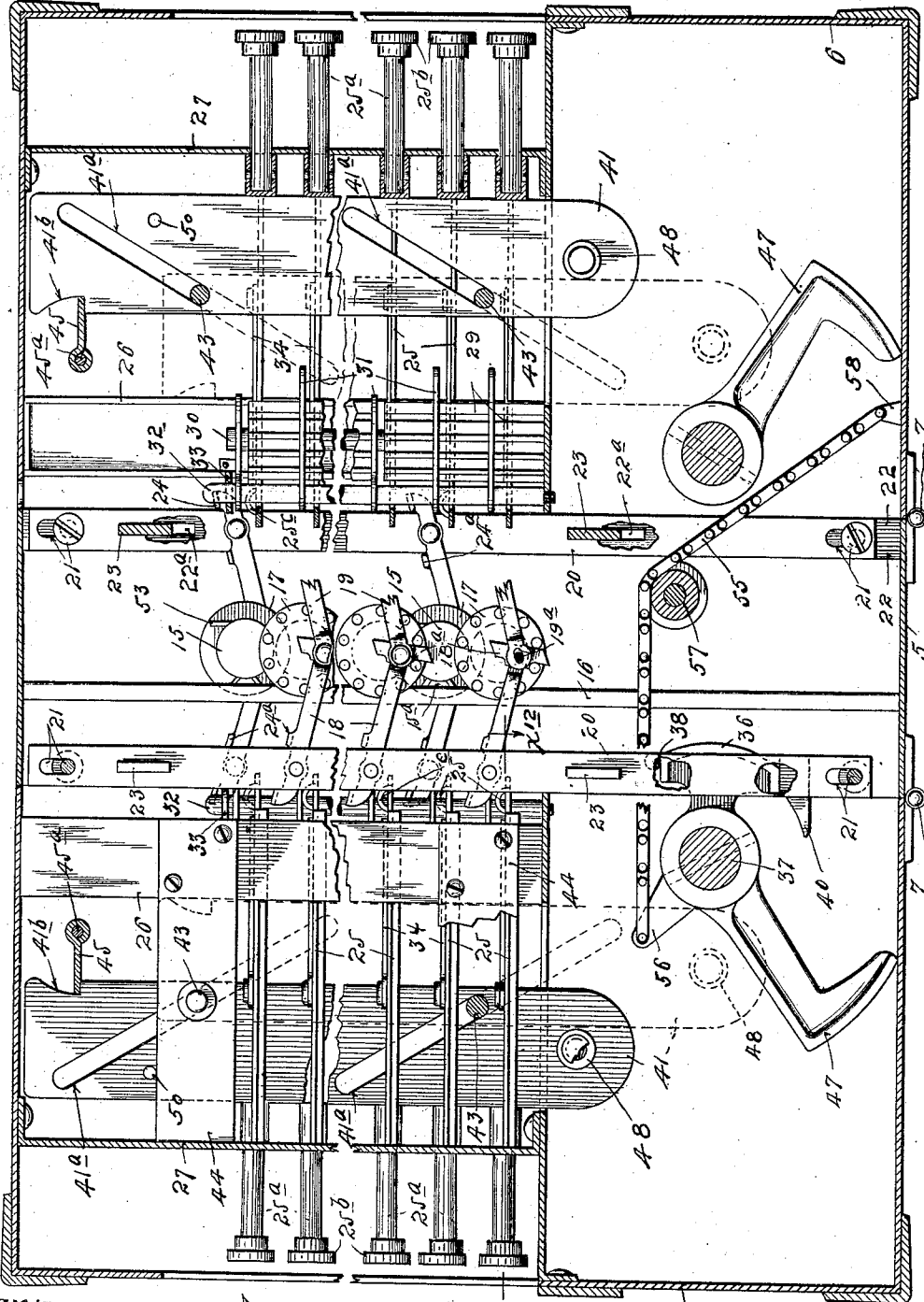
William M. Murchard

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994,763.

Patented June 13, 1911.
8 SHEETS-SHEET 6.



Witnesses.

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A. H. Osahl

Fig. 7

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S. LOE.
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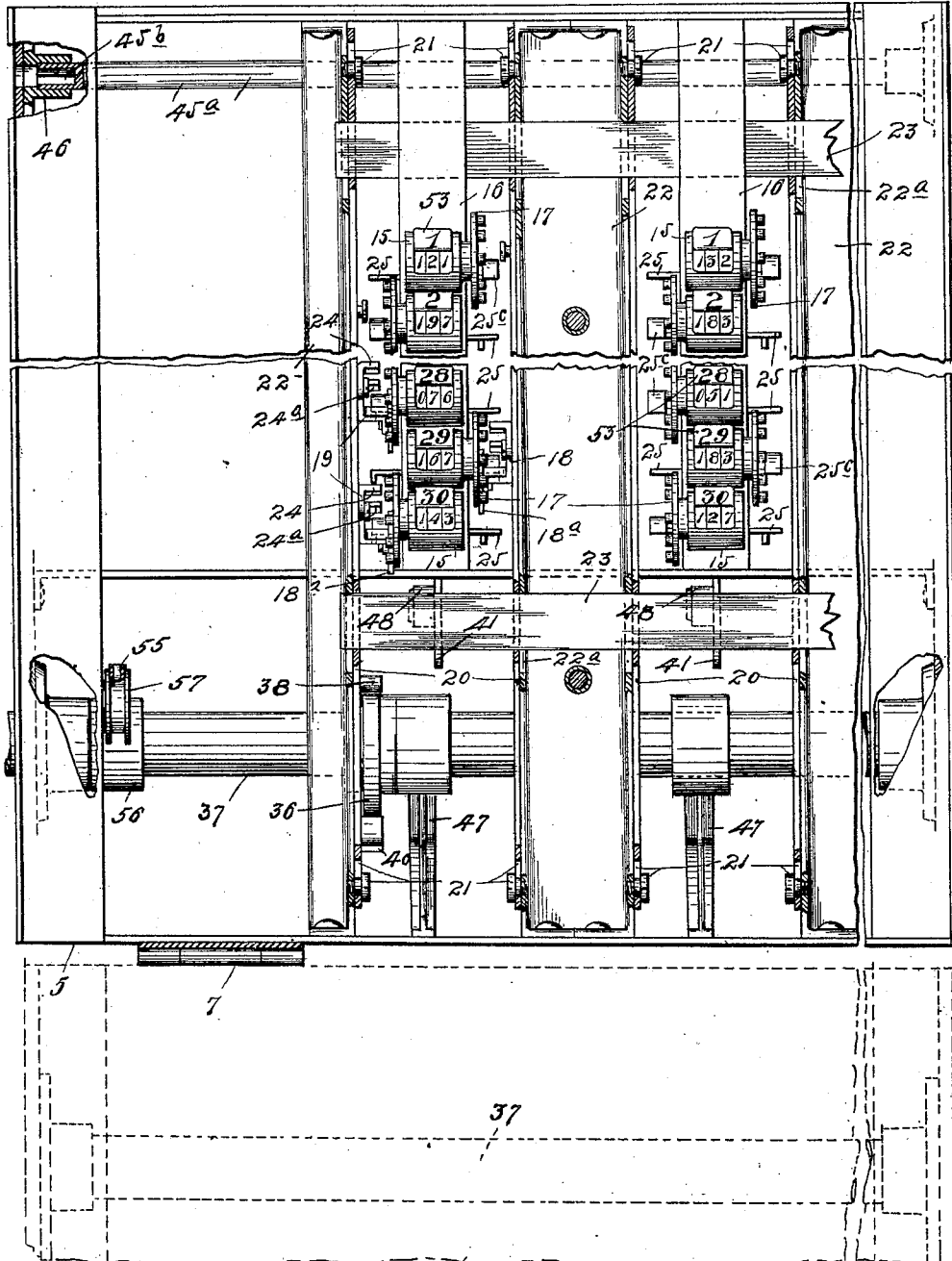
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994,763.

Patented June 13, 1911.

8 SHEETS-SHEET 7.

Fig. 8.



Witnesses.

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Fig. 9.

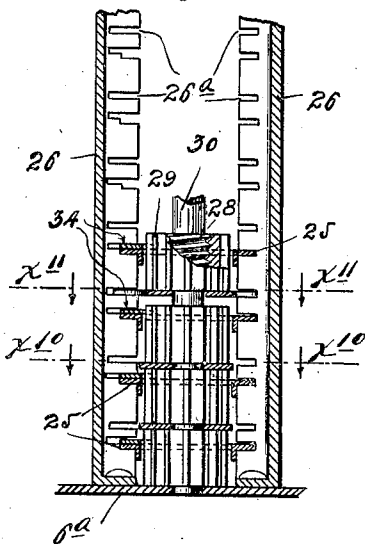


Fig. 10.

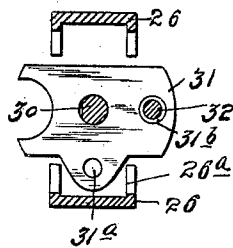


Fig. 11.

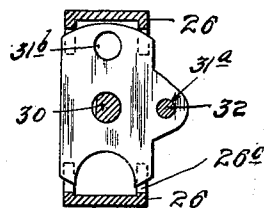


Fig. 12.

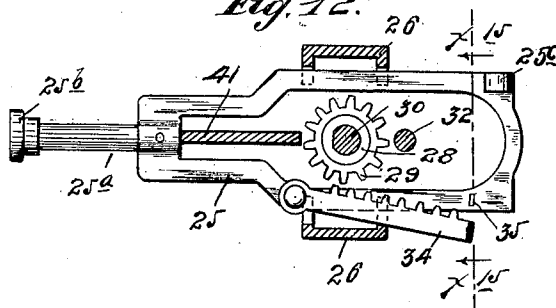


Fig. 13.

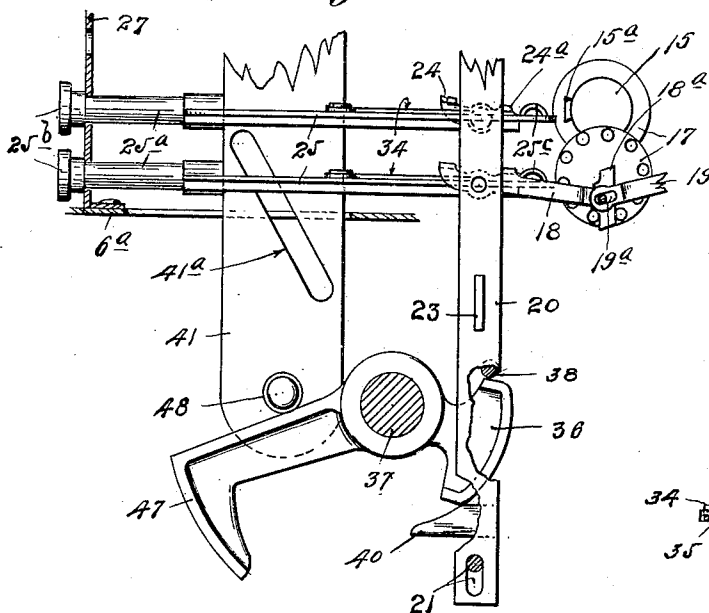


Fig. 14.

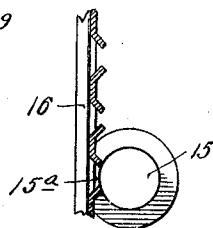
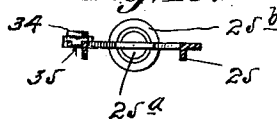


Fig. 15.



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UNITED STATES PATENT OFFICE.

SYVER LOE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF TWO-THIRDS TO JESSE W. WALKER, OF PITTSBURG, PENNSYLVANIA.

VOTING-MACHINE.

994,763.

Specification of Letters Patent. Patented June 13, 1911.

Application filed February 4, 1907, Serial No. 355,577. Renewed March 4, 1910. Serial No. 547,353.

To all whom it may concern:

Be it known that I, SYVER LOE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Voting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to voting machines and the particular object thereof is to provide a duplex or multiplex machine having common registers or tallies and supporting frame, but independently operative register-actuating mechanisms, whereby several persons, during the same interval of time, may manipulate register actuators for the purpose of casting or recording votes.

In practice it has been demonstrated that a single voting machine has not the required vote recording capacity (on account of time required to operate it) for even a small voting precinct, and that practically all precincts require two or more voting machines to take care of the votes which must be cast during the voting hours of election day. It is a well known fact that the registers and frame work are the expensive parts of all voting machines. By the above indicated and hereinafter described organization I have so arranged the various mechanisms that one set or series of registers serves to record all of the votes cast by the means of several otherwise independent voting mechanisms, and thus reduce to a minimum the cost of voting machine instalment of a given vote recording capacity. Furthermore, by this arrangement I am able to assemble what in effect of vote recording capacity is several voting machines, approximately within the space of a single voting machine. This reduction in space occupied by the one voting mechanism is also of very considerable importance.

The invention involves other novel features of construction which will be hereinafter described and defined in the claims.

Generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings which

illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in elevation looking at one face of the improved machine. Fig. 2 shows the improved machine in side elevation, with the parts of the machine in condition for voting. Fig. 3 is a side elevation of the machine, showing one of the case sections turned downward so as to expose the registers to view. Fig. 4 is a side elevation showing the case sections turned downward and secured in inoperative positions, the machine being thereby put in condition for shipment or storage. Fig. 5 is a fragmentary view in elevation, looking at the face of one of the case sections, and showing the key board and ticket holding devices. Fig. 6 is a horizontal section taken through the machine approximately on the line $x^6 x^6$ of Fig. 1. Fig. 7 is a vertical section taken approximately on the irregular line $x^7 x^7$ of Fig. 6. Fig. 8 is a vertical section taken approximately on the line $x^8 x^8$ of Fig. 6, some parts being broken away, and some parts being indicated by dotted lines. Fig. 9 is a detail principally in horizontal section on the line $x^9 x^9$ of Fig. 6, but with some parts shown in full, some parts removed and with some parts broken away. Fig. 10 is a horizontal section on the line $x^{10} x^{10}$ of Fig. 9. Fig. 11 is a horizontal section on the line $x^{11} x^{11}$ of Fig. 9. Fig. 12 is a detail in horizontal section taken on the line $x^{12} x^{12}$ of Fig. 7. Fig. 13 is a detail view with parts broken away, partly in elevation and partly in vertical section, showing in "set" positions several register-actuating keys or slides and associated parts. Fig. 14 is a section taken approximately on the line $x^{14} x^{14}$ of Fig. 6, some parts being broken away and some parts being removed; and Fig. 15 is a detail in section on the line $x^{15} x^{15}$ of Fig. 12.

Framework and case.—The framework of the machine is preferably of skeleton form and may be constructed either of metal bars or castings. In its preferred form it is made up of a pair of laterally spaced end brackets 1, to the front and rear of each of which is hinged a pair of truss brackets 2, which when turned inward are adapted to be connected, in pairs, by nutted

bolts 3, or other suitable coupling devices. As shown, the lower portions of the legs of the brackets 1 are connected by tie rods 4.

The machine illustrated is a duplex machine and the case thereof is made up of an intermediate section 5 and two outer sections 6, said latter two sections being connected at their lower portions to the lower portion of the intermediate section 5, by hinges 7. The intermediate section 5, at its lower end, has projecting trunnions 8 that are journaled in suitable bearings on the upper central portions of the end brackets 1.

Preferably, swinging booth-forming doors 9 are hinged to the opposite sides of each of the outer case sections 6. These doors 9 are adapted to be folded over the outer faces of the respective case sections 6, as shown in Figs. 3 and 4, and they are adapted to be extended as shown in Figs. 1 and 2, to form the sides of two voting booths located one in front of each case section 6.

The numeral 10 indicates curtains shown as applied to the doors 9.

Figs. 1 and 2 show the parts of the sectional case in operative position. Fig. 3 shows one of the case sections 6 turned down, and Fig. 4 shows all of the case sections turned down into inoperative positions, entirely within and inclosed and protected by the framework made up of the brackets 1 and 2.

To secure the case sections in the positions shown in Figs. 1 and 2, four links 11 are shown as provided. At one end, these links 11 are pivoted to the frame brackets 1, and at their other ends they are detachably secured to the sides of the case sections 6, as shown, by means of thumb screws 12. When the case sections are turned down as shown in Fig. 4, the links 11 are adapted to be turned downward and secured by the thumb screws 12 to threaded bosses 12^a on the sides of the intermediate case section 5. To that end of the intermediate case section 5 which is turned upward when the case is in operative position, there is attached a plurality of clamping arms 13 shown as provided in their free ends with thumb screws 14 adapted to impinge against the outer free portions of the case section 6, to lock the three case sections together, as shown in Figs. 1, 2 and 4, or to lock two of the case sections together, as shown in Fig. 3.

The above described novel arrangement of supporting frame and keys, irrespective of the particular voting mechanism employed, I do not herein claim, since the same is subject matter of the divisional application filed by me of date ——— Serial Number ——— entitled "Voting machine."

Registers and escapement devices therefor.—The registers or tallies are arranged

in several vertical columns and are all mounted within the intermediate case section 5. These registers may be of any suitable or standard construction, but the escapement mechanism for actuating the same is preferably of the character disclosed and claimed in my prior Patent No. 804,962, of date November 21, 1905, entitled "Voting machine." These registers, which are indicated as entireties by the numeral 15, are shown as provided with dove-tailed case projections 15^a that fit dove-tailed seats of vertical supporting bars 16 (see particularly Figs. 7, 8 and 14). The unit member of each register is connected to move with a pin wheel or escapement gear 17 that is provided with ten laterally projecting cam pins or studs. For coöperation with each escapement wheel 17 there is provided a so-called escapement dog 18 in the nature of a vibrating lever. At their forward ends, the dogs 18 are formed with reversely projecting and reversely beveled cam lugs 18^a that act upon the projecting pins of the coöperating escapement wheels 17 in a manner to be hereinafter described.

In this duplex machine, an escapement lever 19 is connected to each escapement lever 18, as shown, by means of a slot and pin connection 19^a (see Fig. 13). The levers 18 and 19 are alike except that, as shown, the cam heads 18^a are rigidly connected to the said levers 18. The levers 18 and 19 are pivotally connected to supporting bars 20 that are connected for limited vertical sliding movements, as shown, by means of slot and screw connections 21, to vertical supporting columns 22 that are rigidly secured to the top and bottom of the intermediate case section 5. The several vertically movable bars 20 to which the escapement levers 18 are pivoted, are rigidly connected by horizontal tie bars 23, and the sliding bars 20 to which the escapement levers 19 are pivoted are likewise rigidly connected by similar tie bars marked with the same numeral, 23. The bars 23 slide vertically in slots 22^a of the columns 22.

Outward of their pivots, the escapement levers or dogs 18 and 19 are provided with laterally projecting ears 24 and inward of their pivots they are provided with similar ears 24^a. In the machine illustrated, there are ten vertical columns of registers, but it will, of course, be understood that this number of columns, as well as the number of registers in each column, may be varied at will.

Register actuating keys or slides.—The register actuating slides of this duplex machine are assembled in vertical columns and there are twice as many thereof as there are of the registers, or otherwise stated, in each outer case section, there are as many columns of register actuators as there are columns

of registers in the intermediate case section. These register actuating slides 25 which for convenience are designated as the keys, are preferably mounted to slide toward and from the cooperating registers, and as shown are arranged to work in grooves cut in the flanges of vertical channel columns 26 rigidly secured at their upper and lower ends to the tops and bottoms of the respective case sections 6. In the construction illustrated, the keys 25 are bifurcated and provided with outwardly projecting stems 25^a that work through vertical plates 27 and are provided at their outer ends with key heads or finger pieces 25^b. The said plates 27 are rigidly secured to the tops, bottoms and sides of the case sections 6 and are located considerably inward of the outer faces thereof.

Each key 25 is provided with a cam lug 25^c for action on the ears 24 and 24^a of the cooperating escapement levers or dogs 18 and 19.

By reference particularly to Figs. 6, 7 and 8 it will be seen that the pin wheels 17 of the registers in each column are staggered or successively offset in reverse directions, so as to permit the registers to be brought into closer quarters. Hence, it will, of course, be understood that the cam lugs 25^c of the keys of the several columns are located alternately on one side and then on the other for proper action on the correspondingly staggered escapement levers 18 and 19. The exact relation of the parts just described will be more clearly brought out in the description of the operation.

Vote limiting mechanism.—The vote limiting mechanism in part illustrated in the drawings of this application and which I preferably employ, is disclosed and broadly claimed in my prior Patent No. 712,079, of date October 28, 1902, entitled "Voting machine." This vote limiting mechanism, however, as herein illustrated, involves certain novel details of construction and the preferred arrangement thereof is as follows: As already stated, in the machine illustrated in the drawings, there are ten vertical columns of register actuating keys in each case section 6. For each such vertical column of keys there is a vertical column of laterally expansible devices made up of threaded hubs 28 and cooperating nut members 29, which latter are shown in the form of spur pinions. The co-called hubs 28 of each stack are axially aligned and are mounted to slide axially upon fixed or non-rotary shafts 30, which shafts are flattened at one side to hold said hubs against rotation, as best shown in Fig. 12. Each fixed shaft 30 is located between the corresponding pair of vertical key guiding bars 26. These shafts 30 are rigidly secured at their lower ends to horizontal partition plates 6^a of the case

sections 6. On the shafts 30, between the pinions or nut members 29, are spacing plates 31 the form of which in plan are best shown in Figs. 10 and 11. When the said spacing plates 31 are positioned as shown in Fig. 10, they are adapted to slide vertically on the respective shafts 30, but when turned into the position shown in Fig. 11 they engage with notches 26^a of the upright bars 26, and by the latter are held against sliding movements with respect to the said shafts 30 and supporting bars 26. Extending parallel to and in the vicinity of each vertical column of pinions 29 is a removable lock rod 32, the lower end of which is seated in the underlying supporting plates 6^a and the upper end of which is passed loosely through a bracket 33 on the adjacent supporting bar 26 (see particularly Fig. 7). The spacing plates 31 are provided at points 90 degrees apart with perforations 31^a—31^b. The so-called lock rods 32 are passed through the perforations 31^a of those plates 31 that are set as shown in Fig. 11, and are passed through perforations 31^b of those plates 31 that are set as shown in Fig. 10. Said lock rods or bolts 32 therefore hold the said plates 31 against rotation, but permit those that are set as shown in Fig. 10 to slide vertically up and down and hold those that are set as shown in Fig. 11 interlocked with the cooperating supporting bars 26 against vertical sliding movements.

Each key 25 is provided with a rack bar 34 which is preferably pivoted thereto at one end and adapted at its free end to engage and interlock with a seat 35 in said key. These racks normally engage one with each of the pinions 29.

Comments on mechanism described.—In the machine illustrated, the adjustments and arrangements of parts is for the voting of mixed tickets, that is, tickets on which the different offices are enumerated consecutively and the different party's candidates for the different offices are grouped together. Further as illustrated in the drawings, the first three columns of keys and cooperating bars at the left, with respect to Fig. 1, are assigned to the State ballot; the next three columns to the county ballot; the next three to the city ballot; and the last column at the right, to constitutional amendments, and other matters that should be voted yes or no.

The expansible vote limiting devices 28—29 of the several columns are grouped to correspond to the grouping of candidates on the different ballots or tickets, and this grouping is accomplished by means of those plates 31 that are set as shown in Fig. 11. For instance, the group assigned to the office of governor should correspond to the number of parties represented, thus: there being Republican, Democratic and Socialistic candidates for governor, three laterally ex-

pansible vote limiting devices 28—29 should be confined between two plates 31 set as shown in Fig. 11, and interlocked to the bars 26; and there should be normally an amount of clearance or play between said parts sufficient and only sufficient to permit an inward movement of one register actuating key and resulting movement of the connected pinion 29. Hence, when one of the said three keys, appropriated to governor, is pushed inward to its "set" position, the corresponding pinion 29 will be rotated on its cooperating hub 28, and the two parts 28 and 29, expanding laterally, will take up the entire play between the elements of that group and thereby prevent the inward movement to "set" position, of any other key of that group. In some other groups, where several candidates may be elected to the same office, such, for instance, as judges of the district court, members of school board, and park commissioners, the amount of play or clearance between the elements of the group should be just sufficient to permit the inward movements to "set" positions of the proper number of keys and the resulting expanding movements of the corresponding vote limiting devices 28—29.

Restoring mechanism.—Directing attention now particularly to Fig. 7, it will be seen that the vertically movable bars 20 and the pivotally attached escapement levers 18 and 19 are normally held upward, by lifting heads 36 carried by rock shafts 37 and engaging with pins 38 on said bars 20. The rock shafts 37 are suitably journaled in the sides of the case sections 6 below the supporting plates 6^a thereof, and at their outer ends are provided with levers in the form of operating bails 39. The heads 36 are segmental and they cooperate with segmental lugs 40 of the bars 20, to positively force the latter downward and to hold the same in lowered position, as shown in Fig. 13, when said rock shafts 37 and parts carried thereby are moved, as shown in Fig. 13, under upward movements of the operating bails 39.

The votes represented by the "set" keys are transmitted to the registers, by movements of the "set" keys from their "set" back to their normal positions, while the register actuating levers 18 and 19 are lowered as shown in Fig. 6. Under such movements of the keys from their "set" to their normal positions (see Fig. 13), the cam lugs 25^a engage, first with the inner lugs 24^a, to impart upward vibratory movements of the respective escapement levers, and then engage the ears or lugs 24 of said levers, to positively vibrate the latter again downward. Under upward movements of the said escapement levers, the upper ends of the beveled escapement heads 19^a engage overlying pins of corresponding pin wheels 17, and impart half steps of movement to

said pin wheels, and under downward movements the lower beveled ends of said heads 19^a engage underlying pins of said pin wheels, and impart the final half steps of movement to said pin wheels and, hence, to the unit members of corresponding registers. The "set" keys in the one case section 6 are arranged to be simultaneously restored to normal positions, by an upward movement of the corresponding bail 39, and the same statement is true with respect to the corresponding parts of the other case section 6; but means is provided for preventing the simultaneous return movements of the set keys in the two case sections 6.

Simple and efficient mechanism for accomplishing the above indicated results is as follows: For each vertical column of keys 25 there is a vertically disposed so-called "restoring" bar 41 which, as shown, extends through the large openings in the cooperating keys and is adapted to press against the inner ends of the key stems 25^a, as shown in Figs. 6 and 7. These restoring bars 41 work between laterally spaced pairs of retaining collars 42 secured on a pair of transverse rods 43, which rods are supported by brackets 44 secured to the columns 26 and supporting plate 27. The restoring bars 41 are provided with parallel oblique cam slots 41^a through which the upper and lower rods 43 are passed (see particularly Figs. 6 and 7). As clearly illustrated in Fig. 7, the restoring bars, when moved vertically, are by the cam slots 41^a and rods 43 caused to move edgewise from and toward the intermediate case section 5, or vice versa. When the said restoring bars are moved from their dotted line positions to their full line positions (Fig. 7), they move the cooperating set keys from their "set" to their normal positions, and when a restoring bar is locked in its uppermost or full line position (Fig. 7) it locks all of the cooperating keys in their normal positions.

Pivotally mounted in the upper portion of each case section 6 is a lock blade 45 that is adapted to lock in their raised positions, all of the restoring bars 41 of that section of the machine, to-wit, that are within the corresponding case sections 6. Preferably, the upper ends of the restoring bars 41 are notched at 41^b (see Fig. 7) to form seats for the free edges of the said lock blades 45. The shafts 45^a of the lock blades 45 are mounted at their ends in suitable bearings 46 on the sides of the case sections 6, and each shaft is shown as provided at one end with an anchoring seat 45^b into which a key or wrench (not shown) may be inserted by the election judge or attendant, to rock the lock blade upward and simultaneously release all of the cooperating restoring bars 41, thereby permitting the latter to fall into their lowermost or inoperative positions, thus releasing

the keys and putting the machine into condition for use by a voter.

The rock shafts 37 are provided with restoring arms 47, the outer ends of which, as shown, are segmental. These restoring arms 47 are engageable with roller equipped studs 48 on the lower ends of the several restoring bars 41.

When a voter in one of the booths moves upward the restoring lever or bail 39 on that side of the machine, and thereby rocks the corresponding rock shaft 37, the first effect is to lower the escapement lever supporting bars 20; and second, to throw the restoring arms 47 into engagement with the roller equipped studs 48, and thereby simultaneously raise the several cooperating bars, and cause the latter to move the cooperating keys from their "set" to their normal positions, as already described.

If it were possible to simultaneously move corresponding keys of the two case sections 6 from their "set" to their normal position, or more specifically stated, if it were possible to simultaneously move upward the two restoring bails or levers 39, it is evident that the proper actuation of the registers would not be accomplished, for in that event, the registers would be given only one unit of movement, whereas they should be given two units of movement. As a simple and efficient means for preventing the simultaneous upward movements of the two bails 39, they are provided with interfering projections or segments 49 that move on intersecting arcs and are so arranged that the segment of either bail, when the latter is moved, moves across the path of movement of the segment of the other bail and locks said latter noted bail in its normal position, shown in Fig. 2. The said interfering segments or lever projections are only one of many devices that may be used to accomplish the result above stated, and I do not, of course, limit myself thereto.

When it is desired at any election to entirely cut out of action any one of the columns of registers or register actuators, this may be done by locking the restoring bar 41 of that column in its uppermost or full line position shown in Fig. 7. Any one of the said restoring bars 41 may, in the construction illustrated, be locked in its uppermost position by passing a pin or cotter through a perforation 50 therein just above the upper brackets 44, (see Fig. 7). Of course, the said pins or cotters should be removed from all of the restoring bars 41, except those that will be locked in inoperative position.

A large number of keys or registers are required to adapt a machine for use at primary elections, where a larger number of candidates are represented than at final elections. Hence it is that it is sometimes de-

sirable, especially at final elections, to lock some of the restoring bars 41 in position to render corresponding columns of register actuators inoperative. Of course, at primary elections those columns of registers and register actuating keys which, at final elections, are assigned to constitutional amendments and to irregular votes may be used, or assigned to the regular candidates for nomination.

The segmental outer ends of the restoring arms 47 serve to hold the corresponding restoring bars 41 in their raised positions, when the bodies of the said arms have been moved upward and out of alinement with the cooperating roller equipped studs 48.

Other devices.—After the polls have closed the doors 9 should be closed on both sides of the machine and both of the bails 39 should be turned upward and locked to the respective case sections 6. For this purpose the case sections 6 are provided with yokes 51 that are adapted to receive the transverse bars of said bails 39. By then applying padlocks 52 to the projecting ends of the yokes 51, said bails are locked to the said case sections 6, as shown in Fig. 3.

To expose to view the several series of registers, the right hand case sections 6, as viewed in Fig. 3, must be turned downward, as shown in said Fig. 3. To assist in identifying the registers with corresponding keys, the caps 25^b of the key stems of the several columns are numbered consecutively, as shown in Fig. 5, and the registers are correspondingly numbered as shown on numeral plates 53 thereof (see Fig. 8).

The ballots indicated by the character α are held on the outer face of the vertical supporting plates 27 of the case sections 6, one at the side of each column of key heads 25^b, as shown, by means of channel shaped metallic holders 54 (see particularly Figs. 5 and 6). The names of the candidates and the several tickets should, of course be in line with the heads of the keys that actuate the registers assigned to the respective candidates.

For the purpose of positively insuring that the left hand bail 39 be in its raised position when the right hand case section 6 is turned downward as shown in Fig. 3, a connection, such as a chain 55, is attached to an arm 56 on the left hand rock shaft 37, is passed over an idle guide wheel 57 on the intermediate case section 5, and is attached, at 58, to the right hand case section 6. As is evident, when the right hand case section is turned downward, it pulls on the chain 55 and rocks the left hand shaft 37, thereby carrying the left hand bail 39 and restoring arms 47 upward, raising the left hand restoring bars 41 with the results already stated. Of course, if the left hand bail 39 has already been moved upward, when the

right hand case sections 6 have been moved downward, said chain connection performs no function whatever. Furthermore, this chain connection or other device operating as above described, absolutely insures the registration of the votes represented by the keys set by the last voter in the left hand booth and likewise insures the locking of all of the escapement levers 18, before access can be had to the register.

When the bails 39 are locked as shown in Fig. 3, they hold the doors 9 in closed positions. Preferably, when the entire case is to be turned downward into the inoperative position shown in Fig. 4, they should be so turned as an entirety, and with the several case sections locked together by the clamping arms 13. As is evident, the framework of the machine gives good protection to the case when it is turned downward into the position shown in Fig. 4, and also brings the machine into compact form for shipping or storing.

It will be understood that when the case sections 6 are moved away from the intermediate case section 5, the register actuating keys 25 are carried away from the cooperating escapement levers 18 and 19, and on the other hand, when the said case sections 6 are turned to their normal positions with respect to the said intermediate case section, the said keys and levers will again be brought back into operative relation to each other. It will also be understood that the said case sections may be connected to each other in a great many different ways and may be given many different kinds of supporting means, so far as the broad idea of my invention is concerned. These statements in the specification and claims that the register actuating keys are simultaneously moved from set to normal positions is made in a liberal sense and is intended to indicate that said parts are at approximately the same time given such movements. In certain of the claims the expressions "two series of register actuators"; "two series of escapement levers" and like statements are made, but it will, of course, be understood that more than two series might be employed, and on the ground that the greater number includes the less, said construction would be within the scope of the said claims.

It will, of course, be understood that by the proper adjustments of the spacing plates 31 with respect to the position shown in Figs. 10 and 11, the expansible vote limiting devices 28—29 may be properly grouped for the ticket or ballot of any election.

In resetting the machine, the racks 34 of the keys 25 should be moved pivotally out of mesh with the cooperating wide faced pinions or nut members 29, so that the latter may be rotated into their proper initial positions, and the said racks thereafter inter-

mesh therewith. The said wide faced racks 29, of course, are capable of very considerable lateral movements, while maintaining mesh with the respective racks 34.

What I claim is:

1. In a multiplex voting machine, a common series of registers, several independent series of register actuators operating on said common registers but adapted to be moved into set positions and to be returned to normal positions, individually, without action on said registers, and restoring devices for said series of register actuators, rendering the same operative on the cooperating registers under return movements effected thereby.

2. In a multiplex voting machine, a common series of registers, several independent series of register actuators operative on said common registers, but movable into set positions and back to normal positions without action on said registers, vote limiting mechanism cooperating with each series of register actuators and grouping certain of the same, and restoring devices for said actuators rendering the same operative on their respective cooperating registers under return movements effected thereby.

3. In a multiplex voting machine, the combination with a common series of registers, of independent series of register actuators operative on said common registers, but movable into set positions and back to normal positions without action on said registers, vote limiting mechanism cooperating with each series of register actuators and grouping certain thereof, independent restoring devices for said several series of register actuators, rendering the same operative on their respective registers, under return movements effected thereby, and means for preventing simultaneous actuator restoring movements of the said independent restoring devices.

4. In a multiplex voting machine, the combination with a common series of registers, of several independent series of register actuators operative on said common registers and arranged to be individually moved into set positions, and means for independently imparting common return movements to the several series of register actuators and causing the said actuators to operate the respective registers under such movements, substantially as described.

5. In a multiplex voting machine, the combination with a common series of registers, of independent series of register actuators arranged in groups, certain of the said groups including a plurality of actuators, vote limiting mechanism cooperating with said grouped series of register actuators, restoring devices for said register actuators operative to impart simultaneous return movements from set positions to the respective se-

ries of register actuators, and to cause said actuators to act upon the respective registers, and means for preventing simultaneous actuator operating movements of said restoring devices, substantially as described.

6. In a multiplex voting machine, the combination with a common series of registers, of two corresponding but independent series of register actuating keys, and an escapement device for each register, having two connected escapement levers, subject one to each of the two corresponding keys of the said two independent series, substantially as described.

7. In a multiplex voting machine, the combination with a common series of registers, of two corresponding but independent series of register actuating keys, an escapement device for each register, comprising two escapement levers, one subject to each of the two corresponding keys of the said two series of keys, and means preventing the simultaneous operation of two corresponding keys of the said two series of keys on the co-operating escapement levers, substantially as described.

8. In a multiplex voting machine, the combination with a common series of registers, of two independent series of register actuating keys, connections whereby the corresponding keys of the two series are arranged to operate on the same register, vote limiting mechanism independently co-operating with the said two series of keys, independent restoring devices for simultaneously moving from set to normal positions the keys of each independent series, and means for preventing the simultaneous movements of the said two restoring devices, substantially as described.

9. In a multiplex voting machine, the combination with a common series of registers, of two independent series of register actuators movable from normal to set positions without action on the respective registers, means whereby the corresponding register actuators of the two series are caused to operate common registers under movements from set to normal positions, and means for simultaneously moving from set to normal positions the registers of the one series and for preventing the simultaneous movement from set to normal positions of corresponding keys of the two series, substantially as described.

10. In a multiplex voting machine, the combination with a common series of registers, of two independent series of register actuators movable from normal to set positions without action on the respective registers, means whereby the corresponding actuators of the two series are caused to operate common registers under movements from set to normal positions, means for simultaneously moving from set to normal

positions the registers of the one series and for preventing simultaneous movements from set to normal position of the corresponding register actuators of the two series, and means for locking the said register actuators in normal positions and for releasing the same, substantially as described.

11. In a multiplex voting machine, the combination with a common series of registers, of two independent series of register actuators, vote limiting mechanism co-operating with said register actuators, means for preventing simultaneous operative movements of corresponding register actuators of the two series, and means for locking the register actuators in normal positions and for releasing the same, substantially as described.

12. In a multiplex voting machine, the combination with a common series of registers, of independent series of register actuators movable from normal to set positions without operation on the respective registers, means for causing said register actuators to operate the respective registers under movements from set to normal positions, vote limiting mechanism co-operating with said register actuators, means for locking the register actuators in normal positions and for releasing the same, and means preventing the simultaneous movements from set to normal positions of the corresponding register actuators of the two series, substantially as described.

13. In a multiplex voting machine, the combination with a common series of registers, of two independent series of register actuators movable from normal to set positions without operation on the respective registers, means for causing said register actuators to operate the respective registers under movements from set to normal positions, independent restoring devices for simultaneously moving from set to normal positions the set registers of the respective series, means preventing simultaneous movements of said independent restoring devices, vote limiting mechanism co-operating with said register actuators, and means for locking said register actuators in normal positions and for releasing the same, substantially as described.

14. In a multiplex voting machine, the combination with a common series of registers, of two corresponding but independent series of register actuating keys, escapement devices for each register, each having two escapement levers subject one to each of the two corresponding keys of said independent series of keys, vote limiting mechanism co-operating with said keys, independently movable restoring bars operative on said keys, lever actuated means for causing said restoring bar to simultaneously move the co-operating keys from set to normal posi-

tions, and independent locks operative on said restoring bars to cause the same to hold said keys in normal positions, substantially as described.

5 15. In a multiplex voting machine, the combination with a common series of registers, of escapement devices operative on said registers, said escapement devices comprising two series of escapement levers connected in pairs and provided with cam lugs on opposite sides of their pivots, independently movable supporting bars to which said two series of escapement levers are pivoted, two independent series of register
10 actuating keys, said keys having cam lugs for action on the cam lugs of said escapement levers, means for moving said supporting bars so that the said keys will operate on the respective escapement levers under
15 movements from set to normal positions, independent restoring bars operative on said keys to move the corresponding series thereof, from set to normal positions, means for locking said restoring bars in positions
20 to hold said keys in normal positions, and means for preventing simultaneous key restoring movements of said restoring bars, substantially as described.

16. In a multiplex voting machine, several series of registers on each side of the machine, independent groups of register actuators arranged in duplicate for operation on common registers under movements from set to normal positions, independently
30 operative restoring devices arranged to simultaneously move from set to normal positions all of the set register actuators on corresponding sides of the machine, and means for preventing simultaneous operative
35 movements of said restoring devices, substantially as described.

17. In a voting machine, the combination with a case made up of separable sections, one of which is relatively fixed, of a series
45 of registers mounted on the relatively fixed case section, a series of register actuators mounted on the relatively movable case section, and the separation of the said case sections serving to give access to said registers, and means for locking said registers when
50 the actuators are moved from cooperative relation in respect thereto by a movement of said movable case section from its operative position, substantially as described.

18. In a voting machine, the combination with a case made up of separable sections, of a series of registers mounted on one of said case sections, a series of register actuators mounted on the other case section, and means
60 for locking said registers and said register actuators when the said case sections are separated to afford access to said registers, substantially as described.

19. In a multiplex voting machine, the combination with a case made up of separable

intermediate and outer sections, of a series of common registers mounted on said intermediate case section, duplicate series of register actuators mounted on said outer case sections and operative on said common series of registers, and means for locking
70 said registers when one of the said case sections is moved to afford access to said registers, substantially as described.

20. In a multiplex voting machine, the combination with a case made up of separable intermediate and outer sections, a common series of registers mounted on said intermediate case section, duplicate series of register actuators and cooperating vote limiting mechanism mounted on the outer case sections, means for rendering said register actuators operative on the cooperating registers under movements from set to normal positions, independent restoring devices operative to simultaneously move from set to normal positions the register actuators of the corresponding series, means for preventing simultaneous operative movements of said two restoring devices, and means for
80 locking said registers when one of the said case sections is moved with respect to the other to afford access to the said registers, substantially as described.

21. In a voting machine, the combination with several series of registers, of corresponding series of register actuating keys operative on said registers under movements from set to normal positions, restoring bars, one for each series of keys, operative on said keys to move the same from set to normal positions, means for imparting restoring movements to said restoring bars, and independent means for locking one or more of said restoring bars in position to hold said
100 keys in normal positions, thereby rendering that series of keys inoperative on the respective registers, substantially as described.

22. In a multiplex voting machine, the combination with a common series of registers, of two corresponding but independent series of register actuating keys, escapement devices for each register, each comprising a pair of connected escapement levers arranged to normally lock the cooperating registers, and the said escapement levers being subject one to each of the two corresponding keys of said independent series of keys, vote limiting mechanism cooperating with said keys, and means for causing said keys to
110 operate the respective registers under movements from set to normal positions, substantially as described.

23. In a voting machine, the combination with registers and register actuating mechanism, of vote limiting mechanism cooperating with said register actuators and comprising a shaft, bars adjacent to and on opposite sides of said shaft, laterally expandible elements working on said shaft,
125 130

spacing plates interposed between certain of the said laterally expansible elements and capable of pivotal movement on said shaft, and means for locking certain of the said
 5 spacing plates to said bars to thereby cause the same to operate as limiting stops, and means for holding certain of the other spacing plates with freedom for sliding movements on said shaft, substantially as described.
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24. In a multiplex voting machine, a common series of registers, several independent series of register actuators operative on said common series of registers but adapted
 15 to be moved into set positions and to be returned to normal positions, individually and without action on said registers, vote limiting mechanism cooperating with each series of actuators, and means for rendering the
 20 set register actuators operative on the corresponding common registers.

25. In a multiplex voting machine, a common series of registers, several independent sets of register actuators operative on said
 25 common series of registers but adapted to be moved into set positions and to be returned to normal positions, individually and without action on said registers, vote limiting mechanism, cooperating with said series of
 30 actuators and independently but correspondingly grouping the same, and means for rendering the set actuators operative on the corresponding common registers.

26. In a multiplex voting machine, a common series of registers, several independent
 35 series of register actuators operative on said common series of registers but adapted to be moved into set positions and to be returned to normal positions, individually and without action on said registers, vote limiting
 40 mechanism cooperating with each series of actuators, and means for rendering the set actuators of the different series operative on the corresponding common registers, at different times.
 45

27. In a multiplex voting machine, a common series of registers, several independent sets of register actuators operative on said common series of registers but adapted to be
 50 moved into set positions and to be returned to normal positions, individually and without action on said registers, vote limiting mechanism, cooperating with said series of actuators and independently but correspond-
 55 ingly grouping the same, and means for rendering the corresponding set register actuators of the different series operative on corresponding common registers, at different times.

In testimony whereof I affix my signature
 60 in presence of two witnesses.

SYVER LOE.

Witnesses:

MALIE HOEL,
 F. D. MERCHANT.