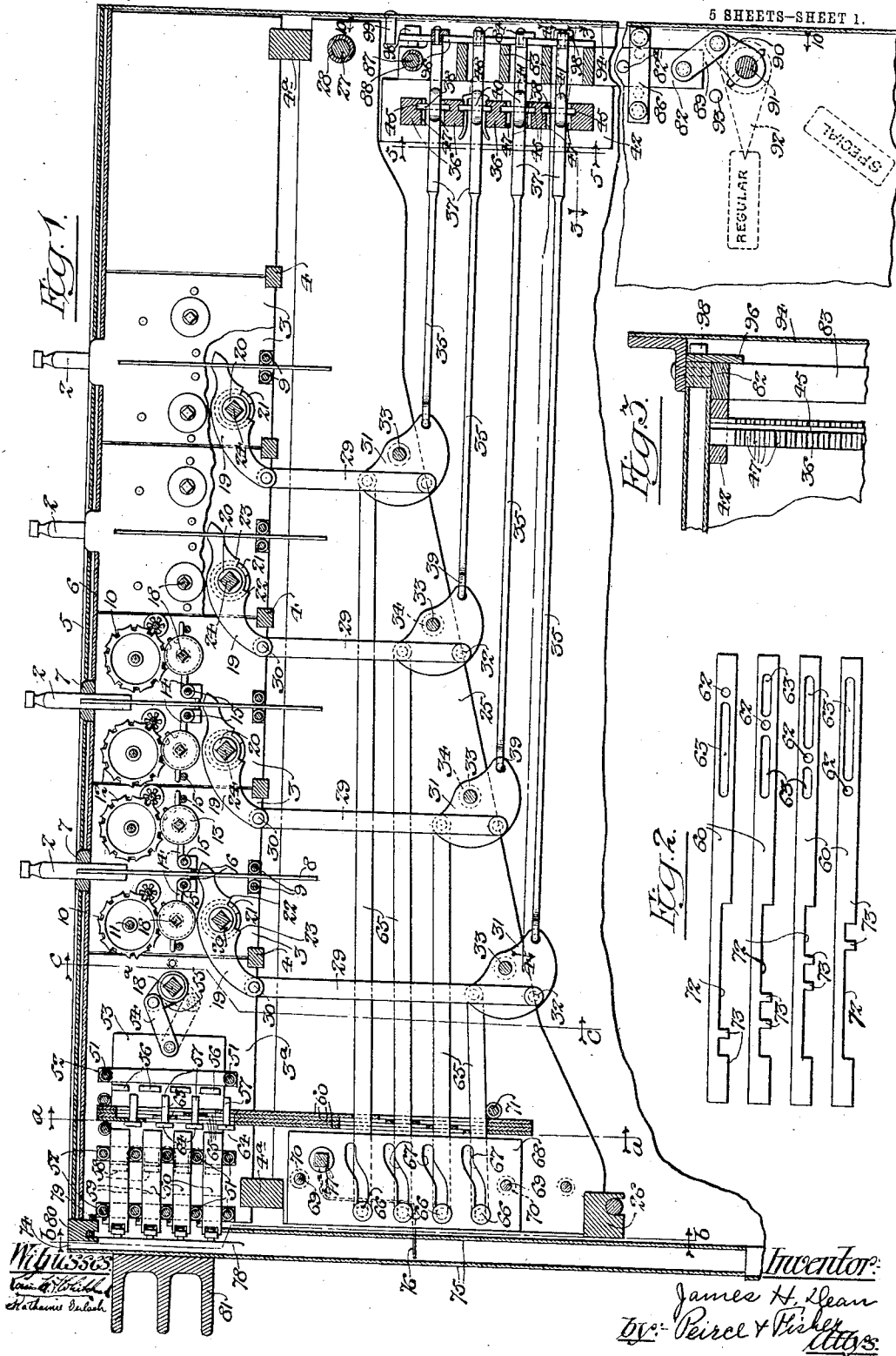


1,031,171.

J. H. DEAN.
VOTING MACHINE.
APPLICATION FILED NOV. 4, 1908.

Patented July 2, 1912.

5 SHEETS-SHEET 1.



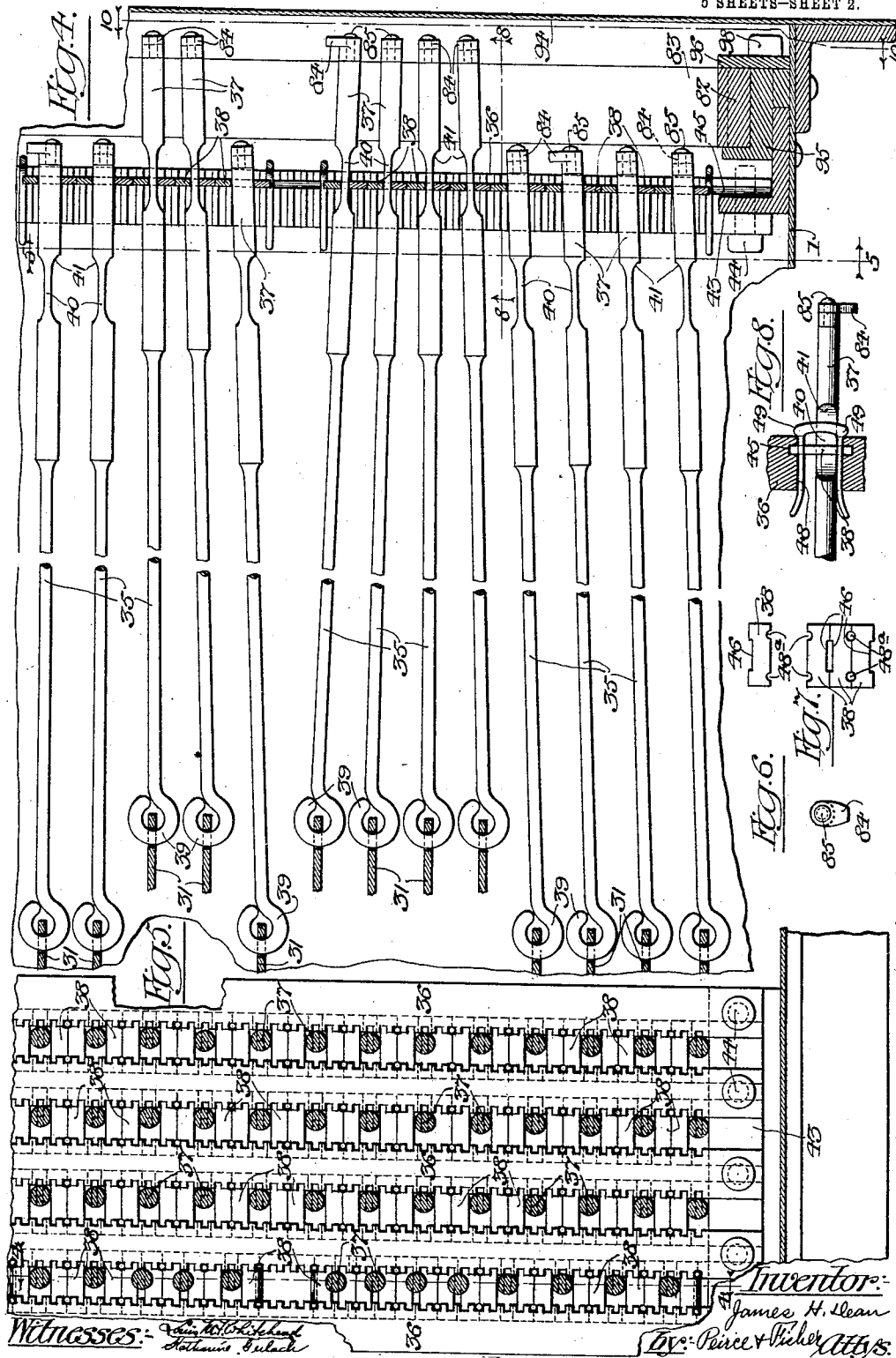
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5 SHEETS—SHEET 2.

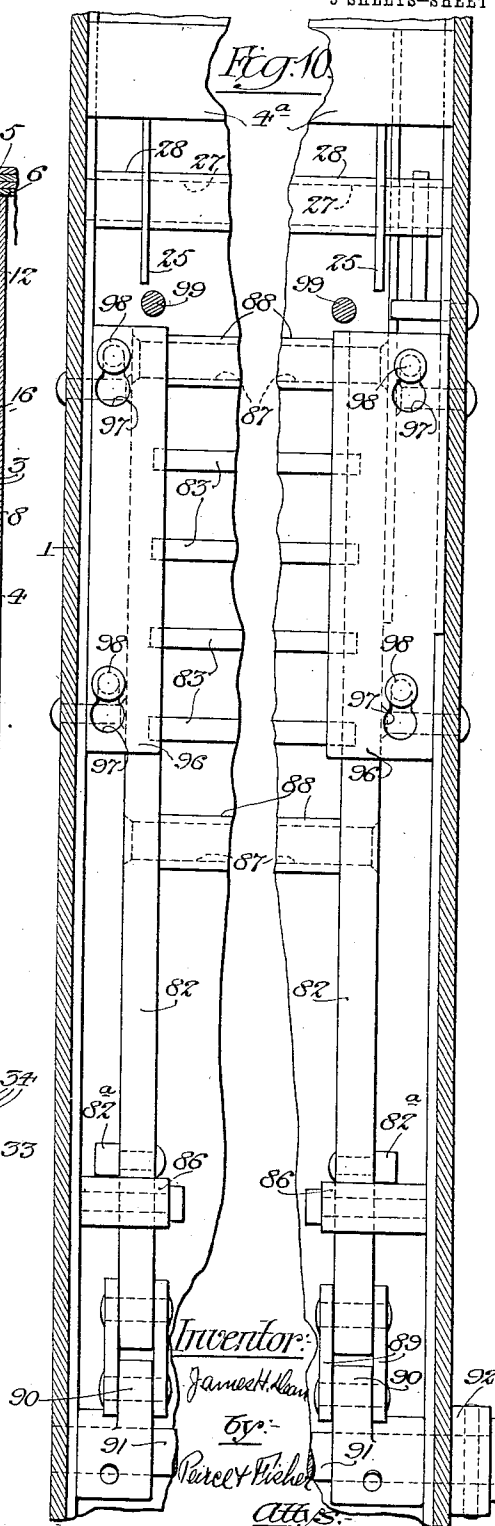
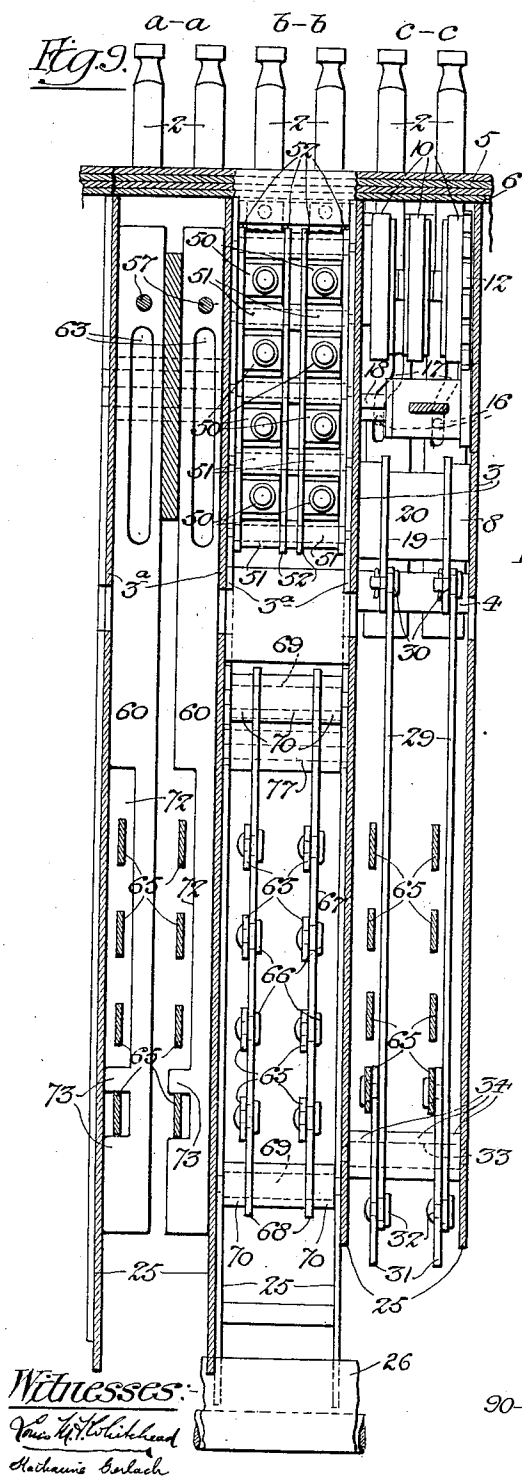


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5 SHEETS-SHEET 3.



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Fig. 11.

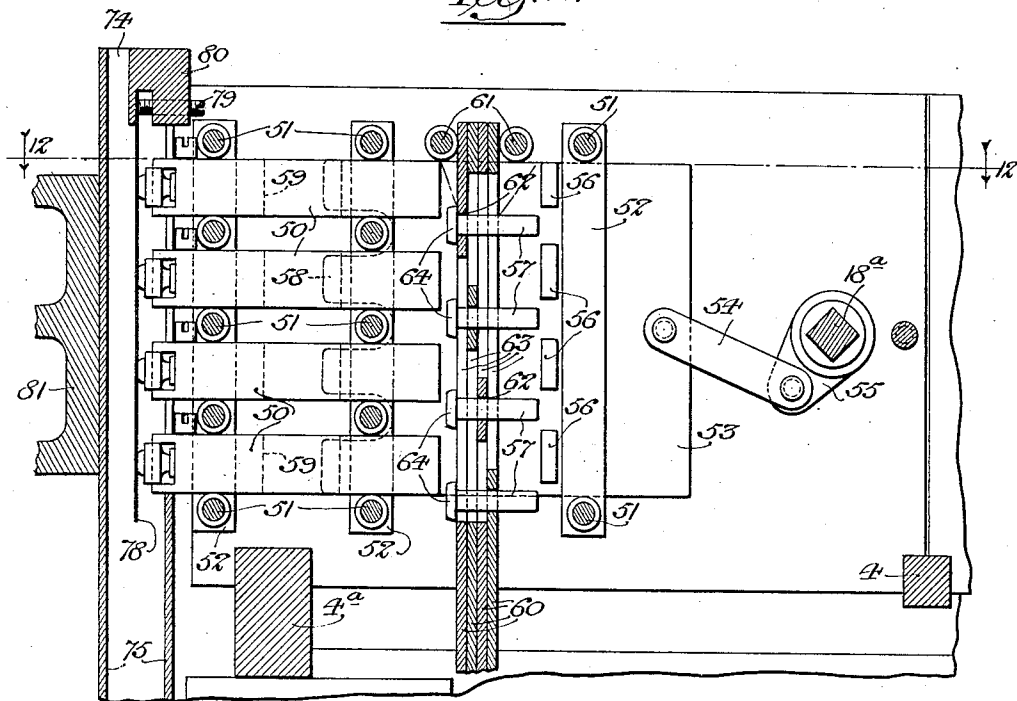
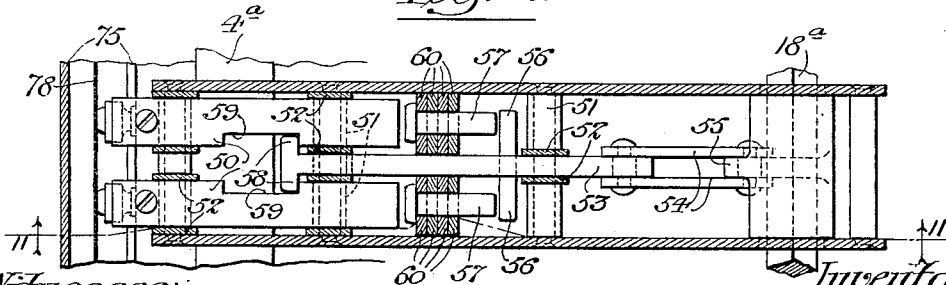


Fig. 12.



Witnesses:

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Stachurs Gulach

Inventor:

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5 SHEETS—SHEET 5.

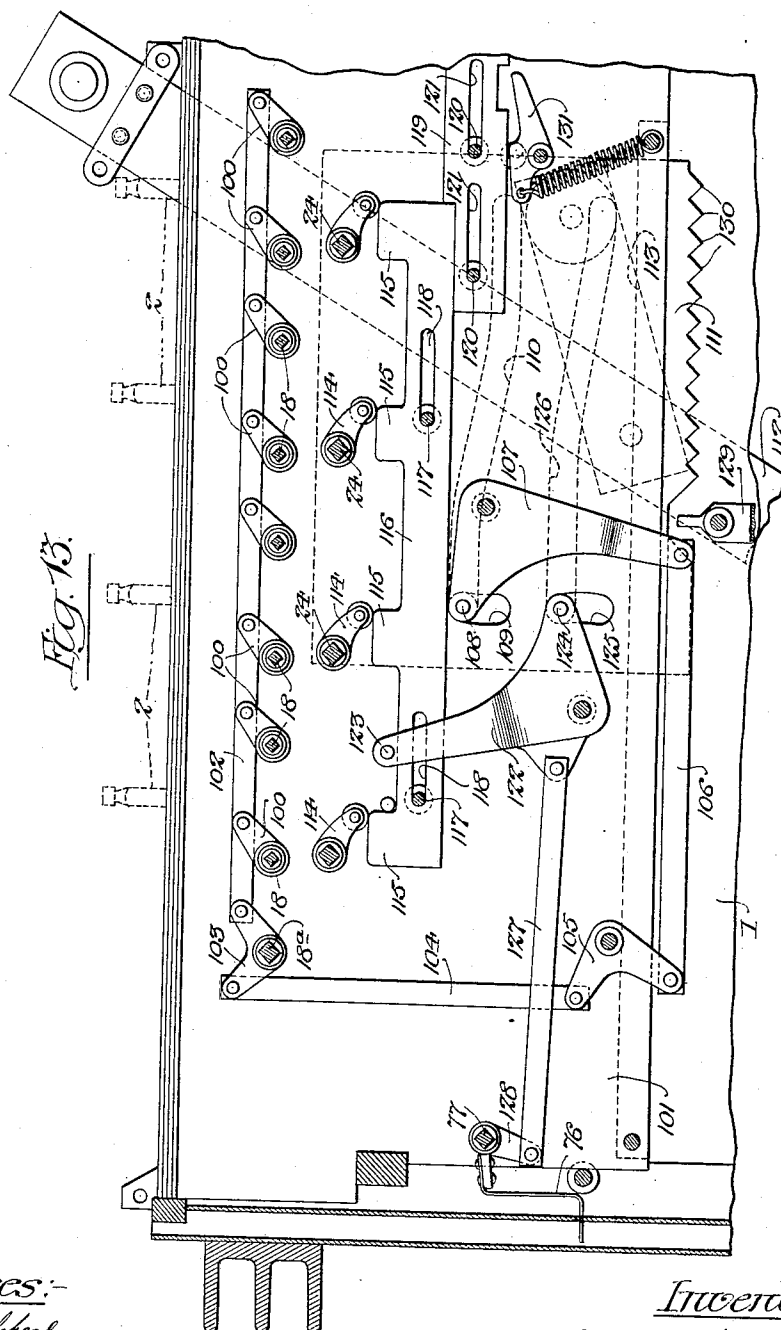


Fig. 13.

Witnesses:-
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UNITED STATES PATENT OFFICE.

JAMES H. DEAN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
EMPIRE VOTING MACHINE COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION
OF NEW YORK.

VOTING-MACHINE.

1,031,171.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed November 4, 1908. Serial No. 461,049.

To all whom it may concern:

Be it known that I, JAMES H. DEAN, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Voting-Machines, of which the following is a specification.

The invention relates to voting machines and more particularly to that type of voting machines adapted for use with the Massachusetts or Minnesota ballot. In these States there is no party alinement of the candidates upon the ballot. Instead, the names of the candidates are arranged in columns, with the names of the candidates for several different offices in the same column, the names of the candidates for the same office being arranged together. For example, the names of the candidates for governor will be arranged at the top of the first column, one below the other, then, in the same column, will follow the names for lieutenant governor, and so on. In voting machines designed for use with the party column and office row arrangement of candidate names, the keys are correspondingly arranged in party columns and office rows and there is a set of interlocking devices for each office row, two or more of which may be arranged in multi-candidate groups. The arrangement of keys and interlocking devices, however, is not adapted for use in connection with the Minnesota form of ballot. Moreover, in these old types of voting machines there is one irregular voting device for each office row that is interlocked with the keys of that row. But this irregular mechanism cannot be satisfactorily employed when the Minnesota form of ballot is employed instead of the party column and office row arrangement of the candidates' names.

The present invention seeks to provide an arrangement of interlocking mechanism and a class voter's lock-out and irregular mechanism in connection therewith, which is particularly adapted to the Massachusetts or Minnesota form of ballot, although it will be understood that certain features of the invention may be applied to other types of voting machines.

The invention consists in the features of improvement, combinations and arrangements of parts hereinafter set forth, illus-

trated in the accompanying drawings and more particularly pointed out in the appended claims.

The invention is illustrated as applied to the flat type of voting machine, as set forth in prior applications filed by me December 27, 1904, Serial No. 238,388, and April 1, 1907, Serial No. 365,369, in which the voting keys are arranged upon the flat top of a box-like frame or casing. It will be understood, however, that the invention could be adapted to other types.

In the drawings, Figure 1 is a vertical cross-section from side to side of the machine. Fig. 2 is a detail view of certain parts of the irregular voting mechanism. Fig. 3 is a detail plan section on the line 3-3 of Fig. 1. Fig. 4 is a detail horizontal section on line 4-4 of Figs. 1 and 5. Fig. 5 is detail vertical section on the lines 5-5 of Figs. 4 and 1. Fig. 6 is a detail end view of one of the interlocking arrows. Fig. 7 is a detail plan view of some of the interlocking blocks. Fig. 8 is a detail section on the line 8-8 of Fig. 4. Fig. 9 is a detail vertical section with portions thereof taken respectively on the lines *a-a*, *b-b* and *c-c* of Fig. 1. Fig. 10 is a detail vertical section on the lines 10-10 of Figs. 1 and 4. Fig. 11 is an enlarged detail view of a portion of the irregular voting mechanism, parts being shown in section on the line 11-11 of Fig. 12. Fig. 12 is a detail plan section on the line 12-12 of Fig. 11. Fig. 13 is a detail cross section at the rear of the machine showing the operating mechanism.

As in the constructions shown in the prior applications referred to, the machine is provided with a box-like frame or casing 1 having vertically movable ballot indicators or keys 2 extending through the flat top of the machine frame. These keys are mounted on removable units or sections, with two keys, counters controlled thereby, and restoring devices for the keys arranged in each section. Each section comprises a pair of connecting side plates 3 and the sections are mounted in the upper portion of the machine upon supporting bars 4 that extend from front to rear of the machine frame. The counter sections are arranged below a pair of removable top plates 5 and 6. Each key extends through a guide 7 at the upper

portion of the counter section and is provided with a depending tail piece 8 which extends between a pair of guide pins or rollers 9 at the lower portion of the counter section. The two counters for the keys of each section are arranged on opposite sides of the keys and each comprises a set of counter wheels 10 mounted upon a cross-pin 11 that extends between the side plates of the counter section. The units wheel of each counter is provided with a Geneva stop gear 12 which is arranged to be operated by the single toothed, Geneva stop actuator 13. Each actuator is rotatably mounted in a support 14 that is axially movable upon a pair of cross-pins 15 extending between the side-plates of the counter-section. The tail portion 8 of each key is provided with a cam slot 16 (see Fig. 9) that engages a pin 17 connected to the carrier or holder 14 of the corresponding counter actuator. By moving the key vertically to and from voted position, the part 14 is shifted to move the actuator 13 axially into and out of operative relation with the gear 12 on the units wheel of the corresponding counter. The actuators of the several counter sections extending in a series from front to rear of the machine, are arranged in line and a number of actuator shafts 18 extend therethrough. These actuator shafts are oscillated by the operating mechanism to advance the counters corresponding to the voted keys. This counter mechanism is more fully set forth in the prior applications referred to.

Each key is slotted to engage one end of a rock-arm 19 that is loosely mounted upon a hub 20 journaled between the side plates of the counter section. A laterally projecting lug 21 on the hub 20 extends between a pair of shoulders 22 and 23 on the rock-arm 19. The hubs 20 of the several counter sections extending from front to rear of the machine are arranged in line and are provided with square openings. A number of square shafts 24 extend through these openings and are controlled by the operating mechanism. These shafts are normally held in the position shown in Fig. 1 with the lugs 21 on the sleeve 20 engaging the shoulders 22 of the rock-arms 19 to lock the rock-arms and keys against movement with the keys in their normal, raised or unvoted position. When the voter is admitted to the machine, the shafts 24 are unlocked so that the voter may indicate his choice by depressing the ballot indicators or keys 2 to voted position and thereby shift the actuators 13 relatively to the corresponding counters. At the end of the voting operation, the shafts 24 are oscillated back to normal position to restore and lock the keys and counter actuators. The lugs 21 are considerably narrower than the spaces between the shoulders 22 and 23, so that there is a lost motion connection be-

tween the restoring shafts 24 and the keys to permit the independent operation of the several keys connected to each of the shafts.

The keys, as in the machine shown in the prior applications referred to, are arranged in columns extending from front to rear of the machine and in rows extending from side to side thereof. In said prior devices, a set of interlocking devices was provided for each transverse row of keys with means for connecting the interlocking devices of adjacent rows to form groups. In such prior machine and in other prior machines of similar party column and office row arrangement, the keys of each row cannot be subdivided; that is to say, they must either all be arranged in a single candidate group, or all arranged with adjacent office rows in multi-candidate groups. In other words, the office row or set of keys is a unit and is thrown into and out of groups as a whole. Moreover, if two office rows are arranged in multi-candidate groups, the number of keys which can be voted in that group is limited to two. If three office rows are thrown into a group the number which can be voted is limited to three, and so on, and it cannot be conveniently otherwise arranged. For these reasons, the adjacent keys in the rows or columns cannot be subdivided in any desired manner so that any number of adjacent keys can be arranged in a group and the number of keys which can be voted in that group limited to any desired number, and such arrangements are not, therefore, adapted to the Massachusetts or Minnesota type of ballot. In such prior devices there is a set of interlocking devices for each office row, as stated. In the present construction, there is a set of interlocking devices for each column of keys and means are provided whereby each set of interlocking devices may be arranged in groups in any desired manner. That is to say, any number of adjacent interlocking devices with the keys connected thereto may be arranged in a group and the number of keys which may be shifted to voted position in any group can be limited to any desired number. Moreover, means are connected with each of the regular candidate keys for preventing a vote for any regular candidate for the same office so that no special interlocking devices are required in connection with the irregular voting mechanism and the latter does not interfere with the grouping of the keys in conformity with the Massachusetts or Minnesota form of ballot.

For convenience in manufacture and in assembling the machine, the parts of the interlocking and irregular voting mechanism that are associated with the keys are carried upon units or sections arranged below the counter sections. Each of the former sections is of the same width as the counter

sections and comprises a pair of connected side-plates 25 that extend from side to side of the machine below one of the transverse rows of counter sections, it being understood that there is one of these lower sections for each transverse row of counter sections, as shown in Fig. 9. Each plate 25 is notched at the ends of its upper edge to engage the large supporting cross bars 4^a. The lower left-hand end of each plate is notched to engage and rest upon a supporting cross-bar 26. The left-hand end of these plates is considerably wider than the right-hand end as shown, and their lower edges are inclined upwardly from left to right. A supporting rod 27 extends through the right-hand ends of the plates and a series of spacing collars 28 are arranged on these rods between the plates.

The tail portion of each rock-arm 21 is provided with a depending link 29 that is connected thereto by a pivot pin 30. The lower end of each link is connected to the central edge portion of a semi-circular segment 31 by a pivot pin 32. The segments 31 are arranged as shown closely adjacent the lower inclined edges of the plates 25 so that the segments connected to the different columns of keys that extend from front to rear of the machine, are arranged at different heights, the links 29 being correspondingly of different lengths. The interlocking rods 35, of which there is one set for each column of keys, are also of different lengths and are connected as shown, one to the lower right-hand corner of each of the segments 31. From the segments 31 the interlocking rods 35 extend horizontally or at right angles to the links 29 at the right-hand end of the machine where they rest upon a series of horizontal supporting bars 36 that extend from front to rear of the machine and at right angles to the interlocking rods 35. The rods 35 are provided at their ends with enlarged spreader portions 37 and cooperate with rows of interlocking blocks 38 that are arranged to slide in horizontal direction in guide grooves or channels formed in the supporting bars 36. When any key is depressed to voted position, the corresponding segment 31 is oscillated through the medium of the rock-arm 21 and link 29 to move the interlocking rod 35 connected with the key longitudinally and thereby wedge apart or spread the interlocking blocks 38. By limiting the extent to which the interlocking blocks may be spread or shifted laterally, the number of keys which may be voted in the different groups can be properly limited. It should be noted that there is one row of interlocking spreaders and blocks for each column of keys and, that by the peculiar arrangement set forth, the rows of interlocking spreaders and blocks are compactly arranged one above the other at one side of

the machine where they are easily accessible for grouping.

The interlocking rods and spreaders must shift laterally to a certain extent with the interlocking blocks, and to permit this lateral or horizontal swing of the rods the latter are provided at their left-hand ends with eyes 39 (see Fig. 4) which engage openings in the lower corners of the segments 31. The rods as shown, are round and the enlarged spreader portions 37 thereof are integral with the rods and are cylindrical as shown. The spreaders are provided intermediate their ends with thinned portions 40 having wedge-shaped shoulders 41 at their ends. In the unvoted position of a key, the thin portion of the corresponding interlocking rod is opposite the row of blocks but, when the key is depressed to voted position, the enlarged, outer end of the spreader is brought into engagement with the blocks, the wedge faces 41 serving to force the blocks apart to permit the entrance of the enlarged, outer end portion of the spreader. The supporting bars 36 are securely fixed in position. At their rear ends (see Figs. 1 and 3) they engage sockets in a short, vertical supporting plate 42. Their forward ends are notched (see Fig. 4) to engage the rib of an angle bar 43 to which they are secured by pins 44. The interlocking blocks 38 are in the form of thin, flat plates that are held in position in a vertical plane or at right angles to the direction of movement of the interlocking rods and spreaders by guide grooves 45 in the adjacent faces of the supporting rods 36. The upper and lower edges of the blocks extend within the grooves 45 of the supporting rods or guides 36 and are slidable laterally or in horizontal direction therewith. The blocks are preferably provided in their edges with notches 46 (see Fig. 7) through which the contracted part 40 of the spreaders 38 extend. When a spreader is in unvoted position, the ends of the two adjacent blocks will abut and the contracted part of the spreader will loosely fit in the notches 46 thereof so that there will be no friction between the parts when shifted laterally during the operation of the machine and adjacent blocks will not be spread or separated when an unvoted spreader assumes an inclined position. The adjacent faces of the guides or supporting bars 36 are not only provided with the longitudinal grooves 46, but are also provided with a series of transverse grooves 47, the distance between which is equal to one "step" of the interlocking mechanism, *i. e.*, the distance through which the blocks are shifted or spread by the movement of one of the keys and interlocking spreaders to voted position. These grooves are arranged to receive U-shaped locking pins 48 (see Fig. 8) that are preferably formed of spring metal

with the ends of the legs of each pin out-turned so that they will be yieldingly held in position with the outturned portions extending beyond the inner faces of the supporting bars or guides 36. The outer, closed portions of the locking pins are provided with projections or lugs 49 that engage the outer edges of the guide bars 36. These pins serve to lock the end blocks of the several groups to thereby limit the number of spreaders and keys which can be shifted to voted position. Preferably, each block is divided centrally or formed of two sections so that one section may form the end block of one group and the other section the end block of the adjacent group, and the edges of these sections are provided with notches 48^a (see Fig. 7) for receiving the grouping pins 48.

In order that each column of keys and the interlocking devices therefor may be divided up or grouped in any desired manner, that is, with any number of keys in a group and the number to be voted in each group limited to any number, the parts of the interlocking mechanism should be so proportioned that, when not grouped, all of the keys and interlocking spreaders may be moved to voted position, as shown in the three lower rows in Fig. 5, with the enlarged portions of the spreaders between the blocks. To form any group of keys and rods, the proper number of keys in the group are moved to voted position and then the corresponding interlocking spreaders are moved together and the outside end blocks or the adjacent half sections thereof are locked against lateral movement by two of the pins 48. In Fig. 4 for example, an arrangement of the mechanism is shown at the upper portion of the figure for a group of five candidates, any three of which may be voted for by a single elector. In the lower portion of Fig. 4, the interlocking mechanism is arranged for a group of eight candidates is shown with four to be voted for. By this means, each of the columns of keys and the corresponding rows of interlocking devices may be divided up into groups in any desired manner. For example, if the first five keys of the first column are devoted for candidates for governor, the corresponding five interlocking spreaders may be arranged in a group and the interlocking pins so arranged that only one can be voted. The next series of keys in the column could be similarly arranged for lieutenant governor and the next series of keys be arranged if necessary, in a multi-candidate group of any number of candidates with the number which may be voted limited to any number. In preparing the machine for an election therefore, the names of the candidates for the different offices would first be associated with the keys in the first column and after these had been utilized the keys in the second column could be employed

for different sets of candidates for different offices and if there were more candidates for additional offices, the third and fourth columns could be utilized. In this way the interlocking mechanism of the machine is perfectly adapted for the Massachusetts or Minnesota type of ballot. It will be understood, that although the interlocking mechanism prevents a candidate from overvoting he can by restoring any key or keys correct or change his vote before the end of the voting operation, since the movement of the key back to unvoted position will also restore the corresponding interlocking spreader.

In voting for irregular candidates or those not nominated by any party and whose names do not appear upon the face of the machine opposite the regular candidate keys, the voter writes the name of the candidate of his choice upon a paper ballot. In the present machine, means are provided in connection with each regular candidate voting mechanism for marking the irregular ballot, if any is cast by the voter. For this purpose, a series of impression devices or printing plungers 50 are provided one for each of the regular voting keys. These plungers are arranged in unit sections at the upper, left-hand portion of the machine frame. These sections, like the counter sections, are formed of connected side-plates 3^a. In the form shown, there are two vertical rows of printing plungers 50 in each section with four plungers in each row, the number of plungers in each row corresponding to the number of keys in each transverse row on the machine, which of course can be changed as becomes necessary or desirable. The plungers are held in place, but so as to be longitudinally movable, by horizontal guide pins or rollers 51 extending between the side-plates 3^a and by vertical guide pieces 52. An actuator for the two vertical rows of each irregular section is arranged between the two rows and is in the form of a flat, vertical plate 53 that is similarly guided between the rollers 51 and vertical strips 52. At its inner edge (see Figs. 1, 11 and 12), the plate 53 is connected by a double link 54 to a crank-arm 55, the hub of which is journaled in the side-plates 3^a. These hubs are all arranged in line and an oscillating actuator shaft 18^a extends there-through. At the end of the operation of the machine, this shaft is oscillated to move the cranks 55 from the position shown in full line (see Fig. 1) to that shown in dotted line, so that the actuator plate 53 is moved forward and back to normal position. At its inner portion and on opposite sides, the actuator 53 is provided with a series of projecting lugs 56, one for each of the plungers 50, and a series of pins 57 are arranged to be interposed between the lugs 56 and the inner ends of the plungers 50, so that the

plungers will be moved forwardly with the actuator. At its forward edge, the actuator plate is provided on opposite sides with laterally projecting lugs 58 which set within recesses or notches 59 in the adjacent sides of the printing plungers 50 so that the plungers will be returned with the actuator. No plungers will, however, be pushed forwardly unless the corresponding pin 57 has been shifted to position between the rear end of the plunger and the corresponding lug 56 upon the actuator 53.

The four pins 57 of each row are carried, one by each of a set of four vertically disposed bars 60, that are placed close together side by side and the upper ends of which extend between a pair of guide pins or rolls 61 that are secured at their ends to the side-plates 3^a of the corresponding irregular section. The four plates of these sets are illustrated in detail in Fig. 2. As there shown, the plates are provided with holes 62 for receiving the pins 56, these holes being at different distances from the ends of the plates, so that the pins will be properly held one above the other. Each of the pins is thus connected to and shift with one of the plates 60. It, however, extends through slots 63 formed in all of the other plates so that the pins and plates may be shifted in vertical direction independently of one another. It should be noted that the pins are free to move in horizontal direction with the actuator plate 53. The outer ends of the pins are provided with heads 64 which normally rest against the outer plates 60 and behind the inner ends of the printing plungers 50, so that the pins cannot be displaced from position. The inner ends of the pins are, however, normally out of line with the lugs 56 on the actuator 53, so that no impression device or plunger will be operated by the movement of the actuator plate 53 unless the corresponding pin is raised into the path of one of the lugs 56.

The movement of the plates 60 and pins 57 in vertical direction to set the plungers or impression devices into and out of position for operation is controlled by the regular candidate keys 2. For this purpose, each key is arranged to operate a link 65 that is connected at its right-hand end to the corresponding segment 31 and extends laterally therefrom to the left-hand side of the machine. The links of the different columns are of different lengths as shown, and are arranged one above the other. At their outer ends they are provided with shouldered pins 66 which engage cam grooves 67 in a series of vertical plates 68. These plates are arranged between the section plates 25 on supporting pins 69 and are held in proper position by spacing washers 70 on the pins 69. The links or bars 60

extend downwardly between the plate 25 and adjacent the inner edges of the plates 68 and are held in place between the inner edges of this plate and a guide pin 71 that extends between the plates 25. Each of the plates 60 is provided with a notched portion 72 through which the links 65 extend, but each is provided with lugs or shoulders 73 for engaging one of the links. The cam slots 67 are so arranged that, when any key is depressed to voted position, the corresponding segment 31 will be oscillated through the medium of the rock-arm 19 and link 29 to move the corresponding link 65 toward the right. The movement of the pins 66 on the end of the link in the cam slot 67 will raise the link and the corresponding vertical bar or link 60 and the pin 57 thereon, so that the corresponding printer or impression device will be placed in position for operation by the reciprocating plate 53 and the irregular ballot, if any is cast by the voter, will be correspondingly marked. It should be noted that there are four rows of markers, one above the other, which correspond to the different columns of keys, so that the different impressions upon the irregular ballot could be identified with the respective offices by the location on the irregular ballot. Preferably, however, the printing plungers or markers are provided with impression faces differing in character; for example, they could be numbered and lettered in correspondence with the numbering and lettering of the keys, so that the impressions or markings on the irregular ballot can be properly identified with the different regular candidate keys and will accurately show the regular candidates for whom the voter has cast a ballot. Should the voter attempt to cast a vote for an irregular candidate for the same office, the marking or impression of the regular ballot in this way will serve to cancel any such vote. In a multi-candidate group, the impression devices will show how many regularly nominated candidates the elector has voted for so that he cannot overvote upon the irregular ballot.

With the particular embodiment of the invention set forth, separate cards will be prepared for use as irregular ballots, such cards having blank spaces for the different offices arranged in correspondence to the ballot upon the face of the machine. If the voter desires to cast a ballot for an irregular candidate for any office, he will write his name in the proper space upon a blank irregular ballot and place it in a slot 74 at the left of the upper face plate of the machine and it will drop to position between the side plates 75 with its lower edge resting upon supporting hooks 76 that are carried by an oscillating shaft 77. An inking ribbon 78 is made fast at its upper edge by screws 79

to a bar 80 and hangs in front of the printing plungers 50, so that the ballot will be properly marked to prevent an elector from overvoting. A transverse bar 81 is secured 5 to the outer face of the outer side-plate 75 to receive the pressure of the printing plungers. The retraction of any regular candidate key will similarly retract or place out of operative condition the corresponding 10 printing plunger, so that the voter can correct or change his vote for a regularly nominated candidate and cast a vote for an irregular candidate if he desires to do so. If he has voted for an irregular candidate for any given office and desires to 15 change his vote before the completion of the voting operation and vote for a regularly nominated candidate, he can do so by simply depressing the proper candidate key and will thereby cancel the vote he has previously made for an irregular candidate. As above explained, the printing plungers of the depressed keys are not operated until the voter leaves the machine, and then by 25 throwing the operating lever the machine causes all of the printing plungers whose keys are in operative position to be simultaneously actuated for the purpose of marking the card ballots simultaneously with 30 their several marks. In this sense the action of the printing plungers is a delayed action and has for its object to permit a voter to arrange and rearrange his ballot as much as he pleases and then to mark his ballot simultaneously with the selected 35 plungers.

The class voter's lock-out comprises a shifting frame formed of vertical bars 82 and cross-bars 83, the latter being 40 arranged one above the other, below the ends of the interlocking spreaders 37 and arranged to cooperate with adjustable lugs or abutments 84 upon the ends of the interlocking spreaders. These abutments are 45 secured to the ends of the spreaders by rivets 85 and may be turned on the rivets either to a horizontal position or to a depending position, as shown in the drawings. The vertical bars 82 are arranged 50 adjacent the front and rear plates of the machine frame and at their lower ends slide through suitable guides 86 fixed respectively to the front and rear plates of the machine, as shown in Figs. 1 and 10. These bars 55 are connected at their upper ends and intermediate their ends by cross-bars 87 upon which are mounted spacing sleeves 88. The lower ends of the vertical bars 82 are connected by double links 89 to crank-arms 90 60 upon a shaft 91.

In preparing the machine for an election, the abutments 84 upon the interlocking spreaders corresponding to the offices for which women or other class voters cannot 65 vote, are turned down, while the remainder

are left in horizontal position. Normally the parts of the class voting lock-out are in the position shown in the drawings with stop-pins 82^a upon the vertical bars 82 engaging the guides 86. In this position, the cross-bars 83 do not in any way interfere 70 with the operation of the interlocking rods and voting keys connected thereto. When a restricted or class voter is admitted to the machine, the judge of election will shift 75 the shaft 90 through the medium of an indicating pointer or handle 92 at the rear of the machine from its "regular" position to its "special" position. This shift of the shaft will lift the rods 82 and cross-bars 80 83 until the cranks 89 strike the stop-pins 93 on the front and back plates. The cross-rods or bars 83 will then be in position to cooperate with the downturned abutments 84 and lock out the voting mechanisms of the 85 candidates for offices for whom the class voter is not entitled to register a vote. The other voting mechanisms, however, remain unlocked, and may be voted in the ordinary manner. After the class voter leaves the 90 machine, the judge of election will of course restore the class vote lock-out to its normal position. The right-hand side-plate 94 of the machine is normally locked in position during an election, but is removable by the 95 custodian of the machine for adjusting the interlocking mechanism and the class voter's lock-out. To afford access to the grouping devices of the interlocking mechanism, the cross-bars 83 are removably arranged in 100 grooves or sockets in the inner side faces of the bars 82. The upper end of the forward side-bar 82 engages an angle piece or guide block 95, the rear vertical bar 82 engages the plate 42, and the ends of the 105 cross-bars 83 also abut against the angle bar 95 and the plate 42. They are held in position by two locking plates 96 which are provided with slots 97 for engaging headed pins 98. The lower ends of these 110 blocks are enlarged so that they may be disengaged from the pins to release the cross-bars 83. The removable side-plate or door 94 is provided with a pair of thick, inwardly projecting pins 99 which extend 115 over the upper ends of the locking plates 96 and hold them against displacement and against disengagement from the headed pins 98. The pins 99 are so arranged that the side door 94 cannot be put in place 120 unless the locking plates 96 are in proper position with the upper, narrow ends of the slots 97 engaging the pins 98.

The operating mechanism is similar to that set forth in the applications above referred to. The actuator shafts 18 and 18^a extend through the hubs of a series of crank-arms 100 that are journaled in the main operating section 101 at the rear of the machine, as shown in Fig. 13. These crank- 130

arms are connected by a common link 102 and the end one of the series is provided with a projecting arm 103 that is connected by a link 104 to a bell-crank 105 journaled at the lower portion of the main operating section. A horizontally extending link 106 connects the bell-crank 105 to one arm of an operating bell-crank 107 that is journaled in the main operating section. A pin or roller 108 on the bell-crank 107 extends through a slot 109 in the rear plate of the main operating section and engages a cam slot 110 in a shifting cam plate or carriage 111. This cam plate is arranged to reciprocate in suitable guideways on the back of the main operating section and is shifted by a lever 112 that is connected thereto by a link 113. The locking and restoring shafts 24 engage the hubs of a series of crank-arms 114 that are journaled in the main operating section. These crank arms are normally engaged by lugs 115 on a locking and restoring bar 116. This bar is mounted upon a pair of cross-pins 117 which extend through slots 118 therein, so that the bar may be shifted to a limited extent in horizontal direction. The locking and restoring bar 116 is shifted in one direction by the judge's intervening bar 119 which is mounted upon cross-pins 120 extending through slots 121 therein and which bar extends out through the side, rear portion of the machine frame. The locking and restoring bar 116 is shifted in the opposite direction by a bell-crank 122 journaled in the main operating section and having a pin 123 at its upper end arranged to engage one of the lugs 115. A pin or roller 124 upon the other arm of the bell-crank 122 extends through a slot 125 in the rear plate of the main operating section and engages a cam slot 126 in the operating cam plate or carriage 111. A link 127 connects the bell-crank 122 to an arm 128, the hub of which is engaged by the shaft 77. A pivoted full-stroke dog 129 is arranged to engage ratchet teeth 130 upon the lower edge of the cam-plate or carriage 111 to compel the complete shift thereof in opposite directions.

The cam plate or carriage is normally at the left-hand side of the machine. When the voter is admitted, he shifts it to the right-hand side, or to the position shown in Fig. 13, through the medium of the main operating lever 112. The crank-arm 122 is thereby moved to shift the pin 123 and release the bar 116. At the end of the movement of the carriage, it trips a spring-held latch 131 which normally locks the judge's intervening bar 119 against movement. The latter can then be pushed in by the officer in charge of the machine to shift the bar 116 and release the shaft 24 and the keys controlled thereby. The voter then indicates

his choice for regular and irregular candidates as described and, as stated, can correct or change his vote at any time before he completes the voting operation by returning the lever 112 and carriage 111 to the left. The oscillation of the actuator shafts 18, effected by the cam plate 111 and bell-crank 107, effects the oscillation of the counter actuators 12 and advances the counters corresponding to the voted keys one step. The bell crank 107 also oscillates the shaft 18^a and the printing plungers 50, corresponding to the voted keys of the regular candidates, will be operated thereby to mark any irregular ballot which may be deposited by the voter in the slot 74. At the end of the restoring shift of the carriage, the bell-crank 122 will be shifted to restore and hold the locking bar 116 in normal position, so that the shaft 24 will be oscillated to restore and lock the keys and the interlocking and irregular voting mechanisms connected thereto in normal position. This shift of the locking bar 116 will also restore the judge's intervening bar 119 which will then be locked in position by the latch 131 so that it cannot again be pushed in to release the keys until after the next voter has shifted the cam plate or carriage 111 to the right to unlock the latch 131. The movement of the bell-crank 122 will also rock the shaft 77 through the medium of the link 127 and arm 128 to move the supporting fingers 76 out of the passage way between the plates 75, so that any irregular ballot which is deposited in the machine, will fall down into the bottom of the machine casing.

It is obvious that numerous changes could be made in the details set forth without departure from the essentials of the invention.

I claim as my invention:

1. In a voting machine, the combination with a series of voting keys, of a series of interlocking rods, a series of pivoted members to which said interlocking rods are connected, links connecting said pivoted members and said keys to shift said rods longitudinally, said interlocking rods being shiftable laterally independently of said pivoted members, and means limiting the lateral shift of said interlocking rods.

2. In a voting machine, the combination of a series of keys with a series of pivoted rock arms connected to said keys, a series of pivoted members arranged below said rock arms, links connecting said rock arms and said pivoted members, a series of interlocking rods connected to and longitudinally shifted by said members, said rods having spreader portions, spacers between said spreader portions of said rods, and means for limiting the lateral shift of said rods and spacers.

3. In a voting machine, the combination with a series of voting keys longitudinally

- movable through the face of the machine, of a series of interlocking rods longitudinally movable in a direction at right angles to the movement of said keys, operating connections between said rods and keys, said rods being laterally movable independent of said keys and having spreader portions, interlocking blocks between the spreader portions of said rods, and means for limiting the lateral movement of said rods and blocks.
4. In a voting machine, the combination with a number of parallel columns of keys, of a number of rows of interlocking blocks, one for each column of keys, arranged adjacent one another, a corresponding number of rows of interlocking rods having spreader portions engaging said blocks, a number of rows of pivoted members to which said rods are connected, the pivots of said members being arranged in an incline plane, and links connecting said members to said keys.
5. In a voting machine, the combination with a boxlike frame or casing, of a number of columns of voting keys longitudinally movable through the top face of said frame or casing, a number of rows of interlocking blocks, one for each column of keys, guide channels for said blocks arranged adjacent one side of the machine frame, a number of rows of interlocking rods having spreader portions engaging said blocks, a number of rows of pivoted members to which said rods are connected, a series of rock arms engaging said keys, and links connecting said rock arms and said pivoted members.
6. In a voting machine, the combination with a column of keys, of a corresponding row of interlocking blocks, supporting bars having guide grooves wherein said blocks are laterally movable, a series of interlocking rods connected to and longitudinally shifted by said keys and having spreader portions engaging said blocks, grouping pins for locking certain of said blocks and for dividing said keys into groups, and said supporting bars having transverse seats for said pins arranged at a distance apart equal to one step of the interlock.
7. In a voting machine, the combination with a column of keys, of a corresponding row of interlocking blocks, guide channels for said blocks, a series of interlocking rods connected to and longitudinally movable by said keys, said rods having spreader portions engaging said blocks, each of said blocks comprising two sections and means for locking the sections of said blocks against movement to form the end stops or abutments of adjacent groups.
8. In a voting machine, the combination with a number of columns of keys, of a corresponding number of rows of interlocking blocks, supporting bars for said blocks arranged adjacent one another, guide grooves for said blocks formed in the adjacent faces of said supporting bars, a number of rows of interlocking rods having spreader portions engaging said blocks, the rods of the different rows being of different lengths, a number of rows of pivoted members to which said rods are connected and connections between said pivoted members and said keys.
9. In a voting machine, the combination with a number of columns of keys, of a corresponding number of rows of interlocking rods connected to and longitudinally shifted by said keys, a series of adjustable abutments one connected to each of said rods and a shiftable class voter's lockout comprising a number of transverse bars, one for each row of abutments, and means for shifting said rods in a direction transverse to the movement of said interlocking rods.
10. In a voting machine, the combination with a number of columns of voting keys, of a corresponding number of rows of interlocking blocks arranged adjacent one another at one side of the machine frame, a number of rows of interlocking rods having spreader portions engaging said blocks, said rods being connected to and longitudinally shifted by said keys, adjustable abutments pivotally mounted upon the ends of said rods, and a class voter's lockout cooperating with said abutments comprising a pair of longitudinally movable side bars and a number of transverse bars removably mounted on said side bars, and locking plates for holding said transverse bars in position, the side of the frame or casing adjacent said class voter's lockout being removable and having abutments for holding said locking plates in position.
11. In a voting machine, the combination with the regular candidate keys, counters controlled thereby and interlocking mechanism for said keys, of a series of delayed action impression devices each controlled by one of said keys and means for holding an irregular paper ballot in position to be impressed by all of said devices.
12. In a voting machine, the combination with a series of regular candidate keys, counters controlled thereby and interlocking mechanism for said keys, of a series of impression devices corresponding in number and arrangement to said keys, means controlled by each key for setting the corresponding impression device into and out of condition for operation and means for effecting the operation of all of the devices that are in condition for operation.
13. In a voting machine, the combination with a series of regular candidate keys, counters controlled thereby and interlocking mechanism for said keys, of a series of delayed action printers corresponding in number to said keys, actuating means for said

printers and a set of coupling devices, one controlled by each of said keys for connecting and disconnecting the corresponding printer and said actuating means.

5 14. In a voting machine, the combination with a series of regular candidate keys, counters controlled thereby and interlocking mechanism for said keys, of a series of
10 delayed action printers, one for each of said keys, actuating means for said printers, individual coupling devices, one controlled by
15 each of said keys for connecting and disconnecting the corresponding printer and said actuating means, and means for holding an irregular ballot in position to be marked by
all of said printing devices.

15. In a voting machine, the combination with a series of voting keys, counters controlled thereby and interlocking mechanism
20 for said keys, said keys being movable to and from voted position to correct or change a vote, of a number of impression devices, each controlled by one of said keys
25 and arranged to be placed into and out of position for operation thereby, means for holding an irregular paper ballot in position to be marked by all of said impression devices and operating mechanism for effecting
30 the impression of said devices upon the irregular ballot.

16. In a voting machine, the combination with a number of columns of regular candidate keys, interlocking mechanism for
35 said keys and a series of counters, one controlled by each of said keys, of a number of rows of delayed action impression devices arranged at one side of the machine and corresponding in number and arrangement
40 to said columns of keys, means operated by each key for controlling the corresponding impression device and means for supporting an irregular paper ballot in position to be marked by said impression devices.

17. In a voting machine, the combination
45 with a number of columns of regular candidate keys, counters controlled by said keys and interlocking mechanism between the same, of a number of rows of printers, one for each column of keys arranged adjacent
50 one another at one side of the machine frame, a series of actuators for said printers, one of said actuators being arranged to operate a number of said printers, coupling devices for connecting said actuators and
55 printers, shiftable supporting bars whereon said coupling devices are mounted, operating links for said bars and connections between said links and said keys.

18. In a voting machine, the combination
60 with a number of columns of voting keys, counters controlled thereby and interlocking mechanism interposed between said keys, of a number of rows of printers corresponding in number and arrangement to
65 said keys, a set of actuators for said print-

ers, said actuators and said printers being longitudinally movable, a set of coupling pins laterally shiftable to connect said printers and actuators, a set of bars one supporting each of said coupling pins, said bars being
70 movable to throw said pins into and out of operative position, a set of links for shifting said bars, a pin on the end of each of said links engaging a cam slot in one of said
75 plates and connections between the opposite ends of said links and the corresponding keys.

19. In a voting machine, the combination with a column of regular candidate keys and counters controlled thereby, of a row of
80 interlocking blocks and spreaders, said spreaders being connected to and longitudinally shifted by said keys, means for grouping said column of keys and said row of interlocking blocks with any number of keys
85 in a group and with a number of keys which may be limited to any desired number, a row of printing devices for marking an irregular ballot, means controlled by each of said keys for placing the corresponding
90 printer into and out of condition for operation and mechanism for effecting the operation of said printers.

20. In a voting machine, the combination with a number of keys, of a series of counters, counter actuators controlled by said
95 keys and shifted into and out of operative position thereby, mechanism for effecting the operation of said actuators upon said counters, interlocking mechanism interposed between said keys, a set of delayed action
100 printers one for each of said keys, means for holding an irregular paper ballot in position to be marked by said printers, means controlled by said operating mechanism for actuating said printers and coupling devices, one controlled by each of said
105 keys for placing the corresponding printer into and out of condition for operation.

21. In a voting machine, the combination
110 with a series of keys, of a series of counters, one controlled by each of said keys, interlocking mechanism between said keys, a series of printers, one for each of said keys for marking an irregular ballot, means controlled
115 by each of said keys for placing the corresponding printer into and out of condition for operation, and mechanism for operating said printers for advancing the counters corresponding to the voted keys
120 and for restoring and locking said keys in normal position, said counters, said interlocking mechanism and said printers being arranged in removable units or sections.

22. In a voting machine, the combination
125 with regular candidate keys, counters controlled thereby, and interlocking mechanism for said keys, of a series of printers, one for each key, connections between said printers and said keys for causing the operation of
130

the printers of the keys that are placed in operated position, means for simultaneously operating the said selected printers, said printers being placed from each other at a distance less between centers than are the corresponding keys.

23. In a voting machine, the combination with regular candidate keys, counters controlled thereby, and interlocking mechanism for said keys, of a series of printers, one for each key, connections between said printers

and said keys for causing the operation of the printers of the keys that are placed in operated position, said printers being placed from each other at a distance less between centers than are the corresponding keys.

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Witnesses:

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