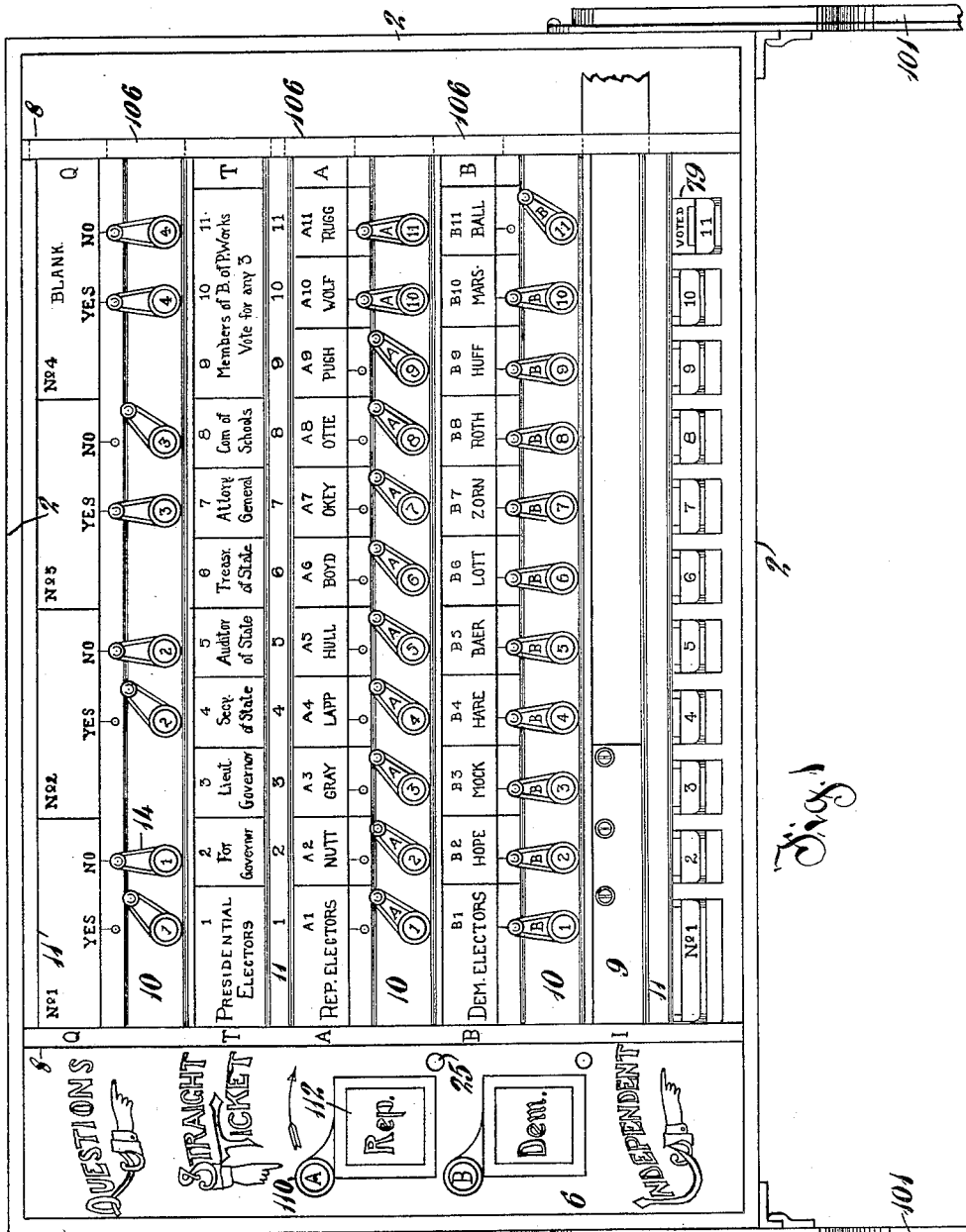


1,062,893.

Patented May 27, 1913.

6 SHEETS—SHEET 1.



WITNESSES:

St. Clampton
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1,062,893.

W. H. DANA.
VOTING MACHINE.
APPLICATION FILED OCT. 13, 1909.

Patented May 27, 1913.
6 SHEETS—SHEET 2.

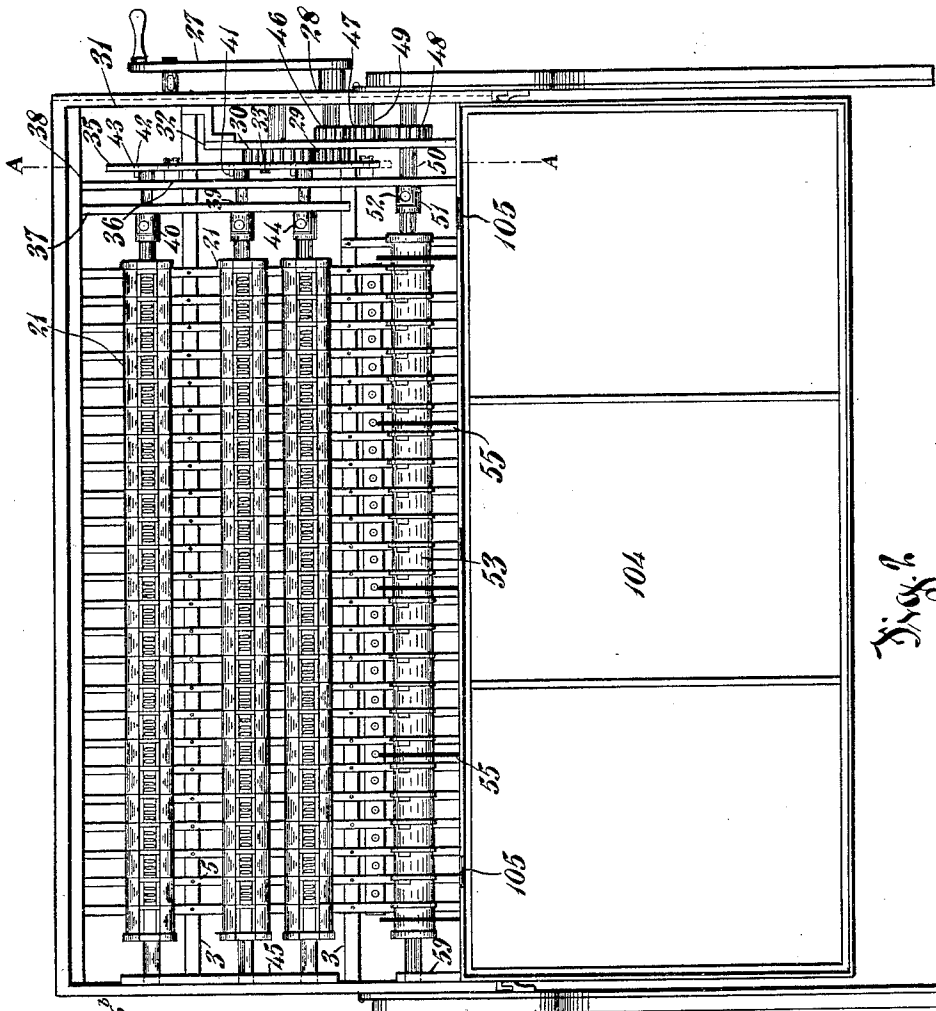


Fig. 2

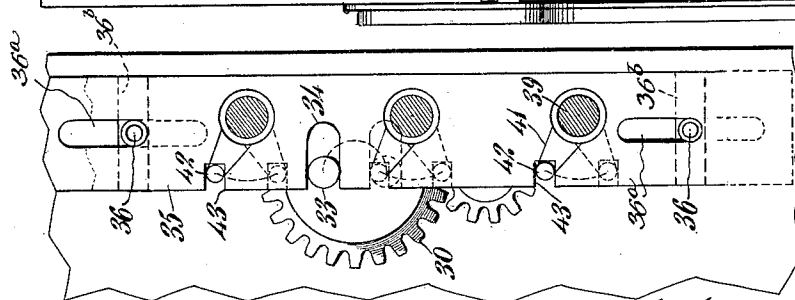


Fig. 3

WITNESSES:
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Patented May 27, 1913.

6 SHEETS—SHEET 3.

1,062,893.

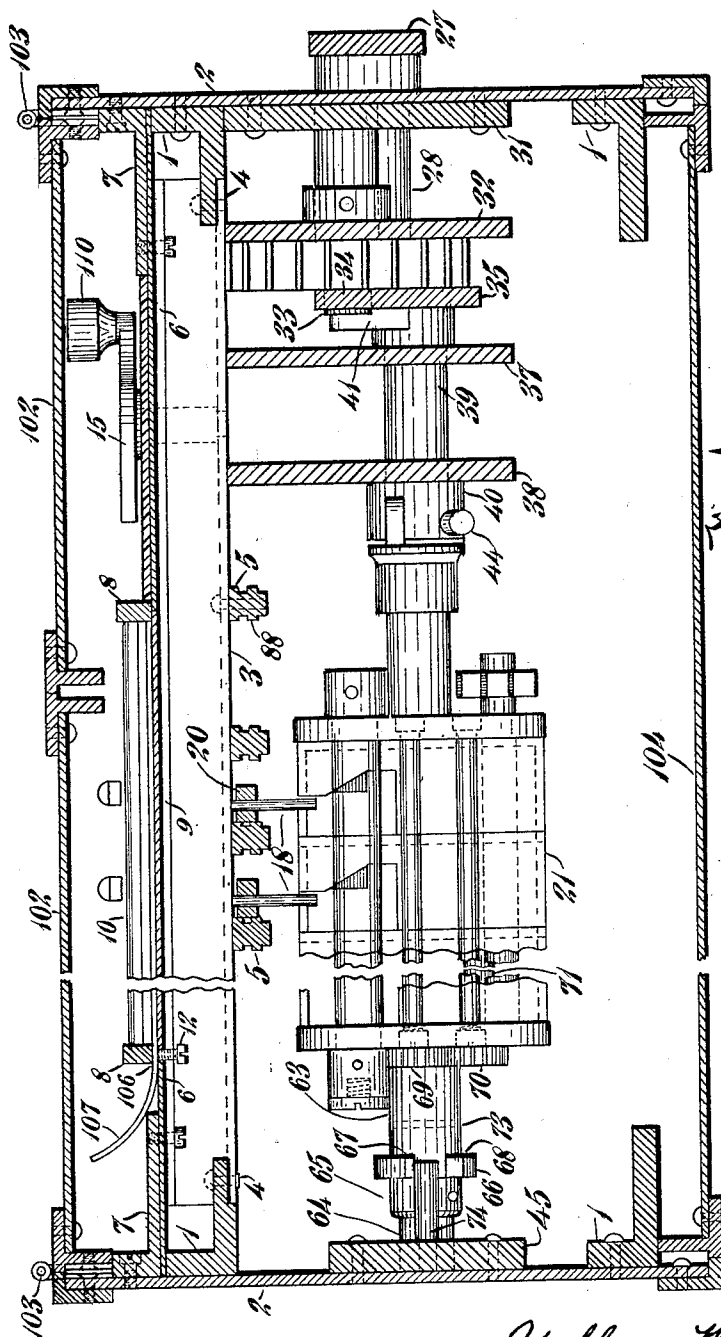


Fig. 4

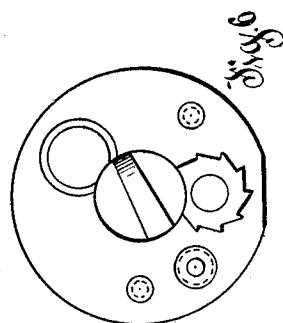


Fig. 6

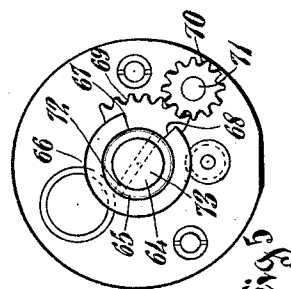


Fig. 5

WITNESSES:

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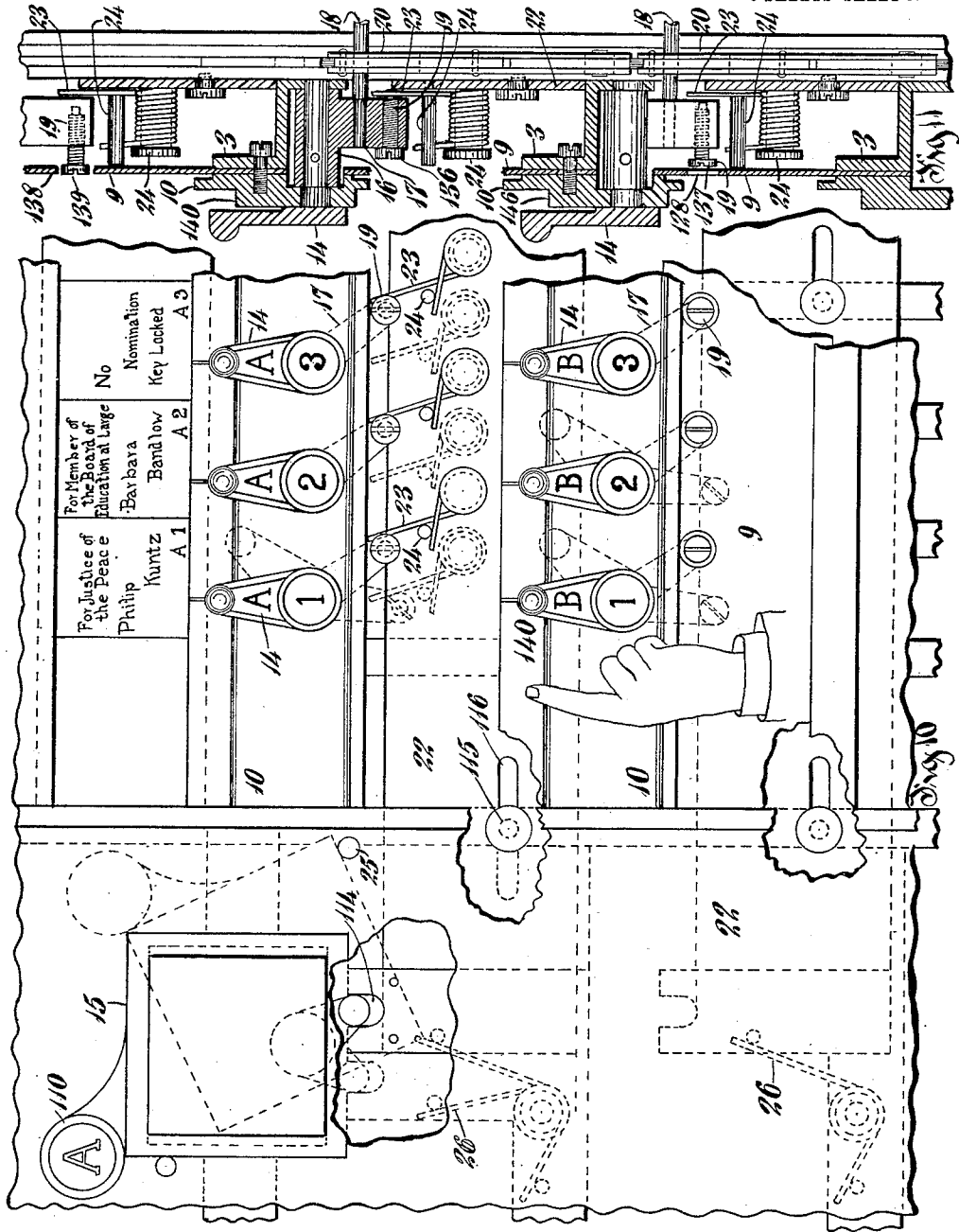
W. H. DANA.
VOTING MACHINE.

APPLICATION FILED OCT. 13, 1909.

Patented May 27, 1913.

6 SHEETS—SHEET 5.

1,062,893.



WITNESSES:

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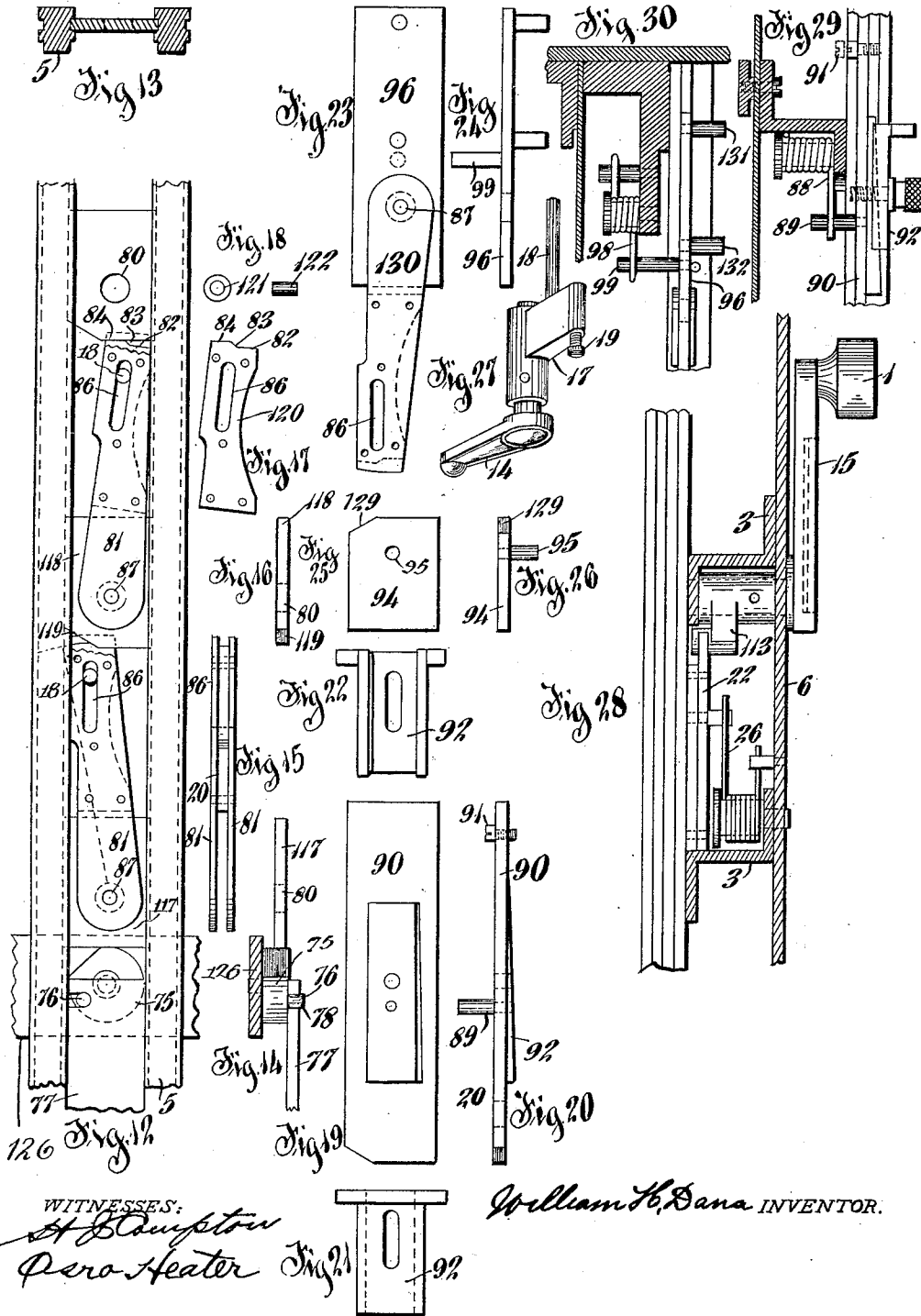
W. H. DANA.
VOTING MACHINE.

APPLICATION FILED OCT. 13, 1909.

1,062,893.

Patented May 27, 1913.

6 SHEETS—SHEET 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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VOTING-MACHINE.

1,062,893.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed October 13, 1909. Serial No. 522,393.

To all whom it may concern:

Be it known that I, WILLIAM H. DANA, a citizen of the United States, residing in Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Voting-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to voting machines, particularly to that general type of machines illustrated in my Letters Patent No. 845860 dated March 5, 1907, and No. 886314 dated April 28, 1908.

In my former machines, the tickets were arranged in vertical rows but for machines in which from 50 to 70 candidates must be provided for for each party ticket, I have found it much preferable to arrange the tickets in horizontal rows.

The object of my present invention, is to improve the construction of my former machines as applied to machines of the horizontal type, with particular reference to the construction of the primary inter-locking mechanism and the voting lever actuating mechanism, by that certain novel construction and arrangement to be hereinafter pointed out in detail and set forth in the claims.

In the drawings Figure 1 is a front elevation of my improved machine showing the two tickets and levers for question voting and ballot receivers for independent voting. Fig. 2 is a rear elevation of the machine with the rear door inclosing the operating parts opened. Fig. 3 is a detail sectional end view taken on the lines A, A of Fig. 2. Fig. 4 is a horizontal section of the machine, with the parts broken away. Figs. 5 and 6 are right and left end views of one of the registry frames. Fig. 7 is an enlarged sectional rear elevation of one end of the machine as shown in Fig. 2. Fig. 8 is a vertical section of that portion of the machine shown in Fig. 7, looking from left to right. Fig. 9 is a detail transverse section of a pair of the guide bars for the inter-locking plates. Fig. 10 is an enlarged sectional front elevation of a portion of the machine as shown in Fig. 1. Fig. 11 is a vertical section of that portion of the machine shown in Fig. 10, looking from right to left. Fig. 12 is a detail rear elevation of a portion of the pri-

mary inter-locking plates and guide bars. Fig. 13 is a cross section of same. Figs. 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 and 26 are detailed views of various parts of the primary inter-locking mechanism. Fig. 27 is a perspective view of one of the key levers. Fig. 28 is a detail cross section illustrating the construction of one of the straight ticket levers and its connections. Fig. 29 is an enlarged cross sectional view of the spring connection for the intermediate inter-locking plates. Fig. 30 is a similar view of the spring connection for the top plates of the inter-locking plate system.

The operating parts of the voting machine are inclosed in a rectangular case made up of light framework, and supported a proper height from the ground in suitable side standards 101, 101.

2, 2, represents the casing plates forming the sides and top and bottom of the framework, and at the front and rear of this framework are securely riveted the angle bars 1, 1 running vertically, while riveted to these angle bars and extending horizontally across the machine are a series of Z-bars 3, 3, which bars form the division between the horizontally disposed tickets and their actuating and registering mechanisms. Riveted to the rear face of these Z-bars and to the top and bottom framework, are a series of grooved bars 5, which run vertically and form the support and guide for the series of primary inter-locking plates which are employed to prevent the actuation of more than the proper key levers in operating the machine.

6, 6 are vertical plates for inclosing the front of the machine, secured to the angle bars 1, 1 to which the corner angle plates 7, 7 on the outside are also secured, while the front of the machine is provided with doors 102, 102 as shown in Fig. 4, hinged at 103, 103, at the front edge of the casing. The rear of the case is also provided with a door or cover 104, hinged horizontally at 105 as shown in Fig. 2, to drop down for access to the rear of the machine. The front of the case is also divided into sections by the vertically disposed division bars 8, 8. Between these division bars 8, 8 are secured the horizontally disposed key plates 10, in which the key levers are mounted, and where required between the key plates 10 the ticket retaining bars 11 are arranged horizontally, the

key plates and ticket retaining plates being properly secured to the Z-bars 3, as shown in Fig. 11.

The key plates 10 and the retaining plates 11 are channeled at their edges and one of the division bars 8, is provided with openings or slots 106, as shown in Fig. 4, through which the printed ballot slips 107, upon which are printed the offices and names of candidates, can be passed into the grooves formed by the channels of the plates 10, 11. When these slips have been placed in position, in fitting up the machine for an election, the screws 12 (shown in Fig. 4), one for each ballot slit, may be tightened to prevent the ticket being shifted or removed during an election. The key plates 10, in conjunction with the Z-bars 3, support and form the bearings for the key levers, one of which is illustrated in perspective in Fig. 27, while the straight ticket levers are supported and have their bearings in the cover plate 6 and the Z-bars 3 as shown in Fig. 28. The key levers are constructed of two parts, the lever proper 14, and the rear extension 17, which forms a crank arm. This crank arm carries a pin 18, and a screw 19 and the pins 18 pass through the inter-locking plates and contact with the registry devices in the registry frames 21 as arranged in my former patents above referred to.

15, 15 are the straight ticket levers, provided with an operating handle 110, one for each party row, formed with a plate 112 to carry the party emblem, and these party levers are provided with the crank arm 113 which engages in a slot 114 in the sliding plate 22 one for each party row, which plates are arranged to move longitudinally guided by the pins 115 which take through horizontal slots 116 in these plates 22. The rotation of any one of the straight ticket levers to the stop pin 25 will thus shift its respective plate 22, while the straight ticket lever operated is returned to its normal position by the spring 26, bearing between a stud in the framework, and a pin on the plate. Each sliding plate is connected with the series of key levers of the particular party row by a series of spring or yieldable arms 23, one of which is provided for each key lever of the row, each spring arm being mounted on a stud on the plate 22, and the tension of the springs being maintained by means of the pins 24 as shown in Fig. 10. The outer ends of these springs 23, engage each one with the screw 19 of its respective key lever. It will be evident from this construction that when a straight ticket lever is operated, all of the key levers of the particular party will also be operated, and that the connection between the straight ticket lever and each key lever of the particular party is a yieldable connection. This forms one of the features of my present invention.

It may frequently happen that a voter by mistake or otherwise, attempts to vote a second straight ticket lever, and one has already been voted, and where the connection is not a yieldable one too much pressure on the second party lever may either intentionally or otherwise break or injure some part of the operating mechanism, while with my construction if the key levers of any party row are locked from movement by the inter-locking mechanism, the spring arms will merely yield against this undue pressure, and no harm or damage result.

The construction illustrated is exceedingly simple and an infallible safe guard against any damage to the machine against all abuses of this nature, and it will be understood that such yieldable connection may be readily interposed in other constructions of voting machines without departing from the spirit of my invention in this particular.

The registry mechanism is mounted in the registry frames 21 and except for certain changes in details the construction and operation of this portion of my machine is of the same general nature as that illustrated and described in my Patent No. 845,860 aforesaid.

The registry frames are rotated by the registering lever 27, which is secured on the driving shaft 28, on which is mounted the gear 29 meshing with a larger gear 30, both of which have their journal bearings in plates 31, 32, as shown in Figs. 2, 4 and 7.

The gear 30 carries a crank pin 33 which engages in a slot 34 of a sliding bar 35, as shown in Fig. 3. This sliding bar 35 is vertically and slidably mounted on studs 36 which engage in slots 36^a, and are screwed into bearing blocks 36^b secured to the plate 37 to serve as a bearing for the sliding plate. The registry frames are supported on shafts 39 which are journaled in the plates 37, 38 of the framework, and these shafts are provided with slotted hubs 40 at one end, and at the other with crank arms 41 which carry crank pins 42, which engage in slots 43 in the sliding bar 35. Tongues on the ends of the registry frames engage in the slotted hubs where they are secured by set screws 44, so that the registry frames can be easily removed from the machine, inasmuch as at the opposite end the frames are supported on the shafts engaging in suitable openings in the journal plate 45. The object of this construction is to rotate the registry frames part of a revolution, in order to actuate the counting mechanism when the crank handle 27 is given a complete revolution. On the driving shaft 28 is mounted another gear 46 (see Fig. 2), which meshes with the gears 47, 48, mounted on shafts 49 and 50, journaled in the bearing plates as shown in Fig. 2, and this shaft 50 is provided with a slotted hub

to which is detachably secured by means of the screw 52, the receiving cylinder 53 which is supported on its opposite end in the bearing plate 59, and intermediately supported by the tie plates 55. The receiving cylinder 53 contains the irregular voting mechanisms such as described in my prior Patent No. 885,981. I have shown these additional gears in Fig. 2, but in Fig. 7, which is an enlarged sectional rear elevation with many of the parts omitted, I have omitted these gears 46, 47 and 48. When the registry lever 27 stands in the position shown in Fig. 7, bearing against the stop post 56, the machine is in its normal unlocked position.

57, 58 are exclusion bars details of which are not shown, for excluding any particular class of voters from the operation of all of the key levers, which levers are drawn out by the election officers when any restricted voter comes to use the machine. These bars extend entirely across the several rows of interlocking devices which control the operation of the key levers, as will be hereinafter explained, and when the bars are operated, will stand in the pathway of the interlocking devices of any desired rows of voting levers in order to prevent the operation of such levers. 59 and 60 are studs on these bars respectively, which bear against and shift the arm 61 into the pathway of a block 62 on the sliding bar 35. Then after a voter has made the selections, upon turning the lever 27 until it rests against the rear side of the stop post 56, the votes selected are fully registered, and the upward movement of the rack bar bringing the block 62 into contact with the arm 61, the exclusion bars are returned to their normal position for the next voter. As in my other machines above referred to, when the registering lever 27 is in its last position the mechanisms are all locked.

Journalled on the hub end 64 of each registry frame, is a sleeve 63 (see Fig. 4) held in place by a collar 65. The sleeve 63 at one end is provided with a rim 66 partly cut away to form the shoulders 67 and 68, while on the other end of the sleeve is a segmental gear 69 which meshes with the gear 70, secured to the end of a shaft 71, which shaft is arranged to lock the counting wheels from movement. Through the sleeves 63 and hub 64 holes are drilled and a pin 74 secured in the bearing plate 45, extends between the shoulders 67, 68 of the rim 66. When the registry frames are rotated in either direction, the shoulders 67, 68 as the case may be, contact with the pin 74 and in this way through the medium of the gears 69, 70, the shaft 71 is alternately rotated into a locking or unlocking position, with reference to the counting wheels adjacent to it. When in the locked position the holes 72, 73 of the sleeve and hub

will be in alinement with each other as shown by the dotted lines in Fig. 4, so that the sealing wire or other device may be secured through these holes to seal the counting wheels against movement. The main registry lever 27 may also be secured to the stop post 56, by a lock or seal.

For the purpose of preventing the movement of more than the desired number of key levers in any vertical row, I provide a novel construction of inter-locking plates of the same type as the primary inter-locking mechanism of my former patents above referred to, and my present invention relates to a considerable extent to the novel features in connection with this primary inter-locking mechanism.

Each interlocking plate as a whole is made up of two parts, a sliding plate proper which slides in suitable grooves in the guide bars, and a pivoted portion which is actuated by a pin on the key lever to shift the pivoted portion, which, by contact with the sliding plate portion of the contiguous interlocking devices, spreads the devices to take up the space represented by the movement of a key, or a unit space of movement. These interlocking devices are identical for each row of voting keys, except that the plates for the bottom or lower end of the series have no beveled corner.

The interlocking plates are made up as follows: The sliding plate for each lower row is a flat rectangular plate 117, and the sliding plates for each interlocking device above the lowermost is a similar plate 118, with one corner 119 beveled out at about an angle of thirty-three degrees. Pivottally mounted at 87 to these sliding plate members 117 and 118 are a pair of side plates 81, 81, which plates are separated above the sliding member by a division plate 120 (Figs. 1 and 17). The upper end of each of these division plates is formed with a straight linear abutting surface 82, from which there is an inclined extension 83 to a radial abutting surface 84, and a slot 86 is formed through the plates 81, 81, and the division plate. In making up the interlocking plates I proceed as follows:

For the bottom rows of inter-locking plates, I rivet the rectangular plates 117 between the lower ends of the side plates 81, so that the plates 81 with the division plates 120 will be pivoted to the rectangular plate 117. To accomplish this I make use of a short sleeve or hub 121 which is placed in the hole 80 of the plate 117, and then a pin 122 is passed through the holes 87 and the hub or sleeve, and the parts riveted together. For the intermediate locking plates, I proceed in the same way to rivet the plates 81 and the division plate pivottally to the plates 118. As the hubs and the division plates 120 are made a little thicker than the plates

117 and 118, a free pivotal movement is obtained for the bifurcated portion of the inter-locking plate, and each inter-locking plate is thus made up of a primary member which can slide in the grooves of the guide bars 5, and a pivoted member which carries the division plate for contact with the plate 118 of the next inter-locking plate. The upper ends of the plates 81, 81 extend beyond the abutting face of the division plate, so that the lower end of the next inter-locking plate can rest between these ends, and the pivoted members are kept in perfect alinement. The construction and operation of these inter-locking plates will be understood more clearly from a description of the method of assembling the parts. In order to readily pass the plates into the grooves in the guide bars 5, in assembling the plates, the shoulders that form the grooves at the upper end of the guide bars are cut away as shown at 125 in Fig. 7.

As I have arranged my independent voting devices in the last horizontal row at the bottom of the machine, I provide a construction whereby the ballot receivers of the independent voting devices may be connected with the inter-locking system. Across the lower end of the vertical rows of the guide bars, and above the independent voting devices, I secure a plate 126. Figs. 7, 8 and 12. On this plate, one for each inter-locking row, are pivotally secured a series of segmental disks 75. These disks carry a stud 76 which engages with a slot 78 in slidable plates 77, which plates are slidably mounted in grooves in the guide bars and connection is made between these plates 77 and the independent voting mechanism, so that when an independent candidate is voted for, in any vertical row the proper disk 75 will be rotated to take up the space in the vertical row of inter-locking devices. I have not illustrated the construction of this independent voting mechanism, but it will be understood that when any independent candidate is voted for, the operation of the independent voting mechanism will draw down the particular plate 77 in the row voted, and this movement will rotate the disk 75 to take up the unit space in said row.

In assembling the regular inter-locking plates, I first select those having the unbeveled primary member or plate 117, and drop them into the grooves of the guide bar so that the abutting surface of the plate 117 will rest on a segmental disk 75 Figs. 7 and 8. For a seven party and forty key machine for example, there will be forty segmental disks and a series of seven inter-locking plates resting one on each disk. I then pass into the grooves in the guide bars, the other six inter-locking plates all of the type with the beveled plate 118, with the

abutting surface of this plate resting on the abutting surface of the division plate beneath it. I then pass into the grooves the top plates 90 shown in Figs. 19, 20, one plate for each row, with its beveled abutting surface resting on the abutting surface of the division plate of the device beneath it.

In order to keep the abutting surfaces of the inter-locking plates taut against each other, I provide each of the top plates 90 with a stud 89, and arrange a coiled spring 88 secured to the Z-bars bearing against this stud, as shown in Fig. 29. I also provide a screw 91 for each top plate for adjustment to contact with one of the exclusion bars 57, 58, so that when the set screw is screwed in flush with the top plate, the plate will slide under the exclusion bars; but when the screws 91 are adjusted with the head of the screw projecting above the plate, such screws will come in contact with the exclusion bars and prevent the operation of the interlocking plates in the particular rows desired. I have not illustrated the operation of the exclusion bars, however, as this construction forms no part of my present invention. A block 92 (Fig. 21) is also adjustably secured to each top plate for contact with a secondary inter-locking mechanism contained under the plate 93, (Fig. 7) for multi-candidate group voting, which forms no part of my present invention, and need not be described. Although it will be understood that the contact members 128 of this secondary inter-locking mechanism form the stops for the primary inter-locking.

To arrange for the inter-locking devices for the question voting, I provide as follows: The plates 94 Figs. 25 and 26 provided with studs 95 and a beveled surface 129, are passed into the grooves in the guide bars 5, with the beveled surface upward and with the studs 95 resting on the secondary inter-locking frame 93 Figs. 7 and 8, and I then pass into the grooves combination inter-locking and top plates illustrated in Figs. 23 and 24. These plates consist of a rectangular plate 96 and a pivoted bifurcated member 130, constructed in the same way as the pivoted members of the regular inter-locking plates, and in order to hold the top plates 96 in place, I insert the pins 97 in the guide bars as shown in Figs. 7, 8, and 9. In order to keep these question voting inter-locking plates taut, I provide a coiled spring 98 Fig. 30 with its end bearing against the stud 99 on the plate 96. I also provide these plates 96 with studs 131, 132, for engagement with the inter-locking plates 134, and the exclusion plate 135 Figs. 7 and 8. For moving the inter-locking plates, it will be understood that the pins 18 of the key levers extend through the slots 86, Fig. 7 one for each inter-locking plate, so that upon the actuation of a key lever the inter-locking

plates will be spread apart by the contact of the abutting surfaces. It will be also noted that inasmuch as the surface 83 is short, that the first initial movement of the key lever will spread the plates, and that the subsequent movement will bring the radial edge 84 in contact with the straight abutting surface of the next plate. It will not be possible, therefore, by partially moving a number of key levers where a large number are grouped together for multi-candidate voting, to actuate any more than the number provided for, because it is the first and initial movement of the key lever which spreads the plate.

One important advantage of my improved construction above described is the ease and speed with which the machine may be arranged for an election, especially where certain of the offices may be voted as a straight ticket by a straight ticket lever, and some of the offices are prohibited by law from being voted for on a straight ticket, and for still other offices no nomination may have been made, so that the key levers for each office should be locked to prevent their being operated by mistake. I have illustrated the different adjustments for such conditions in Figs. 10 and 11. Take for example the column for the office of the justice of the peace, which may be considered as a sample of all of the offices for which the voter may make use of a straight ticket voting lever. For such offices, the screws 19 inserted through the cranks of the voting levers are left in their normal position screwed down with their inner ends in contact with the spring arm 23, on the straight ticket lever 22, as illustrated at 136 in Fig. 11. The second vertical row being for a member of the board of education, if the straight ticket lever cannot be used and it is necessary that such offices should be voted for separately, the screws 19 are adjusted as shown at 137 in Fig. 11, with the end of the screw withdrawn from contact with the spring arm 23. In the third case where there is no nomination, the screws 19 are adjusted so that the heads of the screws extend into the holes 138 in the cover plate 9, as shown at 139 in Fig. 11, and in this way these particular key levers will be positively locked. Necessary adjustments are, therefore, readily and easily made without in any way disturbing the other parts of the mechanism. It will be understood that when the ballot slips with the printed names are secured on the front of the machine as heretofore described, the holes 138 through which the screws 19 are adjusted, will be covered up. I would also note that for the convenience of the voter, I have constructed the key plates 10 with an off-set as shown at 140 in Fig. 11, upon which the voter can rest his finger while

moving it against the key levers to vote them individually but in quick succession.

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

1. In a voting machine, the combination with a plurality of key levers, a straight ticket lever, and a bar common to all of a series of keys and actuated by the straight ticket lever, of a series of resilient arms mounted on the bar, one for each key of the series and intermediate the bar and the keys, said arms being normally inactive and adapted to contact with and to shift all unlocked keys but to yield to any locked key in said series.

2. In a voting machine, the combination with a plurality of key levers, a straight ticket lever, and a slidable bar common to all of a series of keys and actuated by the straight ticket lever, of a series of resilient arms mounted on the bar, one for each key of the series and intermediate the bar and the keys, said arms being normally inactive and adapted to contact with and to shift all unlocked keys but to yield to any locked key in said series.

3. In a voting machine, the combination with a plurality of key levers, a straight ticket lever, and a bar common to all of a series of keys and actuated by the straight ticket lever, of a series of resilient arms mounted on the bar, one for each key of the series and intermediate the bar and the keys, said arms being normally inactive and adapted to contact with and to shift all unlocked keys but to yield to any locked key in said series, with adjustable pins on the key levers adapted to be shifted to disconnect any desired key from operation by the straight ticket lever.

4. In a voting machine, the combination with a plurality of key levers, a straight ticket lever, and a bar common to all of a series of keys and actuated by the straight ticket lever, of a series of resilient arms mounted on the bar, one for each key of the series and intermediate the bar and the keys, said arms being normally inactive and adapted to contact with and to shift all unlocked keys but to yield to any locked key in said series, with adjustable screws on the key levers to disconnect any desired key from operation by the straight ticket lever.

5. An interlocking mechanism for voting machines, comprising a series of non-abutting plates slidably mounted in the frame, each plate with an arm pivoted thereto, to abut against the next adjoining plate in all positions of the arm with connection for said arms each with its respective key, whereby the actuation of the key will spread the plates a predetermined distance.

6. An interlocking mechanism for voting machines, comprising a series of non-abut-

ting plates slidably mounted in the frame, each plate with an arm pivoted thereto, to abut against the next adjoining plate, said pivoted arms having slots with pins on the
 5 key levers to engage its respective slot, whereby the actuation of the key will spread the plates a predetermined distance.

7. An interlocking mechanism, for voting machines, comprising a series of plates slidably mounted in the frame, each plate with an arm pivoted thereto, provided with a duplex abutting surface to contact with the next adjoining plate in all positions of the arm, with connection for said arms each
 10 with its respective key, whereby the actuation of the key will spread the plates a predetermined distance.

8. An interlocking mechanism, for voting machines, comprising a series of plates slidably mounted in the frame, each plate with an arm pivoted thereto, provided with two abutting surfaces to contact with the next adjoining plate in all positions of the arm, said pivoted arms having slots with pins
 20 on the key levers to engage its respective slot, whereby the actuation of the key will spread the plates a predetermined distance.

9. In an interlocking mechanism for voting machines, a series of interlocking devices, each device comprising a non-abutting slidable member and a rotatable member with the end of the rotatable member of one device in all positions of the rotatable member abutting against the end of the slidable
 30 member of the next device and connection for each rotatable member with its respective key, whereby the actuation of the key will spread the interlocking devices a predetermined amount.

40 10. In an interlocking mechanism for vot-

ing machines a series of interlocking devices, each device comprising a non-abutting slidable member, and a rotatable member with the end of the rotatable member having two abutting surfaces, and with the end
 45 of the slidable member having a beveled surface with the abutting end of the rotatable member of one device engaging the abutting end of the slidable member of the next device in all positions of the rotatable mem-
 50 ber, and connection for each rotatable member with its respective key whereby the actuation of the key will spread the interlocking devices a predetermined amount.

11. In an interlocking mechanism for voting machines, a series of guide bars with grooves therein, and a series of rectangular plates slidable in said grooves, each plate having a beveled outer edge, with a slotted member pivoted thereto provided with a
 60 contacting surface having a stepwise radial conformation to engage the beveled edge of the adjacent slidable member in one position; and the straight edge in all other positions, and slotted connection for each pivoted
 65 member with its respective key lever.

12. In an interlocking mechanism for voting machines, an interlocking unit comprising a rectangular member, and a bifurcated rotatable member pivoted to the rectangular
 70 member with an abutting plate secured between the arms of the bifurcated member and having a stepwise radial abutting surface, with an elongated slot through the bifurcated member to furnish connection for
 75 the key levers.

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Witnesses:

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 OSRO HEATER.

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