

No. 635,273.

Patented Oct. 17, 1899.

J. BOMA.
VOTING MACHINE.

(Application filed June 1, 1897.)

(No Model.)

6 Sheets—Sheet 1.

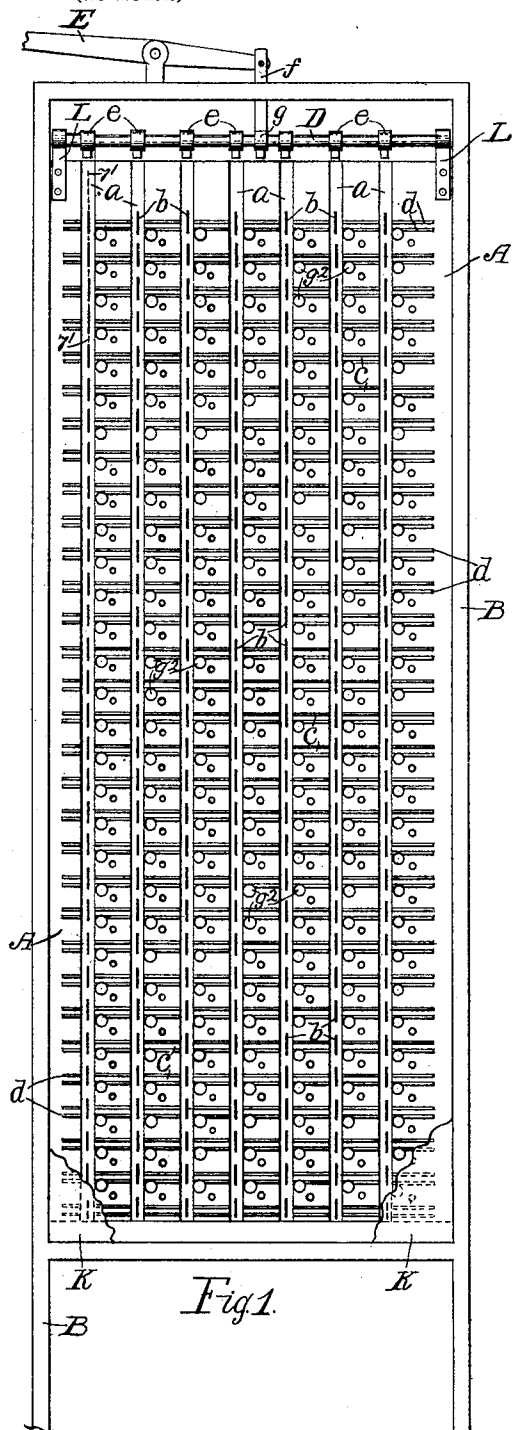


Fig. 1.

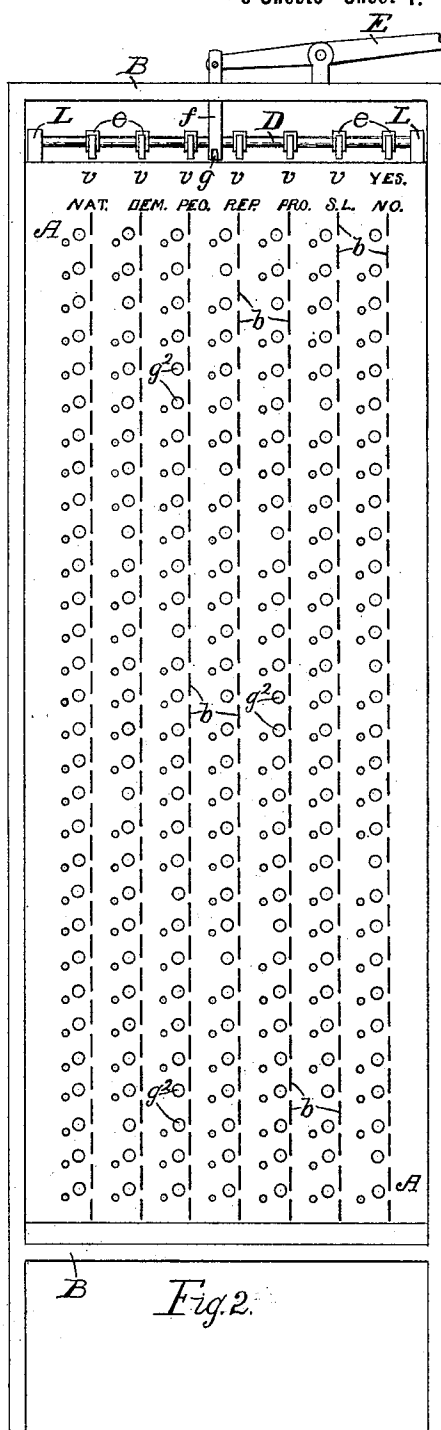


Fig. 2.

Attest:
M. L. Winston.
M. D. Phillips.

Inventor:
John Boma,
By E. B. Whitmore,
Att'y.

No. 635,273.

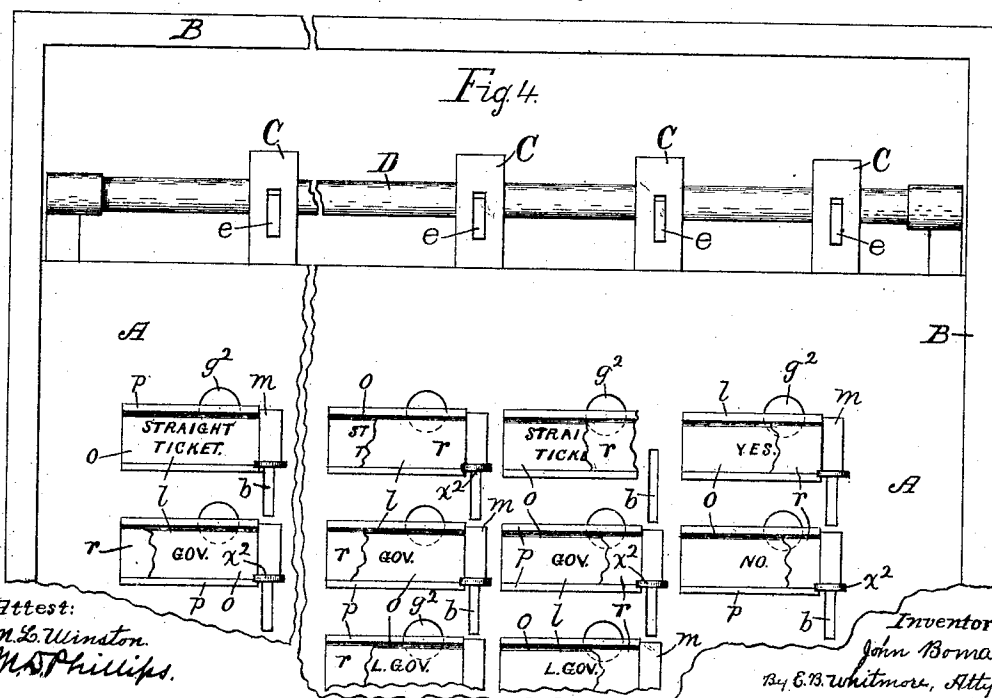
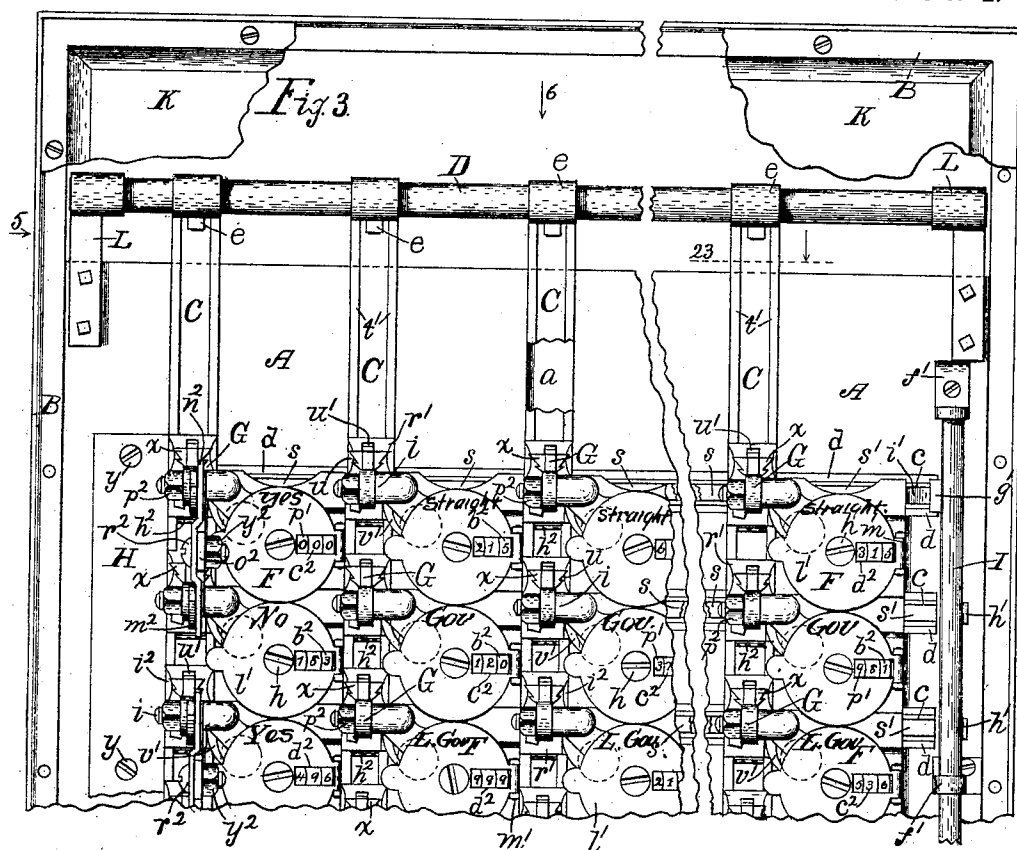
Patented Oct. 17, 1899.

J. BOMA.
VOTING MACHINE.

(Application filed June 1, 1897.)

(No Model.)

6 Sheets—Sheet 2.



Attest:
M. L. Winston.
M. S. Phillips.

Inventor:
John Boma,
By E. B. Whitmore, Atty.

No. 635,273.

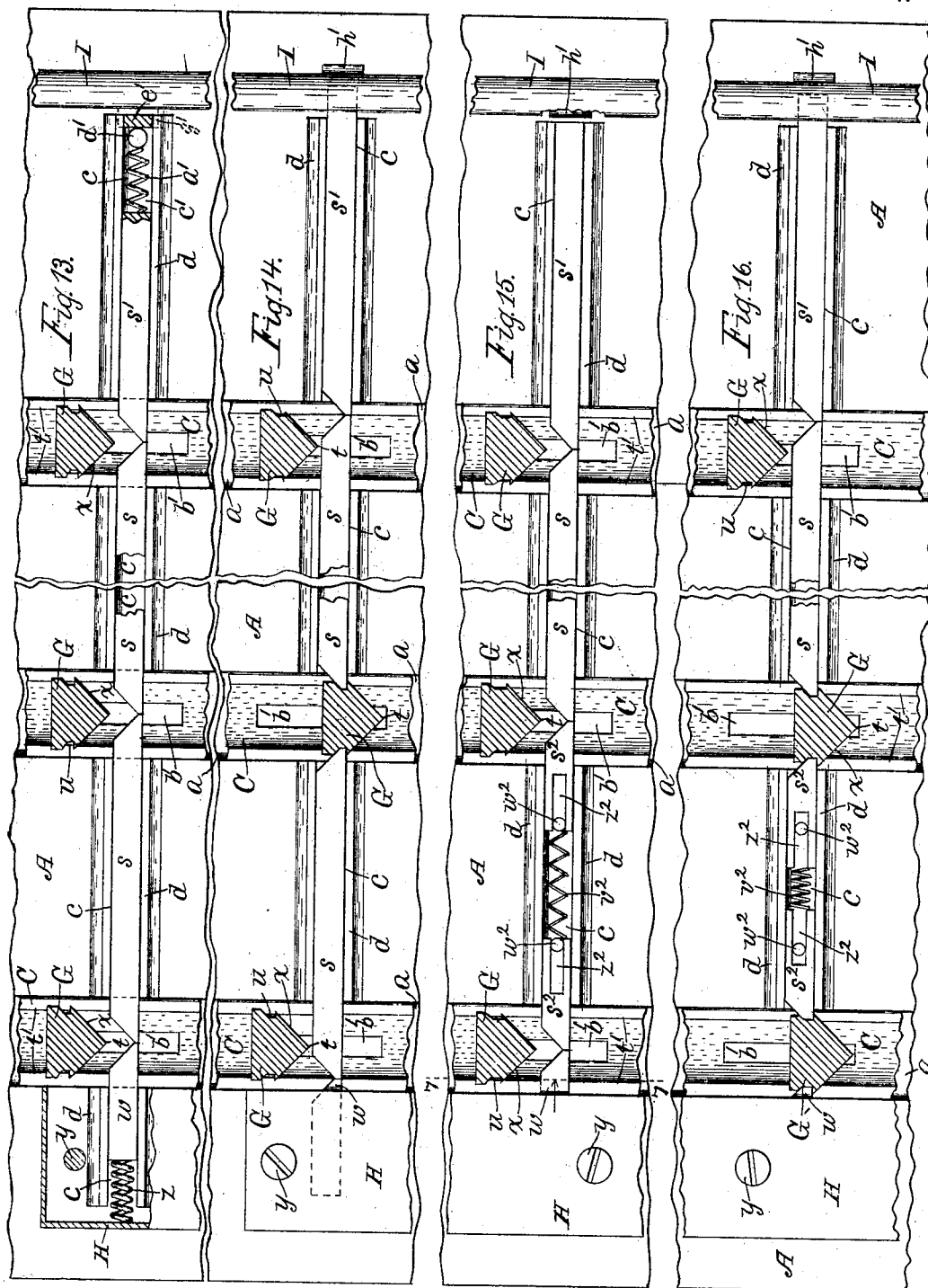
Patented Oct. 17, 1899.

J. BOMA.
VOTING MACHINE.

(Application filed June 1, 1897.)

(No Model.)

6 Sheets—Sheet 4.



Attest:
M. L. Lumsden.
M. D. Phillips.

Inventor:
John Boma,
By C. B. Whitmore,
Atty.

No. 635,273.

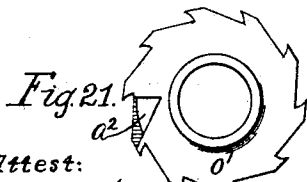
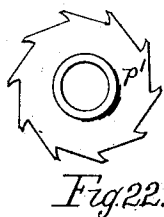
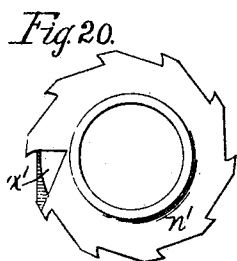
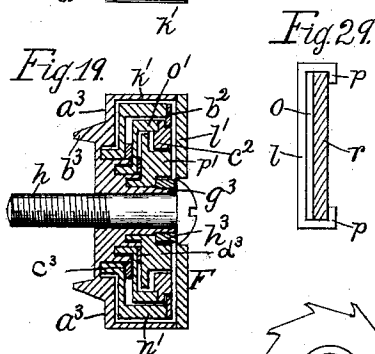
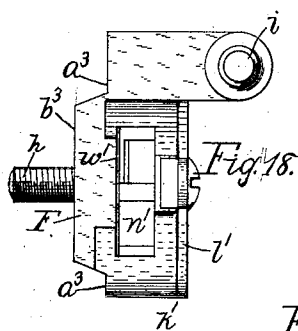
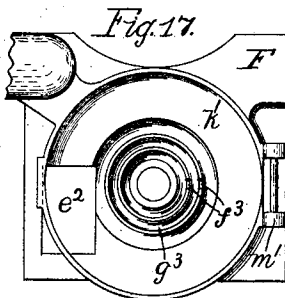
Patented Oct. 17, 1899.

J. BOMA.
VOTING MACHINE

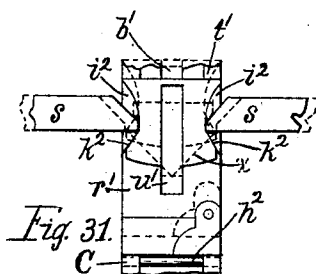
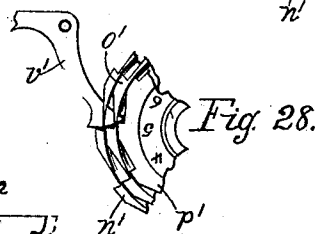
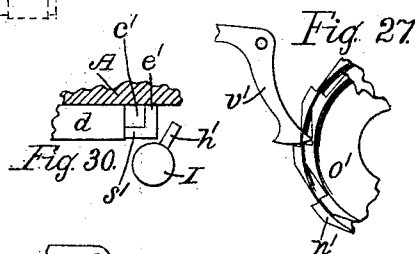
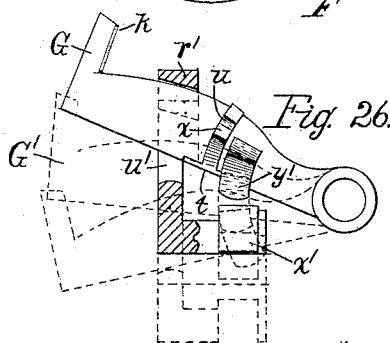
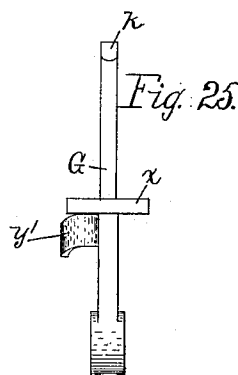
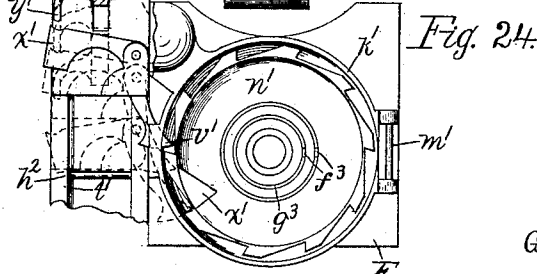
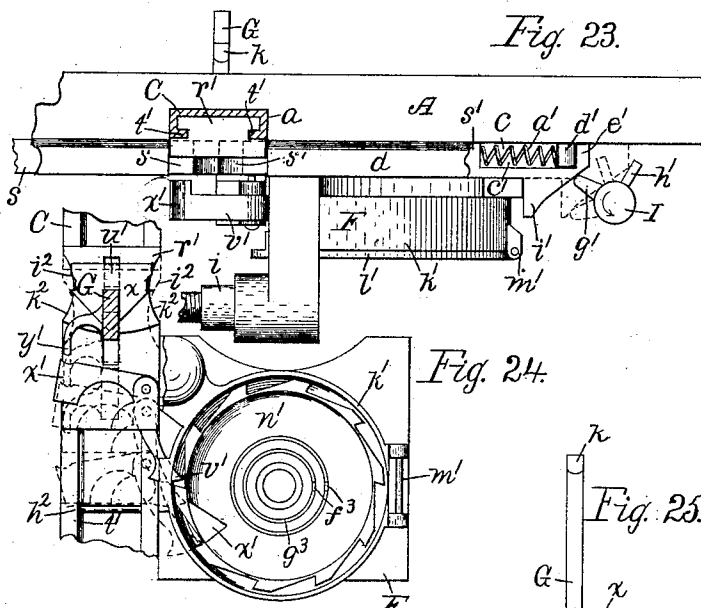
(Application filed June 1, 1897.)

6 Sheets—Sheet 5.

(No Model.)



Attest:
M. L. Winston.
M. D. Phillips.



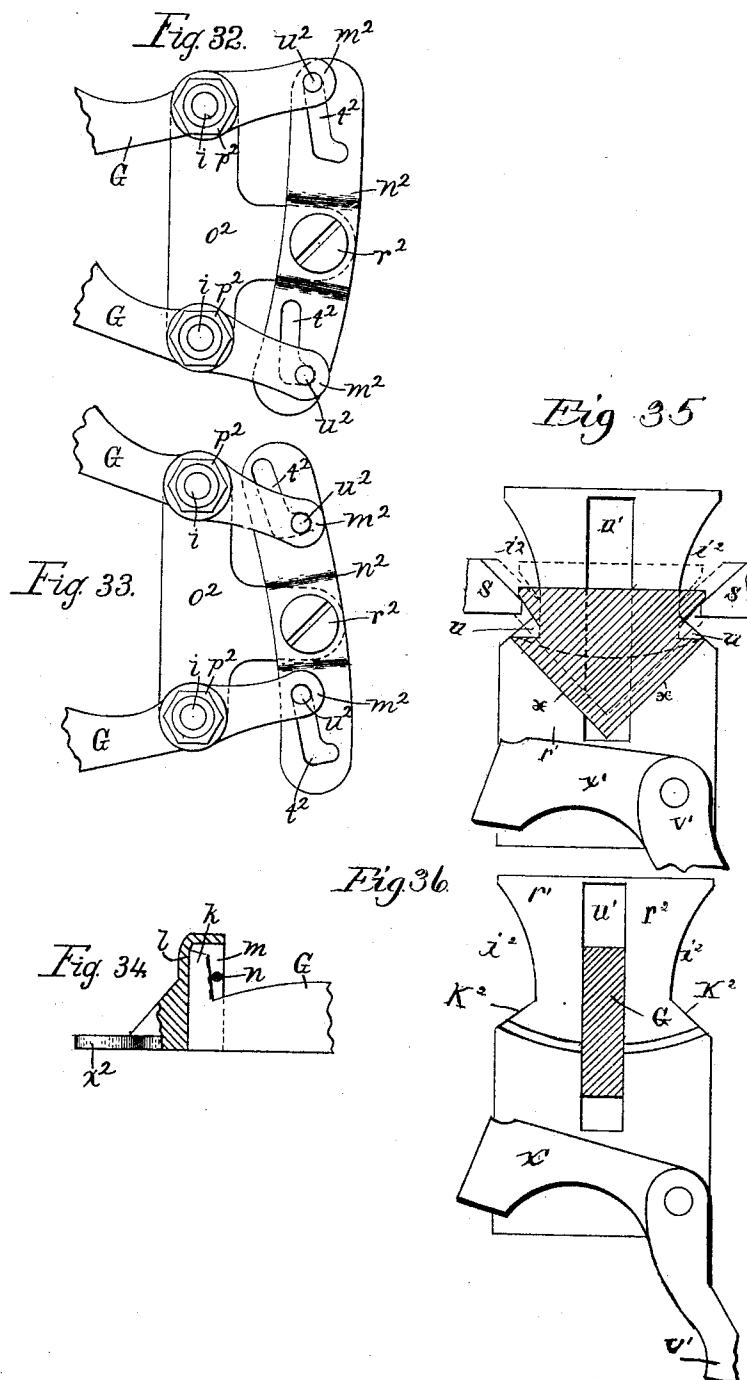
Inventor:
John Boma,
By B. R. Whitmore, Atty.

J. BOMA.
VOTING MACHINE.

(Application filed June 1, 1897.)

(No Model.)

6 Sheets—Sheet 6.



Attest:
M. L. Winston.
M. O. Phillips.

Inventor:
John Boma,
By E. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

JOHN BOMA, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO
CHARLES A. WEBSTER, OF SAME PLACE.

VOTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 635,273, dated October 17, 1899.

Application filed June 1, 1897. Serial No. 638,950. (No model.)

To all whom it may concern:

Be it known that I, JOHN BOMA, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Voting-Machines, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention relates to voting machines or devices in which a mechanical operation of parts of the machine is performed or parts moved or manipulated by the voter for the purpose of registering his vote, no paper ballots or other similar detached devices being employed.

The object of my invention is to produce a voting-machine that shall be simple in construction and certain in its actions and to provide in the machine all the parts and combinations necessary or convenient to adapt it to all uses for which such machines are intended.

This voting-machine is designed to provide for voting a "straight" ticket of any one of the political parties having tickets in the field at any given election and also for voting "split" tickets in any way that may suit the wish of the voter.

The machine is also provided with a separate set of voting devices for the purpose of admitting a voter to record his choice for or against questions—such as, for example, constitutional amendments, appropriations of public funds, the enactment of special laws, or other similar questions that may be properly voted upon at public elections.

The machine is also further so designed that if a voter in any case vote a straight ticket, for example, the action of registering such vote at once locks out all the rest of the machine devoted to the purpose of voting for candidates, so that no other vote can be recorded for any candidate until the parts of the machine are again brought to their normal positions.

A further provision is made in the machine so that if a voter at any time vote for any particular candidate the part of the machine provided for voting the straight tickets is thereby locked out, so that no one of the straight tickets can thereafter be voted until

the machine is again brought to its normal condition, though other special candidates may be voted for in making up a split ticket.

The machine is also designed to show at the conclusion of an election the exact number of votes registered for each ticket or candidate and the number of votes registered for or against any question or measure that may become the subject of choice by the voters.

The invention consists in parts and devices and their association and operation, all hereinafter fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a rear side elevation of the main body of the device with some associated parts. Fig. 2 is a reverse or front side elevation of the body. Fig. 3, condensed, shows portions of the upper part of the body with counters and some other parts, view as in Fig. 1. Fig. 4, condensed, shows the reverse side of the upper part of the body with ticket-holders in place. Fig. 5 is an edge view of some of the upper parts seen as indicated by arrow 5 in Fig. 3, parts being vertically sectioned. Fig. 6 is a top view of some of said parts seen as indicated by arrow 6 in Fig. 3. Fig. 7 is a view of some of the upper parts seen as in Fig. 5, better showing the voting-levers and associated parts, certain of which are illustrated in the section, the body being sectioned on the dotted line 7' in Fig. 1. Fig. 8 is a rear elevation of a counter or vote-recorder with parts sectioned and broken away. Fig. 9 is a front view of the counter with the cover thrown open. Fig. 10 is a similar view of a counter with parts broken away and omitted. Figs. 11 and 12 are similar views of the counter with additional parts omitted. Figs. 13 to 16, inclusive, show the voting-levers and arresters in different positions assumed in using the machine, parts being vertically sectioned and broken away. Fig. 17 is a front view of the body of a counter with all detachable parts removed. Fig. 18 is an edge view of a counter seen as indicated by arrow 18 in Fig. 9. Fig. 19 is a vertical diametrical section of a counter complete, taken on the dotted line 19 in Fig. 9. Figs. 20 to 22, inclusive, show the reverse sides of the respective toothed wheels of the counter. Fig. 23 is a top view

of a portion at the right-hand side of the device, a returning-bar being transversely sectioned, as on the dotted line 23 in Fig. 3, parts being broken away and omitted. Fig. 24 shows the manner of operating the counters, parts being shown in various positions by full and dotted lines. Fig. 25 is a top view of a voting-lever. Fig. 26 better shows the relation of a voting-lever with coacting parts, parts being shown in various positions by full and dotted lines. Figs. 27 and 28 show different actions of the pawl. Fig. 29, drawn to an exaggerated scale, shows the manner of holding a ticket. Fig. 30 shows the method of locking out parts of the voting devices. Fig. 31 is a front elevation of parts, showing the method of unlocking the voting-levers, parts being shown in two positions by full and dotted lines. Figs. 32 and 33 are elevations of parts, showing the manner of locking certain ones of the voting-levers. Fig. 34, partly in vertical section, shows the method of securing a ticket-holder to a voting-lever. Fig. 35 is an elevation, partly in section and somewhat magnified, of the subject-matter illustrated in Fig. 31; and Fig. 36 is a similar view showing one of the levers *G* in section on a line immediately in front of the block *r'*, the bars *s* being omitted.

Figs. 1 and 2 are drawn to a scale of one-seventh full size, Figs. 3, 4, 5, and 6 to a scale of one-half full size, and the remaining figures, except Fig. 29, to a scale full size.

Referring to the parts shown, *A*, Figs. 1 and 2, is a rigid metal plate or body which supports the numerous smaller working parts of the machine. This plate or body is preferably rectangular in form—longer than it is wide—and may be made in one piece or in sections, as may be convenient. It is held in a vertical position by a suitable frame or holder *B*, so that its longer dimension is vertical, the plate, with its numerous dependent parts, being intended to be inclosed by some suitable housing or inclosure. The rear face of this plate is formed with vertical channels *a*, Figs. 2, 3, 6, and 23, preferably rectangular in cross-section, equally spaced, there being a series of vertical slots *b*, Figs. 1, 2, 4, 7, and 13 to 16, formed through the plate along the middle vertical lines of these respective channels. The plate is further formed upon its rear face with horizontal races *c*, Figs. 2, 7, and 13 to 16, preferably rectangular in cross-section, crossing the channels *a* at right angles. These races are equidistant from each other and formed between raised transverse ribs *d* between the channels *a*, as shown. The channels are formed in the substance or body of the plate below its surface, and the races are formed upon or above the surface of the plate, the open sides of the channels and the bottoms of the races being in the plane of the face of the plate, the axes of the races crossing in front of the channels. A series of flanged metal strips or returning bars *C*, Figs. 3, 4, 5, 7, 13, to 16 and 23, are placed within

the channels *a* and adapted to be moved vertically therein by means of a shaft *D*, Figs. 1, 3, 4, 5, and 6, having arms *e* reaching through openings in said returning bars. This shaft is held in arms or rests *L*, Figs. 1 to 6, secured to the plate *A*, and it is adapted to be turned or rocked through short distances by some simple means—as, for example, a lever *E*, located above the frame *B*. This lever is connected with the shaft by means of a rod *f* and arm *g*, the latter being rigid upon the shaft. Upon the rear face of the plate is secured by means of central screws *h* a multitude of vote registers or counters *F*, Figs. 3, 8, 9, and 18, one being shown in vertical cross-section in Fig. 19. These counters are arranged in rows both vertical and horizontal, and each is provided with an operating-lever *G*, Figs. 5, 7, 8, 9, and 25, which constitute the voting-levers or parts of the machine to be operated by the voter for registering his vote. These levers are pivoted upon bearings or rests *i* of the respective counters, each in position to pass at its front end through a slot *b* in the plate *A*, as clearly shown in Fig. 7. These levers also pass through vertical slots *b'*, Figs. 13 to 16, in the returning bars *C*, which slots are opposite the slots *b* in the plate. These voting-levers are adapted to receive at their front ends, in front of the plate *A*, holders *l*, Figs. 4, 5, and 6, for tickets or slips of paper, upon which are printed the names of candidates to be voted for or other matter. As a matter of convenience, the levers are formed with upwardly-turned tapered parts *k*, the ticket-holders being formed with chambers *m*, Fig. 34, to pass over and inclose the parts *k* of the levers, horizontal pins *n* passing through the chambers aiding to bind the parts together. These ticket-holders are detachable from the levers, and they are generally made of sheet metal flanged at *p* at their edges, as clearly shown in Fig. 29, the ticket *o* being slipped in under the flanges. A strip of glass *r* is also passed under the flanges to cover the face of the ticket, through which the latter may be read by the voter. These ticket-holders are formed with thumb-pieces *x*², Figs. 4, 5, 6, and 34, to be seized or pressed by the voter in operating the voting-levers, said thumb-pieces when the ticket-holders are rigidly in place on the levers constituting extended parts of said respective levers.

The horizontal races *c* in the plate *A* are occupied by locking-blocks of metal *w*, *s*, *s'*, and *s''*, Figs. 7 and 13 to 16, placed end to end, longitudinally along which races they are adapted to slide. These locking-blocks are rectangular in cross-section and in length just equal to the distance between the middle lines of the channels *a* in the plate *A*, (center to center.) At their ends these locking-blocks are beveled or made inclined on their upper sides, as shown, the locking-blocks normally abutting together at their reduced ends, the abutting ends corresponding with the middle lines of the channels *a*, as clearly shown in Figs. 13

and 15. The positions of these locking-blocks are relatively such that when the locking-blocks are moved longitudinally they pass conveniently beneath the uplifted voting-levers 5 G, the latter crossing the lines of the locking-blocks. Normally the inclined parts of the locking-blocks are immediately beneath the levers, the latter being formed with inclined parts x terminating in edges t above the locking-blocks. 10

Figs. 13 and 15 show the levers and the locking-blocks in their normal positions ready to be manipulated by a voter in recording his vote, the levers being in their upward positions, as shown in full lines in Fig. 5 and at the upper part of Fig. 7. Now if a lever be depressed by the voter, as shown at the middle in Fig. 14, for example, it will be forced between the ends of the two adjacent prisms 15 and crowd them longitudinally apart, as shown. This will act to push all the other locking-blocks (with certain exceptions) in that horizontal row along endwise in under the remaining levers of the row, which will 20 prevent these levers from being depressed until all parts are again returned to their normal positions—that is to say, the locking-blocks when in these positions cross the paths of motion of the levers and constitute arresters for the levers and temporarily lock them 25 out of action, so that when one candidate has been voted in either horizontal row no other candidate for the time being can be voted in that row.

The levers and the associated locking-blocks are arranged in horizontal rows or sets associated to act with reference to each other, but each lever and each locking-block in a set is adapted to act independently of all others in the same set or in other sets; but when one 30 lever is voted or depressed all the other levers and locking-blocks in that row are thereby locked out of action. The inclined parts x of the levers are formed at each side with notches or rests u , in which to receive and hold the adjacent ends of the locking-blocks, as shown in Figs. 14 and 16, when the levers are forced between the locking-blocks. The lower side 45 of the notches and the contiguous under faces of the locking-blocks being straight, the latter when occupying said notches lock the levers in their depressed positions, so they cannot be again raised until released by another operation of parts hereinafter described. 50

At the left of each horizontal row of locking-blocks occurs a short locking-block w , Figs. 13 to 16, which, however, does not act as an arrester for the levers. These pieces are covered or inclosed by a housing H, (see, 60 also, Figs. 3, 5, and 6,) secured to the plate A by fasteners y . Springs z between a wall of the housing and the pieces w act to urge the latter toward the right and so tend to return all the locking-blocks or arresters that stand 65 to the left to their normal positions after having been pushed aside by the voting-levers, as above described. The pieces w have their

ends beveled like the arresters, and when in their normal positions they press directly against the adjacent arresters, as shown. 70 Also at the right of each horizontal row of locking-blocks is employed one, s' , Figs. 13 to 16, having one end beveled and one square or transverse end. The pieces s' are formed with cavities or chambers c' , Figs. 13 and 23, 75 near their right-hand ends, in which are placed springs a' , confined between the end walls of the chambers and stop-pins d' , rigid in the plate A. These springs each act to push the associated part s' toward the left 80 and so act against the part w at the other end of the line of locking-blocks, both springs serving to keep the reduced ends of all the locking-blocks in a horizontal row normally together. The parts s' are formed with end 85 walls e' , which, coming in contact with the stop-pins d' , prevent said parts s' from being at any time carried too far to the left, the arrangement being such that the abutting ends of all the locking-blocks in a horizontal row 90 shall be normally at the middle lines of the respective returning bars c and directly under the edges t of the levers. A depression of any one of the levers acts to crowd the part w of its row back into the housing H 95 and the part s' toward the right beyond the ends of the ribs d , as shown in Figs. 14 and 16.

The counters F, with their associated parts, are held upon the plate or body A in both horizontal and vertical rows. A sliding block 100 r' , Figs. 3, 7, 23, 24, and 26, is provided with each voting-lever G, tongued and grooved at its sides to adapt it to slide vertically along the intumed flanges t' of the returning-bar c , as shown in Fig. 23. Each block is formed 105 with a central vertical slot u' , through which the lever passes, as shown in Fig. 26, the lever being adapted, when moving downward, to press at the bottom of the slot and so carry the block down along the returning bar. 110 Each counter F is provided with a series of toothed wheels $n' o' p'$, Figs. 10, 11, 12, and 19, and each sliding block r carries a pawl v' , Figs. 3, 7, 23, and 24, adapted to operate these wheels. The pawl is formed with an over- 115 hanging counterweighted part x' , and the voting-lever is provided with a projecting wing y' , Figs. 7, 24, 25, and 26, in position to encounter the part x' of the pawl when the lever is depressed. Normally the lower end 120 of this wing stands at a little distance above the pawl, and the body of the lever stands at a greater distance above the bottom of the slot u' in the sliding block, as shown. Consequently when the lever is depressed at any 125 time the wing will first encounter the part x' of the pawl and carry the latter, with the sliding block, downward, turning the wheel also at the same time. The part of the lever in the slot will move downward more rapidly than 130 the wing y' and the sliding block, as that part of the lever is farther away than the wing from the center of motion of the lever. On account of this the lever will overtake the

sliding block and eventually press the latter at the bottom of the slot w' and so thereafter continue the downward motion of the block and the pawl by a direct pressure against the block, the position of the parts when the lever first encounters the bottom of the slot being indicated by dotted lines at G' , Fig. 26. When the lever thus commences to bear against the block and while forcing the latter downward, the pawl will be moved downward more rapidly than the wing y' of the lever, for the reason, above stated, that the block when directly pressed by the lever will move downward more rapidly than the wing of the lever. On account of this when a downward movement of the parts is completed in any given case and the primary toothed wheel n' turned through the space of a tooth the part x' of the pawl formerly in contact with the wing will be some distance away from the wing. The relative position of the parts when the lever is fully down is shown at the lower part of Fig. 7 and the lowermost dotted positions of the parts in Figs. 24 and 26, and it should be stated that in these movements of the parts the pawl is directly operated by both the lever and the sliding block separately, first by the lever and subsequently by the sliding block.

The use of the wing on the lever is mainly to insure a pressure of the point of the pawl against the primary wheel n' , so that the latter will be certainly turned at each downward movement of the lever. Ordinarily the counterweighted part x' would keep the pawl in contact with the wheel; but should the pawl from any cause at any time stand apart from the wheel the first effect of the action of the wing upon the pawl would be to push the point of the latter firmly to place against the wheel above a tooth before the pawl or the sliding block commences to move downward.

The counters are placed upon the plate A, between the ribs d of the races, as appears in Fig. 7, each counter being formed with a part b^3 , Figs. 18 and 19, having inclined sides to meet the adjacent inclined sides of the ribs. The rear face of the part b^3 meets and bears against the surface of the plate A, the overhanging parts a^3 a^3 of the counters forming fourth walls or closers of the races c , serving to confine the prisms s , s' , and s^2 and prevent them from becoming displaced.

Each wheel n' o' p' of a counter is formed with ten teeth, these wheels being denominated "units-wheels," "tens-wheels," and "hundreds-wheels," respectively, and the counter may be constructed so that a fourth or thousands wheel similar to the others may be employed, if found necessary. An opening w' , Figs. 7 and 18, is formed through a wall of the hollow case k' of each counter, through which the point of the pawl projects to act upon the wheels within. To enable the pawl at the proper time to act upon the second or tens wheel o' , the primary or units

wheel n' is formed with an opening z' in its side, Figs. 12, 18, and 20. By this means when the opening is at any time presented to the pawl the latter will reach through it and engage a tooth of the wheel o' and so turn both wheels n' and o' through one-tenth of a revolution, the position of the pawl with reference to the wheels being clearly shown in Fig. 27. The tens-wheel o' is likewise formed with an opening a^2 in its periphery, Figs. 11, 18, and 21, which when presented to the pawl allows the latter to reach through and engage the inner or hundreds wheel p' . When this occurs, the pawl, which has a long or extended foot, presses simultaneously a tooth of each of the three wheels and turns all through a tenth of a revolution, the relative positions of the parts being shown in Fig. 28. From this description it will be understood that the pawl will turn the units-wheel n' through ten complete revolutions while it turns the tens-wheel o' through one revolution and that it will turn the latter through ten revolutions while the inner or hundreds wheel p' is turned through a single revolution, the wheel n' during a single revolution of the wheel p' being turned through one hundred revolutions.

To the wheel n' is secured a digit-ring b^2 , Figs. 3, 9, and 19, upon a face of which are shown the digits "0" to "9," equally spaced in regular order. A similarly-figured digit-ring c^2 is also secured to the wheel o' , the hub of the inner wheel p' being also similarly marked with the digits. The parts b^2 , c^2 , and p' are concentric, as shown in Fig. 9, and their marked or figured faces are in a plane, as shown in Fig. 19. The counter is formed with a door or cover l' for the case, Figs. 3, 9, 18, and 19, hinged at m' , having an opening d^2 through it, and the faces of the parts b^2 , c^2 , and p' are parallel with and just beneath this cover, through the opening d^2 in which the figures may be read. Now if the wheels of a counter are all set so the three zeros form a line, as shown in Figs. 3 and 9, opposite the opening d^2 in the cover it will be understood that successive actions of the pawl upon the wheels will cause the figures visible through said opening to change and show consecutively all numbers from naught up to nine hundred and ninety-nine, should the pawl act that many times.

The digit-ring b^2 is relatively so placed upon the wheel n' that when the zero appears at the opening d^2 the opening x' of the wheel will stand below the pawl, as shown in Fig. 24, the pawl being in position to engage the first tooth above said opening x' , and the digit-ring c^2 is relatively so placed upon the wheel o' that when its zero is opposite the opening d^2 the opening a^2 in the wheel will be below the pawl and in position to have the latter engage the first tooth above said opening a^2 ; also the figures are placed upon the wheel p' so that when the zero is opposite the opening d^2 a tooth will be in position to re-

ceive the pawl. Now when the three zeros are in line opposite the opening d^2 the wheel n' will be moved forward by the pawl nine times before its opening is presented to allow the pawl to turn both wheels, and, further, the wheel b' will be moved forward nine times before its opening will be presented to allow the pawl to turn all three wheels at once—that is to say, the tenth motion of the wheel n' will be made simultaneous with the first motion of the wheel o' and the tenth motion of the latter wheel will be made simultaneous with the first motion of the wheel p' and the hundredth motion of the wheel n' . By means of this construction and operation of the parts one vote will be recorded by the counter for any given candidate or party each time a voting-lever is depressed, and the whole number of votes recorded for any party or candidate will be shown at the close of the election on the face of the counter through the opening d^2 .

The forms of the toothed wheels as to cross-section are clearly shown in Fig. 19, each wheel being adapted to turn upon its bearings within the case k' . Between the wheels n' and o' is placed a spacing-ring c^3 , Figs. 12 and 19, and between the wheels o' and p' is placed a similar spacing-ring d^3 , Figs. 11 and 19, which rings serve to keep the wheels separated, so that each one may turn independently of the others and prevent any one being turned by another on account of friction. These spacing-rings are each formed with a slight inward projection e^3 , Figs. 11 and 12, entering corresponding notches f^3 f^3 , Figs. 17 and 24, in the body of the counter, so that neither ring shall turn with the wheel. The wheels turn upon a core part g^3 , Figs. 10, 11, 12, and 19, of the body of the counter, through which the holding-screw h passes. Upon the end of said core part is threaded a nut h^3 above the wheel p' for the purpose of holding all in place, each wheel being held to turn with moderate friction.

At the rear side of each counter next the plate A the case k' is formed with an opening e^2 , Figs. 8 and 17, through which two adjacent teeth of the wheel n' are visible to the voter. This opening is covered or closed with a stout piece or plate of glass f^2 , so that while the movements of the wheel may be readily observed the wheel cannot be touched or moved by introducing an instrument through the opening. The form of these openings is not essential, and opposite each a hole g^2 , Figs. 1 to 4, is formed through the plate A, so that when a voter depresses a lever to register his vote he may observe the motion of the wheel and see that the counter is duly operating or responding to the movement of the lever. For instance, before he presses the lever the voter is able to notice that the point of the pawl v' is in position just above the upper one of the two visible teeth, and as he depresses the lever he may watch the wheel and the pawl and see that they both act properly and

report the matter to the proper authorities if anything goes wrong.

After a vote has been registered by a voter in every case the parts of the machine are all returned to their normal positions by means of the lever E, Figs. 1 and 2, above the frame B. By depressing this lever the shaft D will be turned in a manner to draw all of the returning bars C upward to their upper positions. This serves to unlock all of the voting-levers which may have been previously depressed and return them to their upper positions, bringing all of the pawls in position to again act upon their associated wheels and allowing all the arresters and the sliding blocks w and s' and s^2 to assume their normal positions in the races. By raising the lever E the returning bars will be moved downward, which releases the voting-levers, leaving them again free to be depressed by the next voter who presents himself. The slots b' in the returning bars and b in the plate A are sufficiently long to allow a free action of the voting-levers without contact. The sliding blocks, with the pawls and levers, are lifted by the returning bars, which are provided with cross-pins h^2 , Figs. 3, 7, and 31, just beneath the respective blocks when the latter are in their lowest positions. When the returning bars are depressed by the lever E, as stated, the pins h^2 are carried sufficiently downward to allow the blocks to be depressed to their lowest positions by means of the voting-levers, as already described.

In their upward movements the blocks r' act to unlock the levers that have been depressed or voted and free them from the adjacent arresters or sliding blocks. These blocks are formed with depressions or spaces i^2 , Fig. 31, which allow the adjacent ends of the arresters or sliding blocks to pass into the rests u in the levers (see Figs. 14 and 16) and so temporarily lock the latter against being again raised to their normal positions. Now when the movement takes place for returning all the parts to their normal positions the blocks start upward in advance of the levers, which causes their inclined sides k^2 to push the arresters endwise back from the levers and unlock them. The slots u' in the blocks have vertical depths to admit of this upward motion of the blocks in advance of the levers.

It has been stated that the position of parts when a lever first encounters the bottom of the slot is indicated by dotted lines G' in Fig. 26, and it might appear that the lowest dotted position of the front end is intended to indicate the position of the lever with respect to the block r' after the lever has been depressed and the vote registered. This, however, is not the case. When the lever is first depressed, it impinges against the bottom wall of the slot and carries the block r' down to the pin h^2 , which serves to raise the block when the returning bars are elevated. In performing this function, however, the lever is

depressed beyond its normal locked position, the inclined faces of the depressed lever u acting against the inclined extremities of the locking bars or prisms s to press the latter rearwardly a sufficient distance to permit this downward movement of the lever. As soon, however, as the voter removes the pressure from the voting key or lever the spring-impelled bars s will through the cooperation of the inclined faces above referred to cause the voting-lever to be elevated, as shown in dotted lines in Fig. 35 and in full lines in Fig. 36. It will now be apparent that the blocks n' may be moved upwardly independently of the levers G a sufficient distance to cause the inclined faces k^2 (see Fig. 31) to move the locking-bars s in opposite directions out of engagement with the bars G , which latter are now restored to their normal position by the continued upward movement of the returning bars.

At the right of the ribs d is placed a vertical rod I , Figs. 3, 13 to 16, and 23, secured to the plate A in bearings or rests f' . This rod is provided with an upper longitudinal wing g' and a series of lower wings h' in a vertical row, the arrangement being such that there is a wing opposite the end of and associated with each prism s' at the right of the series of arresters. The upper prism s' , which belongs with and forms a part of the straight-ticket-balloting mechanism, is formed at its right-hand end with an expanded inclined part i' , in position to engage the wing g' . In Fig. 23 the parts are shown in their normal positions ready for a vote to be recorded. If now, for instance, the voter vote a straight ticket by pulling a lever in the upper horizontal row, the prism s' of that row will be moved to the position shown by dotted lines. This will turn the wing g' to the position shown by dotted lines and also turn the shaft I through one-eighth (more or less) of a revolution. This motion of the shaft would bring all the wings h' to the positions shown by dotted lines, or near to the right-hand ends of the respective prisms s' from top to bottom of the plate A .

The two positions of the wings h' are shown by full lines in Figs. 14 and 15, respectively, the former being the normal positions and the latter the positions after a straight party-vote has been recorded. When the rod I has been thus turned, no other vote can be recorded for any party or candidate anywhere upon the machine until all parts are again brought into their normal positions, for as the wings h' are near the ends of the respective prisms s' no voting-lever below the upper row could be depressed on account of these positions of said wings, or if a voter were to first depress any lever below the upper horizontal row—as, for instance, the middle lever (shown in Fig. 14)—the prism s' of that row would be forced toward the right and near the associated wing h' , as shown in Fig. 30. This would lock the rod I from being turned by

the part i' , as above described, so that no one of the straight tickets could be then voted until all parts of the machine were again brought back to their normal positions, although one name or candidate could be voted in each of the horizontal rows all the way down below the upper one—that is to say, if a straight ticket be voted in any given case the whole of the machine devoted to the voting for candidates is simultaneously locked, so that no split can be voted. While, on the other hand, if a split be first voted, then all the levers in the upper row would be locked out, so that no straight could be voted, though other candidates might yet be voted for in making up a split ticket, as all the other levers below the upper row are yet at liberty to be depressed.

Some of the voting devices of this machine (shown in the vertical column at the left in Fig. 3, at the right in Fig. 4, and in Figs. 5 and 7) are made independent of the action of the other voting devices. These independent parts are designed for the purpose of voting "yes" or "no" or for or against such matters as constitutional amendments, use of public funds, &c. They are like the other voting devices in the machine, except that the voting-levers have rearward extensions m^2 , Figs. 3, 5, 7, 32, and 33, joined in vertical pairs by cam bars or connectors n^2 . There may be one or more pairs of these connected voting devices, as may be required, eight pairs being commonly provided, so that eight questions or any less number may be voted upon at any given election. The connectors n^2 are each carried by a vertical hanger o^2 , held by the rests i of adjacent counters, inside of the levers on said rests, as shown, screw-nuts p^2 , threaded upon the extreme ends of the rests, serving to hold the levers and the hanger in place. The connector is held to turn in a vertical plane upon a pivot-bolt r^2 , rigid in the hanger and provided with a screw-nut y^2 . These connectors are formed with inclined L-shaped openings t^2 , occupied by pins u^2 , rigid in the levers.

As shown in Fig. 7, both the upper connected levers G are in their normal positions, either of which may be voted or pressed downward by the voter as in other cases, the openings t^2 being in position to allow either pin u^2 to move upward. If, for instance, the upper lever be voted or pressed downward, as shown in Fig. 32, it will, on account of the inclination of the cam-opening t^2 , turn the connector upon its axis sufficiently to cause the pin u^2 of the lower lever to occupy the short branch of the adjacent opening and effectually lock said lower lever against any vertical motion—that is to say, if a voter in any case vote for a given question or measure he cannot also vote against it; or if, to further illustrate, the voter depress the lower lever of the pair, as shown in Fig. 33, the connector will be swung so as to bring the pin u^2 of the upper lever in the short branch of the adjacent slot, and thus

lock that lever against being voted until all the parts are again brought to their normal positions by the action of the lever E, as above described. With these coupled levers the adjacent coacting prisms s^2 are made somewhat different from the others, as clearly shown in Figs. 15 and 16. In this construction of the parts these prisms are divided into short pieces, with springs v^2 interposed between them. The sections of the prisms are formed with longitudinal slots s^2 , inclosing pins w^2 , rigid in the plate A. Now if a lever at the left be forced downward, as appears in Fig. 16, it will force the contiguous piece s^2 to the right and compress the spring between it and the right-hand pin w^2 , or if both levers at the left in that horizontal row be pressed downward, as shown, the two parts s^2 between them will be crowded toward each other and compress the spring between them. The pins and slots are so arranged that the former constitute stops for the parts s^2 , so that neither can at any time be pushed too far along in its race c . The construction is such that a spring v^2 never reaches beyond the pins w^2 , it being always confined between the pins, between one part s^2 and the opposite pin, or between both parts s^2 , as shown in Fig. 16. The action of the spring tends to keep the two parts s^2 in their normal positions—that is to say, keep them abutted against the arresters on the right and the part w on the left, as shown in Fig. 15, the joints between the abutting parts as in the other cases corresponding with the middle lines of the grooves a or returning bars C.

In this machine the voting devices in each vertical row on the plate A are designed for a political party, the names of the candidates appearing on the tickets or cards o in the holders l , Fig. 4, below the upper horizontal row. The upper row is designed for the straight full tickets of the various parties, there being as many vertical rows used as there are parties at an election. To illustrate, viewing Fig. 2, the vertical column at the left may be, for example, assigned to the National party, and moving toward the right the other vertical columns to the Democratic party, the People's party, the Republican party, the Prohibition party, and the Socialist-Labor party, respectively, the column at the right, or so much of it as is necessary, being employed for voting "yes" or "no" on constitutional amendments or similar matters. Over the columns in the places occupied by the letter "v" upon the plate are placed the party emblems, and the party colors appear for the guidance of the voters in vertical stripes extending from the top to the bottom of the plate A on its rear face, in front of which the voter stands while operating the machine.

All of the prisms or parts w , s , s' , and s^2 are invisible to the voter and inaccessible to him. Also upon the outer faces of the covers l' of the counters are made to appear by

some simple means the party names and names of candidates, &c., as they appear upon the tickets o at the opposite side of the machine, so that each is closely associated with the number showing the final count appearing through the opening d^2 in the cover of the counter.

The series of counters and associated parts are covered, as by a plate of glass, wire screen, or other suitable device K, Figs. 1 and 5. While this cover permits the counters to be easily read through it, it renders them inaccessible during the hours of election and prevents them and other parts from being tampered with by designing persons to show an incorrect or fraudulent vote. This cover or part K is held by the frame B and secured thereto, so that it may be removed between elections for the purpose of resetting all of the counters to zero. The counters are reset by opening the covers l' and turning the wheels p' and the digit-rings c^2 and b^2 , with their attached wheels, by means of a pointed instrument to bring all the zeros in line opposite the openings d^2 .

What I claim as my invention is—

1. A voting-machine comprising a plate or body formed with a series of parallel channels, and a series of parallel races crossing said channels, in combination with a series of longitudinally-recessed bars occupying said channels and adapted to move longitudinally therein, and blocks within said bars and loosely connected therewith, the longitudinally-movable bars in the races adapted to be operated by the blocks, and means to move said bars in the channels, substantially as specified.

2. A voting-machine comprising a plate or body formed with a series of parallel channels, and a series of parallel races crossing said channels, in combination with a series of flanged bars occupying said channels and adapted to move longitudinally therein, and another series of bars in said races and adapted to move longitudinally therein and grooved blocks in the flanged bars in position to engage with and operate the bars in the races, substantially as specified.

3. The combination in a voting-machine of a plate or body formed with a series of parallel channels, with a series of bars occupying said channels, and a series of longitudinally-slotted blocks loosely held by said bars and adapted to move longitudinally thereon, and means to move said bars in the channels, substantially as specified.

4. The combination in a voting-machine of a plate or body formed at one side with a series of parallel channels, and a series of parallel races crossing said channels, said plate being slotted at points along the channels, slotted bars in the channels, slotted blocks in the bars, levers projecting through the slots in the blocks, bars and plate, and a series of bars occupying each of said races and adapted to move therein, said bars abutting at

their ends and each having a length equal to the distance between said adjacent channels center to center, and means to move said bars along the races and to hold their abutting ends at or near the middle of said channels, substantially as specified.

5. The combination in a voting-machine of a plate or body, a returning bar held by said plate or body, a counter secured to said plate or body provided with internal gearing for displaying figures, a lever held by the counter, a sliding block loosely held by the returning bar and adapted to be actuated by said lever and the returning bar, a pawl carried by said sliding block to actuate the gearing in said counter, and means to operate said returning bar, substantially as specified.

6. A voting-machine having a series of movable parts or handles arranged in pairs, in combination with an angularly-slotted connector for the handles of each pair, said handles having parts to engage the angular slots of the connectors, whereby the movement of either handle will cause the connector to hold the other motionless, substantially as specified.

7. A voting-machine having a plate or body formed with races, and a series of bodies or parts placed end to end in each of the races, in combination with a series of levers supported by the plate or body, to be forced between adjacent bodies or parts, said levers being each provided with an inclined or beveled portion and a shouldered portion adjacent thereto to engage with the adjacent ends of the separate bodies or parts, whereby the operating-key is locked in its depressed position, substantially as specified.

8. The combination in a voting-machine of a plate or body, a returning bar held by said plate or body, a counter supported by said plate or body, a lever held by the counter, a sliding block on the returning bar, a pawl carried by the sliding block, and means to operate the returning bar, the pawl being formed with a counterweighted part, said part lying across the path of the lever, substantially as specified.

9. The combination in a voting-machine of a plate or body, a returning bar held by said plate or body, a counter supported by said plate or body, a lever held by the counter, a sliding block on the returning bar, a pawl carried by the sliding block adapted to be directly operated by both the lever and sliding block separately, and means to operate the returning bar, substantially as specified.

10. The combination in a voting-machine of a plate or body, a returning bar held by said plate or body, a counter supported by said plate or body, a lever held by the counter, a sliding block on the returning bar, a pawl carried by the sliding block adapted to be moved by the lever in advance of the motion given it by the sliding block, and means for operating the returning bar, substantially as specified.

11. The combination in a voting-machine of a plate or body, a returning bar held by said plate or body, a counter supported by said plate or body, a lever held by the counter, a sliding block on the returning bar adapted to be actuated by the lever, a pawl on the sliding block adapted to be actuated by the lever in advance of the motion of the lever upon the sliding block, and means for operating the returning bar, substantially as specified.

12. The combination in a voting-machine, of a plate or body, a returning bar held by said plate or body, a counter supported by said plate or body, a lever held by the counter, a sliding block on the returning bar, a pawl carried by the sliding block, and means to operate the returning bar, the pawl being formed with an overhanging part and the lever being provided with a projecting part adapted to engage the overhanging part of the pawl, substantially as specified.

13. In a voting-machine, a plate or body provided with a series of counters, in combination with a series of movable parts to be operated by the voter, each part being provided with an upturned portion and mechanism for connecting said respective parts and the counters, and ticket-holders carried by said respective parts, the ticket-holders being each provided with a chamber for detachably connecting it with the upturned portions of the parts, substantially as specified.

14. In a voting-machine, the combination with a supporting part, of several series of movable members, as for instance, voting-levers carried thereby, several series of locking elements, as for instance locking-bars corresponding with said series of movable members, one of the locking elements of each series being divided transversely, and interposed springs designed to operatively urge the ends of said divided members, substantially as specified.

15. The combination in a voting-machine of a plate or body formed at one side with a series of parallel races, and a series of coacting parts or bodies occupying each of said races and adapted to move therein, and means for moving said parts or bodies in each race, one of said bodies in each race being divided and formed with slots, and stop-pins occupying said slots and springs between the pins, substantially as specified.

16. A voting-machine comprising a plate or body formed with a series of channels, and a series of races crossing said channels, in combination with a series of bars occupying said channels, and another series of bodies occupying said races, a series of levers to engage said bodies in the races, the levers being formed with rests for holding the bodies, and means to move said bodies out of said rests, substantially as specified.

17. A voting-machine comprising a perforated plate, a series of casings thereon, the front and rear walls of said casings being per-

forated, annular movable parts in each casing, the front of each of which is provided with numerals and visible through the front opening and the rear is visible through the rear
5 opening and the opening in the plate, and means for operating the registering parts, substantially as specified.

In witness whereof I have hereunto set my hand, this 28th day of May, 1897, in the presence of two subscribing witnesses.

JOHN BOMA.

Witnesses:

ENOS B. WHITMORE,
M. L. WINSTON.