

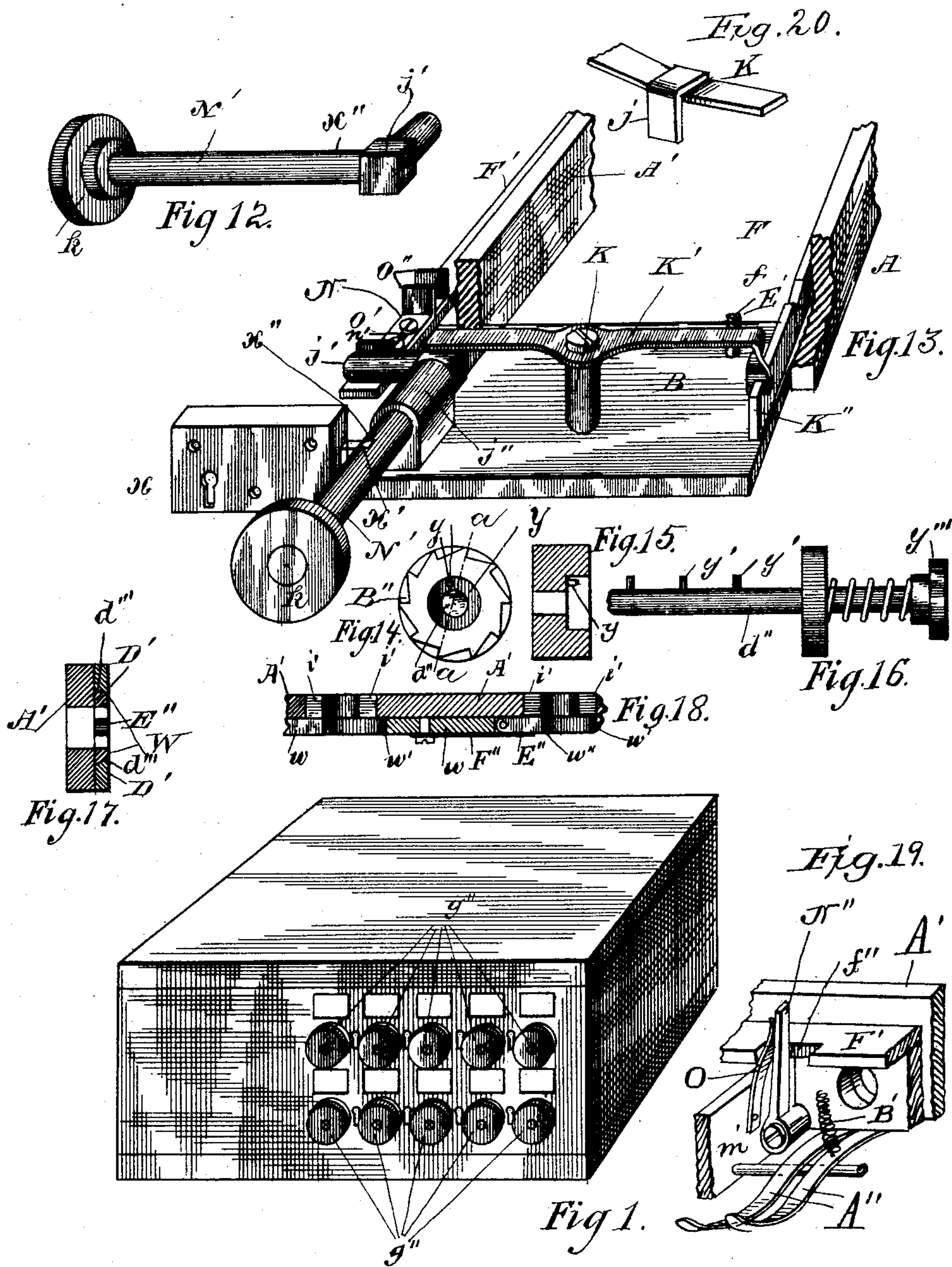
(No Model.)

3 Sheets—Sheet 1.

G. A. CLINE & W. TRIMBLE.
VOTING MACHINE.

No. 473,913.

Patented May 3, 1892.



Witnesses;

John A. Rice
Harry Nixon

Inventors;

G. A. Cline
Wm Trimble
by Chas H. Riches
Attorney.

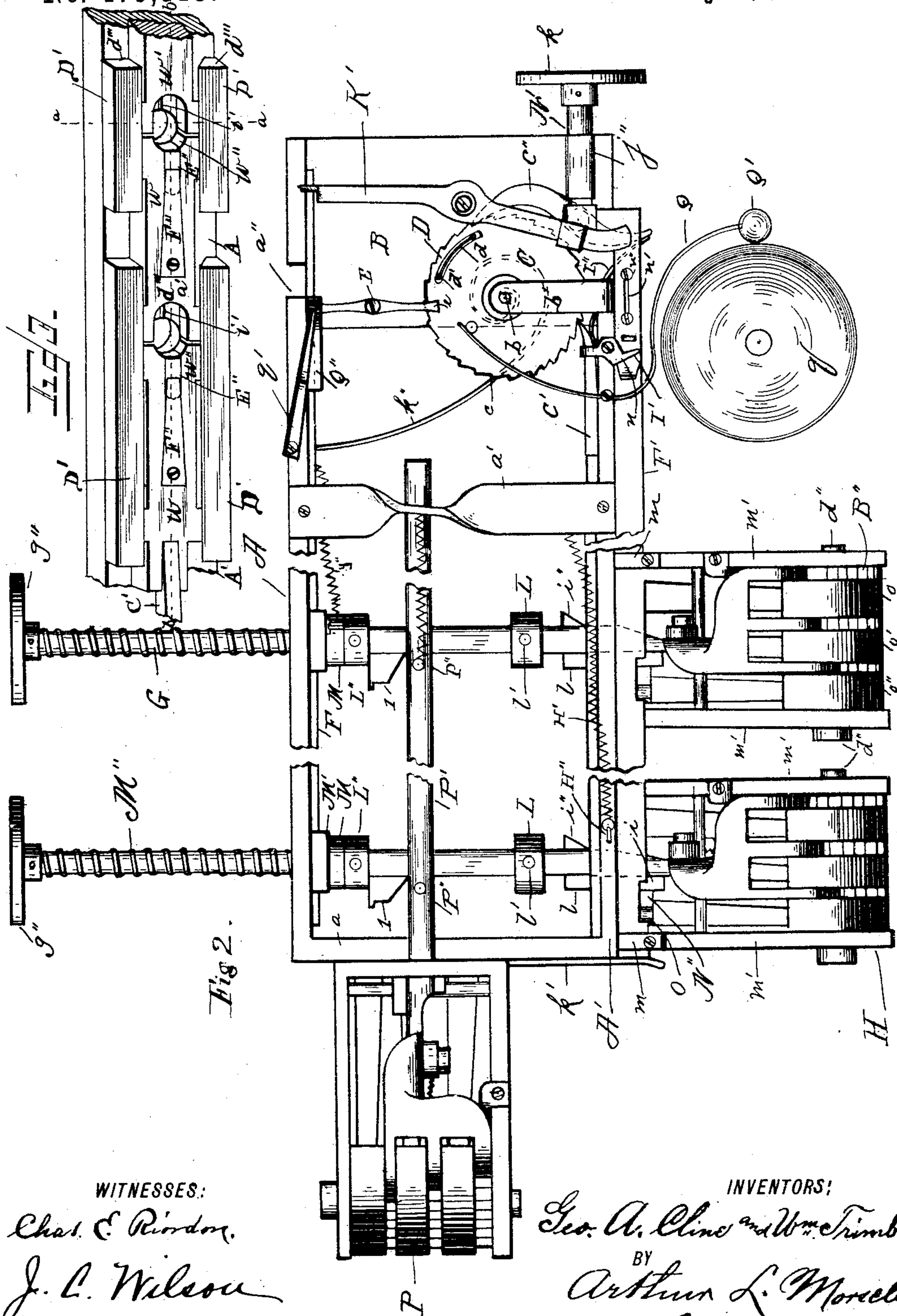
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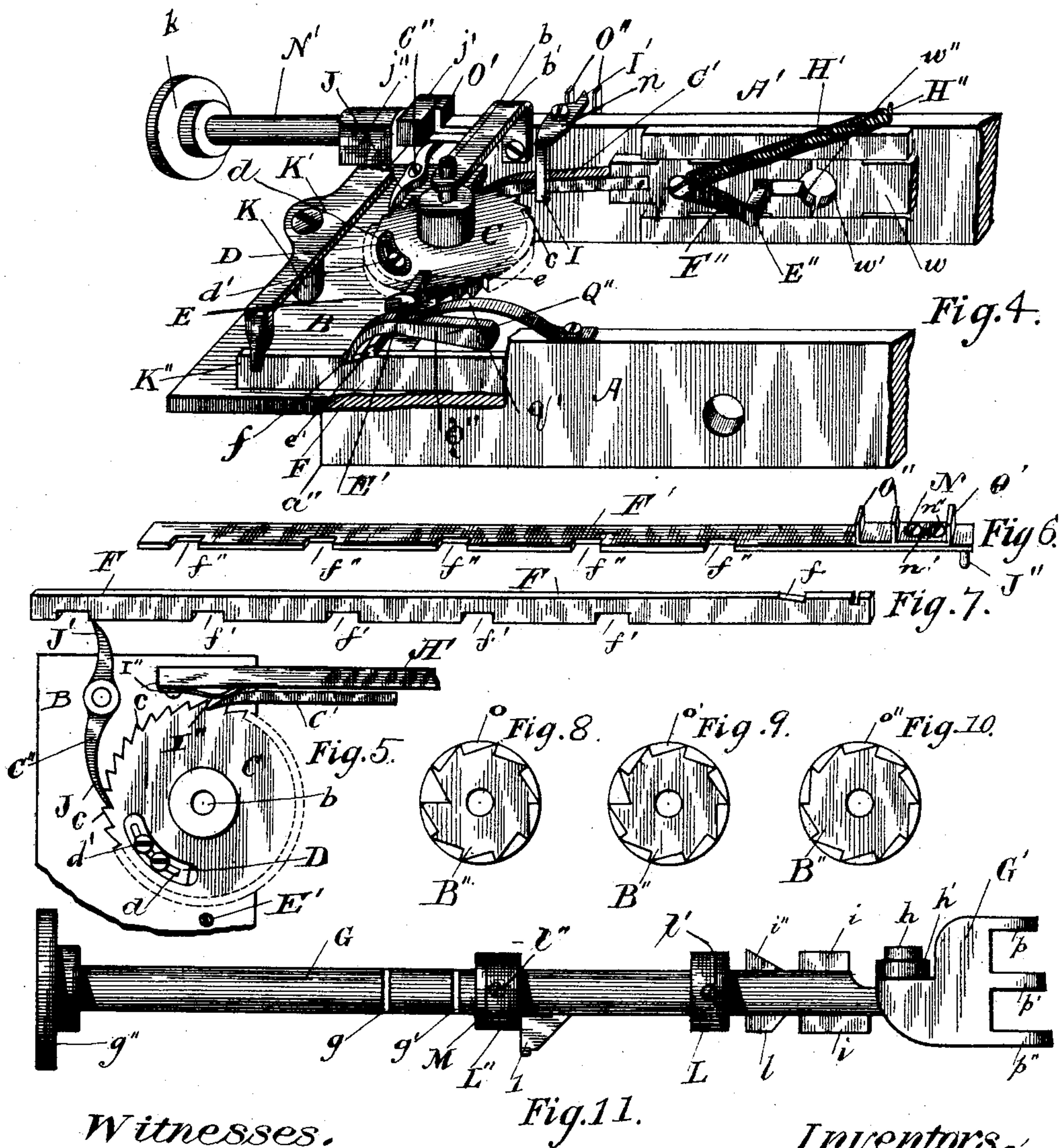
WITNESSES:
Chas. E. Riordan.
J. C. Wilson

INVENTORS:
Geo. A. Cline and Wm. Trimble.
BY
Arthur L. Morell,
ATTORNEY.

G. A. CLINE & W. TRIMBLE.
VOTING MACHINE.

No. 473,913.

Patented May 3, 1892.



Witnesses.

John A. Pries
Henry Dixon

Inventors.

Geo. A. Cline
William Trimble
by Chas. H. Riches
Attorney

UNITED STATES PATENT OFFICE.

GEORGE A. CLINE AND WILLIAM TRIMBLE, OF TORONTO, CANADA.

VOTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 473,913, dated May 3, 1892.

Application filed January 2, 1891. Serial No. 376,450. (No model.)

To all whom it may concern:

Be it known that we, GEORGE ADOLPHUS CLINE and WILLIAM TRIMBLE, machinists, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Voting-Machines; and we hereby declare that the following is a full, clear, and exact description of the same.

10 The objects of this invention are, first, to construct a machine which will automatically register the number of votes cast in favor of any or all candidates seeking election and at the same time indicate the number of electors who have cast their ballots; second, to so
15 construct the machine that only the party voting will know for which candidate he has cast his ballot; third, to render it impossible to tamper with the poll; fourth, to prevent an
20 elector voting more than once for the same candidate or to vote for more candidates than he is entitled to; and it consists, essentially, of the device hereinafter more fully explained, and more particularly pointed out in the
25 claims.

In the drawings, Figure 1 is a perspective view of the outside of the casing of the machine, showing the arrangement of two tiers of keys with their corresponding name-plates and key-holes. Fig. 2 is a plan view of the machine, a part of the frame being broken away and only two of the key-rods represented. Fig. 3
30 is a detail perspective view of the pawl-operating slide and its guideway in the side bar A'. Fig. 4 is a detail perspective view of the ratchet-wheel and operating mechanism. Fig. 5 is a plan view of the ratchet-wheel, showing the pawl c' and recoil-dog. Fig. 6 is a detail perspective view of the releasing-bar. Fig. 7
35 is a detail perspective view of the locking-bar. Fig. 8 is a side elevation of the units-wheel, showing the arrangement of ratchet-teeth. Fig. 9 is a corresponding view of the tens-wheel. Fig. 10 is a view of the hundreds-wheel. Fig. 11 is a plan view of the key-rod, showing the numeral-pawl, guides, cams, locks, and locking-grooves. Fig. 12 is a detail perspective view of the releasing key-rod. Fig. 13 is a detail perspective view showing
40 the arrangement of the side bars of the frame of the machine, the locking and releasing bars, the connection between the locking and re-

leasing bars, the releasing key-rod, and means for locking the same. Fig. 14 is a side elevation of one of the numeral-wheels, showing
55 the means for returning the same to "0." Fig. 15 is a cross-section of the same on the line a a, Fig. 14. Fig. 16 is a detail view of the spindle on which the numeral-wheels revolve. Fig. 17 is a cross-section on line a a, Fig. 3. Fig. 18 is a longitudinal section through a
60 portion of Fig. 3 on the plane indicated by the line b b. Fig. 19 is a detail view illustrating clearly the latches N'', the springs A'', and spring B'; and Fig. 20 is a detail view of a
65 section of arm K illustrating arm j, secured thereto.

Like letters of reference refer to like parts throughout the specification and drawings.

Our improved voting-machine consists of a
70 rectangular-shaped frame composed of two side bars A A', end bar a, and intermediate bar a'. Connected to the side bars A A' at their open end a'' is a bed-plate B, in which is journaled the lower end of the ratchet-spindle
75 b, while the upper end of said ratchet-spindle is journaled in a bar b', extending inwardly from and secured to the side bar A'. Rigidly secured to the spindle b is a ratchet-wheel C, having a suitable number of teeth c cut on
80 its periphery, into which engages the pawls C' and C''. On the top face of ratchet-wheel C is secured an adjustable regulator D, which is shown in this case to consist of a stop
85 in the form of a segment, provided with a slot d and secured to the ratchet-wheel C by means of a set-screw d'. This stop D engages with the end e of the trip-block E, while the opposite end of said trip-block engages with a
90 niche f, formed in the upper edge of the locking-bar F. This trip-block E is pivoted to the standard E', secured to the upper side of the bed-plate B.

The locking-bar F consists of a piece of metal, preferably of cast-steel, having cut in
95 its upper edge the niche f and having cut in its lower edge niches f'. The niches f' are slightly greater in width than the diameter of the key-rod G for the purpose of permitting said key-rods to slide freely in their bearings when the machine is unlocked. The
100 key-rods G consist of cylindrical bars of metal having grooves g g' cut in their peripheries, fitted on their outer ends with enlarged

heads or buttons g'' and on their inner ends with a hinged pawl G' , provided with three prongs p p' p'' , respectively, opposite the units, tens, and hundreds wheels. The number of prongs on the pawl G' is regulated by the number of numeral-wheels there are in each case. If two wheels are employed, it is only necessary to make use of two prongs on the pawl, while if five numeral-wheels are employed it is necessary to employ five prongs on the said pawl. The pawls G' are pivotally connected to the inner end of the key-rods G by means of a pivot-screw h , passing through a hub h' of said pawl and entering and engaging with a threaded hole formed on the inner end of said key-rods.

Secured to the key-rod G , behind the point where the hub h' is pivotally connected, are two guide-lips i , passing through the guide-slits i' , formed in the side bar A and shown in Figs. 3 and 18, for the purpose of preventing the key-rods G turning in their bearings and throwing the pawl G' out of position. These guide-lips when the keys are in their normal position are flush with the inner side of the side pieces A' , and when the keys are pressed in to their full extent occupy a position removed from the outer side of the side pieces, so as to leave a space therebetween, whereby the latches N'' , hereinafter referred to, may fall behind one of said guides and retain the key in the position assumed.

Secured to the key-rods G , behind and in alignment with the guides i , is a cam i'' and a lock l , said lock serving to prevent more than one key being pressed in at the same time, inasmuch as should such be attempted it would result in the sections w , composing the pawl-operating slide W , hereinafter referred to, binding upon said locks and preventing either of the key-rods going through the grooves w' w'' of said sections until the pressure had been removed from one or both of said keys. It might be stated that we prefer to place the guide-lips i , cams i'' , and lock l opposite the horizontal axis of the key-rods G , so that every part on said key-rods may be accurately and quickly fitted to its corresponding part in the frame of the machine.

On the key-rod G , behind lock l and cam i'' , is a collar L , secured by means of a screw l' . The distance between the collar L and outer end of the lock is equal to the thickness of the pawl-operating slide W .

On the key-rod G on the inner face of the side bar A is a second collar L'' , secured by means of a screw l'' , and between this collar and the groove g' is a cushioning-washer M . The distance between the groove g' and cushioning-washer M is equal to the thickness of the guide-plates M' , through which passes the locking-bar F .

On the key-rod G , between the button g'' and outer face of side bar A , is a coiled spring M'' , for the purpose of returning the key-rod to its former position when freed by the locking-bar F and releasing-bar F' . The releas-

ing-bar F' consists of a piece of metal about one-eighth of an inch in thickness, having niches f'' cut in one of its edges and held securely in place by guide-blocks m , fastened to the top of the sides m' of the numeral-cases. The releasing-bar F' extends the whole length of the side bar A' and has secured to its upper face an adjustable U-shaped piece N for operating the pivoted pawl-releasing arm n . The U-shaped piece consists of a body having formed in it a slot n' , through which passes the stem of a set screw or screws n'' , securing it to the releasing-bar F' . The construction of the U-shaped piece is such that at one end is formed an upwardly-extending arm O' , while at the opposite end two upwardly-extending arms O'' O'' are formed. Arm O' is engaged by the releasing key-rod N' , while between arms O'' works the horizontal portion of pivoted arm n , Fig. 4.

Pivotally connected to the outer face of the backs of the wheel-cases are latches N'' , passing upward through the niches f'' in the releasing-bar F' and pressed upon by springs O to throw them forward to engage with the rear edge of guide-lips i , which act as keepers and lock the key-rods after they have been pushed into their fullest extent and hold them in this position until freed by the releasing-lever F' .

The wheel-cases H consist of two sides m' m' and a back, the latter secured to the side piece A' of the main frame. In these side pieces is journaled a spindle d'' , (shown clearly in Fig. 16,) carrying the numeral-wheels o o' o'' , respectively, and the units, tens, and hundreds wheels.

Connected to the two sides m' m' near the back is a pin, (see Fig. 19,) over which pass friction-springs A'' , the forward end of said springs bearing against the under side of the numeral-wheels and the rear ends passing under the back of the case H . A spring B' is connected to the under side of pawls G' and to the upper side of one of the friction-springs A'' and serves to hold the pawl lightly against the teeth B'' of the numeral-wheels. The pitch of the ratchet-wheel B'' , formed on the numeral-wheels, is equal to the pitch of the ratchet-teeth formed on the periphery of the ratchet-wheel C , plus the distance between the lock l and collar L . The numeral-wheels are cylindrical pieces of metal and have formed on their peripheries characters for indicating the number of times the key-rods G have been pressed in to their fullest extent, and said characters corresponding to the ratchet-teeth B'' , carried by the wheels—that is to say, there are as many ratchet-teeth as there are characters upon the wheels. The depth of the ratchet-teeth is increased at one point on both the units and tens wheels. The increased depth of the units-wheel, however, is double the depth between the teeth at a corresponding point on the tens-wheel. The object of this construction is to permit the pawl, the prongs of which are constructed

to correspond with the said arrangements of depths, to move the units-wheel *o* forward one space every time the key-rod *G* is pressed into its fullest extent, and on every revolution of the units-wheel the units-prong *p* drops into the increased depth of the ratchet-teeth opposite on the numeral-wheel and allows the pawl *p'* to come into action with the ratchet-teeth formed on the tens-wheel, and on every revolution of the tens-wheel both the prongs *p* and *p'* drop into the increased depth of the ratchet-teeth of the respective wheels and allow the prongs *p''* to come into action with the ratchet-teeth formed on the numeral-wheel *o''* and move the hundreds-wheel forward one space. It will thus be seen that every time the key-rod *G* is pressed into its fullest extent and locked by the latch *N''* the units numeral-wheel will move forward one space and indicate the same on the dial, and every tenth time the said key-rod has been pressed in (or on every revolution of the units-wheel) the pawl will move the units and tens wheels forward one space together, and every hundredth time (or on every revolution of the tens-wheel) the pawl will move the units and tens wheels forward one space together, thus indicating the number of votes that has been cast for the candidate the said key-rod represents.

Secured to the inner face of the side bar *A'* are guide-bars *D'*, having dovetailed grooves *d'''*, (see Figs. 3 and 17,) in which slides the pawl-operating slide *W*. This pawl-operating slide consists of a series of sections *w*, made, preferably, of cast-steel. In the end of the section *w* next to lock *l* is a groove *w'*, and in the end next the cam *i''* is a groove *w''*, following closely the curvatures of the periphery of the key-rod. It might here be stated that the cam *i''* is on the same side of the key-rod *G* as the ratchet-wheel *C*, and having a travel equal to the pitch of the teeth *c* it will move those sections on the ratchet-wheel side of the key-rod forward a distance equal to the pitch of one tooth or space each time the said key-rod is pressed in to its fullest extent, thus moving the stop *D* on the ratchet-wheel *C* one space nearer the end *e* of the trip-block *E*, and after the regulated number of key-rods have been pressed in—as, for instance, if there are three candidates, and three key-rods are pressed in—the trip-block *E* is turned on its pivot by contact therewith of stop *D*, and the end *e'* trips the dog *Q''* and allows spring *Y''* to throw the locking-bar *F* forward into the grooves *g'* of those key-rods *G* not pressed in and into grooves *g* of those that are, thus completely locking the whole machine and preventing any further action on its part until released by the officer in charge. In that end of each section next the cam *i''* is an outwardly-working pivoted latch *E''*, fitted with a returning-spring *F''* for the purpose of permitting said cam passing through the pawl-operating slide on its return movement. When a key-rod is depressed or forced in-

wardly, the cam *i''* thereon will come in contact with the latch *E''* and force the section *w*, to which it is attached, toward the ratchet-wheel *C*. When at the proper time the key-rod is returned to its normal position, the latch *E''* moves inwardly upon its pivot, so as to offer no obstruction to said key-rod. Hinged to the last section, or that section next to the ratchet-wheel *C*, is a pawl *C'*, the point of which engages the teeth *c* on said wheel. Connected, also, to the last section *w* is one end of a coiled spring *H'*, while the opposite end of said spring is attached to a pin *H''*, secured to the top of the side bar *A'*. The object of this spring is to return the sections *w* to their normal position to await the next action of the key-rods *G*. The pivoted arm *n* is made L-shaped and is pivoted to the top of the side bar *A'*, has a downwardly-projecting leg *I*, engaging with the pawl *C'*, and an outwardly-extending arm *I'*, engaging with the U-shaped piece *N*. As the bar *F'* is moved toward the wheel-cases, the arms *O'' O''* carry the arm *I'* with it and move the leg *I* in an opposite direction, forcing pawl *C'* outwardly against the side bar *A'*, thus releasing its point from the ratchet-teeth *c* and permitting the ratchet-wheel to return to its first position to await the next action of the lever *W*, as will hereinafter more fully appear.

Behind the pawl *C'* is a flat spring *I''* (see Figs. 2 and 5) to press the point against the ratchet-teeth *c*. The pawl *C''* is pivoted to the upper side of the bed-plate *B*, and consists of a dog *J*, engaging with the teeth *c* on the ratchet-wheel *C*, and a trip-block *J'*, (see Fig. 5,) engaging with a pin *J''*, formed upon the under side of the releasing-bar *F'*, and shown in Fig. 6, whereby said dog *J* is released from engagement with the ratchet-wheel *C* when said releasing-bar is operated, thus providing for the disengagement of said dog *J* simultaneously with the disengagement of pawl *C'*.

Secured to the top of the bed-plate *B* is a standard *K*, to the top of which is pivoted a cross-bar *K'*, having one end bent at right angles and engaging a groove in the end *K''* of the locking-bar *F*, while near the opposite end of said cross-bar is fitted a downwardly-extending arm *j*, engaged by a block *j'*, formed on the end of the releasing-key rod *N'*. This releasing key-rod slides in a bearing *j''*, connected to the upper side of the bed-plate *B* and extends through the casing of the box, and on the end of the stem of said key-rod is a button *k*.

Connected to the end bar *a* is a spring *k'*, (see Fig. 2,) bearing against the end of the releasing-bar *F'* for the purpose of returning said bar after having been operated upon by the key-rod *N'*. Connected to the ratchet-spindle *b* below the bed-plate *B* is a recoil-spring *k''*, while the opposite end of said spring is secured to the side bar *A*. This recoil-spring serves to return the ratchet-wheel *C* to its initial position when the pawls *C* and *C''* are released from engagement therewith.

One end of the spring, as will appear from the drawings, being coiled around the spindle or shaft of the wheel will, of course, cause its backward rotation when the pawls are thrown out of engagement. The manner of throwing the pawls out of engagement will appear fully in the general summing up of the invention hereinafter.

One end of a coiled spring y'' is connected to the locking-bar F and the other end is secured to the side bar A for the purpose of throwing locking-bar F into the grooves in the key-rods after having been released by the action of the trip-block E upon dog Q''.

A general register P for the purpose of keeping count of the number of electors voting is attached to the end a of the frame and is operated by the key-rod P', fitted with downwardly-extending pins P'', engaging with the cams 1, rigidly secured to the key-rods G. The key-rod P' passes through guide-slits formed in the end bars a and intermediate bar a' and is operated by the cam 1 coming against the pins P''. By pressing one key-rod G inwardly the cam 1 moves the key-rod P' forward against the ratchet-teeth on the numeral-wheels in the register P and throws the remainder of the pins P'' out of action with the cams on the remaining key-rods until freed by the unlocking mechanism, when all the parts of the machine return to their normal position. It will be noticed that the cam 1 has formed thereon a slight shoulder, which when the key-rod P' is moved forward, as above described, will keep the pin P'' in engagement until the unlocking mechanism is operated.

The mechanism and motion of the wheels in the general register P is similar to the motion of the numeral-wheels previously referred to, and we may, if we so desire, employ the same principle and mechanism throughout the other wheel-cases. The general register is designed to aggregate the entire number of electors voting, it being obvious that the first key pressed in will operate the key-rod P' and turn the wheel in said register. With this movement of the key-rod P', however, the same is moved sufficiently far to bring the pins P'' out of line with the cams 1 of any keys which may subsequently be pressed in by any elector, and consequently it remains that the general register will not be again operated until another elector is ready to vote, no matter how many keys may be depressed by the first-named elector, the register only recording once for each elector.

Connected to the upper face of the ratchet-wheel C is a lever Q, on the end of which is a hammer Q', which announces the fact on the gong q that the machine has been unlocked and ready to be again operated upon.

Pivotaly connected to the side bar A is a dog Q'', fitted with a spring q' , for keeping the end e' of the trip-block E in the niche f of the locking-bar F.

Fastened to the casing of the machine is a

lock X, having a bolt X' to engage with a groove X'', cut in the periphery of the key-rod N'. A similar lock may be attached to each of the key-rods G, so that any or all of the key-rods may be locked when not in use. By pushing one of the key-rods inwardly the cam i'' operates on all the sections w of the pawl-operating lever W on that side next to the ratchet-wheel C, while it has no effect on those sections on its opposite side. While it is possible to press one key-rod in at a time and move the pawl-operating lever, any attempt at pressing two key-rods in together would result in the sections w binding upon the locks l and prevent either of the key-rods going through the grooves w' w'' until the pressure had been removed from either or one of the said key-rods. In other words, one key-rod may be pressed and another subsequently pressed before the first is released. The number of the key-rods which may thus be pressed in is dependent upon the regulation of the stop D—that is to say, if three candidates are to be voted for, the stop is adjusted accordingly, and three key-rods may be pressed in one after the other without the release of any. The construction of the pawl-operating bar W allows for this operation, it being obvious that when the keys are pressed in separately, as described, the cam i'' of the first key, which, for the sake of clearer illustration, we will assume is the key which operates section w nearest the ratchet-wheel, will act upon the latch E'' and force the section w , carrying said latch, toward the ratchet-wheel C and cause pawl C' to turn said ratchet-wheel one tooth. This key, therefore, having been pressed in, the cam i'' and lock l have passed through the registering semicircular recesses of the adjacent ends of the sections and offer no impediment to the action of the next key-rod. This rod is now operated in the same manner as explained in the case of the first key-rod, but of course acts upon a section w farther away from the ratchet-wheel C. Inasmuch, however, as the circumference of the several key-rods is less than the circumference described by the edges bordering the aperture formed by the registering semicircular recesses of adjacent ends of sections w it follows that any of the sections w remote from the ratchet-wheel C will have sufficient sliding motion to contact with the section closest to said ratchet-wheel and cause the action of the pawl or to contact with an intermediate section, which latter will in turn operate the section carrying the pawl. It will readily be seen, however, that should a person attempt to press more than one key in simultaneously the different sections, instead of acting upon each other and causing a movement of the entire slide, will strike against the locks l of the key-rods and effectually prevent the section carrying the pawl C' from operating.

It may be possible to apply a clock-work mechanism to this machine, so that at a cer-

tain hour the machine will become unlocked for the day and ready for action, and on reaching a certain hour the clock-work will again lock it and prevent any further votes being
5 polled.

In Figs. 14, 15, and 16 we have shown means for returning the numeral-wheels to "0," which consists of a countersunk bearing Y, in which is secured a pin *y*, engaging with a corresponding pin *y'*, secured to the periphery of the spindle *d''*. This spindle may extend from end to end of the machine through all the numeral-wheels and may be fitted with a button *y'''*, to be easily grasped by the hand when
10 operating the same.

In releasing the machine the key-rod N' is pressed in to its fullest extent, coming in contact first with the downwardly-extending arm *j* of the cross-bar K', carrying said arm with it, and moving the opposite end of the cross-bar K', connected to the end K'' of the locking-bar, in the reverse direction, or, in other words, moving the locking-bar out of the grooves of the key-rods G before operating
20 upon the releasing-lever F'. After this movement has taken place the block *j'* on the releasing key-rod N' engages with the U-shaped piece N and presses the releasing-bar forward until the latches N'' are removed from the rear edge of the guide-lips *i*. The object of first moving the locking-bar out of the grooves before the releasing-bar operates on the latches is to remove the strain caused by the action of the spring M'' from the locking-
30 bar F.

The stop-block D, secured to the upper side of the ratchet-wheel C, is adjusted to regulate the number of votes which may be recorded by any one elector in casting his ballot. To illustrate this, we will suppose that a man is entitled to vote for three candidates. The regulator D is adjusted on the top of the ratchet-wheel C, so as to come in contact with the end *e* of the trip-block E and throw the
40 locking-bar F into the grooves *g* of the remaining key-rods G as soon as three key-rods have been pressed in. In voting, each key-rod represents a candidate, and by pressing the same in to its fullest extent the cam *i''* moves the sections on the ratchet-wheel side of said key-rod forward and throws the pawl C' into the ratchet-teeth *c* and moves the ratchet-wheel C forward one stop or space, carrying the regulator D the same distance
50 with it. The recoil-pawl C'' prevents backward movement of the ratchet-wheel when the pawl C' is returning to its normal position.

To prevent the officer in charge of the ballot-box from being able to tell what candidates the elector has voted for, we may, if it is so desired, in place of locking the key-rods forward when they have been pressed in, arrange suitable mechanism to permit the key-
60 rods to return to their normal position and then lock them.

In order to convey a clear understanding of

the device, it will be necessary to give a brief resumé of the system now in vogue in the Dominion of Canada upon which our invention
70 is based, although its utility of course is not confined to the system referred to.

According to the method of conducting elections in Canada only one elector is allowed in the polling-booth at a time, and before receiving the ballot-paper he is examined by an officer styled "the deputy returning-officer" or officer in charge of the polling-booth. After the elector has passed a satisfactory examination to the deputy returning-officer he is
75 handed a ballot-paper upon which is printed the names of the candidates and is shown behind a screen, where he secretly marks an "X" opposite the name of the candidate or candidates whom he wishes to support. He then folds the ballot-paper so that the marks which he has placed upon it cannot be seen and returns the same to the deputy returning-officer for deposit in the ballot-box. We will now suppose that five candidates "A," "B," "C," "D," and "E" are running for election and that the elector is entitled to vote
80 once each for any three of the candidates he may choose and is desirous of recording his vote for "A," "C," and "E." He now goes behind the screen and marks an "X" opposite the names "A," "C," and "E" and returns the ballot-paper folded to the deputy returning-officer, who deposits it in the ballot-box. When the pole is counted at the close of an election, the "X" opposite the name "A" counts one for "A," and so on. If the elector, however, were to mark an "X" after the names of four candidates when he was only entitled to mark after the names of
85 any three, his ballot-paper would be thrown out and would not count for any of the candidates whose names appear thereon. If five candidates were running and each elector was only entitled to one vote, he would simply mark an "X" opposite the name of the candidate whom he wishes to support and that "X" would count one in favor of that candidate when the poll was counted; but if he were to mark an "X" after two of the names his ballot-paper would be thrown out and neither candidate would receive the benefit of his ballot, and the same rule applies in all cases—that is, a voter may record one vote in favor of each candidate he wishes to support until he
90 has voted for the full number prescribed by law, which number is determined in advance by the number of vacancies to be filled, and if the elector vote for more than he is entitled to his ballot-paper in every instance is thrown out and counts nothing in favor of any candidate.
95 100 105 110 115 120 125

Our invention, as previously stated, is more especially adapted to carry out the above system mechanically, whereby the same results are obtained without the danger of fraud or illegal voting. To this end, instead of depositing a written ballot within a ballot-box, each key is designed to represent a candidate. All
130

that is necessary, therefore, in order to cast a vote is to depress or press inwardly the key representing the candidate voted for. The action of this key upon the inthrust is to turn 5 the units-wheel through the medium of arm *p* of the trifurcated pawl, which drops into engagement with the teeth of said wheel. At the same time other mechanisms are operated—that is to say, the guide-lips *i i* are forced 10 through the guide-slits therefor to a position somewhat removed from the outer side of the side piece *A'*. At the same time the section *w* is moved laterally toward the ratchet-wheel *C*, so as to cause pawl *C'*, carried by said section, to engage with the wheel and rotate the 15 same one tooth. This lateral movement is attained through the cam *i''*, acting upon the pivoted latch *E''*. When the full inthrust of the key-rod has been completed, one of the latches 20 *N''*, working in its appropriate slot *f''* of the releasing-lever, is forced back of the rear edge of the guide-lip *i* adjacent, and thus locks the key.

From the foregoing remarks the object of 25 locking off each key-lever by the latches *N''* as soon as the elector has pressed said key-lever in and recorded his vote in favor of the candidate which said key-lever represents will be readily understood. If the key-lever 30 were to return to its normal position after having been pressed in, it would be possible for the elector to continue voting for the same candidate. Now suppose that five candidates “A,” “B,” “C,” “D,” and “E” are running 35 and in place of the ballot-paper our device is employed and that each key-rod represents a candidate. The key-releasing rod is always locked and can only be operated by the deputy returning-officer. Each elector in this case, 40 as in the first instance, is entitled to vote for any of the three candidates he may choose. We will suppose that he wishes to support “A,” “C,” and “E.” He now presses inward the key-rod representing “A,” which key-rod 45 on being pressed in moves the numbering-wheel forward one tooth and is locked on its inthrust by the latch *N''*, and is securely held in this position until released by the key-releasing rod, which is manipulated only by 50 the deputy returning-officer. After having pressed in the key-rod representing A and recording his vote in favor of that candidate he then presses in the key-rod representing “C,” which is also locked in its depressed position 55 by the latch *N''*, as before, and he then presses in the key-rod representing “E,” which is subjected to the same action as the key-rods representing “A” and “C.” It will thus be seen that the elector has the power to record one vote 60 each for any three of the candidates he may choose; but by locking each key-rod on its inthrust by the latches *N''* he is rendered powerless to record more than one vote for any one candidate. In this case the machine is 65 adjusted to become locked off by the locking-bar *F* as soon as the elector has recorded his three votes, making it utterly impossible for

him to vote for the fourth candidate. The whole machine is then locked off by the locking-bar *F* and remains so until it has been 70 released by the deputy returning-officer unlocking the key-releasing rod and pressing said rod inward. It is not the intention to release any key-rod until the elector has finished voting, and by this means the elector is 75 allowed to vote according to the regulation governing the election.

The action of the locking-bar *F*, above referred to, is attained in the following manner: The number of candidates which each elector 80 may vote for is determined in advance of the election by the chief election officers of the district, each machine in the district being set to allow each elector to vote for the same number of candidates. In the illustration just 85 given each elector is allowed to vote for three candidates. Consequently the stop *D* is adjusted accordingly. As each key therefore is pressed in, the ratchet-wheel *C* is turned the distance of one tooth and the wheel advanced 90 in this manner until three keys have been pressed in, at which time said wheel has been rotated sufficiently to cause stop *D* to engage the trip-block *E*, which has the effect of pressing the spring-pressed dog bearing down 95 upon locking-bar *F* upwardly, so as to allow said bar to slide back until its end abuts against the frame *A* at the end where the general register is located, thereby bringing the 100 notches *f'* of said locking-bar out of register with the key-rods, which normally pass freely through said notches, and bringing the full width of the locking-bar into engagement with the grooves *g* of the key-levers not pressed in, 105 so as to lock them all securely in position, and thereby preventing an elector voting for more candidates than he is entitled to by the rules governing the election. The key-releasing rod 110 *N'* is normally in a locked position and under the control of the deputy returning-officer, so that he can release the key-levers immediately after each elector has completed his ballot. After each elector therefore has completed his 115 vote the officer unlocks the releasing key-rod and presses the same inward. Upon this inward thrust the angular extension of the releasing key-rod engages the arm *O'* of the U-shaped piece, and of course the releasing-rod 120 *F'* is moved longitudinally, so that the edges of the notches *f''* thereof bear against the spring-pressed latches *N''* and force them from engagement with the guide-lips *i i*, so as to cause the release of the pressed-in key. At the same time with the operation just described the arms 125 *O'' O''* move the pawl-releasing bar, so as to throw the pawl out of engagement with the teeth of the ratchet-wheel *C*, while pin *J''*, depending from the end of the releasing-bar *F'*, engages with the trip-block *J'* of pawl *C''*, thereby also throwing said pawl out of engagement 130 with the ratchet-wheel and allowing said ratchet-wheel to return to its initial position or the position it occupied before being partly rotated by pawl *C'*. The object of this is to permit the

ratchet-wheel and the stop D, carried thereby, to return to original position. As a further result of the manipulation of the key-releasing bar, the part j' thereof engages with the depending arm j of cross-bar K' , and consequently moves said cross-bar, so that its opposite end, which is in engagement with locking-bar F, will move said locking-bar longitudinally and bring the notches f' thereof once more into register with the keys, so that said keys may be moved freely. It will be understood of course that this movement occurs slightly in advance of the release of the keys, so that the notches f' may be in proper position for the passage of the key-rods the moment the same have been released. The box of the machine is supposed to be locked by the chief returning-officer of the district, so that neither the elector nor other person or persons can interfere with the recording mechanism and alter the state of the poll.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a voting-machine, the combination of a series of key-rods provided upon one of their ends with pawls, numeral-wheels engaged by said pawls, a pawl-operating slide engaged and actuated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by said slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

2. In a voting-machine, the combination of a series of key-rods provided at different points upon their lengths with locking-grooves, a series of numeral-wheels operated by the key-rods, and a locking-bar provided with a series of notches for the passage of the key-rods, said bar constructed to be moved longitudinally, so as to throw the notches out of register with the key-rods and the full width of the bar into engagement with the outer locking-grooves of the pressed-in key-rods and the inner grooves of the key-rods not pressed in, substantially as set forth.

3. In a voting-machine, the combination of a frame, a series of key-rods provided upon one of their ends with pawls, numeral-wheels engaged by said pawls, a pawl-operating slide operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by said slide, an adjustable regulating-stop upon the upper face of said ratchet-wheel, a trip-block having its inner end engaged by said stop after the ratchet-wheel has been moved a regulated number of teeth, a spring-pressed dog pivoted to the frame-work, and a locking-bar provided upon its upper edge with a notch within which the pivoted dog normally fits, said dog being tripped by the outer end of the trip-block when said trip-block is turned, and a spring having one end secured to the frame and its opposite end secured to the locking-

bar, whereby the latter when the dog is thrown out of engagement is moved longitudinally, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

4. In a voting-machine and the like, the combination, with a frame, one of the side bars thereof provided with guide-slits, of a series of key-rods provided at diametrically-opposite points with guide-lips, whereby said rods in passing through the slits are prevented from turning in their bearings, and a series of numeral-wheels operated by the key-rods, substantially as set forth.

5. In a voting-machine, the combination of a frame, one of the side bars thereof provided with guide-slits, a series of key-rods provided at diametrically-opposite points with guide-lips, a series of spring-pressed latches adapted to fall behind said guide-lips when the keys are pressed inward, and a series of numeral-wheels operated by the key-rods, substantially as set forth.

6. In a machine for registering votes and the like, the combination of a wheel-case, a numeral-wheel journaled therein, a pin passing across the lower portion of said case, friction-springs passing over said pin, the forward ends thereof bearing against the under side of the numeral-wheels, a key-rod provided upon one end with a pawl for engaging the numeral-wheel, and a spring having its lower end connected to one of the first-named springs and its upper end connected to the under side of the pawl, substantially as set forth.

7. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide provided with an inwardly-working pivoted spring-pressed latch, a key-rod provided with a laterally-extending cam adapted to act upon the end of the latch upon the inward movement of the key-rod and cause a lateral movement of the slide, and upon the outward movement of said key-rod to cause the latch to move inwardly upon its pivot, numeral-wheel operated by the key-rod, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

8. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide consisting of a series of sections, each of said sections provided with an inwardly-working pivoted spring-pressed latch, a series of key-rods provided with laterally-extending cams, adapted to act upon the ends of the latches upon the inward movement thereof and cause a lateral movement of the slide and upon the outward movement of said key-rods to cause the latches to move inwardly upon their pivots, numeral-wheels operated by the key-rods, a ratchet-wheel con-

structed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

9. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide consisting of a series of sections having their opposing ends provided with semicircular grooves, each of said sections also provided with an inwardly-working pivoted spring-pressed latch, a series of key-rods provided each with a laterally-extending cam and at a diametrically-opposite point with a laterally-extending lock, said cams adapted to act upon the ends of the latches upon the inthrust of the key-rods and cause a lateral movement of the slide and upon the outward movement of said key-rods to cause the latches to move inwardly, and said locks adapted to contact with the grooves of the sections of the slide contiguous when more than one key is pressed in at a time, numeral-wheels operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, substantially as set forth.

10. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide consisting of a series of sections having their opposing ends provided with semicircular grooves, each of said sections also provided with inwardly-working pivoted latches, a series of key-rods provided each with a laterally-extending cam and at a diametrically-opposite point with a laterally-extending lock, collars upon the key-rods, located thereon at a distance from the locks equal to the thickness of the pawl-operating slide, numeral-wheels operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, substantially as set forth.

11. In a voting-machine, the combination of a frame, guide-plates secured to one of the side pieces of the frame, a series of numeral-wheels, key-rods for operating said wheels, said rods provided with locking-grooves at different points upon their length, a collar and cushioning-washer upon each key-rod, located thereon at a distance from the innermost grooves equal to the thickness of the guide-plates, and a locking-bar constructed to engage the inner or outer grooves of the key-rods according as the same are pressed in or out, substantially as set forth.

12. In a voting-machine, the combination of a frame, a series of key-rods working through said frame, said key-rods provided with a lat-

erally-extending lip, a series of spring-pressed latches adapted to fall behind said lips when the keys are pressed inward, a series of numeral-wheels operated by the key-rods, and a releasing-bar provided with a series of notches into which the spring-pressed latches fit, said releasing-bar constructed to be moved toward the numeral-wheels, so as to press the bordering edges of the notches against the latches and cause the release of the key-rods, substantially as set forth.

13. In a voting machine, the combination of a frame, a series of key-rods working through the frame, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind said lips when the keys are pressed in, a series of numeral-wheels operated by the key-rods, a releasing-bar constructed to be moved toward the numeral-wheel and engage the latches, so as to effect the release of the key-rods, and a spring secured at one end of the machine, its free end bearing against the end of the releasing-bar and causing the same to be returned to its normal position after acting upon the latches, substantially as set forth.

14. In a voting-machine, the combination of a frame, a pawl-operating slide working in guideways in said frame, a series of key-rods for operating said slide, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind the lips upon the inthrust of the keys, a series of numeral-wheels operated by the key-rods, a ratchet-wheel adapted to be engaged by the pawl carried by the slide, a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, a pivoted arm having a downward projection engaging the pawl, and a releasing-bar engaging the latches and provided with two upwardly-extending arms adapted when said bar is operated to engage the horizontal portion of the pivoted arm and throw the pawl out of engagement with the ratchet-wheel, substantially as set forth.

15. In a voting-machine, the combination of a frame, a pawl-operating slide working in guideways in said frame, a series of key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind the lips upon the inthrust of the keys, a series of numeral-wheels operated by the key-rods, a ratchet-wheel adapted to be engaged by the pawl carried by the slide, a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, a pivoted arm having a downward projection engaging the pawl, a detent-pawl for the ratchet-wheel, and a releasing-bar engaging the latches, said bar provided with two upwardly-extending arms adapted when said bar is operated to engage the horizontal portion of the pivoted arm and throw the pawl out of engagement

with the ratchet-wheel, and the releasing-bar further provided upon its extremity with a depending pin adapted to engage the detent-pawl and throw the same out of engagement, substantially as set forth.

16. In a voting-machine, the combination of a frame, a series of key-rods working through said frame, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind said lips upon the inthrust of the keys, a series of numeral-wheels operated by the key-rods, a releasing-bar provided with a series of notches into which the spring-pressed latches fit, said releasing-bar constructed to be moved toward the numeral-wheels, so as to press the bordering edges of the notches against the latches and cause the release thereof, and a spring secured at one end of the frame and having its free end bearing against the releasing-lever, so as to cause the return of the same to its normal position, substantially as set forth.

17. In a voting-machine, the combination of a series of key-rods, numeral-wheels operated thereby, a locking-bar provided at one end with a niche, a spring-pressed dog normally engaging said niche, a trip-block having one end engaging beneath said dog, and mechanism engaging the opposite end of the trip-block, so as to throw the dog out of engagement with the niche of the locking-bar and permit said bar to move longitudinally and lock the key-rods, substantially as set forth.

18. In a voting-machine, the combination of a series of key-rods, numeral-wheels operated thereby, a locking-bar provided at one end with a niche, a spring-pressed dog normally engaging said niche, a trip-block having one end engaging beneath said dog, mechanism for engaging the opposite end of the trip-block, so as to throw the dog out of engagement with the niche of the locking-bar and permit said bar to move longitudinally into locked engagement with the key-rods, a pivoted cross-bar having one end engaging the locking-bar, and mechanism for engaging the opposite end of said cross-bar, so as to return the locking-bar to its normal position, substantially as set forth.

19. In a voting-machine, the combination of a series of key-rods, a pawl-carrying slide operated by the key-rods, numeral-wheels also operated thereby, a ratchet-wheel constructed to be engaged by the pawl carried by said slide, a pivoted arm bent downwardly at right angles to engage the pawl, a detent-pawl, a key-releasing bar provided at one end with a depending pin, a U-shaped piece adjustably secured to the releasing-bar, having two upwardly-extending arms to receive the horizontal portion of the pawl-releasing arm and its extremity provided with an upwardly-extending arm, a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to

lock the key-rods, a pivoted cross-bar having one end engaging the locking-bar and provided near its opposite end with a depending arm and a key-releasing rod, its angular end when said rod is slid inwardly adapted to act against the depending arm of the cross-bar and the end arm of the releasing-bar, substantially as set forth.

20. In a voting-machine, the combination of a frame, a series of key-rods working through said frame, a series of numeral-wheels operated by the key-rods, a releasing-bar for disengaging the key-rods from their locked position after their inthrust, a releasing key-rod sliding in bearings, so as to contact with and operate the releasing-rod, said releasing key-rod provided with a slot, and a lock for engaging said slot, substantially as set forth.

21. In a voting-machine, the combination of a frame, a series of numeral-wheels, key-rods operating said numeral-wheels, said key-rods provided with laterally-extending cam-surfaces, a key-rod running transversely of the first-named rods and provided with depending pins adapted to be engaged by the cams on the inthrust of the rods carrying said cams, and a numeral-wheel adapted to be operated by the transverse key-rod, substantially as set forth.

22. In a voting-machine, the combination of a series of key-rods provided upon one of their ends with pawls, registering mechanism, substantially as described, actuated by said key-rods, and a locking-bar constructed to automatically lock both the key-rods pressed in and those not pressed in after a predetermined number of said pressed-in key-rods have been operated, substantially as set forth.

23. In a voting-machine, the combination of a frame, a series of key-rods mounted in said frame, registering mechanism actuated by the key-rods, each of said key-rods provided on its outer end with a head or button, mechanism for locking the key-rods upon their inthrust, a spring for returning the same to their normal position after release, and a locking-bar constructed to automatically lock both the key-rods pressed in and those not pressed in after a predetermined number of said pressed-in key-rods have been operated, substantially as set forth.

24. In a voting-machine, the combination of a series of key-rods, registering mechanism operated by said rods, a ratchet-wheel, a slide consisting of a series of sections to actuate said ratchet-wheel, said slide so constructed as to permit the inthrust of one key-rod at a time and effectually stop the simultaneous inthrust of two or more key-levers, substantially as set forth.

25. In a voting-machine, the combination of a series of key-rods, of an operating-slide provided with apertures fitted with pivoted latches, actuated by said key-rods passing through said apertures, registering mechanism actuated by said key-rods, and mechan-

ism for automatically locking off the machine actuated by said operating-slide, substantially as set forth.

26. In a voting-machine, an operating-slide
5 consisting of a series of sections sliding in suitable guides and having apertures fitted with outwardly-working pivoted latches, each of which is provided with a returning-spring, in combination with the key-rods, registering
10 mechanism, and mechanism for automatically locking off the machine actuated by said operating-slide, substantially as set forth.

27. In a voting-machine, the combination
15 of a series of key-rods, registering mechanism actuated by said key-rods, a ratchet-wheel provided on one of its faces with a stop, a trip-block, one end of which is actuated by said stop, a locking-bar to lock off the machine
20 upon the inthrust of the regulated number of key-rods actuated by the other end of said trip-block, substantially as set forth.

28. The combination of the key-rods having pivoted to their inner ends pawls G' , the numeral-wheels, pawl-operating slide W , the
25 pawl C' , ratchet-wheel C , trip-block E , and locking-bar F , substantially as and for the purpose set forth.

29. The combination of the key-rods G , the pawl G' , numeral-wheels, cams i'' , pawl-operating slide W , the pawl C' , recoil-pawl C'' ,
30 ratchet-wheel C , the stop D , trip-block E , and locking-bar F , substantially as and for the purpose set forth.

30. The combination of the key-rod G , fitted on its outer end with an enlarged head or
35 button and on its inner end with a pawl G' , the guides i , guide-slits i' , formed in a side bar A' , the recoil-spring M'' , with the side bar $A A'$, grooves $g g'$, and locking-bar F , substantially as and for the purpose set forth.
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31. The combination of the key-rods G ,

pawls G' , operating numeral-wheels $o o' o''$, the guides $i i$, bolts N'' , cams i'' , pawl-operating slide W , the pawl C' , ratchet-wheel C , stop D , trip-block E , locking-bar F , cross-bar
45 K' , and releasing-bar F' , substantially as and for the purpose set forth.

32. In a voting-machine, the releasing-bar F' , provided with a U-shaped piece N , one end of which O' engages with the outwardly-extending arm i' of the pivoted pawl-releasing
50 arm n , in combination with a pawl-releasing bar, the pawl C' , and ratchet-wheel C , substantially as and for the purpose set forth.

33. In a voting-machine, the frame of the
55 machine consisting of two side bars $A A'$, an end bar a , and the intermediate bar a' , a bed-plate B , connected to the open end a'' of the said end bars and having journaled therein the lower end of the ratchet-spindle b , while
60 the opposite end is journaled in a cross-bar b' , extending outwardly from and secured to the side bar A' , in combination with the locking-bar F , sliding in guide-plates M' , secured to the inner face of the side bar A , the pawl-
65 operating slide W , sliding in guides D , secured to the inner face of the side bar A' , the ratchet-wheel C , the stop D , trip-block E , niche f , cut in the upper edge of the locking-bar F , into which engages the end e' of the
70 trip-block E , notches f' , cut in the lower edge of the said locking-bar and through which passes the key-rods G , the key-rods G , fitted with grooves $g g'$, and into which engage the said locking-bar, substantially as and for the
75 purpose set forth.

Toronto, December 20, 1890.

GEORGE A. CLINE.

WILLIAM TRIMBLE.

In presence of—

GUSTAVE A. PEIES,

CHARLES H. RICHES.