

3 Sheets—Sheet 1.

VOTE REGISTERING AND RECORDING MACHINE.

Patented Oct. 9, 1894.

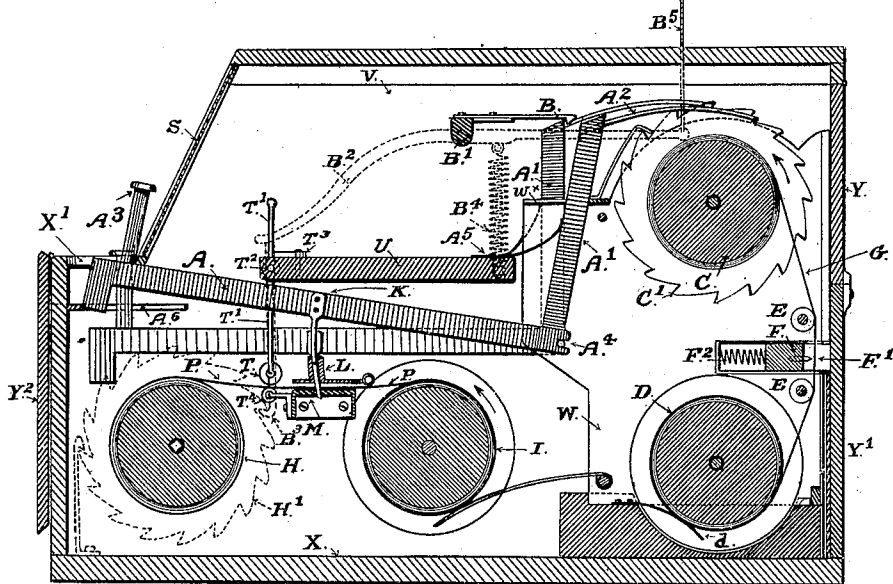
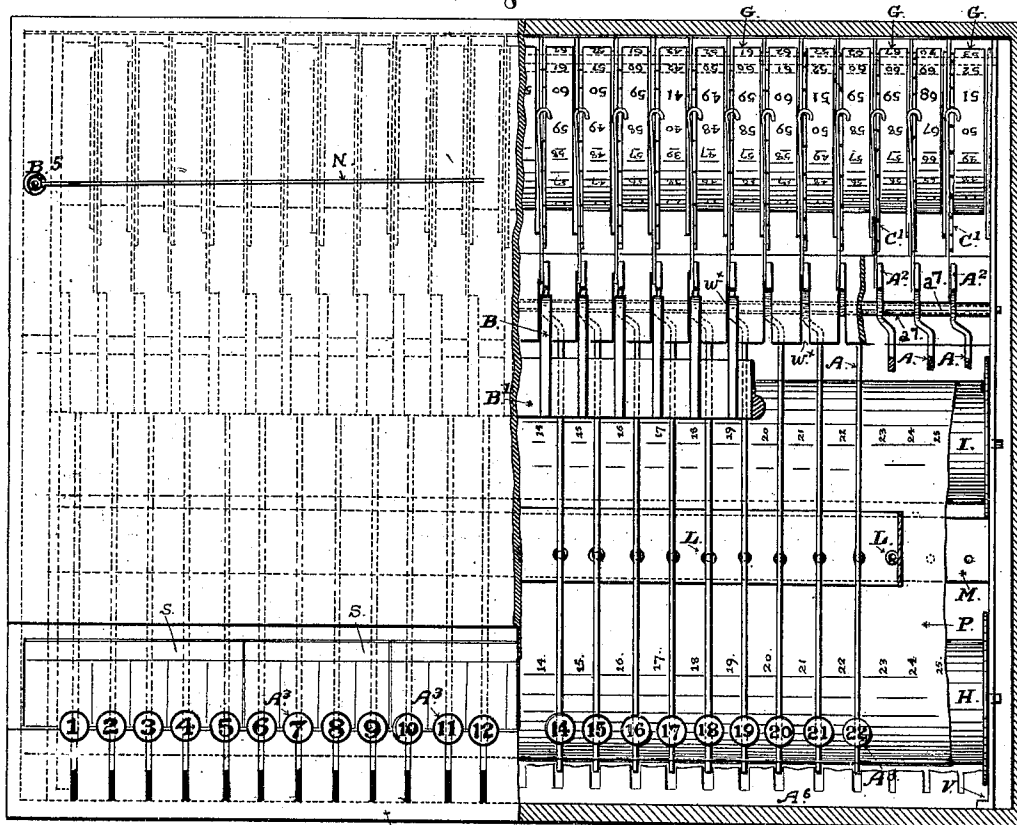


Fig. 1.



x^2 fig. 2.

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Inventor:
Hersey A. Clifford
By *Smith* *Att*

(No Model.)

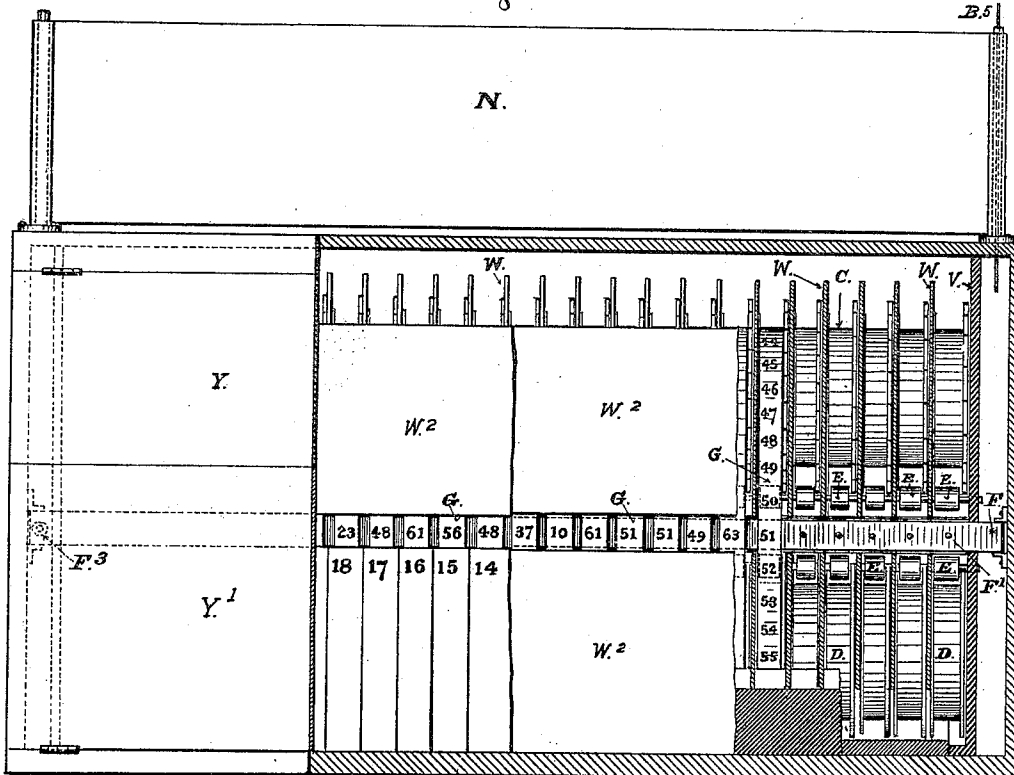
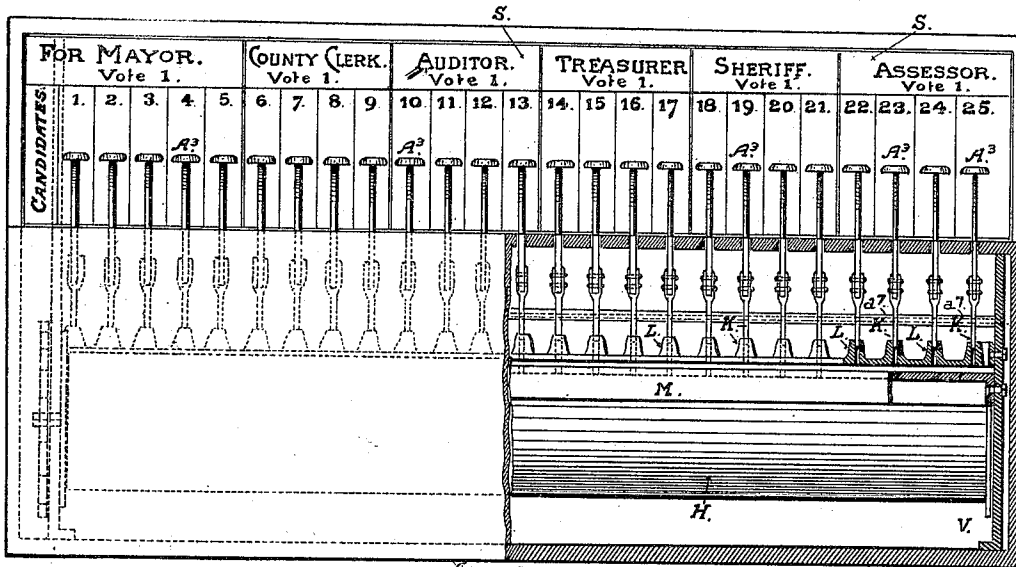
3 Sheets—Sheet 2.

H. A. CLIFFORD.

VOTE REGISTERING AND RECORDING MACHINE.

No. 527,138.

Patented Oct. 9, 1894.



Witnesses:

E. Patten

M. Rogers

Inventor

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(No Model.)

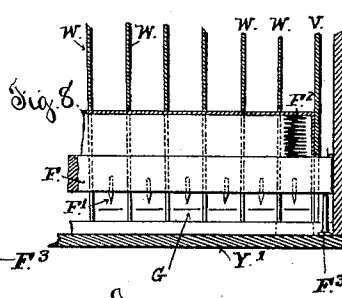
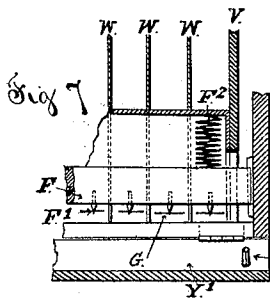
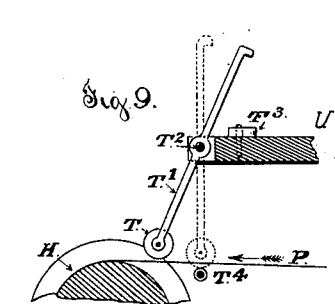
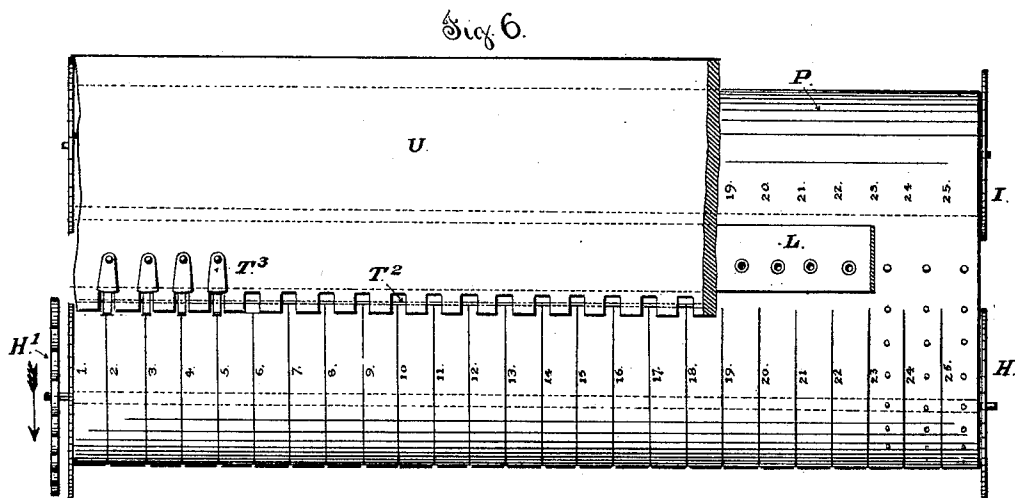
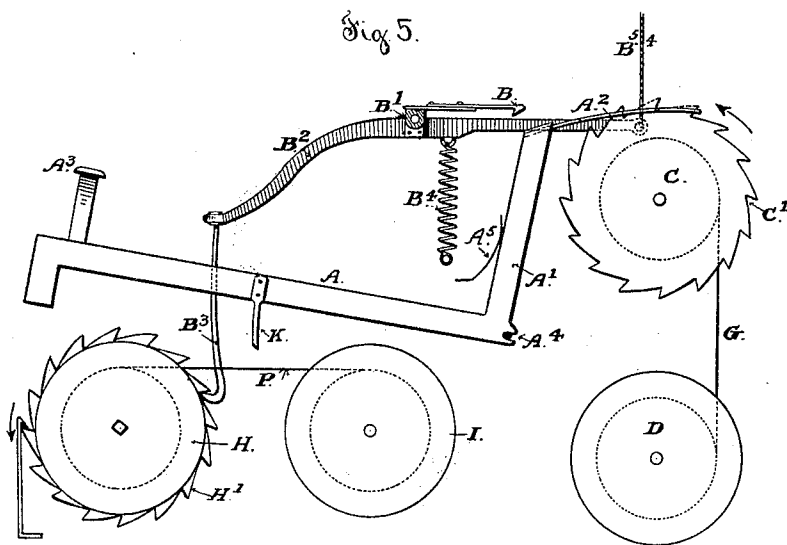
3 Sheets—Sheet 3.

H. A. CLIFFORD.

VOTE REGISTERING AND RECORDING MACHINE.

No. 527,138.

Patented Oct. 9, 1894.



Witnesses:
E. Patten.
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UNITED STATES PATENT OFFICE.

HERSEY A. CLIFFORD, OF SAN FRANCISCO, CALIFORNIA.

VOTE REGISTERING AND RECORDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 527,138, dated October 9, 1894.

Application filed October 2, 1893. Serial No. 487,036. (No model.)

To all whom it may concern:

Be it known that I, HERSEY A. CLIFFORD, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Voting-Machines, of which the following is a specification.

This invention relates to certain improvements made in a machine for registering votes described and claimed in a prior application for Letters Patent filed by me on the 6th day of February, 1893, Serial No. 461,171, and allowed on the 6th day of June, 1893.

The present invention has for its objects, mainly, to simplify the construction and to improve the operation of the registering mechanism; and the improvements herein consist in certain novel constructions and combinations of case, key-board, individual key-levers, individual register-tapes, a counter record-sheet and mechanism connecting said keys with the register-tapes for moving the same and recording the vote, as hereinafter fully described; reference being had in the following description to the accompanying drawings, in which—

Figure 1 is a vertical, transverse section of my improved machine. Fig. 2 is a top-view with the top of the case and some of the overlying parts of the mechanism within broken away to uncover parts below. Fig. 3 is a front-elevation with the case broken away and some parts inside in section. Fig. 4 is a rear-elevation with the case and some parts of the inner frame in section and some parts broken away. Fig. 5 is a side-elevation in detail of one of the key-levers and the parts connecting it with the paper-carrying spools and rollers. Fig. 6 is a top-view of the counter record-sheet and its carrying-rollers. Figs. 7 and 8 are longitudinal sections taken horizontally through the rear of the case at the right-hand side of Fig. 4, showing the manner of locking and releasing the vote-recording strips of all the keys by the movements of a single bar. Fig. 7 illustrates the position of the bar forward in contact with the strips, and Fig. 8 illustrates the opposite position when the strips are released. Fig. 9 is a detail of a cutting device for separating the record-sheet into separate strips to facilitate the

work of counting the votes of different candidates.

The key-levers —A—A—are set at regular intervals apart between side-plates —V—V— of the frame, and have keys —A³— on their front ends arranged to work through slots in the flat key-board —X'— of the casing. Each lever has a fulcrum on a rod —A⁴— across the interior space between the side-plates. This rod furnishes a common fulcrum or bearing-point for all the levers. Loose-spacing sleeves or collars —a⁷— are placed between the levers on this rod to separate the keys, and for the front ends of the levers there are slotted guides —A⁶— just under the key-board. At the fulcrum —A⁴— each lever has an upright arm or member —A'—, to the upper end of which is secured a dog formed of a rod —A²— with a hooked end to engage a ratchet-tooth flange —C'— on a reel or spool —C. To every key-lever is one of these flanged-reels or spools; and all these spools are centered to turn loosely on a common rod or spindle fixed in horizontal position between the side-pieces of the frame.

Immediately below the spools —C— is placed a corresponding number of spools —D—D— having flanges to confine the tapes they carry, but no ratchet teeth; and these spools —D, like the upper ones, are centered to turn freely on a common rod or spindle.

The pair of spools —C—D— to every key-lever carries a tape or strip —G— of indefinite length having on one face divisions or spaces divided and numbered consecutively from 1 upward for the whole length of the strip.

That part of the space between the side-plates —V—V— at the rear of the machine is divided by partition-plates —W—W— into compartments of uniform width into which the spools —C—D— are set; and each compartment is provided with small guide-rollers —E—E— over which the strip —C— is carried from one spool to the other for the purpose of throwing out the strip closely into line with a sight-opening across the rear of the case.

As often as a key-lever is depressed the upper one —C— in each pair of spools is turned a short distance corresponding to the space

or interval between one numbered division and the next on the strip —G; and thus the numbers on the face of the strip as they pass across the opening, moving from the lower to the upper spool, show at the sight-opening the number of times that particular lever is moved. These numbered strips I have termed register tapes, while the wide strips or sheet on which the stroke of every key is recorded I have herein termed the "record-sheet."

B— is a spring-tongue or trigger fixed at one end to a rocker-bar —B'—, extending from that bar backward and in line with the upper end of the upright arm —A'— of the key-lever and hooked at the end to catch the end of the arm and lock the lever when the key at the outer end is pressed down. The bar —B'— is centered to turn in the side-plates, and on one pivot of the bar outside the plate —V— is fixed a lever —B²— having a downwardly bent member in front of the pivot and a straight arm extending rearwardly from the pivot. From the end of this arm a cord or wire —B⁵— is carried upward through a tube on the top of the case to the outside, so that by pulling on this cord the trigger —B— will be raised and the locked key-lever released.

A⁵— is a spring acting against the key-lever to throw it back when the trigger is raised; and —B⁴—, a spring acting on the lever in the opposite direction to bring back the bar —B'— when the end is released, and to hold the trigger down.

The triggers for all the key-levers are fixed to the same bar —B;— and consequently the movement of the one lever —B²— acts to unlock and release any number of key-levers by a single pull of the cord —B⁵.

In constructing the frame of this machine the side-plates —V— and the partitions —W— at the back can be made of sheet-metal, but the box or inclosing case —X— may be made of wood. All the parts are mounted in or directly on the metal-frame, so that it can be set in and drawn out from the back of the case. That end of the case is formed of two hinged sections, or doors —Y—Y', and the end of the frame is covered by metal plates —W²— —W²— that serve both to support and stiffen the partitions —W— at their rear ends, and also to cover the numbers on the register-tapes except at the sight-opening where the numbers are exposed. The lower door when opened will uncover the sight-opening when it is desired to read the number of votes, but when the machine is in use these doors will be kept closed and locked to protect the tapes. All the tapes are held fast and cannot be moved when the back of the case is opened to inspect the tapes or read the numbers. This is done by a locking-bar arranged in such manner that as the door is opened to expose the tapes to view the locking-bar is thrown into action automatically and all the tapes are locked. Thus neither the

upper nor the lower spool of any tape can be moved while the door remains open. The locking-bar is so arranged, also, that it is thrown out of action as the door is closed. In the present construction this device is a movable bar —F— set behind the register-tape and carrying on the face or side next the tapes a point or punch —F'— for every tape to seize and lock all the tapes and to mark or prick or make a perforation in each tape when the bar is pressed outward toward or against the tapes. Springs —F²— behind the bar throw it forward into action, and stops or projections —F³— fixed on the inner side of the door —Y'— at both sides and in line with the bar act against the bar as the door is closed to press the bar back and hold it out of contact with the tapes, the ends of the bar —F— set in guides on the inside of the case as seen in Figs. 2, 4, 7, and 8.

H— and —I— are two rollers with flanged heads carrying the record-sheet —P. This part is a wide strip or sheet of paper of indefinite length carried by the rollers and drawn from one roller and wound upon the other roller step by step, mechanically, and a given distance after the whole number of keys depressed by a voter are released after the operation of voting is finished. This band, or sheet, extends under the whole set of key-levers to serve for all the keys; and to each lever is fixed a marking or recording device by which the key when it is depressed records the vote upon this sheet in addition to the operation of the register-tape at the back of the machine. The movement of this record-sheet is effected by a ratchet-tooth disk —H'— on the axle of one roller —H— outside the side-plate —V— of the frame and a pawl —B³— connected to the curved end of the lever —B²; so that as the key-levers previously depressed by the voter are all released by the single movement of the bar —B'—, the pawl —B³— acts to turn the roller —H— after the key-levers have been restored to position. The lever —B²— acts on the spring —B⁴— after the cord —B⁵— is released to turn the ratchet wheel —H'— on the axle of the roller —H. The movement of each key is recorded on this continuous sheet by a punch —K— fixed on the key lever in front of its fulcrum to act upon the sheet from above, and a fixed die-plate —M— having holes for the punches is set under the sheet to support the paper and form the stationary portion of the punching device before mentioned.

Directly above the die-plate there is a stationary plate, or bridge-piece, —L— having tubular standing guides, or sockets, for the punches to keep them in line with the holes in the plate below. The sheet is drawn between the two plates —L—M— and the punches are confined and work in the sockets of the upper plate at all times.

Every key of the key-board at the front of the machine when depressed operates both to

move its register-tape at the rear and also to record its movement upon the continuous sheet —P— below the key. It will be obvious in this latter operation of recording the vote that the key could be made to simply prick or to stamp the sheet, instead of cutting out a hole at every stroke of the key, by simply substituting a proper pricking, or marking, or printing device for the cutting-punch. I consider the present construction, however, the simplest and most certain means of registering the votes on this sheet. The sheet —P— marked or perforated in this manner by the keys shows all the votes given for the candidates named in the ballot at the front of the machine and also shows the number of votes received by each separate candidate when the voting is finished; so that the sheet can be removed from the machine after the polls are closed, and the votes counted to check and verify the numbers exhibited on the register-tapes at the back of the machine. The sheet is intended also to furnish a permanent record of the votes to be filed away for future reference. To facilitate counting the marks or perforations, the surface of the sheet can be ruled off into spaces or divisions and the same numbered to agree with the numbers borne by the keys, or otherwise marked to identify the divisions. This sheet can be divided into sections by cutting it along dividing lines into a number of separate record-strips and either separating it into individual strips, each containing the record of votes for one candidate, or, by cutting the sheet on dividing lines, the same can be divided according to the different offices or positions voted for; so that each strip or section will contain the record of votes given for a given office. Thus, for example, dividing the sheet —P— shown in the drawings between the lines 17—18, 21—22, Fig. 2, the two wide-strips or sections of the sheet will form an independent record of the votes for sheriff and for assessor; and in like manner the remainder of the sheet can be divided into separate sections by offices.

In Figs. 1, 6 and 9 I have illustrated a cutting device for conveniently dividing the record-sheet into sections, and capable of being thrown into or out of action at will. It consists of a small rotary cutting-disk —T— mounted to turn freely in bearings on the lower end of the arm or lever —T'—, which part is itself fixed on a center pin —T²— in such manner that moving on that pin as a center the lower end carrying the cutting-disk can be raised to stand clear of the sheet beneath, or it can be brought down in working contact with the sheet. The upper end of this arm extending above the pivot —T²— forms a handle for setting the cutting-disk in this manner, and a movable button —T³— on the bar or beam —U— in which the arm is pivoted serves to lock the arm in upright position when the disk is set for work. A small roller —T⁴— under the sheet and in line with

the cutting-disk furnishes a bearing surface on the bed for the sheet.

In many cases the record-sheet can be conveniently handled in counting the votes without cutting it into sections; so that such cutting device may not be set for action, but may be omitted altogether from the machine without affecting its general operation.

If so desired, provision can be made in constructing a machine to enable the record-sheet to be separated into sections before it is removed from the machine by placing the required number of cutters in position to act on the sheet between the two rollers —H—I. Where the cutting devices are omitted altogether the beam —U— which supports them may be dispensed with, except in so far as it is required to hold the side-plates.

The inclined front of the case over the key-board is open across the entire length of the machine and is framed to hold a glass behind which the tablet or board —S— containing the names of the offices and of the candidates is set from the back; so that the same are in full view of the voter, while being protected by the glass. The tablet is ruled off into sections as shown in Fig. 1, according to the different offices, and each section is subdivided into spaces in line with the keys in front; so that to every space there is a key standing in position directly in front of it. The head of every key and the spaces on the tablet behind are numbered to correspond. In these spaces are printed or fixed the names of the candidates for the offices designated above; to each space a candidate and to every space a key, and all in plain view of the voter when he takes his position in front of the machine.

As thus constructed one or more of the machines are set up for operation at the polls side by side, or one on top of the other, the key-boards being accessible to the voters; but the rear of the machine and the operating cords are accessible only to the lawful inspectors or clerks. To shut in or inclose the space behind the machine a thin screen —N— can be fixed across the top of the machine at the rear, as shown in Fig. 4.

In the operation, the voter taking his position in front of the key-board reads from the tablet in front the names of the different candidates for whom he desires to vote, beginning at the left, or with the highest office, and depressing one after another in successive order the keys that are in line with the names of the candidates and bear their numbers. After operating the keys in this manner the voter steps out of the booth and the next voter in turn comes to the key-board, but before he can vote, all the keys depressed by the preceding voter must be unlocked and restored to working position; for which purpose the inspector pulls the cord that releases the triggers before described, and the keys return to position. In the operation of releasing the keys the record-sheet

advances one space under the punches of the keys and a blank portion of the sheet is brought under the punches of the levers.

When the machine is set up at the opening of the polls the doors at the back of the machine are locked by the inspector and are not opened until the election is over.

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

1. The combination, in a suitable case, of a key-board composed of independently acting key-levers, rollers carrying a record-sheet of indefinite length beneath the key-levers, an individual punch or marking device to each key-lever operated by the movement of said lever to punch or mark the record-sheet at every stroke of the lever, means for locking each key-lever to hold it out of action at every stroke or movement and for releasing and throwing into action again all the moved key-levers simultaneously, and means for moving said record-sheet after every time of release of said key-levers when they are restored to action and before they can be operated again, substantially as hereinbefore described.

2. In a voting-machine the combination, of a case having a key-board composed of key-levers separately operative from the outside, spools or rollers carrying register-tapes set with relation to a sight-opening as described, means for connecting every key-lever with its individual tape, whereby every stroke of the lever moves the tape a given distance and the numbers on said tape are exposed in order at the sight-opening to register the strokes of the key-lever, and means for locking or holding said register tapes at rest when the machine is not in use and for releasing all the said tapes when the machine is brought into operation, substantially as hereinbefore described.

3. In a voting-machine the combination, of a pivoted key-lever having a horizontal member forming a key, and an upright member extending above the pivot, a trigger to engage and lock said upright member when the key is depressed, a spring holding said trigger down against the lever and means for raising said trigger to release the lever, in combination with a set of spools or rollers carrying a register-tape a ratchet-wheel on one of said spools and a pawl connected to the key-lever to engage and move said spools a given distance at the stroke of the key whereby the tape is drawn from one spool and wound upon the other by the strokes of the key-lever to register the number of strokes of the key, substantially as hereinbefore described.

4. In a voting-machine, a pivoted key-lever having a horizontally extending member forming a key and an upright member above the pivot, a locking-trigger engaging and locking said upright member as the key is depressed, a spring holding said trigger

against the key-lever and means for raising said trigger to release the lever, a set of spools carrying a register-tape and means connecting one of said spools with the key-lever to move the register-tape a given distance at every depression or stroke of the key, in combination with a record-sheet set with relation to a punch or marker fixed on said lever and adapted by the stroke of the lever to record the stroke on the sheet beneath, and means for moving said record-sheet a given distance after every stroke of the key to bring a new portion under the punch, substantially as described.

5. In a voting-machine, the combination, of a key-board composed of a number of separately operative key-levers, means actuated by each lever independently of the other levers to register the strokes of the key-levers, means for locking each key-lever when moved and for releasing all the locked levers at one time, and a sheet and mechanism for recording thereon the strokes of all the key-levers and for moving said sheet after each recording operation, consisting of a punch or marking device on each key-lever above the sheet and a stationary die-plate or bed beneath the sheet, rollers on which said sheet is wound and means connected with one of said rollers outside the machine for moving the sheet a given distance forward after each recording operation, substantially as hereinbefore described.

6. In a voting-machine, the combination, with the spools or rollers C D numbered tape G, key-levers A', ratchet-wheel C', pawl A² and spring B, of the movable locking-bar E having points to engage and hold the tapes from moving, springs F² to throw the bar into action and means for moving and holding the bar out of action, substantially as hereinbefore described.

7. In a voting-machine, the combination of a case having a key-board composed of levers operative from the front of the machine, an opening at the back of the case and a door to cover said opening, spools or rollers carrying numbered tapes behind said sight-opening, means connecting the key-levers with said tape-carrying spools to move the tapes a given distance at every stroke of the keys, means for locking the key-levers when moved and for unlocking them after the stroke to set them for another stroke, and a locking device adapted to lock or prevent movement of all the tapes when the sight-opening is uncovered and to release the tapes when the said opening is closed, consisting of the movable bar adapted to seize the tapes and springs to throw said bar into action against the tapes and a finger or projection on the door of the sight-opening adapted to throw off the bar when the door is closed, substantially as hereinbefore described.

8. In a voting-machine, the combination, with a key-lever, a register-tape having numbers on its face and mechanism actuated by

said key-lever to move said tape a given distance to expose the numbers thereon in consecutive order by a single stroke of the key-lever, of a continuous sheet on which are recorded the strokes of each key-lever by the direct action of the key-lever itself upon the sheet in addition to the record presented by the register tapes, and mechanism connected to the key-lever, actuated by the stroke of the lever, to punch or mark the record-sheet, means for locking the key-levers when depressed and mechanism for releasing all the depressed levers simultaneously to restore them to position, and means connected with said releasing-mechanism to move said record-sheet a given distance for recording the next stroke of the lever substantially as hereinbefore described.

9. In a voting-machine, the combination, with the key-levers, of means connected to each lever to register each stroke or movement of said lever and a locking mechanism to hold each key-lever out of action as it is depressed and to simultaneously release and throw into action all the locked key-levers after such depression, consisting of the rocking-bar B' trigger B, spring B⁴, lever B² and cord B⁵, substantially as hereinbefore described.

10. In a voting-machine, the combination of a case having a flat key-board composed of individual key-levers bearing identifying

numbers on the key, one for each candidate, a raised tablet behind the key-board divided into columns or spaces corresponding in number and position to the keys, and marked or numbered to correspond with the keys, individual registering-mechanism at the back of the case, arranged in front of a sight-opening therein, and connecting mechanism between each key-lever and its individual registering-mechanism adapted to operate the same at each stroke of the key, means for locking each key when moved by the voter and for releasing simultaneously all the keys operated by the individual voter, a counter record-sheet on which are permanently recorded the movements of each key, recording mechanism actuated by each key to record the movements thereof on said record-sheet and mechanism connected with the key-releasing mechanism aforesaid to advance and space the said record-sheet after the votes of one voter are recorded thereon and bring a blank portion of said sheet into position for receiving the record of the next voter constructed for operation substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

HERSEY A. CLIFFORD. [L. s.]

Witnesses:

C. W. M. SMITH,
CHAS. A. KELLY.