

W. H. HOWE.  
VOTE RECORDING APPARATUS.

No. 592,590.

Patented Oct. 26, 1897.

Fig. 1.

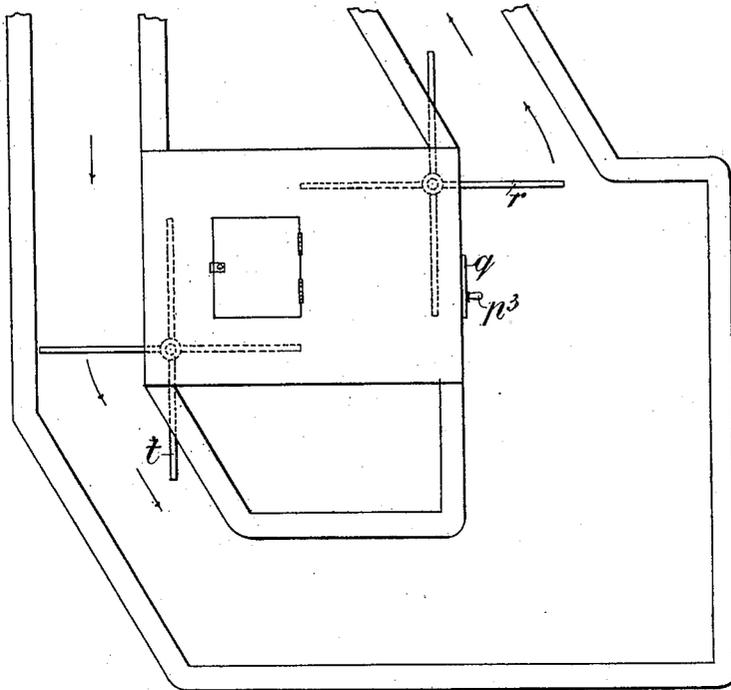
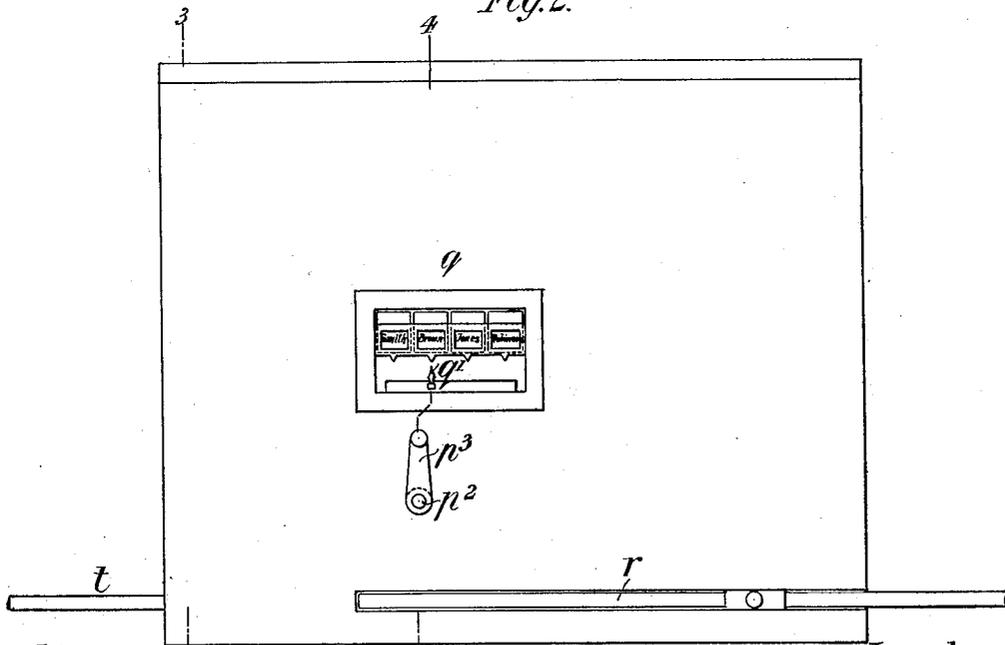


Fig. 2.



Witnesses. 3

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(No Model.)

4 Sheets—Sheet 2.

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Fig. 3.

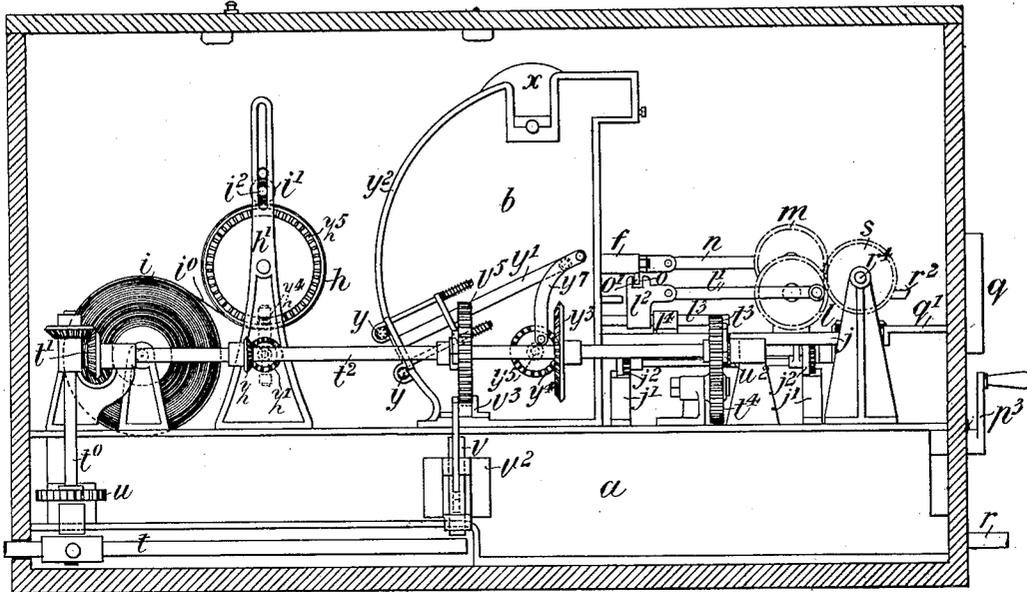
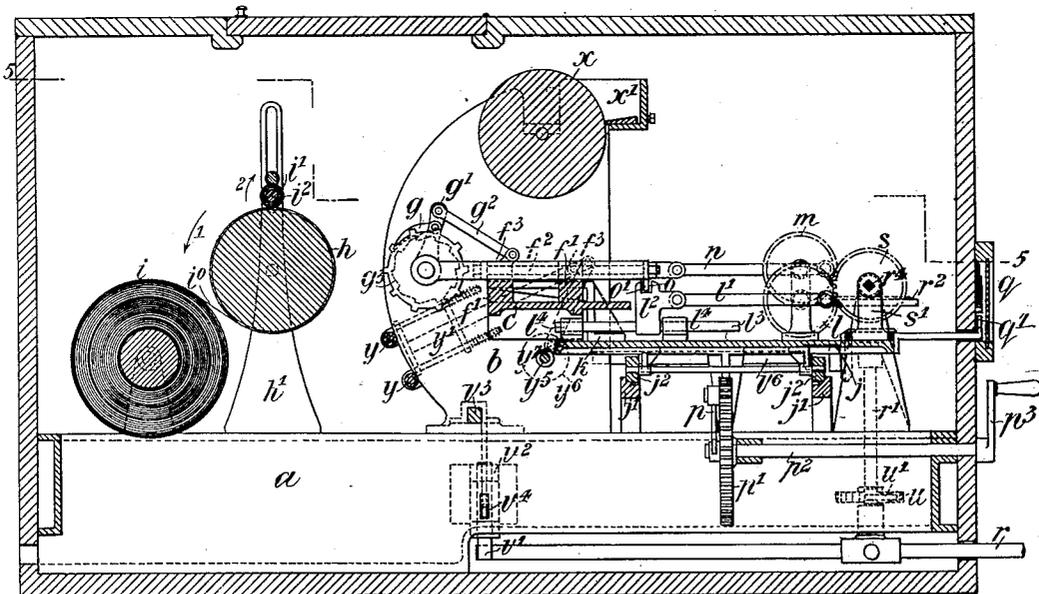


Fig. 4.



Witnesses.

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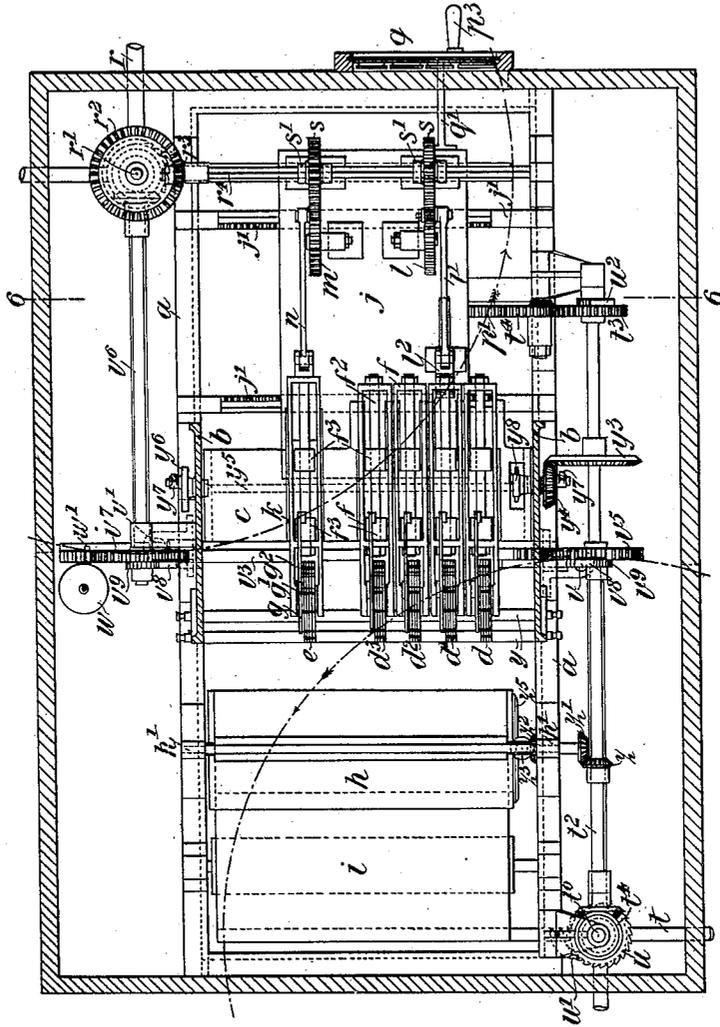
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Fig. 5.



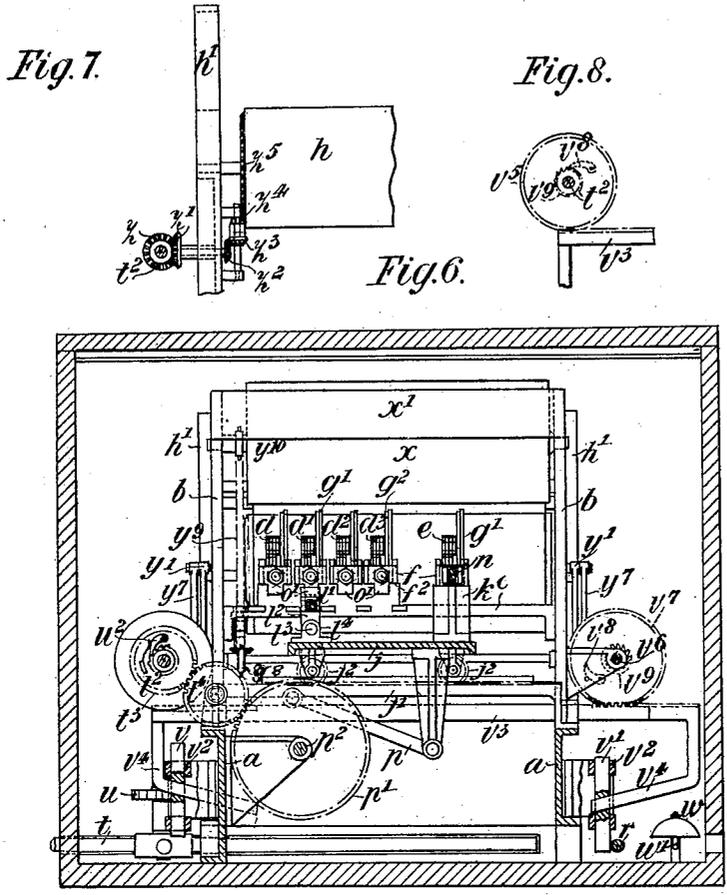
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				Scrutiny.			
Smith.	Brown.	Jones.	Robinson.	Smith.	Brown.	Jones.	Robinson.
1				1	2		
2	1			3		4	7
	2	1		5			
	3			6			
	4		1	8			

1	595
2	6061
3	5994
4	3032
5	
6	
7	
8	
9	

Witnesses.  
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*J. W. Paulsen*

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# UNITED STATES PATENT OFFICE.

WALTER HENRY HOWE, OF LONDON, ENGLAND.

## VOTE-RECORDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 592,590, dated October 26, 1897.

Application filed April 11, 1896. Renewed July 9, 1897. Serial No. 644,030 (No model.) Patented in England May 10, 1894, No. 9,299.

To all whom it may concern:

Be it known that I, WALTER HENRY HOWE, a subject of the Queen of Great Britain, residing at Highgate, London, England, have invented new and useful Improvements in Apparatus for Recording Parliamentary and other Votes, (for which I have obtained a patent in Great Britain, No. 9,299, dated May 10, 1894,) of which the following is a specification.

My invention relates to apparatus for recording parliamentary and other votes, and has for its chief object to provide means whereby, in the case of a scrutiny, the votes of the different electors can be identified.

In carrying out my invention I provide a set of number-printing apparatus for each candidate or combination of candidates for election, each of which sets of numbering apparatus is advantageously adapted to be operated by the rotation of a wheel within the box or chamber wherein the electors record their votes. I also provide an independent set of number-printing apparatus which is adapted to be operated in such a manner that each vote that is given for a candidate or combination of candidates is recorded by the independent numbering apparatus, the record printed by this apparatus serving for scrutiny purposes. The several sets of numbering apparatus are adapted to print upon a band which is moved forward the required distance each time a vote is recorded.

To enable my invention to be fully understood, I will describe the same by reference to the accompanying drawings, in which—

Figure 1 is a plan view showing the arrangement of my apparatus in conjunction with the closed chamber, which, for convenience, I term the "ballot-chamber," in which the said apparatus is situated. Fig. 2 is an elevation, drawn to larger scale than Fig. 1, of the apparatus as seen by the voter. Fig. 3 is a longitudinal section of the apparatus on the line 3 3, Fig. 2. Fig. 4 is a section on the line 4 4, Fig. 2. Fig. 5 is a section on the line 5 5, Fig. 4. Fig. 6 is a section on the line 6 6, Fig. 5. Figs. 7 and 8 are views illustrating details of construction. Fig. 9 is a view on a larger scale of a portion of the paper band printed

by the apparatus. Fig. 10 is a view of a paper sheet on which the presiding officer records the assessment-number of each voter when voting.

Similar letters of reference indicate corresponding parts in the several figures.

$a$  is the bed-plate of the apparatus, and  $b b$  are two standards thereon between which is fixed a plate  $c$ , upon which the several sets of candidates-numbering apparatus are mounted.

I have represented in the drawings four sets of numbering apparatus,  $d d' d^2 d^3$ , Figs. 5 and 6, for the several candidates, and another set  $e$ , mounted, as hereinafter described, for the scrutiny. It is to be understood, however, that the several sets of candidates-numbering apparatus will vary according to the number of candidates for election. These sets of numbering apparatus may be of any suitable construction. In the drawings I have represented the several numbering-wheels of each apparatus (the figures on which are adapted to print an impression) as being carried by a frame  $f$ , sliding upon blocks  $f' f'$  on the plate  $c$  and provided with rods  $f^2 f^2$ , working in guides  $f^3 f^3$ , also on the plate  $c$ . The motion is imparted to the units-wheel of each numbering apparatus by means of a pawl  $g$ , mounted on a lever  $g'$ , loose on the axle carrying the numbering-disks and connected by a link  $g^2$  with an arm on one of the guides  $f^3$  on the plate  $c$ , whereby as the numbering apparatus is pushed forward the pawl slides over one of the teeth of the ratchet-wheel  $g^3$ , fixed to the said units-disk, while as the apparatus is returned the pawl, by engaging with the ratchet-wheel, will cause the latter and the said wheel to be moved one tooth, as will be readily understood by referring to Fig. 4 on the drawings. The motion of the units-wheels is imparted to the tens and other numbering-wheels in the usual manner.

$h$ , Figs. 3, 4, and 5, is the impression-roller, and  $i$  is a roll of paper band  $i^1$ , which is passed around the impression-roller  $h$  and wound into another roller  $i'$ . The impression-roller  $h$  is mounted on brackets  $h' h'$  on the bed-plate  $a$ , and the roll  $i'$  is carried by a spindle  $i^2$ , running in slots or guides in the upper

ends of the said brackets in such a manner that as the said roll  $i'$  increases in diameter it will rise in the guides and that the roll  $i'$  will bear upon the surface of the impression-roller  $h$ , whereby as the roller  $h$  rotates in the direction of the arrow 1, Fig. 4, the said roll  $i'$  will rotate in the direction of the arrow 2 in the said figure to roll up the band.

In using my apparatus it is obvious that only one set of candidates-numbering apparatus must be operated, while the set of apparatus  $e$  for the scrutiny must be operated simultaneously with each set of candidates-numbering apparatus. In order to permit of effecting such simultaneous operation, I advantageously provide the following arrangement of mechanism—that is to say, I provide a movable platform  $j$ , Figs. 4, 5, and 6, which runs upon rails  $j' j'$ , supported on the base  $a$ , the wheels  $j^2 j^2$ , carrying the said platform upon the rails, being provided with teeth and engaging with corresponding rack-teeth on the rails, so as to insure the platform always maintaining its proper position relatively with the rails. The platform  $j$  has fixed upon it a bracket  $k$ , (shown most clearly in Figs. 4 and 6,) which bracket is adapted at its upper part to project above the cross-plate  $c$  and to carry the set of numbering apparatus  $e$  and its guides in such a manner that when one or the other sets of candidates apparatus makes an impression on the band  $i^0$  the scrutiny apparatus will also make an impression.

Upon the platform  $j$  are mounted two crank-disks  $l m$ , Figs. 3, 4, and 5, the former of which is connected by a rod  $l'$  with a cross-head  $l^2$ , provided with a guide-bar  $l^3$ , sliding in guides  $l^4 l^4$  upon the platform  $j$ , while the crank-disk  $m$  is connected by a rod  $n$  to the frame  $f$  of the scrutiny set of numbering apparatus  $e$ . The cross-head  $l^2$  is formed with a groove or notch  $o$ , and on the several frames of the candidates-numbering apparatus are tongues  $o' o'$ , arranged to project downward in such a manner that by traversing the platform  $j$  the cross-head  $l^2$  can be brought into engagement with either of the said tongues  $o'$ , so that the rotation of the crank-disk  $l$  will reciprocate the connected set of numbering apparatus and cause it to print upon the band  $i^0$ .

As the platform  $j$  is being traversed in order to bring the cross-head  $l^2$  into engagement with one or the other set of the candidates - numbering apparatus, the scrutiny-numbering apparatus  $e$  is also moved, so as to bring it opposite to the scrutiny-column on the band  $i^0$  corresponding to the candidate's name, whereby when the candidates-numbering apparatus is operated to record a vote the scrutiny apparatus will also be operated.

In order that a voter shall be enabled to move the platform  $j$  to engage the cross-head  $l^2$  with the numbering apparatus of the candidate for whom he desires to vote, I connect the said platform  $j$  by a rod  $p$ , Figs. 4 and 6,

with a crank-disk  $p'$ , mounted on a shaft  $p^2$ , which extends to the outside of the apparatus, where it is provided with a crank-handle  $p^3$ , by turning which the platform may be reciprocated. Adjacent to the said handle I arrange an indicator  $q$ , having within it the names of the several parliamentary or other candidates, and in connection with the said indicator is a pointer  $q'$ , which is fixed to the platform  $j$  and moves therewith, whereby a voter may at once see when the apparatus is in proper position for voting for a certain candidate. This arrangement of indicator and pointer will be readily understood by reference to Figs. 2 and 4 of the drawings.

I advantageously move the different parts to perform the printing operation through the medium of a turnstile  $r$ , Figs. 1, 2, 4, and 5, which the voter operates as he leaves the ballot-chamber after placing the pointer  $q'$  in the proper position. For this purpose I attach to the vertical spindle  $r'$  of the said turnstile a bevel-wheel  $r^2$ , Fig. 5, which engages with a bevel-pinion  $r^3$ , mounted on a shaft  $r^4$ . This shaft  $r^4$  has mounted upon it two wheels  $s s$ , which engage with gear-teeth on the peripheries of the two crank-disks  $l m$  for operating the voting and scrutiny numbering mechanisms, respectively, so that when the turnstile  $r$  is rotated the said crank-disks will be operated to move the numbering mechanisms. In order that the said wheels  $s s$  shall always be in gear with the teeth on the crank-disks  $l m$ , the said wheels are connected to the shaft  $r^4$  by splines or feathers, or the said shaft is made square in cross-section, as shown in the drawings, and the wheels themselves are held in brackets  $s' s'$ , fixed to the platform  $j$ , so that as the said platform is moved the said wheels  $s s$  will also be moved to the same extent.

The several gear-wheels are so proportioned that a quarter of a revolution of the turnstile  $r$  shall move the numbering mechanisms forward to print and return them to their original positions, so that the cross-head  $l^2$  is free to be moved into engagement with either of the sets of candidates-numbering mechanism by the next voter.

In order that the successive voters entering the ballot-chamber shall not be able to ascertain by the position of the index-finger for whom the previous voter voted, I provide at the entrance to the ballot-chamber a second turnstile  $t$ , Figs. 1, 3, 5, and 6, the shaft  $t^0$  of which is connected by bevel-gearing  $t'$  to a horizontal shaft  $t^2$ , which carries at one end a gear-wheel  $t^3$ , engaging through the intervention of another gear-wheel  $t^4$  with gear-teeth upon the periphery of the crank-disk  $p'$ , through the medium of which the platform  $j$  is moved, whereby as a voter enters the ballot-chamber the said disk  $p'$  will move the said platform  $j$ , and consequently also the index-finger  $q'$ , so that the latter shall not afford any correct information.

Each of the turnstiles  $r t$  is provided with

a ratchet-wheel  $u$  and pawl  $w'$ , Figs. 3, 4, and 5, for preventing the turnstile being turned in the wrong direction.

The wheel  $t^3$  is not fixed to the shaft  $t^2$ , but is connected thereto by means of a ratchet and pawl, (indicated by the letter  $w^3$  in Figs. 3, 5, and 6,) so as to allow of the voter moving the platform  $j$  by means of the handle  $p^3$  without imparting movement to the shaft  $t^2$ .

In practice it is advisable that as a voter enters the ballot-chamber the admission-turnstile  $t$  shall be locked behind him and remain locked until he shall have left such ballot-chamber. I therefore provide in conjunction with each turnstile a bolt or locking device which is operated as follows—that is to say, as a voter enters the ballot-chamber the locking-bolt, in conjunction with the admission-turnstile  $t$ , is moved so as to limit the movement of the turnstile to a quarter of a revolution and prevented from being moved by the next person wishing to vote, while the bolt, in conjunction with the exit-turnstile  $r$ , is disengaged therefrom, the latter being free to turn as the voter leaves the ballot-chamber. As, however, the voter is leaving the ballot-chamber the bolts are again operated—that is to say, the bolt in connection with the exit-turnstile  $r$  is moved to prevent the said turnstile being rotated more than a quarter of a revolution, while at the same time the bolt in connection with the admission-turnstile  $t$  is moved to disengage it from the said turnstile and thereby leave the latter free to be operated by the next voter. This arrangement of locking-bolts will be most clearly understood by reference to Fig. 6, wherein  $v$   $v'$  indicate, respectively, the bolts in connection with the admission and exit turnstiles  $t$   $r$ , the said bolts being adapted to slide vertically in guides  $v^2$   $v^2$ , fixed to the base  $a$  of the apparatus. In connection with these bolts is a rack-bar  $v^3$ , the two ends of which are formed with inclined cam-surfaces  $v^4$   $v^4$ , which extend through apertures in the bolts in such a manner that when the said bar is reciprocated transversely of the apparatus one bolt will be raised and the other simultaneously depressed.

On the shaft  $t^2$  is mounted a gear-wheel  $v^5$ , which engages with one end of the rack-bar  $v^3$ , and on a shaft  $v^6$ , which is connected by bevel-gearing with the vertical shaft  $r'$  of the exit-turnstile is mounted another gear-wheel  $v^7$ , similar to the gear-wheel  $v^5$ , which engages with the other end of the said rack-bar  $v^3$ . These wheels  $v^5$   $v^7$  are not fixed to their respective shafts, but are connected thereto by ratchet-and-pawl mechanism, (the ratchet-and-pawl mechanism in connection with the wheel  $v^5$  being represented in Fig. 8 and that in connection with the wheel  $v^7$  in Fig. 6,) arranged in such a manner that when the shaft  $t^2$  is rotated, owing to the operation of the admission-turnstile  $t$ , the said wheel  $v^5$  will move the rack-bar  $v^3$  from the position

shown in Fig. 6 toward the left hand, thereby depressing the bolt  $v$ , so as to bring it into the path of the arm of the turnstile operated by the incoming voter. Simultaneously with the depression of the bolt  $v$  the bolt  $v'$  is raised out of engagement with the turnstile  $r$ , the wheel  $v^7$  slipping on the shaft  $v^6$ . When the voter passes the turnstile  $r$  in leaving the ballot-chamber, the reverse action takes place—that is to say, the wheel  $v^7$  is positively moved by the shaft  $v^6$  and moves the rack-bar  $v^3$  to the right hand, whereby the bolt  $v'$  is depressed and the bolt  $v$  raised to allow of the turnstile  $t$  being again moved, the wheel  $v^5$  during this operation slipping around upon its shaft  $t^2$ .

In order to allow the wheels  $v^5$  and  $v^7$  to slip around upon their respective shafts  $t^2$  and  $v^6$ , as described, the pawls  $v^8$   $v^8$ , in connection with the said wheels, are pivoted thereto in such a position that during the movement of either turnstile the pawl of the wheel on the shaft  $t^2$  or  $v^6$  of the moving turnstile is in engagement with the ratchet-wheel  $v^9$ , fixed to that shaft, but at the end of the movement of the said turnstile the wheel will have arrived at such a position that the pawl will fall out of engagement with the said ratchet-wheel until returned to its former position by the movement of the rack-bar  $v^3$  when the latter is operated upon by the other turnstile.

$w$ , Figs. 5 and 6, indicates a bell which I advantageously arrange in conjunction with the exit-turnstile in such a manner that each time the turnstile is operated by a person leaving the ballot-chamber one arm of the said turnstile will strike the arm  $w'$  of the bell and thereby indicate to the presiding officer that the ballot-chamber is unoccupied.

In order to effect the inking of the numbering-disks, I mount on the standards  $b$   $b$  an inking-cylinder  $x$ , Figs. 4 and 6, and an induct  $x'$ , and I provide ordinary inking-rollers  $y$   $y$ , carried by two arms  $y'$   $y'$  and running around a circular path  $y^2$ , formed upon the standards  $b$   $b$  in such a manner that as the rollers move upon the path they come into contact with the type, as will be readily understood by reference to Fig. 4 of the drawings. Motion is imparted to the levers  $y'$ , carrying the inking-rollers from the shaft  $t^2$ , driven by the admission-turnstile  $t$  through the medium of the bevel-wheel  $y^3$ , Figs. 3 and 5, which engages with a bevel crank-pinion  $y^4$  on one end of a shaft  $y^5$ , on the other end of which is a crank-disk  $y^6$ . The crank-pins of the crank-pinion  $y^4$  and of the disk  $y^6$  are connected by links  $y^7$  with rearward extensions of the levers  $y'$   $y'$ , whereby as the said shaft  $y^5$  is rotated the desired movement will be imparted to the inking-rollers  $y$   $y$ .

The diameters of the wheels  $y^3$   $y^4$  are so proportioned relatively with the speed of the shaft  $t^2$  that each time the turnstile  $t$  is moved a quarter of a revolution the inking-rollers  $y$   $y$  will be moved up or down, so as to pass once over the face of the type.

On the shaft  $\gamma^5$  is a sprocket-wheel  $\gamma^8$ , (see Fig. 6,) connected by a chain  $\gamma^9$  with corresponding sprocket-wheel  $\gamma^{10}$  on the axle of the inking-cylinder  $x$ , whereby a partial rotation will be imparted to the said cylinder each time the shaft  $\gamma^5$  is actuated.

The movement of the paper band  $v^0$  after each printing operation is effected from the shaft  $t^2$  in connection with the admission-turnstile  $t$ . As shown in Figs. 3, 5, and 7, the motion of the shaft  $t^2$  is communicated to the impression-cylinder  $h$  through the medium of the train of wheels  $z$ ,  $z'$ ,  $z^2$ ,  $z^3$ , and  $z^4$ , which latter engages with a ring of teeth  $z^5$  on one end of the impression-cylinder.

It will be understood that as the motion of the band  $v^0$  is due to the rotation of the impression-cylinder  $h$  the distances the paper band is moved from time to time will be the same notwithstanding the decrease in the diameter of the roll  $i$  and the increase in diameter of the roll  $i'$ , as hereinbefore described.

The paper band which I use in conjunction with my apparatus is preferably divided into twice as many columns as there are candidates, half of the columns serving for recording the votes and the other half for the scrutiny-numbers.

From the foregoing description it will be understood that each of the candidates' sets of numbering apparatus records only the number of votes which have been given for that candidate, while the set of numbering apparatus for the scrutiny corresponds with the total number of votes given. In order, therefore, for the purpose of scrutiny, that the different votes may be analyzed, I provide the presiding officer at the voting-station with a book having printed in it the numbers from "1" consecutively upward, as shown in Fig. 10, according to the number of voters on the register, and as each person presents himself to the presiding officer to record his vote the rate-book or assessment number of the voter is placed against the number corresponding with the order in which he presents himself.

The mode of operation is as follows: Assume there are four candidates, Smith, Brown, Jones, and Robinson, whose names are placed in the indicator  $q$  of the apparatus. Voter No. 1 now presents himself to the presiding officer, who, having entered the rate-book number—say 595—opposite No. 1 in his book, allows the voter to pass into the ballot-chamber. Should this voter desire to vote for Smith, he then moves the handle  $p^3$  to bring the index-finger  $q'$  opposite to the said name, and thereupon leaves the ballot-box, in doing which the figure "1" is printed in the first column of the paper band and also in the first scrutiny-column. Voter No. 2 follows, after having his number—say 6,001—recorded, and passes into the ballot-chamber and votes for Brown, whereupon the figure "1" is printed in the second column and the figure "2" in

the corresponding scrutiny portion of the band. Voter No. 3, whose rate-book number is, say, 5,944, may also desire to vote for Smith, the result being that the figure "2" is impressed in the first column and the figure "3" in the scrutiny portion of the band, this being the total number of the votes recorded. Voter No. 4—say rate-book number 3,652—votes for Jones, and this being the first vote given for this candidate the figure "1" is therefore printed in the third column, but it being the fourth vote recorded the figure "4" is printed in the corresponding scrutiny-column. It will thus be understood that each voter prints in line with the vote which he records for his candidate a number corresponding with the number against which his own rate-book number is placed in the presiding officer's book, whereby, in case of scrutiny, the votes can be readily analyzed.

It will also be understood that at the close of the poll it will not be necessary to count the votes, as the last printed number in each candidate's column indicates the number of votes which have been recorded in his favor.

In practice I find it advantageous to arrange, in connection with one or the other of the turnstiles, a counting mechanism, the number recorded by which should always correspond with the number of persons who have voted according to both the presiding officer's book and the total recorded by the scrutiny-numbering apparatus.

Although in the foregoing description I have described the scrutiny set of numbering apparatus as printing in four different columns, it is to be understood that all the scrutiny-numbers may be printed in a single column, in which case it is only necessary to provide the record-band with one column more than the number of candidates necessitates.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a vote-recording apparatus the combination with a series of independent registering devices, of a separate registering device adapted to be operatively connected with each of said independent devices and to be operated by the operation of any one of the same, a movable recording-strip, and means for impressing the indicator-number of any of said independent registering devices and said separate registering device upon said recording-strip at each operation of the machine, substantially as described.

2. In a vote-recording mechanism, the combination with a series of independent registering devices in different vertical planes, a separate scrutiny-registering device out of line with said independent devices, means for moving said scrutiny-registering device laterally into positions corresponding relatively with the positions of said independent de-

vices, devices connected with said scrutiny-registering device adapted to engage one of said independent devices, a recording-strip and means for moving said scrutiny-registering device and its connected independent registering device to print upon said recording-strip, substantially as described.

3. In a vote-recording mechanism, the combination with a series of independent registering and printing devices, a separate scrutiny-registering and printing device, a laterally-movable carriage carrying said scrutiny-registering device, an operating device on said carriage adapted to be brought into operative relation with any one of said series of independent registering devices, a movable recording-strip, means for simultaneously moving said operating device and the said scrutiny-registering device, to force the latter and one of said independent devices into printing contact with the recording-strip and operating devices for moving said carriage laterally, substantially as described.

4. In a vote-recording apparatus the combination with a series of independent registering devices and operating mechanism adapted to be placed in engagement with any one of said registering devices, means accessible to the voter for so moving said operating mechanism, of a turnstile in the path of the voter in leaving the apparatus operatively connected with and adapted to impart motion to said operating mechanism and a turnstile in the path of a voter in approaching the apparatus, operatively connected with

said operating means to move it from engagement with one of said independent devices to another, whereby after one voter leaves the apparatus and registers his vote, the position of the mechanism is changed before another voter reaches the apparatus, substantially as described.

5. In a vote-recording apparatus the combination with a series of independent registering and printing devices, operating mechanism therefor adapted to be placed in engagement with any one of said devices, means accessible to the voter for moving said operating mechanism, a recording-strip, mechanism for feeding said strip, a turnstile operatively connected with and adapted to impart motion to said operating mechanism and a turnstile operatively connected with the feeding mechanism for the record-strip, substantially as described.

6. In apparatus for recording votes in which several sets of numbering apparatus corresponding with the number of candidates is employed and an additional set of apparatus for recording the number of votes for scrutiny purposes, the provision of means whereby either set of numbering apparatus may be engaged with an operating-handle outside the apparatus and whereby the scrutiny-number-printing apparatus shall print in different columns, substantially as described.

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Witnesses:

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C. G. REDFERN.