No. 847,040. PATENTED MAR. 12, 1907.

C. G. BARNUM.

COUNTING MECHANISM FOR VOTING MACHINES.

APPLICATION FILED NOV. 2, 1906.

3 SHEETS—SHEET 1.

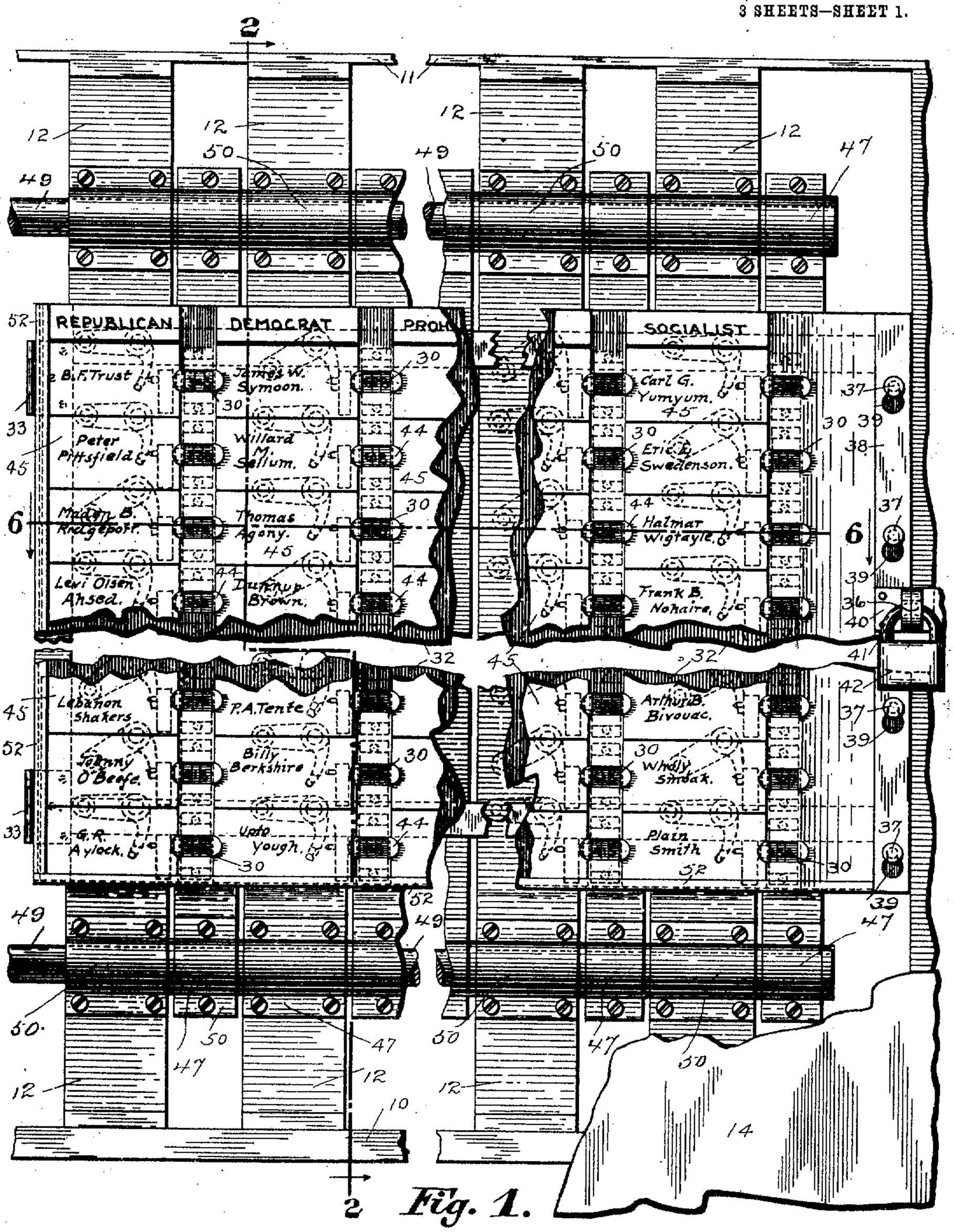


Fig. 1.

WITNESSES:
F. B. Rives.
A. B. Camp.

INVENTOR
Carl G. Barnum
By A. M. Wooster.
ATTORNEY

No. 847,040. PATENTED MAR. 12, 1907.

C. G. BARNUM.

COUNTING MECHANISM FOR VOTING MACHINES.

APPLICATION FILED NOV. 2, 1906.

3 SHEETS—SHEET 2.

Fig. 2.

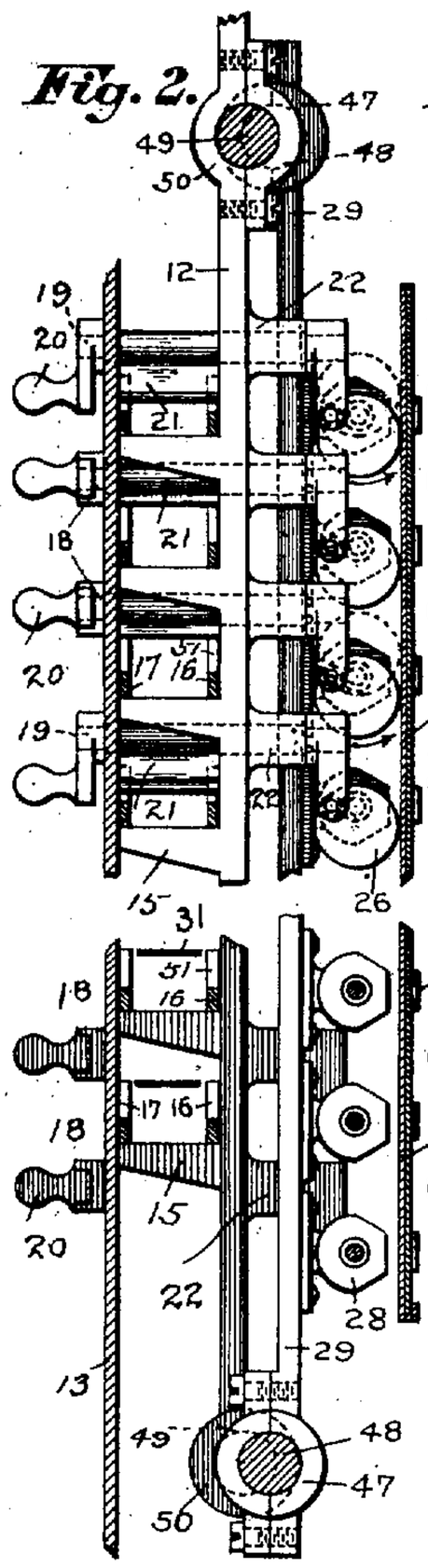


Fig. 3.

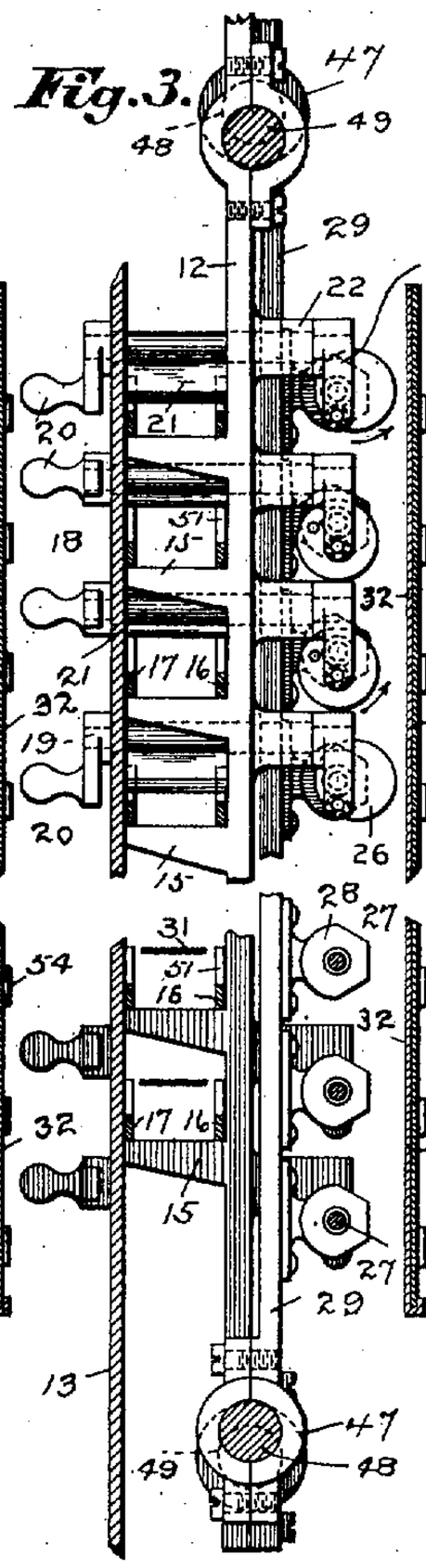


Fig. 4.

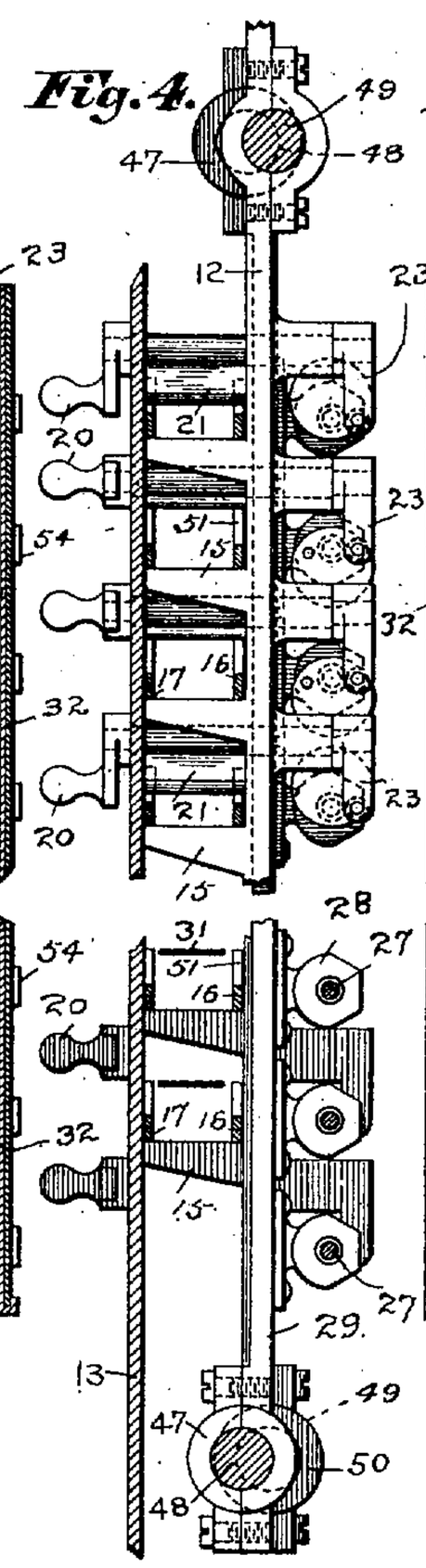


Fig. 5.

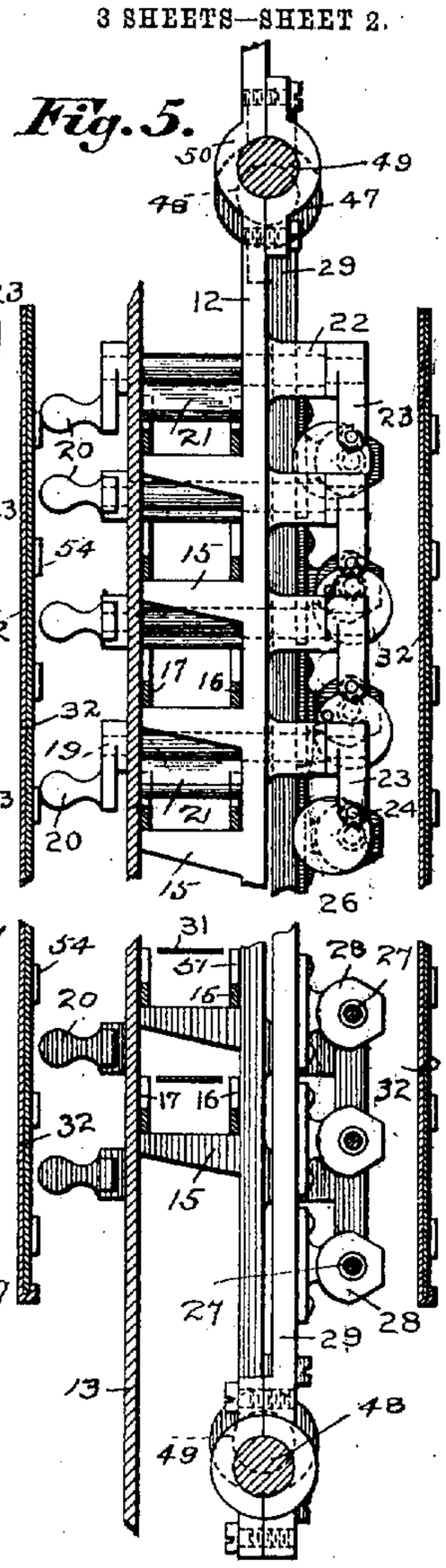
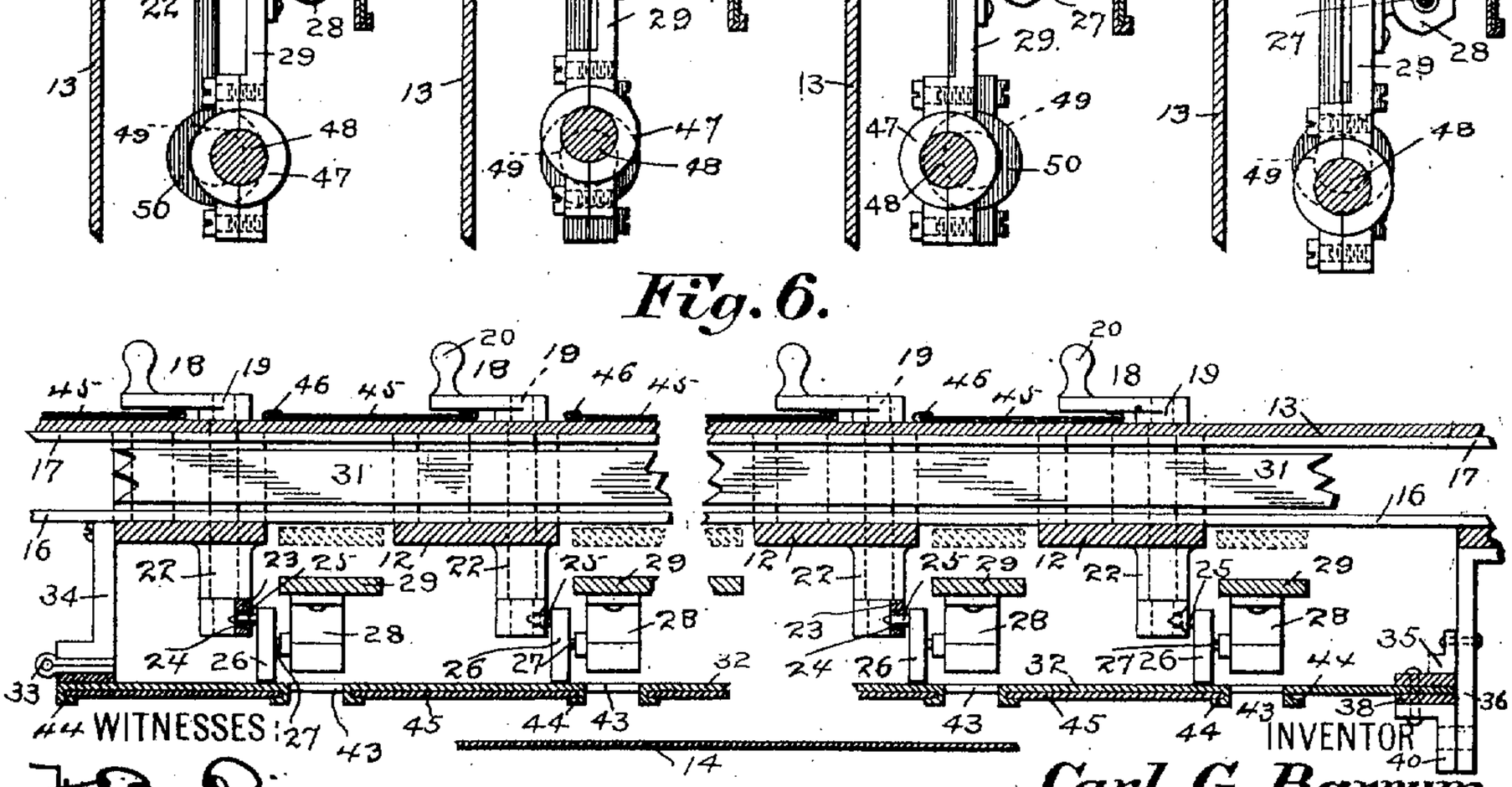
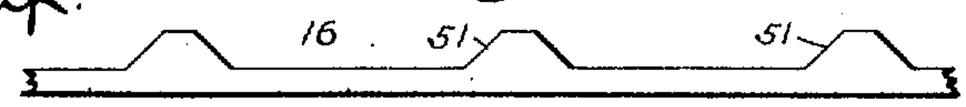


Fig. 6.



F. B. Rives.
A. B. Camp.

Fig. 7.



Carl G. Barnum

BY

A. M. Wooster

ATTORNEY

No. 847,040. PATENTED MAR. 12, 1907.

C. G. BARNUM.

COUNTING MECHANISM FOR VOTING MACHINES.

APPLICATION FILED NOV. 2, 1906.

3 SHEETS—SHEET 3.

Fig. 8.

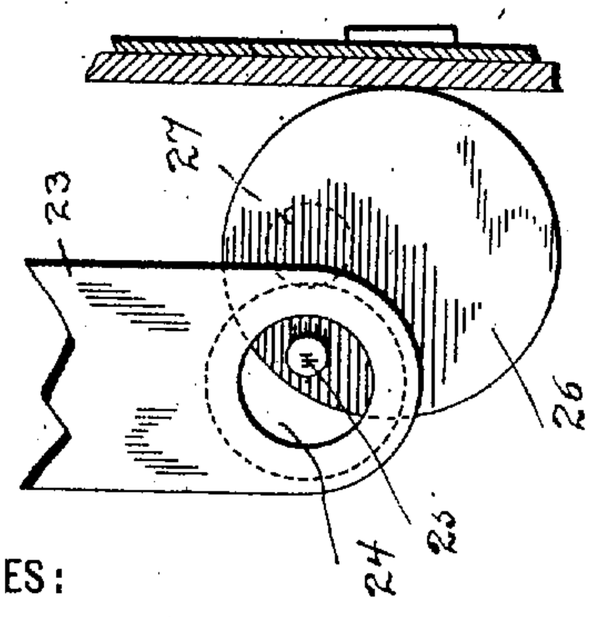


Fig. 9.

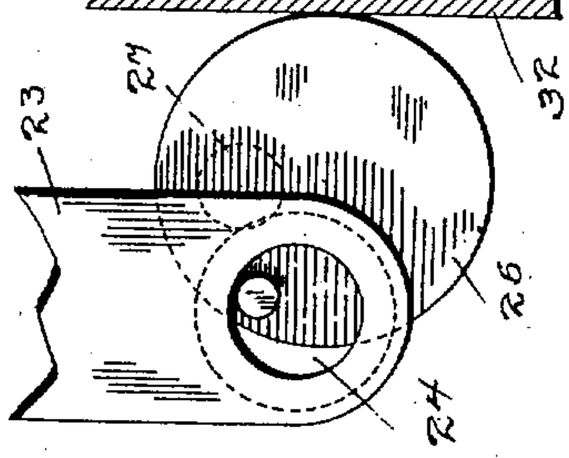


Fig. 10.

Fig. 11.

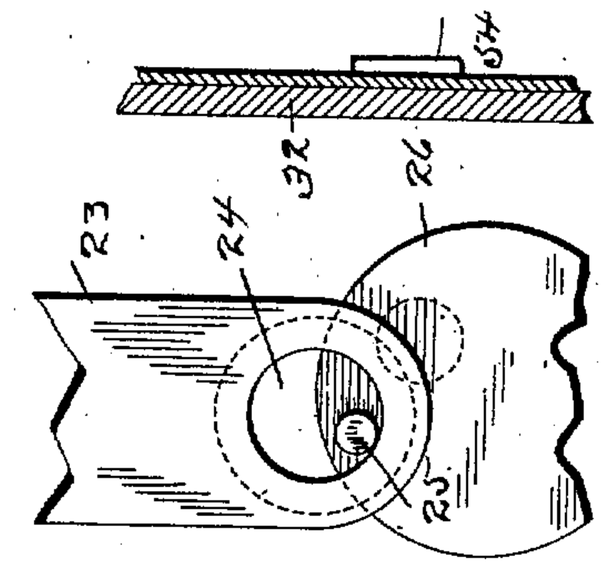


Fig. 12.

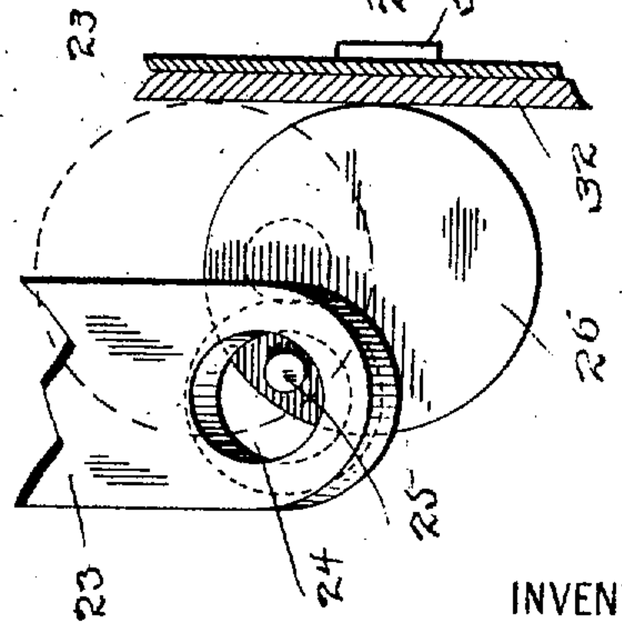


Fig. 13.

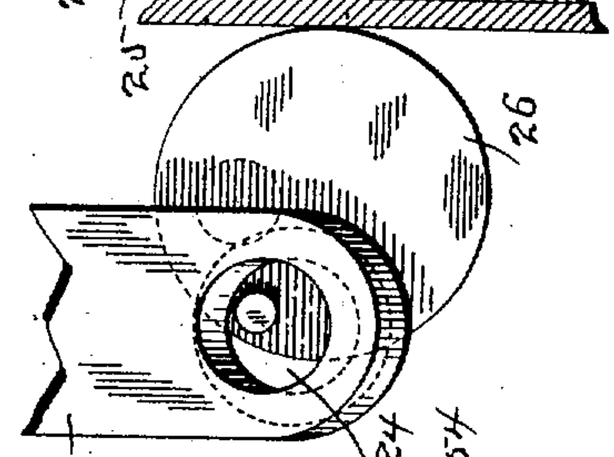
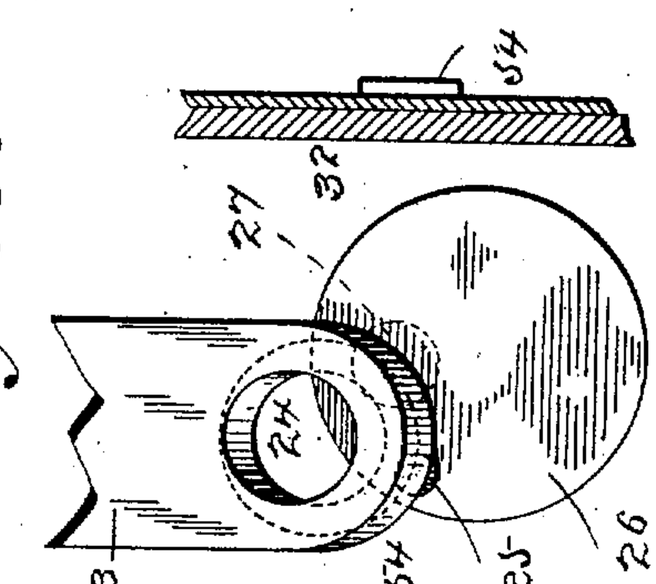


Fig. 14.

Fig. 15.



WITNESSES:

E. A. Hackins.

S. Kerner.

INVENTOR

Carl G. Barnum

BY

A. M. Wooster

ATTORNEY

UNITED STATES PATENT OFFICE.

CARL G. BARNUM, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO TRIUMPH VOTING MACHINE COMPANY, OF PITTSFIELD, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

COUNTING MECHANISM FOR VOTING-MACHINES.

No. 847,040. Specification of Letters Patent. Patented March 12, 1907.

Application filed November 2, 1906. Serial No. 341,766.

To all whom it may concern:

Be it known that I, CARL G. BARNUM, a citizen of the United States, residing at Pittsfield, county of Berkshire, State of Massachusetts, have invented a new and useful Counting Mechanism for Voting-Machines, of which the following is a specification.

This invention relates to certain improvements in voting-machines.

It is one of the objects of the invention to provide simple, accurate, and perfectly reliable counting mechanism.

A further object of the invention is to provide mechanism for actuating all counters that are connected with voting members by the operation of voting and for disengaging the engaged counters near the end of a counting operation.

A further object of the invention is to provide means for locking the counters at all times except during the counting operation.

A further object of the invention is to provide means for retaining ballot-strips in the rear of the machine corresponding with the ballot-strips on the front of the machine, the names upon the rear strips being contiguous to the corresponding counters, so that the vote for the several candidates may be tabulated from the rear of the machine after the completion of an election.

A further object of the invention is to provide locking mechanism for the counters that will permit the votes at the completion of an election to be tabulated from the counters without unlocking the counters.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, which will be hereinafter described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings, forming a part of this specification, in which like characters of reference indicate the same parts, Figure 1 is a rear elevation illustrating the application of my novel counting mechanism to a voting-machine, in the present instance to a Triumph voting-machine, the rear door or doors being removed and the voting members appearing in dotted lines, a portion of them being in the normal or disconnected position and certain of them being in the voting or connected position, specifically the first and fourth voting members, counting from the top in the second column from the left, being in the connected or voting position and the second and third voting members in said column being in the normal or non-voting position; Fig. 2, a vertical section on the line 2 2 in Fig. 1 looking toward the right, the position of the counters corresponding with Fig. 1; Fig. 3, a similar view, the counter-bar having moved far enough to impart to the engaged counters—*i. e.*, the first and fourth counters—a quarter-rotation; Fig. 4, a similar view, the movement of the counter-bar having proceeded far enough to impart a half-rotation to the engaged counters; Fig. 5, a similar view, the movement of the counter-bar having proceeded far enough to impart a three-quarter rotation to the engaged counters; Fig. 6, a horizontal section on the line 6 6 in Fig. 1 looking down; Fig. 7, a detail elevation of either a wedge-bar or resetting-slide or of a restricting-bar. Figs. 8, 9, 10, and 11 are detail views, on an enlarged scale, corresponding with Figs. 2, 3, 4, and 5, Fig. 8 showing the counter-dog as moved into the engaged position by a voting operation, Fig. 9 showing the position of said parts when the counter-bar has moved the counter far enough to impart a quarter-rotation to the counter-shaft, Fig. 10 the position when a half-rotation has been imparted to the counter-shaft, and Fig. 11 the position when a three-quarter rotation has been imparted to the counter-shaft; Fig. 12, a view corresponding with Fig. 1, except that the counter-dog is in its normal or disengaged position, the stopping position of the counterweight in an attempt to uncount being indicated by dotted lines; and Figs. 13, 14, and 15 are views corresponding, respectively, with Figs. 9, 10, and 11, except that the counter-dogs have not been placed in the engaged position, and consequently movement of the counter-bar carrying the counter has no effect upon the counter-shaft and no count is made.

10 denotes the base of the machine, 11 the top plate, 12 standards, 13 the front plate, and 14 the rear door, all of which may be of any ordinary or preferred construction.

15 denotes rests which extend from the standards and engage the front plate and also support the wedge-bars or resetting-

slides (indicated by 16) and the restricting-bars, (indicated by 17.)

31 denotes flexible members—for example, metallic strips or chains—which coact with the voting members in the voting operation.

18 denotes voting members as a whole, each voting member comprising a shaft 19, an operating-lever 20, and a locking-lug 21. Shafts 19 are journaled in the front plate and in hubs 22 upon the standards. At the inner end of each shaft is a counter-dog 23, having a hole 24, which is adapted to receive loosely a pin 25, projecting from a weight 26, which is secured eccentrically to and depends from the shaft 27 of a counter 28. The counters are rigidly secured in vertical columns to counter-bars 29. The special style of counters used is unimportant so far as the present invention is concerned. It is sufficient for the purposes of this specification to state that the counters are positive in action and that the case of each counter is provided with an opening 30, through which the numerals upon the counter-wheels may be seen. The weights may be of any desired configuration—for example, the larger segments of disks, as shown in the drawings—the pins 25 projecting from the weights in substantially horizontal alinement with the counter-shafts, as clearly shown in Figs. 2, 8, and 12.

32 denotes a counter-locking door, which is hinged, as at 33, to brackets 34, secured to one of the standards, the opposite edge of said door engaging stops 35 on brackets 36, (one only being shown,) at the opposite end of the machine. This door is shown as braced and strengthened by cross-strips 54.

37 denotes headed locking-studs which extend rearward from the face of the counter-locking door near its free edge.

38 denotes a locking-plate having openings 39, which receive the locking-studs freely, and extending upwardly from said openings slots which receive the shanks of the locking-studs under the heads, as clearly shown in Fig. 1. The locking-plate is provided with a locking-lug 40, which in the locking position registers with the outer end of bracket 36. The locking-lug and the outer end of said bracket are provided with holes in line with each other which are adapted to receive the hasp 41 of a padlock 42. In use the key of this padlock is held by the moderator, inspector, or other duly authorized person, so that there can be no tampering with the counters.

43 denotes apertures in the counter-locking door which register with the openings 30 in the counters, so that the record of votes may be tabulated without opening the counter-locking door. In practice I utilize metal displaced in forming apertures 43 to form ways 44 for ballot-strips 45, which bear the names of the candidates to be voted for. At the left edge and bottom of the counter-locking door I also provide ballot-retaining strips 52. Similar ballot-strips 45 are provided on the front of the machine, (see Fig. 6,) which are retained in ways 46 upon the front plate.

In the type of machine illustrated the titles of the offices to be voted for are arranged in a vertical column (not shown) at the left of the machine as seen from the front, and the names of candidates for said offices are arranged under the proper party names or emblems in vertical columns extending toward the right of the machine, the ballot-strips on the counter-locking door being clearly illustrated in Figs. 1 and 6, the latter figure also showing the ballot-strips at the front of the machine. The use of a counter-locking door is wholly new, likewise the use of ballot-strips contiguous to the counters and visible in connection with the counters. This is an important feature of the invention, for the reason that it practically eliminates the danger of error in calling off the number of votes for each candidate in tabulating the votes after the completion of an election. The vitally important function, however, performed by door 32 is the locking of the counters against the possibility of uncounting or unwarranted counting—in fact, against operation in any except the regular manner, which I shall presently describe. It will be obvious from Figs. 2, 8, and 12 that forward movement of the shafts of the counters, as in the act of counting, is made impossible by the engagement of the weights with the doors. Consequently no count can be made except in the manner provided. It is, furthermore, well understood that an entire backward rotation of the shaft is required to uncount a count that has been made. In practice the weights are so shaped and so hung that in the closed position of the door the center of gravity of the weights is pushed to the opposite side from the door of vertical lines through the pivotal points of the weights—*i. e.*, the axes of the shafts of the counters—as clearly shown in Figs. 8 and 12. This insures that should an attempt be made to turn a counter backward, as indicated by dotted position of weights in Figs. 2 and 12, the instant the counter-shaft is released the weight, owing to the fact that its center of gravity cannot be raised into vertical alinement with the axis of the shaft, will drop back to its normal position, it being impossible to place a weight on a dead-center, and thereby throw a counter out of use. In other words, when a shaft is turned backward the long radius of the eccentrically-hung weight will engage the counter-locking door above the pivotal point of the weight before even a half-rotation of the counter-shaft has been made, thus preventing any possible change in the reading of the counter. The holes 24 in the counter-dogs which re-

ceive the pins 25, extending from the weights are shown as countersunk in Fig. 6 and as enlarged in Figs. 8 to 15, inclusive, so as to provide for slight variation from perfect alinement of the pins and holes and insure that when the counter-dogs are swung to the engaging position, as in Figs. 8 to 11, inclusive, the pins will be sure to pass into the holes.

The counter-bars are provided with bearings 47, which are mounted on eccentrics 48, carried by shafts 49, journaled in bearings 50 upon the standards. Motion is imparted to the shafts to operate the counter-bars and actuate the engaged counters by mechanism which forms no portion of the present invention. It is sufficient for the purposes of this specification to say that after the completion of a voting operation the voter operates exit mechanism, forming no portion of the present invention, which imparts to shafts 49 a complete forward rotation and then a complete backward or return rotation, the effect of which is to cause the counter-bars to make a complete endwise and lateral rotary oscillation in the vertical plane and then a return oscillation to their normal position. The first movement of the counter-bars causes the engaged counters to rotate bodily about the pins 25 as centers of rotation, and consequently rotates the counter-shafts and causes a count to be registered by each engaged counter. Near the end of the first movement—that is, near the end of the forward oscillation of the counter-bars—for example, when seven-eighths, more or less, of said forward oscillation of the counter-bars and consequent rotation of engaged counter-shafts has taken place—the wedge-bars or resetting-slides 16 are caused to make a movement toward the right looking from the front of the machine or toward the left as seen in Fig. 1. These wedge-bars or resetting-slides are provided with inclines 51, which engage the locking-lugs 21 of the voting members, thereby oscillating the shafts of said voting members and disengaging the engaged counter-dogs—that is, causing counter-dogs in the position of the first and fourth counter-dogs in the second column, counting from the left in Fig. 1, to return to the position of the second and third counter-dogs in said column and counter-dogs in the position shown in Figs. 8 to 11, inclusive, to return to the position shown in Figs. 12 to 15, inclusive. The movement of the wedge-bars resets the voting members and locks them in the non-voting position. The disengagement of the counter-dogs from the counter-pins takes place an instant after the parts are in the position illustrated in Figs. 5 and 11. As soon as the disengagement of the counter-dogs from the counter-pins takes place the weights 26 act to complete the rotation of the counter-shafts, leaving the weights and counter-pins in the position shown in Figs. 2, 8, and 12. This complete rotation of the counter-shafts causes the mechanism of the engaged counters to count the votes that have been cast for the candidates with whose names on the ballot-strips said counters correspond.

The operation is as follows: I have not described specifically the operation of the voting members, the flexible members, the wedge-bars or resetting-slides, or the restricting-bars or made any reference to the different classes of voting, as straight, split, party, restricted, group, or independent voting, as the special class of voting or the manner in which the act of voting is performed is unimportant so far as the present invention is concerned. Turning now to Figs. 1, 2 and 8, it will be noted that the first and fourth voting members in the second column from the left in Fig. 1 have been operated. In other words, a vote has been cast by the manipulation of said voting members. This movement has caused the counter-dogs to engage the corresponding pins 25, extending from the counter-weights, leaving the second and third counter-dogs disengaged. It will be understood, of course, that the number of voting members and corresponding counters in each vertical column is unimportant so far as the present invention is concerned and that only the counters that have been engaged by counter-dogs through a voting operation are actuated by the movement of the counter-bars. As soon as the voting operation is completed the counter-bars carrying the counters are operated in the manner already described. This movement causes the engaged counters to rotate bodily about the counter-pins as a center of rotation. The position of the parts as this movement proceeds will be apparent from Figs. 3, 4, and 5, and 9, 10, and 11, noted in sequence, Figs. 3 and 9 showing the position of the parts when a quarter-rotation of the engaged counters has been made, Figs. 4 and 10 when a half-rotation has been made, and Figs. 5 and 11 when a three-fourths rotation has been made. Shortly after the parts are in the position shown in Figs. 5 and 11 the engaged counter-dogs are disengaged from the corresponding counters by the operation of the wedge-bars or resetting-slides, and the weights complete the actuation of said counters by completing the rotation of the counter-shafts, leaving the parts in the position shown in Figs. 2 and 12. This will be readily understood from Figs. 5 and 11 in connection with Fig. 1, in which it will be seen that the weights corresponding with the engaged counters—*i. e.*, the first and fourth counters from the top in Fig. 1—are in a position to exert their full force to complete the rotation of the counter-shafts the instant the counter-dogs are disengaged from the counter-pins. The use of the counter-locking door in connection with the counterweights renders it abso-

lutely impossible to make a rotation of the shaft of any counter either forward or backward and thereby add to or subtract from the count that has been made by endwise and lateral oscillation of the counter-bars in the manner described.

Having thus described my invention, I claim—

1. In a machine of the character described the combination with counters having shafts extending therefrom, weights secured to said shafts and depending therefrom and pins projecting from the weights, of voting members having counter-dogs adapted to engage the pins, mechanism for causing engaged counters to rotate bodily about the pins and mechanism for disengaging the counter-dogs from the pins near the end of the rotation of the counters about the pins leaving the weights to complete the rotation of the counter-shafts.

2. In a machine of the character described the combination with counters having shafts extending therefrom, weights secured to said shafts and depending therefrom and pins projecting from the weights, of oscillatory voting members having counter-dogs with holes adapted to receive the pins in the engaging position, mechanism for causing engaged counters to rotate bodily about the pins and mechanism for disengaging the counter-dogs from the pins near the end of the rotation of the counters about the pins leaving the weights to complete the rotation of the counter-shafts.

3. In a machine of the character described the combination with counters having shafts extending therefrom, weights secured to said shafts and depending therefrom and pins projecting from the weights, of voting members having counter-dogs adapted to engage the pins, counter-bars by which the counters are carried, mechanism for imparting to the counter-bars endwise and lateral rotary oscillation and for imparting to engaged counters bodily rotation about the pins and mechanism for disengaging the counter-dogs from the pins near the end of the rotation of the counters about the pins leaving the weights to complete the rotation of the counter-shafts.

4. In a machine of the character described the combination with counters having shafts extending therefrom, weights secured to said shafts and depending therefrom and pins projecting from the weights, of voting members having counter-dogs adapted to engage the pins, mechanism for causing engaged counters to rotate bodily about the pins, and resetting-slides having inclines which disengage the counter-dogs from the pins near the end of the rotation of the counters about the pins, leaving the weights to complete the rotation of the counter-shafts.

5. In a machine of the character described the combination with a counter-shaft having a weight depending therefrom and a pin extending from the weight, of voting mechanism, a counter-dog controlled thereby and engaging the pin, mechanism for causing the counter to rotate bodily and mechanism for disengaging the counter-dog before the end of the rotation of the counter, leaving the weight to complete the rotation of the counter-shaft.

6. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from said shafts, of a counter-locking door contiguous to said weights and which is engaged by said weights to prevent complete rotation of the counter-shafts in either direction.

7. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from said shafts, of a counter-locking door normally engaged by said weights and preventing forward rotation of the counter-shafts and also preventing complete backward rotation of the counter-shafts by the engagement therewith of the weights when they are swung above the counter-shafts.

8. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from said shafts, of a counter-locking door contiguous to said weights to prevent complete rotation of the counter-shafts in either direction and means for moving the counters bodily away from the door and imparting rotation to the counter-shafts.

9. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from said shafts, of a counter-locking door contiguous to said weights, for the purpose set forth, voting members having counter-dogs adapted to engage the weights, counter-bars by which the counters are carried and means for imparting endwise and lateral oscillation to the counter-bars to move the counters away from the door and rotate the shafts of engaged counters.

10. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from said shafts, of a counter-locking door contiguous to said weights, for the purpose set forth, voting members having counter-dogs adapted to engage the weights, counter-bars by which the counters are carried, means for imparting endwise and lateral oscillation to the counter-bars, for the purpose set forth, and means for disengaging the counter-dogs from the weights near the end of the rotation of the counter-shafts, leaving the weights to complete the rotation.

11. In a machine of the character de-

scribed the combination with counters having shafts extending therefrom and weights secured to said shafts, of a counter-locking door which is engaged by the weights to prevent complete rotation of the counter-shaft in either direction and is provided with openings to disclose the counter-numerals.

12. In a machine of the character described the combination with counters having shafts extending therefrom and weights secured to said shafts, of a counter-locking door which is engaged by the weights to prevent complete rotation of the counter-shaft in either direction and is provided with openings to disclose the counter-numerals and with ways to receive ballot-strips.

13. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from said shafts, of a counter-locking door which is engaged by said weights to prevent complete rotation of the counter-shafts in either direction and is provided with openings 30 to disclose the counter-numerals and with ways on its outer face and ballot-strips in said ways.

14. In a machine of the character described the combination with a front plate, voting members having counter-dogs, counters having shafts extending therefrom, weights depending from said shafts and pins extending from the weights and adapted to be engaged by the counter-dogs, of a counter-locking door which is engaged by the weights to prevent complete rotation of the counter-shafts in either direction and is provided with openings to disclose the counter-numerals and ways upon the front plate and counter-locking door to receive corresponding ballot-strips.

15. In a machine of the character described the combination with a front plate, voting mechanism, counters, locking means upon the counters, and connecting mechanism intermediate the voting mechanism and the counters, of a counter-locking door engaging the counter-locking means and having openings to disclose the counter-numerals and corresponding ballot-strips on the front plate and door.

16. In a machine of the character described the combination with the front plate, voting members, counters, locking means upon the counters, connecting mechanism intermediate the voting members and the counters, and counter-actuating mechanism, of a counter-locking door engaging the counter-locking means and having openings to disclose the counter-numerals, ways on the front plate and door and ballot-strips in said ways corresponding with the respective voting members and counters, so that the votes for candidates may be tabulated while the counters remain locked.

17. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from the shafts, of a counter-locking door which is engaged by the weights, for the purpose set forth, headed studs upon the free edge of the door, a locking-plate having openings which receive the heads of the studs and slots leading therefrom which receive the shanks of the studs and means for locking said plate in the engaging position.

18. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from the shafts, of a counter-locking door which is engaged by the weights, for the purpose set forth, headed studs upon the free edge of the door, a locking-plate having openings which receive the heads of the studs, slots leading therefrom which receive the shanks of the studs and a locking-lug and a bracket contiguous to the locking-lug in the closed position, said bracket and said lug being provided with holes in line with each other to receive the hasp of a padlock.

19. In a machine of the character described the combination with counters having shafts extending therefrom and weights depending from the shafts, of a counter-locking door which is engaged by the weights, for the purpose set forth, headed studs upon the free edge of the door, a locking-plate having openings which receive the heads of the studs, slots leading therefrom which receive the shanks of the studs and a locking-lug, a bracket having a stop engaged by the door and means for securing the locking-lug to the bracket.

In testimony whereof I affix my signature in presence of two witnesses.

CARL G. BARNUM.

Witnesses:

GEO. O. B. HAWLEY,

ARTHUR B. CAMP.