

G. C. ABBOTT.
COUNTER OPERATING MECHANISM.
APPLICATION FILED FEB. 13, 1911.

999,621.

Patented Aug. 1, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

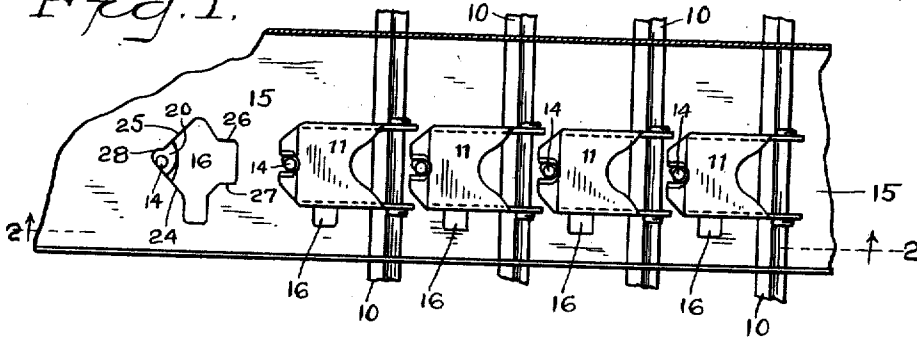


Fig. 2.

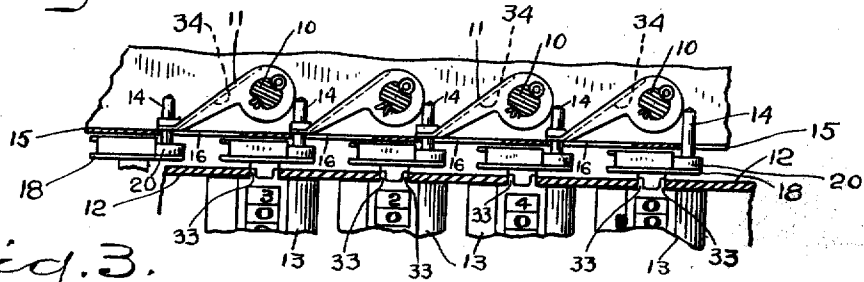


Fig. 3.

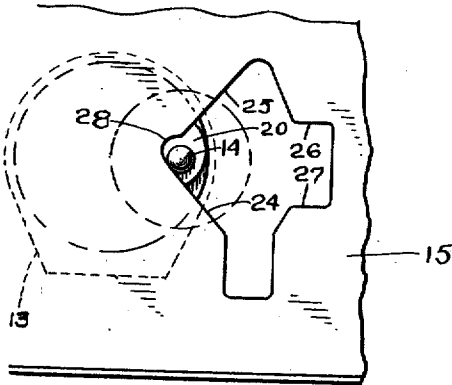


Fig. 4.

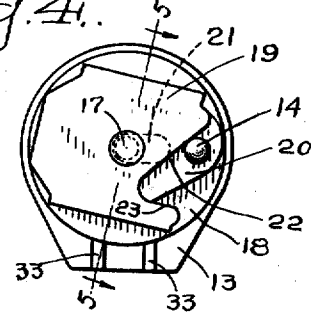


Fig. 5.

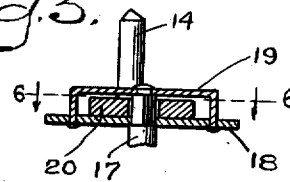
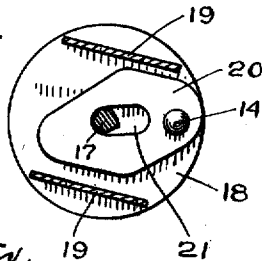


Fig. 6.



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INVENTOR

Charles C. Abbott

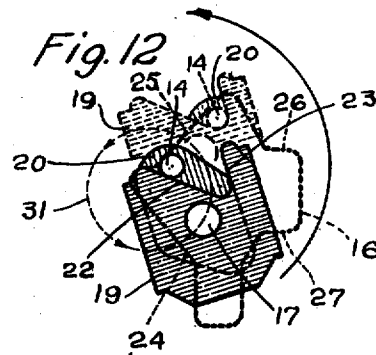
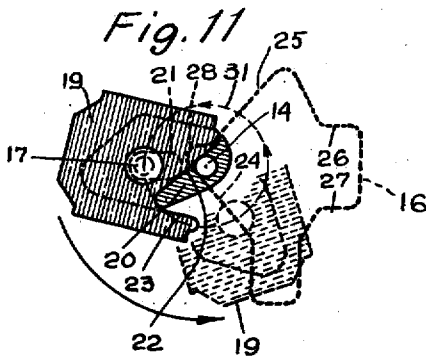
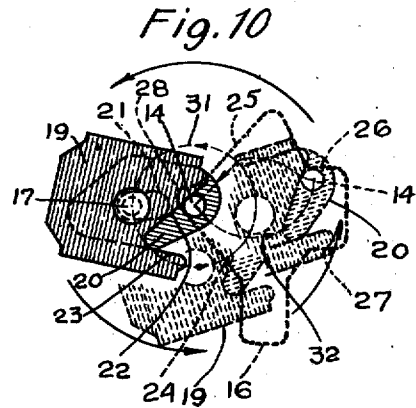
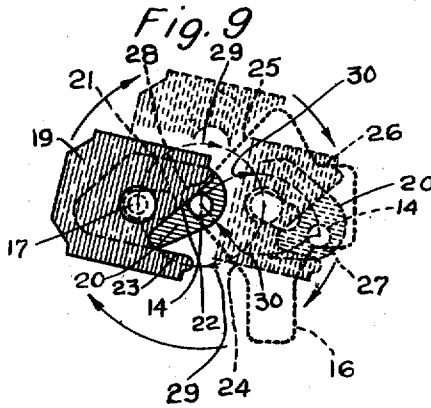
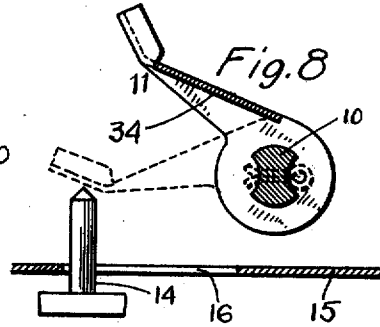
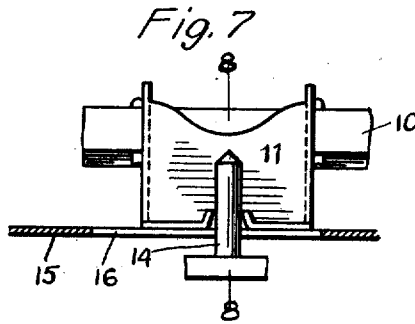
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UNITED STATES PATENT OFFICE.

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COUNTER-OPERATING MECHANISM.

999,621.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed February 13, 1911. Serial No. 608,417.

To all whom it may concern:

Be it known that I, CHARLES C. ABBOTT, a citizen of the United States, residing at Pittsfield, county of Berkshire, State of Massachusetts, have invented an Improvement in Counter-Operating Mechanism, of which the following is a specification.

This invention relates to the counter operating mechanism of voting machines and has for its object to provide simple and reliable means for connecting actuated voting members with the corresponding counters which will lock the counters against removal and against improper actuation either forward or backward, will insure the mechanism against injury from being tampered with and will render a dead center impossible in any position of the parts and under any conditions that can arise.

With these and other objects in view I have devised the simple and novel counter connecting and locking mechanism which I will now describe, referring to the accompanying drawings forming a part of this specification and using reference characters to indicate the several parts:

Figure 1 is a plan view of a portion of a counter locking bar showing voting members connected with the crank pins of corresponding counters; Fig. 2 a section on the line 2—2 in Fig. 1, looking in the direction of the arrows, showing the counter carrier and counters; Fig. 3 a detail plan view of the counter locking bar on an enlarged scale, showing an opening for a counter pin; Fig. 4 a plan view of a counter provided with my novel movable crank pin; Fig. 5 a section on the line 5—5 in Fig. 4, looking in the direction of the arrows; Fig. 6 a section on the line 6—6 in Fig. 5, looking in the direction of the arrows; Fig. 7 a detail elevation on an enlarged scale as seen from the left in Fig. 1; Fig. 8 a section on the line 8—8 in Fig. 7, with the counter dog in the disengaged position; Figs. 9 and 10 are diagrammatic views illustrating the travel of the counter crank pin of a disconnected counter when the counter carrier is moved, as by the operation of the exit mechanism; and Figs. 11 and 12 are diagrammatic views illustrating the operation of the mechanism in preventing a dead center.

10 denotes voting member shafts, 11 counter dogs carried thereby, 12 the counter

carrier, 13 counters, 14 the counter operating pins and 15 the counter locking bar which is provided with openings 16 through which the operating pins project.

In performing the voting operation the voter oscillates voting member shafts, which places the counter dogs carried by said shafts in engagement with the operating pins of the corresponding counters. When the counter carrier is operated each engaged counter is caused to make a complete bodily rotation about its operating pin which is held by the counter dog. At the end of the counting operation all counter operating pins whether previously engaged or disengaged will be at their normal position in engagement with the walls of openings 16, as in Fig. 3, so that any movement of a counter shaft either to count or uncount or removal of counters is made impossible.

17 denotes counter shafts. The operative end of each counter shaft extends beyond the case and carries a disk 18 to which a housing 19 is secured. Each counter operating pin is carried by a plate 20 which lies loosely in the housing and is provided with a slot 21 through which the counter shaft passes. One end of the top of the housing is provided with walls 22 and 23 lying at an angle to each other which are adapted to be engaged by the counter operating pin. The openings 16 in the counter locking bar are preferably shaped substantially as shown in Fig. 3. The essential features of these openings are straight walls 24 and 25 which lie at approximately a right angle to each other and straight walls 26 and 27 which lie parallel to each other and at an angle of forty-five degrees more or less to walls 24 and 25. At the intersection of walls 24 and 25 a recess 28 is provided. During the normal operation of counting, the operating pins of the engaged counters remain seated in recesses 28.

Figs. 9 and 10 show the movement of the operating pin of a disengaged counter when the counter carrier is operated.

In Fig. 9, the dotted line indicated by 29 shows the path of movement of the counter shaft from left to right and the dotted line indicated by 30 shows the path of movement of the counter operating pin, which is retained for a moment in recess 28. When the pin leaves this recess it moves in a

curved path until it engages wall 27 by which its movement is stopped and the counter shaft is turned but not enough by any possibility to cause an actuation of the counter. As the movement of the counter carrier in that direction is continued, the pin will pass off from wall 27 and travel in a curved path until it engages wall 24 along which it will slide into recess 28. The exact position of the counter operating pin in recess 28 is unimportant but it is found desirable to provide a recess as a seat for the pin at the intersection of walls 24 and 25. Fig. 10 corresponds with Fig. 9 with the exception that the movement is from right to left. The dotted line indicated by 31 shows the path of movement of the counter shaft and the line indicated by 32 shows the path of movement of the counter operating pin. When the latter pin leaves recess 28 it moves in a curved path until it engages wall 26 by which its movement is stopped as before but no count can possibly be made. As the movement of the counter carrier in that direction is continued, the pin will pass off from wall 26 and will travel in a curved path until it engages wall 25 along which it will slide into recess 28. The counters are ordinarily attached to the counter carrier without screws by simply being slid to place, the counters being provided with ribs 33 which engage corresponding slots in the counter carrier. An additional function of wall 24 is to render it impossible to remove a counter when the machine is locked, the wall being engaged by the counter operating pin and preventing the withdrawal of the counter from the slot in the carrier.

Figs. 11 and 12 illustrate the manner in which a dead center is made impossible during any possible operation of the counter carrier irrespective of whether the counter operating pins are engaged or disengaged by counter dogs. In ordinary use the counter dogs are either in the non-voted position, as in full lines in Fig. 8, or in the voted position as in Figs. 1, 2 and 7. In the non-voted position, the counter operating pins travel as in Figs. 9 and 10. In the voted position the pins do not travel being held by the counter dogs in recesses 28 at the intersection of walls 24 and 25 of the openings in the counter locking bar while the counter carrier swings the counters around in a circle, the counter shafts making a complete rotation about the counter operating pins and consequently each counter shaft making a complete rotation and causing an actuation of the counter. These two conditions are the only ones that exist in a legitimate use of the machine and no dead center is possible, but if the machine should be experimented with by anyone during a demonstration or at other times when it is possible to get at it and one or more counter dogs

thrown off after the counters were partly operated, it might result in a dead center and possible injury to the mechanism were it not for the provisions I am about to describe. Figs. 11 and 12 illustrate the condition where a counter dog has been thrown off after the counter has been partly operated. The counter operating pin has traveled along wall 22 on the end of the housing since the dog left it. The first portion of the movement of the counter operating pin is in an arc of a circle concentric with the path of travel of the counter shaft until the pin engages wall 25 in opening 16 in the counter locking bar. When this occurs, further travel of the counter causes the pin to slide along wall 25 of opening 16 and wall 22 on the end of the housing and the movement of the pin continues until the parts are in the last position shown in Fig. 12 when the counter shaft is passing the pin on its way to its normal position. Further travel of the counter draws the pin back along wall 25 of the opening in the counter locking bar and out along wall 23 on the housing and finally the parts reach their normal position. The pin is free to make the movements just described owing to the fact that plate 20 by which it is carried has perfect freedom of movement in the housing as will be understood from Fig. 6.

In the structure illustrated, a dead center is impossible owing to the fact that the counter operating pin is free to travel along the walls of the opening in the counter operating bar and on the end of the housing away from a dead center. These provisions do not come into play in ordinary legitimate use, their sole purpose being to prevent injury to the mechanism from any improper use of the machine either intentional or otherwise.

The counter dogs are ordinarily blanked out and formed from sheet metal. It will be noted that the counter operating pins are cone-pointed and that the backs of the counter dogs incline upward away from the counter operating pins as at 34. When the exit mechanism is operated by a voter leaving the machine, the disengaged counter operating pins will pass around beneath their respective counter operating dogs. Suppose now that two parties were experimenting to beat the machine or to injure it and that one should operate one or more voting members after the other had started to operate the exit mechanism. The counter dogs would come down on the tops of the counter operating pins, but as the backs of the dogs slant away from the pins in the same direction as the path of travel of the pins, the points of the pins would slide along the backs of the dogs and there would be no possibility of engagement of the parts even if the counter dogs should be held down on the pins by force.

Having thus described my invention I claim:

1. The combination with a counter shaft, a housing carried thereby and having operative walls at one end and a counter operating pin movable relatively to the counter shaft and adapted to engage the walls on the housing, of a counter dog and a counter locking bar having an opening and a recess in which the operating pin is held by the counter dog during the operation of counting.
2. The combination with a counter shaft, a housing carried thereby and having operative walls at one end and a counter operating pin movable relatively to the counter shaft and adapted to engage the walls on the housing, of a counter dog, and a counter locking bar having an opening with straight walls which are engaged by the pin.
3. The combination with a counter shaft, a housing carried thereby and having operative walls at one end and a counter operating pin movable relatively to the counter shaft and adapted to engage the walls on the housing, of a counter dog, and a counter locking bar having an opening with a straight wall 24 which is engaged by the pin to prevent removal of the counter.
4. The combination with a counter shaft, a housing carried thereby and having operative walls at one end and a counter operating pin movable relatively to the counter shaft and adapted to engage the walls on the housing, of a counter dog, and a counter locking bar having an opening with straight walls along which the pin slides to prevent a dead center should the machine be tampered with.
5. The combination with a cone-pointed counter operating pin, of a counter dog adapted to engage the pin and having a back inclined away from the pin to prevent engagement should the machine be tampered with.
6. The combination with a counter shaft and a housing carried thereby and having operative walls at one end, of a plate lying loosely within the housing and carrying an operating pin adapted to engage the operative walls of the housing and a counter locking bar having an opening with operative walls 24, 25, 26 and 27 adapted to be

engaged by the operating pin, substantially as described, for the purpose specified. 55

7. The combination with a counter shaft and a housing carried thereby and having operative walls at one end, of a plate lying loosely within the housing and carrying an operating pin adapted to engage the operative walls of the housing and a counter-locking bar having an opening with operative walls lying at an angle to each other and other operative walls parallel with each other and at an angle to the first mentioned walls and a recess at the intersection of the first mentioned walls, substantially as described, for the purpose specified. 60 65

8. The combination with a counter shaft and a housing carried thereby, of a plate lying loosely in the housing, a counter operating pin carried thereby and a counter locking bar having an opening with operative walls lying at an angle to each other and other operative walls parallel to each other and at an angle to the first mentioned walls, substantially as described, for the purpose specified. 70 75

9. The combination with a counter shaft and a housing carried thereby, of a plate lying loosely in the housing, a counter operating pin carried thereby and a counter locking bar having an opening with operative walls lying at an angle to each other with a recess at the intersection of said walls, and other operative walls parallel to each other and at an angle to the first mentioned walls, substantially as described, for the purpose specified. 80 85

10. The combination with a counter shaft and a housing carried thereby and having operative walls at one end, of a plate lying loosely in the housing, a counter operating pin carried thereby and adapted to engage said operative walls and a counter locking bar having an opening with operative walls also engaged by the counter operating pin, substantially as described, for the purpose specified. 90 95

In testimony whereof I affix my signature in presence of two witnesses. 100

CHARLES C. ABBOTT.

Witnesses:

EDMUND A. HASKINS,
GEO. O. B. HAWLEY.