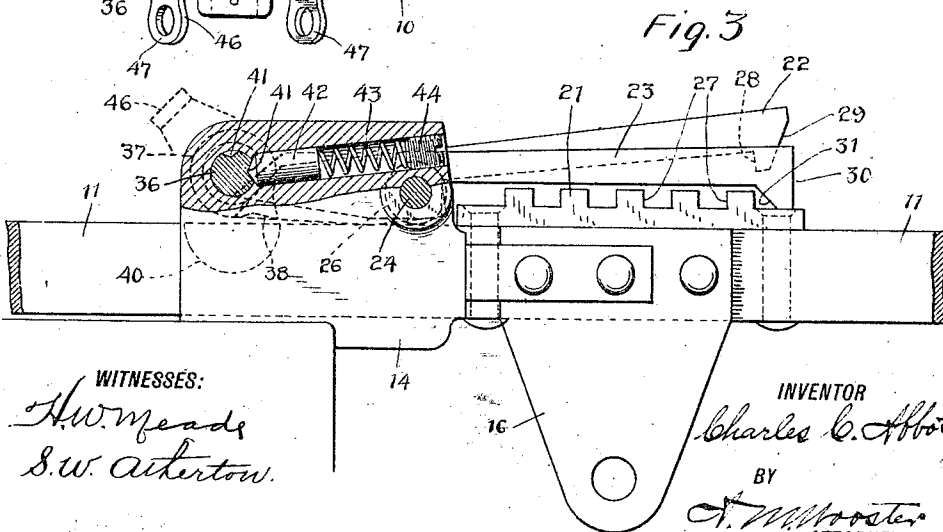
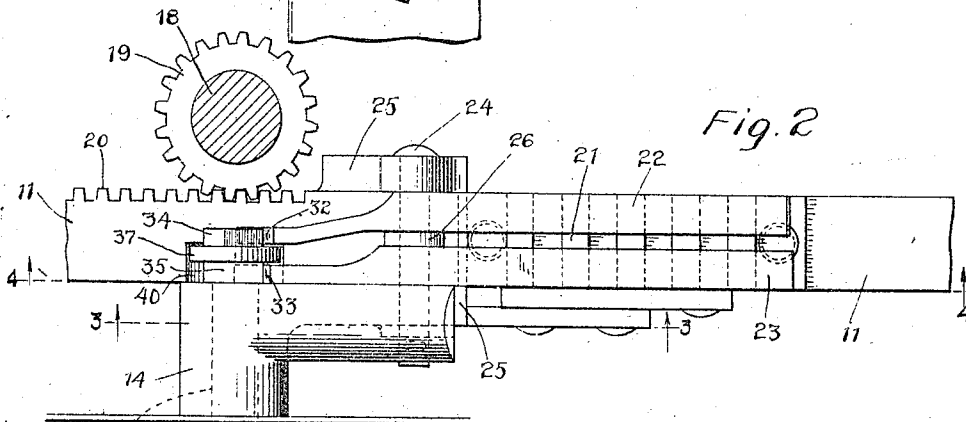
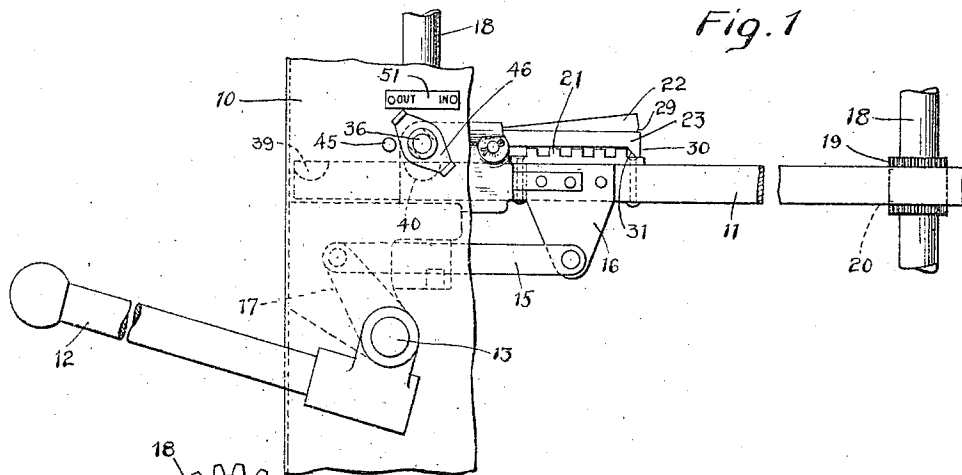


C. C. ABBOTT.
OPERATING LEVER LOCK FOR VOTING MACHINES.
APPLICATION FILED JULY 6, 1912.

1,059,808.

Patented Apr. 22, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

H. W. Meade
S. W. Atherton.

INVENTOR

Charles C. Abbott

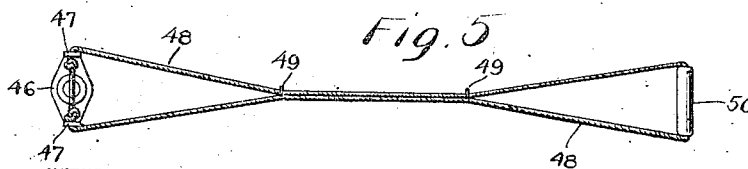
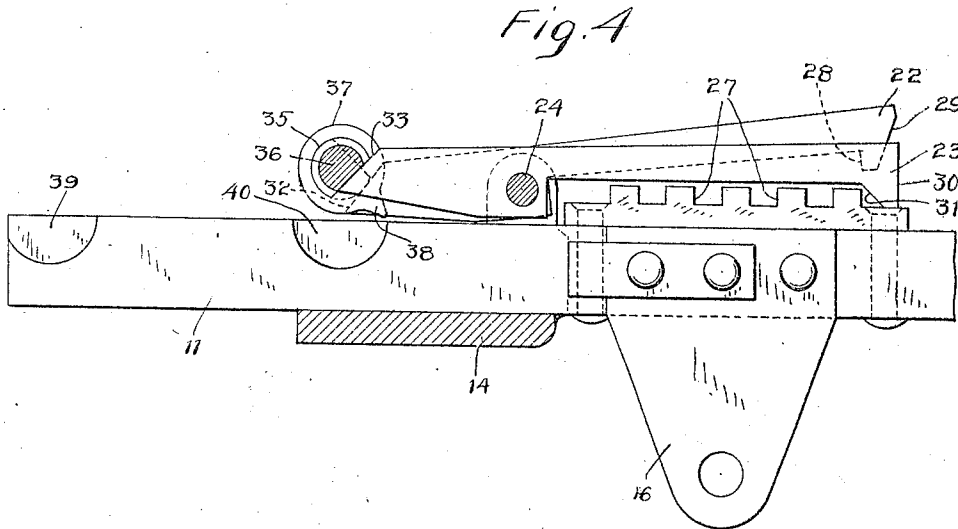
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UNITED STATES PATENT OFFICE.

CHARLES C. ABBOTT, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO TRIUMPH VOTING MACHINE COMPANY, OF PITTSFIELD, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

OPERATING-LEVER LOCK FOR VOTING-MACHINES.

1,059,808.

Specification of Letters Patent.

Patented Apr. 22, 1913.

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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 Operating-Lever Locks for Voting-Machines, of which the following is a specification.

This invention has for its object to provide a lock for the main operating or entrance and exit lever of a voting machine that will act directly on the main operating bar and prevent reverse movement of the operating lever and bar until after the completion of a forward movement in either direction; that is, having commenced to move the operating lever from either the voting or non-voting position, backward movement of said lever and consequently reverse movement of the main operating bar is rendered impossible until after the completion of the forward movement that has been commenced.

In the accompanying drawing forming a part of this specification, Figure 1 is a front elevation of my novel operating lever lock; Fig. 2 an enlarged plan view corresponding therewith; Fig. 3 an elevation corresponding with Fig. 2, partly in section on the line 3—3 in Fig. 2; Fig. 4 an elevation corresponding with Fig. 3, certain parts being removed and the cam shaft being in section on the line 4—4 in Fig. 2; and Fig. 5 is a detail view of an operating rope which permits the attendant to operate the lock while standing at a distance from the machine.

10 denotes the casing of the machine, 11 the main operating bar, 12 the operating lever, frequently termed the entrance and exit lever, and 13 a shaft to which the operating lever is rigidly secured. Shaft 13 is mounted to oscillate in a casting 14 within the casing and extends through the front of the casing to receive the operating lever as clearly shown in Fig. 1. Any suitable operating connection may be employed between the operating lever shaft and the main operating bar. In the present instance I have shown the connection as effected by means of a link 15, one end of which is pivoted to a plate 16, itself rigidly secured to the

bar, and the other to an arm 17, appearing in dotted lines only, which extends from the operating lever shaft. Various mechanisms of the machine are operated from the main bar as, for example, counter carrier operating shafts 18 which carry pinions 19 engaging rack sections 20 on the main bar.

21 denotes a rack or section of rack teeth formed upon or rigidly secured to the top of the main bar. This rack is engaged by pawls 22 and 23 mounted on a stud 24 which passes through lugs 25 forming a portion of casting 14, the main bar lying in a recess in the casting between the lugs. The pawls are spaced apart on the stud by a collar 26 which also acts to hold the main bar down and prevent the rack from bearing against the under side of the pawls. The stud is retained in place in any suitable manner as by a cotter pin. It will be noted that the teeth of rack 21 have vertical walls 27 and that the heads of the pawls are laid out to engage the opposite walls of said teeth respectively. Thus pawl 22 is provided with a vertical wall 28 which prevents movement of the rack and main bar toward the right and with an incline 29 which when engaged by a rack tooth causes the pawl to rise up over the tooth and permits movement of the rack and bar toward the left, and pawl 23 is provided with a vertical wall 30, which prevents movement of the rack and bar toward the left and with an incline 31 which when engaged by a rack tooth causes the pawl to rise up over the tooth and permits movement of the rack and bar toward the right. At the rear ends of pawls 22 and 23 are inclines indicated respectively by 32 and 33. Incline 32 is engaged by a cam 34 and incline 33 engaged by a cam 35. These cams are carried by a shaft 36 which is mounted to oscillate in a hub which forms part of casting 14. This shaft also carries a disk 37 having a locking projection 38 adapted to engage either of two recesses in the operating bar indicated respectively by 39 and 40, and outside the casing said shaft is provided with a cross bar 46, the purpose of which will presently be explained.

Cams 34 and 35 as shown are simply disks with flat sides forming the low portions of

the cams. In Fig. 4, the low portion of cam 35 is shown in engagement with the incline 33 of pawl 23, which, as the operative end of the pawl is heaviest, permits that end of the pawl to drop down into engagement with the rack. The cams work opposite to each other so that as one pawl drops down the other is raised, pawl 22 being shown in Fig. 4 as raised by the other cam. From the position shown the movement of cam 35 will be from left to right. The instant this movement commences the high portion of the cam will begin to engage incline 33 and pawl 23 will commence to rise out of engagement with the rack. Simultaneously the high portion of the other cam will commence to pass out of engagement with the rear incline of the other pawl, which will drop down into the locking position as the first mentioned pawl rises out of the locking position. In order to retain the cams in their two effective positions, that is with the high portion of one cam and the low portion of the other cam in engagement with an incline of a pawl, and vice versa, I provide shaft 36 with recesses or spots 41, either of which is adapted to be engaged by the nose of a plunger 42 socketed in casting 14. The plunger is retained in operative position by the pressure of a spring 43 in the socket, the other end of which bears against an adjusting screw 44. In order to prevent the possibility of the shaft being turned too far in either direction, I provide a stop pin 45 in the casing which is adapted to be engaged by either arm of the cross bar and serves as a positive stop to limit the movement of the shaft, cams and locking projection in either direction.

The function of locking projection 38 is to render it impossible for the attendant to operate cam shaft 36 except when the operating bar is at one of the extremes of its movement, that is either in the voting or the non-voting position. In Fig. 4, the locking projection is shown as having passed out from recess 40 toward the right. At the other extreme of its movement the shaft would have made something more than a quarter turn and the projection would have passed out of the recess toward the left. When either recess is in alinement with the cam shaft, the attendant can manipulate the pawls freely by means of said shaft. At any other position of the operating bar, an attempt to operate the cam shaft would cause the locking projection to engage the top of the operating bar intermediate the recesses and thereby lock the shaft against movement, leaving one pawl locked out of operative position and the other free to operate. In the drawings, the operating bar is at the extreme of its movement toward the left. Suppose now that the operating lever is swung upward from the position shown in

Fig. 1. The operating bar will necessarily be moved toward the right. Incline 31 on pawl 23 will cause said pawl to ride up the teeth of the rack permitting the teeth to pass under the pawl and after each tooth has passed the pawl will drop down between two teeth and the engagement of wall 30 on the pawl with the left vertical wall of the tooth just passed will lock the bar against backward movement. It will be understood that pawl 22 still remains locked out of operative position through the engagement of the high portion of the corresponding cam with the incline at the rear end of the pawl. The movement of the operating bar toward the right will carry recess 40 far enough toward the right so that any attempt to manipulate the cam shaft will cause the locking projection to engage the top of the bar between the recesses. It will be understood of course that any appreciable movement of the shaft in the opposite direction will be prevented by the engagement of the cross bar with the stop pin. The condition is therefore as follows: By further upward movement of the operating lever the operating bar can be moved farther toward the right. Reverse movement of the operating bar, however, is prevented by the engagement of the vertical wall of pawl 23 with the left vertical wall of one of the rack teeth. The other pawl is locked out of operative position by the high portion of the corresponding cam and the cam shaft is locked against movement to throw pawl 23 out of operative position by the engagement of the locking projection carried by the cam shaft with the operating bar itself, so that having commenced a movement of the operating bar in either direction reverse movement is made impossible until the movement that has been commenced is completed.

In order to provide a convenient means whereby the attendant can manipulate the cam shaft while standing at a distance from the machine I provide the cross bar with eyes 47 through which a rope 48 passes, the ends of said rope being secured together. One strand of the rope has rigidly secured thereto rings 49 through which the other strand slides freely. At the ends of the strands opposite the cross bar is a handle 50. This enables the attendant to stand at any required distance from the machine, four feet or more, and to manipulate the cam shaft with ease.

It will of course be understood that in voting machines having an operating or entrance and exit lever, said lever is first operated by the voter to unlock the machine; that is to place it in condition so that the voter may indicate his vote, and when the voter leaves the machine he must again operate said lever in order to count the vote that he has previously indicated and also

lock the machine. For the convenience of the operator I have indicated on the casing of the machine, as at 51, the words "Out" and "In," said words being placed in a position to cooperate with one arm of the cross bar. The normal or non-voting position of the operating lever is substantially vertical. The operating bar is at the extreme of its position toward the right, pawl 23 is locked out of operative position and pawl 22 is in operative position, just the reverse of the position shown in the drawing.

On the approach of a voter the attendant, if he has not already done so, turns the cross bar to the reverse of the position shown in Fig. 1; that is, he turns the upper arm of the cross bar from "Out" to "In." The effect of this oscillation of the cam shaft will be to raise pawl 23, which opposes the movement of the operating bar toward the left, out of engagement with the rack and to permit pawl 22, which opposes the movement of the bar toward the right, to drop down into engagement with the rack. The voter can now swing the operating lever to approximately the horizontal position as shown in Fig. 1. Should he attempt to reverse the lever after having started to swing it downward, the movement will be prevented by the engagement of pawl 22 with the rack. At the completion of the downward movement of the lever the voter can indicate his vote. The attendant may now swing the cross bar from "In" to "Out," as shown in Fig. 1. This will leave the parts in the position shown in the drawings. Pawl 22 is now raised out of operative position and pawl 23 has dropped down into position to prevent movement of the operating bar toward the left after the movement toward the right has commenced. After indicating his vote the voter registers it by swinging the operating lever from the position shown to its normal or approximately vertical position. In addition to registering the vote indicated, the return of the operating lever to its normal position acts to lock the machine. The vote indicating and registering mechanism is not shown as it forms no portion of the present invention and is merely referred to in order to make clear the functions and operation of the lever locking mechanism. The voter cannot reverse the movement of the lever after having started to swing it upward, because of the engagement of pawl 23 with the rack. The attendant cannot change the position of the pawls, owing to the engagement of the locking projection on the cam shaft with the operating bar, except when the operating lever and operating bar are at one of the extremes of their movement; that is, when the parts are in the voting position, as shown in the drawings, or in

the normal or non-voting position. The operation of the cross bar by the attendant has simply the effect of unlocking the operating bar and operating lever and permitting the lever to be swung downward from its normal or non-voting position, or swung upward from the voting position shown in the drawing. Should the voter fail to complete the return movement of the operating lever, he does not lose his vote and no harm can be done, as the attendant must complete the movement and swing the operating lever clear to the non-voting position before he can swing it to the voting position again to permit another voter to indicate and register his vote. It is thus made impossible for a careless voter to deprive himself of his vote, or for a dishonest official to deprive him of it by juggling with the operating lever.

Having thus described my invention, I claim:

1. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of reversible means for locking the bar against backward movement after forward movement in either direction has commenced, and means for locking said last named means against reversal.

2. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of reversible means for locking the bar against backward movement after forward movement in either direction has commenced, means for reversing said locking means and manually operated means for actuating said reversing means.

3. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of manually reversible means for locking the bar against backward movement after forward movement in either direction has commenced, and means for locking said last named means against reversal.

4. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of reversible means for locking the bar against backward movement after forward movement in either direction has commenced, and means cooperating with said bar for locking said last named means against reversal.

5. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of reversible means for locking the bar against

backward movement after forward movement in either direction has commenced, and means for locking said locking means except when the bar is at either extreme of its movement.

6. In a mechanism of the character described, the combination with an operating bar provided with a square toothed rack, an operating lever and connections intermediate said lever and bar, of pawls provided with vertical walls and inclines, said pawls respectively permitting movement of the rack and bar in opposite directions and locking against reverse movement, means for moving either pawl out of operative position and simultaneously rendering the other pawl operative, and means for locking said last named means except when the bar is at either extreme of its movement.

7. In a mechanism of the character described, the combination with an operating bar having a rack, an operating lever and connections intermediate said bar and lever, of pawls lying adjacent to each other engaging said rack and locking it against backward movement after forward movement in either direction has commenced, a shaft having cams adapted to engage the pawls for the purpose set forth, and means cooperating with the bar to prevent rotation of the shaft except when the bar is at the end of its travel in either direction.

8. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of reversible means for locking the bar against backward movement after forward movement in either direction has commenced, a shaft having means for reversing the locking means when the bar has reached the end of its travel in either direction, and manually operated means for turning said shaft.

9. In a mechanism of the character described, the combination with an operating bar, an operating lever and intermediate connections for the purpose set forth, of reversible means for locking the bar against backward movement after forward movement in either direction has commenced and an independently operated shaft having means adapted to reverse the locking means when the bar has reached the end of its travel in either direction and means for locking the shaft against movement except at the completion of the movement of the operating bar.

10. In a mechanism of the character described, the combination with an operating bar having a rack, an operating lever and connections intermediate said bar and lever, of pawls engaging said rack and locking against backward movement after forward movement in either direction has commenced, means for locking either pawl out

of operative position and means for preventing shifting of pawls except when the bar is at either extreme of its movement.

11. In a mechanism of the character described, the combination with an operating bar having recesses and a rack, an operating lever and connections intermediate said bar and lever, of pawls engaging said rack and locking against backward movement after forward movement in either direction has commenced, and a shaft having cams adapted to engage the pawls for the purpose set forth and a locking projection engaging the bar and acting to prevent rotation of the shaft except when a recess in the bar is in alinement with the locking projection.

12. In a mechanism of the character described, the combination with an operating bar having recesses and a rack, an operating lever and connections intermediate said bar and lever, of pawls engaging said rack for the purpose set forth, and a shaft having cams adapted to engage said pawls whereby either pawl may be locked out of operative position leaving the other pawl operative, and a locking projection engaging the bar whereby rotation of the shaft and consequent shifting of the pawls is prevented except when a recess in the bar is in alinement with the projection.

13. In a mechanism of the character described, the combination with an operating bar having recesses and a rack, an operating lever and connections intermediate said bar and lever, of pawls engaging said rack for the purpose set forth, and a shaft having cams and a locking projection, rotation of the shaft causing the cams to lock either pawl out of operative position leaving the other operative, and the projection engaging the bar and locking the shaft against rotation except when a recess in the bar is in alinement with the projection.

14. In a mechanism of the character described, the combination with an operating bar having recesses and a rack, an operating lever and connections intermediate said bar and lever, of pawls engaging said rack for the purpose set forth, a shaft having cams for controlling the pawls and a locking projection whereby the shaft is locked against rotation except when a recess is in alinement with the projection and means for limiting the movement of the shaft in either direction.

15. In a mechanism of the character described, the combination with an operating bar having recesses and a rack, an operating lever and connections intermediate said bar and lever, of pawls engaging said rack for the purpose set forth and a shaft having cams for controlling the pawls, a locking projection adapted to cooperate with a recess and a cross bar by which the shaft is operated to control the pawls.

16. In a mechanism of the character described, the combination with an operating bar, an operating lever, and intermediate connections for the purpose set forth, of
5 reversible means for locking the bar against backward movement after forward movement in either direction has commenced, means for reversing said locking means, and means for limiting the movement of said
10 reversing means in either direction.

17. In a mechanism of the character described, the combination with an operating bar having a rack, an operating lever, and connections intermediate said bar and lever,
15 of pawls engaging said rack, a shaft having cams for controlling the pawls, and means for limiting the movement of the shaft in either direction.

18. In a mechanism of the character described, the combination with an operating bar having a rack, an operating lever, and connections intermediate said bar and lever, of pawls engaging said rack, a shaft having
20 cams for controlling the pawls, and a cross bar carried by said shaft for operating the same.

19. In a mechanism of the character described, the combination with an operating bar having a rack, an operating lever, and connections intermediate said bar and lever, 30 of pawls engaging said rack, a shaft having cams for controlling the pawls, a cross bar carried by said shaft for operating the same, and a pin engaged by said cross bar to limit the movement of the shaft in either direc- 35 tion.

20. In a mechanism of the character described, the combination with an operating bar having a rack, an operating lever, and connections intermediate said bar and lever, 40 of pawls engaging said rack, a shaft having cams for controlling the pawls, a cross bar carried by said shaft, and a rope secured to said cross bar for operating the same to turn said shaft. 45

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

CHARLES C. ABBOTT.

Witnesses:

FRANCES R. DOWNS,
LESTER SHEPARDSON.