March 31, 1942. R. F. SHOUP 2,277,857

VOTING MACHINE

Filed Sept. 4, 1940 3 Sheets-Sheet 1

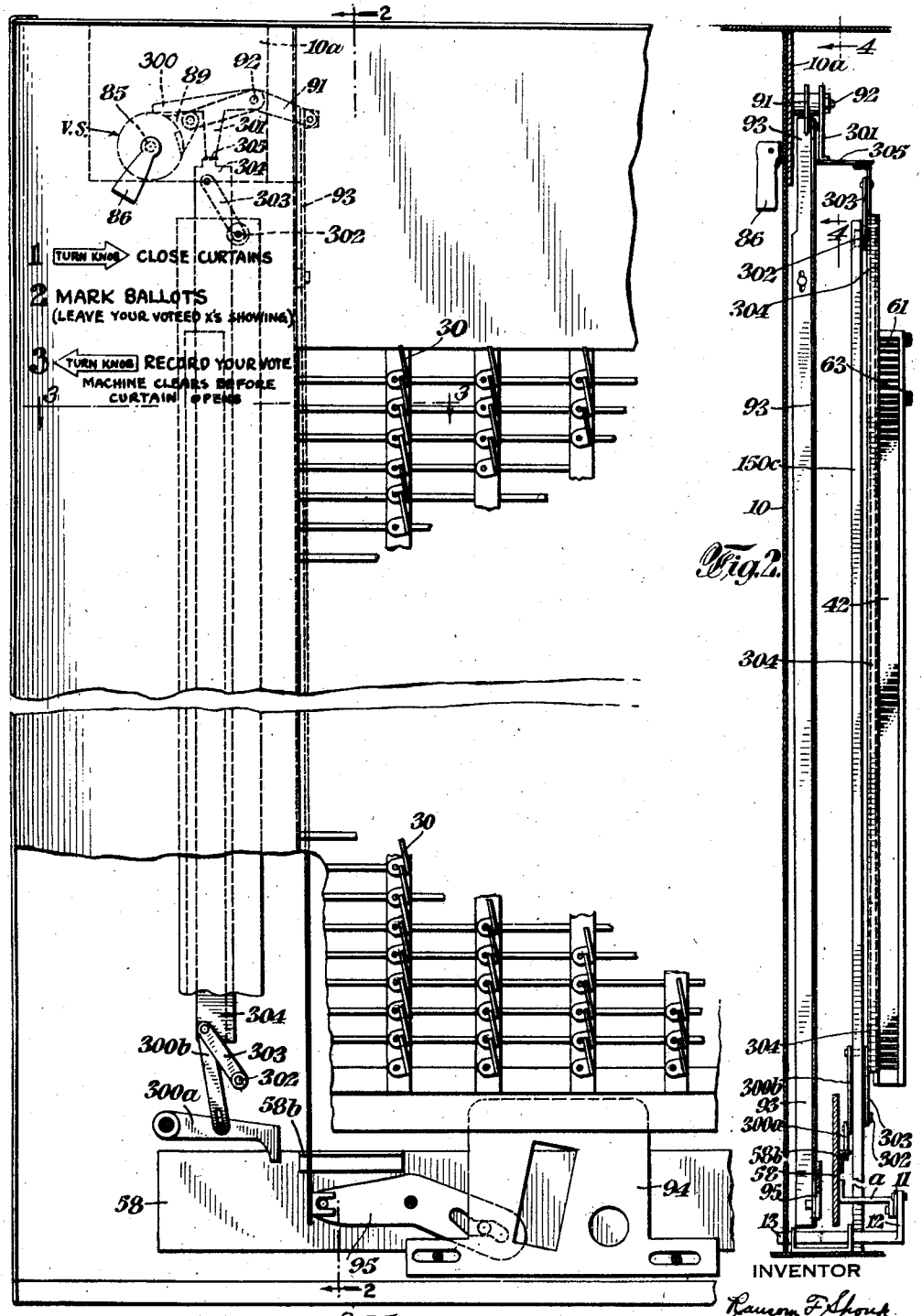


Fig. 1.

Fig. 2.

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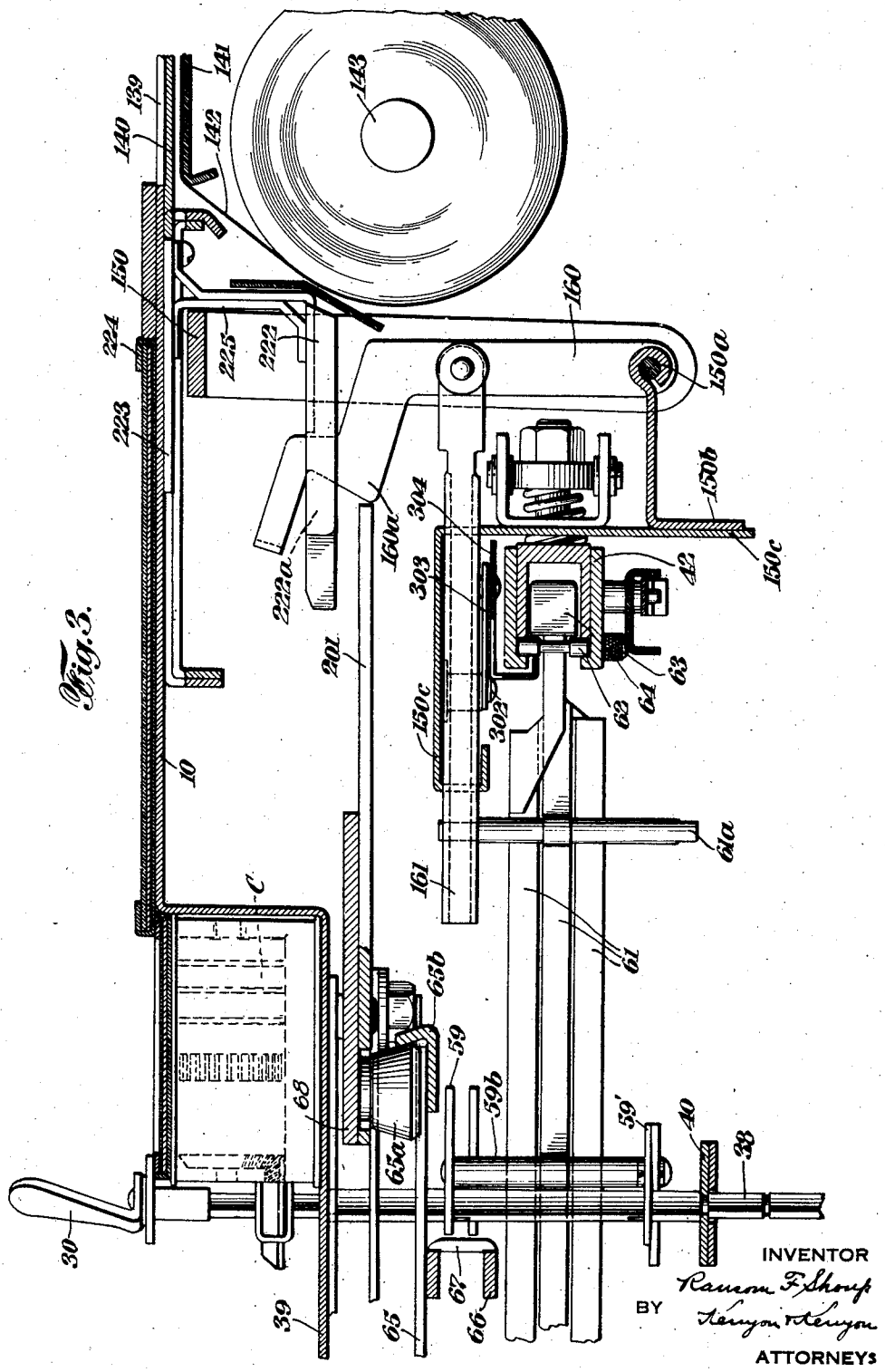


Fig. 3.

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Fig. 4.

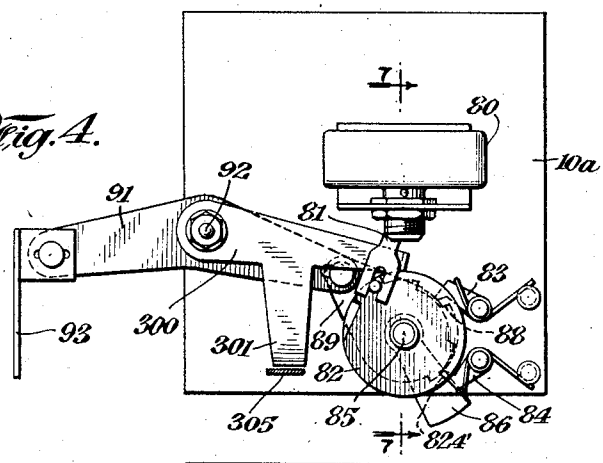


Fig. 7.

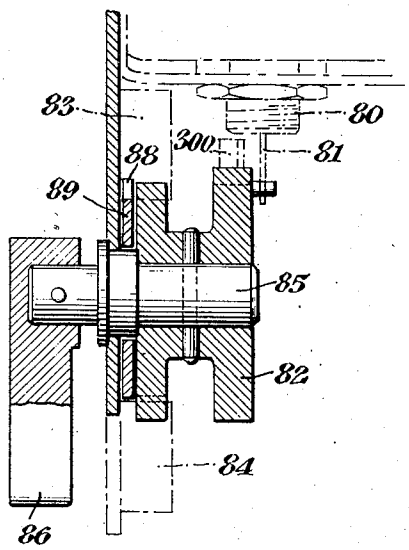


Fig. 5.

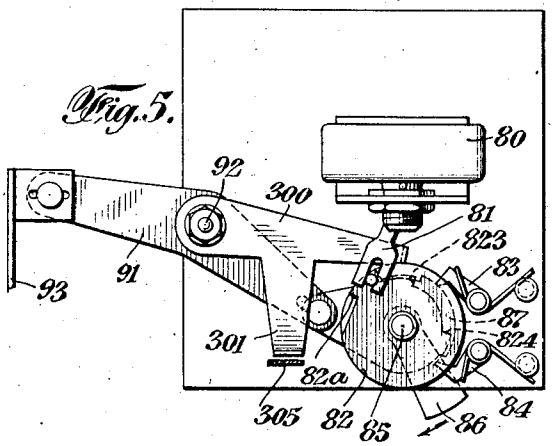


Fig. 6.

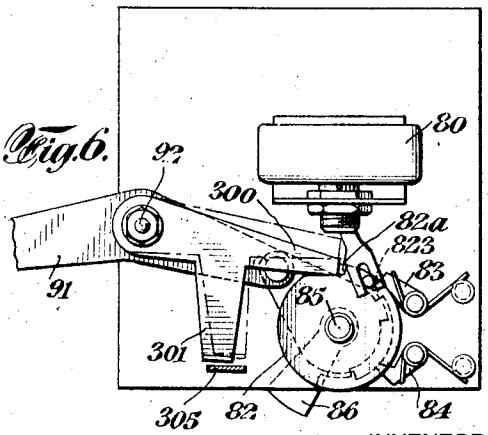
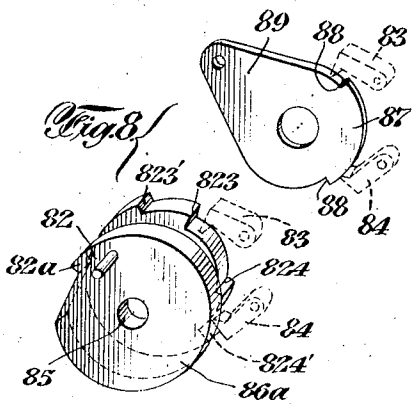


Fig. 8.



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Patented Mar. 31, 1942

2,277,857

UNITED STATES PATENT OFFICE

2,277,857

VOTING MACHINE

Ransom F. Shoup, Ardmore, Pa., assignor to The Shoup Voting Machine Corporation, Philadelphia, Pa., a corporation of Delaware

Application September 4, 1940, Serial No. 355,291

2 Claims. (Cl. 235—55)

This invention relates to voting machines and more especially to voting machines of the type illustrated in Shoup et al. Patent No. 2,054,102.

A voting machine of this type is equipped with rotatable voting spindles which are associated with counters in such manner that the actuation of a spindle through a predetermined arc conditions the associated counter for registration of one vote. However, the voter must leave the spindle in actuated position in order to register the vote. If he restores the spindle to its original position he completely nullifies the effect of having actuated the spindle and prevents registration of a vote for the candidate to whom the spindle is allocated. A voter who thinks that proper operation of the voting spindles requires actuation and restoration thereof and who operates the spindles accordingly, unwittingly prevents registration of the vote which he thinks he is casting. The machine also is equipped with means for registering a vote for a candidate for whom no spindle is allocated. Such means includes a slot provided with a closure commonly known as a personal choice slide.

An object of this invention is the provision in a voting machine of the above referred-to type of means requiring the voter to actuate and leave actuated at least one voting spindle unless he actuates at least one personal choice slide.

Other objects, novel features and advantages of this invention will become apparent from the following specification and accompanying drawings, wherein:

Fig. 1 is a fragmentary front elevation partially broken away of a voting machine embodying the invention;

Fig. 2 is a section substantially on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary horizontal section substantially on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary section substantially on the line 4—4 of Fig. 1;

Figs. 5 and 6 are views generally similar to Fig. 4 with the elements in different positions;

Fig. 7 is a section on the line 7—7 of Fig. 4, and

Fig. 8 is an exploded view of certain parts of the mechanism.

The invention is specifically disclosed embodying the improvements covered by Shoup Patent No. 2,241,485 and co-pending application Serial No. 250,478 and in so far as possible the reference characters herein used designate the same or equivalent elements as are designated by such reference characters in said Shoup et al. patent and said Shoup patent and application.

Columns of spindles 38 are journalled at one end in vertical members 40, each spindle being equipped with an operating handle 30. A partition 39 supports columns of counters C (Fig. 3) associated with the spindles 38 and the structure of each counter, as well as the means for actuating the counter by the spindle, is preferably the same as is disclosed in Shoup Patent No. 2,140,336. An interlock for the spindles comprises horizontal draw bars 61 fastened in groups between pairs of rollers 62 supported in longitudinal grooves in the inner faces of a vertical channel member 42. Certain of the rollers 62 are tubular and headed pins 63 extend through them and passages in the channel member to lock the pins in fixed relation. Each draw bar 61 is equipped at one end with an enlarged head or wedge 64 which also is of greater width than the draw bar. Each spindle 38 is equipped with a pair of arms 59 and 59' between which extends a pin 59b connected to a draw bar 61.

In Fig. 3 is disclosed the spindle locking and restoring frame consisting of horizontal bars 65 connected by vertical channel straps 66 having cut-out portions providing rungs 67 arranged to engage the arms 59. The bars 65 are provided with an interconnecting track member 65b which engages rollers 65a carried by a vertical bar 68 supported for combined vertical and horizontal movement. The bar 68 and the locking and restoring frame are shown in Fig. 3 in spindle-locking position. Horizontal movement of the bar 68 to the left from its Fig. 3 position releases the spindle locking and restoring frame for movement to the left into spindle unlocking position and return movement of the bar 68 to its Fig. 3 position effects return of the spindle locking and restoring frame to spindle-locking position, all as fully disclosed in said Shoup et al. Patent No. 2,054,102.

Movement of the bar 68 is effected through the electrically actuated driving mechanism disclosed in Shoup Patent No. 2,241,485 and co-pending application, Serial No. 250,478 and a voter-actuated switch VS is provided for controlling the operation of such mechanism, said switch having an operating number movable between two positions. As fully disclosed in said Shoup patent and co-pending application, the construction of the switch and its connection in the energizing circuits for the electrically actuated mechanism are such that movement of the switch operating member from one of its positions to its other position causes actuation of the driving mechanism to effect leftward movement of the bar 68 from its Fig. 3 position and restoration of the switch handle to its original position causes actuation of the driving mechanism to effect return movement of said bar 68.

In the wall 10 is provided a column of personal choice slots 139 with a closure slide 140 for each slot. In back of the slots is a guide 141 over which passes a sheet of paper 142 from a

feed roller 143. A yoke 150 pivotally supported on a rod 150a is rotated counterclockwise from the position shown in Fig. 3 by movement of any slide 140 to open position and is returned to such position by mechanism (not shown) to restore the slide to original position. Also, the yoke 150 coacts with mechanism (not shown) to advance the strip 142 a predetermined distance for each actuation of the yoke.

A vertical plate 150c of the shape shown in Fig. 3 is provided with a vertical series of apertures constituting guideways for links 161 which at one end are attached to arms 160 pivotally supported by the rod 150a. Each link 161 is provided with a pin 61a connected to a draw bar 61 and each arm 160 is provided with a head 160a directed approximately perpendicular to the arm 160. Each head projects into a channel-shaped runner 222 slotted at 222a and having a right-angle extension attached to a slide 223 supported on the back of the wall 10. On the front face of the wall 10 is provided a guide 224 in which is received a strip on which are printed the names of the various offices to be voted for, the arrangement of the officers names being such that a name is in alinement with each personal choice slot and with each horizontal row of spindles. Movement of any plate 140 from slot-closing position as shown in Fig. 3 to the left to slot-open position, effects corresponding movement to the left of a slide 223 and through engagement of the runner 222 with the head 160a counter-clockwise swinging movement of the arm 160 is effected from its Fig. 3 position to actuate the corresponding link 161 and the interlock strap 61 connected thereto.

The voter operated switch VS is mounted on a plate 10a attached to the wall 10 and comprises a contact box 80 equipped with an operating member or arm 81 oscillatable between two positions, and said arm 81 has a pin and slot connection with a rotatable member 82. The member 82 is shaped to provide a first pair of opposed shoulders 823 and 824 and a second pair of shoulders 823' and 824' with the second pair being spaced further apart and having a greater radius than said first pair. A pivoted pawl 83 is provided for co-operation with the shoulders 823 and 823' while a pivoted pawl 84 is provided for co-operation with the shoulders 824 and 824' to control the permissible direction of rotation of the member 82. The rotatable member 82 is carried by a shaft 85 which extends through the plate 10a and wall 10 and is equipped with an operating handle 86. A wiper 89 is rotatably supported by the shaft 85 and underlies the pawls 83 and 84 which extend beyond the face of the member 82. Springs 83a and 84a exert tension on the pawls 83 and 84 respectively tending to swing them into contact with the wiper 89. The wiper has an arcuate portion 87 the radius of which is at least equal to but preferably greater than the radius of the shoulders 823 and 824. The arcuate portion 87 is of such length that it cannot engage both pawls simultaneously and is operative to maintain one pawl out of engaging relation to one shoulder while permitting the other pawl to assume engaging relation to the remaining shoulder. The pawls 83 and 84 limit the extent of swinging movement of the rotatable member 82 by co-operation with the shoulders 823' and 824' and by co-operation with the shoulders 823 and 824 control movement of the rotatable member by the handle 86 with consequent control of the operation of the switch. A lever 91 is pivotally supported by the pin 92 and has one end pivotally connected to the wiper to effect oscillation thereof. The other end of the lever 91 is connected by a link 93 with one end of a lever 95 having a pin and slot connection with a shield 94 carried by the officers latch rod (not shown herein) but fully disclosed in Shoup Patent No. 2,241,485.

The rotatable member 82 is provided with a cut-out portion forming a shoulder 82a. A gravity-actuated dog 300 is pivoted at one end to the pin 92 with its remaining end riding on the rotatable member 82 in position to fall into engaging relation to the shoulder 82a when the member 82 is in its extreme position of clockwise movement. The dog 300 is provided with an arm 301, the purpose of which will later become apparent.

A pair of studs 302 are supported by the plate 150c in vertically spaced relation and to each stud is pivotally attached one end of a link 303. The remaining end of each link 303 is pivotally attached to a vertical channel plate 304 so that the channel plate is supported for combined horizontal and vertical movement. The arrangement of the channel plate is such that one vertical edge thereof normally engages the interlock rollers 62 with the plate being maintained in such position by gravity. The arrangement of the links 303 is such that leftward movement of the plate 304 (Fig. 3) results also in upward movement thereof. At the upper end of the plate 304 is provided a horizontal arm 305 which underlies the arm 301. Leftward movement of the plate 304 with concomitant upward movement thereof, is effected by engagement with the plate 304 of a wedge 64 moved leftward by a draw bar 61 upon actuation of the voting spindle 38 attached thereto. Except when moved leftward as just described, the plate 304 remains in its lowermost position. The relation of the arm 305 to the arm 301 is such that when the plate 304 is in its lowermost position with its vertical edge contacting the interlocking rollers 62, the dog 300 is free in so far as the arm 305 is concerned to drop into engaging relation to the shoulder 82a but when the plate 304 is elevated by leftward movement thereof by a wedge 64, the dog is lifted out of engaging relation to the shoulder 82a.

Before a voter enters the voting machine, the various elements are in the positions shown in Figs. 3 and 4. The spindles are locked by the spindle locking and restoring frame which is held in such position by the bar 68 and the pawl 83 prevents sufficient clockwise rotation of the member 82 to actuate the switch 80. Also, the right end of the dog 300 is riding on the curved surface of the member 82 with the arm 301 slightly spaced from the arm 305 and the pawl 84 engaging the shoulder 824'. As the voter enters the machine, the election officer operates his latch rod to lift the link 93 thereby swinging the wiper 89 into position to lift the pawl 83 out of engaging relation to the shoulder 823 (Fig. 5), and releasing the switch for actuation by the voter. The voter then swings the handle 86 to move the rotatable member 82 clockwise from its Fig. 5 position to the position shown in Fig. 6 in which position the pawl 83 engages the shoulder 823' to prevent further clockwise rotation of the member 82. Such movement of the member 82 fully actuates the switch VS to close the circuit energizing the electrical driving mechanism to move the bar 68 leftward and to effect operation of the

other mechanisms necessary to condition the machine for indication by the voter of his vote. The actuation of the wiper **89** to lift the pawl **83** out of engaging relation to the shoulder **823** also sets up a condition permitting the pawl **84** to move into engaging relation to the shoulder **824** following clockwise rotation of the handle **86**, to prevent return counter-clockwise movement of the member **82** to its original position. Also, the dog **300** drops by gravity into engaging relation to the shoulder **82***a* to prevent return movement of the member **82**. The wiper **89** is again actuated either by automatic operation of the officers latch rod as disclosed in patent No. 2,241,485 or by manual operation of such rod by the election officer to lift the pawl **84** out of engaging relation to the shoulder **824**. The dog **300**, however, can be rendered inoperative only by actuation by the voter of a spindle **38** or a personal choice slide **140**. Actuation of either a spindle or a personal choice slide causes leftward movement of a wedge **64** to engage the plate **304** to effect combined leftward and upward movement thereof sufficient to lift the dog **300** out of engaging relation to the shoulder **82***a* through the intermediary of the arms **305** and **301**. However, should the voter actuate one or more spindles and return them to original position, and fail to actuate a personal choice slide, then the plate **304** returns to original position by gravity with corresponding return of the dog **300** to operative position. Only with the dog **300** in elevated position can the voter actuate the member **82** counterclockwise to return it to its original position and actuate the switch VS to energize the electrical operating mechanism for effecting registration of the vote and return of the various parts of the machine to original position. A voter must, therefore, either actuate a spindle **38** and leave it actuated or actuate a personal choice slide. Any actuated personal choice slide wedge is returned to original position by engagement of the plate **201** (movable horizontally with the bar **68**) with the associated arm **160** to restore the arm to its original position. Also, the slide is returned to original by the yoke **150**.

The mechanism above described is embodied in an electrically operated machine, but the invention is also applicable to a manually operated machine. In the co-pending Shoup application, Serial No. 250,478, is illustrated mechanism by which an electrically operated machine may be converted to a manually operated machine. When thus converted, the main cam bar **58** (Fig. 1) is actuated by the manually operated handle shown in such application instead of by the electric drive also shown in said application and controlled by the switch VS. Said handle is attached to the shaft **13** having an arm **12** connected by a link **11** to an arm A carried by the bar **58** all as fully disclosed in said application, Serial No. 250,478. The main cam bar **58** is the same as the main cam bar shown in the Shoup et al. Patent No. 2,054,102 and whether actuated manually or electrically moves from left to right to close the curtains and condition the machine for voting and moves from right to left to open the curtains and record the vote, this bar being a part of the operating mechanism for the vertical bar **68** previously referred to. On this bar is provided a stop **58***b* adapted in the closed curtain position of the cam bar **58** to be engaged by a pivoted dog **300***a* to prevent return movement of the main cam bar to curtain-open position. A link **309***b* is connected at one end to the lower end of the plate **304** and its other end has a lost motion connection with the dog **300***a*. The link **309***b* is of proper length that when the plate **304** is in its lowermost position and the main cam bar **58** is in curtain open position, the dog **300***a* lies in the path of the stop **58***b*, but when the plate **304** is in its uppermost position, the dog **309***a* is lifted out of the path of the stop **58***b*.

With this arrangement, the dog **300***a* drops into the path of the stop **58***b* whenever the main cam bar **58** is moved to curtain closed position and remains in the path of such shoulder until the plate **304** is lifted either by actuation of a spindle or a personal choice slide as previously described. However, should the voter actuate one or more spindles and return them to original position and fail to actuate a personal choice slide, then the plate **304** returns to original position by gravity with corresponding return of the dog **300***a* to operative position. Only with the dog **300***a* in elevated position can the voter actuate the handle to return the main cam bar **58** from curtain closed position to curtain open position.

It is to be understood that various modifications may be made in the structure above described without in any way departing from the spirit of the invention as defined in the appended claims.

I claim:

1. In a voting machine, a row of spindles each of which is operable independently of any remaining spindle, a voter-actuatable member movable between two positions, a latch for holding said member against movement toward one position and biased for movement into member holding position, an interlock strap connected to each spindle and extending substantially at right angles to said spindle and to said row of spindles, a bar extending adjacent said interlock straps parallel to said row of spindles, means supporting said bar for combined longitudinal and transverse movement, and a shoulder on each interlock strap engageable with one edge of said bar upon movement of the strap into spindle actuated position to effect movement of said bar, said bar being engageable with said latch upon longitudinal movement of the bar to move said latch to release said member and being biased to return to original position upon return of all actuated interlock straps to unvoted position.

2. In a voting machine, a vertical column of spindles each of which is operable independently of any remaining spindle, a voter-actuatable member movable between two positions, a gravity actuated latch for holding said member against movement toward one position, a horizontal interlock strap connected to each spindle, a vertical bar, means supporting said bar for combined horizontal and vertical movement, a shoulder on each interlock strap engageable with one vertical edge of said bar upon movement of the interlock strap into spindle actuated position to effect movement of said bar, said bar being engageable with said latch upon vertical movement of the bar to lift said latch to release said member and being gravity biased to return to original position upon return of all actuated interlock straps to original position.

RANSOM F. SHOUP.