

Feb. 2, 1965

C. M. O'NEAL
VOTING MACHINE

3,168,240

Filed April 8, 1963

4 Sheets-Sheet 1

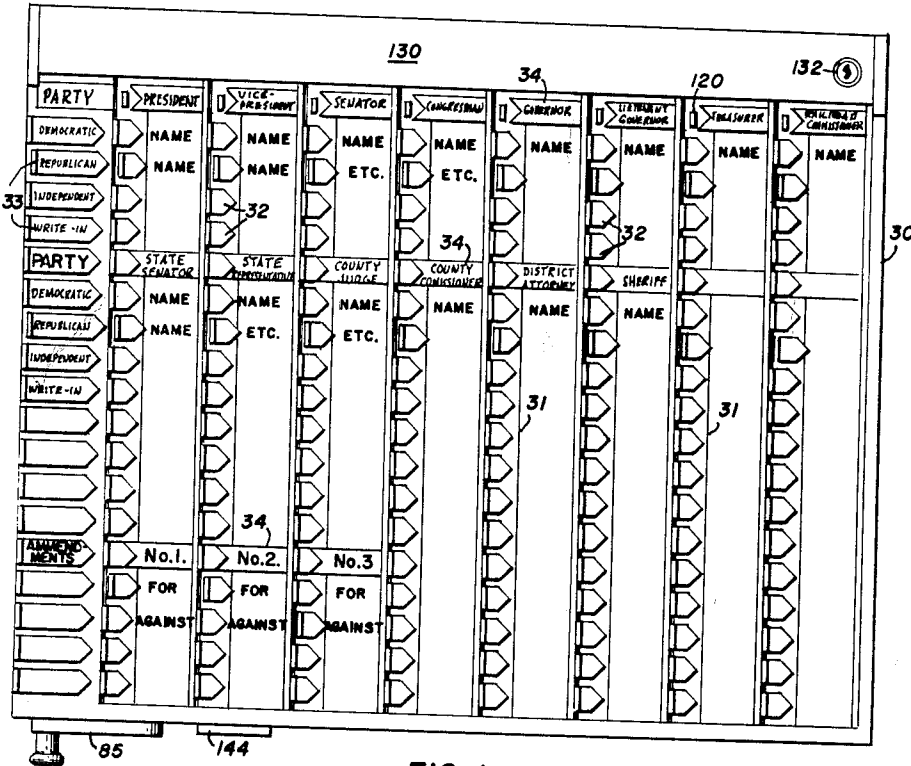


FIG. 1.

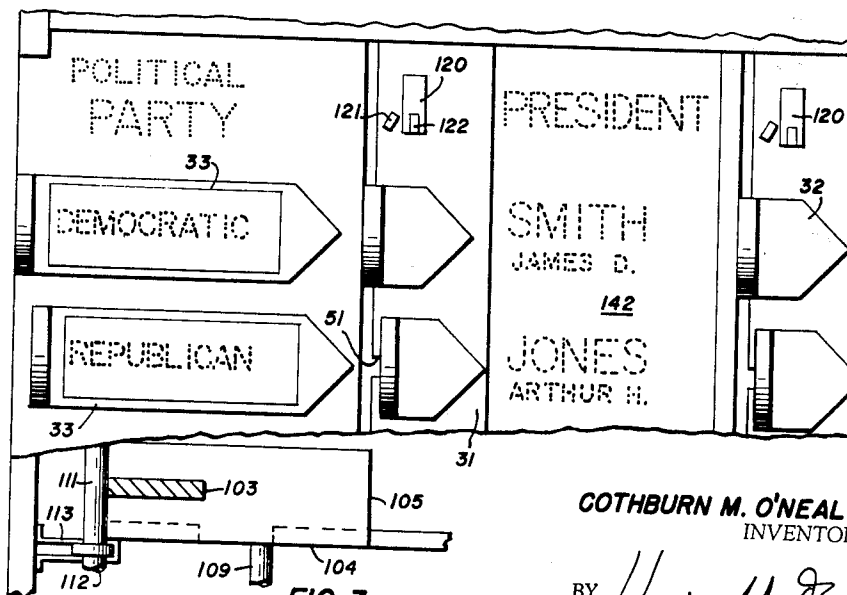


FIG. 3.

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4 Sheets-Sheet 2

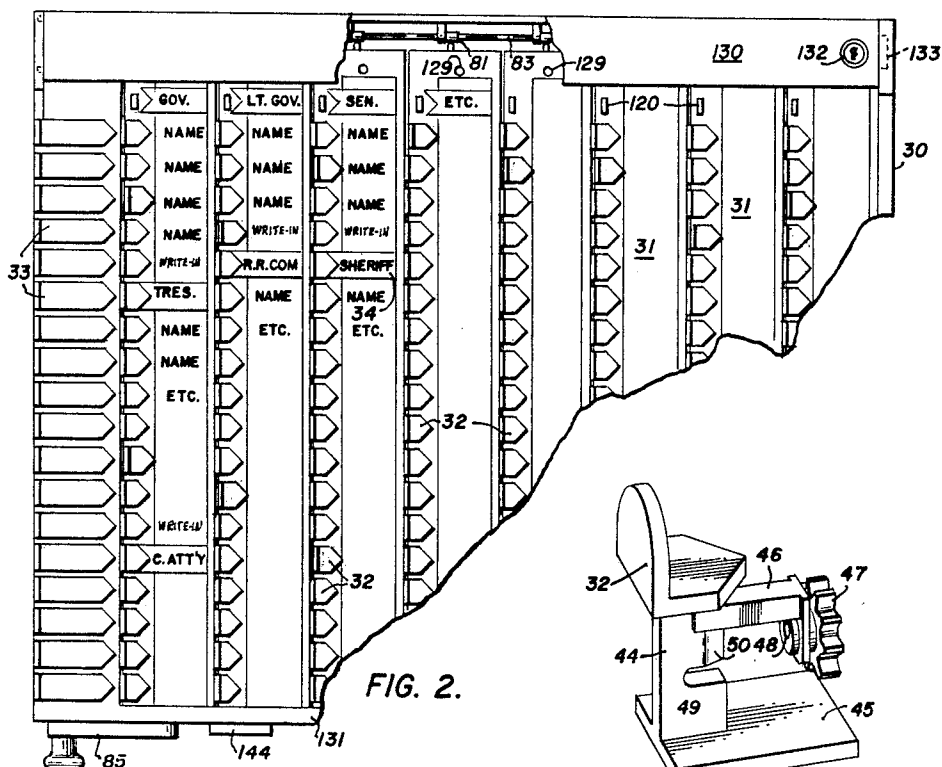


FIG. 2.

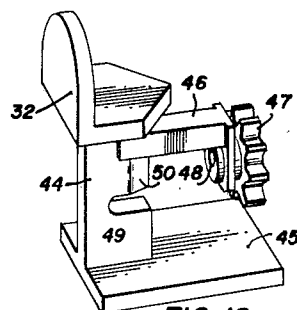


FIG. 12.

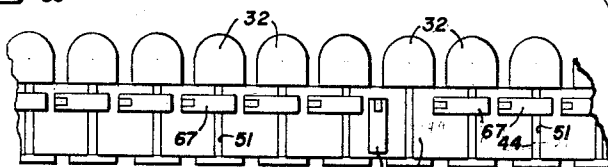


FIG. 10.

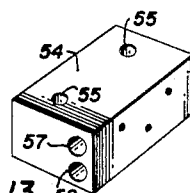


FIG. 13.

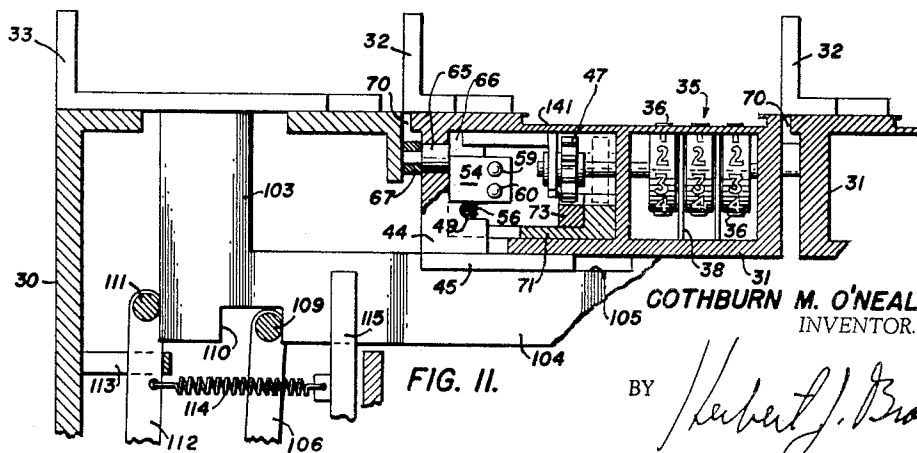


FIG. II.

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4 Sheets-Sheet 3

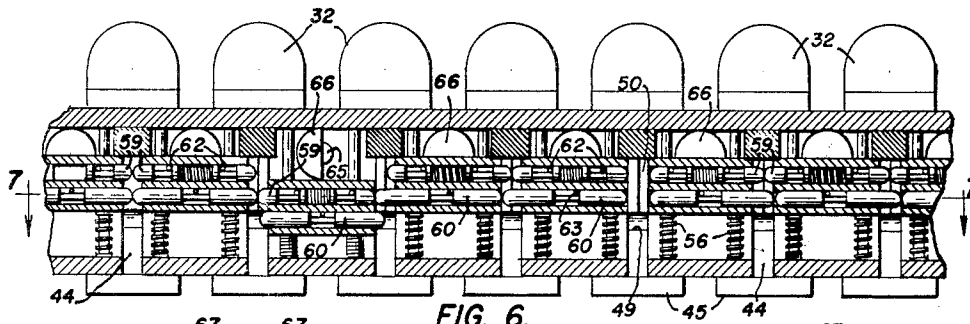


FIG. 6.

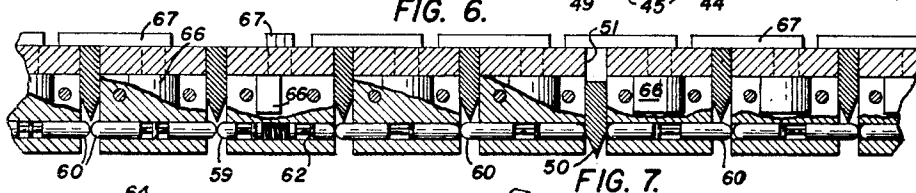


FIG. 7.

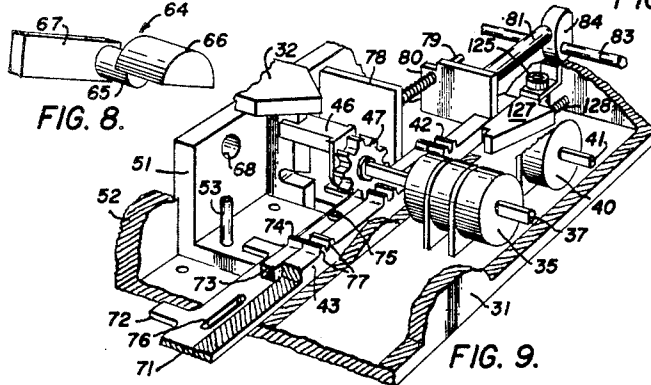


FIG. 8.

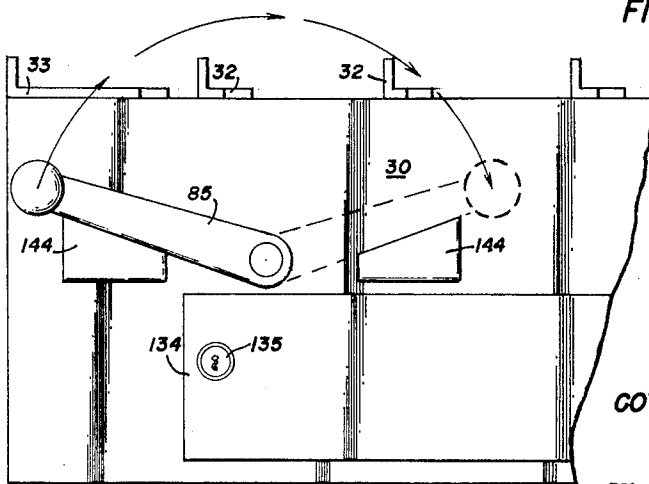
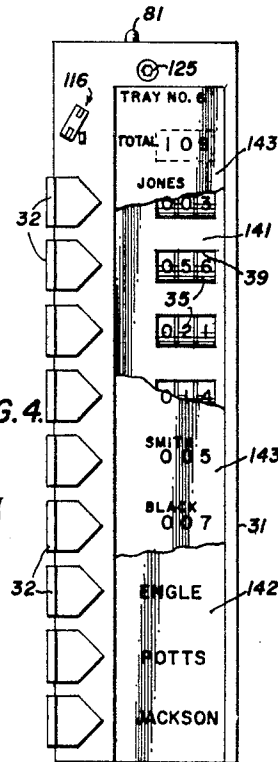


FIG. 9.

FIG. 4.



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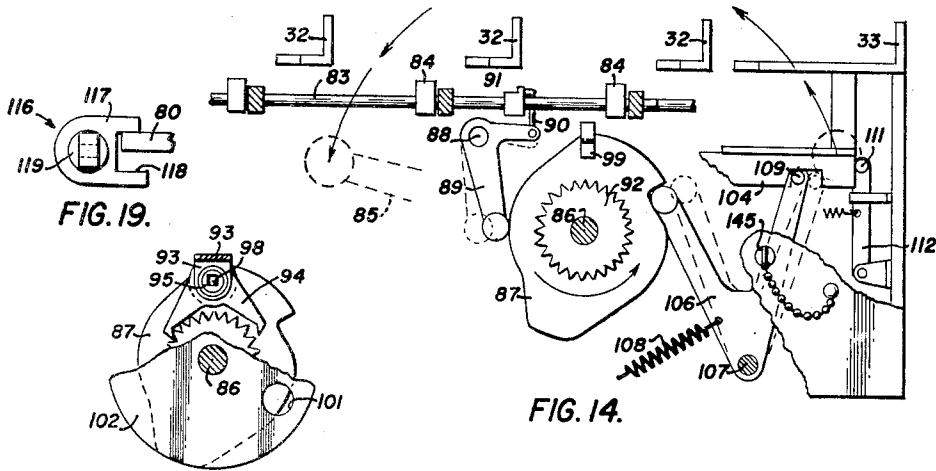


FIG. 15.

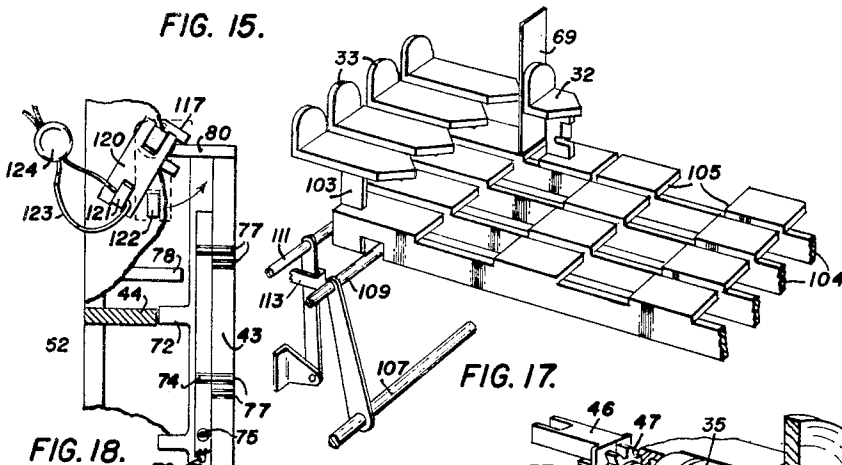


FIG. 17.

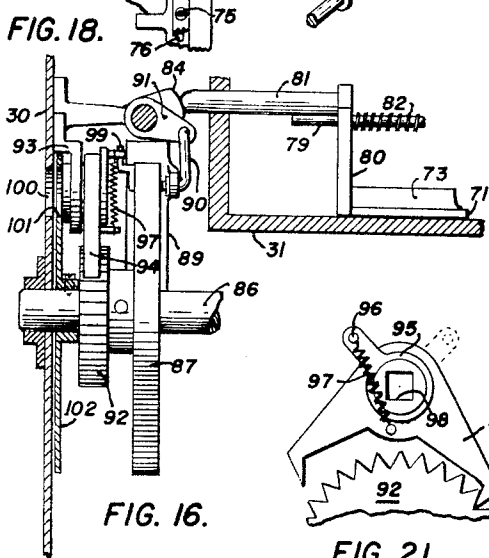


FIG. 16.

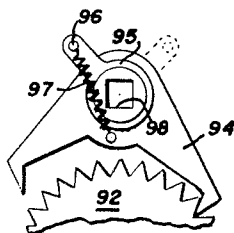


FIG. 21.

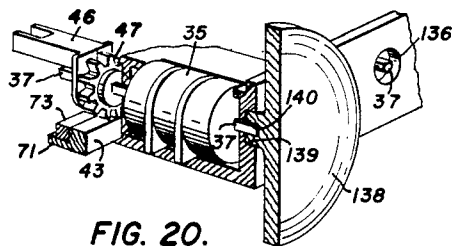


FIG. 20.

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VOTING MACHINE

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Filed Apr. 8, 1963, Ser. No. 271,277

4 Claims. (Cl. 235—54)

This invention relates to voting machines and has for its primary object the provision of a compact, lightweight and relatively inexpensive voting machine construction.

Another object of the invention is to provide a voting machine capable of listing candidates for more than one office in a single column whereby a smaller construction is possible.

A further object of the invention is to provide means for multiple write-in votes where a single column is divided into lists of candidates for more than one office.

A particular object of the invention is to provide locked removable ballot trays whereby only the trays may be impounded, when necessary, without impounding the entire machine.

Another object of the invention is to provide a voting machine having closer mechanical linkage for more positive action and less maintenance.

A further object of the invention is to provide means for conveniently resetting counters after voting has been completed.

A still further object of the invention is to provide a locking and sealing arrangement whereby a column tray cannot be unlocked without breaking the precinct judge's seal and then using a key which is never in the judge's possession.

These and other objects will become apparent from the following description and the accompanying drawings, wherein:

FIGURE 1 is a plan view of a voting machine in accordance with the invention and set up for a general election.

FIGURE 2 is a fragmentary plan view similar to FIGURE 1, but showing the machine set up for a primary election.

FIGURE 3 is an enlarged fragmentary plan view, similar to FIGURE 1, and showing a voting key positioned to effect a straight party vote.

FIGURE 4 is a plan view of a single tray showing fragments of the candidate list and the printed result.

FIGURE 5 is an enlarged fragmentary front elevational view showing the operating crank and write-in ballot receiving drawer.

FIGURE 6 is a vertical sectional view through the vote selector mechanism and showing a series break cam set in actuated position.

FIGURE 7 is a sectional view taken on line 7—7 of FIGURE 6.

FIGURE 8 is a perspective view of one of the series break cams.

FIGURE 9 is a fragmentary perspective of a tray showing the vote selecting mechanism and counters.

FIGURE 10 is a broken elevational view of a tray showing a series break cam in actuated position and opening a slot to receive a write-in ballot.

FIGURE 11 is an enlarged vertical fragmentary sectional view showing the straight ticket key, straight ticket push bar and one of several voting mechanisms actuated thereby.

FIGURE 12 is a perspective view of a voting key.

FIGURE 13 is a perspective view of a plunger block for carrying the series plungers first shown in FIGURES 6 and 7.

FIGURE 14 is a rear elevational view of the voting cam mechanism.

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FIGURE 15 is an elevational view of the cam shown in FIGURE 1 and illustrating a reversible pawl coactive therewith.

FIGURE 16 is an elevational and sectional view taken at a right angle with reference to FIGURE 14.

FIGURE 17 is a fragmentary perspective view of some of the straight ticket push bars and related parts.

FIGURE 18 is a broken plan view of the lock and seal mechanism in locked and sealed position.

FIGURE 19 is a plan view of the stop element of the lock and seal mechanism.

FIGURE 20 is a perspective view showing means for clearing the counters, and

FIGURE 21 is an elevational view of a locking pawl arrangement to prevent unauthorized voting.

The form of the invention shown includes a rectangular case 30 receiving multiple removable trays 31 having individual keys 32 along corresponding sides for voting for various candidates. To the left of the trays 31 as viewed in FIGURE 1, there are other keys 33 for voting for all candidates of a party, that is, voting a "straight ticket." Some of the keys 33 are used as labels only, for example, those marked "Party" and "Amendment." The individual keys 32 opposite the last referred to keys 33 are blocked by thick rigid labels 34 marked to indicate the office the candidates are running for, or the number of an amendment to be voted on. In primary elections all of the straight ticket keys 33 are blocked in inactive positions by means hereinafter described.

Within each tray 31 and opposite each key 32 there is a counter 35, the individual wheels 36 of which are mounted on splined shafts 37 and supported on brackets 38 extending upwardly from the bottom of the tray 31. The counters 35 are conventional and are of the type wherein one complete revolution of a first wheel actuates the adjacent wheel one-tenth of a revolution. The numbers on the wheels 36 are raised and project above the trays 31 through openings 39 for carrying out a printing operation to be described. There is another counter 40 which registers the number of times the machine is operated during any one election. The shafts 41 of the last referred to counters 40 have pinions, not shown, on their inner ends for coaction with gear teeth 42 on sliding racks 43 which extend longitudinally of the trays 31.

A key 32 for voting an individual candidate is shown in detail in FIGURE 12 and includes a depending flat post 44, a flat perpendicular rectangular slide 45 on the lower end thereof, a laterally projecting pinion bearing bracket 46 and a freely rotatable pinion 47 on the extending end of the bearing bracket. An axial opening 48 through the pinion 47 is shaped to slidably engage and turn with the inner end of a previously described splined counter shaft 37 received therein. The post 44 is notched, at 49, in its inner edge to accommodate lower plungers, to be described, and the same edge of the post above the notch is wedged, at 50, and will be hereinafter referred to as the key post wedge. The bottoms and corresponding sides of the trays 31 have vertical and lateral slots 51 (FIGURE 9) for receiving the key posts 44, and the upper surfaces of the slides 45 are adjacent the bottom surfaces of the trays (FIGURE 11). Just inwardly of each tray side 52 there are pairs of upwardly projecting pins 53 between the slots 51 for locating plunger blocks 54 which extend from the edge of one slot to the edge of the other. The plunger blocks 54 (FIGURE 13) have vertical holes 55 therethrough for slidable engagement on the pins 53, and which blocks are normally in a raised position by reason of coiled compression springs 56 around the pins 53 and beneath the blocks. As shown in FIGURES 6, 7 and 13, the blocks 54 have upper and lower

holes 57 and 58 parallel with the lengths of the trays 31 for slidably receiving upper and lower plungers 59 and 60. The ends of the plungers 59 and 60 are round for coaction with certain of the key post wedges 50 in a manner so that the voter can vote for only one candidate for each office, as hereinafter referred to. The upper plungers 59 are compressible lengthwise and are normally longer than the distance between the wedges 50, center to center. The lower plungers 60 are rigid and their lengths are equal to the distances, center to center, between the wedges 50. Each upper plunger 59 is transversely divided and has a coiled compression spring 61 therebetween and both upper 59 and lower plungers have lengths of reduced diameters, not numbered, inwardly of their ends, to accommodate transverse holding pins 62 and 63.

A feature of the invention has to do with providing means whereby candidates for more than one office may be listed in a single column in a voting machine, and the described plunger blocks 54 and series break cams 64 are employed for this purpose. A detail of such cam 64 is illustrated in FIGURE 8 and is comprised of a shaft 65, an eccentrically mounted cam 66 on one end thereof and a lever 67 on the other end. The shafts 65 are journaled in openings 68 in the tray sides 52 and have the levers 67 outwardly of the tray sides and the cams 66 projecting inwardly to engage the upper surfaces of the plunger blocks 54. The levers 67 are arranged relative to the cams 66 so that when a lever is in a down position the corresponding plunger block 56 is moved downwardly to align the compressible upper plunger 59 with the non-compressible lower plungers 60 of adjacent blocks. It is to be noted that the down position of the lever 67 makes possible the insertion of a card write-in ballot 69, FIGURE 17, in slots 70 between trays 31, as best shown in FIGURE 11. As shown in FIGURE 2, the write-in label is at the bottom of the list of candidates for any one office; thus, the operation of a lever 67 downwardly provides a space between such levers, FIGURE 10, whereby the card ballot 69 may be inserted when the corresponding key 32 is operated.

The slidable rack 43 has a flat base portion 71 extending toward the tray side 52, and the extending side of which has finger projections 72 for locking the keys 32 in a manner to be described. Adjacent the movable rack 43 and atop the flat base portion 71 there is a stationary rack 73 having single teeth 74 opposite the posts 44 of the keys 32. Mounting of such rack 73 is carried out by means of pins 75 extending through the rack, slots 76 in the movable base 71, and connection with the bottom of the tray 31. The movable rack 43 has multiple teeth 77 opposite the teeth 74 of the stationary rack 73. As best shown in FIGURES 9 and 18, there is a perpendicular plate 78 on the inner surface of the tray wall 52 near the end thereof, which plate rigidly supports a guide pin 79, and which guide pin extends through a perpendicular plate 80 on the end of the movable base 71. A pin 81 having a round outer end is perpendicularly mounted on the movable plate 80 and extends through the end of the tray 31. A compression spring 82 is mounted around the guide pin 79 between the stationary plate 78 and the movable plate 80.

There is a transverse shaft 83 having its ends journaled in the sides of the case 30, and which shaft has actuating cams 84 for contacting the round ends of the pins 81 and actuating the movable rack 43. All voting trays 31 are acted upon simultaneously by operation of a crank 85 mounted on a shaft 86 extending through the case 30 and perpendicular to the last referred to shaft 83. As best shown in FIGURE 14, there is a main actuating cam 87 mounted on the crankshaft 86, and mounted on a pivot 88 there is a bell crank 89. One end of the bell crank is in contact with the cam 87 and the other end of the bell crank has a link 90 which connects with an arm 91 on the transverse shaft 83. The rise on the main cam 87 is

such that partial rotation of the lever 85 will actuate the transverse shaft 83 to such a degree that the movable rack 83 is moved a distance whereby one unit may be registered on each counter 35 opposite a selected and actuated voting key 32. After voting the lever 85 is locked in a down position by means of a ratchet and pawl arrangement such as illustrated in FIGURES 14 and 21. On the crankshaft 86 there is a ratchet 92 and swingably mounted on a bracket 93 supported by the case 30 there is a double pawl 94 for coaction with the ratchet. The bracket 93 additionally supports a collar 95 rotatably mounted on one side of the pawl and has a projection 96 extending upwardly therefrom for engaging one end of a tension spring 97, and the lower end of which spring is connected with the pawl 94 between the legs thereof. The collar has a square or other shaped socket or key way 98 through its axial center. It is to be noted that the arrangement shown in FIGURE 21 is the reverse side of the same arrangement illustrated in FIGURE 15. The main actuating cam 87 has a projection 99 for contacting the projection 96 on the collar. In the arrangement shown in FIGURE 15 the lever 85 may be actuated in a direction to register votes on the counters 35 but cannot be returned to the starting position until a key or the like is inserted in the socket 98 so as to change the action of the pawl 94. Access to the socket 98 is through an opening 100 in the case 30 and an opening 101 in a disk 102 mounted on the shaft 86, which latter opening registers with the first opening only when the lever 85 is at the end of the voting stroke. After resetting the pawl 94 with the key the lever is returned to its starting position, at the end of which operation the projection 99 on the main cam 87 contacts the projection 96 on the collar 95 and resets the pawl for another voting operation.

As best shown in FIGURES 11 and 17, the straight ticket keys 33 are mounted, by means of vertical connections 103, on the ends of bars 104 which slidably extend beneath the voting trays 31. The upper surfaces of the bars 104 are recessed, at 105, to receive the rectangular slides 45 of the individual candidate keys 32. The recesses 105 are of sufficient length that the individual keys 32 may be operated independently of the straight ticket keys 33, but actuation of the latter moves all individual keys above the bar 104 acted on. Operation of the crank 85 actuates the counters 35 through the medium of the main cam 87 in the manner previously described. Referring now to FIGURE 14, there is a V-shaped lever 106 pivotally mounted, at 107, in a plane parallel with the main cam 87 and one arm of which lever is held in contact with said cam by means of a tension spring 108. The remaining arm of the lever 106 supports a longitudinal rod 109 loosely received in notches 110 in the lower edges of the transverse bars 104. The shape of the main cam 87 is such that the longitudinal bar 109 will return all keys 32, 33, to their original positions upon return of the operating lever 85. During the return of the bars 104 there is a moment of dwell, also by reason of the shape of the main cam, whereby there is sufficient time for write-in ballots to drop through the slots 70 between the voting trays 31. Alignment of the keys 32, 33, is assured after their return by means of another longitudinal bar 111 mounted on vertical pivoted arms 112 having bracket stops 113 on the inner wall of the case 20. Tension springs 114 mounted on vertical posts 115 normally move the longitudinal rod 111 inwardly to the limit of the stops 113, and align the outer edges of the vertical connections 103 of the transverse bars 104.

Means for locking the individual trays 31 after each election by the precinct judge are shown in FIGURES 18 and 19. The lock 116 shown in FIGURE 19 is comprised of a plate 117 having a recess 118 in one side and a short shaft 119 projecting upwardly from the plate. The shaft 119 is journaled in the upper surface of the tray 31 and extends thereabove where it is shoul-

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dered to pivotally receive an end of a locking lever 120. The extending end of the lever 120 is notched to engage projections, one of which is designated as the locking lug 121 and the other as the operating lug 122. The locking lug 121 and the end of the lever 120 are line drilled, not numbered, to receive a wire 123 which is sealed, 124, by the judge. A side edge of the movable rack plate 80 is received in the recess 118 of the locking plate 117, and it is to be noted that the width of the recess 118 is sufficient to permit operation of the movable rack 43 during the voting operation but close enough to additionally move and lock the rack when the locking arm 120 is engaged on the locking lug 121. At such time the finger projections 72 on the rack base 71 are aligned with the posts 44 of the individual keys 32. As shown in FIGURE 9, there are further and automatic locking means which can be unlocked, say, at a county courthouse by a key which is never in the possession of the precinct judge. Such additional locking means is comprised of a perpendicular shaft 125 journaled in the bottom of the tray 31 and in a bracket 126 mounted in the end of the tray. A notched arm 127 extends from the shaft 125 and engages an edge of the movable plate 80 by reason of the action of a compression spring 128 mounted between the tray end and said arm. The upper end of the shaft 125 has a socket or key way which is accessible through a hole 129 in the top of the tray, and which hole is normally covered and locked by a transverse panel 130. A flange 131 integral with the lower upper edge of the case 30 as viewed in FIGURES 1 and 2, engages the lower ends of the trays 31, whereas the referred to panel 130 engages the upper ends of the trays. A lock 132 having a bolt 133 provides for the removal of the panel 130.

A drawer 134 having a lock 135 is provided in the case 30 for receiving the write-in ballots 69. Not shown, the drawer 134 may have partitions for segregating the write-in ballots 69 according to offices indicated on the upper surfaces of the trays 31.

Referring now to FIGURE 20, means are shown for resetting the counters 35. Holes 136 are provided in the sides of the trays opposite the ends of the splined counter shafts 37. After the trays 31 are removed from the case 30, a spinner 138 having a cylindrical box 139 and key socket 140, is placed on the counter shafts 37 and rotated until zero readings on the counters 35 are obtained.

The present invention may include the printing of ballots for those jurisdictions requiring permanent original records. As shown in FIGURES 4 and 11, the top of each tray is recessed in the form of a wide flat channel 141 to receive an upper thin card 142 having the list of candidates printed thereon and a thin sheet of paper 143 therebeneath. A sheet of carbon paper, not shown, is inserted between the card 142 and the paper 143, or the back of the card 142 may be coated with a pressure responsive transfer medium. Each channel 141 may have raised numbers and letters for identifying the particular tray. The letters on the counter wheels 36 project through the openings 39, previously described. Thus, by running a roller, under pressure, over the upper surface of the card 142, a record is printed on the paper 143 therebeneath.

Before an election, and before placing and locking the trays 31 in the case 30, certain levers 67 of the series break cams 64 are turned down to segregate the names of candidates for different offices in one column. Such action moves corresponding plunger blocks 54 downwardly and renders the lower rigid plunger inactive. See FIGURE 6. This also makes write-in voting possible as described in the foregoing. The upper compressible plunger 59 is then aligned with adjacent rigid plungers 60, and by reason of the locations of the holding pins 62 of the compressible plungers, only one key

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32 under each office listed may be operated; that is, only one key post wedge 50 may enter between adjacent rigid plungers 60. Manually actuating key 32 of a group moves the pinion 47 into engagement with the movable rack 43, and after all candidates have been selected, the operating crank 85 is moved in one direction between stops 144 on the case 30, and through the action of the main cam 87, the movement of the transverse shaft 83 and cams 84 thereon, the movable racks 43 are moved a distance to register one integer on each of the counters 35 in accordance with the selected keys 32. After the crank 85 has been moved as far as it will go, it is locked in that position until the pawl 94 is unlocked by the precinct officer authorized to do so. Releasing the pawl 94 was described in connection with FIGURES 15 and 21.

If a straight ticket is to be voted, the corresponding straight ticket key 33 is manually actuated with the result that all individual keys 32 in line therewith are actuated at the same time by reason of the movement of the transverse bar 104. In a primary election where straight tickets are not voted the straight ticket keys 33 are locked by a pin 145 extending through the case 30 and engaging the double arm lever 106, and the longitudinal rod 109 holds the transverse bars 104 in inactive position as shown by dotted lines in FIGURE 14.

The invention is not limited to the exemplary construction herein shown and described, but may be made in various ways within the scope of the appended claims.

What is claimed is:

1. In a voting machine including a case, multiple elongate trays received in said case in side-by-side relation, laterally movable individual keys mounted in corresponding sides of said trays, a longitudinal movable rack within each said tray, a counter within each said tray opposite each said key, means carried by said keys operatively engaging said counters with said racks, plunger blocks between each said key and movable perpendicular to the direction of movement thereof, each said block receiving a compressible plunger therethrough and a rigid plunger extending therethrough, both said plungers being parallel with each other and slidably positioned transversely of the movement of said keys, means limiting the movement of said compressible plungers and rigid plungers, said compressible and rigid plungers being normally in respective alignment, means selectively moving at least one of said blocks to align the compressible plunger thereof with adjacent said rigid plungers, and wedges carried by said keys for movement between two of said blocks and the rigid and compressible plungers carried thereby.

2. In a voting machine as defined in claim 1, the construction wherein said blocks are supported in their normal position by spring means, cams journaled in said trays and positioned to align said compressible plungers with adjoining said rigid plungers, and levers on said cams outwardly of said trays and normally extending in the direction of the length thereof, and write-in ballot receiving slots between said trays above said levers.

3. In a voting machine as defined in claim 1, means moving said movable rack beyond voting position, and projecting fingers carried by said movable rack and arranged to contact said keys when said rack is moved beyond voting position.

4. In a voting machine, an elongate tray, laterally movable keys mounted along one side of said tray, a longitudinally movable rack within said tray, counters within said tray opposite said keys, means carried by said keys operatively engaging said counters with said rack, plunger blocks between each said key and movable perpendicularly to the direction of movement thereof, each said block receiving a compressible plunger therethrough and a rigid plunger extending therethrough, both said plungers being parallel with each other and slid-

ably positioned transversely of the movement of said keys, means limiting the movement of said compressible plungers and rigid plungers, said compressible and rigid plungers being normally in respective alignment, means selectively moving at least one of said blocks to align the compressible plunger thereof with adjacent said rigid plungers, and wedges carried by said keys for movement between two of said blocks and the rigid and compressible plungers carried thereby.

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