C. C. ABBOTT.

LOCKING MECHANISM FOR VOTING MACHINES.

APPLICATION FILED JULY 28, 1909.

954,771.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

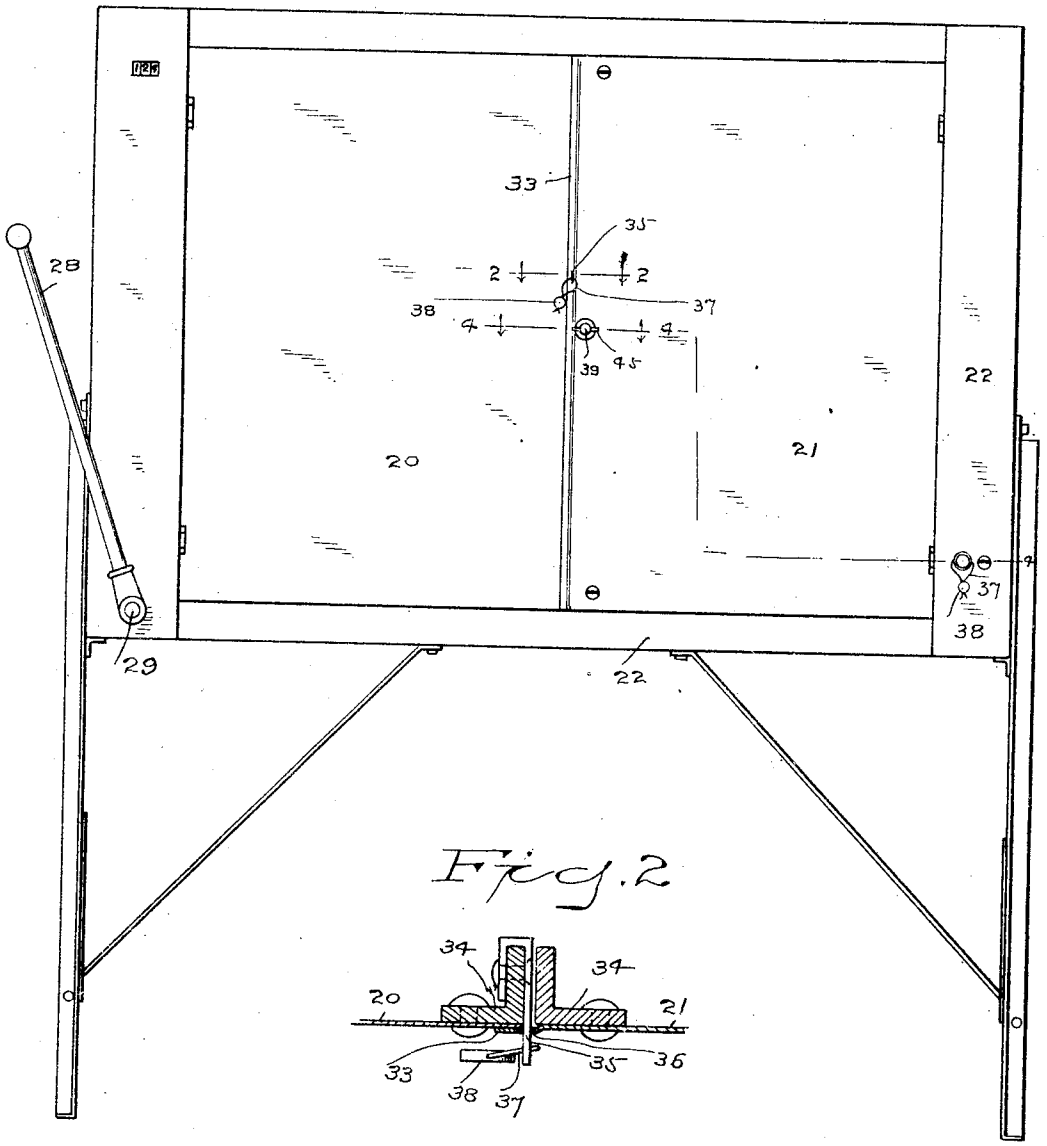
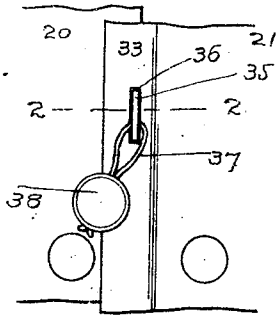


Fig. 2.

Fig. 3.



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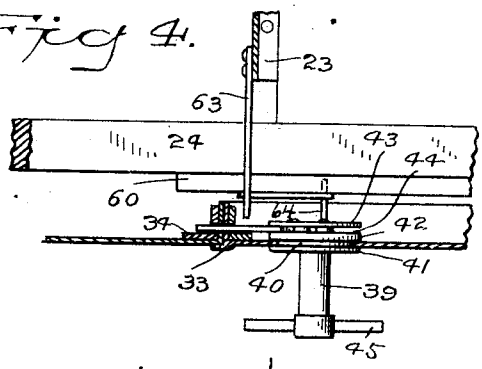
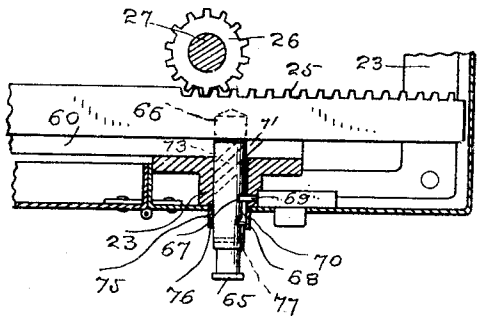
3 SHEETS—SHEET 2.

Fig 4.





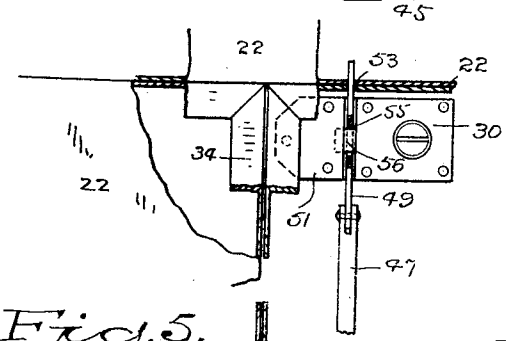


Fig.5.

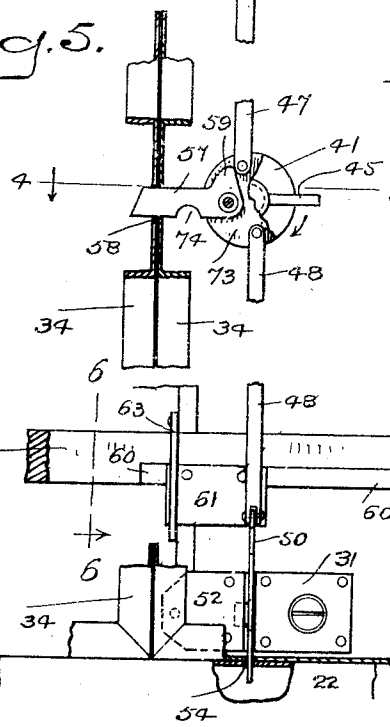
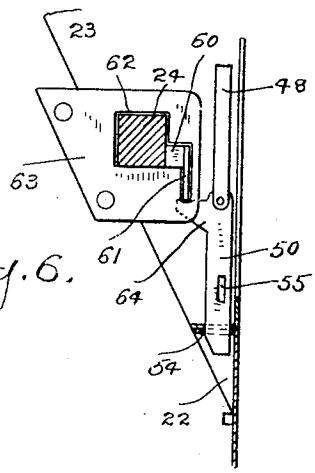
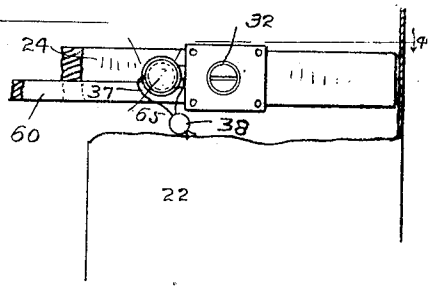


Fig.6.





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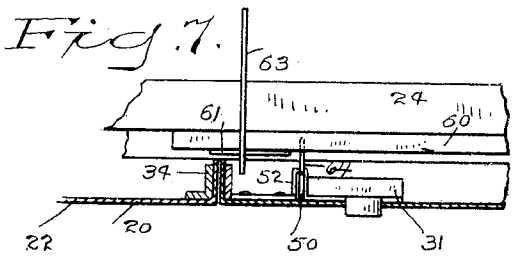
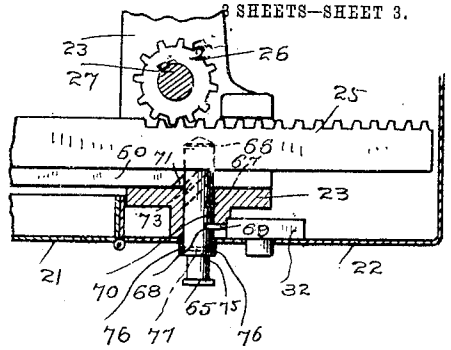
954,771. Patented Apr. 12, 1910.

3 SHEETS—SHEET 3.

Fig. 7.





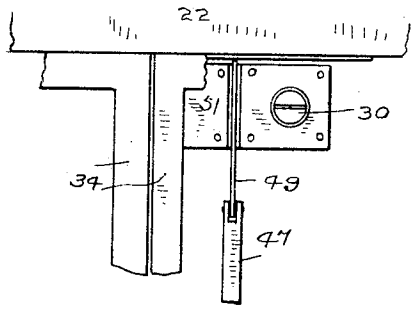


Fig. 9.

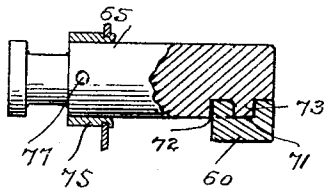
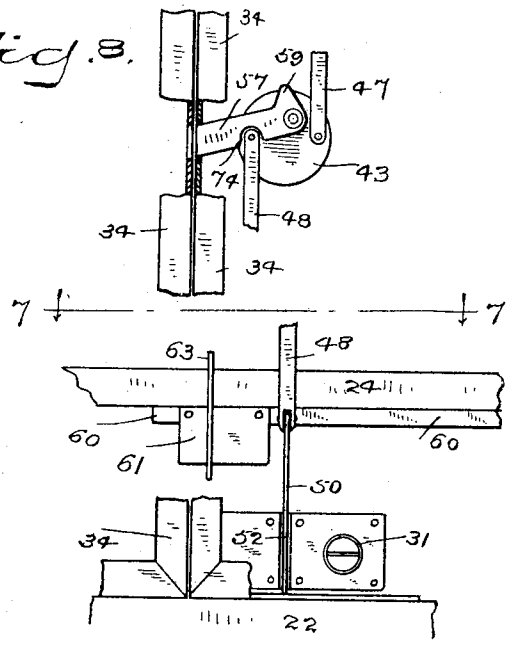


Fig. 8.



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UNITED STATES PATENT OFFICE.

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LOCKING MECHANISM FOR VOTING-MACHINES.

954,771. Specification of Letters Patent. **Patented Apr. 12, 1910.**

Application filed July 28, 1909. Serial No. 509,992.

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 Locking Mechanism for Voting-Machines, of which the following is a specification.

This invention has for its object to provide locking mechanism for voting machines which shall render it impossible for any person to open the doors of the machine after an election and obtain access to the mechanism until unlocking operations have been performed by three persons,—for example, officials of two political parties and the moderator,—each having a key differing from each of the other keys and powerless against any lock except the one to which it belongs, and which shall render it impossible for the doors of the machine to be opened even by the three persons holding the keys, acting in conjunction, until the main or operating bar of the machine has been locked by the moderator thereby locking all the operative mechanism, the closing of the doors, moreover, being impossible until after the operating bar has been locked.

With these and other objects in view I have devised the novel 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 various parts.

Figure 1 is a rear elevation of a voting machine, for example, the Triumph voting machine, the doors being in the locked position as in use; Fig. 2 a detail sectional view on an enlarged scale on the line 2—2 in Fig. 1 looking in the direction of the arrows, showing the application of a seal to the machine. Fig. 3 a detail elevation corresponding with Fig. 2; Fig. 4 a section on an enlarged scale on the line 4—4 in Figs. 1 and 5 looking in the direction of the arrows, showing all of the locking mechanism below the locking shaft in plan, the main operating bar being unlocked and the doors locked as when the machine is in use; Fig. 5 an elevation of the locking mechanism in the locked position; Fig. 6 a detail elevation, the operating bar being in section on the line 6—6 in Fig. 5 looking in the direction of the arrow; Fig. 7 a section on the line 7—7 in Fig. 8 looking in the direction of the arrows, the lower rod being removed, showing the doors unlocked so that they may be opened as at the completion of an election and showing the operating bar locked; Fig. 8 an elevation corresponding with Fig. 5 showing the locking mechanism in the unlocked position; and Fig. 9 is a detail view partly in section and partly in elevation illustrating the tongue and groove connection of the push bolt with the slide bar.

20 denotes the left door, 21 the right door, 22 casings surrounding the doors, 23 framework of the machine and 24 the main or operating bar of the machine. The doors are hinged to the casing and framework in any suitable manner. The operating bar is provided with racks 25 (one only being shown) each meshing with a pinion 26 on a vertical shaft 27. This shaft is actuated by means of an operating lever 28 on operating shaft 29, the connections between the operating shaft and the operating bar and between the vertical shafts and the voting mechanism, independent voting mechanism and counting mechanism not being shown as they form no portion of the present invention which relates only to the locking of the operating bar and the doors.

30 denotes the upper lock, 31 the lower lock and 32 the bar lock which also dogs the door locking mechanism as will presently be described. The locking mechanism is all carried by the right door which is provided with a flange 33 which overlaps the edge of the left door and retains it in the locked position. Locks 30 and 31 are carried by the right door and lock 32 is seated in the casing at the right of the right door. On the inner sides of the doors are angle strips 34. The angle strip upon the left door carries a staple 35 which is rigidly secured thereto and passes through a slot 36 in flange 33 in the locking position, and may receive a wire 37 to which a seal 38 is attached which renders tampering with the machine impossible without breaking the seal even by those in possession of the keys (see Figs. 1, 2 and 3).

39 denotes the locking shaft which is mounted to oscillate in the right door near its left edge and at approximately its mid height. This shaft carries a hub 40 which is journaled in the door and is provided on its outer face with a guard disk 41 of greater diameter than the hub and covering the

opening in the door. Upon the inner side of the door and riveted or otherwise rigidly secured to the hub is a disk 42 and rigidly secured to disk 42 is an inner disk 43. Disks 42 and 43 are secured together by shouldered rivets or with spacing blocks between them (not shown) so as to leave a space indicated by 44 between the disks.

45 denotes a cross pin in the locking shaft for convenience in operation.

47 and 48 denote rods pivoted between disks 42 and 43 and extending upward and downward respectively.

49 and 50 denote locking bolts loosely connected to rods 47 and 48 and lying in U-shaped upper and lower catch plates 51 and 52 and adapted to pass through slots 53 and 54 in the upper and lower walls of the door and to engage the casing as clearly shown in Fig. 5. These locking bolts are provided with slots 55 through which the bolts 56 of locks 30 and 31 pass in the locking position.

57 denotes a center locking bolt pivoted between disks 42 and 43 which is adapted to pass through slots 58 in angle strips 34 upon the doors to lock said doors at the center as clearly shown in Fig. 5. Locking bolt 57 is provided with a lug 59 which is adapted to be engaged by the lower end of rod 47 as clearly shown in Fig. 5, said lug serving as a stop when engaged by rod 47 to limit the oscillation of the locking shaft and the disks when turned to the locking position.

74 denotes a recess in the underside of locking bolt 57 which is adapted to be engaged by the end of rod 48 when the parts are thrown to the unlocking position, as clearly shown in Fig. 8, the wall of this recess when engaged by rod 48, serving as a stop to limit the movement of the locking shaft and the disks when turned to the unlocking position. It will be noted in Fig. 5 that in the locking position rods 47 and 48 are thrown slightly past the center. This is in order to render it impossible to retract the upper and lower locking bolts by jarring or vibration, should locks 30 and 31 be unlocked, and leaving it, moreover, impossible to open the doors until lock 32 has been unlocked and the operating bar locked, as will presently be explained.

60 denotes a slide bar which lies parallel with the operating bar and has rigidly secured thereto a downwardly extending plate 61. The operating bar, the slide bar and plate 61 are adapted to reciprocate in a correspondingly shaped slot 62 in a plate 63 which is rigidly secured to the framework of the machine. Lower locking bolt 50 is provided with an arm 64 which extends under plate 61 when the latter is in the locking position, that is to say, when the slide bar is in the locking position plate 61 lies in the path of movement of arm 64 and obstructs or dogs the bolt so that the locking shaft cannot be operated to withdraw locking bolts 49, 50 and 57 until bar lock 32 has been unlocked and the operating bar locked even should locks 30 and 31 be unlocked. Plate 61 and arm 64, moreover, act to prevent the closing of the doors to the locking position when the operating bar is unlocked as in the unlocked position of the locking bolts, the arm will strike the plate and prevent the closing of the doors.

65 denotes a push bolt which is adapted to reciprocate in the casing and framework contiguous to lock 32, it being shown in the present instance between said lock and the right edge of the right door. This bolt has longitudinal movement only in the casing and framework and is adapted to engage a socket 66 in the operating bar to lock said bar against movement. The push bolt is provided with inner and outer slots 67 and 68 which are adapted to be engaged by the bolt 69 of lock 32 to lock the push bolt in either the locking or the unlocking position. Between these slots is a surface 70 which is lower than the surface of the bolt. The purpose of this is to retain the push bolt in place, the outer walls of the slots serving as stops to limit the movement of the push bolt when pushed in or withdrawn. This for the reason that bolt 69 of lock 32 when withdrawn just clears surface 70, but does not clear the end walls of the slots. The push bolt is connected to the slide bar so as to reciprocate said bar transversely to the bolt by means of an oblique tongue and groove connection.

71 denotes an oblique groove in the slide bar, and 72 a recess in the push bolt which receives the bar and is provided with a tongue 73 which engages the groove in the bar.

75 denotes a sleeve projecting from casing 22 and inclosing the push bolt.

76 denotes holes in opposite sides of the sleeve which register with a hole 77 in the push bolt when the latter is in the locking position. A wire 37 may be passed through these holes and a seal 38 affixed thereto by the moderator or other official in charge of the machine, either during an election or between elections, which leaves the operating bar locked and renders it impossible for any one to tamper with any portion of the operative mechanism of the machine without breaking the seal.

The special form of locks used is of course immaterial so far as the principle of the invention is concerned. I have simply indicated therefore ordinary cylinder locks in the drawing. It is important, however, that bar lock 32 should be so constructed as to permit the withdrawal of the key (not shown) only when the bolt is thrown, thus insuring that if the moderator or other official in charge attends to his duty, the bolt

of lock 32 will always be thrown which can only be when the push bolt is at either its locking or retracted position, thus insuring that the doors cannot be opened until the operating bar is locked. This for the reason that unless the parts are in the position they occupy when the operating bar is unlocked, plate 63 will obstruct arm 64 when the right door is swung to the locking position, and thus prevent the closing of the doors. In order to close the doors, therefore, it is necessary to lock the operating bar.

The operation is briefly as follows: Before an election the officials of different political parties holding the keys to locks 30 and 31 lock these locks, and the moderator or other official in charge of the election unlocks lock 32 and releases the push bolt, which is then retracted releasing the operating bar and leaving the voting mechanism (not shown) free to be operated in the usual manner. The moderator then locks the push bolt in the retracted position. After the election is closed and it is required to tabulate the votes, the officials of different political parties having the keys of locks 30 and 31 unlock these locks and the moderator or other official in charge of the election unlocks lock 32, pushes the push bolt to the locking position and locks it, leaving the locking mechanism controlled by the locking shaft free to be operated. It should be understood, however, that the locking shaft cannot be operated until the push bolt has been moved to the locking position so that neither the voting nor the counting mechanisms can be tampered with in any way after the machine is opened and the moderator cannot withdraw his key from lock 32 until the push bolt is moved inward to the locking position and the bolt of lock 32 is fully thrown which locks the push bolt in the locking position and consequently locks all the mechanisms of the machine.

Having thus described my invention, I claim:—

1. The combination with the operating bar and the doors of a voting machine, of mechanism for locking the doors when in the closed position and simultaneously unlocking the operating bar.

2. The combination with the operating bar and the doors of a voting machine, of means for locking the doors, means for locking the operating bar against operation and means for locking the door locking means against operation until the operating bar is locked.

3. The combination with the operating bar and the doors of a voting machine, of means for locking the doors, means for locking the operating bar and means operated by the bar locking means for locking the door locking means when the bar is unlocked and for unlocking the door locking means when the bar is locked.

4. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, a push bolt for locking the operating bar and means controlled by the push bolt for locking the locking bolts when the bar is unlocked and for unlocking the locking bolts when the bar is locked.

5. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, locks having bolts for locking the locking bolts, a push bolt for locking the operating bar, means controlled by the push bolt for locking the locking bolts when the bar is unlocked and vice versa and a lock having a bolt for locking the push bolt in its locking and unlocking positions.

6. The combination with the operating bar and the doors of a voting machine, of upper and lower locking bolts for said doors, locks controlled by different keys and having bolts for locking the locking bolts, a push bolt for locking the operating bar, means controlled by the push bolt for locking the locking bolts when the bar is unlocked and vice versa independently of the locks of the bolts and a lock controlled by a different key and having a bolt for locking the push bolt in its locking and unlocking positions.

7. The combination with the operating bar and the doors of a voting machine, of a locking bolt for said doors having an arm, a push bolt for locking the operating bar, a slide bolt reciprocated by the push bolt and a plate carried by the slide bar and adapted to be engaged by the arm of the locking bolt to lock said bolt when the push bolt is retracted and the operating bar is unlocked and to release said arm when the operating bar is locked by the push bolt.

8. The combination with the operating bar and the doors of a voting machine, of a locking bolt for said doors, a push bolt for locking the operating bar, a slide bar reciprocated by the push bolt and a plate carried by the slide bar, and obstructing the locking bolt when the push bolt is retracted and the operating bar is unlocked.

9. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, means for operating said bolts simultaneously, a push bolt for locking the operating bar and means controlled by the push bolt for obstructing the locking bolts when the push bolt is retracted and the operating bar is unlocked.

10. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, means for operating said bolts simultaneously, a push bolt

for locking the operating bar, a slide bar, oblique tongue and groove connections between the push bolt and the slide bar and a plate carried by the slide bar for obstructing one of the locking bolts when said bolts are in the locking position and the push bolt is retracted leaving the operating bar unlocked.

11. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, means for operating said bolts simultaneously, a push bolt for locking the operating bar, means controlled by the push bolt for obstructing the locking bolts when the push bolt is retracted, and a lock having a bolt for locking the push bolt.

12. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, means for operating said bolts simultaneously, a push bolt for locking the operating bar which is provided with slots and a low surface between said slots, means controlled by the push bolt for obstructing the locking bolt when the push bolt is retracted and a lock having a bolt which in the retracted position permits the low surface of the push bolt to pass and stops said bolt by engagement with the end walls of the slots and is adapted to enter said slots to lock said bolt in the locking and unlocking positions.

13. The combination with the doors of a voting machine and an operating bar, of upper and lower locking bolts for said doors, means for operating said locking bolts simultaneously, a push bolt for locking the operating bar and a slide bar operated by the push bolt which locks the locking bolts when the push bolt is retracted.

14. The combination with the doors of a voting machine and an operating bar, of upper and lower locking bolts for said doors, means for operating said locking bolts simultaneously, a push bolt for locking the operating bar, a slide bar operated by the push bolt which locks the locking bolts when the push bolt is retracted and locks controlled by different keys and having bolts which lock the upper and lower locking bolts and the push bolt respectively.

15. The combination with the doors of a voting machine and an operating bar, of upper and lower locking bolts for said doors, means for operating said locking bolts simultaneously, a push bolt for locking the operating bar, a slide bar having a tongue and groove connection with the push bolt and carrying a plate which obstructs the movement of the lower locking bolt when the push bolt is retracted and releases said locking bolt when the operating bar is locked by the push bolt.

16. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar and means controlled by the push bolt for dogging the door locking means when the operating bar is unlocked.

17. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar, a slide bar controlled by the push bolt and a plate carried by the slide bar for dogging the door locking mechanism when the operating bar is unlocked.

18. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar, means controlled by the push bolt for dogging the door locking means and means for locking the push bolt.

19. The combination with the doors and operating bar of a voting machine, of means for locking the doors, means for locking the operating bar and means for dogging the door locking means when the operating bar is unlocked.

20. The combination with the doors and operating bar of a voting machine, of means for locking the doors controlled by two different keys, means for locking the operating bar controlled by another key and means for dogging the door locking means when the operating bar is unlocked.

21. The combination with the operating bar and the doors of a voting machine, of bolts for locking the doors, means for controlling said bolts, means for locking said bolts controlled by different keys, a push bolt for locking the operating bar, means for locking the push bolt controlled by another key and means controlled by the push bolt for dogging the locking bolts independently of the locking means.

22. The combination with the operating bar and the doors of a voting machine, of a locking bolt for said doors having an arm, a push bolt for locking the operating bar and a plate controlled by the push bolt which is engaged by the arm on the locking bolt to prevent the closing of the doors when the locking bolt is retracted.

23. The combination with the operating bar and the doors of a voting machine, of locking bolts for said doors, a locking shaft and connections for controlling the locking bolts, a push bolt for locking the operating bar, locks controlled by different keys for locking the locking bolts and the operating bar and connections operated by the push bolt for dogging one of the locking bolts when the operating bar is unlocked.

24. The combination with the operating bar and the doors of a voting machine, of upper, lower and center locking bolts for said doors, a locking shaft and connections

for controlling the locking bolts simultaneously, a push bolt for locking the operating bar, locks controlled by three different keys for locking the upper and lower locking bolts and the operating bar and connections operated by the push bolt for dogging the lower locking bolt when the operating bar is unlocked.

25. The combination with the operating bar and the doors of a voting machine, of upper, lower and center locking bolts for said doors, said lower locking bolt having an arm, a locking shaft and connections for controlling the locking bolts simultaneously, a push bolt for locking the operating bar, locks controlled by three different keys for locking the upper and lower locking bolts and the operating bar and a slide bar operated by the push bolt and having a plate which engages the arm of the lower bolt and dogs the locking bolts when the operating bar is unlocked.

26. The combination with the operating bar and the doors of a voting machine, of upper and lower locking bolts for said doors, said lower bolt having an arm, means for operating said bolts simultaneously, a push bolt for locking the operating bar, locks controlled by three different keys for locking the locking bolts and the operating bar, a slide bar reciprocated by the push bolts and a plate carried by the slide bar which dogs the lower locking bar when the operating bar is unlocked and is engaged by the arm of the lower locking bolt to prevent the closing of the doors when said bolt is retracted.

27. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar and means for sealing the push bolt in the locking position.

28. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar which is provided with a hole and a sleeve inclosing the push bolt and provided with holes which register with the hole in the bolt when the latter is in the locking position to provide for sealing the bolt.

29. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar which is provided with a hole, a sleeve inclosing the push bolt and having holes registering with the holes in the bolt when the latter is in the locking position and adapted to receive a seal wire and means controlled by the push bolt for dogging the door locking means when the operating bar is unlocked.

30. The combination with the doors and operating bar of a voting machine, of means for locking the doors, a push bolt for locking the operating bar, a sleeve inclosing the push bolt, a slide bar controlled by the push bolt and a plate carried by the slide bar for dogging the door locking mechanism when the operating bar is unlocked, the push bolt and the sleeve being provided with holes to receive a seal wire when the bolt is in the locking position.

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

CHARLES C. ABBOTT.

Witnesses:

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FRANCES R. DOWNS.