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PATENTED SEPT. 10, 1907.

E. B. WILLIX & E. L. KEITH.

VOTING MACHINE.

APPLICATION FILED NOV. 10, 1906.

3 SHEETS—SHEET 1.

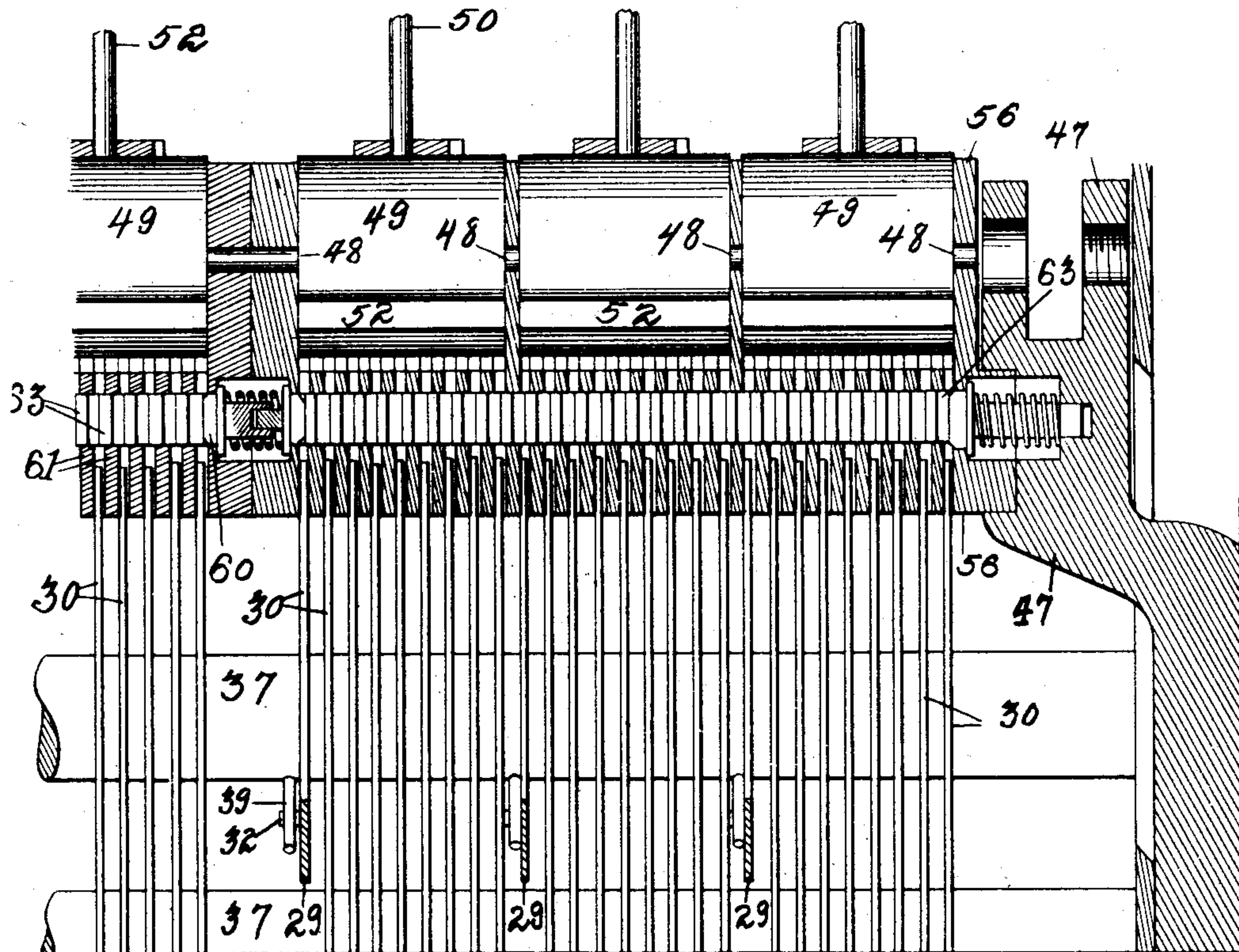
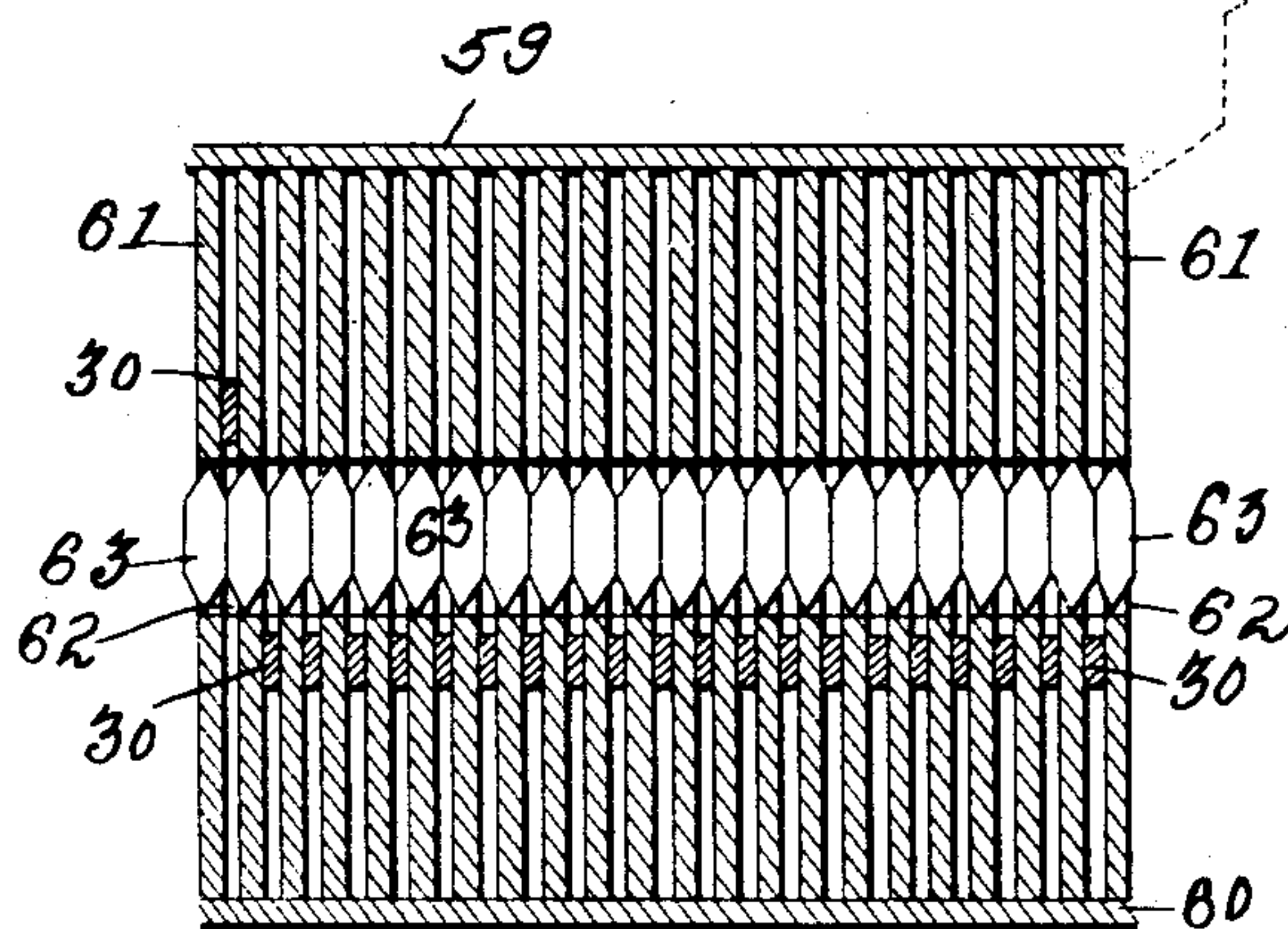


Fig. 1.



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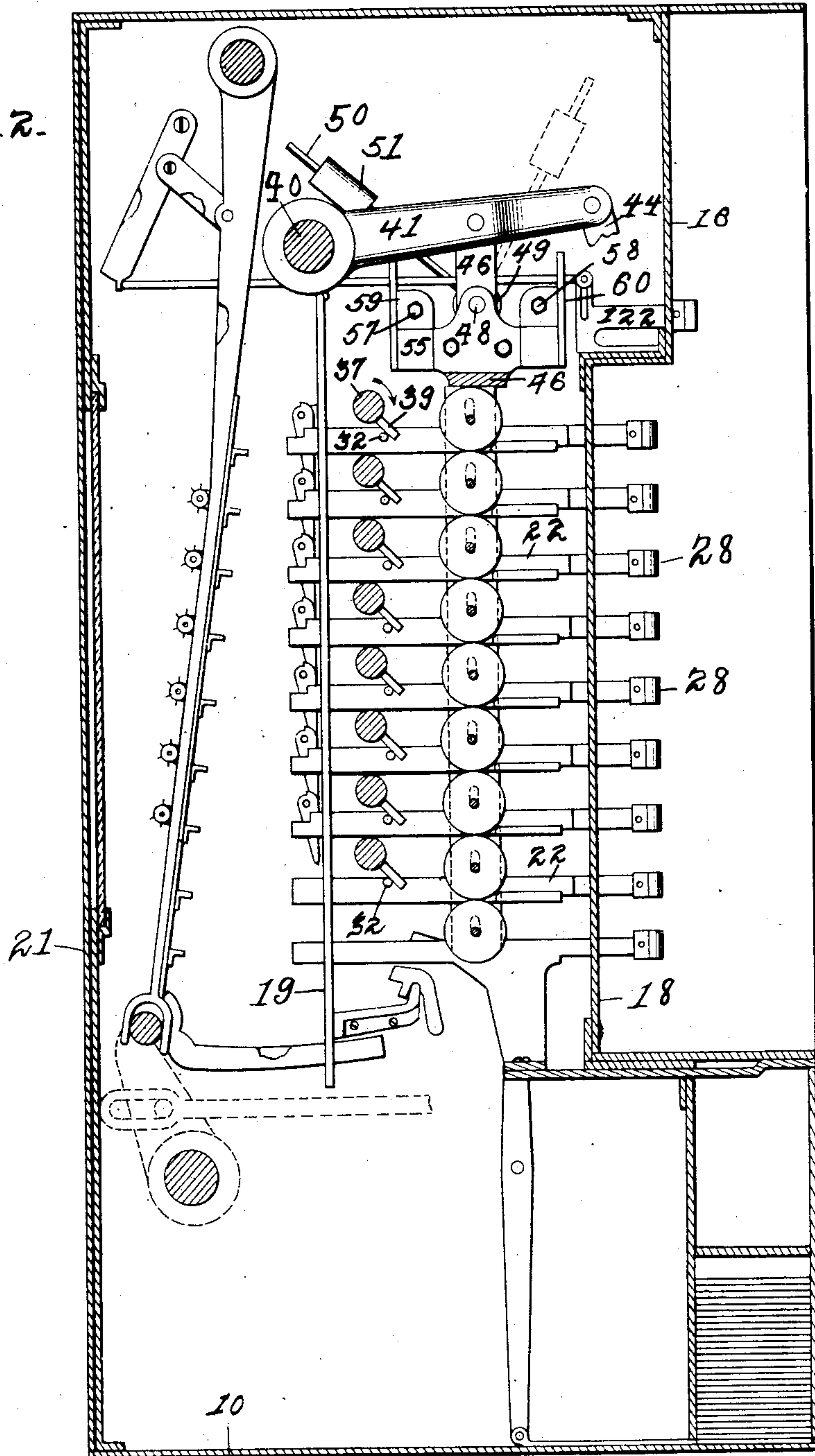
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3 SHEETS—SHEET 2.

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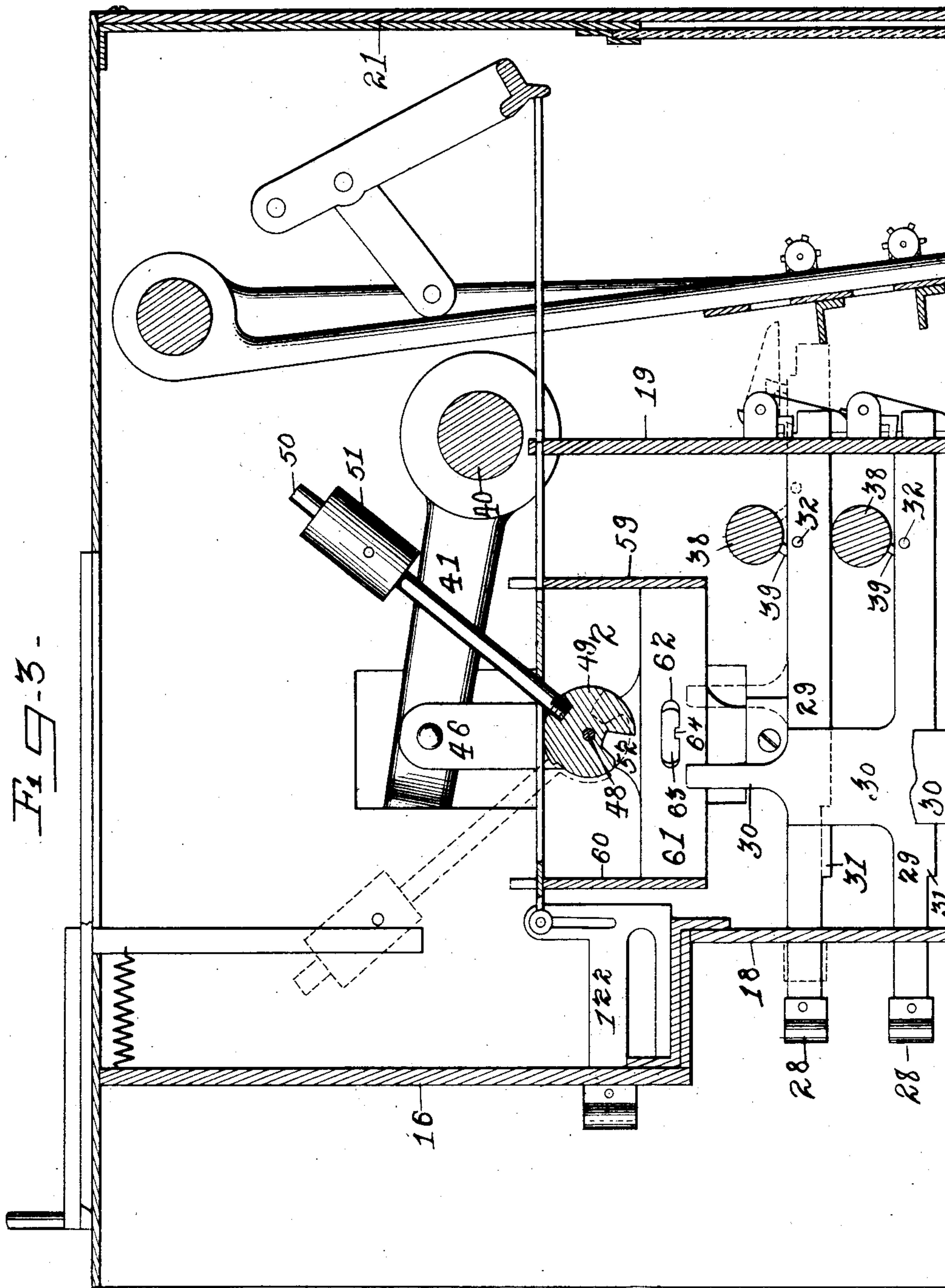
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ENOS B. WILLIX, OF MOUNT VERNON, IOWA, AND ELMER L. KEITH, OF SMITH, SOUTH DAKOTA; SAID KEITH ASSIGNOR TO SAID WILLIX.

VOTING-MACHINE.

No. 865,975.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Original application filed January 6, 1905, Serial No. 239,866. Divided and application filed September 26, 1905, Serial No. 280,189. Again divided and this application filed November 10, 1906. Serial No. 342,768.

To all whom it may concern:

Be it known that ENOS B. WILLIX and ELMER L. KEITH, citizens of the United States, said WILLIX residing at Mount Vernon, Linn county, State of Iowa, and said KEITH at Smith, in the county of Stanley, State of South Dakota, have invented new and useful Improvements in Voting-Machines, of which the following is a specification.

Our invention relates to voting machines with special reference to the locks that control the candidate's voting keys as set out in our application filed January 6th. 1905, Serial No. 239,866, and also our application filed September 26th. 1905, Serial No. 280,189, both for voting machines.

The following specification will point out in detail the construction of our device and the mode of its operation when read in connection with the drawings accompanying the same and forming a part hereof.

Figure 1, is a longitudinal vertical section through parts of the machine illustrating the locks and a detail horizontal section of the spacing plates or guides and also showing the buttons between said plates. Fig. 2, is a vertical section of the machine just back of the left end casing. Fig. 3, is a detail sectional elevation of a portion of the mechanism illustrating the voting keys and lock.

Like characters of references denote corresponding parts in each of the figures.

In this application there will be only described the office locks, one for each office, and the keys and other devices connected therewith necessary for the convenient operation of the locks.

Referring to the drawings, the candidate or voting keys, are arranged in horizontal rows to form tickets, one row for each ticket. Each row of candidates' keys is independent of each other row and each candidate key is independent of each other key in its row. Each candidate's key comprises a bar 29 mounted for rectilinear reciprocation in notches formed in the front key plates 18 and back key plates 19, an upwardly projecting arm 30 intermediate of its ends and a push-button 28 also used generally to indicate the candidates' keys. Each bar 29 is formed with a shoulder 31 near its forward end, adapted to engage one or another of the front key plates and prevent removal of said bar. Each of the key bars 29 is also provided with a pin 32 projecting laterally therefrom intermediate of its ends. It will be observed that the candidates' keys 29 are not arranged in vertical rows but are so arranged that the arms 30 thereon are parallel with each other and terminate at their upper ends in a common horizontal plane above the uppermost row of such keys.

The candidates' keys are arranged, generally speaking, in upright rows, but each upright row contains as many keys as there are tickets, plus an independent ticket, and the arms 30 on the keys in respect of a given office are arranged compactly and are collectively spaced apart from the upright rows of a collection of arms relating to a different office but arranged adjacent thereto.

All the arms of one series are of the same length and of different series of different lengths and all the arms of all the series extending to the same or common plane.

The locks hereinafter to be described commonly called office locks are located in a rectangular box or case 2 running longitudinally of the machine, having the side plates 59 and 60. At the ends of the box 2 are secured end plates 55 and 56. The bottom of this box 2 is formed of thin spacing plates hereinafter to be described which are secured to the side plates 59 and 60. Over the spacing plates 61 is a longitudinal shaft 48 secured in the end plates 55 and 56, on which shaft 48 are loosely mounted for rotary oscillation the office locks hereinafter to be described.

For the purpose of raising and lowering the box 2 with the contents therein, there is provided a shaft 40 mounted in a horizontal plane longitudinally of the machine, above and slightly to the rear of the box and journaled in the casing of the machine. To this shaft 40 is rigidly secured an arm 41 and hanger 47, to the arm 41 is pivoted from its central portion a jointed hanger 46 which is connected to the end 55 of the box by the shaft 48. The other end of the box is secured to the hanger 47.

The locks consist of shafts or tumblers 49 loosely mounted for rotary oscillation on the shaft 48 and each lock is to be of sufficient length to compass all of the voting keys for an office. Each tumbler 49 is provided with an arm 50 projecting upwardly therefrom, and a weight 51 is mounted upon said arm. It is the function of the arm 50 and weight 51 to hold the tumbler in the position in which it may be placed by the operation of the mechanism herein described, pending the operation of such mechanism in a different direction or the operation of other mechanism. Each of the tumblers 49 is generally cylindrical in form with a recess or slot longitudinal of its periphery and opposite to its arm 50.

The frame sides 59 and 60 are spaced apart farther than the range of movement of the arm 30 on either voting key and spacing plates 61, one for each arm 30, are mounted between and carried by said frame sides 59 and 60. The spacing plates 61 are spaced apart distances corresponding to the thickness of each arm 30 and apertures 62 are formed in the centers of said plates.

These spacing plates 61 also serve as guides to direct the arm 30 of the voting key into engagement with the lock or tumbler 49. Buttons 63 are mounted in the aperture 62 in the spacing plates 61. A notch is formed in the lower margin of each button 63 and is arranged to receive a stud (not shown) on the spacing plate, whereby said buttons are slidingly connected. These spacing plates and buttons may extend the entire length of the lock box 2 or be arranged in gangs.

Each of the buttons 63 is slightly thicker than the spacing plate in which it is mounted and is beveled both ways at each end, while the spacing plates are each slightly thicker than the space between two of said plates. The sum of the thicknesses of the buttons 63 is as much less than the sum of the thicknesses of the spacing plates and the spaces between them, as the thickness of one of the arms 30 with a trifle of clearance, thus permitting at times, one arm 30 to pass between two of the buttons but not permitting two of the arms 30 to pass between buttons at the same time.

In our former application we have shown a convenient mode of raising and lowering the locks, spacing plates and buttons by means of their connection with the exit and entrance levers, the entrance lever being connected with arm 41, and the exit lever connected with the hanger 47 but they may be moved in any convenient manner without effecting the operation of the locks.

The manner of operating our device is as follows, starting with the machine as shown in Fig. 3 with the locks, spacing plates, and buttons raised, the key 29 drawn out, the operator lowers the locks, spacing plates and buttons by the arm 41 and its connections with the entrance lever and brings the tumbler 49 into position whereby the arm 30 of the key can enter the recess 52 in the tumbler, then the operator grasps the push button 28 and forces in the key 29 partially rotating the tumbler into a position shown in dotted lines in said Fig. 3. He cannot force in but one key 29 at the same time from the fact that there is only space between the buttons 63 for the passage of but one arm 30 of the voting key. He cannot also force in another key 29 from the fact that the recess 52 is turned away so that it cannot be engaged by the arm 30. If he desires to vote for some other candidate for this office he must first withdraw the key first pushed in and the withdrawal of the key, turns the tumbler over into position to be engaged by any of the other keys for this office. These office locks will be equally effective whether a full party ticket is turned into voting position as the initial act of the voter, as shown in our former application, or whether one voting key at a time is manually forced to voting position; but when a full party ticket is turned in at first, then the voter if he wishes to change his vote, first withdraws a voting key and the tumbler is turned back so that another key can be forced in to operate the tumbler. If the party ticket is not turned in at the initial act of voting, then the operation is reversed and the voter pushes in a voting key instead of withdrawing a key and he cannot change his vote until he has withdrawn the key pushed in.

It will be observed that there are a plurality of voting keys for each lock and the arm on each key is of

different length from the arm of any other key of the lock and that all the voting keys are non removable, also that each key can at times engage and operate the lock.

It will also be observed that all the arms of all the keys of any one series or office extend to a common plane and the lock for the series is common to all the arms and can be operated by any one arm of the series.

Having now described my invention what I claim is;

1. In a voting machine, a lock loosely mounted on a shaft for rotary oscillation, and a plurality of vote keys each key adapted to engage and rotary oscillate the lock and free to be moved from voting to normal position and not in engagement with the lock either when the keys are in normal, or in voting position.

2. In a voting machine, a lock consisting of a tumbler provided with a recess and loosely mounted on a shaft and adapted to be rotary oscillated, and a plurality of vote keys disconnected from said lock both when in normal and in voting positions and each key adapted to pass through and out of engagement with the lock to rotary oscillate the lock on the shaft.

3. In a voting machine, a lock consisting of a tumbler loosely mounted on a shaft for rotary oscillation and common to a plurality of vote keys, and a plurality of vote keys disconnected from said lock when in normal and voting position each key adapted to engage and rotary oscillate said lock and pass through and out of engagement with the lock.

4. In a voting machine, a lock consisting of a shaft or tumbler mounted for rotary oscillation, a plurality of voting keys each disconnected from the lock both when in normal and in voting position, and an arm on each key adapted to engage said tumbler and rotary oscillate the same.

5. In a voting machine, a lock consisting of a tumbler provided with a recess and loosely mounted on a shaft for rotary oscillation, a plurality of vote keys each key adapted to engage the recess of the lock to rotary oscillate said lock and pass away from the recess and become disconnected from the lock, and means connected with the lock for preventing more than one key from rotating the tumbler at the same time.

6. In a voting machine, a lock consisting of a tumbler mounted for rotary oscillation and provided with a recess, a plurality of voting keys and each key disconnected from the lock when in voting position, and an arm on each of the voting keys adapted to engage the recess in the tumbler and rotary oscillate the same as it passes through and out of the lock to voting position.

7. In a voting machine, a lock consisting of a tumbler mounted for rotary oscillation and provided with a recess, voting keys disconnected from the lock, an arm on each voting key adapted to engage the recess in the tumbler and partially rotate the same as it passes through and out of engagement with the lock to voting position, and means for preventing the arm of any other key from oscillating the tumbler in the same direction.

8. In a voting machine, a lock consisting of a tumbler or shaft mounted for rotary oscillation, voting keys detached from the lock both when the keys are in normal or in voting position, and means connected with the lock for preventing more than one key from rotating the lock at the same time or in the same direction.

9. In a voting machine, a lock consisting of a tumbler or shaft mounted for rotary oscillation, voting keys detached from the lock, an arm on each voting key adapted to enter the lock and rotate the tumbler as it passes through and out of engagement with the lock to voting position, and means for preventing an arm of any other key from operating the lock and rotating the tumbler at the same time.

10. In a voting machine, a movable lock consisting of a tumbler loosely mounted on a shaft for rotary oscillation and normally out of engagement with the voting key, a plurality of vote keys set in a frame and adapted to be reciprocated, means connected with the keys for rotary

oscillating the tumbler, and means for moving the lock to a position whereby it can be operated by the voting key as the voting key is reciprocated to voting position.

11. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation and normally in an inoperative position, a voting key adapted to be reciprocated, and means for bringing the tumbler into position whereby it can be engaged and rotary oscillated by the voting key when the key is reciprocated.

12. In a voting machine, a lock consisting of a tumbler mounted for rotary oscillation and normally in an inoperative position, voting keys adapted to be reciprocated, an arm on each voting key, and means for moving the tumbler into operative position whereby the arm of any one of the voting keys can engage the tumbler and oscillate the same.

13. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation and provided with a recess and normally in an inoperative position, a voting key adapted to be reciprocated, an arm on the key, and means for moving the lock into operative position whereby the arm on the voting key can engage the recess in the tumbler and oscillate it when the key is reciprocated.

14. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation, a series of voting keys adapted to be reciprocated, means connected with the keys for oscillating the tumbler, means for moving the lock from inoperative position into the path of the travel of the keys, and means for preventing more than one key from operating the tumbler at the same time.

15. In a voting machine, a movable lock provided with a tumbler mounted for rotary oscillation, and normally in an inoperative position, voting keys adapted to be reciprocated, an arm on the key, means for moving the lock into the position to be operated by an arm of a voting key, and means for preventing more than one arm of any key from engaging and rotating the tumbler at the same time.

16. In a voting machine, a series of movable locks one for each office each lock loosely mounted on a shaft for rotary oscillation and normally out of position to be engaged by the voting keys when said keys are in normal or voting position, a plurality of keys for each office adapted to be manually moved one at a time to voting position and pass through and operate the lock, means for moving the lock into position to be engaged by the voting keys as they pass through the lock to voting position, and means connected with the lock for preventing any other key for this office from operating the lock until the key that first operated the lock has been withdrawn to normal position.

17. In a voting machine, a lock mounted for rotary oscillation, voting keys adapted to engage and operate the lock, and means for preventing more than one key from operating the lock at the same time consisting of spacing plates and means within the spacing plates set in the path of the travel of the keys.

18. In a voting machine, a lock provided with a tumbler mounted for rotary oscillation, voting keys adapted to engage and operate the lock, and means for preventing more than one key from operating the lock at the same time consisting of spacing plates and buttons within the spacing plates set in the path of the travel of the keys.

19. In a voting machine, a lock consisting of a tumbler mounted for rotary oscillation and provided with a recess, voting keys disconnected from the lock both when in voting and in normal positions, means connected with the voting keys for engaging the recess to operate the tumbler as each key passes through and out of engagement with the lock to voting position, and means connected with the lock for preventing any other key from entering the recess in the tumbler and from rotating the same till the key in the lock is withdrawn.

20. In a voting machine, a lock, voting keys adapted to engage and operate the lock, in combination with spacing plates, and means in the spacing plates for preventing more than one key from operating the lock at the same time.

21. In a voting machine, a lock mounted for rotary oscillation, voting keys adapted to engage and operate the lock, in combination with spacing plates, and means for closing so much of the space between the plates that only one key can engage and operate the lock at the same time.

22. In a voting machine, a lock mounted for rotary oscillation, voting keys each provided with an arm adapted to engage and rotate the lock, in combination with spacing plates, and means for closing so much of the space between the plates that only one arm of a voting key can operate the lock at the same time.

23. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation, a voting key, an arm on the key adapted to engage the tumbler and rotate it, movable guides independent of the bearing of the voting key for directing the arm on the key into engagement with the lock, and means for moving the lock to operative position and moving the guides to position for directing the key into engagement with the lock.

24. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation and normally in an inoperative position, voting keys, an arm on each voting key, in combination with movable guides for directing the voting keys into engagement with the tumbler of the lock, and means for moving the locks and guides into and out of operative position.

25. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation and provided with a recess and normally in an inoperative position, a voting key, an arm on the voting key adapted to engage the recess in the tumbler and rotate the tumbler, in combination with movable guides consisting of spacing plates disconnected from the bearings of the voting key, and means for moving the lock and guides into position, whereby the voting key will be guided into operative engagement with the lock.

26. In a voting machine, a movable lock consisting of a tumbler mounted for rotary oscillation and normally in an inoperative position, voting keys, and an arm on each key adapted to engage the tumbler and rotate it, in combination with movable guides consisting of spacing plates separate from and independent of the bearings of the voting keys, means between the spacing plates for preventing more than one key from operating the lock at the same time, and means for moving the lock into and out of operative position.

27. In a voting machine, a movable lock and normally in an inoperative position, voting keys adapted to operate the lock, in combination with movable guides consisting of spacing plates, means within the spacing plates for preventing more than one key from operating the lock at the same time, and means for moving said locks and guides into and out of operative position with the keys.

28. In a voting machine, a movable lock, voting keys adapted to operate the lock, in combination with movable guides independent of the bearings of the voting keys for directing the keys into engagement with the lock, and means for moving the lock, and guides into operative relation with the keys whereby the keys may operate the lock.

29. In a voting machine, a voting key, a tumbler mounted for rotary oscillation, an arm on said key adapted to engage and oscillate said tumbler, and manually actuated devices independent of the voting keys for oscillating said tumbler at times.

30. In a voting machine, a lock mounted for rotary oscillation, voting keys, an arm projecting from each key and adapted to engage and operate the lock, and means adapted to move the lock into the path of the travel of the arms of the keys, means for preventing the arm of more than one key from operating the lock at the same time or while the arm of one key is in engagement with the lock.

31. In a voting machine, a plurality of voting keys, a plurality of locks one for each office, means for moving the locks from an inoperative position into operative relation with the voting keys and disengage them from the voting keys both when the keys are in voting and initial position, and spacing plates with buttons therein interposed in the path of the travel of the keys to prevent more than one key from being moved from initial to voting position at the same time.

32. In a voting machine, a plurality of voting keys, a plurality of locks one for each office, means for moving the locks from an inoperative position into operative relation with the voting keys and disengage them from the voting

keys both when the keys are in voting and initial position, and spacing plates with buttons therein interposed in the path of the travel of the keys to prevent two keys from being moved from initial to voting position at the same time.

5 33. In a voting machine, a movable lock separate from and independent of the vote keys both when the keys are in voting position and in normal position, consisting of a tumbler loosely mounted on a shaft and common to two series of vote keys for the same office, one series in voting position and the other in normal position, adapted to engage and oscillate the lock to a locking position when the key is being moved from voting to normal position whereby another key can not oscillate the lock in the same direction though any key in normal position can oscillate the lock in the opposite direction.

10 34. In a voting machine, a movable lock consisting of a

tumbler loosely mounted on a shaft and adapted to be rotated on the shaft, a key, means connected with the key adapted to pass through and out of the lock and operate it when the lock has been moved into the path of the travel of the key, and means for moving the lock into the path of the travel of the key.

In testimony whereof we affix our signatures, in presence of two subscribing witnesses.

ENOS B. WILLIX.
ELMER L. KEITH.

Witnesses as to Enos B. Willix:

WM. A. SMYTH,
CHAS. W. HARTUNG.

Witnesses as to Elmer L. Keith:

C. W. WEST,
E. A. WEST.