No. 864,279.

PATENTED AUG. 27, 1907.

E. B. WILLIX & J. YOUNG.

VOTING MACHINE.

APPLICATION FILED APR. 8, 1907.

5 SHEETS—SHEET 1.

Fig. 1.

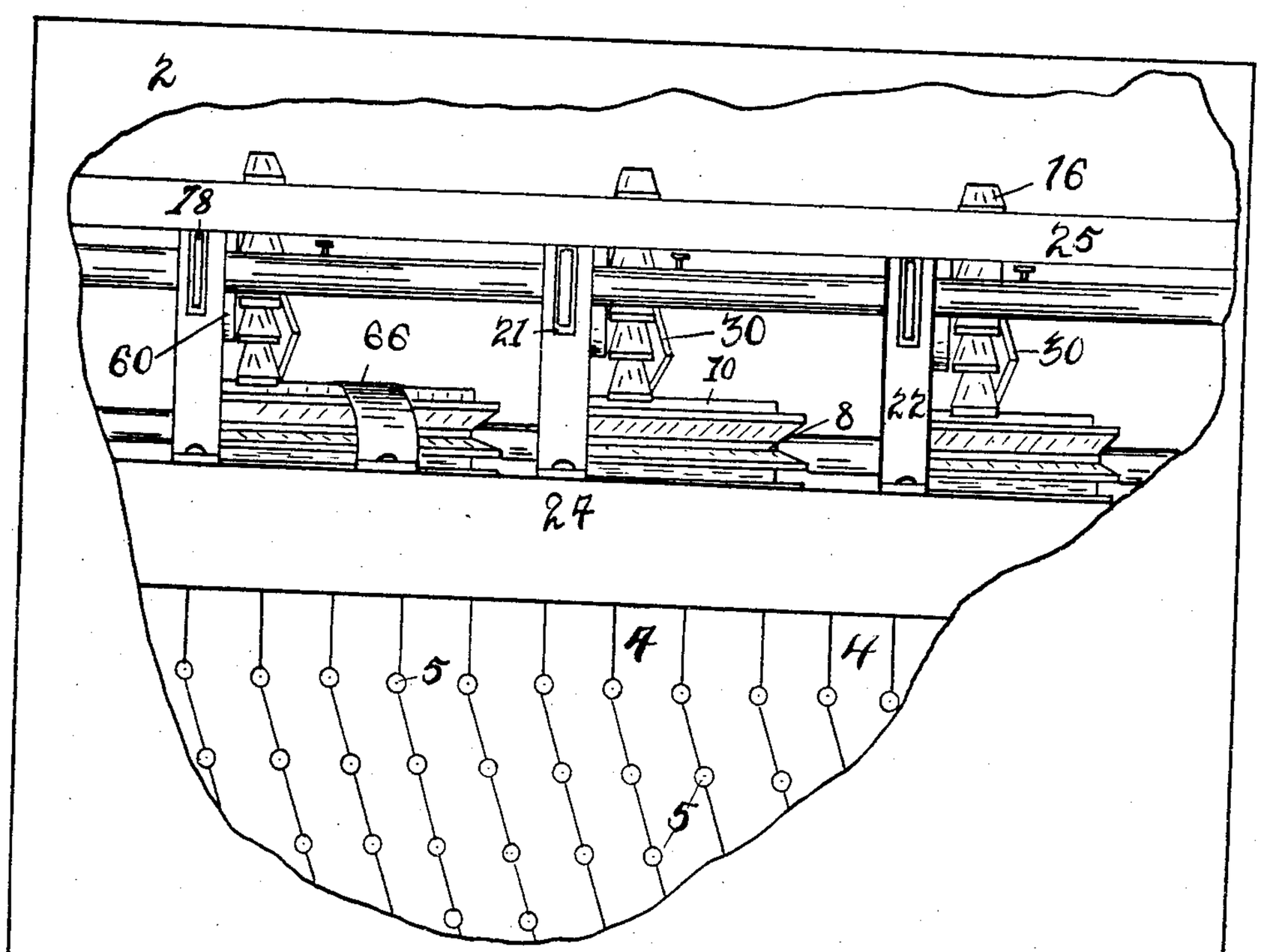
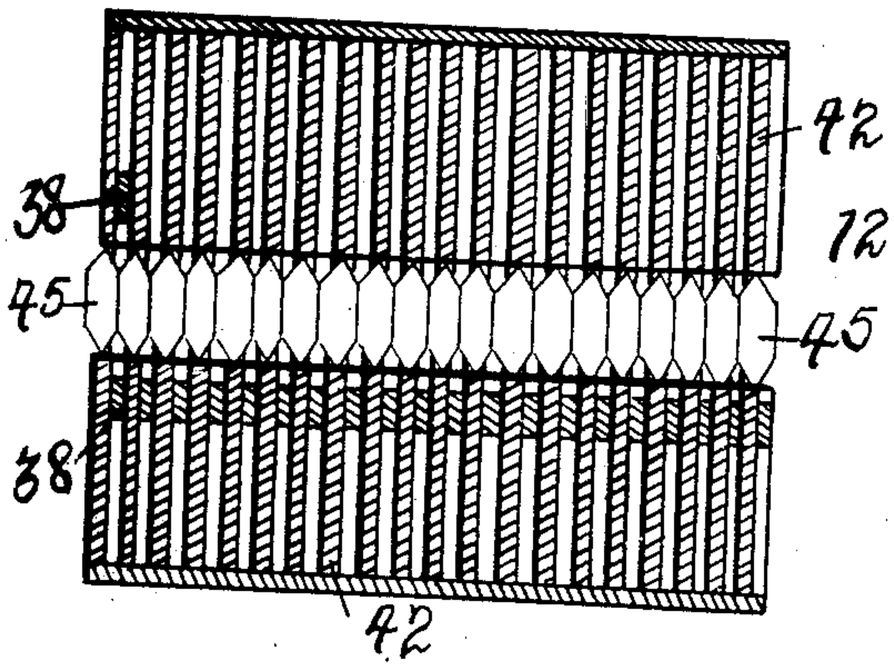


Fig. 9.



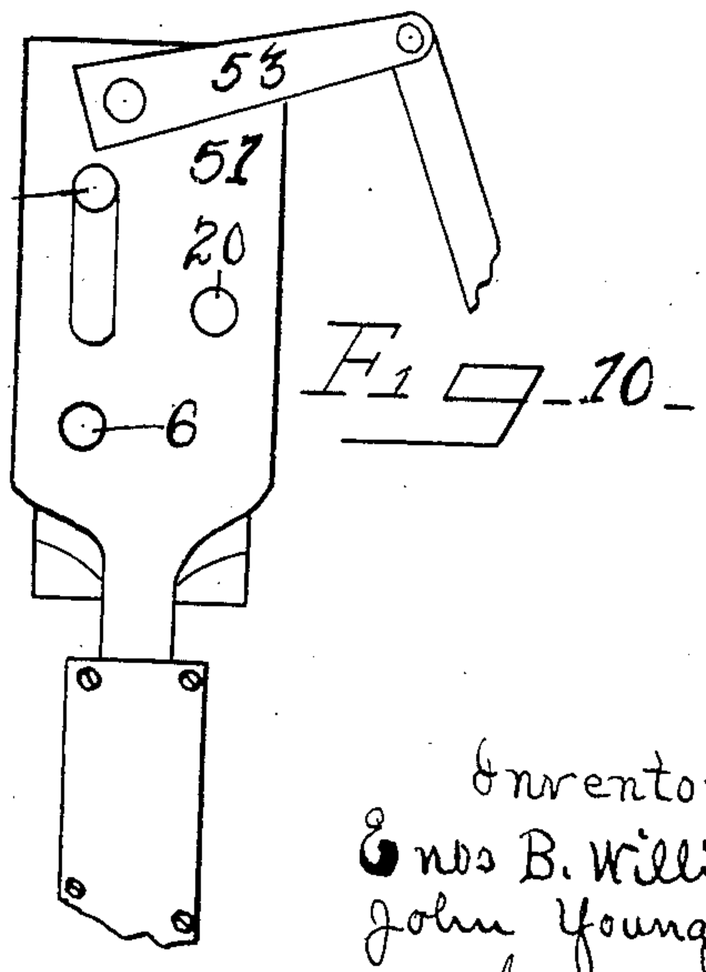


Fig. 10.

Witnesses:
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B. F. Emery

Inventors:
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by
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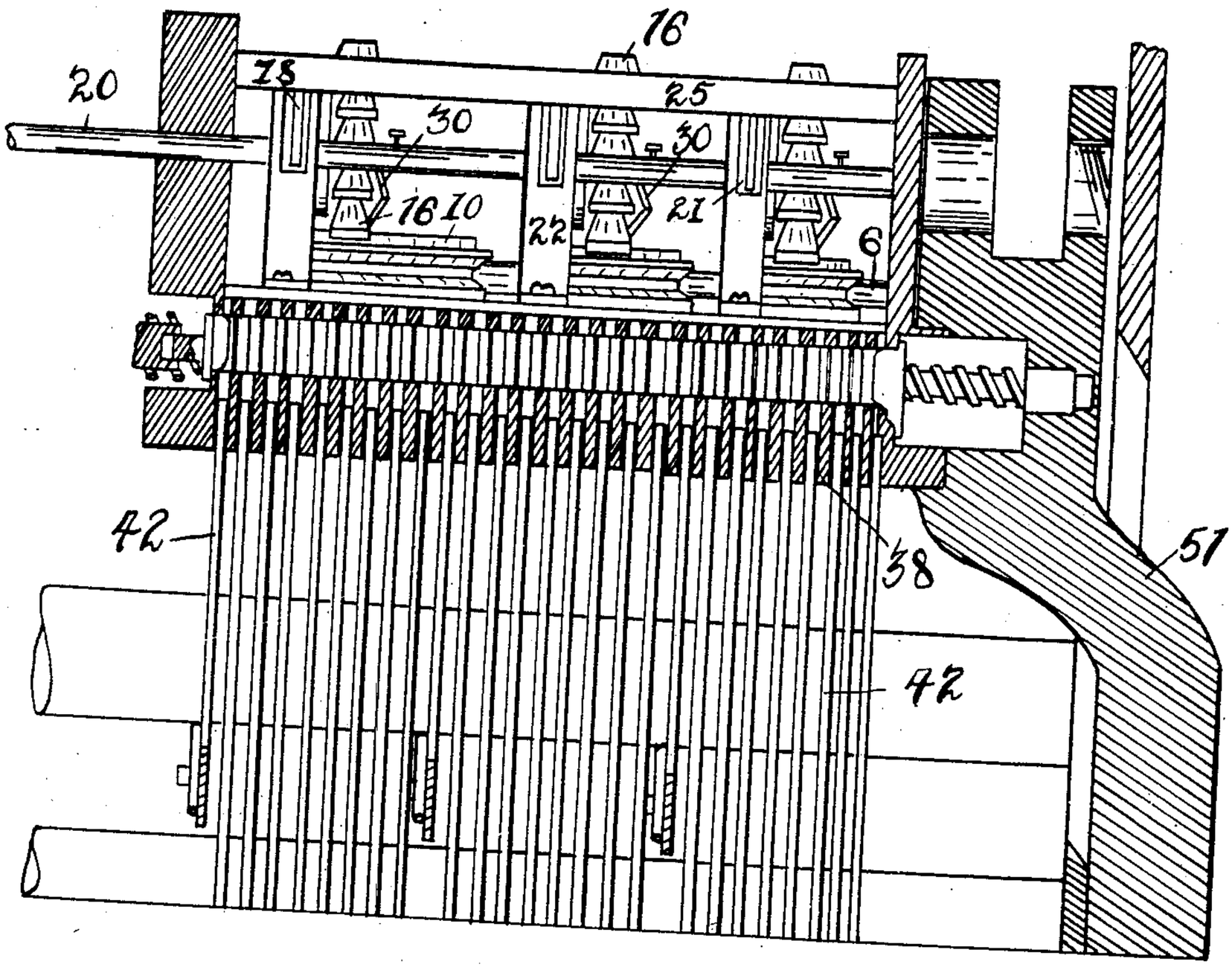
5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

Fig. 4.

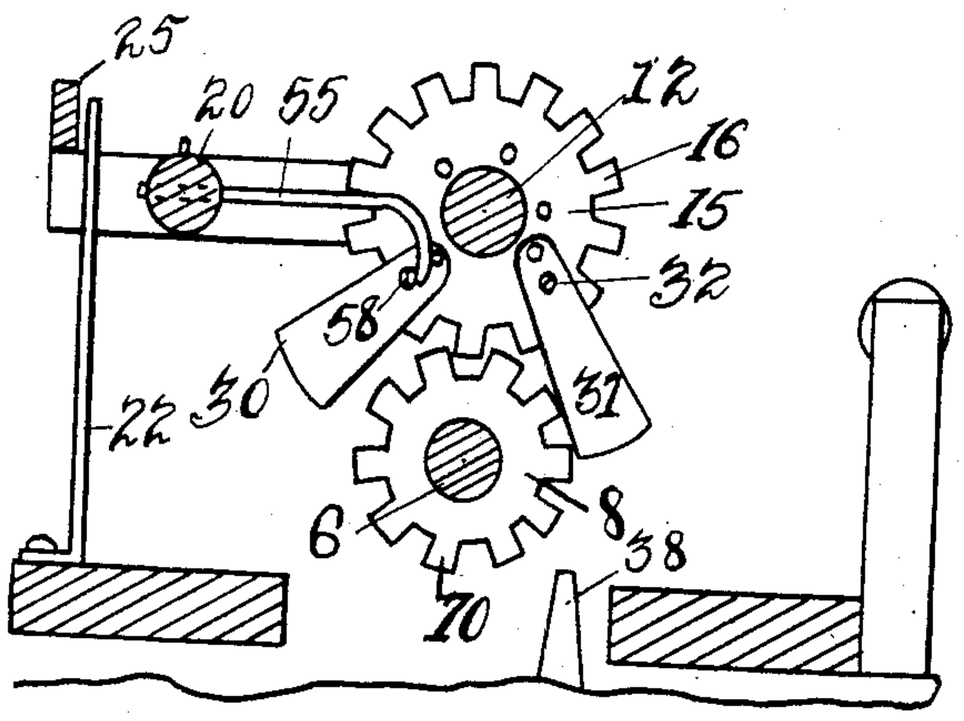


Fig. 5.

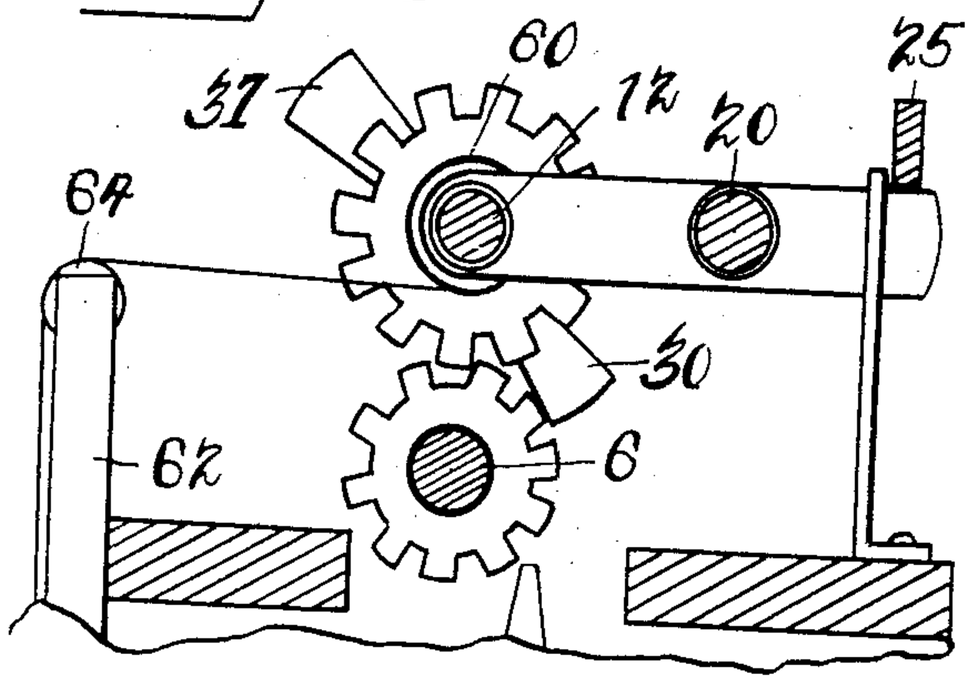


Fig. 11.

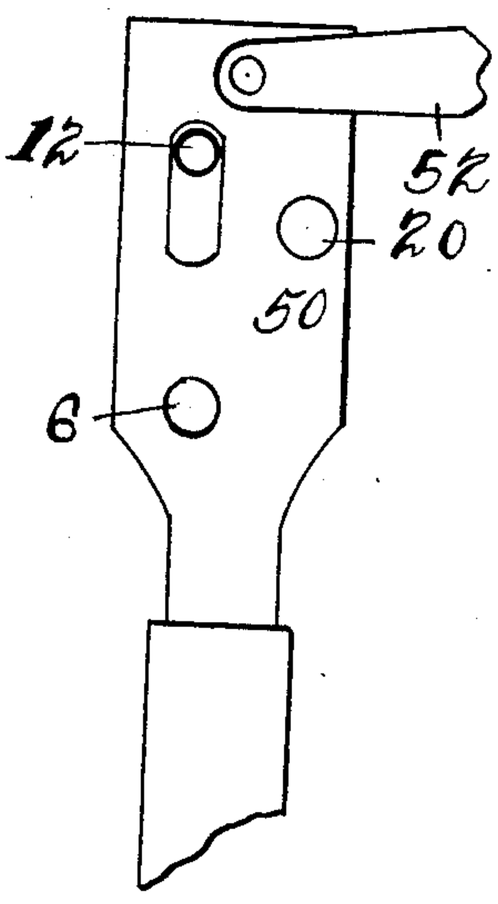
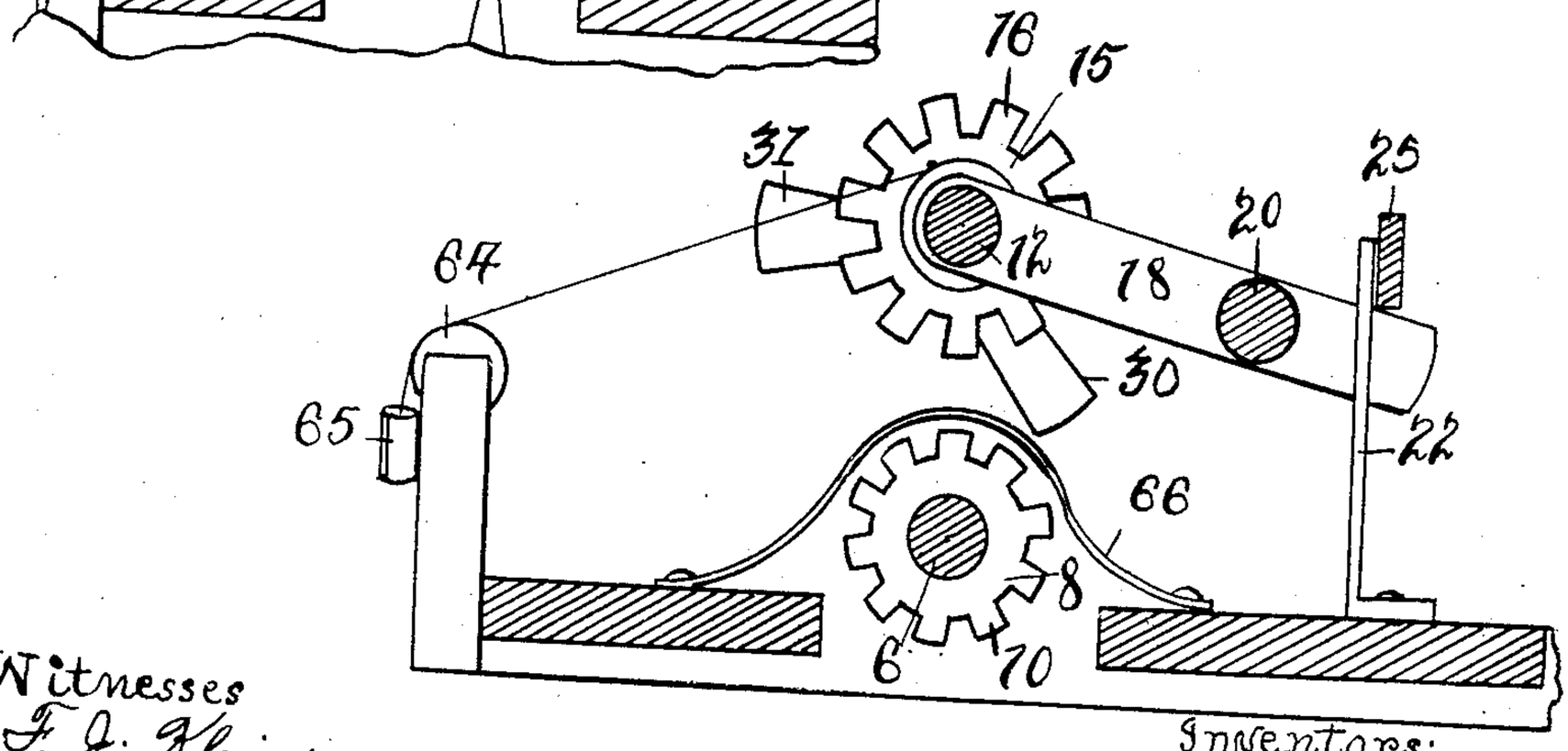


Fig. 3.



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5 SHEETS—SHEET 4.

Fig. 8.

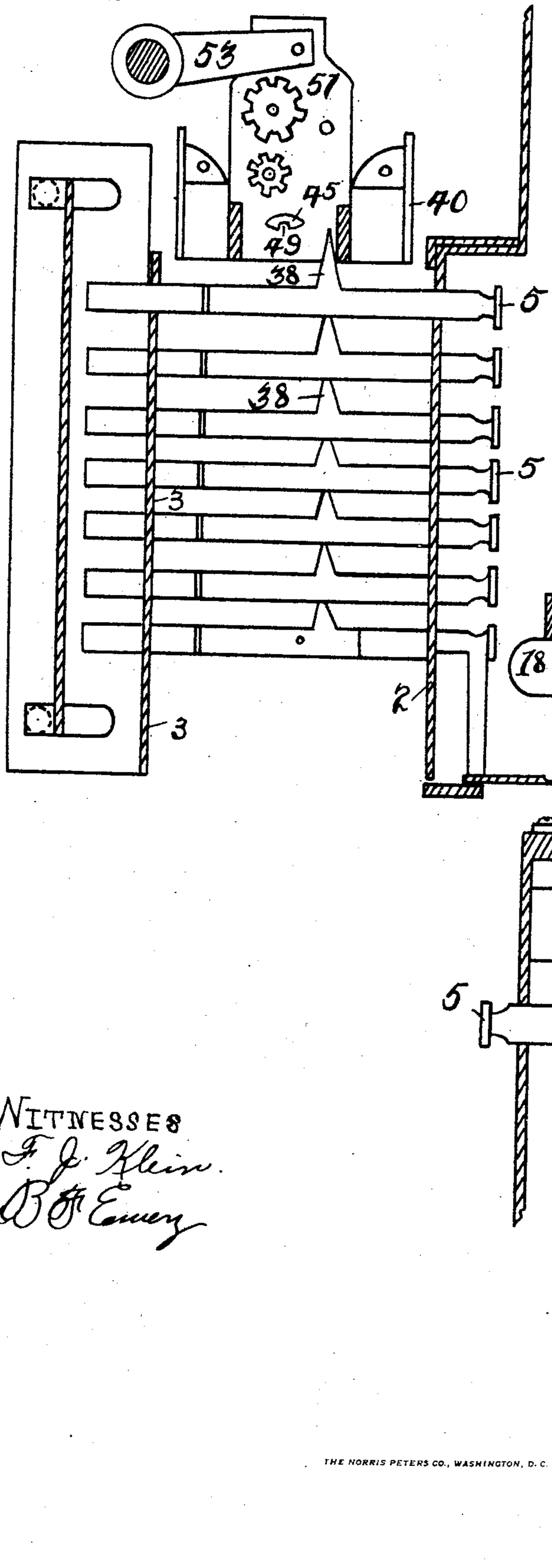

Fig. 6.

WITNESSES
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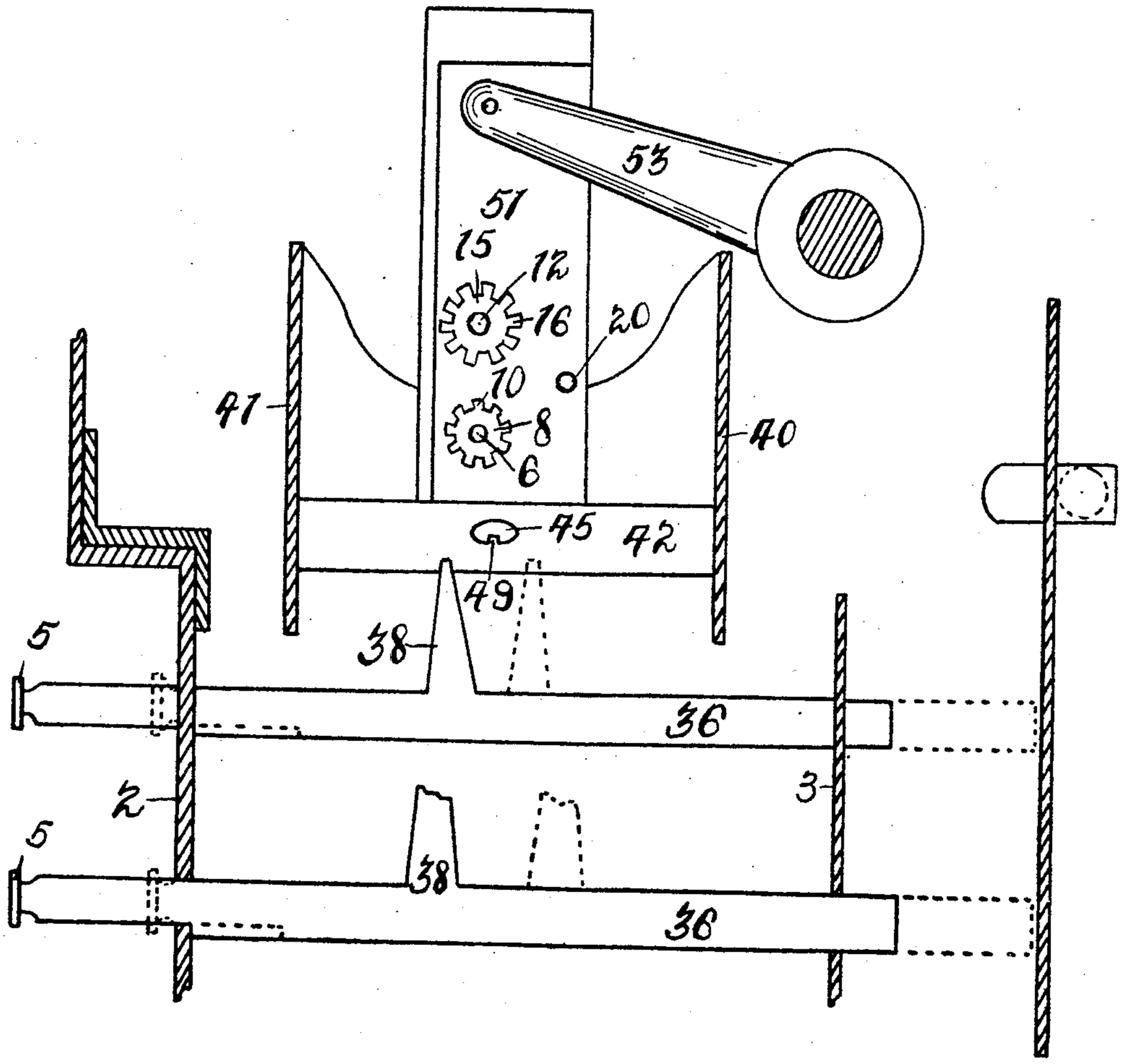
5 SHEETS—SHEET 5.

Fig-7-



Witnesses:
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UNITED STATES PATENT OFFICE.

ENOS B. WILLIX AND JOHN YOUNG, OF MOUNT VERNON, IOWA.

VOTING-MACHINE.

No. 864,279. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed April 8, 1907. Serial No. 367,024.

To all whom it may concern:

Be it known that we, ENOS B. WILLIX and JOHN YOUNG, citizens of the United States, residing at Mount Vernon, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Voting-Machines, of which the following is a specification.

This invention is intended as an improvement in the lock shown in the application of Enos B. Willix, one of the applicants herein, and Elmer L. Keith, for voting machines, filed Nov. 10, 1906, and has for its objects to provide a lock common to a plurality of keys which when operated by a predetermined number of keys, none of the remainder of the keys can operate the lock until one or more of the keys which have operated the lock has been withdrawn and the lock is disconnected from all of the keys both before and after the keys have operated the lock. Also to provide means whereby a plurality of a predetermined number of keys can operate the lock one after the other without the withdrawal of any of the keys and after the predetermined number of keys have operated the lock, no other key can operate the lock until after one of the keys that has operated the lock has been withdrawn and any of the keys common to the lock may form part of the predetermined number of the keys.

It is intended to make provision for assisting the elector in selecting from a plurality of candidates on each party ticket, for a given office, the required number and vote for the same and prevent him from voting for any other candidate for that office, and further where there is only one officer to be elected to a given office, to prevent the elector from voting for more than one candidate for that office.

The lock consists of a pinion mounted on a shaft and provided with a plurality of cogs and said pinion of sufficient length to compass all of the keys common to the lock, and further of a second pinion mounted on a shaft and having a plurality of cogs and adapted to engage the cogs on the first pinion.

It further consists in means secured to one of the pinions for limiting its rotary movements whereby the keys that can rotate the pinion may be limited to a predetermined number.

It further consists in means connected to the second pinion whereby the second pinion may be separated and disengaged from the first pinion and restored to normal position when the keys are restored to normal position without restoring or rotating the first pinion of the lock.

It further consists in certain guides whereby the keys are directed into engagement with the first pinions and in preventing more than one key from entering or operating the lock at the same time.

The following specification when taken in connection with the drawings accompanying the same will fully explain the mode of construction and the manner of operating our device.

Figure 1 is a front elevation of the machine with part cut away showing three enlarged locks and their position with surrounding attachments. Fig. 2 is a part longitudinal, vertical section through parts of the machine and a front elevation of the lock illustrating the lock and guides. Fig. 3 shows an end view of the lock when raised out of engagement with the key. Fig. 4 is an end view of a lock and cross section of the various shafts and connections when the lock is lowered to operative position and set so that only one key can operate the lock. Fig. 5 is an end view taken from the opposite side of Fig. 4 but showing the lock set so that several keys may engage the lock. Fig. 6 is a vertical section through one of the locks and box containing the guides and a plan or side view of a guide and a key when the key has just passed through and engaged and operated the lock. Fig. 7 is a similar view to Fig. 6 but with the box containing the lock and guides raised out of contact with the keys and the keys in normal position. Fig. 8 is an end view of the lock when raised and showing relative position of the keys. Fig. 9 is a horizontal section of the guides with the balls or buttons in position for preventing more than one key from operating the lock at the same time. Fig. 10 is a plan view of one of the hangers connected with the entrance lever for lowering the locks. Fig. 11 is a plan view of the hanger connected with the exit lever for raising the locks.

Like character of reference denote corresponding parts in each of the drawings.

The lock is movable and normally out of position to be engaged by the keys and is brought into the path of the travel of the keys whereby the keys can come into engagement with the lock as they are forced to voting position or individually restored to normal position and, as means whereby the lock is moved out of position to be engaged by the keys may be the same as set out in above mentioned application or any other convenient manner and forms no part of our invention, such means are not shown or described herein in detail but only in a general way.

Referring to the drawings 2 designates the front plate of the machine and is formed preferably of separate plates 4 secured to a back plate and fastened to the ends of the machine forming a rectangular casing. Through the front plate are set to reciprocate the vote keys, hereinafter to be described, with their push-buttons 5 projecting in front of the plate 2.

Back of the plate 2 near the top of the machine is mounted a shaft 6 which extends through the machine. Upon this shaft is loosely mounted the first series of lock pinions 8 and each is provided with cogs 10. The

pinions vary in length according to the number of candidates for a given office in all the parties and of sufficient length to compass the arms of all the keys for that office. Over the shaft 6 is another shaft 12 running the length of the machine parallel with the shaft 6. Upon this shaft are loosely mounted a second series of lock pinions 15 provided with cogs 16 which mesh in with the cogs 10 on the pinions 8. The pinions 15 are considerably larger than the pinions 8 for the purpose presently to appear. The pinions 15 may be rigidly mounted on individual shafts instead of on a single shaft.

Through the machine parallel with shaft 12 and in substantially the same plane is a shaft 20 upon which are pivoted plates or bars 18 one for each lock. The plates are secured on the shaft 12 and extend out towards the front of the machine and project a short distance through slots 21 in brackets 22 secured on a frame. In the casing of the machine is rigidly fixed à bar 25 which extends parallel with the shaft 20 along on the top of the outer ends of the plates 18 as shown in Figs. 1, 2, 3, 4 and 5, for holding down the ends of the plates 18 when the locks are raised whereby the pinions 8 and 15 are separated.

For limiting the number of candidates that can be voted for in each office there is provided the following gage or limiting device. Each of the pinions 15 is provided with holes 28 and in two of the holes are secured stop-plates 30 and 31 by the screws 32. If there is but one candidate to be elected for a given office then the plates 30 and 31 are secured to the pinion 15 at such distance apart that the pinion 15 can not be rotated only the distance of one cog before the plate 31 will strike against the first pinion 8 and stop the further rotation of the pinion 15 but if there is more than one candidate, say five judges to be elected for the same office, then the plates are secured in such holes that the keys can rotate the pinion 15 for the distance of five cogs before the plate 31 will come in contact with the pinion 8 and stop further rotation. By this mode of construction the elector can select from the various parties all of the candidates he is entitled to vote for in any office and no more and if he has made a mistake he can withdraw any key and push in another key for the candidate he desires to cast his vote.

The voting key consists of a body 36 which is preferably a bar of steel having a push-button 5 at its outer end and near its center an arm 38 projecting at right angles from the body and all of the arms of the keys for each party are of the same length and for different parties of different length and all of the arms of the keys for all of the parties project to the same or common plane and to a position in which they can engage and operate the lock when the lock is lowered before the elector commences to make his selection in the act of voting. They are therefore preferably not arranged in vertical rows but are so arranged that all of the arms 36 are parallel with each other. These keys are mounted for rectilinear reciprocation in slots in the front plate 2 and rear plate 3 usually in upright rows and each row contains as many keys as there are tickets, and the arms 38 relative to a given office are arranged compactly but spaced apart.

The locks and guides hereinafter to be described are located in a box having the side plates 40 and 41 which run lengthwise of the machine. Below the locks are secured in the box, guides which consist of spacing plates 42 secured in the side plates 40 and 41 at a distance apart slightly more than the thickness of each arms 38 of the keys. The plates 42 are provided with apertures near the center of the plate. In the apertures are mounted balls or buttons 45 having notches adapted to receive a stud or pin 49 of the spacing plates 42 whereby the buttons are slidingly mounted in the apertures. Each of the buttons is slightly thicker than the spacing plate and is beveled both ways. The sum of the thickness of the buttons 45 is as much less than the sum of the thickness of the spacing plates and the spaces between them as the thickness of one of the arm 38 with a trifle of clearance, thus permitting at times one arm 38 to pass between two of the buttons but not permitting two of the arms 38 to pass between the buttons at the same time.

For raising the locks and guides out of and lowering them into the path of the travel of the voting keys, there is provided a plate or hanger 50 and 51 attached to each end of the box in which the locks and guides are located, and in which the shafts 6, 12 and 20 are mounted. One of these plates 50 is connected by an arm 52 to the entrance lever and the other plate 51 by an arm or lever 53 to the exit lever the same as set out in the above mentioned application or in any other convenient manner, as it is immaterial how the locks and guides are raised and lowered.

For the purpose of restoring the pinion 15 to normal position after it has been rotated to cast a vote for a candidate for a given office there is fixed in the shaft 20 a hook 55 which engages at its outer end a pin 58 on the plate 31 and when the pinion is raised out of engagement with the pinion 8, as will be hereinafter explained, it will draw the stop plate 31 downward and partly rotate the pinion 15 backward and bring the stop-plate 31 into engagement with the pinion 8 and stop further rotation. Where there are more than one or two candidates to be voted for in a given office then the preferable means is by attaching to the side of the pinion 15 a wheel or shoulder 60 (see Fig. 5) and securing a post 62 to the frame with a wheel or pulley 64 in the top of the post 62, then securing a cord to the wheel 60 and connecting it with a weight 65 over the pulley 64. In a collective office or an office where several condidates are to be elected to fill a given office, the pinion 8 is long enough to compass all of the keys belonging to the office, then to prevent the weight 65, after it has been raised by pushing in one or more of the vote keys, from turning pinion 15 back and thereby turn the pinion 8 backward, a brake is provided which consists of a flat spring 66 and is attached to the frame on both sides of the pinion 8 and presses upon the cogs 10 of the pinion 8 and prevents by friction any movement of the pinion 8 except that given it by the voting keys when operating it.

The manner of operating my device is substantially as follows:—Starting with the box containing the locks and guides raised out of the path of the travel of the voting keys and the voting keys 35 drawn out, then as the voter enters the booth he operates the arm 52 by its connection with the entrance lever and this lowers the locks and spacing plates into position whereby they can be engaged by the voting

keys. The operator then grasps a push-button 5 and forces it in and, as it is forced in, it engages one of the cogs 10 of the pinion 8 and partially rotates the pinion, and since the pinion 8 is in mesh with the pinion 15, the pinion 15 will be also partially rotated which will bring the plate 31 against one side of the pinion 8 and stop any further rotation of the pinion 15 and no possibility of forcing in any other key to the lock. This is when the plates 30 and 31 are set for an office in which only one candidate can be voted for. It will be seen that the elector could not push in but one of the keys 35 at the same time because there is only room between the buttons 45 in the spacing plates 42 for the passage of one arm 38 at the same time. If the elector finds he has pushed in the wrong key then he can withdraw that key and push in another for the same office. If there are a plurality of candidates on each party for the same office, say five judges, then the plates 30 and 31 are adjusted so as to permit five of the keys to successively engage five cogs on the pinion 8 which will engage five of the cogs 16 on the pinion 15 before the rotation of the pinion will be stopped by the plate 30 coming in contact with the pinion 8 and stop further rotation. Then the elector can push in five keys, one at a time, selecting them all from one party candidates or from the different parties, but he can not push in more than five, for the reason that the plate 30 will come in contact with the pinion 8 as soon as five cogs 16 have been engaged and operated. If the elector has made a mistake and selected the wrong candidate he can withdraw any one of the five keys forced in and substitute therefor any other key for that office. After the elector has made all of his selections, he leaves the booth and in doing so operates the lever or arm 53 by its connection with the exit lever to raise the locks and guides and when they are raised the ends 21 of the plates 18 will engage the under side of the fixed bar 25 and throw the pinions 15 out of mesh with the pinions 8 and the hook 55 will engage the pin 58 and rotate the pinion 15 backward till the plate 31 engages the cogs 10 on the pinion 8 and prevents further rotation. If however the lock is connected with a collective office then, when the pinion 15 is raised the weight 65 will come into action and rotate backward the pinion to normal position.

It will be observed with this device constructed and operated in the manner set forth herein, that the machine will be adapted for use in voting for candidates in a collective office and that, without reference to the number to be elected to the office, as, all that is necessary is to provide a pinion 8 of sufficient length to compass the ends of the operating arms or the voting keys, and there is no possibility of an elector committing a fraud or being deceived in casting his vote.

Further it will be seen that the lock may be adapted to meet all the different kinds of voting and all contingencies that may arise in an election and still prevent all illegal voting and fraud connected with the casting of the vote

Having now described my invention what I claim is:—

1. In a device of the character described, a lock consisting of a pinion mounted for rotation and common to a plurality of keys, a second pinion adapted to be engaged by the first pinion, and means for separating the pinions from engagement with each other.

2. In a device of the character described, a lock consisting of a pinion loosely mounted for rotation, a second pinion adapted to be engaged and rotated by the first pinion, and means connected with the second pinion for releasing the lock by the separation of the pinions.

3. In a device of the character described, a pinion rotatably mounted, a second pinion adapted to be engaged and rotated by the first pinion, a key adapted to engage the first pinion and rotate it, and means for separating the pinions from engagement with each other.

4. In a device of the character described, a pinion mounted for rotation, a second pinion adapted to be engaged and rotated by the first pinion, a reciprocating key adapted to engage and rotate the first pinion and by it the second pinion, and means for releasing the lock by the separation of the pinions.

5. In a device of the character described, a shaft a pinion loosely mounted on the shaft, a second pinion loosely mounted for rotation and adapted to be engaged and be rotated by the first pinion, and a key adapted to engage the first pinion and rotate it.

6. In a device of the character described a shaft a pinion loosely mounted on said shaft, a second pinion loosely mounted for rotation to be engaged and rotated by the first pinion, a key adapted when reciprocated to engage the first pinion and rotate it and with it the second pinion, and means for raising and lowering the pinions.

7. In a device of the character described, a pinion loosely mounted for rotation and provided with cogs, a second pinion loosely mounted for rotation and provided with cogs adapted to be engaged by the cogs on the first pinion, a key when reciprocated to rotate the first pinion, and means engaging the second pinion for reversing its rotation after it has been separated from the first pinion.

8. In a device of the character described, a pinion rotatably mounted and adapted to be rotated and common to a plurality of keys, a second pinion adapted to be engaged and rotated by the first pinion, and a plurality of keys adapted one after another to engage the first pinion and rotate it and with it the second pinion.

9. In a device of the character described, a pinion mounted for rotation and common to a predetermined number of keys, a second pinion adapted to engage and be rotated by the first pinion, a predetermined number of keys adapted one after another to engage the lock and rotate the pinions, and means for preventing any more than a predetermined number of keys from engaging and rotating one after another the first pinion.

10. In a device of the character described, a movable lock consisting of a pinion adapted to be rotated, a second pinion adapted to be rotated and set to engage the first pinion, a key for rotating the pinions, means for moving the lock, means for separating the pinions when the lock is moved in one direction, and means engaging the second pinion for reversing its rotation after it has been disengaged from the first pinion.

11. In a device of the character described, a lock consisting of a pinion mounted for rotation and common to a plurality of keys, a second pinion adapted to engage the first pinion, and means connected with the second pinion for limiting the movement of the first pinion.

12. In a device of the character described, a shaft a pinion loosely mounted on the shaft and adapted to be rotated, a second pinion loosely mounted for rotation and adapted to engage the first pinion, means secured to the second pinion for limiting the rotation of said pinions, a key adapted to engage the first pinion and rotate the same and means for raising and lowering the pinions and restoring the second pinion to original position.

13. In a device of the character described, a pinion common to and adapted to be rotated by a predetermined number of keys, a second pinion adapted to be engaged and rotated by the first pinion, a predetermined number of keys adapted to operate the first pinion one after another, and a stop secured to the second pinion adapted to prevent the further rotation of the pinions after the predetermined number of keys have operated the lock.

14. In a device of the character described, a movable lock consisting of a pinion loosely mounted and adapted to be rotated and provided with cogs, a second pinion loosely mounted for rotation and provided with cogs adapted to engage the cogs on the first pinion, a stop on said second pinion for limiting its rotation, a key adapted when reciprocated to engage the cogs on the first pinion and rotate both pinions and means for separating the pinions and releasing the lock.

15. In a device of the character described, a movable lock consisting of a pinion adapted to be rotated, a second pinion adapted to be engaged and rotated by the first pinion, a key for rotating the pinion, a stop for limiting the rotation of the pinions, and means for raising the lock and separating the pinions when raised.

16. In a device of the character described, a lock consisting of a pinion provided with cogs and adapted to be rotated, a second pinion provided with cogs and set in engagement with the first pinion, a key adapted to be reciprocated, an arm on the key adapted to engage the cogs on the first pinion and rotate it, and two plates attached to the second pinion and adapted to engage the cogs on the first pinion and limit its rotation.

17. In a device of the character described, a lock consisting of a pinion loosely mounted for rotation, a second pinion loosely mounted for rotation and set to be engaged and rotated by the first pinion, a key adapted to rotate the pinion when it passes through and out of the lock, means engaging the pinions for limiting the rotation of the pinions and preventing more than one key from rotating the pinions, and means for raising and lowering the lock into and out of the path of the travel of the key.

18. In a device of the character described, a pinion adapted to be rotated by a predetermined number of keys, a second pinion adapted to be engaged and rotated by the first pinion, a predetermined number of keys adapted to rotate the pinions one after another, a stop secured to the first pinion for preventing further rotation of the pinion after the predetermined number of keys have rotated the pinions, means for preventing more than one key from engaging the first pinion at the same time and means for separating the pinions and releasing the lock.

19. In a device of the character described, a movable lock consisting of a pinion loosely mounted, a second pinion adapted to be engaged and rotated by the first pinion, a key when reciprocated to rotate the first pinion and by it the second pinion, stops attached to the second pinion and adapted to engage the first pinion and limit the rotation of both pinions, means engaging the second pinion to rotate said pinion to normal position, and means for raising and lowering the lock into and out of the path of the travel of the key.

20. In a device of the character described, a lock consisting of a pinion loosely mounted for rotation and common to a predetermined number of keys, a second pinion adapted to be engaged and rotated by the first pinion, an adjustable stop adapted to be set to stop further rotation of the pinions when the predetermined number of keys have operated the lock, a predetermined number of keys adapted to engage and operate the lock one after another, and means for separating the pinions and releasing the lock.

21. In a device of the character described, a movable lock consisting of a pinion, a second pinion adapted to be engaged and rotated by the first pinion, a key adapted when reciprocated to engage and rotate the first pinion, and means for raising the lock out of and lowering it into the path of the travel of the key.

22. In a device of the character described, a movable lock consisting of a pinion adapted to be rotated, a second pinion adapted to be engaged and rotated by the first pinion, a key adapted when reciprocated to engage and rotate the first pinion, means for raising and lowering the lock into and out of the path of the travel of the key, and means when the lock is raised to separate the pinions from engagement with each other and when lowered bring them into engagement with each other.

23. In a device of the character described, a shaft, a movable lock consisting of a pinion loosely mounted on said shaft for rotation, a second pinion adapted to be rotated by the first pinion, a key for rotating the pinion, means for raising and lowering the lock and means for restoring the second pinion to normal position.

24. In a device of the character described, a lock consisting of a pinion adapted to be rotated, a second pinion mounted for rotation and adapted to be engaged and rotated by the first pinion, a key for rotating the pinions, and means engaging the second pinion for restoring the second pinion to the same position it had before it had been rotated.

25. In a device of the character described, a lock consisting of a pinion adapted to be rotated, a second pinion adapted to be engaged and rotated by the first pinion, a key adapted to engage the first pinion and rotate it and with it the second pinion, means for separating the pinions, and means engaging the second pinion for restoring the second pinion to the position it had before it was rotated by the first pinion.

26. In a device of the character described, a movable lock consisting of a pinion mounted for rotation, a second pinion adapted to be engaged and rotated by the first pinion, a key for rotating the first pinion and with it the second pinion, means for raising and lowering the lock out of and into the path of the travel of the key, means for disengaging the pinions when the lock is raised, and means when the pinions are disengaged for rotating the second pinion back to normal position.

27. In a device of the character described, a lock consisting of a pinion mounted for rotation, a second pinion adapted to be engaged and rotated by the first pinion, a plurality of keys adapted to engage one after the other the same pinion and rotate it and with it the second pinion, and means whereby any one of the plurality of keys may be withdrawn reversing the first pinion and another of the keys inserted and rotate back the first pinion.

28. In a device of the character described, a first pinion common to a plurality of keys, a second pinion adapted to be engaged and rotated by the first pinion, and a plurality of keys adapted to engage one after another and rotate the first pinion in one direction and when withdrawn to rotate said pinion in the opposite direction.

29. In a device of the character described, a lock consisting of a pinion loosely mounted for rotation, a second pinion loosely mounted and adapted to be rotated by the first pinion, keys for engaging and rotating the first pinion, and means for guiding the keys into engagement with the lock and preventing more than one key at a time from entering the lock consisting of spacing plates and buttons within the spacing plates.

30. In a device of the character described, a lock consisting of a pinion rotatably mounted, a second pinion engaged and rotated by the first pinion, keys for rotating the pinions, means for preventing more than one key from entering the lock at the same time, and means for separating the pinions and releasing the lock.

31. In a device of the character described, a first pinion common to a plurality of keys, a second pinion adapted to be engaged and operated by the first pinion, and a plurality of keys each provided with an arm adapted to engage one after another as the keys are manually forced in the first pinion and rotate said pinion in one direction and when the keys are withdrawn to rotate back the first pinion to normal position.

32. In a device of the character described a first pinion common to a plurality of keys, a second pinion adapted to be engaged and rotated by the first pinion, a plurality of keys adapted one after another to engage the first pinion and rotate the pinion in one direction and when a key is withdrawn to rotate said pinion in the opposite direction, and means for separating the pinions and releasing the lock.

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

ENOS B. WILLIX.
JOHN YOUNG.

Witnesses:
J. A. HINER,
W. D. SMYTH.