No. 620,610. Patented Mar. 7, 1899.

F. W. PURCELL.

VOTING MACHINE.

(Application filed Dec. 31, 1897.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1

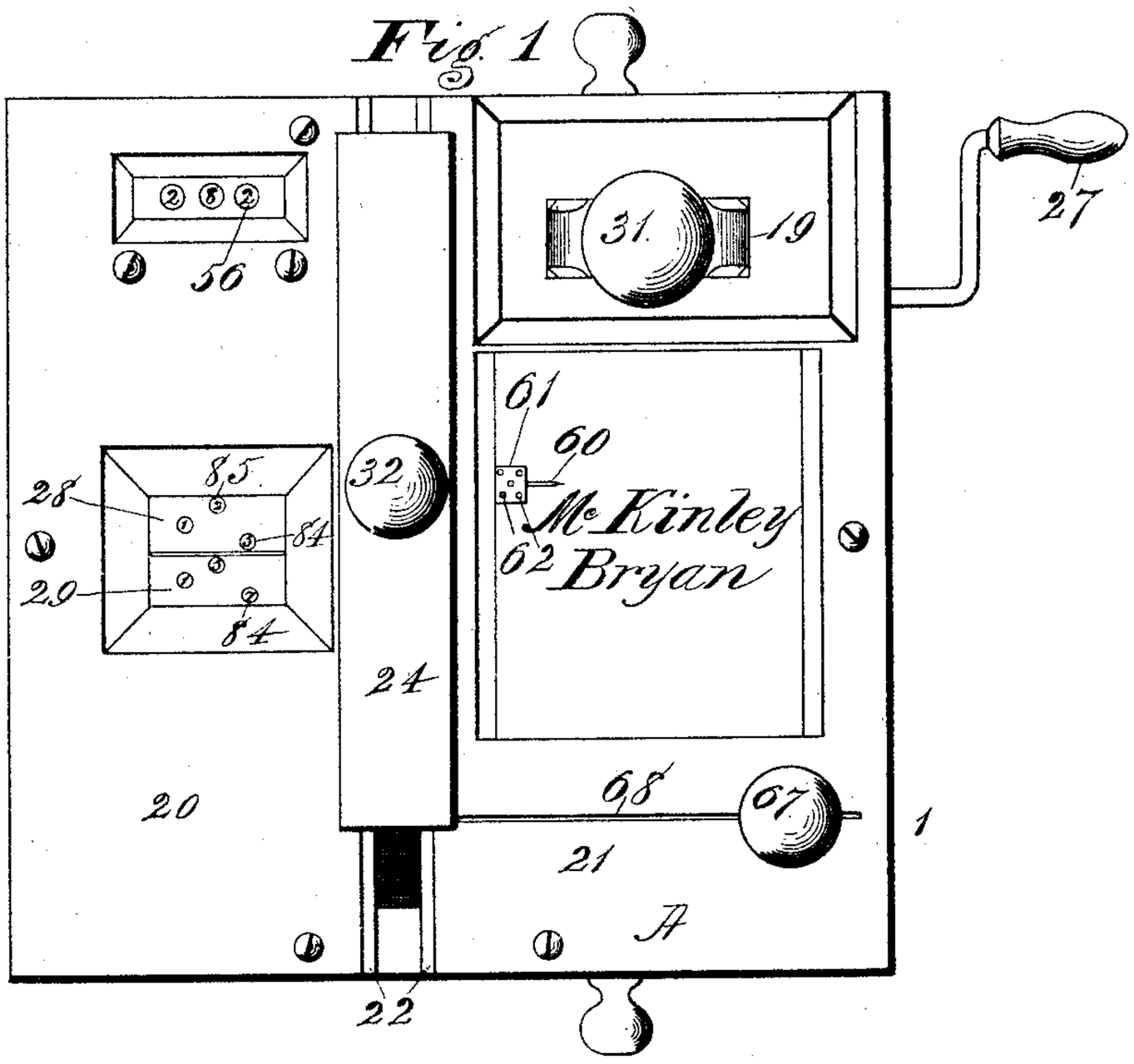

Fig. 2

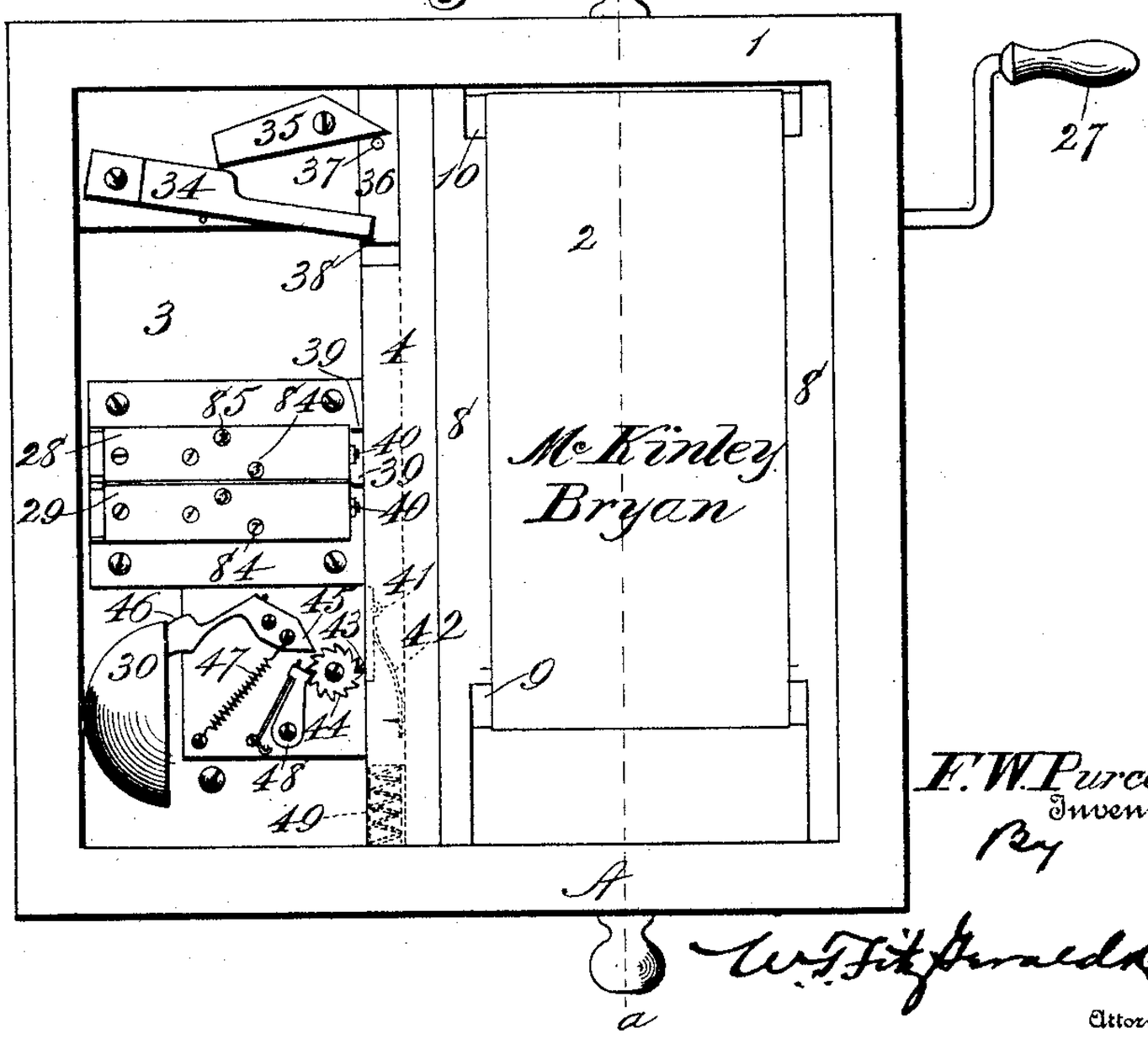

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Fig. 3

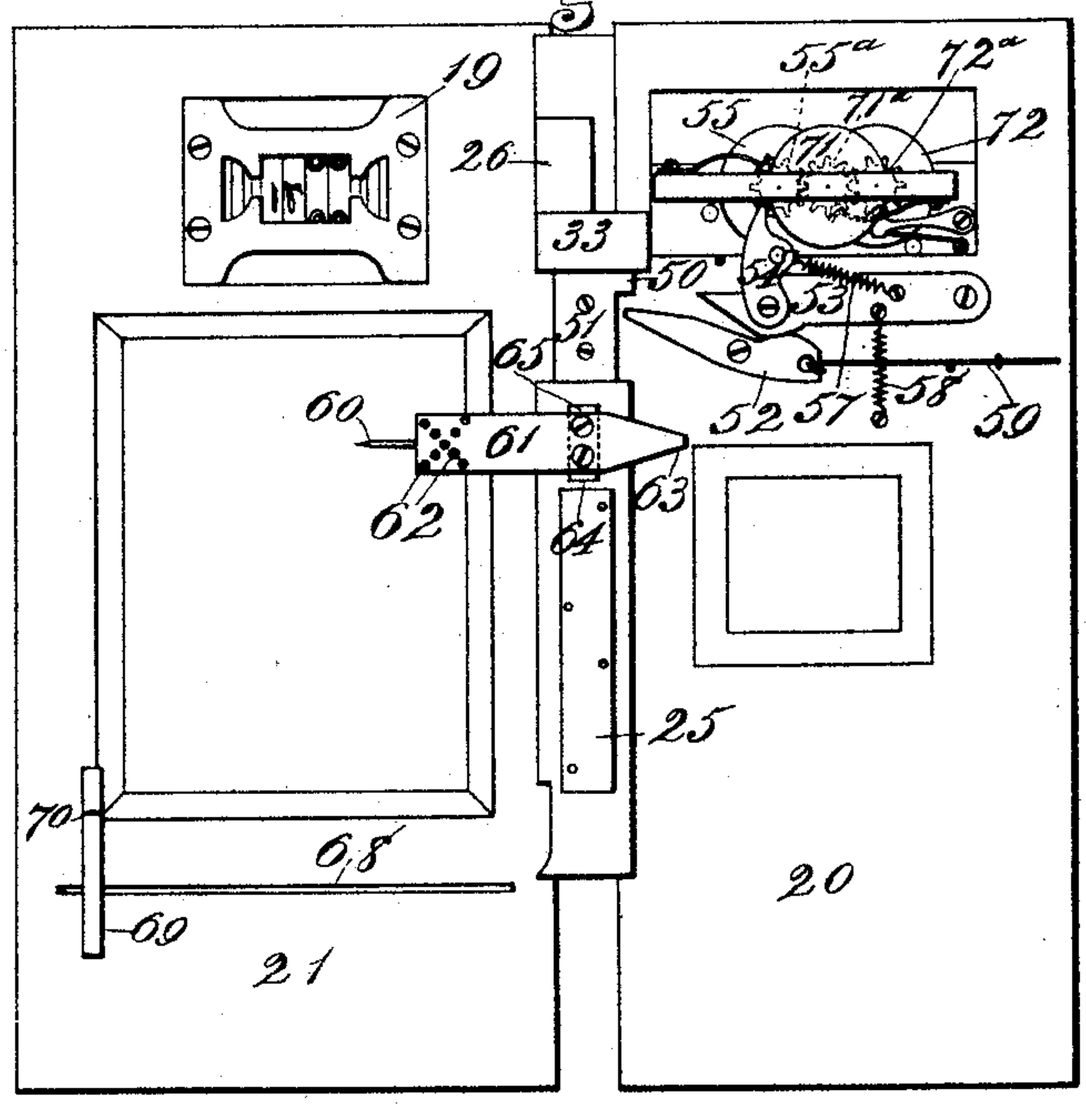

Fig. 4

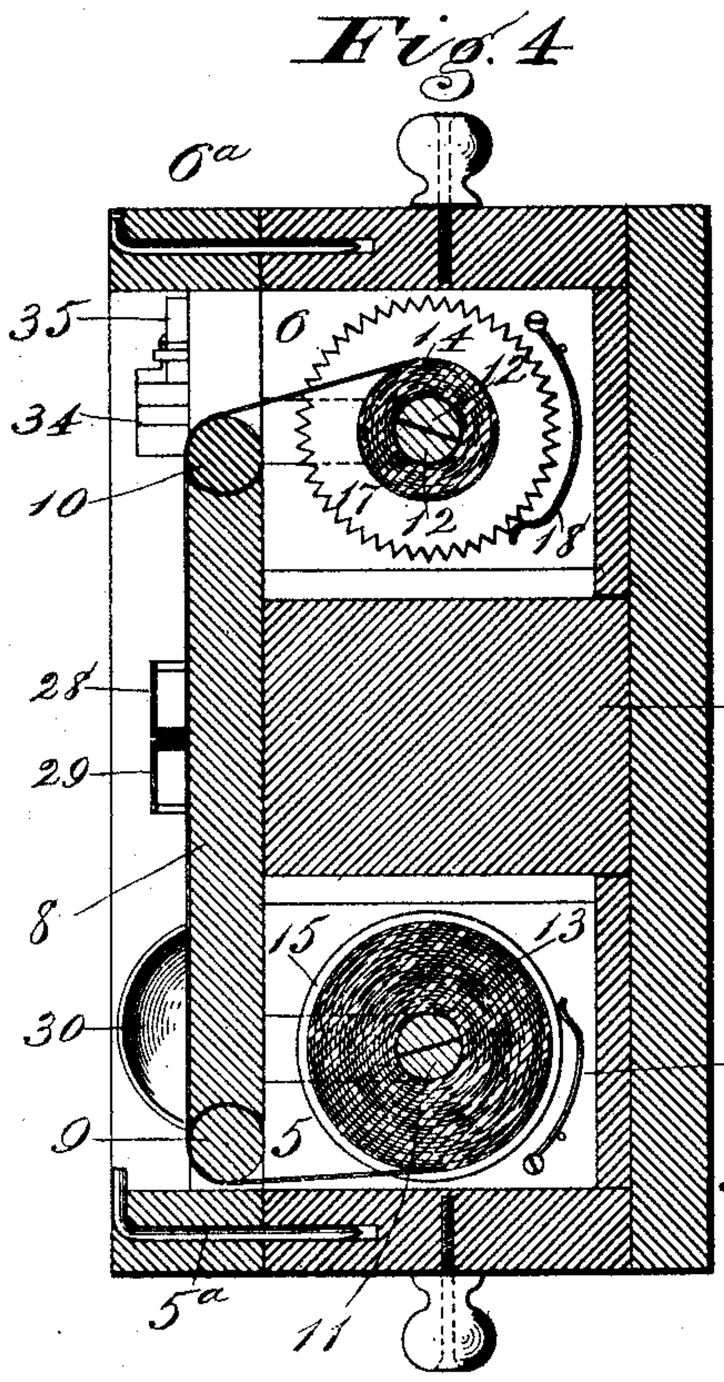

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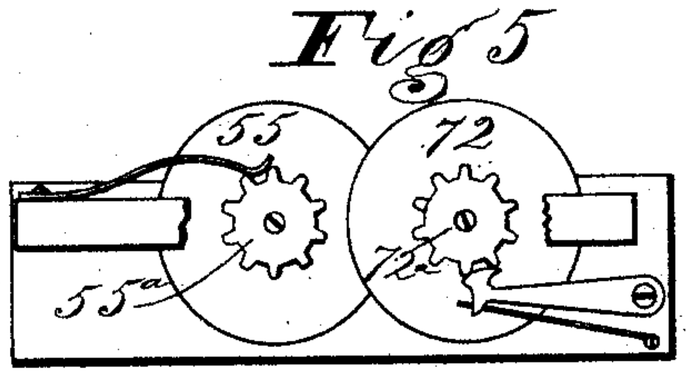
Fig 5



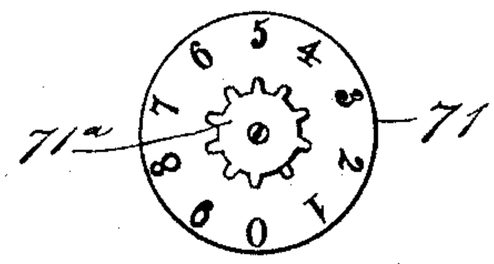


Fig. 6

Fig. 8

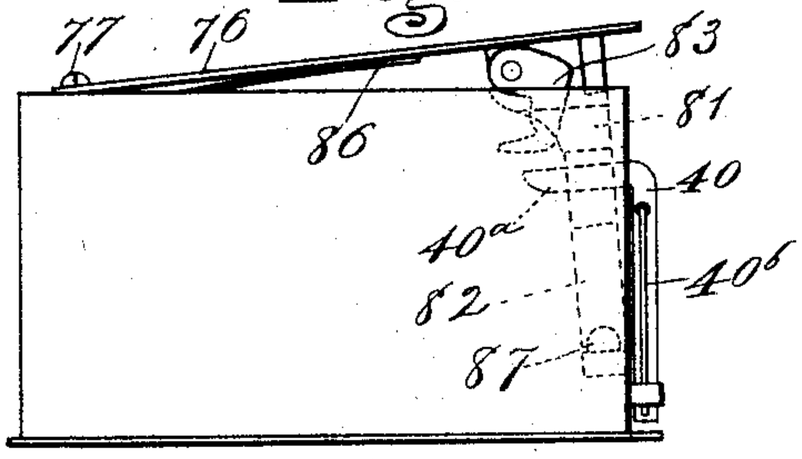


Fig. 7

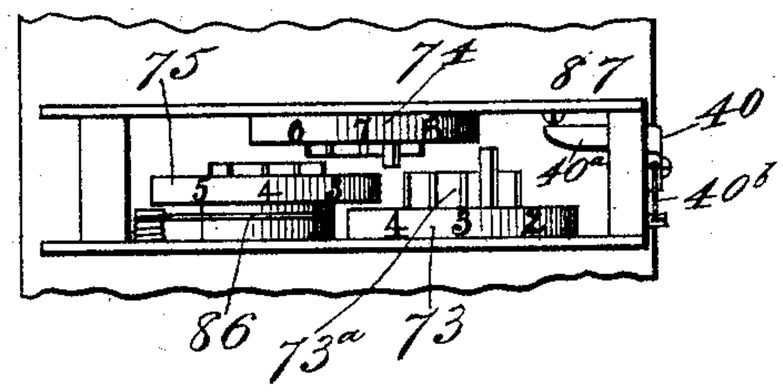


Fig. 9

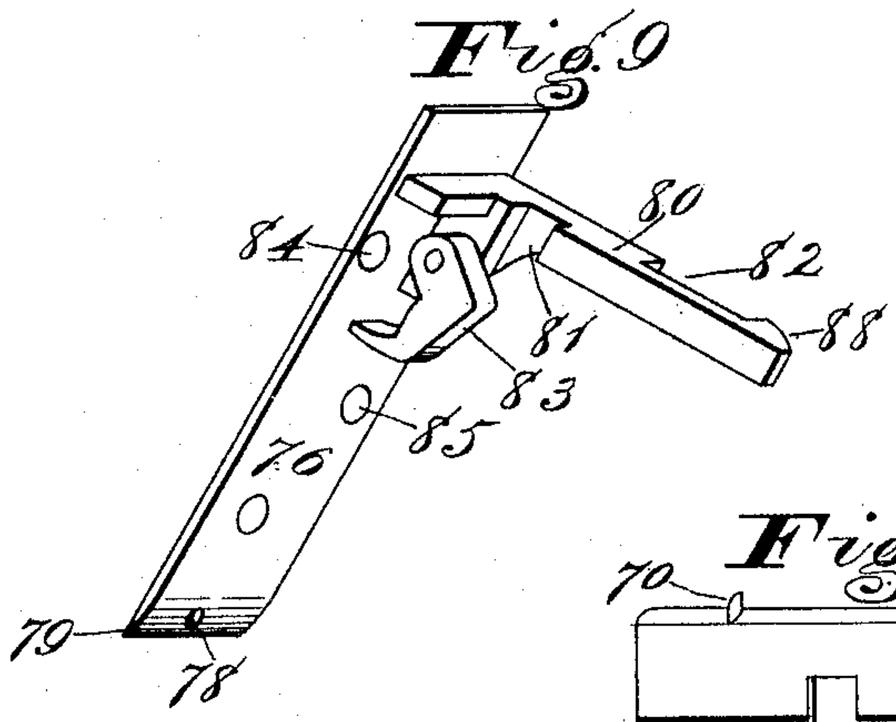


Fig. 10

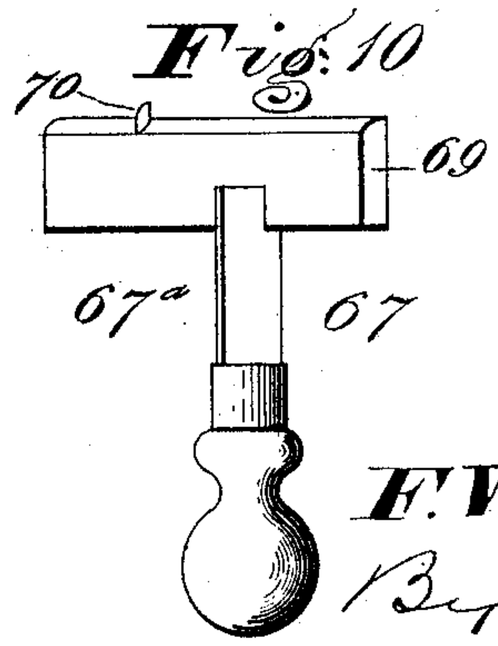
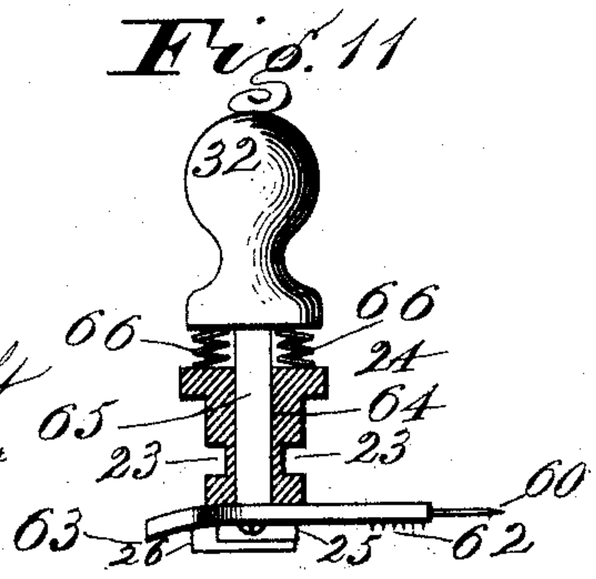


Fig. 11



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VOTING MACHINE.

(Application filed Dec. 31, 1897.)

(No Model.) 4 Sheets—Sheet 4.

Fig 12.

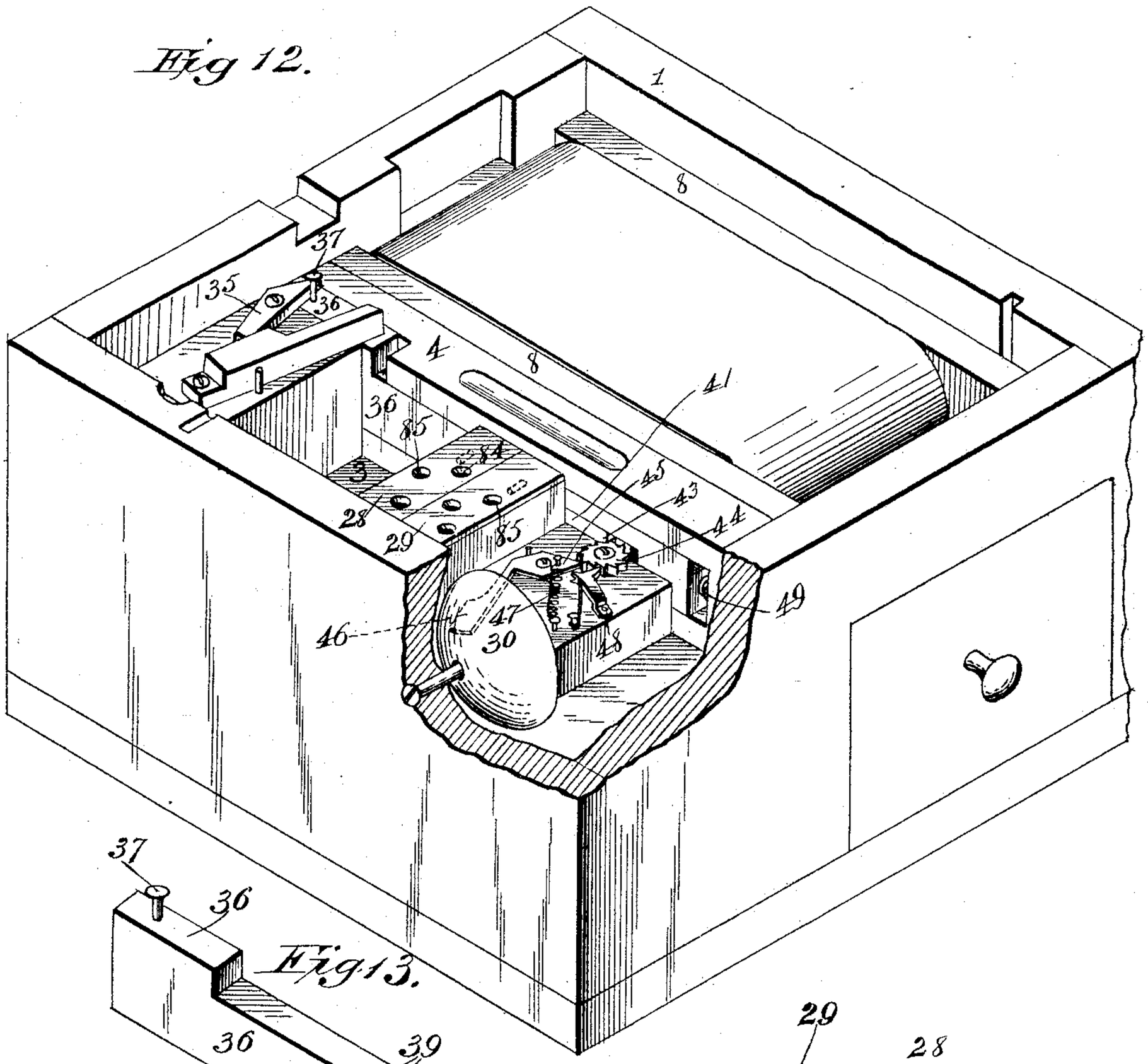


Fig 13.

Fig 15.

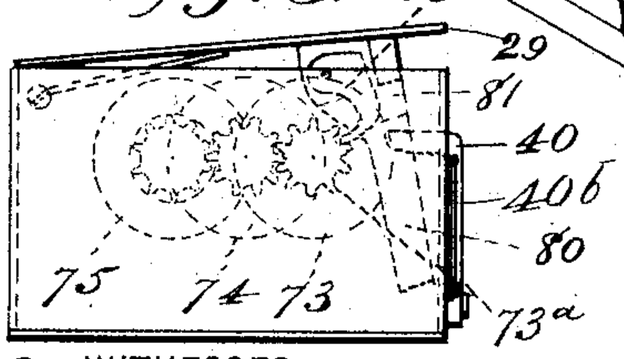
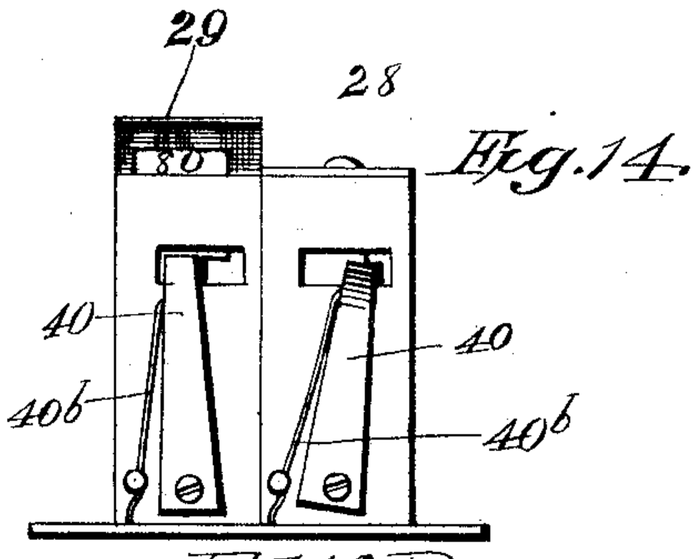


Fig. 14.



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UNITED STATES PATENT OFFICE.

FRANK WILLIAM PURCELL, OF ST. PAUL, MINNESOTA.

VOTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 620,610, dated March 7, 1899.

Application filed December 31, 1897. Serial No. 664,986. (No model.)

To all whom it may concern:

Be it known that I, FRANK WILLIAM PURCELL, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Voting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and the numerals and letters of reference marked thereon, which form a part of this specification.

The object of my invention is to furnish a voting-machine for general elections or for legislative bodies or other organizations of any character whatever in which a large number of ballots will probably be cast and the accuracy of the result is of special importance. In order to accomplish this purpose, each voter should be able to cast his own vote with absolute certainty that it shall be recorded and tabulated as cast, so that the aggregate number of votes cast for any candidate or for any measure shall be a certainty without possible error or fraud. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of my invention in complete operative position. Fig. 2 is a top plan view with the cover of the box removed. Fig. 3 is a bottom plan of the cover and the parts attached thereto. Fig. 4 is a section of Fig. 2 on line *a a*. Fig. 5 is a bottom plan view of the numeral-disks of the total-tally mechanism, (see Fig. 3,) the units-wheels being turned face up, that the numerals thereon may be seen. Fig. 6 is a side elevation of said units-wheel. Fig. 7 is a top plan of the total-tally mechanism with the lid removed. Fig. 8 is a side elevation of Fig. 7 with the lid in an operative position. Fig. 9 is a perspective view of the lid of one of the total-tally boxes. Fig. 10 is a perspective of the knife. Fig. 11 is a sectional view of the slide-bar, showing certain other mechanism connected therewith. Fig. 12 is a perspective view of my invention complete, showing part of the casing broken away and the lid removed. Fig. 13 is a perspective view of the controlling-bar, (hereinafter designated by the numeral 36.) Fig. 14 is an end view of a portion of the individual-tally mechanism. Fig. 15 is a side elevation of one of the individual tallies, showing certain parts of the internal mechanism in dotted lines.

The numeral 1 indicates the receptacle containing the operative parts of my mechanism, said receptacle being divided into two compartments 2 and 3 by the longitudinal partition 4, Figs. 2 and 4. Compartment 2 contains two boxes 5 and 6, one at each end of said compartment, Fig. 4. Said boxes 5 and 6 are locked in position by the pins or bolts 5^a and 6^a, which are passed down from the top of the box through suitable apertures, which register with apertures in said boxes, as shown in Fig. 4. As is apparent, said bolts must be put in their operative position before the lid is secured on the ballot-box. When the lid has been secured in its place, said bolts cannot be removed without first removing said lid. By this means the boxes 5 and 6 are kept securely closed, so that they may in no way be interfered with during the process of voting and can only be opened after the lid has been removed and the bolts have been sufficiently lifted in their respective apertures. Upon a suitable support 7 in the center of said compartment is also rigidly mounted the plate or table 8, extending the entire length of the box. Rotatably mounted in said table, one at each end, are the friction-rollers 9 and 10. The boxes 5 and 6 carry the spindles 11 and 12, respectively, each adapted to carry a roll of paper. The tickets to be voted are printed in consecutive order on a continuous roll of paper 13, which is received upon spindle 11 in box 5. The paper is then passed from said cylinder 13 up over friction-roller 9, longitudinally across table 8, where it is voted upon, thence down over friction-roller 10, and is received upon spindle 12, forming the roll 14. Said spindles 11 and 12 are provided with the longitudinal diametrical grooves 11^a and 12^a, respectively, into which is entered the end of the paper when it is desired to roll the same upon said spindles. Spindle 11 is further provided with the disk 15, fixedly mounted thereon at one end. Upon the periphery of said disk friction is applied by the spring 16, the object of which is to give slight tension to the paper as it is taken from the roll 13 to the

roll 14 in the process of voting. Spindle 12 is provided with the ratchet-wheel 17, mounted similar to disk 15, the teeth of said ratchet-wheel being acted upon by the spring 18. By this means that part of the paper extending across the table where it is voted upon is always held taut. The spindle 12 is rotated manually by means of the crank 27, suitably attached thereon.

At the upper end of compartment 2 is placed an automatically-consecutive-numbering machine 19, the handle 31 of which extends up through the lid of the box. The lid of the box is securely fastened to the same, preferably by means of screws. Said lid is divided into two parts or sections 20 and 21, with a space left between them when placed in operative position. The inner edges of said parts terminate in the tongues 22. This space between said sections conforms to the shape of slide-bar 24, the tongues 22 working in the grooves 23, which prevents the slide-bar from being lifted from its place between the two sections of the lid and only permits it to have a longitudinal movement. Said longitudinal movement of bar 24 is limited to the desired extent by the blocks 25 and 26, rigidly attached to the under side thereof in such a way as to abut against their respective ends of the box when too great a longitudinal movement is attempted. Hence when the lid is secured to the box with slide-bar 24 in operative position said bar cannot be removed from its position without first removing the lid of the box. A large part of the lid-section 21 is glass, so that practically all of table 8 or of the ticket spread thereon is exposed to view. Parts of lid-section 20 are also made of glass, the object of this being to expose to view the numbers registered by the individual tallies and by the total tally.

In compartment 3 of the ballot-box are located the candidates' automatic tallies. For brevity only two, 28 and 29, are here shown, as they are all alike; but the box will be provided with any desired number. In said compartment 3 is also located the bell 30 and mechanism for ringing the same and mechanism operating at the same time to simultaneously release all the lids of the individual tallies, permitting them to rise in position to be depressed, and thereby to register the votes cast, as will be fully described hereinafter. The object of the ringing of the bell is to give notice every time a ticket is voted. Secured to the under side of lid-section 20 in compartment 3 of the ballot-box, Fig. 3, is also located the mechanism for registering the total tally, which mechanism is substantially the same as that employed in the individual tallies.

The operation in voting is as follows: The person operating the mechanism stands or sits at the end A of the ballot-box, which for convenience of description will be hereinafter designated as the "lower" end of the box and the other as the "upper" end. In this position the right hand is convenient to the crank 27, which is rotated till it brings the top of one of the tickets immediately under the numbering-machine 19, Fig. 1. A downward stroke of the hand upon the handle 31 of said machine will number the ticket. As previously stated, it numbers them consecutively, beginning, of course, at "1." The voter then takes hold of the handle 32 of the slide-bar 24 and pushes it to the upper end of the box. The lug 33 on the under side of said bar, Fig. 3, comes in contact with the free end of the pivoted lever 34, Fig. 2, and moves it upwardly. This acts upon lever 35, which in turn acts upon bar 36 through the mediation of pin 37, imparting to said bar a downward movement. All of said bar, except a small portion at the upper end thereof, lies in a groove in the side of partition 4, facing compartment 3 of the box, the outer side of said bar being flush with the side of said partition. The overlying part of said groove is cut away at its upper end, and the upper end of said bar above shoulder 38 is made correspondingly thick, so as to be flush with the top of said partition 4. The length of the thickened part of said bar is slightly less than that of the cut-away portion at the upper end of said groove, so that said bar may have proper longitudinal play for the performance of its work. Bar 36 carries on its side the pins 39, designed to engage with the catches 40 of the individual tallies, so as to release their lids from their depressed position, leaving them ready to again be depressed. Said bar 36 also carries the pivoted ratchet 41, which is held in its operative position by spring 42, so that when bar 36 moves downwardly the projection 43 of said ratchet engages one of the cogs of ratchet-wheel 44, causing a partial revolution of the same. This causes another cog of the ratchet-wheel to come in engagement with and impart motion to the bell-lever 45, causing the bell-hammer 46 to move inwardly from the periphery of the bell. Said movement is resisted by the spring 47, one end of which is suitably attached to said lever, and when the point of the ratchet-cog has revolved sufficiently to move out of engagement with the point of bell-lever 45 the spring instantly brings said lever back into its normal position and delivers a stroke to the bell, causing it to ring. Too free a movement of ratchet-wheel 44 is prevented by means of the spring-actuated dog 48. The downward movement of the bar 36 is resisted by the compression-spring 49, suitably secured in the lower end of the groove in which said bar works, the object of said resistance being to always bring bar 36 back into its normal position after it has been acted upon. It will be observed from Figs. 1 and 2 that when the tickets are in proper position to be voted the name of each candidate will always be opposite the same individual tally, which will be known as his tally. The voter having now moved the slide 24 to its upward limit, and thereby having rung the bell, as ex-

plained above, begins to move it downwardly, the first effect of which is that projection 50 of plate 51, Fig. 3, carried by said bar 24, is brought into engagement with lever 52, which coöperates with lever 53 in such a way as to communicate motion through the mediation of ratchet 54 and cog-wheel 55ª to the units-wheel 55 of the total-tally mechanism, causing it to expose the next greater unit to view through the small glass 56, Fig. 1; but the full operation of the tally-registers will be explained hereinafter. The ratchet 54 is held in engagement with the cog-wheel 55ª by the spring 57, while the lever 53 is brought back into its normal position by the spring 58 and lever 24 by the rod-spring 59. Slide 24 is now moved downwardly till the pointer 60 of the perforating-bar 61 is immediately opposite the name of the candidate to be voted for. Downward pressure upon the handle 32 of said bar 24 will cause said handle to move downward and will bring the perforating-points 62 into the paper, thereby making a number of perforations immediately in front of the name of the lucky candidate, while the other end at the point 63 will depress the lid of that candidate's individual tally, which causes the units-wheel of said tally to sufficiently rotate to expose to view through the units-hole in said lid the next greater number. The ticket thus voted is then wound on the roll 14 by a proper rotation of the crank 27 and the operation described is ready to be repeated. Thus it will be observed that the individual tally of each candidate automatically registers and shows the exact number of votes he has received, while the total tally likewise shows the whole number of votes cast.

The total tally and the number on the last ticket voted must always correspond.

Fig. 11 is a section of the slide-bar 24, showing the means for operating the perforating-bar 61. Said bar 24 is provided at its center with the slot 64, in which snugly fits stem 65, to the top of which is rigidly attached the handle 32, said stem being somewhat longer than said slot, so as to permit an upward or downward movement therein. Rigidly secured to the lower end of this stem is the perforating-bar 61. Said bar 61 when in its normal condition is held slightly above the ticket to be voted, which is accomplished by means of the compression-springs 66, the upper ends of which are suitably seated in the handle 32, with their lower ends resting on bar 24.

When the polls are closed, the clerk of the election severs the tickets that have been voted from those that have not been voted by moving the knife 67, Fig. 10, with slight downward pressure across the bottom of the last ticket voted, thereby cutting the continuous roll in two. Slot 68, extending across the lower end of the lid-section 21, permits the knife to be moved back and forth, the shank 67ª of knife being received by said slot. The cross-bar 69 of said knife prevents the same from being withdrawn from the slot. The cutting-point 70 is carried by said cross-bar, being made integral therewith.

It now remains to fully explain the operation and construction of the tally mechanism. As already explained, the mechanism of the total and that of the individual tallies is exactly the same in principle. For sake of convenience and economy of space the total-tally disks are figured on their upper faces, while the individual tallies are figured around their edges, Figs. 5 and 7.

We begin with the total tally, as illustrated in Fig. 5, which shows the disks and wheels in the same position as they appear in Fig. 3, except that the wheel of tens, which is indicated by the numeral 71, is removed to one side away from its operative position and is turned face up that the figures upon said face may be seen. The cog-wheels 55ª, 71ª, and 72ª are rigidly secured to their respective disks and are each provided with ten cogs, which correspond in number to the ten digits. By mechanism already pointed out and explained the downward movement of slide-bar 24 in preparing to vote each ticket causes the cog-wheel 55ª to move forward one cog or one-tenth of a revolution and carries its disk 55, which is the units-disk, with it, which rotation causes said disk to bring the next larger number in view immediately under the small glass cover 56, Fig. 1. Neither one of the cog-wheels of the tally mechanism lies in the same plane with the cog-wheel to which it imparts motion, as may be clearly seen from Fig. 8, where it will be observed that only one of the ten cogs on the units-wheel 73 and one on the tens-wheel 74 extend sidewise a sufficient distance to come into the planes of their adjacent cog-wheels and to properly mesh therewith, so as to impart a partial rotation. Hence it is plain that the units-wheel must be moved forward ten cogs or an entire revolution in order to move the tens-wheel forward one cog, and the tens-wheel must likewise move an entire revolution to move the hundreds-wheel forward one cog or one-tenth of a revolution. As each cog is moved forward its corresponding unit is exposed to view, the units-wheel moving an entire revolution and numbering ten votes, when it will move the tens-wheel forward, so as to cause it to expose to view the next greater number of tens. The same is true of the tens-wheel in reference to the hundreds-wheel, &c. Hence it will be seen that the tally mechanism does its work with unerring accuracy.

The individual tallies are each provided with a lid 76. (Shown in Figs. 8 and 9.) Said lid is held in operative position by the screw 77, which passes loosely through the hole 78, allowing said lid to play thereon, and is firmly seated in the tally-box. That said play may be more free the end of said lid is slightly rounded at 79. Depending from said lid is the downwardly-extending arm 80, rigidly attached thereto, provided with the cut-away

portions 81 and 82 and carrying the gravity-dog 83. Every time this lid 76 is depressed by the end 63 of the perforating-bar 61, which is every time a name is perforated or voted for, said gravity-dog 83 engages the units cog-wheel 73^a and moves it forward one cog or one-tenth of a revolution, bringing the proper figure into view, which may be seen through hole 84 in said plate. (Also shown in Figs. 1 and 2.) As already explained, each revolution of the units-wheel will move the tens-wheel forward one cog or one-tenth of a revolution and bring the proper figure on that wheel into view immediately beneath the tens-hole 85 in said lid. The tens-wheel operates in like manner on the hundreds-wheel, &c. When lid 76 is depressed, it is held in that position by the inwardly-extending end 40^a, Fig. 8, of the spring-actuated catch 40, which end drops into the groove 81 and remains there till released by the downward movement of bar 36 through the mediation of pins 39. When such movement of bar 36 takes place, the resistance of spring 40^b, which operates to hold said inwardly-extending end 40^a in groove 81, (see also Fig. 9,) is overcome and said end 40^a is moved sidewise out of the groove 81, and the lid is instantly lifted by spring 86, suitably mounted in said tally-box and exerting a constant upward pressure against said lid. To prevent lid 76 from rising too far, the screw or lug 87 (also shown in Fig. 7) is so located on the inside of tally-box that the lower side of groove 82 in depending arm 80 will contact therewith when it has been lifted the proper height. The lower end of the bar 80 is rounded off at 88 to permit it to easily pass said lug or screw 87 when the lid is put on the box. The lower side of said lug is flattened, so as to present a sufficient surface when the lower side of said groove comes in contact therewith.

Having thus fully described in detail a specific construction for the application of my invention to practical use, it will yet be understood that I do not wish to limit myself to the exact construction here shown, but desire to be protected in all that clearly comes within the spirit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a voting-machine, a reciprocating slide 24 carrying a stamper 61 and having a lug 33, a series of levers 34 and 35 operated by said lug, a pawl-and-ratchet mechanism and a bar 36 having a ratchet 41 held in operative position by a spring 42 connecting said levers and ratchet mechanism, whereby a sounder is operated, all combined as set forth.

2. In a voting-machine, a reciprocating slide 24 provided with a stamper 61 and a lug 33, a series of levers 34 and 35 operated by said lug, a slide connected with the levers and having a tooth 43 on its other end, a pawl-and-ratchet mechanism engaged by said tooth and a sounder operated by said pawl-and-ratchet mechanism, all combined as set forth.

3. In a voting-machine, a reciprocating slide carrying a stamper 61 and a lug 33, levers 34 and 35 operated by said lug, and a device operated by said levers and having lateral pins 39 and a spring-cover, whereby said spring-cover of the tally is released, all combined as set forth.

4. In a voting-machine, an individual tally having a spring-actuated cover 76 provided with a depending arm 80 having a notch 81, a catch engaging said recess or notch when said arm is depressed and means to release the same after a ballot has been cast, all combined as set forth.

5. In a voting-machine, an individual tally having a spring-actuated cover 76 with a depending arm 80 provided with an upper recess 81 and a lower recess 82, a catch engaging the upper recess when the cover is depressed and a stop 87 working in the other recess to limit the upward movement of the cover when released, all combined as set forth.

6. In a voting-machine, an individual tally having a spring-actuated cover provided with a depending arm having recesses 81 and 82, a spring arm or catch 40 having an extended end 40^a, said catch or end engaging a recess 81 in said arm when depressed, and a stop 87 engaging recess 82 to limit the upward movement of the cover when released, all combined as set forth.

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

FRANK WILLIAM PURCELL.

Witnesses:
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