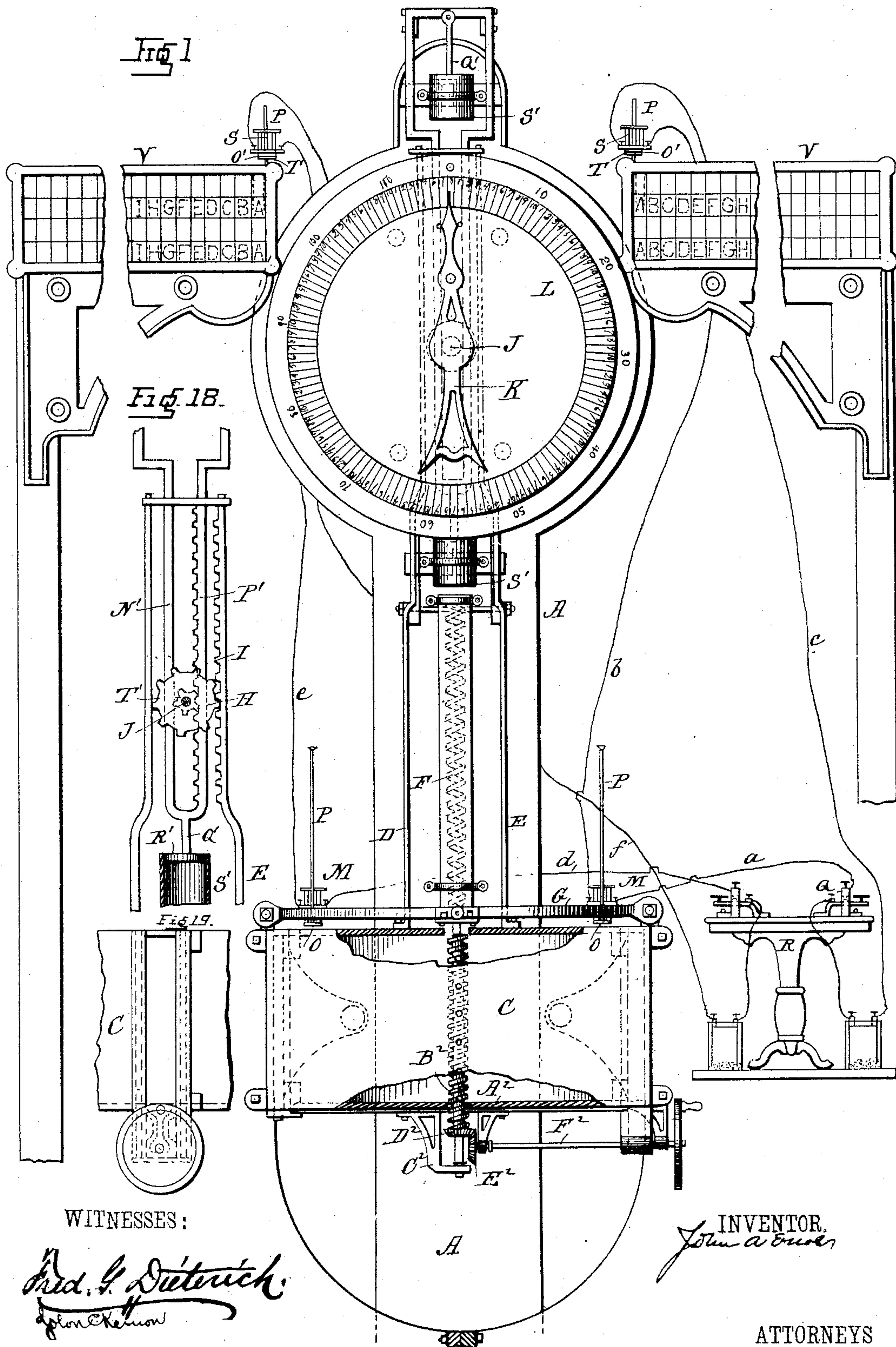


J. A. ENOS.

ELECTRIC VOTING MACHINE FOR LEGISLATIVE BODIES.

No. 287,649.

Patented Oct. 30, 1883.

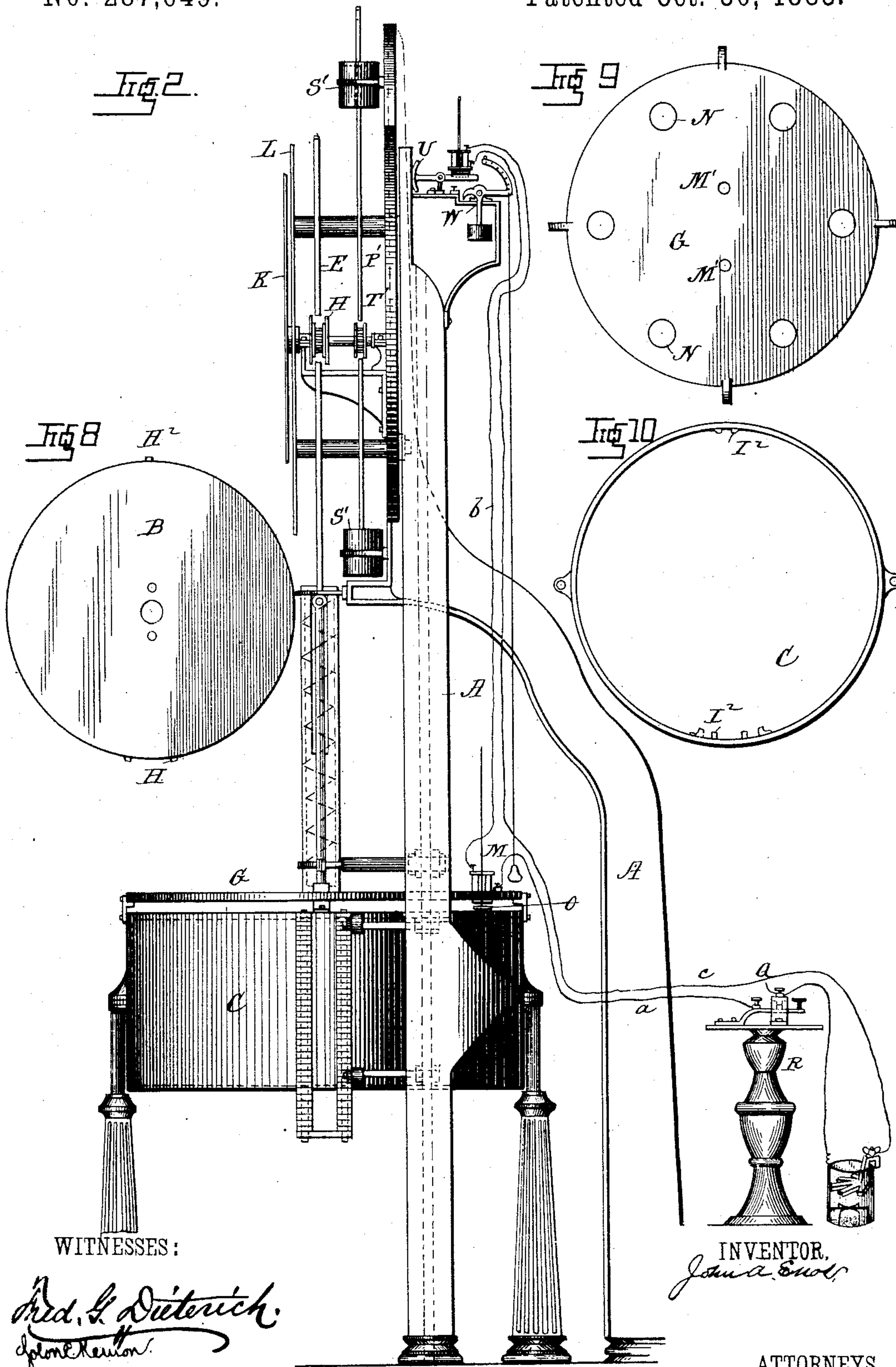


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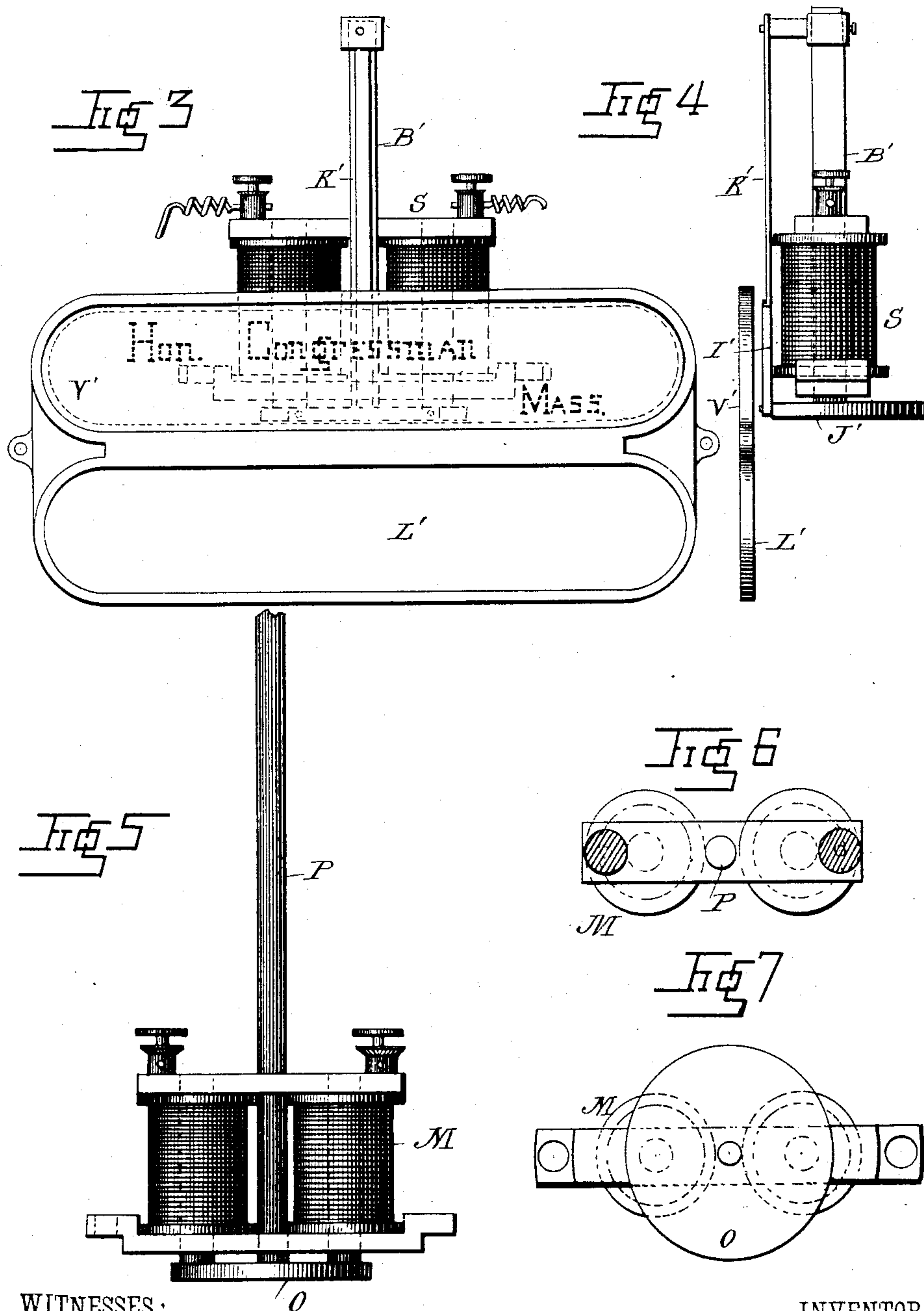
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WITNESSES:

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(No Model.)

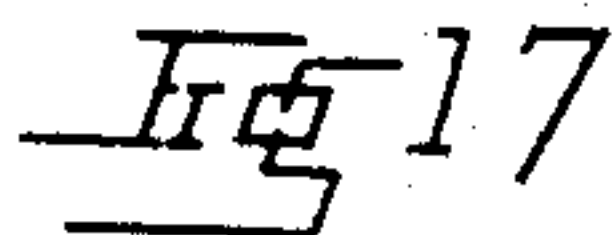
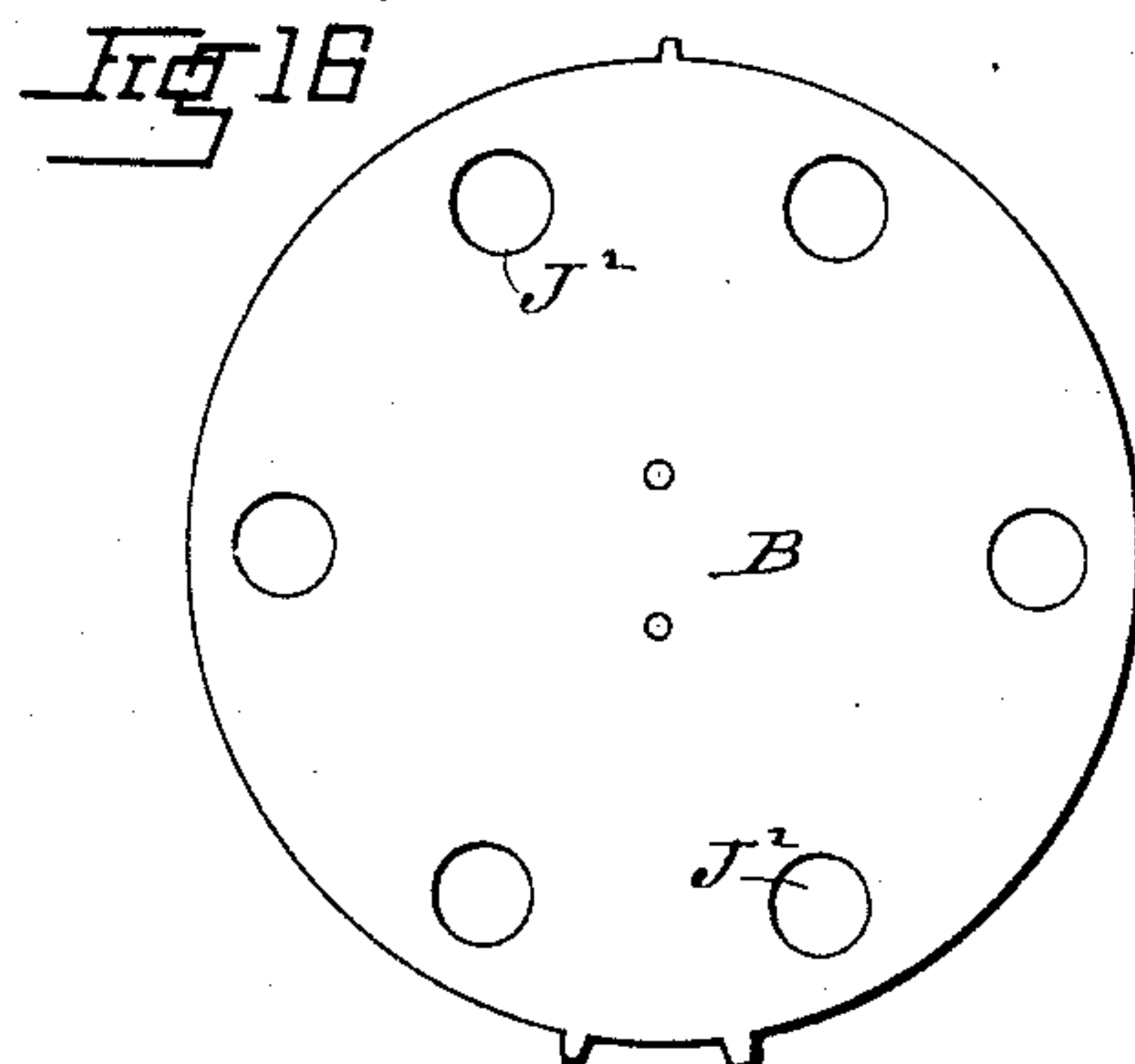
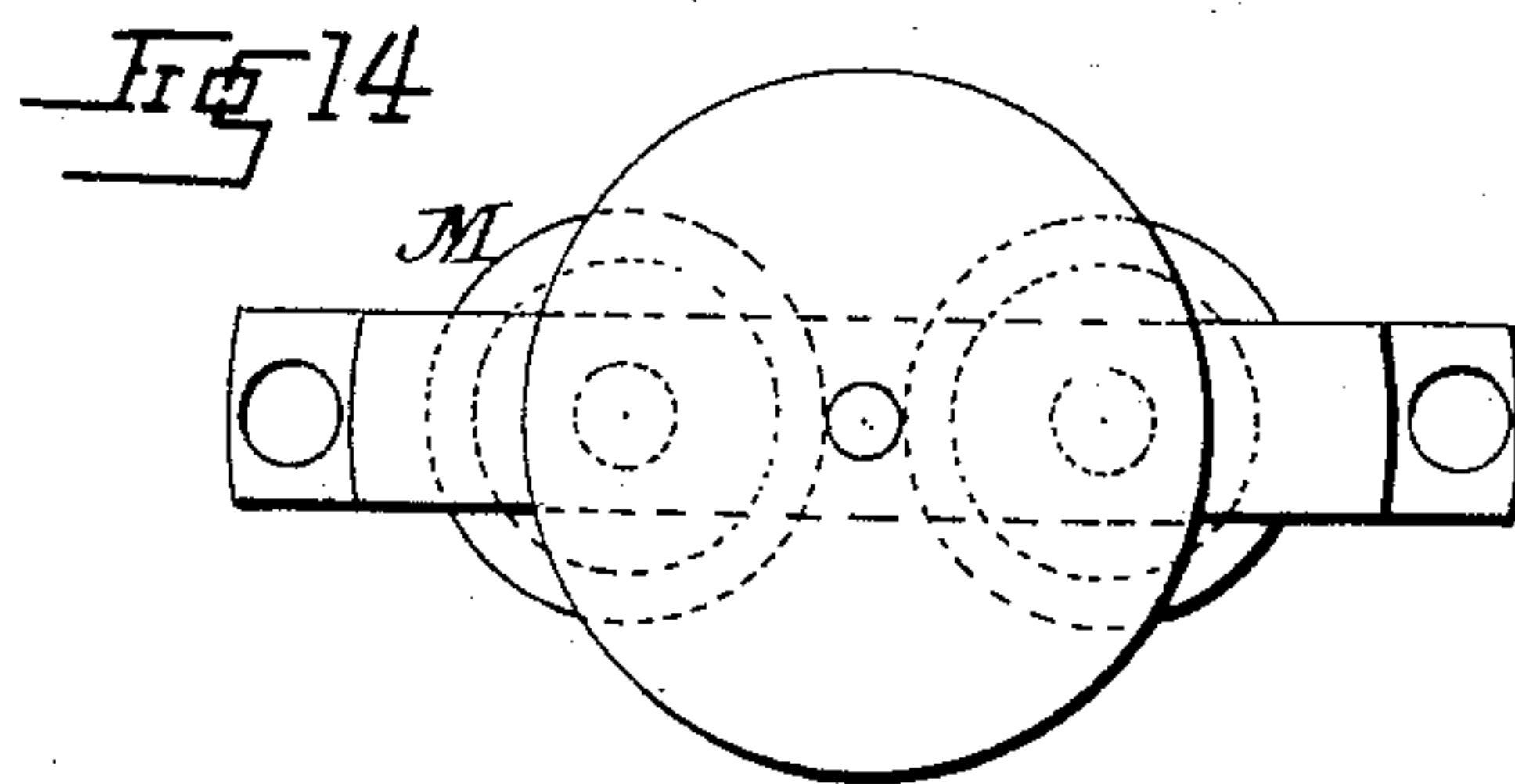
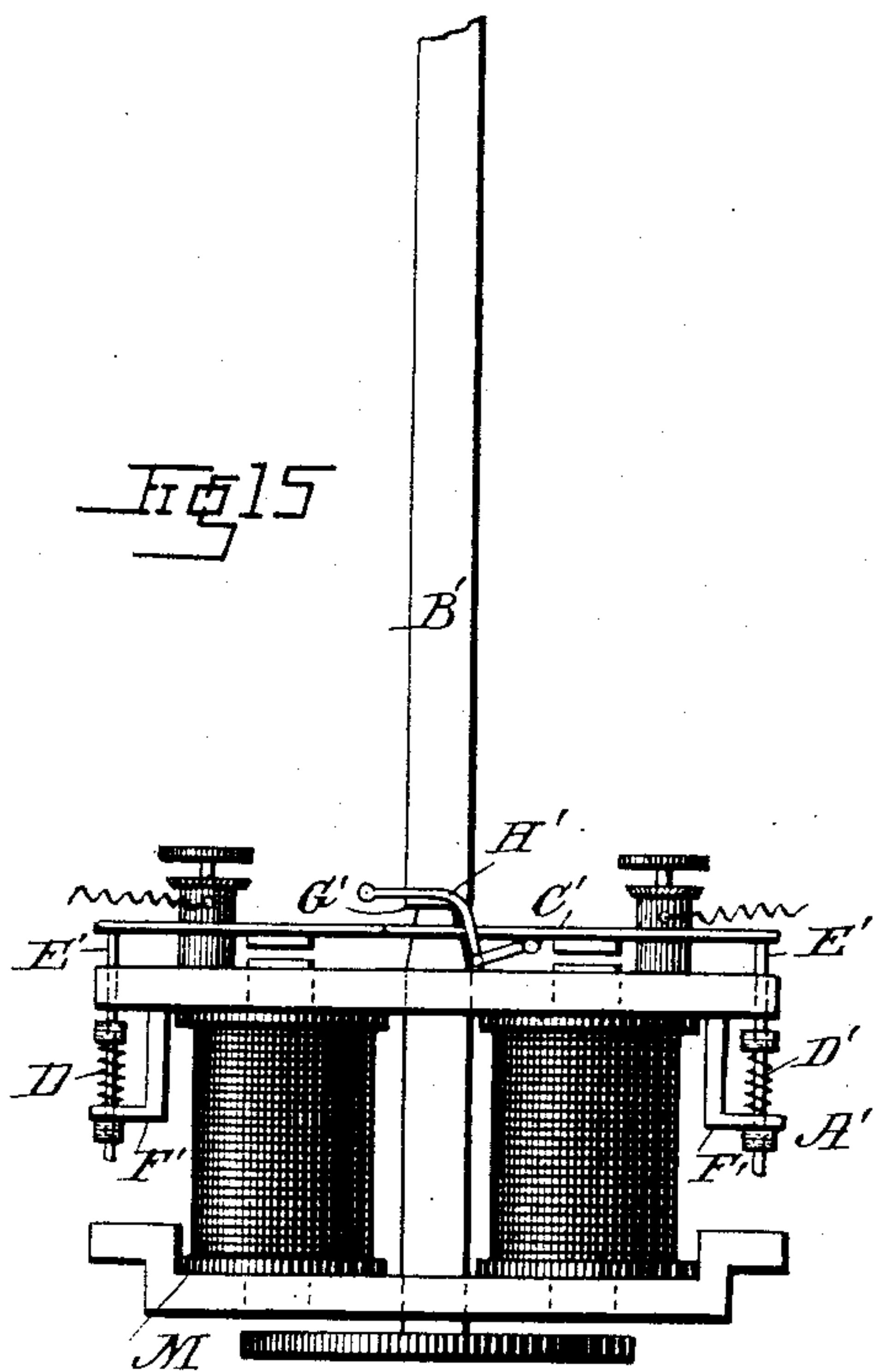
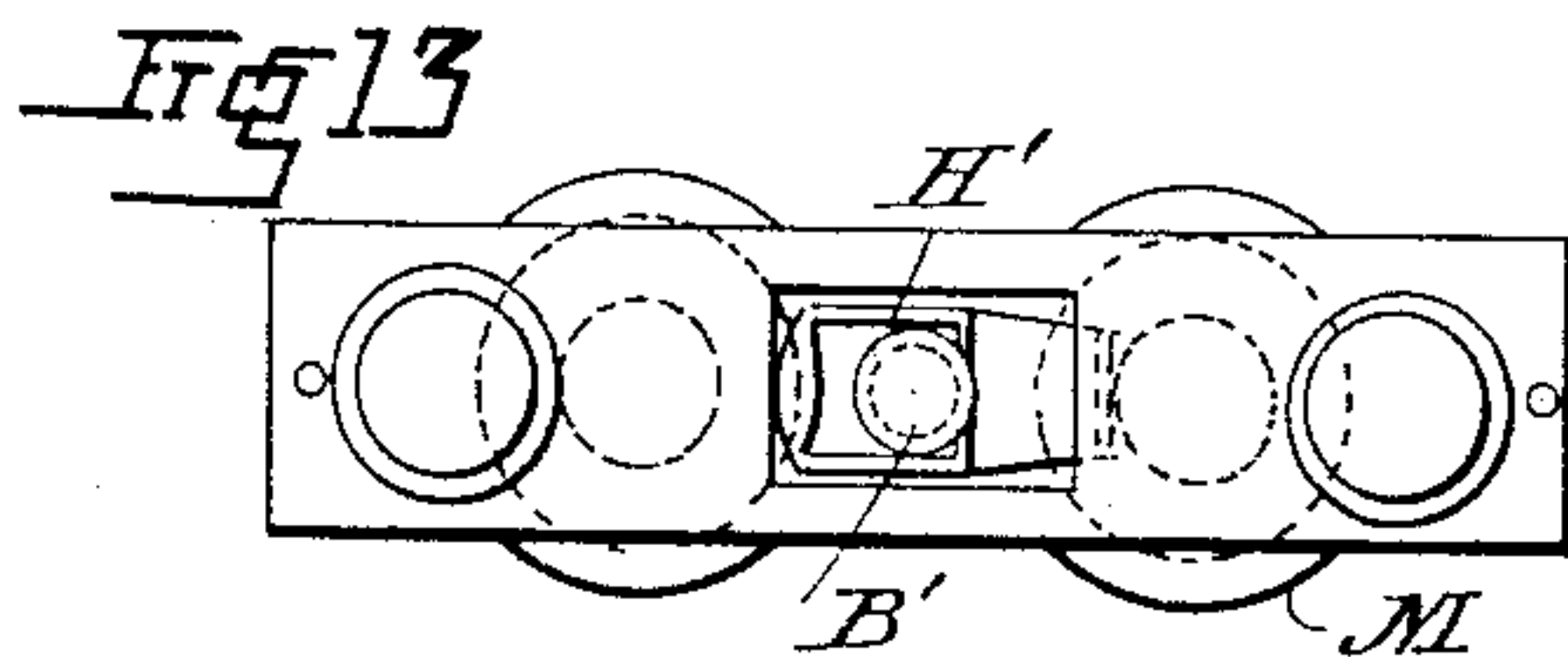
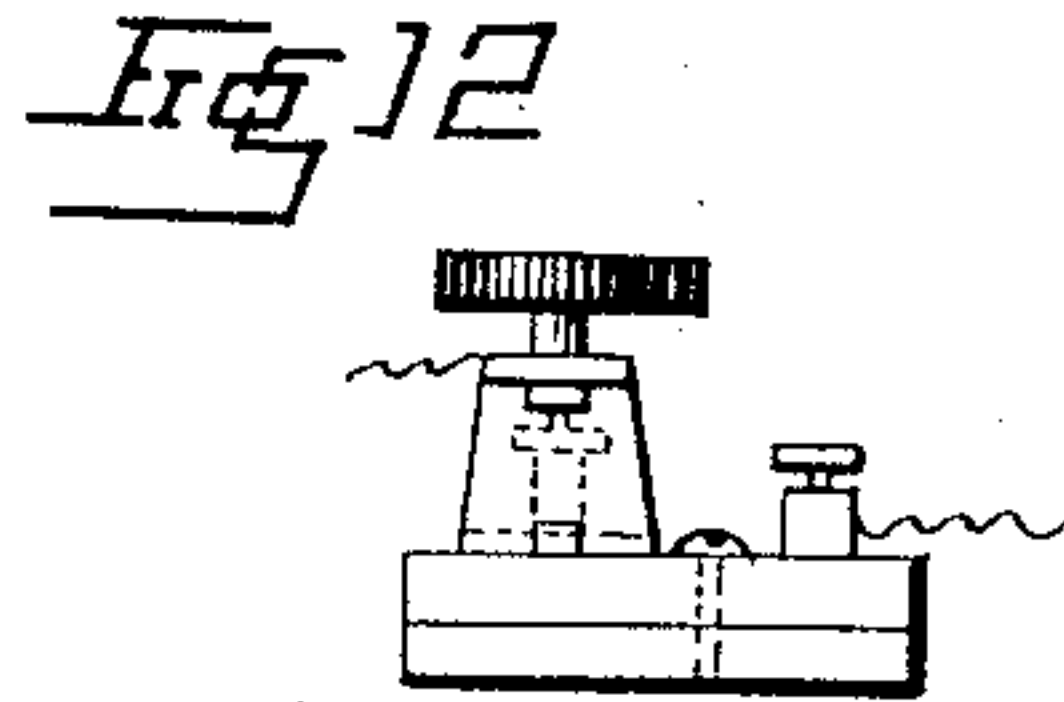
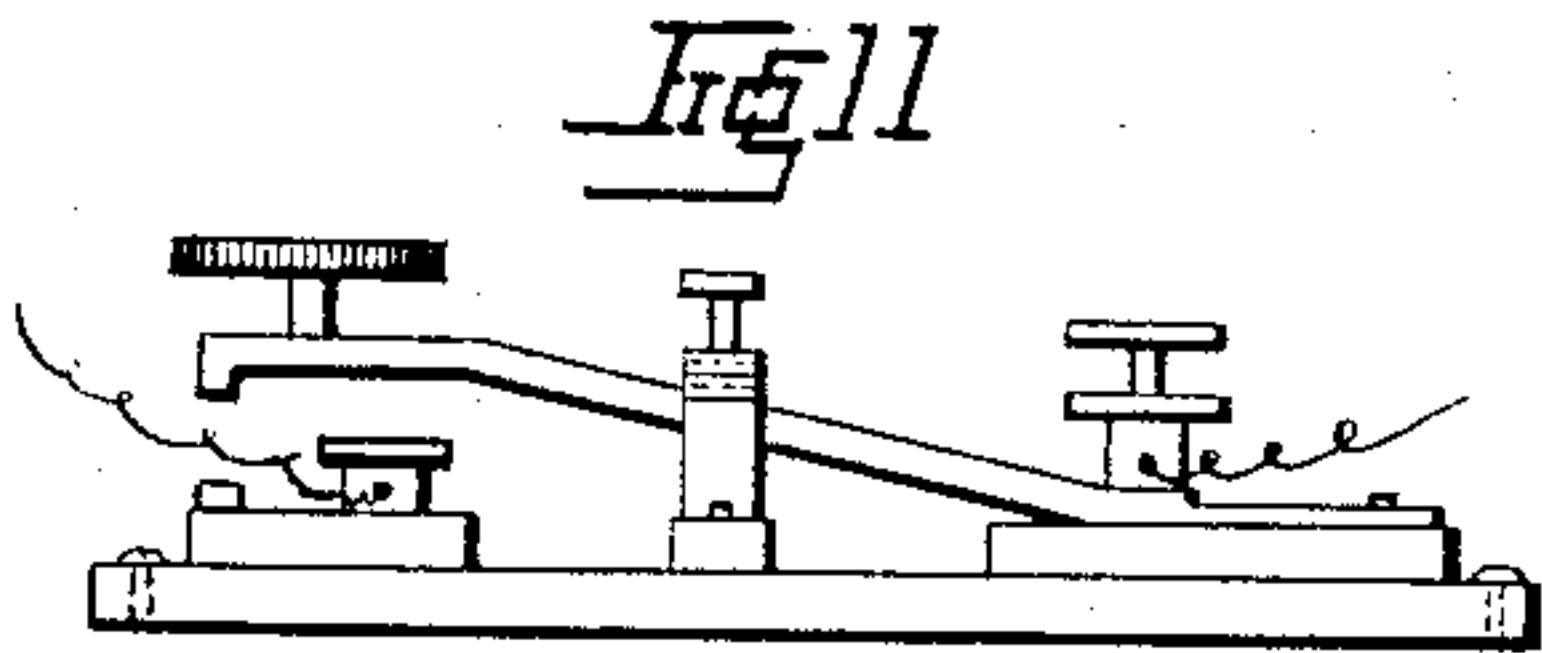
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WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN A. ENOS, OF PEABODY, MASSACHUSETTS, ASSIGNOR OF EIGHT SIXTY-FOURTHS TO GEORGE HENRY LOW, OF SAME PLACE.

ELECTRIC VOTING-MACHINE FOR LEGISLATIVE BODIES.

SPECIFICATION forming part of Letters Patent No. 287,649, dated October 30, 1883.

Application filed March 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. ENOS, of Peabody, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Voting-Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, forming part of this specification.

This invention relates to voting-machines for the use of legislative bodies; and the invention has for its object to provide an electrical apparatus by which each voter may cause his vote to be indicated on a dial, and the letters representing his name to be displayed to view by means of one and the same current of electricity.

In carrying my invention into effect I provide two distinct electric circuits for the use of each voter, one to be used when voting affirmatively and the other when voting negatively, and in each circuit I arrange two electro-magnets provided with gravity-armatures, which armatures are adapted, respectively, to operate two mechanical devices—one for moving a pointer over the face of a dial, and the other for displaying through an opening a disk or plate bearing the name of the voter.

In the drawings, Figure 1 is a front elevation of my electrical voting apparatus, partly broken away, showing the armatures held in their normal position by closed circuits. Fig. 2 is a side elevation of the same, partly broken away, showing one form of device for operating the plate bearing the name of the voter. Figs. 3 and 4 are enlarged detail views, showing a different means for operating the plate bearing the name of the voter. Figs. 5, 6, and 7 are detail views of the electro-magnets and armatures shown in Figs. 1 and 2. Figs. 7, 8, 9, and 10 are detail views of parts shown in Fig. 1. Figs. 11 and 12 are detail views of a key for an open circuit, to be used instead of the keys shown in Figs. 1 and 2. Figs. 13, 14, and 15 are detail views showing means for supporting the gravity-armatures in normal position in an open circuit. Figs. 16 and 17 are detail views showing other means for supporting the armatures where an open circuit is used, and Figs.

18 and 19 are detail views of parts shown in Figs. 1 and 2.

A indicates a supporting-frame, which is to be of any suitable construction, and high enough to support a dial and a name-annunciator in position to be readily seen from any part of a legislative chamber.

In front of the frame A, at the center thereof, is arranged a horizontal dish or scale-pan, B, which is loosely fitted in a cylinder, C, and connected to two parallel vertical bars, D E, extending to the top of the frame, and supported upon a spiral spring, F, which rests upon a disk, G, rigidly secured to projections on the cylinder. The bar E is provided with a rack, I, on its inner edge, with which engages a pinion, H, fitted between the two said bars, and mounted on a shaft, J, carrying a pointer, K, which is adapted to be moved around over a dial, L, when the bars D E are moved downward by weights placed on the scale.

To supply the weight for operating the scale, and through that the pointer, I provide an electro-magnet, M, which is secured over an opening, N, in the disk G, and I construct the armature O of the magnet with a long pin, P, which extends up through and above the electro-magnet, as a guide for the movements of the armature. The electro-magnet M is connected with an electric circuit, *a b c*, which is provided with a key, Q, adapted to close the circuit when in its normal position. When the circuit is broken, the armature O will fall by gravity upon the scale B and cause a corresponding movement of the pointer.

The above description will serve to indicate the general idea of the apparatus for recording a vote. In practice, however, I design to provide two distinct electric circuits—one for voting affirmatively and the other negatively—and arrange the keys of the two circuits on the desk R of the voter. Of these two circuits, the circuit *d e f* is also provided with an electro-magnet, M, arranged in all respects like that already described, so that one of the two armatures O will be deposited upon the scale at every vote, whether the vote be affirmative or negative. When the affirmative vote is taken, each voter in the assembly who wishes to vote

affirmatively will operate the corresponding key on his desk, which desk is to be provided with similar apparatus to that shown on the desk R, and the number of votes cast, which will cause an equal number of armatures O to be deposited on the scale B, will be recorded on the dial by the movement of the pointer. A note may then be made of the number of affirmative votes; and the negative vote may be taken in like manner by operating the corresponding keys, and the deposit upon the scale of additional armatures representing the negative vote will give a movement to the pointer indicating the sum total of both affirmative and negative votes, from which the negative vote may be readily determined.

As it is desirable in voting assemblies to record the names of those voting, as well as the number of votes cast, I arrange in each of the two electric circuits provided for each voter an electro-magnet, S, having a gravity-armature, O', constructed like the armature O, and adapted to fall upon one end of a pivoted lever, T, which is provided with a plate at its other end, upon which is displayed the name of the voter. This plate U is to rest normally behind a screen, V, provided with an opening above the normal position of said plate, through which the name shall be exhibited to view when the lever is moved by the weight of the armature. With this construction a single operation will cause the armatures O O' of either circuit to fall, and cause the vote to be recorded and the name of the voter to be displayed to view. As there are two name-annunciators, one of them will be set apart for displaying the names of affirmative voters and the other the names of negative voters, and as a matter of convenience one of the screens V may be extended to the right and the other to the left of the dial, as shown in Fig. 1. The dotted letters on the screens indicate the relative positions of a number of name-plates U when obscured behind the screens. Each plate indicated by one of the dotted letters is to be connected to a lever, which is adapted to be operated by an armature in the manner above described, to cause the plate to be lifted and the name displayed through an opening in the screen provided therefor.

W indicates a device for lifting the depressed end of the lever and replacing the armature in contact with the electro-magnet. This device consists of a weighted lever adapted to be moved up against the depressed end of lever T by means of a cord connected to the upper end of a curved arm on said weighted lever. The curved arm is designed to give a uniform purchase on the weighted lever by means of the cord which is to rest in a groove in said arm, as shown in dotted lines.

In the foregoing description I have indicated the adaptation of my invention to the use of normally-closed electric circuits. I design in practice, however, to employ circuits

which shall be closed, instead of broken, to operate the armatures. Instead, therefore, of the electric keys shown in Figs. 1 and 2, I shall use such keys as are shown in Figs. 11 and 12, and instead of the electro-magnet and armature shown in Figs. 5, 6, and 7, I shall use those shown in Figs. 13, 14, and 15. The electro-magnet A', (shown in the last-named figures,) instead of having an armature formed of the weighted pin B', as shown in Figs. 5, 6, and 7, is provided with an armature, C', arranged above it and supported on spiral springs D'. The armature may be provided with guide-pins E', passing through the springs, which latter may be supported on brackets F', as shown in Fig. 15. The weighted pin B' is provided with a shoulder, G', with which engages a catch, H', pivoted to the electro-magnet, and having an arm which rests in contact with the under side of the armature C'. The shoulder is so arranged that when the catch which incloses the pin is placed in engagement therewith, as shown in Fig. 13, the weighted pin will be supported in a raised position, and when the armature C', Fig. 15, is drawn into contact with the electro-magnet, the catch will be oscillated and disengaged from the shoulder, and the pin B' will fall by its own gravity. With this construction the armatures, and through them the weights, will be operated by closing the electric circuits.

Instead, also, of using the name-annunciator shown in Fig. 2, I design to attach the name-plate to the weighted pin, as shown in Figs. 3 and 4. The plate I' may be attached at its lower edge to the disk J', secured to the lower end of the pin B', and may be connected to the upper end of the said pin by a rod, K', connected to a sleeve on the pin. With this construction, when the weighted pin B' is caused to fall, the plate I' will move with it, and thus produce the change of position necessary to bring the name on the plate into view. In this case the screen V' is to be provided with an opening, L', arranged below the normal position of the plate, and a suitable stop is to be provided for limiting the movement of the weighted pin to a given position. This annunciator may be used with a normally-closed circuit if the armature is formed by means of the disk on the lower end of the pin B', as in Fig. 5; or it may be used with a normally-broken circuit if the weighted pin is supported and operated by an armature and catch like those shown in Fig. 15. For returning the weighted pin and name-plate to their raised position, a lever and cord like those shown in the device W in Fig. 2 may be used.

Having now described the leading features of my invention, I will proceed to describe certain details of construction by which vibration of the pointer shall be prevented when the scale descends, and means for returning the scale to a raised position after a vote has been taken.

As already stated, the shaft of the pointer

K is provided with a pinion, H, which is adapted to be rotated by a rack-bar, E, attached to the scale B. The bar E and the scale B are supported upon the spiral spring F by means of a pin resting on top of the spring and connecting the bar E with its supplemental bar D. The bars D and E pass through perforations M' in the disk G, (see Fig. 9,) upon which the spring F is supported, and as the scale descends under the weight of the armatures deposited thereon, the spring F is compressed and the bars D E pass down through the perforations M'.

Now, to steady the movement of the bars D E as they move downward, and to prevent the vibration of the pointer K, I provide two other parallel upright bars, N' P', connected together at the ends, and having pins Q', secured to their upper and lower ends, which pins are provided with pistons R', fitted in air-cylinders S', supported on the frame. The bar P' is formed with a rack like the rack on the bar E, and a second pinion, T', also mounted on the shaft of the pointer K, is arranged between the bars N' P', in engagement with the rack on the latter. Now, as the pinion H is rotated by the descent of the scale, the pinion T' also rotates and operates the bars N' P', causing the pistons R' to descend in the cylinders S', which serve as guides for securing a steady perpendicular movement for the bars N' P'. The air in the cylinders will be forced out gradually through small apertures which are to be formed in the lower ends of the cylinders, and this gradual escape of the air will serve to regulate the movement of the bars N' P', and through them the movement of the bars D E, so that the pinion H and the pointer K will operate with steadiness and precision.

The cylinder C, in which the scale B is adapted to move, is provided with a movable bottom or disk, A², through the center of which screws an upright threaded shaft, B², having its lower end journaled in a bracket, C², secured underneath the cylinder, and its upper end in the magnet-supporting disk G. The shaft B² is provided with a bevel-pinion, D², with which gears a corresponding pinion, E², on a horizontal shaft, F², supported in suitable bearings under the cylinder C, and provided with a hand wheel or crank for rotating the same. By rotating the shaft F², and through it the threaded shaft B², the bottom or disk A² will be made to move upward along the latter until it comes in contact with the scale B, when the latter is in a lowered position and lifts the scale, with its weight of armatures, to a position for replacing the armatures in contact with their respective electro-magnets, or for causing the pins of the weights to be engaged by the catches above described, and illustrated in Fig. 15.

The scale B is provided with a central aperture, G², to allow it to move up and down around the shaft B²; and it may also be pro-

vided with lugs H², adapted to move in vertical guides I² on the inner surface of the cylinder, as shown in Figs. 8 and 10.

It is evident from the construction above set forth that the pointer may be operated for indicating a number on the dial by the ascent of the rack-bars and scale, as well as by their descent. My machine may therefore be readily adapted for indicating the number of votes cast by arranging the weights or armatures normally on the scale B, with their pins projecting down through openings J² in the scale, as shown in Figs. 16 and 17, so that when the scale or weights are lifted to proper position, the armatures of all the closed circuits will be taken up by their respective electro-magnets, and when the scale is then allowed to descend again, the difference in the weight of all the armatures and those now left on the scale will cause a corresponding movement in the pointer. In such case the rack-bars for operating the pointer are to be placed on the opposite side of the pinions on the pointer-shaft from that shown in the drawings, so that the ascent of the scale shall cause the pointer to move to the right on the dial.

What I claim is—

1. An electric voting apparatus having a device for indicating on a dial the number of votes cast, and a device for exhibiting the name of the voter to view through an opening in a screen, and, in combination with said devices, a single electric circuit, and electro-magnets having armatures adapted to operate said devices simultaneously, substantially as shown and described.

2. An electric voting apparatus having a scale-operated pointer for indicating on a dial the number of votes cast, and a movable plate for exhibiting the name of the voter to view, and, in combination with said devices, a single electric circuit, and electro-magnets having armatures adapted to operate the scale and to move the plate, respectively, substantially as shown and described.

3. An electric voting apparatus having a scale-operated pointer for indicating on a dial the number of votes cast, and duplicates of a movable plate for exhibiting the name of the voter to view alternately, according as he votes affirmatively or negatively, and, in combination with the scale and each of the movable plates severally, a single electric circuit, and electro-magnets having armatures adapted to operate the scale and to move said respective plate, substantially as specified, whereby the scale and one of the two plates may be operated through either of the two circuits.

4. An electric voting apparatus having a scale, combined with the pointer of a dial, and adapted to receive and weigh one or more weights deposited thereon by the armatures of a series of electro-magnets arranged in an electric circuit, substantially as shown and described, and for the purpose set forth.

5. An electric voting apparatus having a

plate bearing the name of a voter, which is secured to a movable device adapted to be operated by an armature to cause the name to be displayed through an opening in a screen, substantially as shown and described.

6. An electric voting apparatus having a scale adapted to receive weights for operating a pointer on a dial, and, in combination with the scale, means for regulating the movement of the pointer, substantially as shown and described.

7. An electric voting apparatus having a scale adapted to receive weights to be deposited thereon by electro-magnets arranged in the circuits, and, in combination with the scale, a pointer for indicating the number of weights on a dial, and means for replacing the weights in connection with the electro-magnets, substantially as shown and described.

8. In an electric voting apparatus, an electro-magnet having a weighted pin, combined with a guide in which the pin is adapted to

move, and an armature for holding the pin in a given position, substantially as shown and described.

9. In an electric voting apparatus, an electro-magnet having a weighted pin provided with a shoulder, in combination with an armature, and a catch adapted to be placed in engagement with the pin and to be released by the movement of the armature, substantially as shown and described.

10. In an electric voting apparatus, the combination, with an electro-magnet, of a weighted pin having a plate bearing a name attached thereto, and an armature by the movement of which the said pin and plate shall be operated, substantially as shown and described.

JOHN AUGUSTUS ENOS.

Witnesses:

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SOLON C. KEMON.