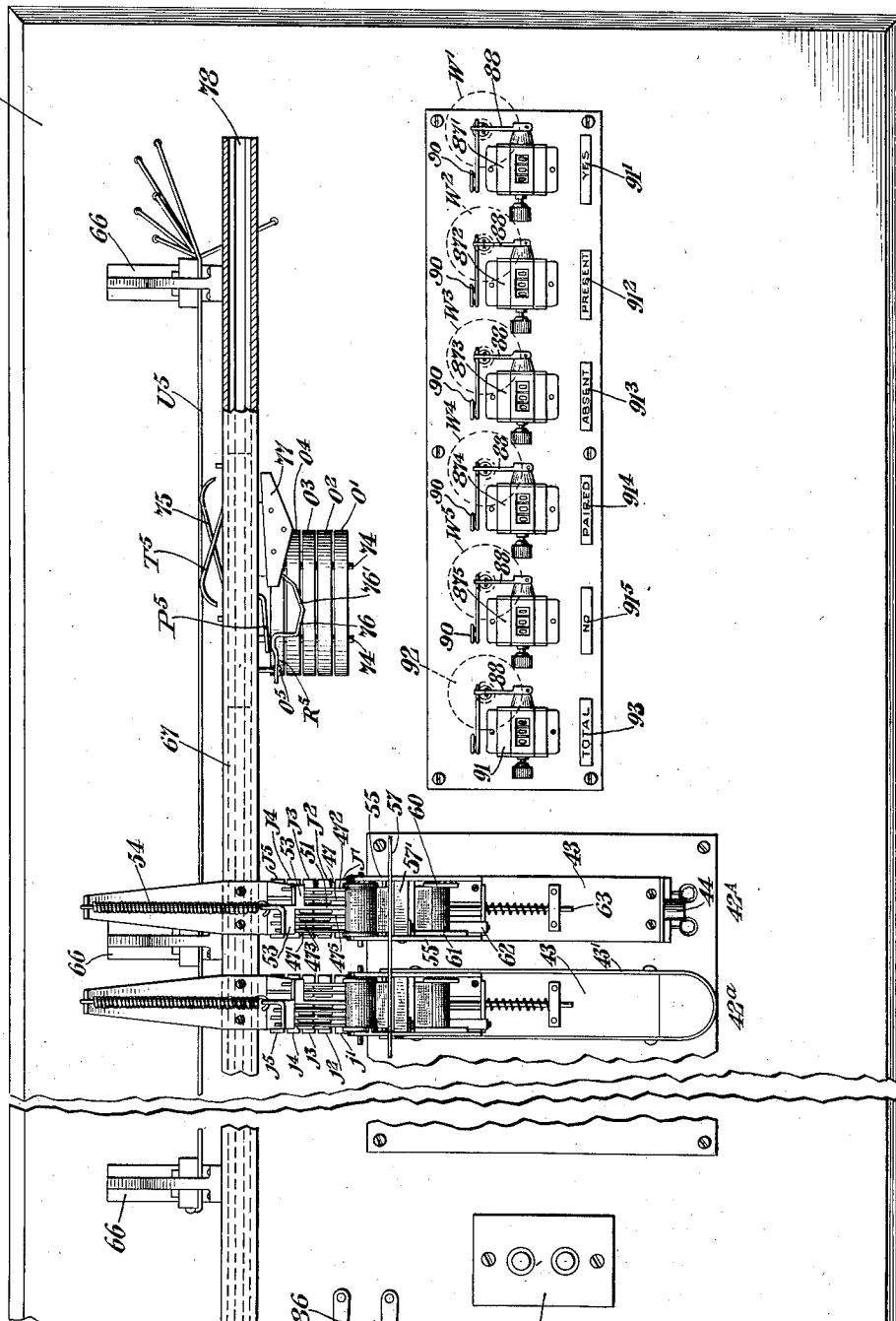


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5 SHEETS—SHEET 1.

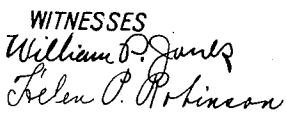


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5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 4.

Fig. 12

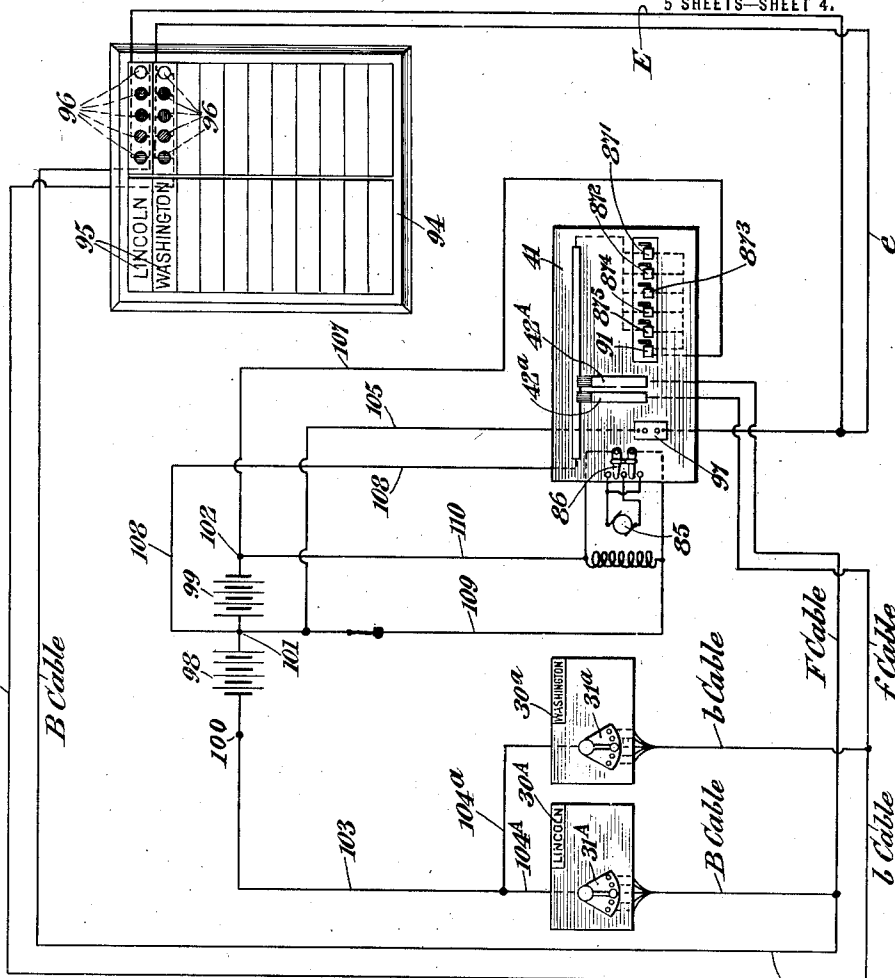


Fig. 9

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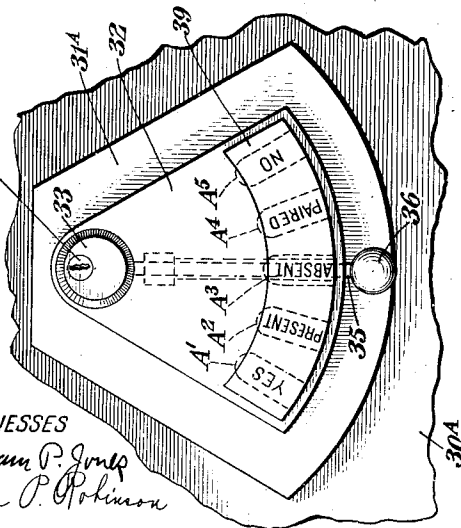
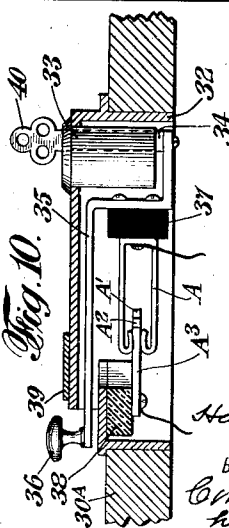


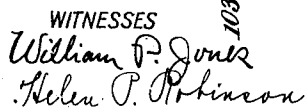
Fig. 10



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5 SHEETS—SHEET 5.



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VOTING APPARATUS.

1,420,879.

Specification of Letters Patent. Patented June 27, 1922.

Application filed May 1, 1917. Serial No. 165,651.

To all whom it may concern:

Be it known that I, HARRY J. SPROAT, a citizen of the United States, residing at Lansing, Ingham County, in the State of Michigan, have invented certain new and useful Improvements in Voting Apparatus, of which the following is a full, clear, and exact specification.

This invention relates to improvements in signaling or indicating apparatus, and the same has for its object more particularly to provide an apparatus for signaling to and indicating at a central point or receiving station a plurality of signals or messages transmitted from a plurality of individual apparatus located at several predetermined individual places or sending stations.

Further, said invention has for its object to provide an apparatus of the character specified by means of which the signal or message transmitted from the individual place or sending station may be temporarily or permanently indicated at the central point or receiving station.

Further, said invention has for its object to provide an apparatus of the character specified by means of which the signal or message transmitted from the individual place or sending station may simultaneously be temporarily or permanently indicated at the central point or receiving station.

Further, said invention has for its object to provide an apparatus of the character specified by means of which the sense, or the presence or absence of a number of individuals meeting as a collective body may be indicated or recorded at a central or receiving station.

Further, said invention has for its object to provide an apparatus of the character specified by means of which the number of individuals present as well as the number of individuals absent may be ascertained and indicated at the central point or receiving station.

Further, said invention has for its object to provide an apparatus of the character specified by means of which the total number of each of several classes of signals or messages may be counted as well as the total number of signals or messages of all classes.

Further, said invention has for its object to provide an apparatus of the character

specified by means of which the messages or signals transmitted to the central point or receiving station may be simultaneously, or practically simultaneously, recorded and counted.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends my invention consists in the novel details of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings showing an illustrative embodiment of the invention—

Figure 1 is a plan or top view showing the recording and counting mechanism of an apparatus constructed according to and embodying my said invention, the same being shown in connection with a voting apparatus for use in legislative bodies, assemblies of individuals, and the like;

Fig. 2 is a front elevation of the mechanism shown in Fig. 1, parts being broken away;

Fig. 3 is an end view of the aforesaid mechanism, parts being broken away;

Fig. 4 is a detail rear view of the traveling carriage forming part of said recording and counting mechanism;

Fig. 5 is a detail front or face view of the printing members of the recording mechanism;

Fig. 6 is a schematic view of the printing members;

Fig. 7 is a detail side view of the ribbon feeding mechanism;

Fig. 8 is a detail face view showing a portion of a printed record produced by the apparatus;

Fig. 9 is a plan or top view of the circuit-closing mechanism located at the sender's station or desk;

Fig. 10 is a vertical, longitudinal sectional view of the same;

Fig. 11 is a detail face view showing a portion of the roster board;

Fig. 12 is a general diagram showing the location and arrangement of the various parts of a complete apparatus, and

Fig. 13 is a diagram showing the circuit connections for the entire apparatus, the

same illustrating a single receiving station and two sending stations in communication therewith.

Referring to the drawings, 30^A, 30^a, indicate voters' desks. While for purposes of illustration there are shown but two voters' desks it will, of course, be understood that there are as many desks as there are voters. Supported upon the voters' desks 30^A, 30^a are switches 31^A, 31^a, of which the construction of switch 31^A will be described, it being understood that the construction of switch 31^a is similar in all respects thereto.

The switch 31^A comprises a casing 32 carrying a Yale lock 33 to the barrel 34 of which is secured an arm 35 extending outwardly beyond the top plate of the casing 32 and carrying upon its outer end a handle 36. Secured to the arm 35, and insulated therefrom by a block 37 of insulating material, is a contact member A adapted to contact with any one of a plurality of fixed contact members A', A², A³, A⁴ and A⁵ depending upon the position of the arm 35. The contact members A', A², A³, A⁴ and A⁵ are mounted upon a block 38 of insulating material secured to the casing 32. Upon the top plate of the casing 32 is a plate 39 bearing the words "Yes," "Present," "Absent," "Paired," "No," which words are so positioned upon the plate 39 that they will correspond with the positions of the contact members A', A², A³, A⁴ and A⁵, respectively. The number of fixed contacts and the wording on the plate 39 may, of course, be varied to meet different requirements without in any way departing from the spirit of the invention.

When the barrel 34 is in its normal or locked position the contact member A carried by the arm 35 will be in contact with the fixed contact member A³ corresponding to the word "Absent" on the plate 39. Upon inserting a key 40 in the lock 33 the barrel 34 will be free to rotate whereupon the voter may move the arm 35 to cause the contact member A to engage any one of the remaining contacts members A', A², A⁴, or A⁵ as desired. As the keys for the several locks are carried by the voters it is evident that unless a voter is present the switch upon his desk cannot be operated, and therefore if a voter is absent the movable contact member of his switch will remain in engagement with that one of the fixed contact members thereof which corresponds to the "Absent" position of his switch.

41 indicates a recording officer's desk upon which are mounted a plurality of recording devices arranged in a row and corresponding in number to the number of voters' desks. In the drawing but two recording devices 42^A and 42^a are shown, corresponding respectively to the voters' desks 30^A and 30^a, and of these two devices the construction of

the device 42^A will be described, it being understood that the construction of the device 42^a is similar thereto.

The recording device 42^A comprises a frame 43 secured to the desk 41 and carrying five horizontally disposed electro-magnets G', G², G³, G⁴ and G⁵ electrically connected respectively to the five fixed contact members A', A², A³, A⁴, A⁵ of the voter's switch 31^A. The electro-magnets G', G², G³, G⁴ and G⁵ are arranged one above the other and each one has a movable core or armature 44 at one of its ends adapted to be drawn inwardly with respect to its associated electro-magnet upon the energization thereof. Secured to the inner end of each of the armatures 44 is a rod 45 projecting beyond the opposite end of its associated electro-magnet and having secured thereto adjacent its outer end a block 46. The electro-magnets are enclosed in a removable casing 43' secured to the frame 43.

Five printing members 47', 47², 47³, 47⁴, 47⁵ corresponding respectively to the five electro-magnets G', G², G³, G⁴, G⁵, are pivotally mounted intermediate their ends upon brackets 48 secured to the frame 43. The printing members, which are of similar construction differing from one another in length only, are provided at their lower ends with laterally extending projections 49 adapted to be engaged by the blocks 46 and having apertures 50 formed therein through which the free ends of the rods 45 pass. Adjacent their upper ends the printing members are provided with printing surfaces bearing words corresponding to the words on the plate 39 of the switch 31^A. The printing surface of the printing member 47', which is operatively connected to the rod 45 secured to the armature 44 of the electro-magnet G' electrically connected to the fixed contact member A' of the voter's switch 31^A, bears the word "Yes" which word also appears on the plate 39 to designate the fixed contact member A'. The printing surfaces of the printing members 47², 47³, 47⁴ and 47⁵, operatively associated with the electro-magnets G², G³, G⁴ and G⁵, respectively, bear the words "Present," "Absent," "Paired" and "No," which words appear on the plate 39 to designate the fixed contacts A², A³, A⁴ and A⁵, respectively.

The electro-magnets of the several recording devices are similarly positioned with respect to their supporting frames thereby forming five horizontal rows of magnets, the magnets of each row being in a different horizontal row than the magnets of any other row. As shown the magnets in the first or lowermost row are electrically connected to the fixed contact members of the voters' switches corresponding to the word "Yes", the magnets in the second row are connected to the fixed contact members of

the switches corresponding to the word "Present", and the magnets of the third, fourth and fifth rows are connected respectively to the fixed contact members corresponding to the words "Absent", "Paired" and "No".

A printing member 51 is pivotally supported at its lower end upon a bracket 52 secured to the frame 43 and is provided intermediate its ends with a printing surface bearing the name of the voter to whom the desk 30^A has been allotted. Adjacent its upper end the printing member 51 is provided with oppositely disposed, lateral projections 53, 53 extending across, and engaging the upper ends of the printing members 47', 47², 47³, 47⁴ and 47⁵. A spring 54 secured to the upper end of the printing member 51 normally holds the same in its raised or inoperative position, and the projections 53, 53, of the printing member 51 will hold the upper ends of the printing members 47', 47², 47³, 47⁴, and 47⁵ in their normally raised or inoperative positions, in which positions their lower ends will be depressed with respect to the frame 43 to cause the several rods 45 and armatures 44 to assume their inoperative positions.

Mounted upon the desk 41 in alignment with the frame 43 of the recording device 42^A is a set of five contact plates J', J², J³, J⁴ and J⁵ electrically connected to one of the terminals of the electro-magnets G', G², G³, G⁴ and G⁵, respectively in the manner and for the purpose hereinafter set forth. Each recording device upon the desk 43 is provided with a similar set of contact plates, which sets are arranged in a row upon the desk 43 in such a manner that the corresponding plates of each set will be in alignment with one another.

Supported upon the top of the frame 43 are a pair of brackets 55 having downwardly extending slits 56 formed therein which slits register with one another and with similar slits formed in the brackets 55 on the frames of the other recording devices supported upon the desk 41. The slits 56 of the several recording devices serve to receive a strip of paper 57 or the like and to hold it in position to receive upon one of its surfaces impressions made by the printing surfaces of the actuated printing members of the recording devices. The other surface of the paper 57 rests upon a block 57' positioned between the brackets 55.

Rotatably supported upon the brackets 55 is a roller 58 carrying an inking ribbon 59 which is led over the printing surface of the paper strip 57 and has its free end connected to a feed roller 60 also rotatably supported by the brackets 55. Secured to the feed roller 60 is a ratchet wheel 61 adapted to be actuated by a pawl 62 fixed upon a reciprocable rod 63 mounted upon the top of the frame 43 and having its rear or free end extending beyond the frame 43 and lying in the path of a traveling actuating member, hereinafter described, adapted to move the rod 63 longitudinally in an outward direction to cause the pawl 62 to rotate the ratchet wheel 61 and feed roller 60 thereby feeding the inking ribbon 59 so that a fresh surface will be presented to the paper strip 57. The pawl 62 and rod 63 are returned to their normal positions after having been thus actuated by means of a spring 64. A spring pawl 65 engages the ratchet wheel 61 and prevents reverse rotation thereof.

From the above description it will be understood that upon the energization of any one of the electro-magnets of any one of the recording devices in the manner hereinafter described, as for example the electro-magnet G² of the recording device 42^A, its armature 44 will be attracted and drawn inwardly thereby causing an outward movement of the rod 45. As the rod 45 is thus moved the block 46 thereon, which engages the projection 49 at the lower end of the printing member 47², will cause the same to rotate about its pivoted point of support, and, as a result of this movement of the printing member 47² its upper end will be moved to carry the printing surface bearing the word "Present" into engagement with the inking ribbon 59 thereby impressing the word "Present" upon the strip of paper 57. As one of the projections 53 of the printing member 51 is engaged by the printing member 47² the printing member 51 will also be moved into its printing position and the name of the voter appearing upon the printing surface of the printing member 51 will also be impressed upon the paper strip 57. When the electro-magnet is deenergized the printing members 47² and 51, and the rod 45 and armature 44 are returned to their normal or inoperative positions by the spring 54. In a similar manner the energization of any one of the other electro-magnets of the recording device will cause its associated printing member to move into its printing position and in each instance, the thus actuated printing member will cause the printing member bearing the voter's name upon its printing surface, to move into printing position.

Supported upon standards 66 secured to the desk 41 in rear of the recording devices are horizontally disposed upper and lower rails 67, 68 forming guides for a traveling carriage 69 preferably formed of insulating material and having wheels 70 engaging the rails 67, 68. Secured to insulating blocks 71 mounted upon the standards 66 and positioned in rear of the traveling carriage 69 are horizontally disposed conductors U', U², U³, U⁴, U⁵ and 72. The conductor U' is positioned opposite the first or lowermost

row of the electro-magnets of the recording devices, and the conductors U^2 , U^3 , U^4 and U^5 positioned respectively opposite the second, third, fourth and fifth rows of electro-magnets. The conductor 72 is positioned between the conductors U^2 and U^3 .

Secured to the rear face of the carriage 69 is a vertically disposed conducting plate 73 (Fig. 4) having forwardly extending conductor rods 74 electrically connected to its lower end. Supported upon the rods 74 and electrically connected therewith are five contact members O^1 , O^2 , O^3 , O^4 and O^5 so positioned that, as the carriage 69 is moved as hereinafter described, they will come into contact with the contact plates J^1 , J^2 , J^3 , J^4 and J^5 which are electrically connected to the electro-magnets of the recording device 42^A. As the movement of the carriage is continued the contact members O^1 , O^2 , O^3 , O^4 and O^5 will successively come into contact with the corresponding contact plates associated with the several recording devices. A contact member 75 connected to the plate 73 slidably engages the conductor 72.

The carriage 69 is provided upon its front face with five normally open circuit closers $P^1 R^1$, $P^2 R^2$, $P^3 R^3$, $P^4 R^4$ and $P^5 R^5$. The members P^1 , P^2 , P^3 , P^4 and P^5 of the circuit closers are fixed and are electrically connected to the contact plate 73. The members R^1 , R^2 , R^3 , R^4 and R^5 of the circuit closers are movable into and out of contact with their co-acting fixed members P^1 , P^2 , P^3 , P^4 and P^5 and are electrically connected by conductors S^1 , S^2 , S^3 , S^4 and S^5 to contacts T^1 , T^2 , T^3 , T^4 and T^5 secured to the rear face of the carriage 69 and slidably engaging the conductors U^1 , U^2 , U^3 , U^4 and U^5 . The circuit closers $P^1 R^1$, $P^2 R^2$, $P^3 R^3$, $P^4 R^4$ and $P^5 R^5$ are so positioned upon the carriage 69 that as the carriage is moved they will successively travel past the electro-magnets of the first, second, third, fourth and fifth rows, respectively. Each of the movable members R^1 , R^2 , R^3 , R^4 and R^5 of the circuit closers is provided with inclined portions 76, 76' so shaped and proportioned that they will not be engaged by the free ends of the rods 45 carried by the armatures 44 of the electro-magnets when the rods are in their inner or normal positions.

If, however, any one of the electro-magnets is energized the rod 45 associated therewith will be moved outwardly, as hereinbefore described, and its free end will then lie in the path of one or the other of the inclined portions 76, 76' of the movable member of its associated circuit closer depending upon the direction of movement of the carriage 69. If the carriage 69 is now moved the free end of the rod 45 of the energized electro-magnet will engage one of the inclined portions of the movable member of

the circuit closer thereby forcing it into engagement with its co-acting fixed member to close a circuit for the purpose hereinafter described.

The carriage 69 is also provided upon its front surface with a double-faced cam 77 adapted, as the carriage moves in either direction past the recording devices, to engage successively the free ends of the reciprocable rods 63 of the inking ribbon feeding mechanism thus actuating the rods 63 to cause the pawls 64 to rotate the feed rollers 60 as above described.

Secured to the carriage 69 and extending downwardly through a slot 78 formed in the lower rail 68 is an arm 79 carrying a nut 80 engaging an endless screw 81. A bevel gear 82 secured to the endless screw 81 meshes with a bevel gear 83 secured to a shaft 84 driven by an electric motor 85 the operation of which is controlled by a reversing switch 86 mounted upon the desk 41 whereby the carriage 69 may be caused to travel in either direction past the recording devices.

Supported upon the desk 41 are five counters 87¹, 87², 87³, 87⁴ and 87⁵ of any approved type, as, for example, the well known Veeder counter, having their operating arms 88 connected to the armatures 89 of electro-magnets W^1 , W^2 , W^3 , W^4 and W^5 the electric circuits of which include the conductors U^1 , U^2 , U^3 , U^4 and U^5 and the normally open circuit closers $P^1 R^1$, $P^2 R^2$, $P^3 R^3$, $P^4 R^4$ and $P^5 R^5$, respectively. Upon closing any one of the circuit closers the electro-magnet in circuit therewith will be energized whereupon its armature will be attracted thus actuating the associated counter, the arm 88 of which is returned to its normal position by a spring 90 when the magnet is deenergized.

Plates 91¹, 91², 91³, 91⁴ and 91⁵ positioned upon the desk 41 adjacent the counters 87¹, 87², 87³, 87⁴ and 87⁵ bear the words "Yes", "Present", "Absent", "Paired", "No", corresponding to the designations of the fixed contact members of the voters' switches and to the words formed on the printing surfaces of the printing members of the recording devices. In operation each counter will register the number of voters' switches having the movable member in engagement with the fixed contact member thereof the designation of which corresponds to the designation of such counter.

An additional electro-magnetically operated counter 91 similar in all respects to the electro-magnetically operated counters hereinbefore described has its electro-magnet 92 so connected that the counter 91 will register a number corresponding to the sum of the numbers registered upon the counters 87¹, 87², 87³, 87⁴ and 87⁵. Adjacent the counter 91 is a plate 93 bearing the word "Total".

Located at any convenient point within the room so that it may be observed by the voters is a roster board 94 provided with a plurality of removable panels 95 arranged in a vertical column and bearing the names of the voters. Supported upon the board 94 opposite the panels 95 are a plurality of groups of visual signals, there being one group of signals for each panel. The group of signals opposite the panel 95 bearing the name of the voter occupying the desk 30^A will be described, it being understood that the other groups of signals are similar thereto. The group of signals comprises five incandescent electric lamps C', C², C³, C⁴, C⁵ mounted in any suitable manner upon the board 94 and registering with openings formed in the face thereof within which openings differently colored jewels 96 are positioned. As shown the lamp C' registers with a white jewel, the lamp C² registers with an orange jewel, the lamp C³ registers with a blue jewel, the lamp C⁴ registers with a green jewel, and the lamp C⁵ registers with a red jewel. The lamps C', C², C³, C⁴ and C⁵ are electrically connected to the fixed contact members A', A², A³, A⁴ and A⁵, respectively, of the voter's switch 31^A and are similarly designated by the words "Yes", "Present", "Absent", "Paired" and "No." The electric circuits of the lamps of the several groups are controlled by a suitable switch 97 of any desired type positioned upon the desk 41.

Fig. 13 is a diagram showing the various operating circuits and sufficient of the mechanism in order to trace the circuits with respect thereto. For purposes of clearness the circuits and mechanisms for but two voters are shown, it being of course understood that the apparatus is capable of indefinite extension by mere duplication. In said figure 98, 99 indicate two electric batteries having three terminals 100, 101 and 102, the terminal 101 being common to both of the batteries. From the terminal 100 a conductor 103 leads to a conductor 104^A which is connected to the movable contact member A of the voter's switch 31^A. The fixed contacts A', A², A³, A⁴ and A⁵ of the switch 31^A are connected by conductors B', B², B³, B⁴ and B⁵ with one set of the terminals of the lamps C', C², C³, C⁴ and C⁵. The other set of the lamp terminals are connected by conductors D', D², D³, D⁴ and D⁵ to a conductor E leading to one of the contacts of the switch 97, the other contact of which is connected to the other terminal 101 of the battery 98 by a conductor 105. Conductors F', F², F³, F⁴, F⁵ are connected to the conductors B', B², B³, B⁴ and B⁵ and to one set of the terminals of the electro-magnets G', G², G³, G⁴ and G⁵ of the recording device 42^A. The other set of terminals of the electro-magnets are connected by con-

ductors H', H², H³, H⁴ and H⁵ to the contact plates J', J², J³, J⁴, J⁵.

In a similar manner the movable contact member *a* of the voter's switch 31^a is connected by a conductor 104^a with the conductor 103 and the fixed contacts *a'*, *a*², *a*³, *a*⁴ and *a*⁵ of this switch are connected by conductors *b'*, *b*², *b*³, *b*⁴ and *b*⁵ to the lamps *c'*, *c*², *c*³, *c*⁴ and *c*⁵, which are connected by conductors *d'*, *d*², *d*³, *d*⁴ and *d*⁵ to a conductor *e* leading to the switch 97. The electro-magnets *g'*, *g*², *g*³, *g*⁴ and *g*⁵ of the recording device 42^a are connected by conductors *f'*, *f*², *f*³, *f*⁴ and *f*⁵ to conductors *b'*, *b*², *b*³, *b*⁴ and *b*⁵, and by conductors *h'*, *h*², *h*³, *h*⁴, *h*⁵ to the contact plates *j'*, *j*², *j*³, *j*⁴ and *j*⁵.

The counter actuating electro-magnets W', W², W³, W⁴ and W⁵ are connected by conductors V', V², V³, V⁴ and V⁵ to the conductors U', U², U³, U⁴ and U⁵ and by conductors X', X², X³, X⁴ and X⁵ to a conductor 106 leading to one terminal of the electro-magnet 92 of the totaling counter. The other terminal of the electro-magnet 92 is connected to the terminal 102 of the battery 99 by a conductor 107. From the other terminal 101 of the battery 99 a conductor 108 leads to the conductor 72. The reversing switch 86 of the motor 85 is connected to the terminals 101, 102 of the battery 99 by conductors 109, 110.

The operation of the apparatus is as follows:—

Assume, for example, that a vote is to be taken and that Lincoln, the voter occupying desk 30^A, desires to vote "Yes" and that Washington, the voter occupying desk 30^a, desires to vote "No". After the presiding officers announces the taking of a vote upon any question, Lincoln having inserted his key 40 in the lock 33 of his switch 31^A, moves the arm 35 of his switch to cause the movable contact A to engage the fixed contact A' designated by the word "Yes" thereby preparing a path for the current through the "Yes" lamp C' and the "Yes" electro-magnet G' of the two signal indicating devices which are electrically connected to his switch 31^A. In a similar manner Washington moves the arm 35 of his switch 31^a to cause the movable contact member *a* to engage the fixed contact member *a*⁵ designated by the word "No" thereby preparing a path for the current through the "No" lamp *c*⁵ and the "No" electro-magnet *g*⁵ of the two signal indicating devices connected to his switch 31^a.

Assuming that the result of the vote is to be indicated, but not recorded, the recording officer closes the switch 97 on his desk 41 to complete the paths for the current from the battery 98 through the lamps C' and *c*⁵. The path for the current through the lamp C' is as follows: from terminal 100 of battery 98, conductor 103, conductor 104^A, movable contact member A, 130

fixed contact A', conductor B', lamp C', conductor D', conductor E, switch 97, conductor 105, to the other terminal 101 of the battery 98. The path for the current through the lamp c⁵ is as follows: from terminal 100 of the battery 98, conductor 103, conductor 104^a, movable contact member a, fixed contact member a⁵, conductor b⁵, lamp c⁵, conductor d⁵, conductor e, switch 97, conductor 105, to the other terminal 101 of battery 98. The lamps C' and c⁵ will thus be illuminated simultaneously and, as a result, a white light, indicating "Yes", will appear on the roster board 94 opposite Lincoln's name, and a red light, indicating "No", will appear after Washington's name.

If it is desired that the result of the vote be recorded and counted the recording officer closes the motor switch 86 on his desk 41 whereupon the motor 85 will be operated to rotate the endless screw 81 by means of the shaft 84 and the meshed bevel gears 83 and 81. The rotation of the endless screw 81 will cause the carriage 69 to travel along the rails 67, 68 and past the several recording devices in succession. As the switch 86 is a reversing switch the motor 85 may be driven in either direction to cause the carriage 69 to travel in either direction.

Assuming the carriage to be in the position shown in Figs. 1 and 2 the recording officer moves the switch 86 into proper operative position to cause the motor 85 and its associated driving mechanism to move the carriage 69 from right to left. As the carriage 69 thus moves, the contact members O', O², O³, O⁴ and O⁵ engage the contact plates J', J², J³, J⁴ and J⁵ of the recording device 42^a whereupon current will flow through the following circuit: battery 98, terminal 100, conductor 103, conductor 104^a, movable contact member A, fixed contact member A', conductor B', conductor F', electro-magnet G', conductor H', contact plate J', contact member O', plate 73, sliding contact 75, conductor 72, conductor 108 to the other terminal 101 of the battery 98. The energization of the electro-magnet G' causes its armature 44 to be moved inwardly and the rod 45 carried thereby to be moved outwardly. This outward movement of the rod 45 serves to move the printing member 47' bearing the word "Yes" on its printing surface into its printing position and as the printing member 47' thus moves it carries with it the printing member 51 bearing the name "Lincoln" on its printing surface. The words "Yes" and "Lincoln" will therefore be printed upon the paper strip 57 as shown in Fig. 8.

As the carriage 69 continues its movement the inclined portion 76 of the movable member R' of the circuit closer P' R' will be engaged by the free end of the outwardly moved rod 45 of the electro-magnet G' and

forced into contact with its co-acting fixed member P' thereby closing the following circuit: battery 99, terminal 101, conductor 108, conductor 72, sliding contact 75, plate 73, fixed member P', movable member R', conductor S', sliding contact T', conductor U', conductor V', electro-magnet W', conductor X', conductor 106, electro-magnet 92, conductor 107, to the other terminal 102 of the battery 99. The energization of the electro-magnet W' effects the actuation of the "Yes" counter 87' and the energization of the electro-magnet 92 effects the actuation of the "Total" counter 91 whereupon each counter will register once. Upon further movement of the carriage 69 the movable member R' of the circuit closer P' R' will be moved out of engagement with its co-acting fixed member P', whereupon the movable member R' will return to its normal position thereby breaking the circuit of the counter electro-magnets W' and 92, and the contact member O' will be moved out of engagement with the contact plate J', thereby breaking the circuit of the electro-magnet G', whereupon the spring 54 will return the printing members 47' and 51, and the rod 45 and armature 44 to their normal positions. The cam 77 will be moved into and then out of engagement with the free end of the rod 63 carrying the ribbon feeding pawl 62 to feed the ribbon as above set forth.

As the carriage continues its movement the contact members O', O², O³, O⁴ and O⁵ will engage the contact plates j', j², j³, j⁴ and j⁵ of the recording device 42^a and current will flow through the following circuit: battery 98, terminal 100, conductor 103, conductor 104^a, movable contact member a⁵, conductor b⁵, conductor j⁵, electro-magnet g⁵, conductor h⁵, contact plate j⁵, contact member O⁵, plate 73, sliding contact 75, conductor 72, conductor 108, to the other terminal 101 of the battery 98. The electro-magnet g⁵ will thereupon be energized and the printing members bearing the words "No" and "Washington" will be moved into printing position in a manner similar to that above described with respect to the operation of the recording device 42^a. The movable member R⁵ of the circuit closer P⁵ R⁵ will be moved into engagement with its co-acting fixed member, as above described, with respect to the circuit closer P' R', and current will flow from the battery 99, to terminal 101, conductor 108, conductor 72, sliding contact 75, plate 73, fixed member P⁵, movable member R⁵, conductor S⁵, contact T⁵, conductor U⁵, conductor V⁵, electro-magnet W⁵, conductor X⁵, conductor 106, electro-magnet 92, conductor 107, to the other terminal 102 of the battery 99. The energization of the electro-magnet W⁵ effects the actuation of the "No" counter 87⁵ and the energization of the electro-magnet 92 effects the energization of the

"Total" counter 91 whereupon each counter will register once. The circuits are broken, the actuated parts returned to normal position and the ribbon feeding mechanism is actuated upon the continued movement of the carriage 69 as above described with respect to the recording device 42^A.

The recording officer then opens the motor switch 86 thereby arresting the movement of the carriage. Upon removing the paper strip 57 from its position within the slits 56 of the brackets 55 the recorded vote will read "No" "Washington" and "Yes" "Lincoln," as shown in Fig. 8. The "Yes" counter 87' having been actuated but once will show the numeral "1" through its sight opening, as will also the "No" counter 87^s. As the "Total" counter 92 was actuated simultaneously with both the "Yes" counter 87' and the "No" counter 87^s the numeral "2" will appear through its sight opening, thus showing that both of the voters have voted.

If either of the voters, for example Lincoln, had been absent the arm 35 of his switch 31^A would have been in its locked position with the movable contact A engaging the fixed contact member A³ designated by the word "Absent." Upon the closing of the switch 97 the "Absent" lamp C³ would therefore be illuminated and a blue light would appear on the roster board 94 opposite Lincoln's name. If the vote were recorded the electro-magnet G³ of Lincoln's recording device 42^A would be energized and the printing members bearing the words "Absent" and "Lincoln" would be actuated to print these words upon the paper strip 57, and the "Absent" counter 87^s and the "Total" counter 92 would each be actuated once in the manner hereinbefore described.

If a roll call is to be taken the movable contact members of the voters' switches will be in engagement with one or the other of the fixed contact members designated by the words "Here" and "Absent," and the result is then indicated or recorded by the signal indicating devices as above described.

While the invention has been described as being used in connection with a voting system it is of course to be understood that it is not to be limited to such use as it is adapted for use in connection with any other system in which signals or messages transmitted from a plurality of individual sending stations are to be received and indicated in any suitable manner at a central or receiving station.

Having thus described my said invention what I claim and desire to secure by Letters Patent is:—

1. In an apparatus of the character described, in combination, a plurality of signal indicating means, electric circuits therefor, means operable by a voter for preparing paths for the current through said cir-

cuits, and means operable by a recording officer for completing the path for the current through any one of said circuits independently of the others thereof to operate the signal indicating means associated therewith, substantially as specified.

2. In an apparatus of the character described, in combination, a plurality of sets of signal indicating means of different character, electric circuits therefor, means associated with each of said sets and controlled by the voters for severally preparing paths for the current through the circuits of said sets, means controlled by a recording officer for simultaneously completing the paths for the current through the circuits of signal indicating means of one character in said sets, and means controlled by the recording officer for successively completing the paths for the current through the circuits of signal indicating means of another character in said sets, said several path-completing means operating independently of one another, substantially as specified.

3. In an apparatus of the character described, in combination, a plurality of groups of signal indicating means of different character for each voter, the signal indicating means of said groups being arranged in sets, the signal indicating means of each of said sets being indicative of a response by the voter, electric circuits for said signal indicating means, means operable by each voter to prepare paths for the current through the circuits of any set of signal indicating means of his group, and means operable by a recording officer for severally and independently completing the paths for the current through the circuits of the signal indicating means of different character of said selected sets, substantially as specified.

4. In an apparatus of the character described, in combination, a plurality of electro-magnets, electric circuits therefor, a plurality of recording members severally operatively associated with said electro-magnets and movable into separated recording positions upon the energization thereof, a recording member adapted to be moved into recording position by the movement of any one of said plurality of recording members, means to receive a record of the actuated recording members, and means for closing any one of said circuits to energize the electro-magnet associated therewith, substantially as specified.

5. In an apparatus of the character described, in combination, a plurality of electro-magnets, electric circuits therefor, a plurality of printing members severally operatively associated with said electro-magnets and movable into separated printing positions upon the energization thereof, said

printing members being provided with printing surfaces of different characteristics, a printing member adapted to be moved into printing position by the movement of any one of said plurality of printing members and adapted to print the name of a voter, means to receive impressions made by the actuated printing members, and means for closing any one of said circuits to energize the electro-magnet associated therewith, substantially as specified.

6. In an apparatus of the character described, in combination, signal indicating means, means to operate the same, a counter, an electro-magnet to actuate said counter, and a normally open electric circuit including said electro-magnet, said signal indicating means serving to close said electric circuit whereby said counter will be actuated, substantially as specified.

7. In an apparatus of the character described, in combination, signal indicating means, means to operate the same, a counter, a traveling member to control the actuation thereof, said signal indicating means comprising a member movable upon the operation thereof into the path of said traveling member to operate the same, and means for moving said traveling member through its path whereby said counter will be actuated, substantially as specified.

8. In an apparatus of the character described, in combination, signal indicating means, means to operate the same, a counter, an electro-magnet to actuate said counter, a normally open electric circuit including said electro-magnet, a movable circuit closer for said circuit, said signal indicating means comprising a member movable upon the operation thereof into the path of said circuit closer to close the same, and means for moving said circuit closer through its path whereby said counter will be actuated, substantially as specified.

9. In an apparatus of the character described, in combination, a plurality of signal indicating means, means to operate the same, a counter, an electro-magnet to actuate said counter, a normally open electric circuit including said electro-magnet, a movable circuit closer for said circuit, each of said signal indicating means comprising a member movable upon the operation thereof into the path of said circuit closer to close the same, and means for moving said circuit closer through its path whereby said counter will be actuated a number of times corresponding to the number of signal indicating means that have been operated, substantially as specified.

10. In an apparatus of the character described, in combination, a plurality of signal indicating means, means to operate any one of the same, a plurality of counters, traveling members to control the actuation

of said counters, said signal indicating means comprising members movable upon operation thereof into the paths of said traveling members to operate the same, and means for moving said traveling members through their paths whereby the operating member of the operated signal indicating means will cause one of said traveling members to actuate its associated counter, substantially as specified.

11. In an apparatus of the character described, in combination, an electro-magnet, an electric circuit therefor, signal indicating means operatively associated with said electro-magnet, means actuated upon the energization of said electro-magnet to operate said signal indicating means, means for completing a path for the current through said circuit, a counter, an electro-magnet to control the operation thereof, an electric circuit for said last mentioned electro-magnet, and means controlled by said first-mentioned means for closing said second-mentioned circuit whereby said counter will be actuated, substantially as specified.

12. In an apparatus of the character described, in combination, an electro-magnet, an electric circuit therefor, signal indicating means operatively associated with said electro-magnet, means actuated upon the energization of said electro-magnet to operate said signal indicating means, means for completing a path for the current through said circuit, a counter, an electro-magnet to control the operation thereof, an electric circuit for said last-mentioned electro-magnet comprising a normally open circuit closer adapted to be closed by said first-mentioned means whereby said counter will be actuated, substantially as specified.

13. In an apparatus of the character described, in combination, an electro-magnet, an electric circuit therefor, means for completing a path for the current through said circuit, signal indicating means operatively associated with said electro-magnet, a counter, an electro-magnet to control the operation thereof, an electric circuit for said second-mentioned electro-magnet comprising a traveling circuit closer, means actuated upon the energization of said first-mentioned electro-magnet to operate said signal indicating means and movable into the path of said circuit closer, and means for moving said circuit closer through its path whereby said circuit closer will be closed by said actuated means to cause the counter to be operated, substantially as specified.

14. In an apparatus of the character described, in combination, an electro-magnet, an electric circuit therefor comprising a traveling circuit-closer, signal indicating means operatively associated with said electro-magnet, a counter, an electro-magnet to control the operation thereof, an electric

circuit for said second mentioned electro-magnet comprising a traveling circuit closer, means actuated upon the energization of said first-mentioned electro-magnet to operate
5 said signal indicating means and movable into the path of said second-mentioned circuit closer, means carrying said traveling circuit closers, and means for moving said carrying means to cause said first-named circuit closer to close the circuit of said first-mentioned electro-magnet and to cause said

second-named circuit closer to be closed by said actuated means whereby said counter will be operated, substantially as specified.

Signed at the city of Lansing, Ingham 15
County, in the State of Michigan, this tenth day of April, One thousand nine hundred and seventeen.

HARRY J. SPROAT.

Witnesses:

GEO. W. CHICHESTER,
MYRL H. AMMON.