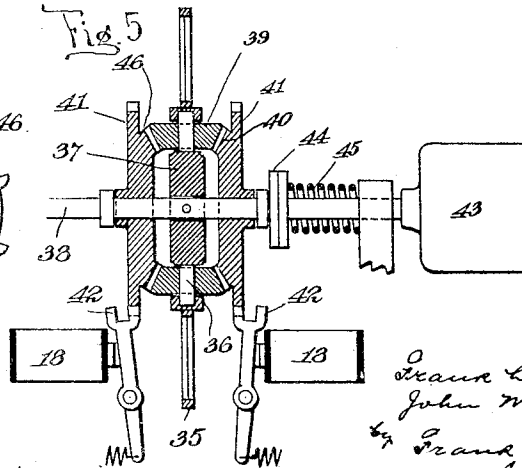
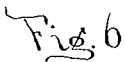
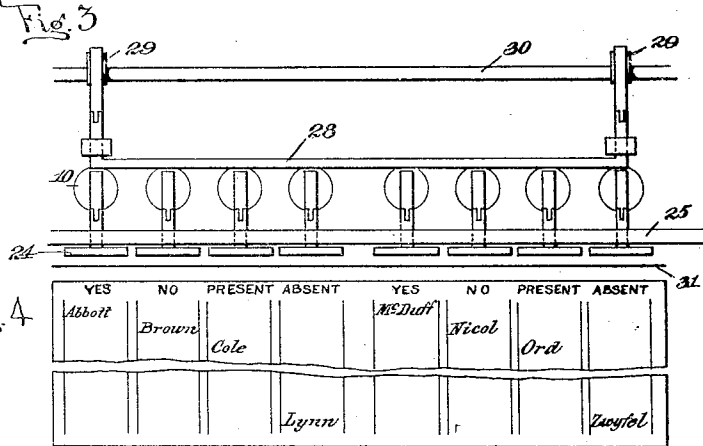
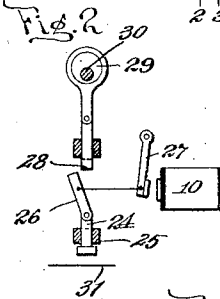


1,283,703.



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UNITED STATES PATENT OFFICE.

FRANK L. DYER AND JOHN W. DYER, OF MONTCLAIR, NEW JERSEY; SAID JOHN W. DYER ASSIGNOR TO SAID FRANK L. DYER.

ASSEMBLY-VOTING MACHINE.

1,283,703.

Specification of Letters Patent.

Patented Nov. 5, 1918.

Application filed December 1, 1916. Serial No. 134,267.

To all whom it may concern:

Be it known that we, FRANK L. DYER and JOHN W. DYER, both citizens of the United States, residing at Montclair, in the county of Essex, State of New Jersey, have jointly invented certain new and useful Improvements in Assembly-Voting Machines, of which the following is a specification.

Our invention relates to voting machines of the type covered by patent granted to Frank L. Dyer, No. 701,314, dated June 3, 1902, and by means of which improvements we enlarge the scope, increase the speed and improve the operation of the voting apparatus. With the apparatus disclosed in said patent, a transmitting device is used for each member, and by means of which any one of a series of circuits may be closed by each member corresponding to the desired vote—"yes", "no", or "present". The receiving apparatus comprises mechanism by which the names of the individual members will be printed in columns corresponding to the vote selected by each member, this printing being effected by the operation of a selecting magnet in the particular one of the circuits closed at each transmitter, and the several transmitters being successively connected in circuit with the receiving apparatus by means of a series of contact plates, with which a contact device successively makes contact. With assembly voting apparatus of the type disclosed in said patent, a totalizing device is employed corresponding with each class of votes and by means of which the number of votes in each class may be totaled. Our present improvements relate to the following:

First: We so arrange the circuits as to make use only of a single contact plate for connecting each of the transmitters with the receiving apparatus instead of a plurality of contact plates, as disclosed in said patent. This improvement effects a substantial simplification in the construction and operation of the apparatus.

Second: In order to increase the speed of the apparatus instead of printing the names in a single column for each class of votes, we print the names in a plurality of columns for each class of votes. In other words, if there are two "yes" columns, the names from A to L will be printed in one column and those from M to Z in the second column. By

utilizing two columns for each class of votes, the speed of the machine will be doubled and by making use of a greater number of columns for each class of votes, the speed of the apparatus will be correspondingly increased. We will hereafter describe an arrangement by which two columns for each class of votes are made use of, from which it will readily be understood how a larger number of columns may be employed. By thus printing the names in a plurality of columns for each class of votes, we not only increase the speed of the apparatus, but we secure a printed record that will be less unwieldy than is the case if a long list of names is to be printed in a single column for each class of votes. By making use of a plurality of columns for each class of votes, it will be obvious that two or more "yes" votes, for instance, may require to be printed simultaneously and, therefore, it is necessary that the totalizing apparatus shall be of a type that will totalize one or more units simultaneously. We will hereafter describe a totalizing device by which either one or two votes may be totaled at each printing operation as the case may require, from which it will be understood how suitable modifications may be made in the totalizing apparatus in case the construction is such that more than two votes may have to be simultaneously totaled.

In order that our invention may be understood, attention is directed to the accompanying drawing forming a part of this specification, and in which—

Figure 1 is a diagrammatic view of the apparatus, arranged to record the votes in two separate columns for each class;

Fig. 2 is a separate sectional view showing one of the selecting magnets and the parts cooperating therewith;

Fig. 3 is a detached view showing the mechanism for printing four separate sets of votes in two groups;

Fig. 4 is a separate plan view showing the printed record as made with the apparatus illustrated in Figs. 1 and 3;

Fig. 5 is a sectional view illustrating one of the totalizing disks and the apparatus for feeding the same either with a single or double feed movement, corresponding to one or two votes; and

Fig. 6 is a separate elevation of one of the feed wheels of the totalizing mechanism.

In all of the views corresponding parts are represented by the same reference characters.

Referring first to Fig. 1, A, B, C, D, E, F, G, and H represent eight (8) transmitting stations arranged in two groups of four each. Obviously each group may be composed of any suitable number of transmitting stations and the transmitting stations may be divided into any desired number of groups. At each transmitter there are three circuit closing devices shown diagrammatically as switches 1, 2, and 3, and corresponding to "yes," "no," and "present" votes. All the circuit closing devices at each station are connected by a common conductor 4, leading to one of the segments of a selecting circuit closer I or J, each being provided with a collecting arm 5 or 6, connecting the same with a battery 7 or 8. The circuit closer 1 of all the transmitters of one group connects with the common conductor 9, leading to a selecting magnet 10. The circuit closer 2 connects with a common conductor 11 leading to a selecting magnet 12. The circuit closer 3 connects with a common conductor 13 leading to a selecting magnet 14. The return circuit from the selecting magnets 10, 12, and 14 connects with a common conductor 15 which connects with the magnet 16 controlling the "absent" votes and thence to the battery 7 or 8, as the case may be. A shunt 17 leads from the connection 9 to the totalizing magnet 18 corresponding to one class of votes. A shunt 19 leads from the connection 11 to the totalizing magnet 20 corresponding to a second class of votes, and a shunt 21 leads from the connection 13 to the totalizing magnet 22 corresponding to a third class of votes, and the return circuits from each group of totalizing magnets 18, 20, and 22 connect with the common circuits 23 leading to the battery 7 or 8. It will thus be seen that each selecting magnet 10, 12, and 14 is in shunt relation to a totalizing magnet 18, 20, or 22, so that when any one of said selecting magnets is energized, the corresponding totalizing magnet will also be energized, all from the same battery corresponding to the particular group, but obviously the magnets 10 and 18, 12 and 20, and 14 and 22 may be in series with each other.

The selecting magnets provide for the printing of the names successively in the particular column desired in any suitable way. One mechanism for the purpose is illustrated in the drawing and comprises a series of plungers 24 mounted to reciprocate in a suitable frame 25 and having tongues 26 pivoted at their upper ends, which tongues connect with the armature 27 of the selecting magnets. When the tongues 26 are in line with the plungers 24, said tongues will be engaged and depressed by a reciprocating

bar 28 actuated in any suitable way as by means of eccentrics 29 mounted on a shaft 30.

With the selecting magnets representing "yes," "no" and "present" votes, the tongues 26 are normally out of line with the reciprocating bar 28, so that when these selecting magnets are deenergized the bar 28 will not engage and move the tongues as shown in Fig. 2; but when any one of the selecting magnets 10, 12, or 14 is energized its armature 27 will be attracted so as to move the tongue 26 in line below the reciprocating bar 28, and when the bar moves downward the corresponding plunger will be depressed so as to carry the paper 31 into contact with the printing surface (not shown) by which, as disclosed in said patent, the member's name will be printed in the desired column representative of the selected vote. The printing surface disclosed in said patent comprises a drum carrying the members' names in alphabetical arrangement, and duplicated for as many classes of votes as desired.

With our present invention the printing surface may be a similar drum or equivalent element, but instead of arranging the names in a single column for each class of votes, we sub-divide the names into a series of columns for each class of votes. Thus, as shown in Fig. 4, the names will be divided into four classes of votes, namely, "yes," "no," "present," and "absent," and each class of votes will be divided into two columns, the first column of each class containing the names from A to L, and the second column of each class containing the names from M to Z. By thus dividing the names into a series of columns for each class of votes, we materially increase the speed of the apparatus. In other words, by dividing the names into two columns for each class of votes, as shown in Fig. 4, we double the speed of the apparatus because we permit two names to be printed simultaneously. Obviously, if the names are divided into four columns, which is readily possible, the speed will be correspondingly increased and the subdivision of the names may be carried to a still further extent. Furthermore, by thus subdividing the names into a plurality of columns for each class of votes, the resulting record as shown in Fig. 4 is in more convenient form than if the names were arranged in a single long column for each class of votes.

It will be observed that as we have so far described our improvements, the closing of the circuits 9, 11, or 13 results in the energizing of the selecting magnets 10, 12, or 14, as the case may be, and also the energizing of the equivalent totalizing magnet 18, 20, or 22, each selecting magnet being separately connected to the corresponding totalizing magnet.

In the case of the selecting magnets 16

representing the "absent" votes, these magnets are normally deenergized and the tongue 26 of the corresponding plunger normally occupies a vertical position as shown in Fig.

1. Therefore, it will be seen that if none of the selecting magnets 10, 12 or 14 is energized, the magnet 16 being deenergized will result in the name being printed in the "absent" column. If, however, any one of the selecting magnets 10, 12, or 14 is energized, the selecting magnet 16 will be also energized, carrying its tongue 26 out of path of the reciprocating frame 28 so that the name will not be printed in the "absent" column but will be printed in the column desired for the vote which may have been selected. In other words, the arrangement is such that the selecting magnet controlling the "absent" votes is operative when it is deenergized and is inoperative when it is energized; whereas, the magnets controlling the "yes," "no," and "present" votes are inoperative when deenergized and operative when energized; and the two magnets being connected in series as shown, when one is in operation the other is not.

In order to operate the totalizing magnet 32 for the "absent" votes, we make use of a circuit closer 33, the movable element of which connects by a support 34 with the plunger of the "absent" magnet, so that when a name is printed in the "absent" column the circuit will be closed to the totalizing magnet 32 and an indication thus registered.

The totalizing mechanism may be of any suitable character and may comprise a series of number disks through which light is projected so that the numbers will be enlarged when thrown on a screen or transparent surface as disclosed in said patent. When number disks for each totalizer are used they comprise units, tens and hundreds disks with any suitable form of carrying mechanism between the same. A separate totalizer is used for each class of votes and is so arranged as to totalize the votes of each class whether recorded separately or two or more at a time. When the apparatus is arranged as shown with the votes of each class arranged in two columns, the totalizing mechanism may be of the type shown in Figs. 5 and 6, where the number disks are capable of being fed with a single or double feed movement. When a larger number of groups for each class of votes is used, the totalizing mechanism will be appropriately modified to totalize the votes.

Referring now to Figs. 5 and 6, one of the number disks is shown at 35 and is mounted on studs 36 carried by an arm 37 secured to a shaft 38. On the studs 36 are mounted bevel pinions 39 connecting with gears 40 on the two escape wheels 41. Each escape wheel is provided with ten teeth as

shown in Fig. 6; and engaging with these teeth is an escapement 42 adapted to be operated by one of the totalizing magnets. Suitable means are employed to rotate the number disk step by step when the escapements 42 are operated. We illustrate for this purpose a small electric motor 43 which connects with the shaft 38 by means of a friction clutch 44 comprising two disks engaging face to face and held in frictional contact by a spring 45. The motor 43 is rotating continuously and exerts a constant torque on the shaft 38 so that when either or both of the escape wheels is released the number disks 35 will be moved to the extent of one or two numbers as will be explained. When one of the totalizing magnets is energized its armature will be attracted so as to move the escapement 42 and permit the corresponding escape wheel to move to the extent of one tooth, and when the circuit is broken the escapement will return to its inactive position, permitting the escape wheel to turn to the extent of a second tooth. Thus it will be seen that when the circuit at any one of the totalizing magnets is completed and broken the corresponding escape wheel will turn to the extent of two teeth and will therefore make one-fifth of a rotation. It will be seen, however, that the number disk 35 will move only one-half the distance of the escape wheel, *i. e.*, one-tenth of a rotation carrying it from one number to the succeeding number. This movement of the number disks takes place when either of the totalizing magnets is energized corresponding to either side of the machine. If, however, the two totalizing magnets are operated simultaneously they will permit the two escape wheels to simultaneously move one-fifth of a rotation carrying the number disks with them, since all the parts will move as a unit and thus the number disks will move to the extent of two numbers.

Having now described our invention, what we claim as new therein and desire to secure by Letters Patent is as follows:

1. In an assembly voting apparatus, the combination with a plurality of transmitting stations and a plurality of circuit controlling devices at each station, of a recording apparatus, a single set of contact plates each of which connects with all the circuit controlling devices of the corresponding one of the transmitting stations, and a contact device making successive contacts with the contact plates and connected to the recording device, substantially as set forth.

2. In an assembly voting apparatus, the combination with a plurality of transmitting stations and a plurality of circuit controlling devices at each station, of a recording apparatus, a plurality of selecting magnets therefor each of which is in circuit with corresponding circuit controlling de-

vices of the several stations, a single set of contact plates each of which connects with all the circuit controlling devices of a corresponding transmitting station and a contact device making successive contacts with the contact plates and connected in circuit with the several selecting magnets, substantially as set forth.

3. In an assembly voting apparatus, the combination with a series of transmitting stations, and a plurality of circuit controlling devices at each station, of a plurality of normally inactive voting selecting magnets each connected with corresponding circuit controlling devices of several stations, a normally active not-voting selecting magnet, and means whereby when any one of the voting selective magnets is made active the not-voting selective magnet will be rendered inactive, substantially as set forth.

4. In an assembly voting apparatus, the combination with a series of transmitting stations and a plurality of circuit controlling devices at each station, of a plurality of voting selecting magnets each connected with corresponding circuit controlling devices of several stations, and a not-voting selecting magnet in the return circuit of the voting selecting magnets, substantially as set forth.

5. In an assembly voting apparatus, the combination with a series of voting selecting magnets, means for operating the same, a normally operative not-voting selecting magnet, and means for rendering the same inactive when any one of the voting selecting magnets is operated, of a plurality of voting totalizing magnets coöperating with the voting selecting magnets, a not-voting totalizing magnet, and a circuit controlling device for the latter actuated when the not-

voting selecting magnet is active, substantially as set forth.

6. In an assembly voting apparatus, the combination with a plurality of transmitting stations and a plurality of circuit controlling devices at each station, of a recording device for making a single record of the vote and a plurality of selecting magnets for determining and controlling the operation of the recording device, the selecting magnets comprising a plurality for each class of votes, substantially as set forth.

7. In an assembly voting apparatus, the combination with a plurality of groups of transmitting stations and a plurality of circuit controlling devices at each station, of a series of voting selecting magnets for each group of transmitting stations, each selecting magnet being controlled by corresponding circuit controlling devices of its group, and means for securing a single printed record determined by the selecting magnets, whereby the votes of a class will be arranged in a plurality of groups, substantially as set forth.

8. In an assembly voting apparatus, the combination with a recording device for making a printed record with the votes of each class arranged in two groups, of a totalizing device for each class of votes, said device having the capacity to totalize either group singly or both groups simultaneously, substantially as set forth.

This specification signed by us, the said FRANK L. DYER and JOHN W. DYER, and witnessed this 28th day of November, 1916.

FRANK L. DYER.
JOHN W. DYER.

Witnesses:

J. F. COLEMAN,
A. E. RENTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."