April 30, 1935. A. T. CARNEY 1,999,803

VISIBLE AUTOMATIC ANNOUNCER

Filed Aug. 13, 1932 8 Sheets-Sheet 1

Fig. 1.

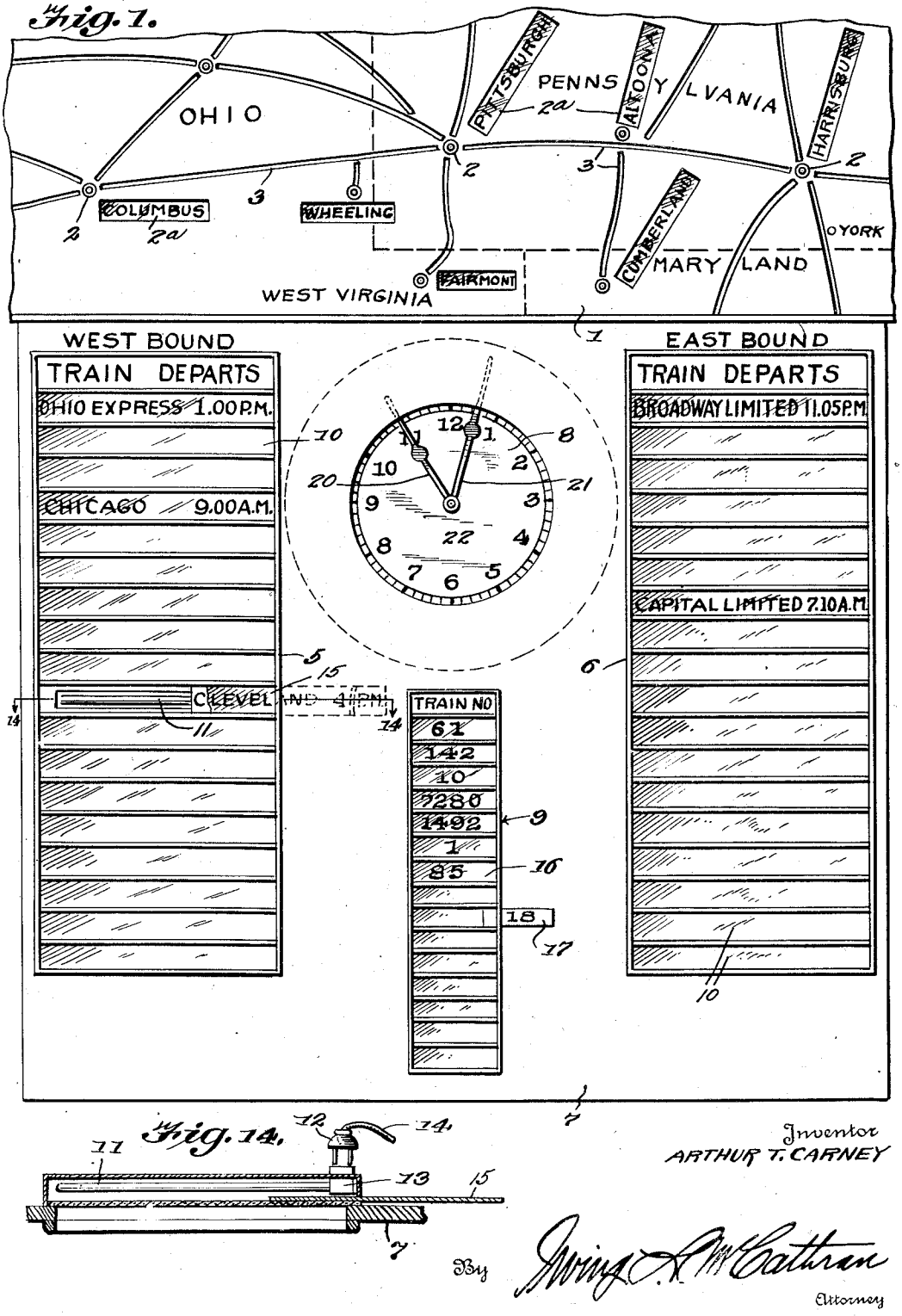


Fig. 14.

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VISIBLE AUTOMATIC ANNOUNCER

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Fig. 2.

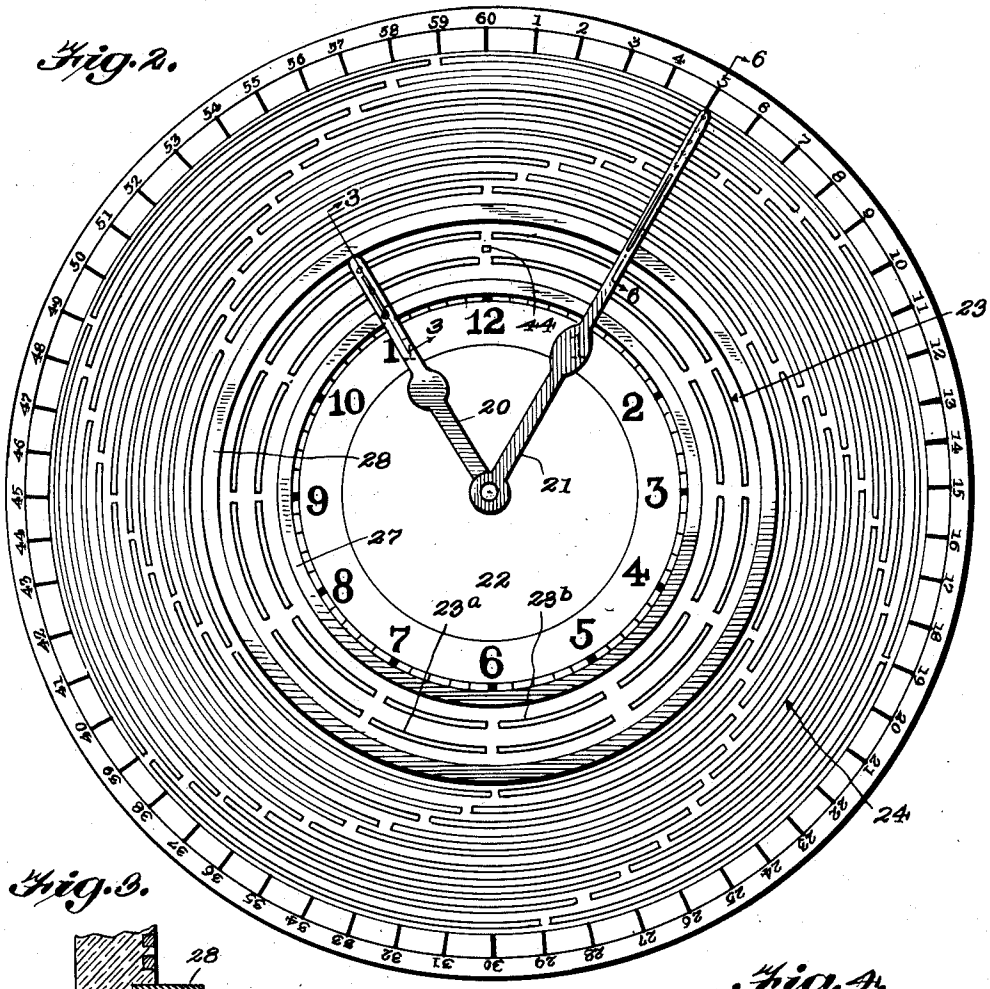


Fig. 3.

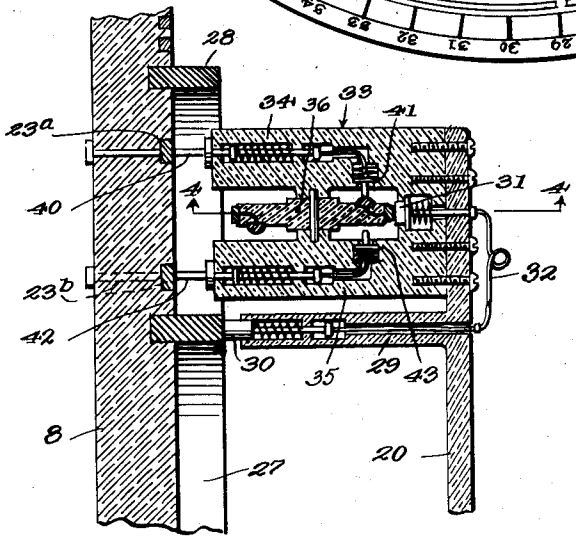
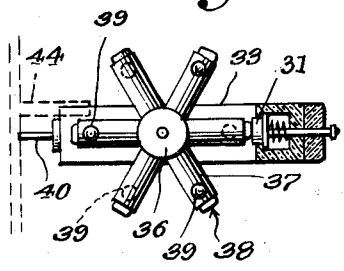


Fig. 4.



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VISIBLE AUTOMATIC ANNOUNCER

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Fig. 6.

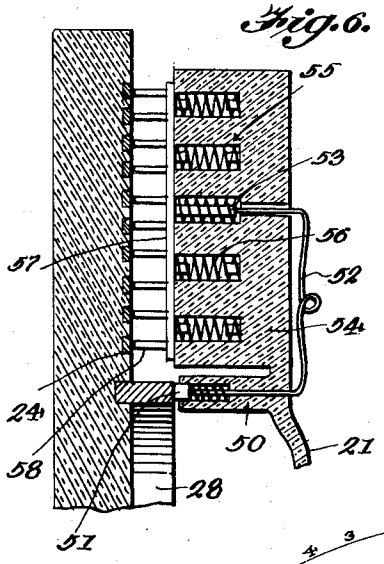


Fig. 7.

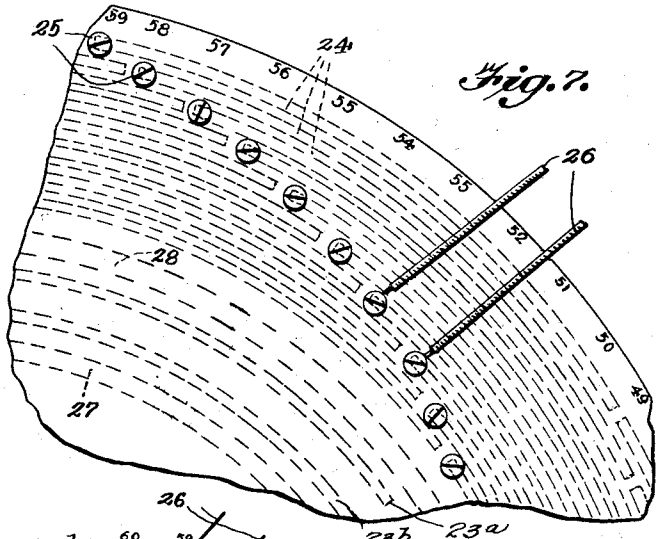
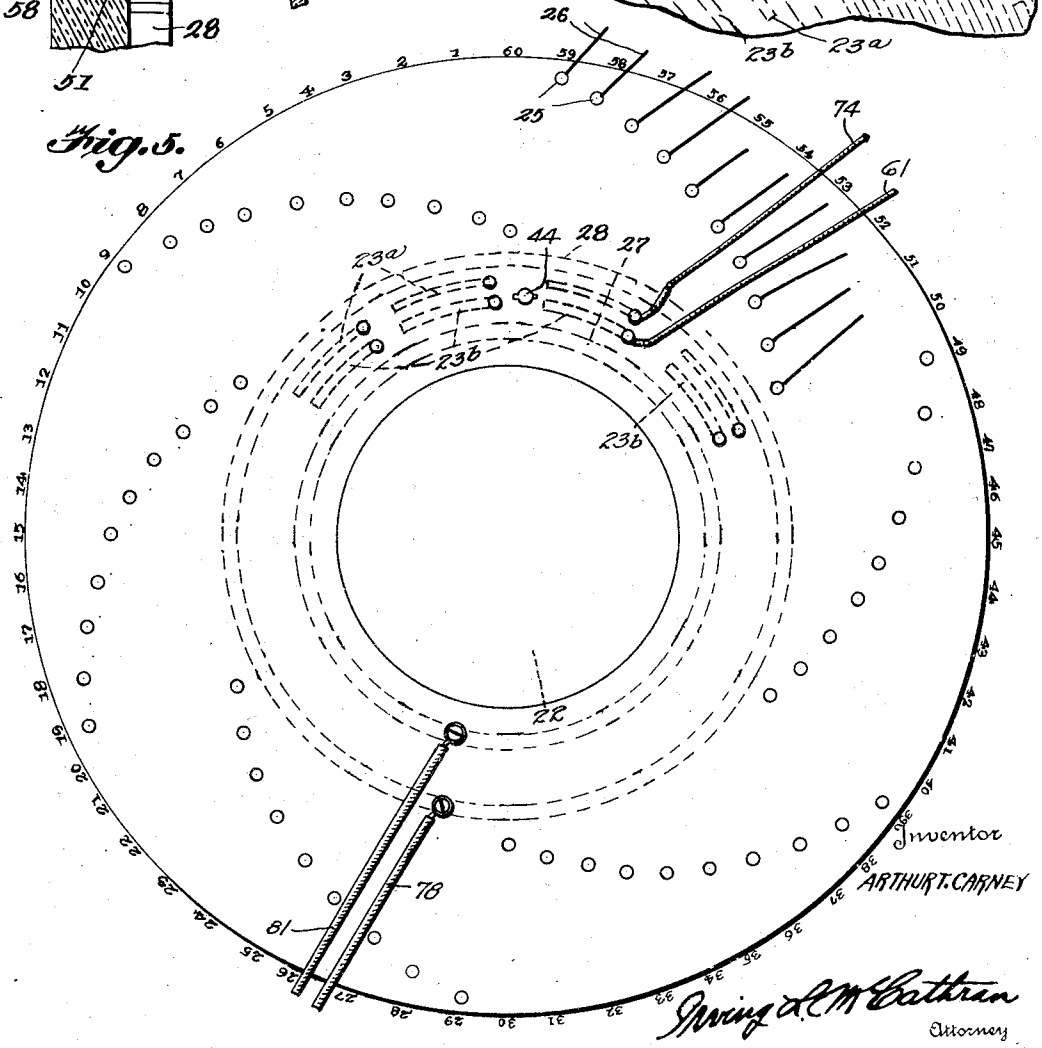


Fig. 5.



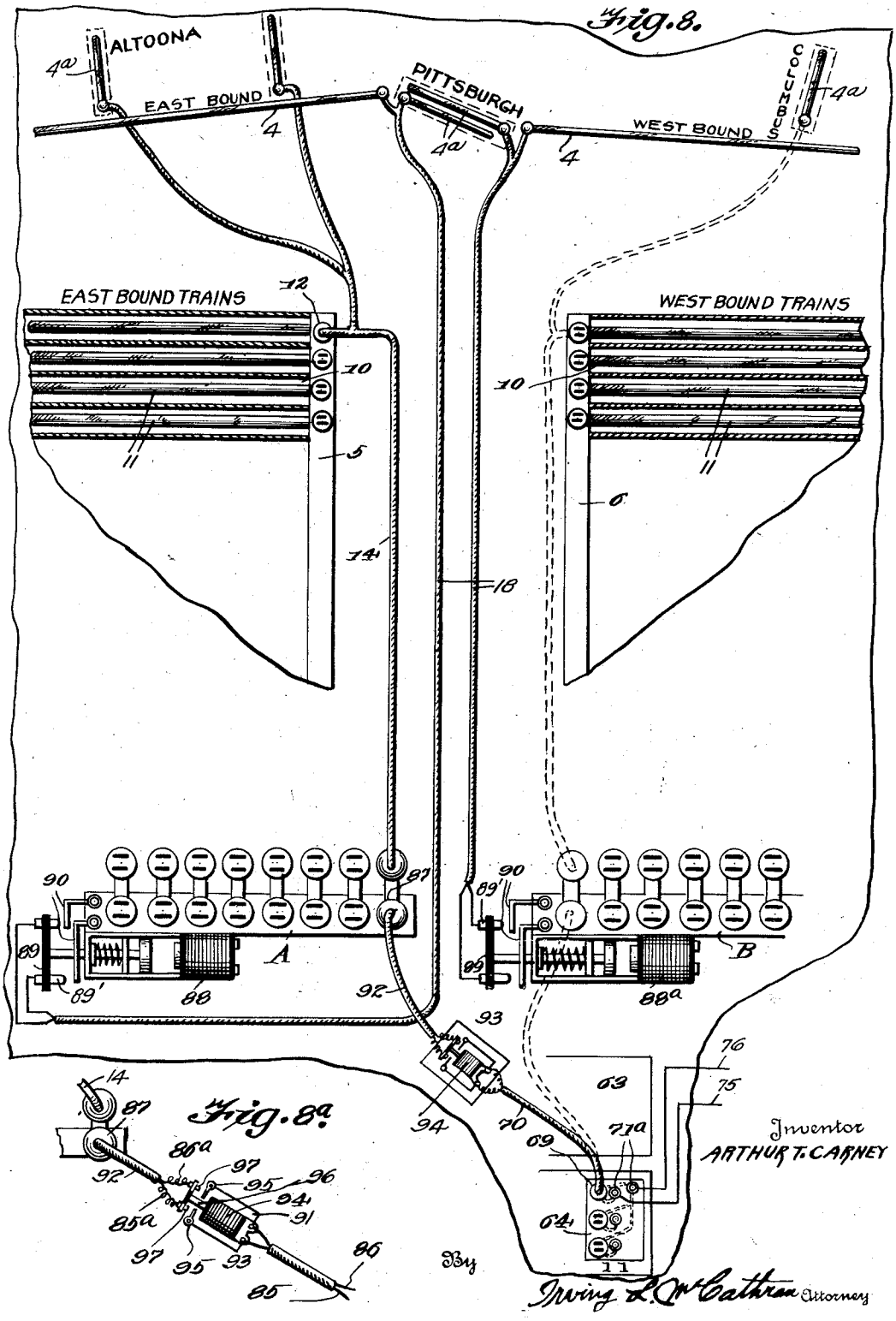
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VISIBLE AUTOMATIC ANNOUNCER

Filed Aug. 13, 1932 8 Sheets-Sheet 4

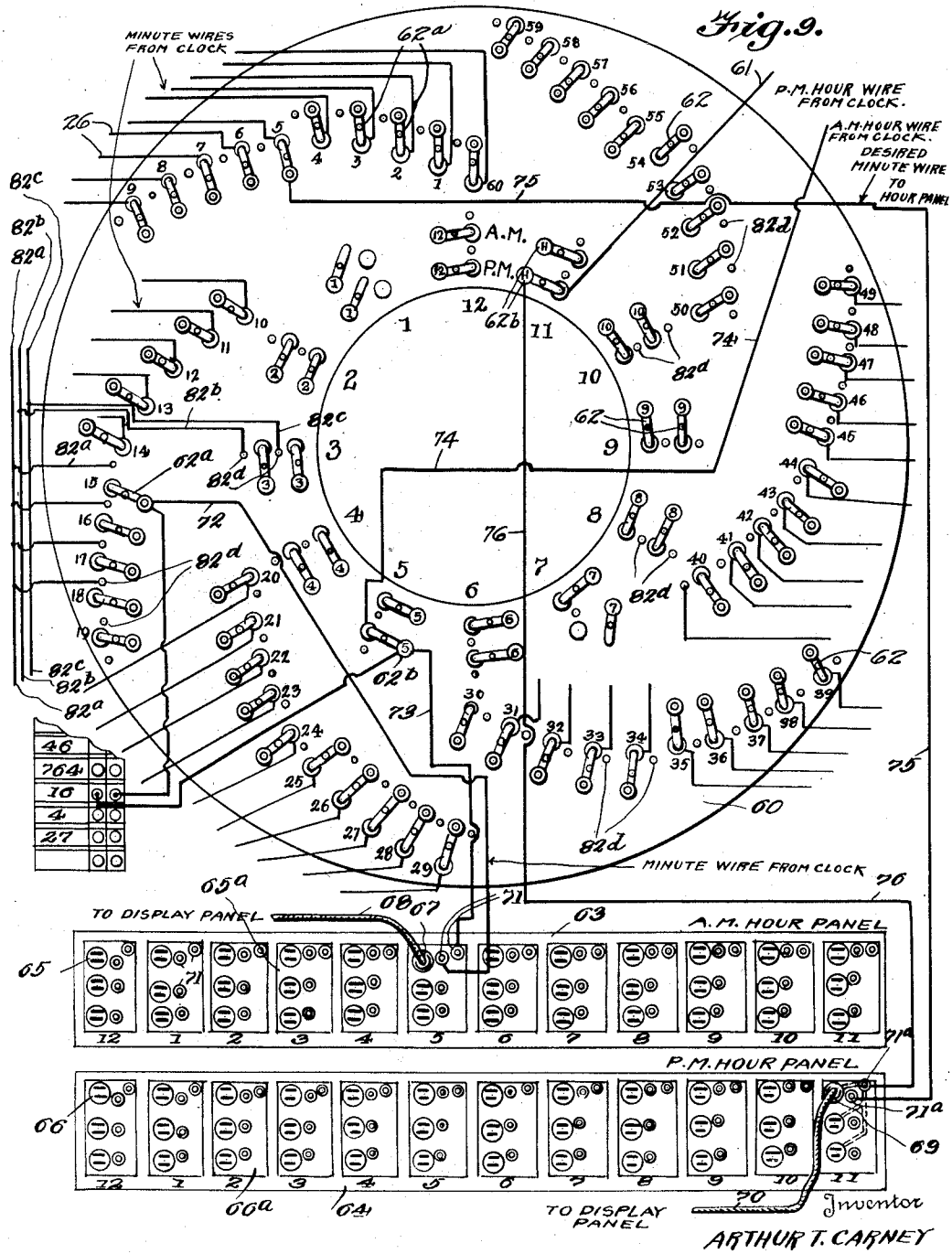


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Fig. 9.



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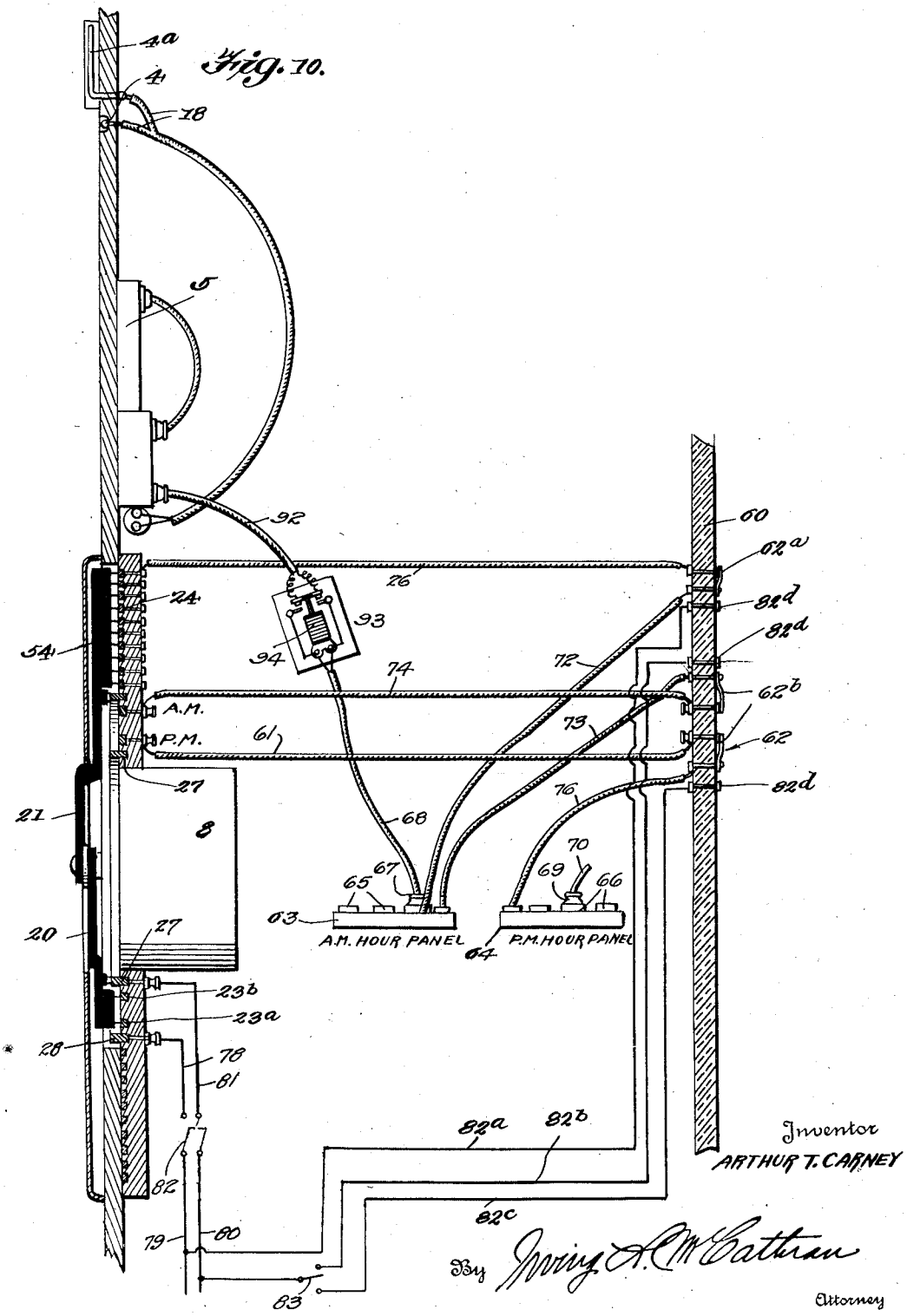
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VISIBLE AUTOMATIC ANNOUNCER

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Fig. 10.



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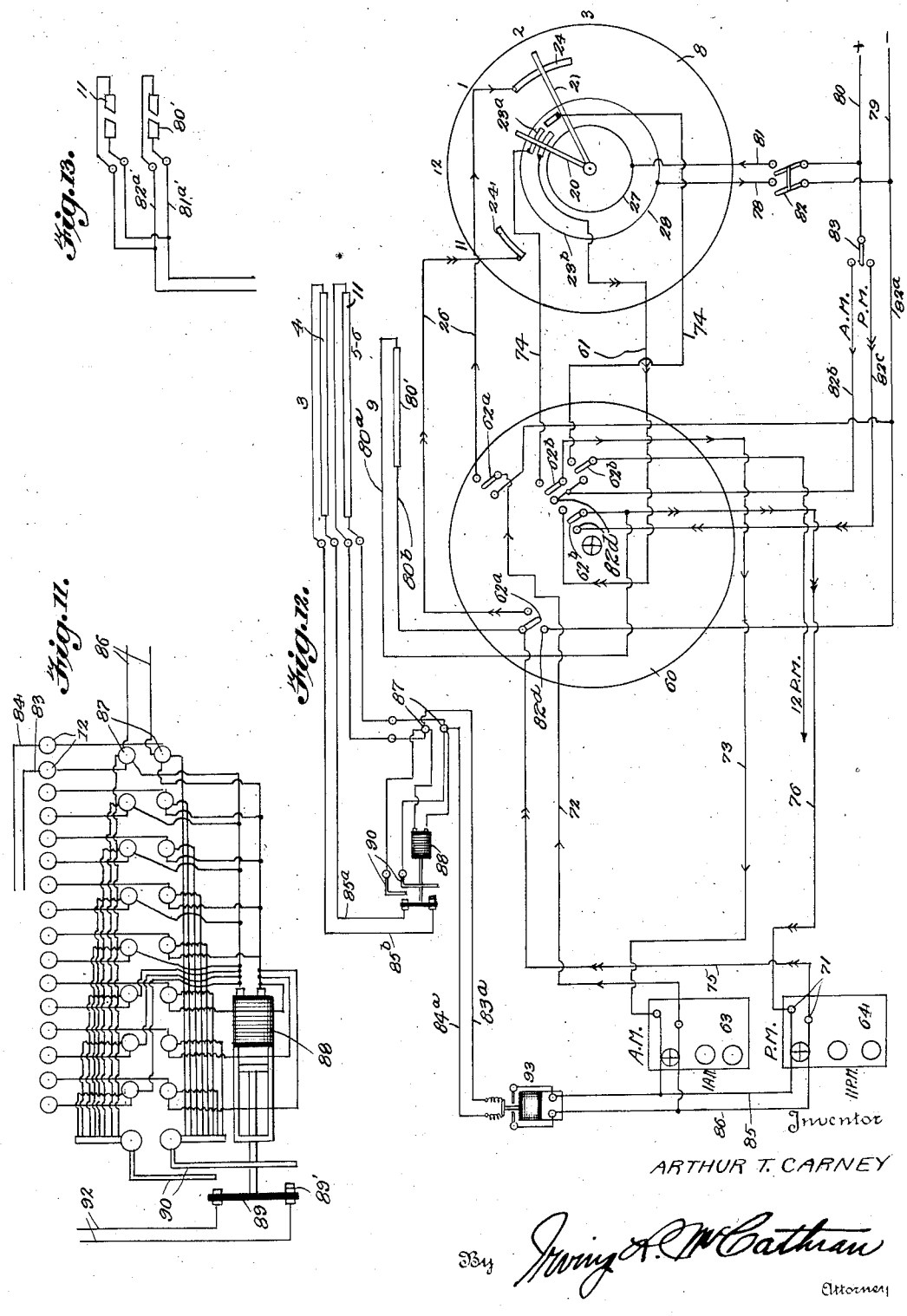
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Fig. 18.



Fig. 16.

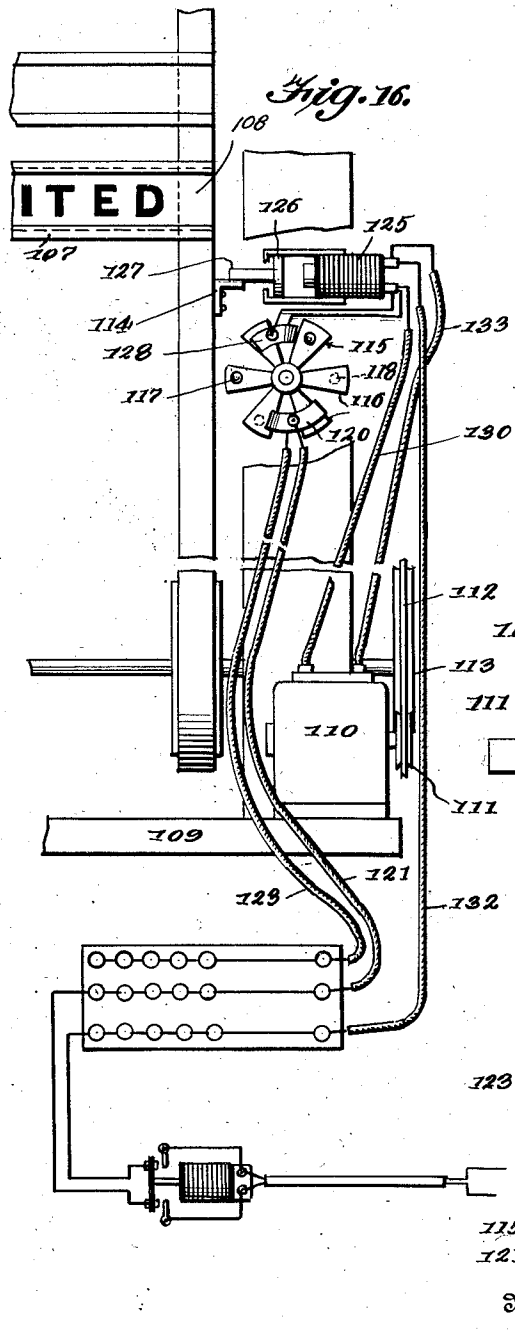


Fig. 15.

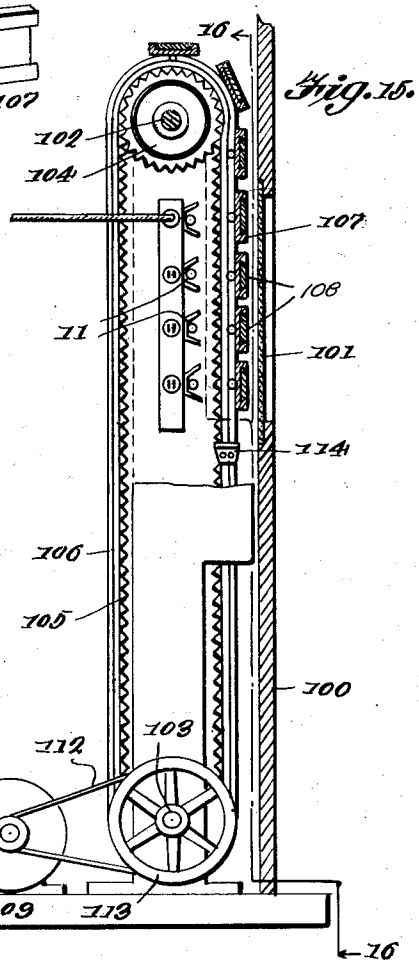
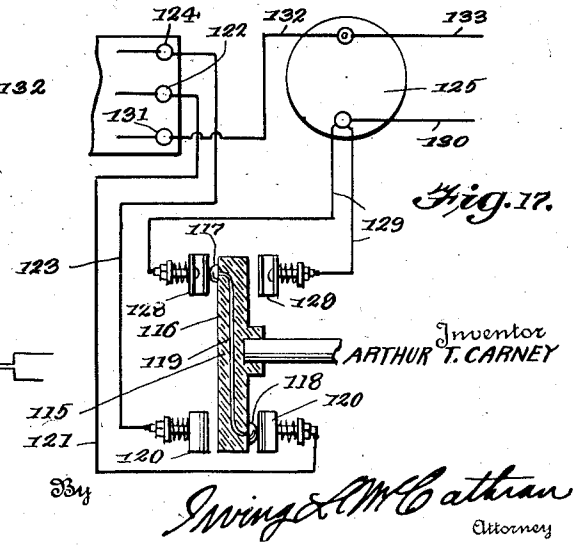


Fig. 17.



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Patented Apr. 30, 1935 1,999,803

UNITED STATES PATENT OFFICE

1,999,803

VISIBLE AUTOMATIC ANNOUNCER

Arthur T. Carney, Blairsville, Pa., assignor of one-third to R. E. Miles, Jr., Wilkinsburg, Pa.

Application August 13, 1932, Serial No. 628,751
16 Claims. (Cl. 161—5)

This invention relates to visible automatic announcers, and has for its object the production of a simple and efficient automatic adviser for all public conveyances and all enterprises catering to the traveling public.

Another object of this invention is the production of a simple and efficient announcer which is so constructed as to control an electrical visible display arranged upon a map, or other designating means, to visibly illuminate or indicate the station which is being approached and also indicate the route upon which the vehicle such as a bus, or train, may be traveling.

A still further object of this invention is the production of a simple and efficient mechanism for controlling the automatic display of the announcing means whereby the station which is being approached may be automatically indicated through the operation of the hands of a clock.

Still another object of this invention is the production of a simple and efficient circuit closing means carried by and cooperating with the hands of a clock for controlling the display of an announcing means mounted upon a suitable display board or other medium.

Another object of this invention is the production of a simple and efficient means for permitting the control of the display means for the announcer manually or automatically.

Yet another object of the invention is the production of a simple and efficient announcer which will give a clearly visible picture of all information usually given the public, and whereby at the option of the purchaser, all train connections and all points thus served may be clearly displayed, as well as hotels, restaurants, points of interest en route, for any prearranged length of time.

With these and other objects in view, this invention consists in certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings:—

Figure 1 is a front elevation of the visible automatic announcer, only a portion of the map being shown, it being understood that the map may be extended to any desired or convenient size and to include any desired or convenient geographical location;

Figure 2 is a front elevation of the clock used in connection with the present invention showing the outer portion of the casing removed to illustrate the various contacts carried by the face of the clock;

Figure 3 is a section taken on line 3—3 of Figure 2;

Figure 4 is a section taken on line 4—4 of Figure 3;

Figure 5 is a rear elevation of the clock showing the manner of connecting the various circuits to the contact strips formed upon the face of the clock;

Figure 6 is a section taken on line 6—6 of Figure 2, this section being a longitudinal section through the outer end of the minute hand;

Figure 7 is an enlarged rear elevation of the clock, showing the various circuit contacts in association with the contact strips formed or carried by the front face of the clock;

Figure 8 is a vertical sectional view taken through the announcing panels and showing the various electrical circuits and apparatus used for displaying the desired information upon the map;

Figure 8a is a detail view of a certain magnetic circuit closer used in connection with the arrangement shown in Figure 8;

Figure 9 is a rear elevation of the switch panel used in connection with the present invention and shown in conjunction with the a. m., and p. m. hour panels;

Figure 10 is a vertical sectional view through the clock panel and switch panel, also showing the p. m., and hour panels in end elevation;

Figure 11 is a diagrammatic view of certain of the electrical circuits involved in carrying out the present invention;

Figure 12 is an enlarged diagrammatic view illustrating a typical a. m. and p. m. circuit through the time controlled switching mechanism, the indicator panels and the cooperative instrumentalities;

Figure 13 is a detail diagram of part of the circuit shown in Figure 12 and illustrates a slight modification thereof;

Figure 14 is a section taken on line 14—14 of Figure 1;

Figure 15 is a side elevation, partly in section, and showing a modified arrangement of display board wherein the chart is movable;

Figure 16 is a detail sectional view substantially on the line 16—16 of Figure 15, and showing diagrammatically certain of the wiring connections to the remainder of the apparatus;

Figure 17 is an enlarged detail view, partly in diagram, of a modification of a wheel switch used herein; and

Figure 18 is a detail perspective view of a cer-

tain train announcer bracket and name plate used herewith.

By referring to the drawings, it will be seen that 1 (Figure 1) designates a map, chart, or other designating means which is preferably provided with certain geographical locations such as towns, cities, and the like, indicated by the numeral 2, and the right-of-way, such for instance as a railway or road system 3 illuminated through the medium of suitable neon lights particularly designated by the numeral 4 in Figures 8 and 10 of the drawings. It should be understood that the map or chart 1 may be of any suitable or desired size or shape to take in a desired geographical territory and the map or chart may be modified in any suitable or desired manner to designate particular points of interest, hotels, and other information which may be of importance. For instance town names 2a (Figure 1) may be shown as transparencies with neon lights 4a or other illuminating means (Figure 8) behind them. Below the chart 1 is preferably placed a pair of announcing panels indicated by the numerals 5 and 6 respectively, one announcing panel being adapted to contain announcements of the west-bound, and the other of the east-bound trains, motor vehicles, steamships, or similar conveyances. Preferably in the center of a supporting board 7 is mounted a specially constructed electrical clock 8, hereinafter described, this clock preferably being mounted between the announcing panels indicating the east-bound and west-bound conveyances. Below the clock is preferably mounted a third panel 9 for containing the numbers of trains, vehicles, boats, or other conveyances. Within each of the several compartments 10 forming the east-bound and west-bound announcing panels 5 and 6, is mounted a suitable illuminating light, preferably a neon light 11, which may be illuminated through the medium of inserting a plug 12 in the socket 13, the plug 12 being carried by a flexible cord 14 leading to a suitable source of electrical supply. These compartments 10 will be provided with interchangeable transparent or translucent plates 15 containing the desired announcements of trains or conveyances to be announced. The train number panel 9 may also be provided with a plurality of compartments 16 and interchangeable plates 17 for the purpose of indicating the number designation of different trains.

The train announcement panels on each side of the clock, can be encased in glass, thereby concealing the train name plates 15 contained within the compartments 10, until said train is actually announced, when it will of course be illuminated or visible at all times and illuminated when announced. A part of each train name plate is preferably detachable, this being the part containing the time of departure, to permit of changing the figures should a train be late. The train number panel 9 shown beneath the clock, can be eliminated and the train number designation included on the same plate 15 as the name of the train. This would avoid the use of an extra circuit conductor which necessarily has to be tapped to conductors leading to the lamps 11 in order to illuminate lamps housed within the compartments 16, which illuminate the train name plates 17. It should not be necessary at any time to remove an entire name plate where the train name plates 15 are not made wholly interchangeable.

The map 1, as previously described, has designated on the face thereof, various points of interest as well as the locations of cities, towns, and stations to be visited by the conveyance, and these are preferably lighted thru the medium of the well-known type of neon lights. It should be understood that any suitable or desired means of illumination may be employed without departing from the spirit of the invention, and these lighting elements such as the track elements 4 and the city locating elements 4a (Figure 8) may be located in any desired manner thru suitable electrical connecting cables 18 indicated in detail in Figures 8 and 10. The various locations and the various rights-of-way may be illuminated through a special wiring system hereinafter described.

Electric clock circuit closing means

By referring particularly to Figures 1 to 7, inclusive, the structure of the electric circuit closing means operated by the electric clock will be understood. The electric clock is employed having an hour hand 20 and a minute hand 21 actuated in the usual step-by-step movement employed in such electric clocks. The electric clock is provided with the usual dial face 22, numbered to indicate the hours and minutes as is usual with such type of clock. Extending around the outer edge of the clock dial 22 is a series of hour hand contact plates 23a and 23b, and beyond these hour hand contact plates 23a and 23b are arranged a series of minute hand contact plates 24, the contact plates 23a and 23b and plates 24 being embedded in suitable insulating material, each contact plate of each series 23a, 23b, and 24 having a suitable lead connection 25 connected to a suitable lead wire 26, as shown in Figure 7, leading to a suitable source of electrical supply. The contact plates 23a and 23b are arranged to accommodate themselves to the hours on the face of the clock whereas the contact plates 24 are arranged in a suitable manner to accommodate themselves to the minutes of the hour. The inner group of contact plates 23a and 23b, as shown in Figures 2, 3 and 7, are arranged to provide an a. m. hour contact series 23a, and a p. m. contact series 23b. Also encircling the clock dial 22 is an inner current ring 27 which has connection with one side of a power line to a brushing contact on the hour hand and concentric with and spaced outwardly from the ring 27 in proper position to contact with a brushing contact on the minute hand is a second current supply ring 28 also having connection with one side of the power line. This particular structure will be described in the following description.

Particular attention is now invited to Figures 2, 3 and 4, with respect to the structure of the hour hand and the contact mechanism carried thereby. The hour hand 20 is provided with an inwardly projecting arm 29, which carries a spring-pressed brush 30, this spring-pressed brush normally contacting with the current supply ring 27 as shown in Figure 3. A spring-pressed contact button 31 is also carried by the hour hand 20 in spaced relation to the arm or finger 29 and contact brush 30, as shown in Figure 3, and this spring-pressed button 31 is electrically connected to the brush 30 through the medium of the conducting cable or suitable electrical connection 32, the brush 30 being also spring-pressed to constitute an efficient electrical connection through the movement of the hand 20. It should be understood that the hand 20 is preferably of insulated material and the outer end of this hand 20 carries a brush-head 33, as shown in

Figure 3, the brush-head having inwardly extending parallel insulated arms 34 and 35. Journaled between these insulated arms 34 and 35 is a rotating spoked trip switch 36 having radiating spoke arms 37 (Figure 4), these arms 37 having at their terminals contact knobs 38 and every alternate spoke arm 37 having upon its alternate opposite side a contact button or knob 39, as shown clearly in Figures 3 and 4. The contact knobs 38 on the ends of the spoke arms 37 are adapted to close the circuit with the spring-pressed contact button 31 for supplying the current from the contact button 31 through a knob 38 to one of the knobs 39 carried by one of the arms 37, the knobs 39 of the alternate arms being alternately placed upon the opposite sides for the purpose hereinafter described to close the p. m. hour contact, or the a. m. hour contact as may be necessary. The insulated arm 34 is provided with and carries a spring-pressed brush pin 40 which is adapted to normally brush against and close a circuit with the conducting band or element 23a, shown in Figure 3. This spring-pressed brush pin 40 is electrically connected with a spring-pressed button 41 which is limited in its outward movement in any suitable or desired manner and the spring-pressed button 41 is adapted to contact with one of the knobs 39 carried by one of the spoke arms 37 as the knob 39 is brought into registering relation. The arm 35 also carries a spring-pressed brush pin 42 which is adapted to contact with the p. m. hour contact ring 23b and the spring-pressed brush pin 42 is electrically connected in turn with a spring-pressed button 43 carried by the arm 35, as clearly illustrated in Figure 3, for the purpose of contacting with the knob 39 carried by one of the spokes 37. It should be understood that the contact buttons 41 and 43 are only alternately in contact with the alternate buttons 39 carried by the spokes 37, one button being in contact with the knob 39 upon one side of the spoke wheel or tripping member 36 for actuating the a. m. hour contact and the knob 39 upon the opposite side being in contact with the push-button 43 at alternate times to actuate the p. m. hour contact. Located above the notation 12 upon the face of the clock, is a tripping lug 44 in the path of travel of the tripping spoke wheel 36 and as the hour hand 20 passes over the tripping lug 44, the lug 44 will engage one of the spokes 37, as shown in Figure 4, the lug 44 being shown in dotted lines, and move one spoke 37 out of contact with the push-button 31 and place the next adjoining spoke in contact therewith. This will reverse the contact of the knobs 39 with the respective buttons 41 and 43, and thus provide the proper change-over for the contact with the respective a. m. and p. m. hour circuits hereinafter described. This structure will provide a very simple and efficient means for permitting the proper change of the contact for actuating the desired a. m. and p. m. hour circuits merely through the rotation of the tripping spoke wheel 37 which will be actuated by the tripping lug 44 engaging the spokes 37 as shown, this being caused by the movement of the hand 20 over the trip lug 44.

The contact rings 24 are arranged in concentric circles, there preferably being ten of these rings which are split throughout their length or circumference and divided into six spaced segments, thereby providing 60 different contacts for the minute hand for each hour to provide for the minutes of the hour. Each segment of each concentric contact plate 24 is spaced from the adjoining segment for a suitable distance to provide a perceptible break in each circuit as the minute hand 21 passes over the contact plates 24. It should be understood that the contact strips 24 may be modified in any suitable or desired manner, and may be multiplied or decreased in number without departing from the spirit of the invention.

As is shown in Figure 6, as well as Figures 2 and 3, the outer minute current supply ring 28 is mounted concentric with the inner ring 27. The minute hand 21 carries an inwardly projecting insulated finger 50 which carries a spring-pressed brush 51 for normally contacting with the current supply ring 28. This spring-pressed brush 51 is electrically connected in any suitable or desired manner, such for instance as by means of a wire 52 to a spring-pressed pin 53 carried by the insulated head 54 of the hand 21. This insulated head 54 is provided with a plurality of sockets 55 within which are mounted springs 56 for engaging the contact plate 57. This contact plate 57 carries a plurality of brush pins 58 which are adapted to contact with the various contact plates 24 constituting the minute hand contact previously described. By referring particularly to Figures 9, 10 and 12, it will be seen that in conjunction with the clock panel and chart, there is arranged in spaced relation a switch panel or switch board 60, which switch board is connected with the various contacts on the plug panel or face of the clock 22 by means of suitable connecting wires 61 and 74. Switches 62 are mounted upon the main switch board or switch panel 60, and these switches may be of any suitable or desired type of manually operated switch. The switches are indicated in Figure 10 generally by the numeral 62, and for the purpose of distinguishing between the different groups of switches, as illustrated in Figure 9, the switches for controlling the minute wires from the clock are indicated as 62a, and the switches controlling the a. m. and p. m. circuits actuated by the hour hand being indicated as 62b. Normally all of the switches are closed in order to provide for the automatic operation through the actuation of the hour and minute hands, but the manual switches have been provided in order to permit the device to be manually operated, if desired, in order to render certain circuits inoperative at any particular time desired when it may be found convenient or desirable.

Obviously, the contact pins 56 (Figure 6) may, if desired, be omitted and the bar or head 57 arranged to contact directly with the contacts 24. In this case, the minute contacts 24 may be of any desired form or arrangement.

It is to be noted that the train number indicator is visible to the public and is illuminated by tapping the wires which illuminate the name of the train and the time of departure, this tapping being made between the display panel and the train announcing chart, the same as for the extra stops as illustrated in Figure 8.

The train number chart or charts, if more than one is required for different directions, should preferably be as close as possible to the main switch board and of course not visible to the public, a cable of two wires leading from the back of the train number chart to the regular circuit used for announcing that particular train, and tapping the same to that circuit between the hour panel and the electro-magnet, the opposite ends of course being connected to the proper binding

posts on the back of the train number chart for that particular train. Now assuming that this particular train is one hour late, prior to the time for its regular announcement, the minute switch will be opened breaking the circuit and preventing its announcement by automatic means. Assuming that the train is going to be one hour late, all that is necessary for its proper announcement is to insert the extension cords in the proper place opposite the train number on the train number chart and insert the opposite ends in the proper switches on the switch board, and except for changing the figures for the time of departure in the name announcing bracket, the matter can then be forgotten. The extension cords may be removed at any time within the next twenty-four hours.

For the purpose of simplification, in Figure 9 there is only illustrated a typical time controlled circuit, and this circuit which is illustrated in Figure 9 may be multiplied in any suitable or desired manner to connect up all the various contacts actuated by the minute hand and these various contacts actuated by the hour hand. In conjunction with the main switch board panel 60, there is provided an a. m. switch board panel 63, and a p. m. switch board panel 64. Each of the panels 63 and 64 is provided with a suitable number of sockets 65 and 66, respectively, for receiving a removable plug 67, which plug 67 is carried by a cable 68 to lead from the a. m. hour panel to the display panel 5, and a removable plug 69 connected to a cable 70 may be used in conjunction with the p. m. panel to lead to the display panel 6. Each of the panels 63 and 64 is provided with a group of socket banks numbered 1 to 12, inclusive, each group of socket banks being provided for each hour of the day, there being twelve socket banks in the a. m. panel 63, and twelve socket banks in the p. m. panel 64, as shown clearly in Figure 9. Each group of socket banks in the a. m. panel is indicated by the numeral 65*a*, and each group of socket banks in the p. m. panel 64 is indicated by the numeral 66*a*. Each socket bank 65*a*, as well as each socket bank 66*a* is provided with three or more sockets 65, 66, and four or more terminal connections 71, as shown clearly in Figure 9. The employment of a plurality of sockets 65 and corresponding connections 71, there always being one more connection 71 than the number of sockets 65, is to permit the indication of a plurality of vehicles starting in any given hour as will be presently understood.

By referring particularly to Figure 9 and the diagram indicated therein, the plug 67, by fitting into one of the sockets 65 will cause the a. m. display panel to be illuminated at the desired point, and current will pass from the minute hand of the clock in the typical circuit illustrated in Figure 9, from a switch 62*a* at the left hand side of Figure 9, through the wire 72, through the contact 71 of one of the switch panel banks, due to the fact that the circuit is closed through the plug 67, then up through the wire 73, through a switch 62*b*, and out through the wire 74.

As shown in Figure 9, the p. m. panel 64 is connected with the minute contact by means of suitable wires, a wire 75 being illustrated, passing from a minute contact 62*a* to one of the plugs or terminals 71*a*, and from the other terminal 71*a* extends a wire 76, which wire 76 connects to the hour hand of the p. m. side with one of the contacts 62*b*, and the current will then pass out through the wire 61 to the other side of the line. The plug 69 may be inserted in any suitable or desired receptacle 66 to close the desired circuit to the p. m. display panel 6, shown in Figure 1. By considering Figure 9, and referring to the above description, it will be seen that a simple circuit running from one minute to the a. m. hour has been illustrated and traced, and a typical circuit has also been illustrated and traced from the p. m. circuit to the p. m. hour panel.

Typical circuit for lighting track circuit train announcing sign, and train indicator

In Figure 12 there is shown a typical a. m. and a similar p. m. circuit through the system with one of the switches 62*a* and one of the switches 62*b*, such for example as on the p. m. side, in connection with a lamp 80′ associated with the train number indicator board 9. This light 80′ is connected to one of the switches 62*b* by means of a wire 80*a* and to one of the switches 62*a* by means of a wire 80*b* thereby completing a circuit through the number indicator sign to indicate the number of a train displayed upon the display panel or map 1, the destination of which is also, at the moment, illuminated upon the chart or map 1. A light 11 in the train announcing sign or one of the compartments thereof, is lighted through the medium of the plugs 12 and the wires 83*a* and 84*a* which are connected to the conductors 85 and 86 respectively through the relay 93. The plug 69 carried by the cable 70 supports or carries wires 85 and 86, which are in turn connected by the suitable plug-in socket 87 to a plug 12 carried by the cable 14, which cable 14 carries the wires 83*a* and 84*a* leading to the train announcing sign. The plug 12 may be manually placed in the suitable socket to illuminate any of the panels 10 which may be desired either in the east or west-bound display board.

To illustrate a manual control of the aforesaid circuits, it will be seen by reference to Figure 12, that the minute current supply ring 28 is connected to the power line wire 79 by a conductor 78, and that the hour current supply ring 27 is connected to the power line wire 80 by means of a conductor 81. Interposed in the conductors 78 and 81 is a switch 82 and in the power line wire 80 a switch 83. The power line wire 80 leads through the switch 83 and conductors 82*b* and 82*c* to the stationary contacts of the switches 62*b* and wire 73 leads from the switch blades of each of the a. m. switches 62*b* to the a. m. hour panel 63 as previously described, and from the other switch blades of the p. m. switches 62*b* to the p. m. hour panel 64, while the minute wires 72 and 75 from the a. m. and p. m. hour panels 63 and 64 will pass through the movable contacts of both switches 62*a*, so that the current will then return to the power wire 79, as will be evident.

From the switch 83, which is arranged to throw in such manner as to provide current for either a. m. or p. m. indications, wires 82*b*, and 82*c*, lead to certain of the contacts of the switches 62*b*, as will later be obvious. Adjacent each minute and hour switch on the switch board is a constant button 82*d* which lies in the path of the movable arm of the respective switch. All the minute switch contacts 82*d* are connected in multiple to the wire 82*a*, all the similar a. m. hour contacts are connected in multiple to the wire 82*b*, and all the similar p. m. hour contacts

are connected in multiple to the wire 82c. Thus, by opening the switch 83 and closing the switch 82, the minute and hour switches on the switch board may be manipulated to close the signal currents at any hour desired by swinging the switch arms for the respective hour and minute into engagement with the respective contacts 82d.

As shown in Figure 13, this construction may be modified to advantage in some cases by connecting the wires 81a and 82a directly to the wires 83a and 84a instead of the connections just described.

In Figure 8, there is shown a magnetic circuit closer or relay indicated in general at 93 and this circuit closer is illustrated in detail in Figure 8a. In the construction of this part of the device there is provided a magnet 94 to the terminals of which the wires 85 and 86 are connected. These wires are also connected by conductors 91 to a pair of fixed contacts 95. An armature 96 is provided for the magnet and insulatedly supports the movable contacts 97 arranged, upon energization of the magnet 94, to be brought into engagement with the respective contacts 95. Wires 85a and 86a in cable 92 connect the respective contacts 97 with the plug for the socket 87. If for any reason, as by a partial short circuit occurring in the time controlled circuits of the system, the current is weakened, the relay 93 will not respond thereto and its armature 96 will hold the contacts 97 thereon out of contact with the fixed contacts 95, hence the lamps in the indicator panels 1, 5, 6 and 8 will remain unlighted, even though the system is otherwise in condition to perform its intended functions.

Electrically connected to the plug-in socket 87 is an electro-magnet 88 (Figures 8, 11 and 12) which is adapted to be energized to actuate the armature 89 and bring its contacts 89' into contact with the contact arms 90 for closing the circuit with the wires 91 and connecting the wires 92 in electrical contact with the contact arms 90 and furnishing current through the track circuit light 3. As shown in Figure 8, it will be seen that the east-bound lights are controlled by a plug-in socket bank A, and the west-bound track and lights on the chart, as well as the display board, are controlled by the plug-in socket bank B. Any number of these plug-in sockets may be employed without departing from the spirit of the invention and as illustrated in Figures 8 and 12, only a typical circuit has been described as well as illustrated for the purpose of simplification and to prevent an unnecessary multiplication of lines upon the drawings. As shown in Figure 3, the track circuit as well as the location circuit indicated by the numerals 3 and 2 respectively, may be connected to operate together, the train announcing time being illuminated direct, and the track circuit being illuminated through the actuation of the magnet 88a in each instance, the track circuit in this way having a delayed illumination through the neon tube. In Figure 11, there is shown a multiplicity of circuits for carrying out the desired objects of the invention, but it is thought unnecessary to describe every circuit, a typical circuit having been selected in each instance and followed out throughout its entirety. It of course is obvious that the circuits may be multiplied to the desired number without departing from the spirit of the invention. In connection with the display chart or map, it should be understood that any number of locations or towns along the line of right-of-way or track circuit, may be illuminated simultaneously to indicate the various stops of the train or vehicle along that particular route.

For the purpose of simplification, only east and west-bound display panels have been illustrated.

Should a train be off schedule so that its departure no longer follows the regular order of train departures, the slides bearing the train names or designations are re-arranged to bring the off schedule train into its proper position on the chart and the plugs and connections are shifted to conform to such changes. When thus re-arranged the chart, and the stations and tracks on the map will be illuminated in accordance with the new arrangement.

In some instances it may be advisable to have a separate source of current supply for emergencies should the normal source of electrical supply fail through inadvertence or some other cause.

The device just described is especially adapted for a stationary chart, but it should be understood that any suitable or desired form of chart may be employed such as a rotating or revolving chart without departing from the spirit of the invention, and a special structure may be provided for such a revolving chart should it be desired, as will be presently explained.

The normal position for this structure illustrated is for automatic operation and for this purpose the current supply will enter the structure through the back of the clock and through the contact plates 27 and 28, previously described, thence through the hands of the clock, thence through the switch board panel, thence through the p. m. or a. m. panel where the current will then pass through the display panel for west-bound according to the proper connection made previously described, illuminating all west-bound panel charts, and also illuminating the geographic charts indicating the trackways and the names of the towns.

In the event that a train is late, or if for any reason announcement is not desired at the regular time, the minute switch on the switchboard shown in Figure 9 is simply moved from its normal position of automatic operation to the neutral position. This of course is in the event that the announcement will be required to be made within the same hour as the ordinary time of announcement, but, if the announcement is to be changed for more than one hour, the hour switch is likewise manipulated in the same manner.

For the purpose of summary, it will be noted that the current supply will enter the structure through the back of the clock as illustrated, thence to the contact plates which extend unbroken the entire circumference of the front of the clock as illustrated, one of these plates preferably the smaller circle, supplies current, that is one side of the circuit for the hour hand, and the other or opposite side of the circuit supplies current to the minute hand, the two sides of the circuit remaining separated while passing through the switch board until they enter the hour panel. When leaving the hour panel each plug cord represents a complete circuit and is arranged at this point according to schedule requirements. There are two separate hour panels, one representing the twelve morning hours and the other the twelve afternoon hours. Wires from the hour switches on the switch board are connected to binding posts for corresponding hours on the hour panel, there being only one wire for each hour, each section or hour on this panel containing as many sockets for plug cords as the schedule re-

quires, it being necessary only to connect the wires from the minute switches on the switch board to complete the circuit.

From the hour panel plug, cords extend to the display panel. This panel has three separate outlets for the current. At one end of the panel there are two contact plates, also illustrated, two wires from each socket on the panel extending to these plates, two wires extending to the electro-magnet which closes the circuit at the end of the panel at the proper time and illuminates the track circuit, the other outlet is another socket from which a plug cord is extended to the train display chart for the purpose of illuminating the name of the train, the time of departure, etc., these wires may be tapped to show any number of stops required for any particular train, thereby making possible the use of one track to display both local and through trains. The amount of space required for track display is so small that in most cases it will likely be preferable to display local and semi-local trains on separate tracks.

The train display chart, as previously stated, may be stationary as there would be nothing to get out of order, no machinery being required to operate it, and it simplifies considerably the wiring arrangement. Letters of about three inches should be sufficiently large for this purpose and two spaces each about ten feet square would be ample room for this display. With this arrangement, should a train be late, the only change that would be necessary is the time of departure, this would be a very simple operation to remove the regular figures and substitute those required, a couple of sets of figures from 0 to 9 being kept at hand for this purpose. If very late, it may be desirable to re-arrange the order of the designations on the board, which may be done as above noted.

It will be noted that the hour hand contact changes from a. m. to p. m. and vice versa, every twelve hours, this being performed automatically by contact changing switch in the hour hand contact brush coming in contact with contact changing post as illustrated, when and just before the hour hand reaches the hour of twelve.

As previously stated, this structure is so designed that it can be changed from automatic operation to manual operation without alteration, provision being made in the original installation by tapping the regular source of current supply and installing a two way switch from which wires lead directly to the switch board, wires from one side of the switch would lead to all minute switches and all a. m. hour switches, while the other side of the switch would be wired to all minute switches and all p. m. hour switches. Only one contact is necessary for the minute side of this switch for both a. m. to p. m. hours, only one wire being required from this switch to all minute switches on the switch board. This source of current supply must be turned off when the structure is being operated automatically. When manual operation is desired, care must be taken to be certain that all switches on the switch board are turned off before turning the current supply on direct to the switch board, this being done, it is only necessary to use the same switches that control the automatic operation for each train to be announced, and as previously stated, a chart should be prepared for this purpose. In the event of a general disarrangement of the train performance, this operation may be simplified by using train number chart as illustrated, extension wires being inserted at the exact moment the train is to be announced.

In the modified arrangement of the display board and apparatus illustrated in Figures 14 to 17 inclusive, there is provided a display board **100** having a suitable opening therein preferably closed by a glass **101**. Above the opening is a horizontal shaft **102** and vertically below this is a second shaft **103** which is located below said opening. On these shafts are mounted sprockets **104** around which are trained sprocket chains **105** carrying leather belts **106** to which are secured a series of transparent or window provided brackets **107**. Transparencies **108** are used for the name plates and are selectively slidable in the brackets so that they may be arranged in any desired order, being interchangeable in the brackets. The arrangement is such that a definite number of the name plates are visible at the same time through the glass or window **101**. The tubes **11** are arranged to lie behind the exposed name plates as shown in Figure 14.

Mounted on a base **109** is a motor **110** which is provided with a belt wheel **111** connected by a belt **112** with a large belt wheel **113** fixed on the shaft **103**. Spaced along one of the belts **106** is a series of stops **114**, there being one of these stops for each set of name plates to be displayed through the window **101**. In the path of these stops is a wheel switch **115** having a series of pairs of arms **116**, the arms of each pair being opposite each other. One arm of each pair has a contact **117** and the other arm has a contact **118**, these contacts projecting laterally from the arms. The alternate pairs of arms have these contacts reversely arranged. A wire **119** connects each pair of contacts. Opposite the lower part of the switch is a pair of spring contacts **120** one of which is connected by a wire **121** to a binding post **122** on the a. m. line of a binding post panel, the other being connected by a wire **123** to a post **124** on the p. m. line of this panel.

At **125** is suitably fixed an electro-magnet having an armature **126** carrying a movable stop **127** which normally lies in the path of the stops **114**, being drawn out of said path upon energization of the magnet. The stop **127** thus effects stopping of each set of name plates in correct position for display.

Opposite the upper part of the wheel **115** is a pair of spring contacts **128** which are connected by wires **129** with one terminal of the magnet **125** and a wire **130** also connects this terminal with one brush of the motor **110**. From a post **131** on the binding post panel leads a wire **132** which connects to the remaining terminal of the magnet **125**, this terminal being connected by a wire **133** with the remaining brush of the motor **110**.

Upon the time arriving for a selected one of the lamps **11** to be energized a circuit will be established from one of the binding posts **122** or **124** through one of the wires **121** or **123** to a respective contact **120**, and from thence through wheel **115** to a contact **128**, through a wire **129**, magnet **125**, and wire **132** to post **131**. Also the motor will be connected to this circuit by wires **130** and **133**. The magnet will be quickly energized and the stop **127** moved out of engagement with the stop **114**. The motor, responding less rapidly than the magnet, will now start and the series of name plates will be moved until the next stop **114** engages the wheel **115** and turns it to break the circuit, whereupon the magnet **125** will be de-energized and the movable stop will

project into the path of the stop 114 to stop the new set of name plates in correct display position. At the same time, the motor circuit will be broken and the motor will stop.

It should be understood that certain detail changes in the mechanical construction may be employed without departing from the spirit of the invention so long as these changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:—

1. In a device of the kind described, a plurality of parallel series of fixed contacts, a contact carrying member movable over said fixed contacts, contacts carried by said member each positioned to traverse a respective series of fixed contacts, a contact fixed on said member, a changeover switch carried by said member and arranged to move from one position to another and thereby to effect connection between the fixed contact of the member and remaining contacts carried by the member in succession, and means in the path of said member engaging and actuating said switch.

2. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series, a pair of contacts carried by said member and each engaging a respective series of fixed contacts, a terminal on said support for each of said pairs of contacts, a third contact fixed on said support, a switch device shiftable to effect connection of said third contact alternately with said terminals, and means in the path of said support to engage and shift the switch device as the support moves past said means.

3. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch having peripheral contact means engaging said third contact and having spaced contact means on its sides engaging the terminals, the contact means on one side of the switch being staggered with respect to the contact means on the other side of the switch whereby said terminals are alternately connected to the said third contact as the switch is rotated, and means in the path of said support to effect rotation of the switch as the support moves past said means.

4. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch including a plurality of radial arms each having an end contact adapted to engage said third contact and having a lateral contact conductively connected to the end contact and adapted to engage a respective terminal, the lateral contacts being arranged alternately on one side and the other of said arms, and a fixed stop member between said series of contacts positioned to engage and turn said switch as the support moves past the stop member.

5. In a device of the kind described, a plurality of parallel series of fixed contacts, a contact carrying member movable over said fixed contacts, contacts carried by said member each positioned to traverse a respective series of fixed contacts, a contact fixed on said member, a changeover switch carried by said member and arranged to move from one position to another and thereby to effect connection between the fixed contact of the member and remaining contacts carried by the member in succession, means in the path of said member engaging and actuating said switch, a continuous supply contact parallel to the series of contacts, a fourth contact carried by said member and engaging said supply contact, and a conductive connection between the contact fixed on said member and said fourth contact.

6. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series, a pair of contacts carried by said member and each engaging a respective series of fixed contacts, a terminal on said support for each of said pairs of contacts, a third contact fixed on said support, a switch device shiftable to effect connection of said third contact alternately with said terminals, means in the path of said support to engage and shift the switch device as the support moves past said means, a continuous supply contact parallel to the series of contacts, a fourth contact carried by the support and engaging the supply contact, and a conductive connection between said third and fourth contacts.

7. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch having peripheral contact means engaging said third contact and having spaced contact means on its sides engaging the terminals, the contact means on one side of the switch being staggered with respect to the contact means on the other side of the switch whereby said terminals are alternately connected to the said third contact as the switch is rotated, means in the path of said support to effect rotation of the switch as the support moves past said means, a continuous supply contact parallel to the series of contacts, a fourth contact carried by the support and engaging the supply contact, and a conductive connection between said third and fourth contacts.

8. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch including a plurality of radial arms each having an end contact adapted to engage said third contact and having a lateral contact conductively connected to the end contact and adapted to engage a respective terminal, the lateral contacts being arranged alternately on one side and the other of said arms, a fixed stop member between said series of contacts positioned to engage and turn said switch

as the support moves past the stop member, a continuous supply contact parallel to the series of contacts, a fourth contact carried by the support and engaging the supply contact, and a conductive connection between said third and fourth contacts.

9. In a device of the kind described, a plurality of parallel series of fixed contacts, a contact carrying member movable over said fixed contacts, contacts carried by said member each positioned to traverse a respective series of fixed contacts, a contact fixed on said member, a changeover switch carried by said member and arranged to move from one position to another and thereby to effect connection between the fixed contact of the member and remaining contacts carried by the member in succession, means in the path of said member engaging and actuating said switch, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

10. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series, a pair of contacts carried by said member and each engaging a respective series of fixed contacts, a terminal on said support for each of said pairs of contacts, a third contact fixed on said support, a switch device shiftable to effect connection of said third contact alternately with said terminals, means in the path of said support to engage and shift the switch device as the support moves past said means, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

11. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch having peripheral contact means engaging said third contact and having spaced contact means on its sides engaging the terminals, the contact means on one side of the switch being staggered with respect to the contact means on the other side of the switch whereby said terminals are alternately connected to the said third contact as the switch is rotated, means in the path of said support to effect rotation of the switch as the support moves past said means, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

12. In a device of the class described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch including a plurality of radial arms each having an end contact adapted to engage said third contact and having a lateral contact conductively connected to the end contact and adapted to engage a respective terminal, the lateral contacts being arranged alternately on one side and the other of said arms, a fixed stop member between said series of contacts positioned to engage and turn said switch as the support moves past the stop member, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

13. In a device of the kind described, a plurality of parallel series of fixed contacts, a contact carrying member movable over said fixed contacts, contacts carried by said member each positioned to traverse a respective series of contacts, a contact fixed on said member, a changeover switch carried by said member and arranged to move from one position to another and thereby to effect connection between the fixed contact of the member and remaining contacts carried by the member in succession, means in the path of said member engaging and actuating said switch, a continuous supply contact parallel to the series of contacts, a fourth contact carried by said member and engaging said supply contact, a conductive connection between said third and fourth contacts, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

14. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series, a pair of contacts carried by said member and each engaging a respective series of fixed contacts, a terminal on said support for each of said pairs of contacts, a third contact fixed on said support, a switch device shiftable to effect connection of said third contact alternately with said terminals, means in the path of said support to engage and shift the switch device as the support moves past said means, a continuous supply contact parallel to the series of contacts, a fourth contact carried by the support and engaging the supply contact, a conductive connection between said third and fourth contacts, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

15. In a device of the kind described, a pair of parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotory switch supported between said legs, said switch having peripheral contact means engaging said third contact and having spaced contact means on its sides engaging the terminals, the contact means on one side of the switch being staggered with respect to the contact means on the other side of the switch whereby said terminals are alternately connected to the said third contact as the switch is rotated, means in the path of said support to effect rotation of the switch as the support moves past said means, a continuous supply contact parallel to the series of contacts, a fourth contact carried by the support and engaging the supply contact, a conductive connection between said third and fourth contacts, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

16. In a device of the kind described, a pair of

parallel series of fixed contacts, a contact support movable over said series and including a pair of spaced legs each traversing a respective series, a contact on each leg engaging the series of contacts traversed by said leg and having a terminal on the side of the leg confronting the remaining leg, a third contact carried by said support between said legs, a rotary switch supported between said legs, said switch including a plurality of radial arms each having an end contact adapted to engage said third contact and having a lateral contact conductively connected to the end contact and adapted to engage a respective terminal, the lateral contacts being arranged alternately on one side and the other of said arms, a fixed stop member between said series of contacts positioned to engage and turn said switch as the support moves past the stop member, a continuous supply contact parallel to the series of contacts, a fourth contact carried by said support and engaging the supply contact, a conductive connection between said third and fourth contacts, a plurality of series of signals, and conductive connections between the contacts of each series of fixed contacts and the signals of a respective series of signals.

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