

V. G. APPLE.
 CONTROLLER FOR LIGHTING CIRCUITS OF DYNAMO BATTERY EQUIPMENTS.
 APPLICATION FILED MAY 19, 1914.

1,133,783.

Patented Mar. 30, 1915.

2 SHEETS-SHEET 1.

Fig. 1.

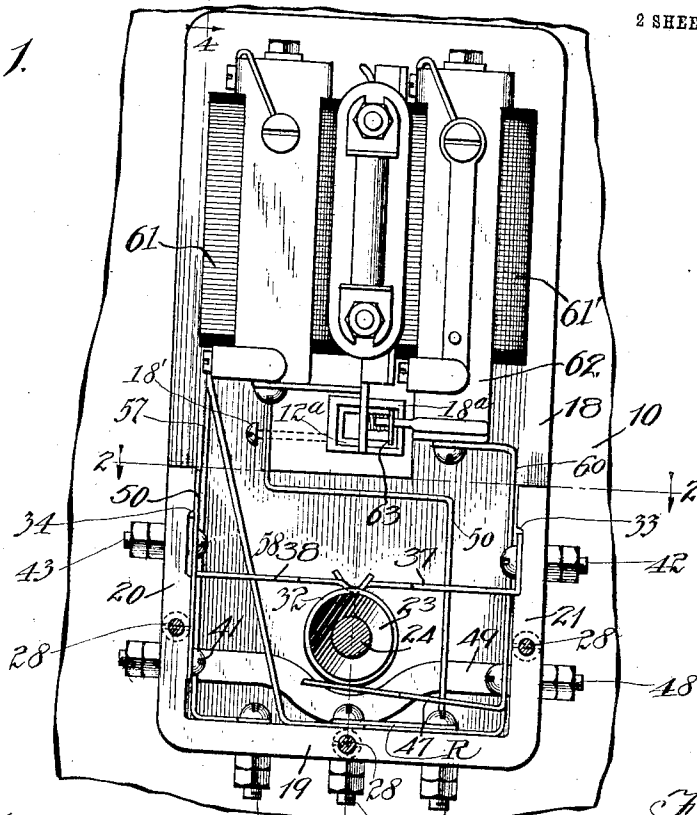


Fig. 2.

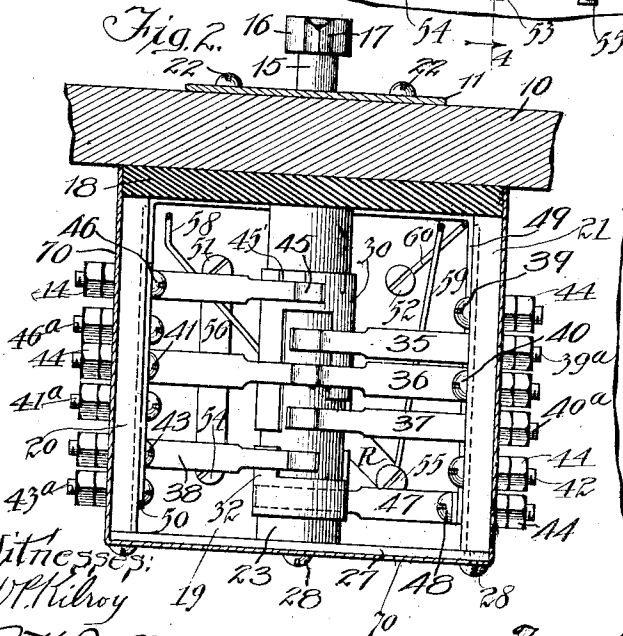
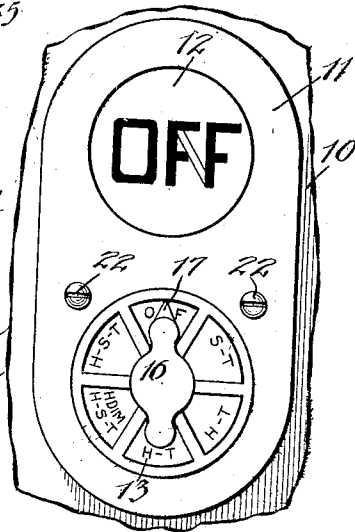


Fig. 3.



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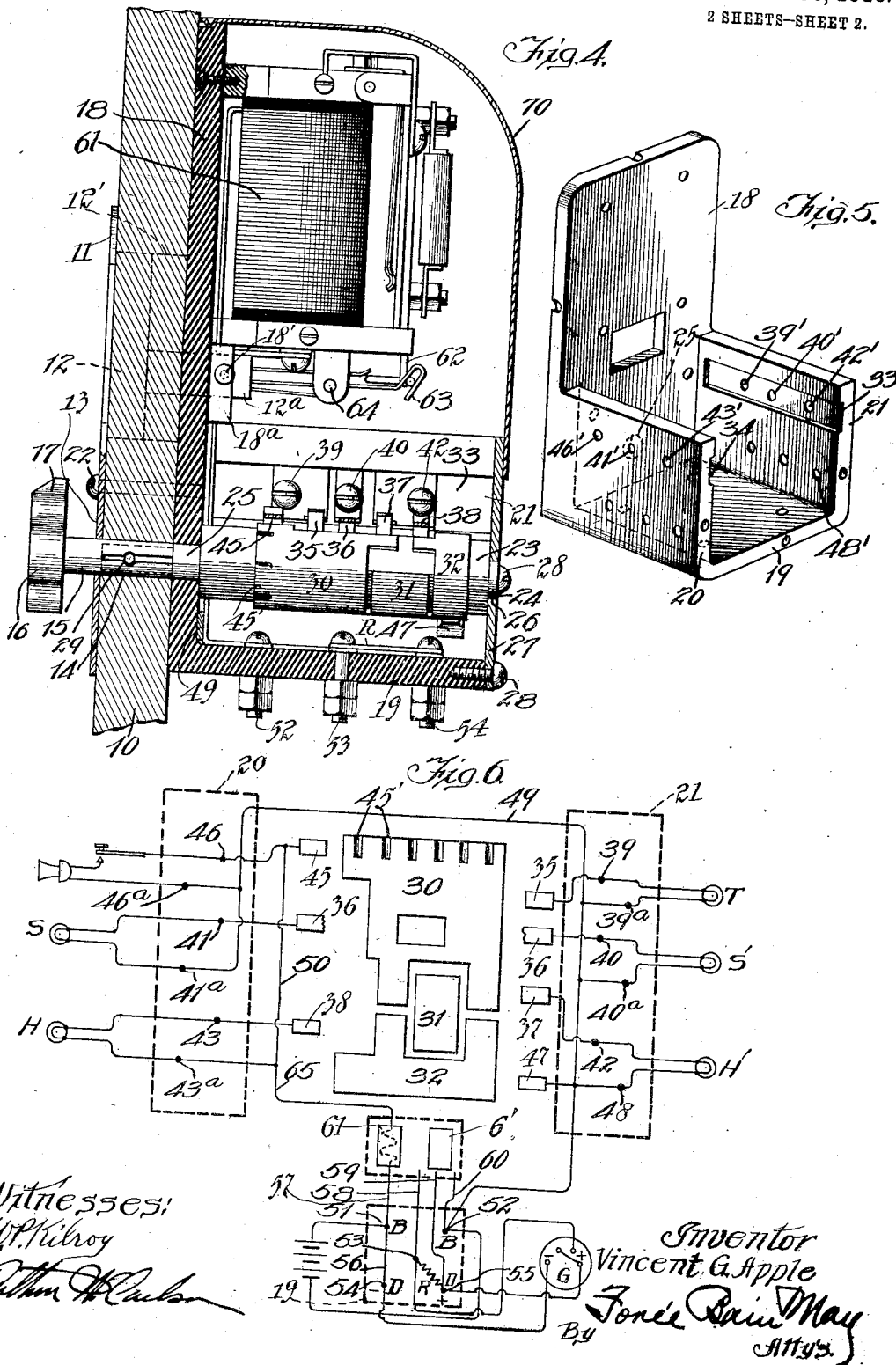
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UNITED STATES PATENT OFFICE.

VINCENT G. APPLE, OF DAYTON, OHIO, ASSIGNOR TO THE APPLE ELECTRIC COMPANY,
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CONTROLLER FOR LIGHTING-CIRCUITS OF DYNAMO-BATTERY EQUIPMENTS.

1,133,783.

Specification of Letters Patent.

Patented Mar. 30, 1915.

Application filed May 19, 1914. Serial No. 839,578.

To all whom it may concern:

Be it known that I, VINCENT G. APPLE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Controllers for Lighting-Circuits of Dynamo-Battery Equipments, of which the following is a specification.

My invention relates to improvements in controllers for the lighting circuits of dynamo battery equipments, such as used on automobiles, motor boats and the like.

More particularly the invention relates to the controller together with a casing which incloses the battery dynamo regulating apparatus, the controller drum and contacts, as well as an indicating device for informing the operator as to conditions prevailing in his dynamo battery circuit.

One of the objects of my invention is to provide a lighting circuit controller which shall be operable from the dash or instrument board of an automobile, and when the operating key is removed, leave the dash or board smooth and free from projecting parts.

Another object of my invention is to provide a lighting circuit controller, regulating apparatus, connections therefor, together with an indicating device all mounted at the rear of the face of the dash so as not to project from the front surface and inclosed in a compact watertight casing, a part of which is readily removable for inspection.

Another object of my invention is to provide a casing of the character described, formed as to its major part of a unitary piece of insulating material such as bakelite, which shall support the apparatus and form side and bottom walls from which the terminals extend.

Another object of my invention is to provide a simplified system of wiring for such controller in which the terminals extending from the right side of the casing are all adapted for connection to apparatus positioned on the right hand side of the longitudinal axis of the car, all terminals extending to the left side of the casing lead to apparatus positioned on the left side of the car, and the contacts extending from the bottom are adapted to make connection with the battery and dynamo, thereby greatly

simplifying the installation and wiring of such an equipment.

Whereas in the drawings I have illustrated a particular embodiment of my invention it is obvious that various changes may be made in the structure and arrangement of parts without departing from the spirit and scope thereof.

In the drawings: Figure 1 is a rear view of the controller with cover and end plate removed. Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1. Fig. 3 is a front view of the controller parts which are visible from the front face of the board upon which they are mounted. Fig. 4 is a vertical, sectional view on the line 4—4 of Fig. 1. Fig. 5 is a perspective view of the unitary controller base and supporting casing. Fig. 6 is a diagrammatic representation of the wiring connections extending from the various transmitting devices to the sides and bottom of the controller casing.

Referring to the drawings the numeral 10 indicates a dash or instrument board of a motor car, motor boat, or the like, to which the controller unit is to be attached. In work of this nature it is very desirable to have the front or exposed face of the instrument board comparatively free from projecting parts in order to give a neat and attractive appearance and I have therefore so arranged the parts as to position the controller casing and its appurtenant apparatus at the rear of the face of the board concealed from view, with only a flat plate 11 exposed on the front face of the board. This flat plate 11 is of ovate form carrying at its upper end the face 12 of the battery dynamo indicator, and at its lower end a circular dial 13 pierced by an axial opening 14, through which extends the controller operating spindle.

In the particular embodiment of my invention illustrated and described I have provided six different controller positions whereby the head lights, side lights, and tail light may be given various relations to the battery dynamo circuits. When the operating handle or knob 16 carried by the spindle 15 is positioned with its pointer end 17 extending vertically upward the controller will be in "off" position and all lights will be extinguished. When moved to the left one notch the head lights, side lights

and tail light will receive full current. When moved to the second position to the left the head lights, side lights and tail light will be in circuit, the head lights being in series and therefore reduced in brilliancy. When moved to a position where the pointer is downward, the head lights and tail light are in circuit with the head lights in series. When swung still farther in a counter clockwise direction into the fourth position the head lights and tail light will be in circuit giving full candle power. When moved into the fifth and last position the side lights and tail light alone will be in circuit.

The battery-dynamo indicator 12 at the upper portion of the plate 11 is similar to that illustrated and described in the pending application filed by Gordon B. Sayre and myself, October 6, 1913, Serial Number 793,526, and entitled Indicators. The indicator casing 12 is of disk like form and carries at its rear face a hollow projector 12^a slidable within the opening in the collar 18^a which projects from the face of the base 18. A set screw 18' takes through the collar 18^a and locks the hollow projection 12^a in any desired position, depending on the thickness of the dash or instrument board 10.

Upon the rear face of the instrument board 10 is mounted the controller casing which incloses the controller as well as the battery dynamo regulating instrumentalities. This casing comprises a base panel or wall 18 having formed integral therewith the bottom wall 19 and two side walls 20 and 21. The side walls extend vertically a distance somewhat less than half of the vertical height of the rear wall 18. This portion of the casing is formed from bakelite or similar insulating material pressed into the proper shape as indicated in Fig. 5. Screws 22 extending through from the front of the plate 11 into the rear wall 18 of the casing, secure both the plate and casing in position upon the instrument board 10.

The controller drum 23, made of fiber or similar insulating material, is carried upon the shaft 24 journaled at its rear end in an opening 25 in the wall 18 and at its other end in an opening 26 in the plate 27 which is secured over the front face of the walls 19, 20 and 21 by the screws 28. The rear end of the shaft 24 is reduced in diameter and provided with a pin 29 to receive the hollow slotted shank of the spindle 15. Plates 30, 31, and 32, cut to shape as indicated in Fig. 6, are positioned around the periphery of the controller drum for making the proper connections between the battery dynamo circuit and the various translating instrumentalities. The upper inner faces of the side walls 20 and 21 are horizontally slotted as at 33, 34 to receive the bases of the two contact fingers 35, 36, 37, 38 and 45, which bear upon the controller segments along an axial line on the top surface thereof. The spring fingers are held in position by the screws 39, 40, 41, 42, 43, and 46, which extend through the side walls and are provided with nuts 44, on their outer ends to serve as binding posts for making connections with wires leading to the various translating devices. The finger 36 extends entirely across the space inclosed by the walls 20—21 and is secured at its opposite end by the screws 40—41 for making the connection to be hereinafter described. The spring finger 45 engages at the rear end of the controller drum with a series of indentations 45' in the plate 30 which are in the present instance six in number, thereby insuring proper positioning of the controller drum for the six different circuit arrangements provided. A sixth finger 47 engages with the controller on its lower side at the end opposite to that engaged by the finger 45 and is secured to the wall 21 by means of the bolt 48. In Fig. 5 I have indicated the openings in the casing through which extend the various screws for holding the spring contact fingers in place, by applying the exponent prime (') to the numerals indicating the screws, thus for example the screw 39 takes through the opening 39' and the screw 48 takes through the opening 48'.

The binding posts 39, 40, 41, 42, 43 and 46 are arranged in the vertical walls 20 and 21 on a horizontal line adjacent the upper edges. A companion set of terminals 46^a, 41^a and 43^a are positioned in the wall 20 on a horizontal line below that upon which the companion terminals are positioned and similarly in the other wall 21 a companion set of terminals 39^a, 40^a, and 48 are positioned. The terminal 48 connected with spring finger 47 is likewise connected with the terminals 40^a, 39^a, 46^a, and 41^a through the medium of the metallic strip 49. A second strip 50 connects the terminal 46 with terminal 43^a.

Upon the bottom wall 19 of the casing are arranged the five battery and dynamo terminals as indicated in Fig. 6. The two battery terminals 51, 52, are positioned at the corners of the bottom 19 adjacent the instrument board 10, whereas the three dynamo terminals are positioned with one, 53, at the center, and the other two, 54, 55 at the outer corners. A short resistance coil R connects terminal 55 with terminal 53 and a strip 56 connects terminal 51 with terminal 54. Wires 57, 58, 59, and 60 extend from terminals, 51, 53, 55, and 52, upward to the two relay magnets 61 and 61' carried on the upper end of the wall 18. As in my Patent No. 1,070,657 entitled Controlling switch, issued August 19th, 1913, these two relay magnets serve to regulate the relationship between the dynamo and battery. The re-

lay magnet 61' provides an automatic means for cutting the dynamo into circuit with the storage batteries at the time when the electro-motor force, of the dynamo equals or exceeds that of the batteries. The other relay magnet 61 serves as a means for decreasing the electro-motive force, at a given speed of the dynamo, when the storage batteries have been partially or completely charged thereby automatically decreasing the current supplied to the batteries when they no longer require the full current that can be produced by the dynamo. The armature 62 of the magnet 61 which throws the dynamo on or off the line is connected to one end of a lever 63 pivoted on the pin 64. The other end of the lever 63 extends through the hollow projection 12^a and is connected to the movable part of the indicator 12. This particular indicator 12, when the dynamo is in circuit, reads "On" and when out of circuit reads "Off" as illustrated in Fig. 3, and is described and claimed in my copending application before referred to.

In the wiring diagram Fig. 6 I have not indicated the connections with the relay magnets 61 and 61' as this wiring arrangement has already been shown in my issued patent. I have therefore indicated them diagrammatically showing the wire 57 extending from the terminal 51 as running into the coil 61 and coming out on the lead wire 65, which in turn is connected to terminal 43^a. This sufficiently illustrates the circuit of the controller and enables one to follow the path of the current when the battery is serving as a source of supply.

It will be noted, particularly in Fig. 6 that the wiring terminals for connecting the controller with the battery, dynamo and various translating instrumentalities, are so arranged that the contacts for the dynamo and batteries are symmetrically positioned upon the lower wall or base 19 of the casing, the contacts for the tail light, side lights and head light H' are positioned upon one side 21 whereas the connections for the horn side lights and head light H are positioned upon the wall 20. This symmetrical arrangement of terminals permits one who is not particularly versed in electrical matters to readily connect up the system as all of the terminals from one side wall extend to instrumentalities positioned at that side of the car and the contacts on the other side extend to the instrumentalities positioned on the other side of the car. This eliminates any crossing of the wiring outside of the controller casing and greatly simplifies the arrangement and wiring up of a car.

In mounting the controller it is necessary to make but two holes in the instrument board, 12' of a diameter equal to the indicator 12 and 14 to receive the end of controller shaft 24.

A metallic hood 70 extends over the tops of the magnets 61 and 61' contacting with the outer edges of the vertical wall 18 and extends down over the upper edges of the walls 20 and 21, thus entirely closing the various instrumentalities and protecting them from dust and the weather.

Having described my invention, what I claim is:

1. A controller for the lighting circuit of an automobile dynamo-battery system comprising, a casing having side walls and a bottom wall; a controller drum and contacts within said casing; terminals carried by one side wall of the casing for connection with the lights on one side of the automobile; terminals on the other side wall of the casing for connection with the lights on the other side of the automobile; and terminals on the bottom wall for connection with the battery and dynamo.

2. A controller, adapted to be carried at the rear face of an instrument board; a controller drum therein; means on the front face of the instrument board for operating the controller drum; an indicator with a face approximately flush with the front face of the board and positioned within an opening therein; a rearward extension on said indicator; and means carried by the casing for adjustably securing the rearward extension thereto.

3. In an apparatus of the character described, the combination of a casing adapted to be secured to the rear face of an instrument board; an indicator positioned within an opening in the board with its face approximately flush with the front face of the board; an extension carried by the indicator extending rearwardly through an opening in the casing; and means on the casing for adjustably securing the extension thereto to compensate for the varying thickness of such boards.

4. A controller for the lighting circuit of an automobile dynamo battery system comprising a casing adapted to be secured to the rear face of an instrument board; an indicator plate positioned on the front face of the casing; means securing both the plate and casing to the board; an indicator device registering with an opening in the plate and positioned within an opening in the board with its face approximately flush with the front face of the board; means carried by the casing responsive to changes in the battery-dynamo circuit for operating the indicator, an extension on the indicator extending rearwardly through an opening in the casing and adapted to receive a part of said indicator operating means; and means carried by the casing for adjustably securing the said extension thereto.

5. A controller comprising a casing having integral rear and side walls formed of

- insulating material, a controller drum positioned within said walls, contact fingers co-operating with said drum; the inner faces of the side walls of the said casing being horizontally grooved to receive the bases of the said contact fingers substantially as and for the purpose set forth.
6. A controller comprising integral rear, side and bottom walls formed of insulating material; a controller drum positioned within the side walls and journaled at one end in the rear wall; a plate covering the front end of the side walls, the front end of the controller drum being journaled therein; and a detachable hood overlying the edges of the rear and side walls and completing the inclosure.
7. A controller for the lighting circuit of

an automobile dynamo-battery system comprising, a casing having side walls and a bottom wall; a plurality of switches within said casing; terminals carried by one side wall of the casing for connection with the lights on one side of the automobile; terminals on the other side wall of the casing for connection with the lights on the other side of the automobile; and terminals on the bottom wall for connection with the battery and dynamo.

In testimony whereof I hereunto set my hand in the presence of two subscribing witnesses.

VINCENT G. APPLE.

In the presence of—
E. V. MARTIN,
M. N. O'CONNOR.

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