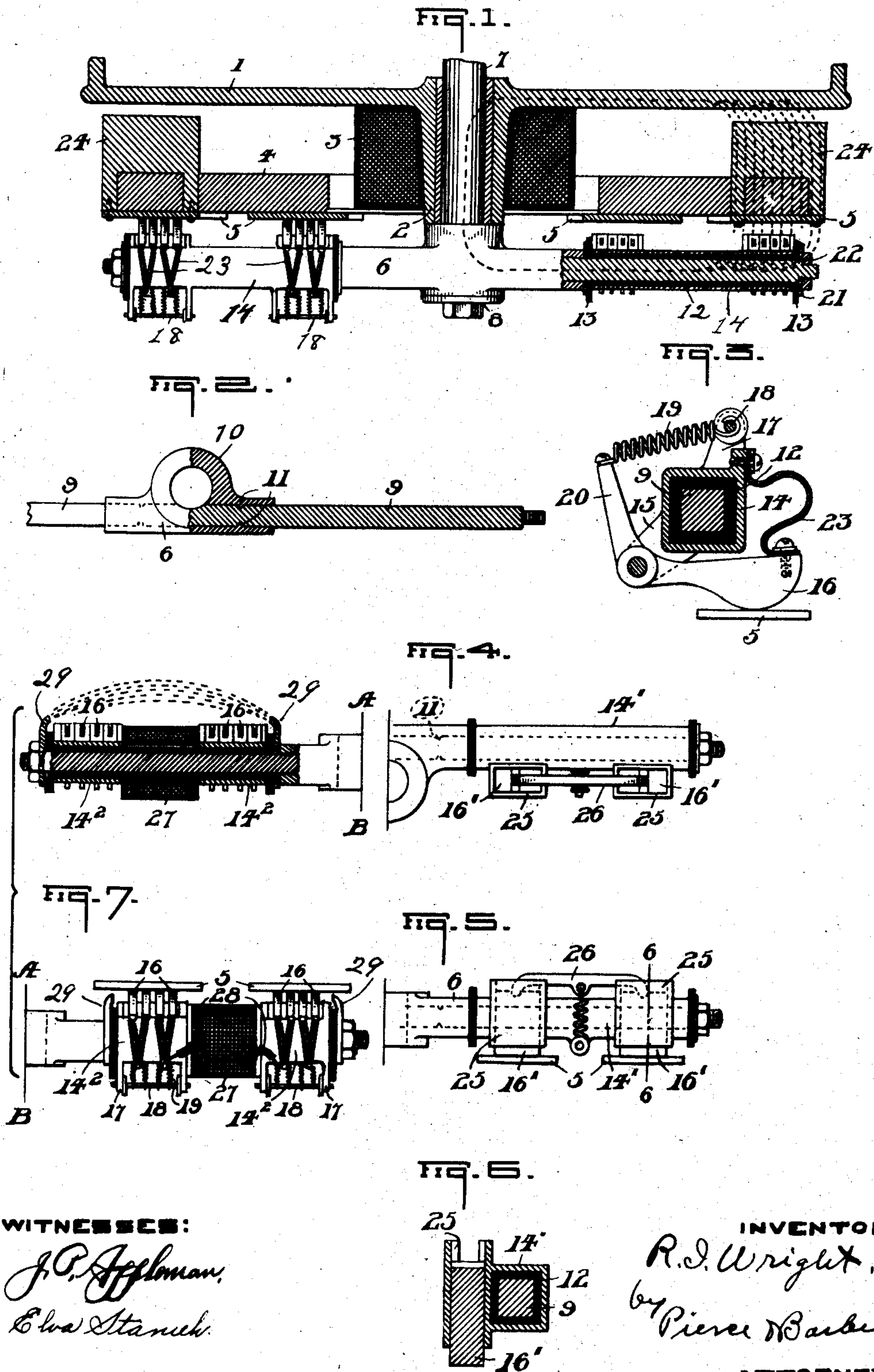


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R. I. WRIGHT.
ELECTRIC CONTROLLER.
APPLICATION FILED OCT. 11, 1906.



WITNESSES:

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REUBEN I. WRIGHT, OF CLEVELAND, OHIO, ASSIGNOR TO ELECTRIC CONTROLLER AND SUPPLY COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

ELECTRIC CONTROLLER.

No. 885,967.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, REUBEN I. WRIGHT, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented or discovered new and useful Improvements in Electric Controllers, of which the following is a specification.

My invention relates generally to electric controllers, but more particularly to the construction of the contact-arm, the finger, and the finger-holders, and to the application thereto of a magnetic blow-out.

The contact arm should be mechanically strong, and the insulation between the arm proper and the finger holders should be of simple shape and well protected from the action of the arc. The contact fingers should be readily renewable so that they can be quickly and easily replaced when worn or burned. The design of the arm should be such that a magnetic blow-out may be used on the controller to aid in the extinguishment of the arc, particularly at the point of the opening of the circuit, and that different types of contact fingers, such as brass or carbon, may be used.

Referring to the drawings which form a part of this specification, Figure 1 is a central section (one end of the switch arm being in elevation) of a controller embodying one form of my invention; Fig. 2, a broken-off section of the contact arm proper; Fig. 3, a cross-section of the complete switch-arm showing the manner of mounting the fingers and the finger-holder; Fig. 4, a broken-off plan of a second form of my invention; Fig. 5, a side view thereof; Fig. 6 a section on the line 6--6 of Fig. 5; and Fig. 7, a view similar to Fig. 1 but in two sections showing another modification.

Referring to Fig. 1, 1 represents one side of a controller frame or casing, which will be assumed to be vertical.

2 is a forwardly projecting boss, on which is the coil or winding 3. In front of the frame 1 and supported in any desired manner, in a parallel relation thereto, is the slate or other insulating support 4 for the concentrically arranged contact-plates or buttons 5. The controller or contact arm 6 is mounted on the pin 7 in the projection 2 and has rotary motion in a plane parallel to the frame 1. It is secured to the pin by the cap-screw 8.

In Fig. 2, I have shown the contact-arm

without the fingers, finger holders, or other parts. I prefer to make this arm of a continuous bar 9 of steel of square or other polygonal cross-section, surrounded by the hub 10 of iron cast thereon. The bar 9 and hub 10 are provided with interlocking notches and projections 11 to aid in securing a good joint between the same.

The bar 9 has thereon at each end the sleeve 12 and the washers 13 composed of insulating material. The bar has preferably a polygonal cross-section to prevent the parts mounted thereon from rotation. On each sleeve 12 and between the washers 13 is the metallic finger holder 14. Each end of each finger holder is provided with the lower lugs 15, to which the fingers 16 are pivoted, and the upper lugs 17 carrying the rods 18 to which are secured one end of the spring 19, the other end thereof being attached to arms 20 of the fingers. The sleeves and finger-holders are held in place on the bar 9 by the washer 21 and the nut 22. One of the washers 13 may be integral with the sleeve 12, if desired. The fingers 16 stand opposite the plates 5 and are pressed in contact therewith by the springs 19.

It will be seen that nearly all of the insulation is protected from the arc by the finger-holders, which are closed and continuous throughout their length. The only insulation exposed to the arc is the washers 13, which can be easily renewed by the removal of the nuts 22. Each finger-holder together with all the fingers, springs, shunting wires, etc. can be readily removed in case repairs are needed and a new set substituted quicker than a single finger of the ordinary controller can be exchanged for another. The finger-holders are insulated from the bar 9 and the hub by simple shapes of insulation without the use of the usual small bushings and washers.

To the slate 4 I secure the iron lugs 24, which lie between the frame 1 and those parts of the plates 5, at which injurious arcing occurs. The lugs lie close to the frame 1 so as to reduce the air-gaps, and have projections which pass through the slate 4 and to which the plates 5 are preferably secured. On energizing the blow-out coil 3 the magnetic flux will be substantially as shown by the dotted lines on the right hand end of Fig. 1. As this flux passes through the fingers and the plates 5, it will be effective, if of

proper strength, to blow out any arc produced by the fingers opening the circuit at the ends of the plates 5.

Referring to Figs. 4, 5 and 6, the finger-holders 14' are arranged on the insulating bushing 12 between the washers 13 and secured in place in the same manner as the corresponding parts are arranged on Figs. 1 and 3. The fingers 16' are preferably of carbon and are slidable in the boxes 25 on the side of the finger holder. The spring pressed bar 26 lies on the outer ends of each pair of fingers. This bar presses the fingers 16' against the contact plates 5. The contact-arm shown by Figs. 4 to 6 may be substituted for that shown on Fig. 1.

Referring to Fig. 7, there are two metallic finger holders at each end of the controller arm, the coil 27 being seated between them around the sleeve 12. One set of fingers 16 is pivoted to each holder 14', the terminals of the coil 27 being connected to the respective holders by the wires 28. 29 is a blow-out horn seated on the bar 9 at each end of the insulation and has a curved end pointed toward the fingers and contacts to aid in directing the magnetic flux which is shown in dotted lines. The blow-out coil 3 of Fig. 1 is omitted when the coils 27 are used.

In Figs. 1, 3 and 7 the fingers are shown as connected to the finger holders by the wires 23, which shunt the pivots of said fingers.

The hub of the controller arm is shown off-set from the arms 9 as shown in Fig. 2, to allow the boring of the hole therein without cutting or weakening the bars and to allow the use of various types of contact devices or brushes.

Having described my invention what I claim is:

1. In a movable contact finger-carrier for electric controllers, the combination of a metallic bar, a hub cast thereon, insulating sleeves surrounding said bar toward either end, tubular finger-carriers surrounding said insulating sleeves, and contact fingers pivoted in said carriers.

2. In a movable contact finger-carrier for electric controllers, the combination of a metallic bar, a hub cast thereon, insulating sleeves surrounding said bar toward either end, tubular finger-carriers surrounding said insulating sleeves, and contact members flexibly mounted on said carriers.

3. In an electric controller, a controller

arm composed of a metallic bar, a hub cast thereon, said hub being offset at right angles to the length of the bar, and contact members flexibly mounted toward either end of said bar and insulated therefrom.

4. In an electric controller, a controller arm composed of a bar, a hub cast thereon, and a shaft seated in said hub, said hub being offset at right angles to the length of said bar in such manner that said bar is not cut by the hole in said offset hub.

5. In an electric controller, a controller arm, a sleeve of insulating material thereon, a metallic tubular holder sleeved on said sleeve, and contact devices carried by said holder readily removable means for securing said second sleeve on the bar.

6. In an electric controller, a controller arm, a sleeve of insulating material thereon, a metallic tubular holder sleeved on said sleeve, and contact devices carried by the ends of said holder; said holder conducting the current from the contact device at one end of the holder to the remaining contact device at the opposite end.

7. In an electric controller, a controller arm composed of a bar, contact devices, a tubular support for said contact devices sleeved on said bar, whereby the said support is prevented from axial rotation and readily removable means for securing said tubular support on said arm.

8. In an electric controller, a controller arm composed of a bar, contact devices, a tubular support for said devices sleeved on said bar, and readily removable means for securing said support on said bar.

9. In a controller, a frame, a rotary contact arm, contact devices carried by the arm, an insulating support between the frame and the arm, contact plates on said support arranged to be engaged by the contact devices, a lug secured to said support and arranged close to said frame and opposite one or more arcing points of said contact plates, and an electro-magnet arranged to have its magnetic circuit pass through said frame, contact arm, and lug.

Signed at Cleveland, this 2nd day of October A. D. 1906.

REUBEN I. WRIGHT.

Witnesses:

C. W. COMSTOCK,
C. PIRTLE.