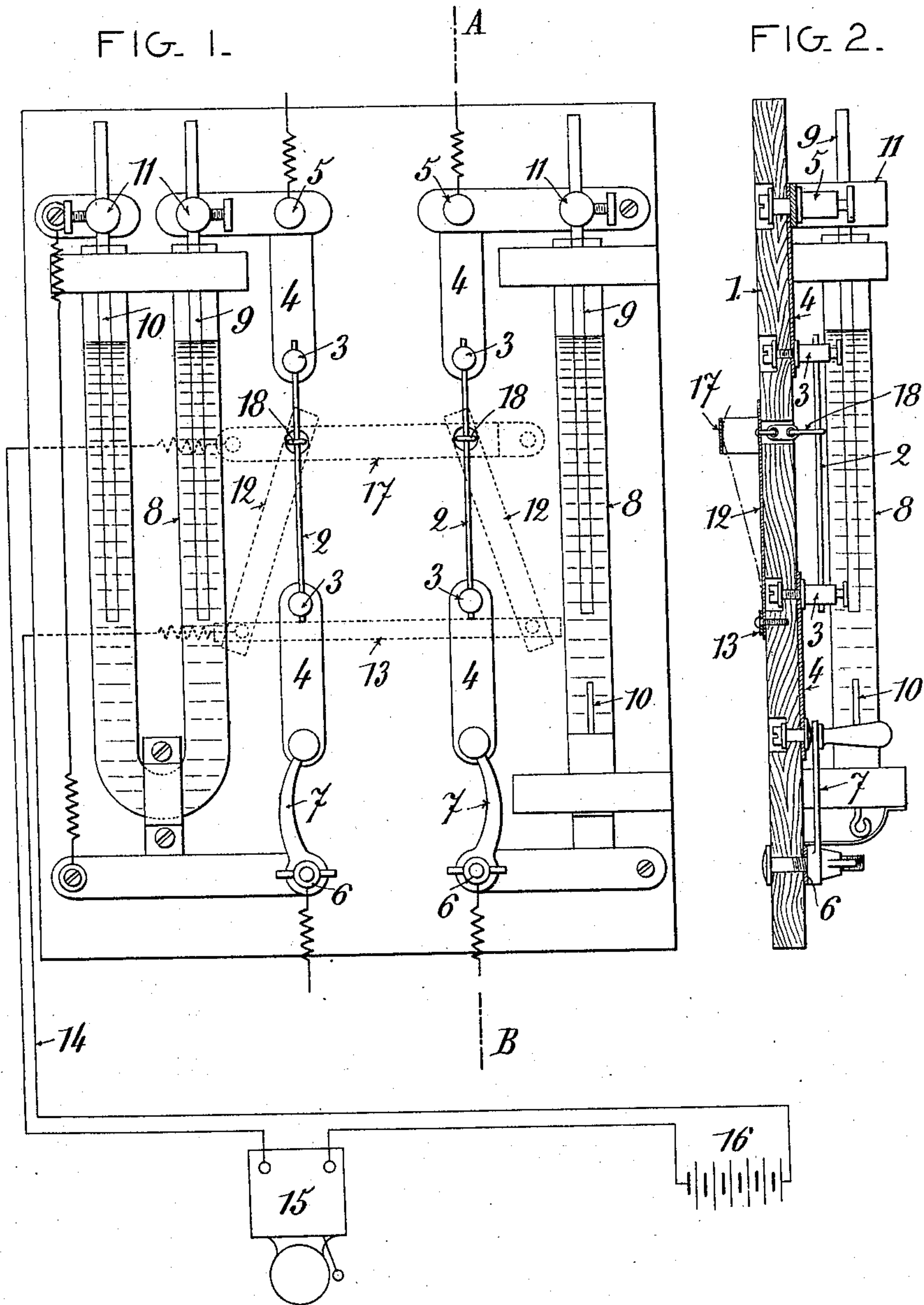


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J. H. MERCADIER.
AUTOMATIC COMMUTATOR.
APPLICATION FILED OCT. 16, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

JULIEN HENRI MERCADIER, OF LOUVRES, FRANCE.

AUTOMATIC COMMUTATOR.

SPECIFICATION forming part of Letters Patent No. 757,942, dated April 19, 1904.

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To all whom it may concern:

Be it known that I, JULIEN HENRI MERCADIER, curate, a citizen of the Republic of France, residing at Louvres, Seine-et-Oise, in the Republic of France, have invented certain new and useful Improvements in Automatic Commutators Having Fusible Wire for either Unipolar or Multipolar Plants, of which the following is a specification.

10 This invention relates to an electric commutator comprising a cut-out having fusible wire and a rheostat mounted in shunt in the main circuit, so that the normal current passes exclusively or almost exclusively through the
15 fusible wire so long as the latter has not been melted by an excess of current, whereas after the melting of the wire the current passes with a more or less reduced intensity through the rheostat.

20 This device can be advantageously applied to lighting-circuits, for instance, because it allows of the lamps remaining lighted after the melting of a cut-out, while at the same time avoiding the burning of the filaments.

25 It may also be used in any other application in which it is desirable to avoid the complete stoppage of the current after the melting of the cut-out.

30 The accompanying drawings show, by way of example, one form in which the present invention can be carried out.

Figure 1 is a front elevation of a bipolar commutator, and Fig. 2 is a vertical section on the line A B of Fig. 1.

35 On a support composed of insulating material 1 are mounted two fusible or lead wires 2 between binding-posts 3, connected by copper plates 4 with the incoming and outgoing binding-posts 5 and 6 for the main current.
40 The binding-posts 6 are connected with the corresponding plates 4 by means of a switch 7, provided with a handle. On the support 1 is also fixed alongside each of the fusible wires 2 a vertical tube 8, composed of glass
45 or other suitable insulating material and containing aqua acidulæ, into which dip two electrodes 9 and 10, connected, respectively, with the binding-posts 5 and 6. By way of example there are shown in Fig. 1 two forms
50 in which the liquid rheostat may be made. In

the form to the right the tube 8 is rectilinear, while in the form to the left the tube is in the shape of a U. In the former form the lower electrode 10 is cemented to the bottom of the tube and must therefore be made in platina 55 to avoid the necessity of replacing the same from time to time. It is more advantageous to use the latter form, because the upper electrodes, which are freely engaged in the tube, can be easily withdrawn and changed, if re- 60 quired, so that they can be made cheaply in copper.

In order to be able to regulate the resistance of the rheostat, the rods 9 and 10 are slidably mounted in the supports 11, provided with 65 set-screws, so that they can be made to dip more or less into the liquid. Usually, as the wires 2 have the necessary conductivity, the currents of normal intensity pass through the plates 4, the wires 2, and the switches 7 to the exclusion of the liquid rheostat, in which the 70 passage of the currents is prevented by the polarization. When the fusible wires melt on account of an increase in the current, the rheostats offer the latter a passage the resist- 75 ance of which, greater than that of the fusible wires, may be of any suitably-determined amount, so that the intensity shall not reach a dangerous limit for any of the devices made use of, such as lamps and the like. The acci- 80 dental cause of the increase in the intensity no longer existing afterward, the fusible wires may be replaced after having carefully opened the switches 7, after which the latter are closed to put the apparatus in its initial con- 85 dition again.

The apparatus thus constituted may be provided with a suitable alarm giving warning at a distance of the melting of the fusible wires. For this purpose there can be fixed to the back 90 of the support 1 spring-plates 12, connected by a fixed plate 13 and a conducting-wire 14 with a circuit comprising a bell 15 and a battery 16. The other end of the circuit is connected with another fixed plate, 17, against 95 which the spring-plates 12 have a tendency to apply themselves. The said plates 12 are normally kept out of contact with the plate 17 by means of hooks 18, suitably insulated, which take onto the fusible wires 2. When 100

one of the wires melts, the corresponding plate 12 is released and comes against the plate 17, thus closing the bell-circuit and sounding the alarm at once. The said circuit may remain closed so long as the melted wire has not been replaced.

Instead of liquid rheostats use may be made of rheostats having carbon or any other conducting-powder or of glow-lamps or any other resistances the conductivity of which has been suitably determined.

When a glow or incandescent lamp is used, the lighting of the lamp shows at once that the wire has melted. Instead of a lamp use may be made of a resistance so arranged as to produce by an electromagnetic action the operation of any audible or optical signal.

I claim—

1. In a commutator, the combination with the terminals of a main line, of a fuse-wire connecting said terminals, a shunt-line between said terminals, and a liquid rheostat in said shunt-line comprising a U-shaped tube to contain the resistance liquid, adjustable electrodes in the arms of said U-shaped tube, and means for securing said electrodes in their adjusted position, substantially as described.

2. In a commutator, the combination of a base of insulating material, terminals of a main line mounted upon said base, a fuse-wire connecting said terminals, a U-shaped tube mounted upon said base and adapted to con-

tain a resistance liquid, apertured supports secured upon said base adjacent to the arms of said U-shaped tube, electrodes slidably mounted in said supports and projecting into the arms of said U-shaped tube, set-screws in said supports to secure said electrodes in an adjusted position, and electrical connections between said supports and the terminals of the main line, substantially as described.

3. In a commutator, the combination of an apertured base of insulating material, terminals of a main line upon said base, a fuse-wire connecting said terminals and in alignment with the aperture in said base, a shunt-circuit between said terminals of greater resistance than said fuse-wire, and an electric signal-circuit comprising a fixed contact upon the under side of said base, a coacting spring-contact upon the under side of said base and a flexible connection engaged with said fuse-wire and extending through the aperture in said base to normally hold said spring-contact away from said fixed contact, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JULIEN HENRI MERCADIER.

Witnesses:

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