June 24, 1924. 1,499,279

G. A. H. WOOTTON

ACCUMULATOR CHARGING BOARD

Filed Jan. 24, 1924

Fig. 1.

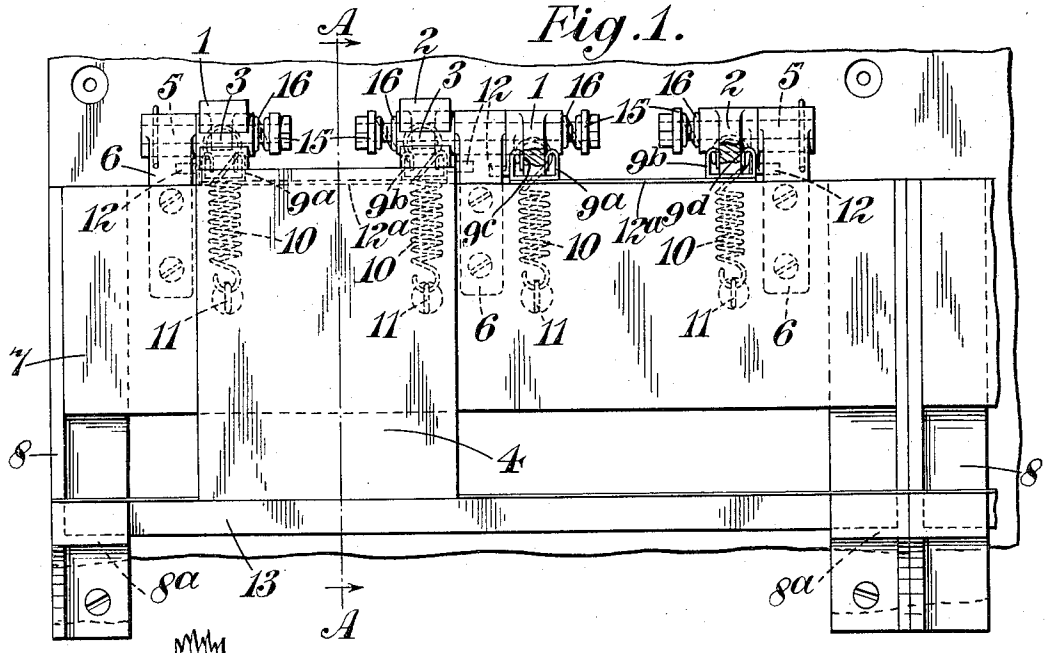


Fig. 2.

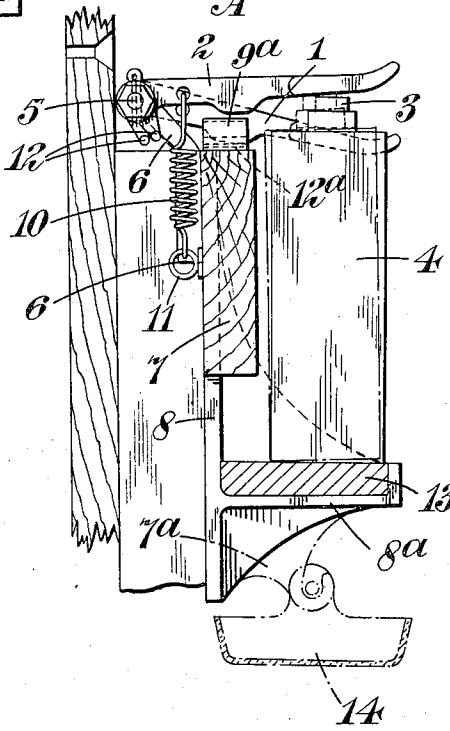
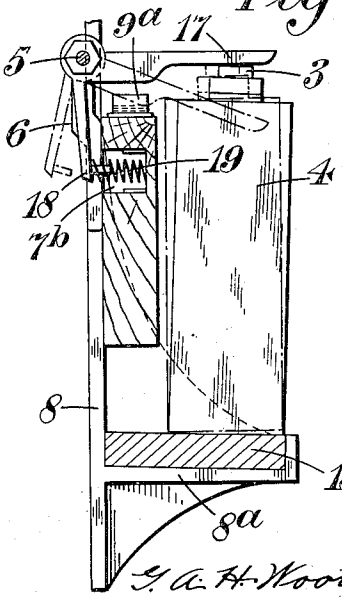


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE ARTHUR HENRY WOOTTON, OF SYDENHAM, LONDON, ENGLAND.

ACCUMULATOR-CHARGING BOARD.

Application filed January 24, 1924. Serial No. 688,352.

To all whom it may concern:

Be it known that I, GEORGE ARTHUR HENRY WOOTTON, British subject, engineer, residing at Sydenham, London, England, have invented certain new and useful Improvements in Accumulator-Charging Boards, of which the following is a specification.

This invention relates to accumulator charging-boards, which are particularly suited for charging accumulators for lamps of the kind used by police, postmen and others. The kind of board to which this invention relates comprises one or more sections or units each including a row of electric charging switches, one or more in number, each switch embodying two spring contact fingers or members for co-operation, respectively, either with two contact elements for the purpose of establishing a short or non-charging circuit when the fingers, are in an off charge position, or with the two terminals of an accumulator placed below the fingers for the purpose of establishing an electric charging circuit when the fingers are in a charging position. The act of placing an accumulator in proper charging position on a support, for example a glass or other insulating plate, which may be supported by its ends on ledges of upright brackets, automatically causes the charging circuit to be closed and the short circuit, including the fingers, to be opened, and the subsequent removal of the accumulator from below the fingers causes the charging circuit to be opened and the short circuit to be closed.

An important object of the invention is to cause co-operating surfaces of intermittently contacting parts to be kept clean by the means of a rubbing action as such parts move in and out of contact with one another, thereby ensuring a definite closing of an electrical circuit either when the said parts are being moved into engagement or while in engagement.

To this end according to the invention, the short-circuit contact elements with which the contact fingers or devices, which are pivotally mounted, co-operate are of a resilient nature, each contact comprising two separated working-surfaces which are oppositely disposed and capable of being forced further apart as the corresponding finger passes with a rubbing action between the two surfaces.

Other features of the invention will be described hereinafter and pointed out in the claims.

The accompanying drawing illustrates a portion of a multi-section charging-board having the invention applied.

Figure 1 in the drawing is a front elevation, partly in section, showing the switches of a two-way or two-switch section and an extension which is a portion of an adjacent section; and

Figure 2 is a vertical cross section on the line A—A in Figure 1, the accumulator being, however, shown in full;

Figure 3 is a cross section showing a modification.

Like reference characters designate like parts throughout the several figures.

In the arrangement illustrated in Figure 1, one charging switch, that in the right hand portion, is shown as in a short circuited or off-charge position, which is the normal position, and the other switch in a position for charging the accumulator shown therein.

Each charging swich comprises two spring-pressed contact fingers 1 and 2 for co-operation respectively, with the positive and negative terminals 3 of an accumulator 4 placed below them. The positive and negative fingers may, if desired, be distinguishably marked in any suitable manner. In one convenient form of construction each finger of a switch is pivotally mounted at one end on a pin 5 carried by a metal bracket 6 fixed to the back of a horizontal rail 7, which is preferably of teak wood but may be of any other suitable substance. The fingers may be retained on their pins in proper working position by means of the nuts 15 and spring washers 16. There would be one rail for each section or row of switches. The rail 7 is atached at its ends in any suitable manner to brackets 8 disposed in rear thereof and secured to appropriate upright supports or framing.

Along the top edge of the rail 7 and adapted to co-operate with the pair of fingers are two metal switch contact devices 9^a and 9^b, one for each finger. The spring contact devices 9^a and 9^b are electrically connected and are each provided with two separate oppositely disposed resilient working surfaces 9^c and 9^d, which are capable of yielding and becoming further separated

apart when the front end of the corresponding finger descends and exercises a rubbing action between them. The fingers 1 and 2, by reason of the action of the associated springs, make a rubbing engagement respectively with the contacts 9^a and 9^b while they are moving into the normal or off-charge position, which position is indicated in the right-hand portion of Figure 1. Between its pivoted end and the part of the finger that co-operates with the switch contact, a finger may be connected, as shown, to one end of a coil spring 10 whose other end is connected, adjustably or otherwise, for instance by means of the attachment 11, to the rail 7, the coil being arranged to impart normally a downward pull to the finger. The finger may be provided with a suitable arm or stop 12 that will, as the finger is lifted and turns on its pivot engage with a part of the bracket or rail and thereby limit the extent of the upward movement of the finger. The positive and negative switch contacts 9^a and 9^b, constituting a pair and co-operating with the pair of fingers 1 and 2, are connected by a wire or metal strip 12^a so as to constitute a short-circuit for the off-charge position of the switch.

Between the two brackets 8 supporting the rail 7 and resting with its ends on ledges or arms 8^a provided for the purpose and projecting from the front of the bracket 8, is a shelf 13 of glass or other insulating material. The function of a shelf is to support accumulators, while being charged. The shelf may be so formed or be so supported on the projecting bracket-ledges that accumulators placed thereon will be tilted, assuming a position slightly out of the vertical and leaning forwardly or away from the horizontal rail, as indicated in full lines in Figure 2, for a purpose described below. In the arrangement illustrated the bracket arms 8^a are shaped to produce the desired amount of tilt.

When an accumulator 4 to be charged is placed on the shelf 13 in proper position below the pair of fingers 1, 2, of a switch, the fingers will be pushed up by the accumulator against the action of the springs 10 so that the fingers move out of contact with the switch contacts 9^a and 9^b and engage with their free ends the accumulator terminals 3, thereby closing the charging circuit through the accumulator whereupon charging proceeds. The fingers at each movement thus break in the known manner one circuit and close another, and at the same time, by reason of their rubbing action, keep the co-operating contacting parts clean, thereby ensuring the switch being definitely short-circuited when there is no accumulator below the fingers.

By giving the accumulators a tilted position when placed on the charging board, as described above, an accumulator can, by pressing the upper part of it rearwardly, be made to rock on its bottom rear edge during a charging operation, so as momentarily to assume a more or less upright position, as shown in broken lines in Figure 2, thereby causing a rubbing action between the accumulator terminals and the co-operating spring-pressed fingers or charging switches so that the contacting surfaces are cleaned.

Metal or other trays 14 may be provided for catching any liquid that may leak or spill from accumulators 4 on the shelves 13. Such trays may be removably suspended from the brackets 8 and in a manner to extend below the lowermost glass shelf of a tier of charging sections, the lower brackets being provided with suitably formed parts 7^a for the purpose. Alternatively, the trays may rest on the ground below a charging-board. The brackets are preferably formed of cast or stamped aluminium, but may be of any other suitable construction.

In an alternative construction, a charging switch may, as shown in Figure 3, be in the form of a bell crank, having a long arm 17 and a short arm 18. The long arm would correspond to one of the above-mentioned fingers 1, 2, and be arranged to co-operate, alternatively, with one of the switch contacts 9 or an accumulator terminal 3, while the short arm would be subjected to the pressure of a horizontally acting spiral spring 19 which can conveniently be housed in a recess 7^b in the rear face of the horizontal rail 7, the spring tending to keep the long arm in engagement with the switch contact. In a further alternative arrangement the long arm or a finger may itself be spring-loaded for the above purpose.

With the charging-board will be associated the necessary wiring or leads and customary accessories for controlling the charging currents.

In arranging the wiring the first contact finger of a section on a board would be placed in electrical connection with one of the usual two terminals of the electric current supplying device, and the last contact finger of the section in connection with the other terminal. On a board comprising two or more sections the sections may be electrically connected in series or in groups, the first and last contact fingers in a series or group being connected up with the supply as described above.

I claim:—

1. In an accumulator charging-board, the combination of a plurality of electric charging switches arranged in a row, a support for accumulators located below the switches, each switch comprising two contact elements electrically connected together, and two spring contact members arranged to co-

operate alternatively either with said contact elements for establishing a short or non-charging circuit, or with the two terminals of an accumulator placed on said support for establishing an electric charging circuit, each of which contact elements is of a resilient nature and comprises two separated resilient working surfaces which are oppositely disposed and adapted to be forced further apart, said spring contact members being so mounted in relation to the said contact elements that while moving from the off-charging position to the charging position, and reversely, they are adapted to pass with a rubbing action each between two of said working faces.

2. In an accumulator charging-board, the combination of a plurality of electric charging switches arranged in a row, a support for accumulators located below the switches, each switch comprising two contact elements electrically connected together and two spring loaded contact fingers pivotally mounted at one end and arranged to co-operate at their other ends alternatively either with said contact elements for establishing a short or non-charging circuit, or with the two terminals of an accumulator placed on said support for establishing an electric charging circuit, each of which contact elements is of a resilient nature and comprises two separated resilient working faces which are oppositely disposed and adapted to be forced further apart, said contact fingers being so mounted in relation to said contact elements that while moving from the off-charging position to the charging position, and reversely, they are adapted to pass with a rubbing action each between two of said working faces.

3. In an accumlator charging-board, the combination of a plurality of electric charging switches arranged in a row, a support for accumulators located below the switches, each switch comprising two contact elements electrically connected together, and two spring contact members arranged to co-operate alternatively either with said contact elements for establishing a short or non-charging circuit, or with the two terminals of an accumulator placed on said support for establishing an electric charging circuit, each of which contact elements is of a resilient nature and comprises two separated resilient working surfaces which are oppositely disposed and adapted to be forced further apart, said spring contact members being so mounted in relation to the said contact elements that while moving from the off-charging position to the charging position, and reversely, they are adapted to pass with a rubbing action each between two of said working faces, said support being so disposed out of the horizontal plane that an accumulator supported on it below a pair of said spring contact members making contact with its terminals, can be rocked in a manner to cause a rubbing action between said terminals and the contacting parts of the said contact members, for the purpose described.

4. In an accumulator charging-board, the combination of a bar of insulating material, an insulating support for accumulators located below said bar, a plurality of pairs of contact elements mounted on said bar, a plurality of pairs of angle levers pivotally mounted on said bar, each angle lever having a horizontal arm constituting a contact finger arranged to co-operate alternatively either with said contact elements for establishing a short or non-charging circuit, or with two terminals of an accumulator placed on said support for establishing an electric charging circuit, each angle lever having a vertical arm depending behind said bar, a plurality of springs, one for each angle lever, housed at one end in said bar and abutting at the other end each against one of said vertical arms, each of which contact elements is of a resilient nature and comprises two separated resilient working faces which are oppositely disposed and adapted to be forced further apart, said angle levers being so mounted in relation to the said contact elements that while moving from the off-charging position to the charging position, and reversely, the said fingers are adapted to pass with a rubbing action, each between two of said working faces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE ARTHUR HENRY WOOTTON.

Witnesses:
HARRY B. BRIELQE,
FRANK MOORE.