E. T. GREENFIELD.

Automatic Electric-Switch for Telephones.

No. 223,132. Patented Dec. 30, 1879.

Fig. 1.

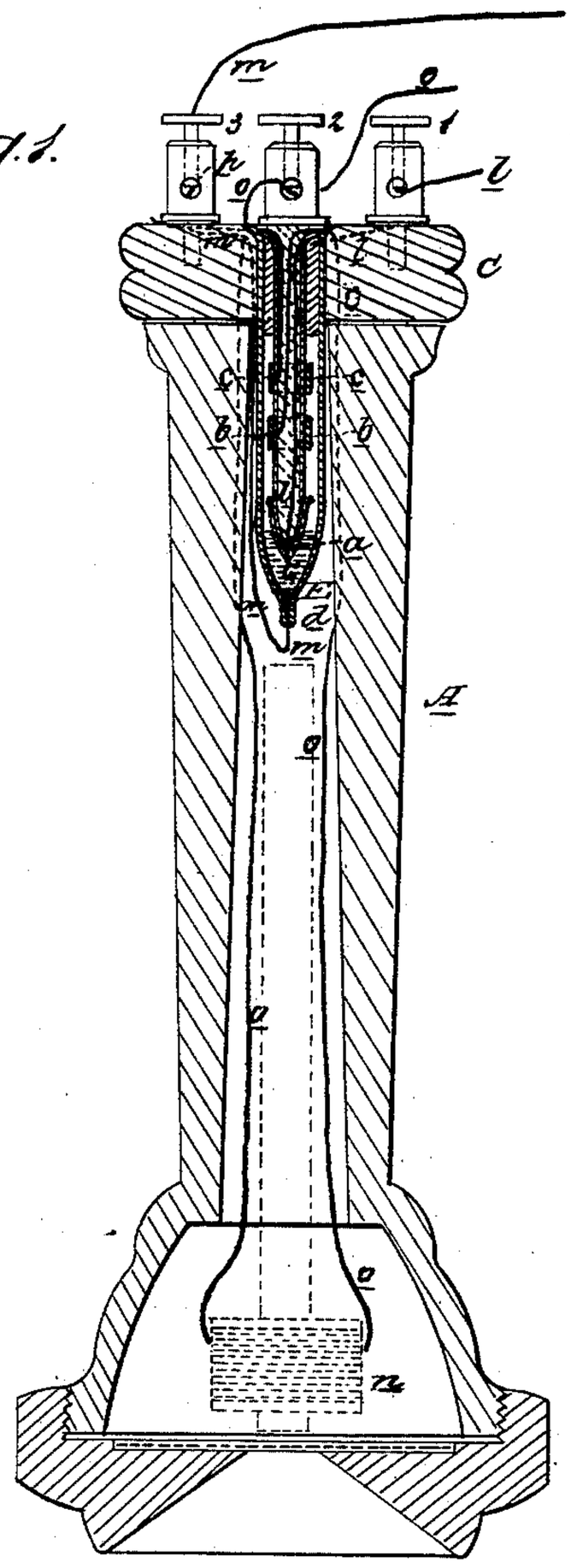


Fig. 2.

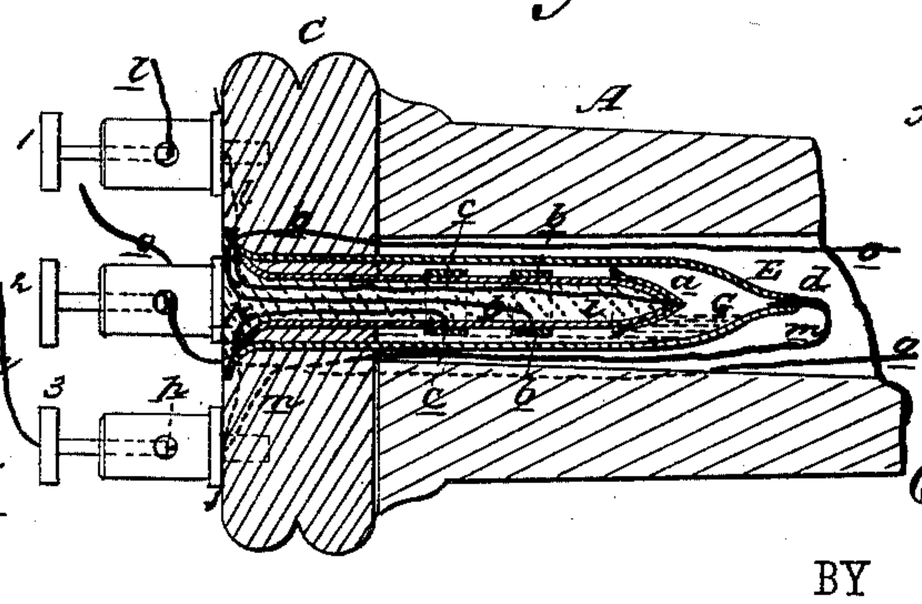
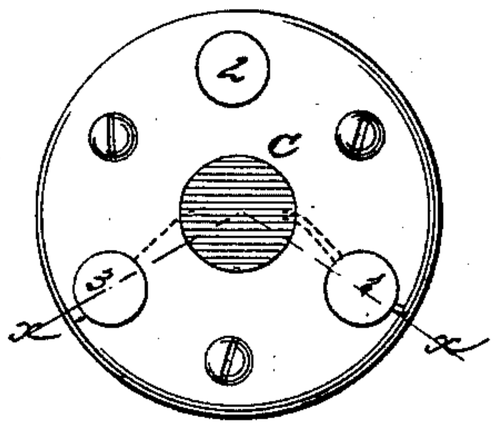


Fig. 3



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EDWIN T. GREENFIELD, OF NEW YORK, ASSIGNOR TO HIMSELF AND DANIEL M. ADEE, OF BROOKLYN, N. Y.

IMPROVEMENT IN AUTOMATIC ELECTRIC SWITCHES FOR TELEPHONES.

Specification forming part of Letters Patent No. **223,132**, dated December 30, 1879; application filed September 26, 1879.

To all whom it may concern:

Be it known that I, EDWIN T. GREENFIELD, of the city, county, and State of New York, have invented a new and Improved Electric Gravity-Switch for Telephones and other purposes, of which the following is a specification.

Figure 1 is a vertical sectional elevation of a telephone on line *x x*, Fig. 3, showing the switch applied. Fig. 2 represents the same placed in a horizontal position. Fig. 3 is a plan of the telephone.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide for an automatic switch a movable electric or magnetic conductor that by its own gravity shall make or break magnetic and electric connection.

For the purpose of illustration the device is shown in the drawings as applied to a telephone.

A represents the telephone-case, provided with binding-posts 1, 2, and 3, that are fixed on its cap C.

D is a tube, of glass or other non-conducting substance, tipped with platinum foil or other good conductor, *a*, and having bands *b c* of the same metal put around it, and with these bands *b* and *c* and *a* wires are made to connect by passing through perforations in the tube D. This tube D so arranged is set within a larger tube, E, so that a perpendicular line may be drawn through their axes, and from the point *d* of this tube E also projects a wire, and within this tube E the movable conductor G (in this instance quicksilver) is placed in such an amount that it will extend up from the point *d* of the tube E and come in contact with the band *a* of the tube D when the telephone is in an upright position, as shown in Fig. 1, and thereby make connection between the band or electrode *a* and the wire connected at *d*, and when the telephone is placed in a horizontal position, as shown in Fig. 2, it is seen that the movable conductor G has, by its own gravity, so moved as to break connection between *a* and *d*, and has established connection between the bands or electrodes *a*, *b*, and *c*. For example, when the telephone is in an upright position, as shown in Fig. 1, the electric current passes along the main line *l* to the binding-post 1, thence to line-connection or electrode *a*, thence through the moving conductor G to the ground-wire *m*, thence through the ground-wire *m* to the binding-post 3, and thence to the bell to ring it, the bell being kept in circuit so long as the telephone remains in this upright position; but when, in order to use the telephone, it is held in an inclined position, the circuit between the main-line wire *l*, that connects at *a*, and the ground-wire *m*, that connects at *d*, becomes broken by the moving of the conductor G, while the connection between the main line *l* and telephone-wire *o*, that connects at *b*, and local-battery wire *p*, that connects at *c*, is established, and the circuit passes through the line-wire *l*, through the electrode *a* to the conductor G, thence through the electrode *b* to the telephone-wire *o*, and thence through the spool *n* to the binding-post 2, and thence to the ground, or, if there be a transmitter, through that to the ground, and at the same time the local current is thrown through the line-wire *l*, thence through the electrode *a*, thence through conductor G to electrode *c*, thence to binding-post 3, and thence through the transmitter (if a transmitter be used) to the other pole of the battery. If a transmitter is not used, the electrode *c* is dispensed with.

This electric or magnetic movable conductor G, in combination with the electrodes *a b c* and ground-wire *m*, forms a perfect automatic electric switch. It is especially designed for use in connection with telephones; but it can be applied as a circuit maker and breaker in any connection where electric switches are used, and as its action is governed solely by gravity it is more efficient, more easily operated, more durable, and more certain of action than are those switches that are influenced by springs.

It is evident, too, that this switch is not liable to get out of order, because it is protected from the corroding influences of the weather by the containing-tube.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a telephone, the perforated tube D,

provided with metallic bands or electrodes *a b c*, in combination with the main-line telephone-wires and local-battery wires *l o p*, respectively, substantially as and for the purpose described.

2. In a telephone, the tube E, inclosing the electrodes *a b c* and carrying the ground-wire *m*, substantially as and for the purpose described.

3. The combination of the movable switch-conductor G with the tube E, electrodes *a b c*, and wires *l m o p*, substantially as and for the purpose described.

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Witnesses:
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