A. ZECCHINI.

ELECTRIC LIGHTER.

APPLICATION FILED APR. 15, 1921.

1,437,701.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.

FIG. 1

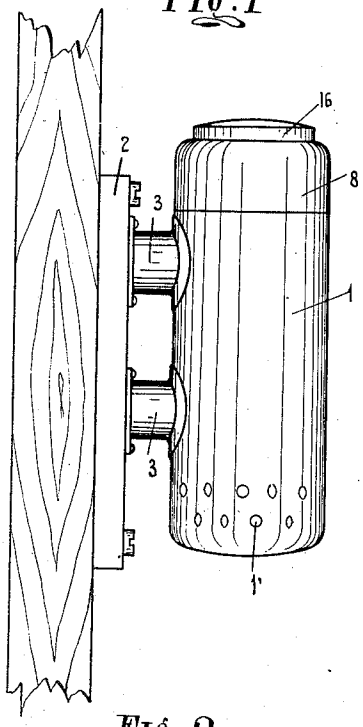


FIG. 3

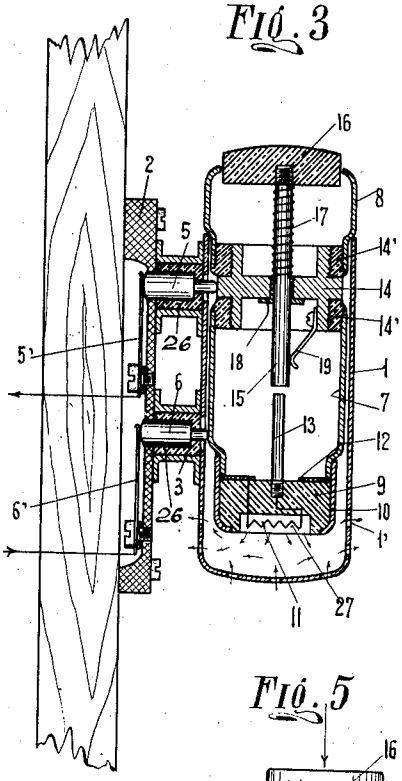


FIG. 2

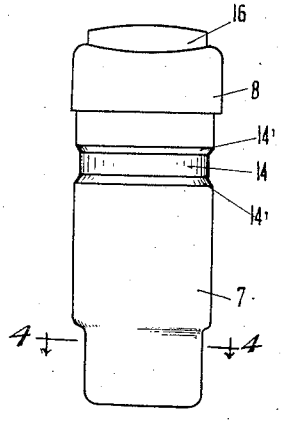


FIG. 4

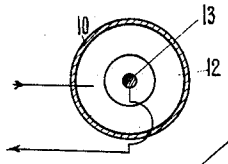
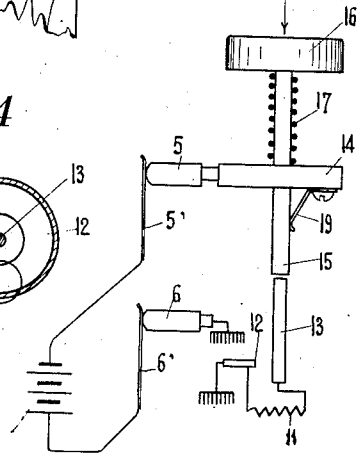


FIG. 5



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2 SHEETS—SHEET 2.

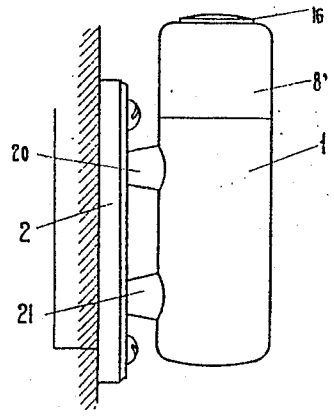


FIG. 6

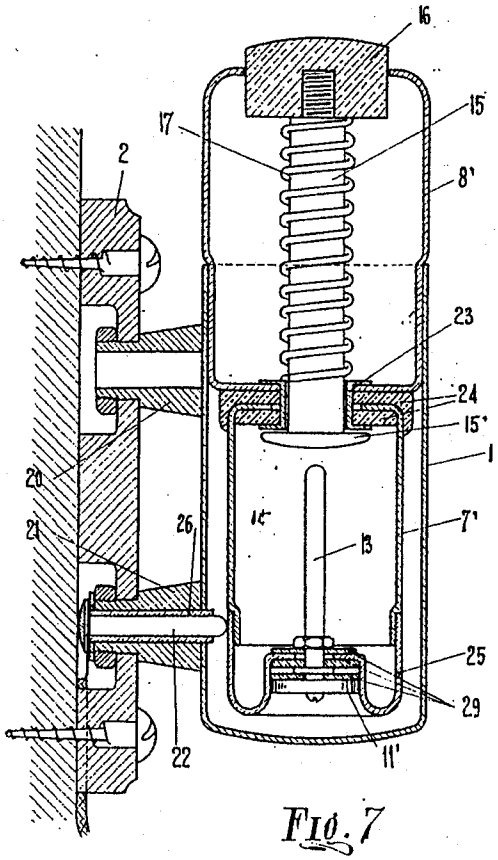


FIG. 7

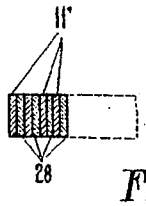


FIG. 9

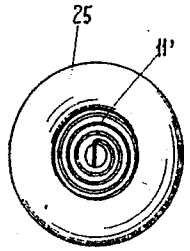


FIG. 8

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Patented Dec. 5, 1922. 1,437,701

UNITED STATES PATENT OFFICE.

ALFREDO ZECCHINI, OF TURIN, ITALY.

ELECTRIC LIGHTER.

Application filed April 15, 1921. Serial No. 461,580.

To all whom it may concern:

Be it known that I, ALFREDO ZECCHINI, a subject of the King of Italy, and resident of Turin, Italy, have invented certain new and useful Improvements in Electric Lighters (for which I have filed an application in Italy, April 26, 1920), of which the following is a specification.

This invention relates to electric lighters for cigars and the like.

This invention has for object a lighter comprising a plug which is provided with an ignition resistant member and with means for inserting this resistant member in and out of circuit of a source of current, said plug being removably located within a stationary socket having current feeding connections.

Further this invention comprises an arrangement for feeding the current to the ignition resistant member whereby the plug carrying said resistant member may be freely removed from its cooperating socket without any connecting wire being provided between said plug and socket, as well as an automatic switch which holds the circuit open when the device is not in use.

Finally this invention comprises a particular arrangement of the ignition resistant member and other useful features hereinafter described and claimed.

The annexed drawings show by way of example two embodiments of the device according to this invention.

In said drawings Figure 1 is the side view of a device according to this invention in inoperative position; Figure 2 is a side view of the plug removed from the socket; Figure 3 is the central section of the device in inoperative position; Figure 4 is the section on line 4—4 of Figure 2; Figure 5 is a diagram of the electric circuit; Figure 6 is a side view of another construction of the device in inoperative position; Figure 7 is a central section of the same to an enlarged scale; Figure 8 is an end view of the removable plug showing the ignition resistant member; Figure 9 is a fragmentary transverse section of the resistant member made to an enlarged scale on line 9—9, Figure 8.

The device shown by Figures 1–3 comprises a socket 1 which is connected by means of hollow arms 3—3 to a plate 2 intended to be secured to a supporting wall. Within said arms 3—3 are located the pins 5—6 which are properly insulated by means of bushings 26 and bear by one end against the spring contacts 5′—6′ connected with the wires of the circuit of a source of current; the opposite ends of said pins project into the hollow of the socket 1.

The socket 1 is further provided with holes 1′ for the circulation of air therethrough.

Within the socket 1 is removably located a metal plug comprising a grasping head 8 at the end intended to remain out of the socket 1 and heating means at its end entering said socket.

Said plug comprises a metal shell 7 having at one mouth a block 9 of insulating material secured on it by a sleeve 10 screwed on said shell; at its opposite mouth said shell 7 is secured to a partition 14 of conducting material carrying the head 8, insulating rings 14′ being located between said partition 14 and the head 8 as well as the shell 7.

The refractory block 9 provides a front recess 27 in which is located a resistant wire 11 having one end connected to the sleeve 9 and shell 7 by means of a conducting washer 12; the opposite end of said wire 11 is connected to a stem 13 projecting centrally into the shell 7.

Said partition 14 has a smaller diameter than the shell 7 and head 8 so as to provide a circular groove, and has a central hole lined with a bushing 18 in which is mounted to slide endwise a central stem 15.

This stem 15 has one end opposite to the end of the stem 13 and its opposite end is provided with a knob 16 of insulating material which projects beyond the edge of the head 8.

A spring 17 bearing against the partition 14 and the knob 16 holds the stem 15 with its end removed from the opposite end of the stem 13; the electric connection of the stem 15 with the partition 14 is ensured by a brush 19 secured to said partition 14 and contacting with said stem.

The arrangement of the partition 14 within the plug is such as when the plug is inserted in the socket 1, the outer rim of the partition 14 contacts with the pin 5 and at the same time the pin 6 contacts with the surface of the shell 7.

The outer surface of the insulating ring 14′ between the partition 14 and the shell 7, and the shape of the shell 7 in its portion under the pin 6 must be such that when the plug is removed from its socket the shell 7

leaves the pin 6 before the edge of the shell 7 under the lower ring 14′ comes in contact with the pin 5, for the purpose of preventing the source of current from being short-circuited through said pins 5 and 6 and the metal body of the shell 7.

When the plug is inserted in the socket 1, as shown by Figure 3, the partition 14 and the stem 15 are electrically connected with the pin 5, and the washer 12 to which leads one end of the resistant wire 11 is electrically connected with the pin 6 through the metal body of the shell 7.

The circuit is therefore open, the opposite ends of the stems 15 and 13 being removed from each other and it is held open so long as the knob 16 is not depressed.

By depressing the knob 16 against the action of its associate spring 17 the stem 15 is carried in contact with stem 13 connected with one end of the resistant member 11 and therefore the current flows through this resistant member.

When it is desired to use the lighter the knob 16 is pushed down and is held in such a position for some time as necessary for causing the heat developed by the current to make the resistant wire incandescent; thereafter the head 8 is grasped and the plug is removed from its socket the incandescent wire being then adapted to be used for lighting a cigar or the like.

The wire which is made incandescent by the passage of electric current keeps its high temperature for a time quite sufficient for the purpose of igniting a cigar or the like.

At the time the plug is being removed from the socket 1 the source of current is not liable to be short-circuited because the shell 7 leaves the pin 6 before coming into contact with the pin 5, as described.

The Figures 6 and 7 show a simplified embodiment of the lighter according to this invention in which the stationary socket 1 is connected to the plate 2 by an earthed arm 20 and by another hollow arm 21 within which is located a pin 22 insulated by a sleeve 26 and connected with one terminal of a source of current whose opposite terminal is earthed; the inner end of the pin 22 projects into the hollow of the socket 1.

The removable plug intended to be located within the socket 1 consists of two metal shells 7′—8′; the shell 7′ has a smaller diameter than that of the hollow of the stationary socket 1 and a portion of the shell 8′ has such a diameter as to fit in the socket 1. Said shells 7′—8′ are connected at their adjacent ends by means of a conducting sleeve 23 having its edges upturned over the edges of the front walls of said shells, and are insulated from each other by insulating washers 24.

The shells 7′—8′ are open at their other ends and the shell 7′ carries an end cap 25 providing a space for the ignition resistant member 11′.

This resistant member (see Figures 8 and 9) consists of a strip 11′ of a proper metal wound on a spiral together with an adjacent strip 28 of insulating and refractory material; the outer portion of said metal strip 11′ contacts with the cap 25, whilst its inner end is electrically connected with a stem 13 concentric with the shell 7′ and insulated from the cap 25 by means of insulating washers 29.

At the end mouth of the shell 8′ is located the insulating knob 16 secured to a conducting stem 15 which passes through the sleeves 23; this rod is provided with a lower head 15′ which is held by a spring 17 removed from the end of the stem 13.

When the parts are in the position shown by Figure 7 the circuit is cut out; by pushing down the knob 16 the stem 15 is lowered and its head 15′ is carried into contact with that of the stem 13. Therefore the circuit of the source of current is closed between the pin 22 and the earthed arm 20 through the cap 25, resistant member 11′, stems 13—15, sleeve 23, shell 8′, one pole of the source being connected to the pin 22 and the other being earthed, as described.

Therefore the current flows through the resistant member 11′ and this latter is made incandescent so that when the plug is removed from the socket said resistant member may be used for purpose of lighting a cigar or the like.

The last described embodiment does not require the use of parts of refractory material; its assembly is made more easy and its size is reduced.

In this construction for avoiding the short-circuiting of the source of current it is sufficient that the portion of the shell 8′ entering the socket 1 is longer than the portion of the shell 7′ lying under the level of the pin 22 when the plug is in position in its socket.

The resistant heating member consisting of a flat metal strip wound together with a strip of insulating material has the advantage that the whole part may be made of a reduced size; therefore the heat is accumulated in a small body and the temperature of this latter is increased, so that it may be used for igniting a cigar or the like after the circuit of the resistance has been held closed long enough for heating it to the required degree.

What I claim as my invention and desire to secure by United States Letters Patent is:—

1. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and

separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, and means controlling the circuit in which said resistant member is inserted.

2. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, means controlling the circuit in which said resistant part is inserted and means holding said controlling means in open-circuit position when the device is out of service.

3. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being in circuit with said resistant part and a knob-controlled spring holding said circuit open when the device is out of service.

4. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, said plug having an outer recess, a heating resistant part in said recess, feeding parts in said socket each connected with a pole of a source of electric current, parts in said plug adapted to contact with said feeding parts and connected with the ends of said resistant part and a spring switch holding normally open the circuit of said resistant part.

5. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part.

6. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part, and means for preventing said contacting parts of the plug from short-circuiting the source of current when the plug is being removed from said socket.

7. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part, said feeding parts of the socket and cooperating parts of the plug being so shaped and positioned as to prevent the part of the plug entering said socket from short-circuiting the source of electric current when the plug is being removed from said socket.

8. An electric lighter for cigars and the like, comprising a stationary member, feed-

ing means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant member comprising a flat resistant metal strip wound together with an insulating refractory ribbon, this resistant part being located in said removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, and means controlling the circuit in which is inserted said resistant part.

Signed at Turin, Italy, this 22 Mar. 1921.

ALFREDO ZECCHINI.