

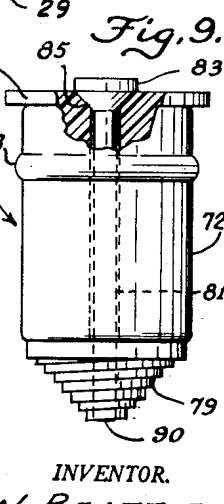
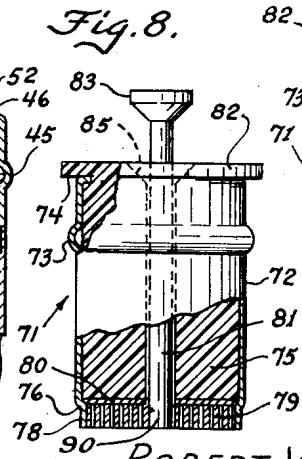
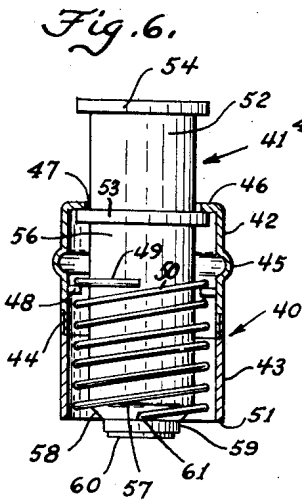
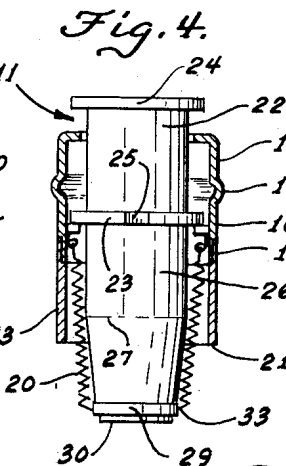
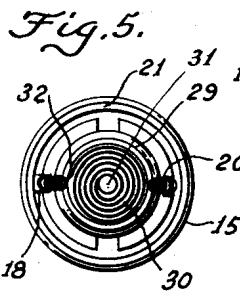
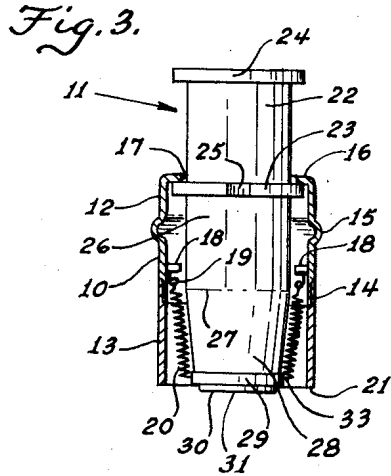
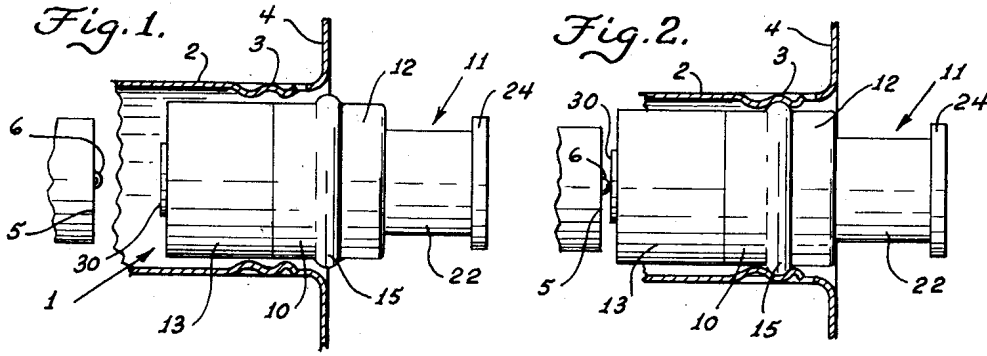
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ELECTRIC PIPE LIGHTERS

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1

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ELECTRIC PIPE LIGHTERS

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8 Claims. (Cl. 219—32)

This invention relates to lighters or igniters for lighting cigars, cigarettes and pipes employing an electrically heated element and is particularly concerned with constructions of such lighters for facilitating the lighting of pipes.

The lighter of the invention has particular utility when installed in an automobile and since that utilization points up its advantages, it will be described from that standpoint. It is to be understood, however, that such description is for illustrative purposes and is in no way intended in a limiting sense.

The so called automobile lighters commonly provided are notoriously poor in their capacity for the lighting of pipes. About the only time they work at all is when the pipe is full. As any pipe smoker knows, however, it is quite common to re-light or re-ignite the tobacco charge in a pipe a number of times before it is burned up. Each time the level of tobacco in the pipe is a little lower and, unless the lighter will get down in the pipe to that level, lighting is ineffective.

It is also generally recognized that electric igniters embodying resistance elements heated to a red heat for lighting afford the safest means available to the operator of an automobile for the lighting of his cigarettes, cigars or pipe. Also, most automobiles come equipped with sockets of a generally standard form for the reception of such igniters, provide contacts to pass the current through their resistance elements and also provide for the partial ejection of the igniter when it has been heated to the proper temperature. Getting people to change from existing sockets to some special form for the benefit of pipe smokers would be out of the question. The solution to the problem then is to provide an igniter receivable in existing standard sockets and, though usable for lighting cigars and cigarettes, being also adaptable to the lighting of pipes. This end is achieved by the igniter of the instant invention.

It is, accordingly, an object of the invention to provide electric igniters which are usable for the lighting of pipes as well as cigars and cigarettes.

Another object is to provide such igniters which are receivable in and will make proper contact with existing sockets.

Still another object is to provide such igniters which will light pipes even though the tobacco level in the pipes is well down below the top of the pipe.

A further object is to provide such igniters of simple and economical construction and wherein certain parts thereof perform several different functions.

Further and more detailed objects of the invention will in part be obvious and in part be pointed out as the description of the invention taken in conjunction with the accompanying drawing proceeds.

In that drawing:

Fig. 1 is an elevation, partly in section, of an igniter in accordance with the invention positioned in the outer position in the conventional socket, fragmentary portions

2

only of said socket being shown and those being shown in section.

Fig. 2 is a view similar to Fig. 1 showing the igniter in its inner or heating position.

Fig. 3 is a part elevation, part section, of the igniter per se with the housing thereof in section and with the igniter element in retracted position.

Fig. 4 is a similar view with the igniter element in extended position.

Fig. 5 is a bottom plan view of the igniter as seen in Fig. 3.

Figs. 6 and 7 are perspective views corresponding respectively to Figs. 3 and 4 illustrating a somewhat modified form of the invention; and

Figs. 8 and 9 are similar views of the preferred form of the invention.

As already pointed out, the lighter or igniter, of the invention, generally indicated at 1 in Figs. 1-5, is intended to be received by conventional sockets commonly found on the dashboards of automobiles, so that no effort has been made to particularize upon the socket structure per se. Enough has been shown to indicate generally the manner in which the igniter is received and the manner in which electrical contact is made therewith to pass current to the resistance element. Thus, as shown in Fig. 1, the side wall or shell 2 of the socket is provided at 3 with suitable struck out clip members formed to engage a mated portion on the igniter, to make contact therewith and hold it in place during the heating. At its outer end the shell 2 is suitably outwardly flanged, or otherwise formed, at 4. The inner end 5 of the socket is insulated with respect to the shell 2 and is conventionally provided with a center contact 6 for making contact with the center of the resistance element when the igniter is pushed in to be heated. Any other features of conventional sockets or igniters, including such things as electrical contacts, or ejectors, whether forming part of the socket or of the igniter, are omitted from the present showing, since they form no part of the instant invention.

The igniter 1 of Figs. 1-5 can generally be considered as comprising a housing 10 with an igniter element, generally indicated at 11, received therewithin. The housing 10 is suitably formed of two sections of metal 12 and 13 joined together in a pressed fit, or other suitable joint, at 14. The purpose of this is to facilitate assembly of the igniter element and housing. The upper section 12 of the housing is formed outwardly at 15 in an annular bead for reception by the clips 3 of the socket. The section 12 is also flanged outwardly at 16 at its upper end to define the end opening 17.

On its inner surface adjacent the lower end thereof, the section 12 is provided with suitable inwardly extending projections 18, here shown as two in number. These serve the dual purpose of acting as stops for establishing the extended position of the igniter element with respect to the housing and they also serve to carry the anchoring means for the ends of the springs employed for holding the igniter element in its retracted position. These anchoring means are here illustrated at 19 with 20 being the springs carried thereby.

The lower section 13 of the housing may, as shown, be merely cylindrical, terminating in a free end face 21. On the other hand it may have its portion adjacent the free end face 21 flanged or inclined inwardly to a slight extent so as to perfect the seating thereof on the upper end of a pipe when the igniter is put to use.

The igniter element itself has an upper cylindrical body portion 22, of slightly less diameter than the opening 17 in which it slides between retracted and extended positions. These positions are determined by collar members 23 and 24 at the ends of the portion 22. Suit-

able provision may be made for assembling the igniter element with the housing 10, such as by notching the collar 23 as shown at 25 at opposite ends of a diameter, with the notches 25 being sized to pass by the stop members 18. Thus, should the igniter element be installed in the housing from beneath, prior to application of the collar member 24, it can merely be slid up with the notches 25 registered with the projections 18 and then turned at 90° to prevent any subsequent registry. After this assembly is effected, the collar 24 is merely pressed, or otherwise suitably secured in place, on the body portion 22. The assembly may be otherwise effected by applying the collars 23 and 24 initially and flange the end 16 inwardly after the igniter element has been inserted downwardly into the housing from the top thereof.

Below the collar 23 the igniter element body, as here shown, extends in a further cylindrical portion 26 to a position 27 just below the projections 18, as seen in Figure 3, from whence it converges conically inwardly in the lower portion 28. The portion 28 terminates in a reduced end to which the ring 29 carrying the igniter coil 30 is applied. This ring may serve to mount the coil with respect to the igniter body in any suitable manner. The coil 30, as is known in the art, commonly forms an involute of high resistance metal, of tape like form seated on edge, starting at a center contact 31 and terminating at an outer contact, such as 32, in electrical contact with the ring 29. The igniter element body is suitably formed of non-conductive material.

The springs 20, secured at their upper ends to the clips 19, have their lower ends 33 suitably secured to the ring 29. They are always, even in the retracted position of the igniter, under a moderate tension. Besides serving as springs they also serve as conductors of electric current from the housing 10 to the ring 29.

Reverting to the Fig. 2 showing, it will be seen that with the igniter pressed into its innermost position and with the side wall 2 of the electrical socket serving as one lead, current will be passed therefrom by means of the clips 3 to the rib 15 of the housing. Current will flow through the housing section 12 and the springs 20 to the ring 29 and thus to the outer end 32 of the heating element 30. The other contact for the heating element is made between the center member 6 at the base of the socket and the inner end 31 of the heater 30.

The igniter is seated in the socket by grasping the outer part of the section 12 and pushing it inward until the rib 15 is engaged with the clips 3. At that time, though the igniter element 11 is in fully retracted position as seen in Fig. 3, its contact member 31 will engage the contact 6. Removal of the igniter for use is achieved by grasping its collar 24 and the body section 22 just inside of the same.

If the igniter is to be used for the lighting of a cigarette or cigar, it can be left in the retracted position of Fig. 3 and used in that position. In the event it is to be used for the lighting of a pipe, particularly after the tobacco charge in the pipe has burned down somewhat, or has been pressed down into the bowl of the pipe, then it becomes necessary to extend the igniter element 11 as shown in Fig. 4. This is done merely by holding the housing 10 in some suitable manner, such as passing two fingers around the same beyond the rib 15 and pressing down on the end 24. It is not necessary to seat the end 21 of the housing on the end of the pipe, but if it is convenient to do so, this seating will introduce a steadying effect. Even if the end 21 engages the top surface of the pipe evenly throughout, enough air for ignition will pass down through the housing by means of the opening 17 and the space between the housing and the igniter. Once the igniter has been used, it is merely necessary to let go of the end 24 and the igniter element will be retracted into its housing by means of the springs 20.

In the modified form of Figs. 6 and 7, the arrangement is generally the same as that of Figs. 1-5, with the prin-

cipal difference residing in the type of spring employed. Thus the housing, generally indicated at 40, receives an igniter element, generally indicated at 41. The housing 40 is formed of sections 42 and 43, generally similar to the sections 12 and 13 of the previous form. Again, these are joined in a press, or other suitable fit, at 44 while the section 42 is provided with an annular outwardly extending rib 45. The section 42 is also flanged inwardly at 46 around its upper end to border the opening 47. Instead of lugs 18, however, the section 42 is provided with an inwardly extending annular shoulder 48, to provide an effective seat for the upper end 49 of the spring 50. Again, the lower section 43 is shown as terminating in a free end face 51, which in this instance could only be turned inwardly to a small extent, since ample space must be allowed for the movement of the spring 50 in and out of the housing.

The igniter element 41 has an upper body portion 52 bordered by collars 53 and 54 which control the extent of its travel in the opening 47. In this instance, due to the presence of the annulus 48, the assembly of the igniter element in its housing is preferably effected by inserting that element from above prior to the flanging of the end 46.

The lower portion 56 of the igniter body is generally cylindrical down to a position 57 close to its lower end where it tapers inwardly at 58 to the ring 59 bordering the heating element 60. The body portion 56 is surrounded by the helical spring 50 whose upper end is formed to seat on the upper surface of the annulus 48 and whose lower end 61 is engaged with the ring 59.

As in the previous form, the spring 50 serves to conduct the electricity from the housing portion 42 to the ring 59 which, in turn, conducts it to the outer border of the involute of the heating element 60. The inner end at the center of the heating element is similarly formed for engagement with the central conduit in the base of the socket.

Functioning of the form shown in Figs. 6 and 7 is generally comparable to that of the previous form, so repetition thereof is not necessary.

The preferred form of Figs. 8 and 9 is somewhat simplified over those of the previous forms. Here the housing, generally indicated at 71, is formed for reception in a conventional socket in the same manner as the housings of Figs. 1-7. Thus, it has a generally cylindrical side wall 72 interrupted by an outwardly extending annular rib 73 and terminating at its upper end in an intumed portion. This housing is advantageously in the form of a thin metal shell filled with suitable non-metallic insulating material as shown at 75. The phenol-formaldehyde sold under the trademark "Bakelite" is one example of a suitable material. At its lower end the shell turns slightly inwardly to form a small restraining shoulder 76 and then continues downwardly in a restricted portion 78 forming the border for the involute heating element 79. Furthermore, the border 78 and the involute 79 are secured together at the outer end of the involute 79 so as to form a good physical and electrical contact.

A disc 80 of suitable heat resistant material such as an asbestos fabric is provided across the bottom end of the insulating material 75. The border of this disc seats on the small shoulder 76.

The body of insulation material 75 is formed with a center bore therethrough for the slidable reception of an actuating stem 81. This stem may, if desired, be formed integrally with the center contact 90 of the involute heater 79, or may be of other material provided with a metallic tip at 90 forming that contact. In either event the tip 90 is secured in good electrical and physical contact with the inner end of the heater 79.

The rod 81 extends above the upper outwardly flanged end 82 of the body for the extent needed to provide sufficient downward movement of the center of the involute

heater 79 as seen in Fig. 9. At its upper end the rod 81 is provided with a head 83 formed with a suitable conical undersurface 84 for reception within a mating socket 85 provided in the upper end of the body 75.

Heating of the heater 79 is effected in the same manner as that of the previous forms. In other words, electric current from the side of the socket 2 is transmitted through the rib 73 and the shell 72 down to the portion 78 and from there to the outer end of the involute heater 79. The contact 90 for the center of the involute heater engages the center contact in the base of the socket. Short circuiting is prevented by the presence of the insulating material of the body 75.

For the lighting of a pipe, once the heater 79 is up to a red glow, all one needs to do is to press down on the head 83 of the rod 81 to extend the heater 79 downwardly in the form of a spiral so that it will go down into the pipe. After the tobacco in the pipe is ignited, the rod 81 is released and the heater returns to its original position. This return action is, of course, enhanced by the cooling and contracting of the metal. If more rapid return is desired a simple helical spring can be mounted about the upper extending end of the rod 81. In this event the undersurface of the head 83 is provided with a flat shoulder and the socket 85 is cylindrical. This form eliminates the separate spring members of the forms of Figs. 3 and 6. Also, it makes for a more rugged construction and enables a larger heater to be employed for more effective igniting of cigarettes and pipes.

Though in the foregoing and in the accompanying drawing, preferred and alternate embodiments of the invention have been described, it will be clear to those skilled in the art that such are by way of illustration and that other useful modifications are possible in the practice of the invention. Speaking more generally, since certain changes may be made in the device and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In electric igniter construction, a housing and a heating element carried by said housing, means formed on said housing for conducting electric current to one end of said heating element, means for projecting said heating element outwardly with respect to an end of said housing, and means for resiliently returning said heating element to said housing, said returning means forming part of said electric current conducting means.

2. In electric igniter construction, a body of insulating material, a shell of electrical conducting material surrounding said body, an involute heating element received within and secured to said shell at one end of said body and means engaged with the center of said involute heating element for projecting the same outwardly of said

shell into substantially conical form for the lighting of a pipe.

3. In electric igniter construction, an elongated body formed of electrical insulating material, a metallic shell overlying part of the side wall of said body and having an extending portion extending beyond one end thereof, an electric resistance type involute heater seated in said extending portion and having its outer end secured thereto, said body being formed with an axial bore there-through and an actuating rod slidably mounted in said axial bore and secured to the center of said involute heater.

4. Electric igniter construction as in claim 3, said shell being formed with an outwardly extending contacting rib and said actuating rod being secured in electrical contact with the inner end of said involute heater.

5. Electric igniter construction as in claim 1, said resilient returning means comprising a pair of coil springs extending between said heating element and said housing from opposite sides of said heating element.

6. Electric igniter construction as in claim 1, said means formed on said housing for conducting electric current to one end of said heating element comprising a pair of spring end mounting means extending inwardly from said housing at opposite sides thereof and a pair of coil springs within said housing, one of the springs of said pair having an end thereof mounted on one of said mounting means and one end of the other of said springs having an end thereof mounted on the other of said mounting means.

7. Electric igniter construction as in claim 1, said resilient returning means including a coil spring surrounding said heater element and normally seated within said housing.

8. Electric igniter construction as in claim 1, said means formed on said housing for conducting electric current comprising an annular shoulder extending inwardly from said housing around said heating element and a coil spring extending between said housing and said heating element, said coil spring having the inner end thereof mounted on said annular shoulder.

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