The present invention relates generally to improvements in smoking pipe apparatus and the like, and more particularly to a new and improved ignition system to be used in combination with smoking pipes and apparatus therefor.

In the field of smoking pipes, it has been the general practice to employ matches, conventional so-called cigarette lighters and other like devices to perform the operation of igniting the tobacco within the bowl of a pipe by the application of same to the pipe bowl opening. Although such devices have served the purpose, they have not proved entirely satisfactory under all conditions of service for the reason that each of such devices is a separate item from the smoking pipe, but nevertheless necessary element for igniting the tobacco within the pipe bowl, and therefore must be remembered and carried on one's person at all times. Furthermore it has been disclosed in several earlier patents that when the top portion of the tobacco within the pipe bowl is ignited first, in many instances its effect is to discharge to the smoker a caustic taste which becomes increasingly pungent as the unburned tobacco is consumed. This unpleasant taste is mainly due to the drawing in of air first through the burned portion of the tobacco, as the heated air is then partially absorbed by the unburned tobacco in the bottom portion of the bowl, thereby giving off moisture and other residue which are captured by the inhaled stream of smoke.

Those concerned with the development of smoking pipes have long recognized the need for overcoming the formation of moisture and other residue in the manner previously described. Devices were therefor provided for first igniting tobacco within a pipe at the bottom of the bowl by providing at that location certain types of electrically conductive filaments having electrical input leads which extend beyond the pipe surface. By connecting the leads to an electrical extension cord and then to a suitable power source, the electrically conductive filament could be heated to thereby ignite the tobacco. Such devices also were found to be very inconvenient due to the necessity of having to carry on one's person an electrical extension cord. Further, these devices were impractical as only certain electrical power sources were satisfactory, for if the current from any one source would be too large in magnitude the heating filament would be burned out.

The general purpose of this invention is to provide a smoking pipe which embraces all of the advantages of smoking pipe ignition systems such as those noted above, yet possesses none of the aforesaid disadvantages. To attain this the present invention contemplates a unique combination of elements comprising a battery and heating element embraced within a smoking pipe, whereby incompatibility and efficiency are avoided by allowing a smoker to light or relight his pipe by merely pressing a switch conveniently positioned on the pipe surface.

An object of the present invention is the provision of an improved form of a smoking pipe tobacco ignition system that is simple in construction and operation.

Another object is to provide unique combinations of elements within a smoking pipe for use in igniting tobacco.

A further object of the present invention is the provision of a recharging device for use with a battery ignition system in smoking pipes.

Other objects, advantages and capabilities of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings illustrating preferred embodiments of the invention.

Referring to the drawings:

FIGURE 1 is an isometric view of a smoking pipe being a first embodiment of the invention with a portion of the bowl cut-away.

FIGURE 2 is a detailed view of the battery shown in FIGURE 1.

FIGURE 3 is an isometric elevation of a second embodiment of the invention.

FIGURE 4 is an isometric exploded view of a third embodiment of the invention with a portion of the pipe bowl cut-away.

FIGURE 5 is a section taken along lines 5-5' of FIGURE 4 to show the switch mechanism.

FIGURE 6 is an isometric view of a fourth embodiment of the invention.

FIGURE 7 is a cross section of a fifth embodiment of the invention.

FIGURE 8 is an isometric view of a pipe holder.

FIGURE 9 is a section taken from lines 9-9' of FIGURE 8.

FIGURE 10 is a schematic diagram of the electrical circuitry involved in FIGURE 8.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIGURES 1 and 2 a conventional pipe stem 20 contiguous with a bowl portion 21, which has an inner wall 22 and inner base 23 defining the tobacco chamber 24, and an outer side wall 25. Exposed to the tobacco chamber 24 is a heating element or electrical conductor 26 integral with said base portion 23 and inner side wall 22, the terminal portions of said element being connected to two contact pins 27 and 28 within the bowl, said contact pins positioned directly opposite the battery 31 positive and negative terminal points 29 and 30, the battery 31 being so located in the wall of the bowl 21 that its outer surface is flush with the exterior surface 25 of bowl 21. Attached to the sides of battery 31 are lead springs 32 and 33, respectively inserted in the bowl receiving slots 34 and 35, holding the battery 31 in place and spaced from contact pins 27 and 28. Connected to battery terminal points 29 and 30 are leads 36 and 37 respectively, which are terminated at a female plug recessed within a small aperture 38 in the bottom of pipe bowl 21.

There is disclosed in FIGURE 3 a further manner of engaging a battery to a pipe bowl by having a bowl 42 provided with slots 43, 44, and 45 open to its outer wall, said slots being suitable to accept an equal number of lead springs attached to side portions of a battery 41. Within the bowl 42 are U-shaped passageways contiguous with the inner parts of slots 43, 44 and 45, and adapted to receive the leaf springs fixed to battery 41 so that the battery 41 may be rotated in a direction as disclosed by arrow 46 and therefore tightly secured to the bowl member 42.

In operation, after the tobacco chamber 24 has been filled with tobacco, the smoker merely has to push the battery 31, conveniently serving a dual function as a switch, against lead springs 32 and 33 to engage the battery terminals 29 and 30 with contact pins 27 and 28,
completing an electrical circuit, allowing the current to flow and heat up electrical conductor 26, to thereby ignite the tobacco situated in bowl 42. A female plug within aperture 38 is directly hooked up to battery terminal 50 so that the battery may be recharged when not in use, as will later be disclosed.

There is shown in FIGURES 4 and 5 a further embodiment wherein stem portion 51 of a pipe 52 is connected to bowl 53, said bowl comprising separable upper and lower bowl members 54 and 55 respectively, the upper bowl member 54 containing a cylindrical outer battery member 56, having its lower inside surface threaded at 57, and conductive ring-like terminals 58 and 59 extending around the bottom periphery of said battery. A cylindrical insulating member 60 is fitted within the battery member 56 by friction or other means so as to be fixed thereto, the inner surface of said insulating member 60 defining a portion of the tobacco chamber 61.

The lower member 55 of the bowl has a raised surface 62 establishing the base of the aforesaid tobacco chamber 60, there being affixed on or within said raised surface 62 a conductive element or electrical conductor 63 having a pair of exposed terminal points 64 and 65 connected to a female recharge plug recessed within aperture 69 from the outer surface 70 of bowl member 55. A threaded wall 71 connects the outer perimetre of raised surface 62 with lower surface 66 of the bowl 55 and is compatible with the threaded part 57 of battery 56 so that the upper bowl portion 54 may be fastened to the lower bowl portion 55 and ring-like conductive terminals 58 and 59 will engage exposed terminal points 64 and 65.

A gap as shown at 74 in FIGURE 4 and also in FIGURE 5, in a portion of the conductor 63, said gap being bridged by the wire leads 75 and 76 of a switch mechanism (see FIGURE 5) within bowl 55 comprising an electrically conductive biased spring member 77 connected to wire 76 and normally disengaged from wire 75 and urged against a threaded portion 78 which is slidable relative to, yet limited in movement by stop member 79 threadably mounted in the lower bowl portion 55 to be flush with the exterior surface 70 in such a manner that button 78 extends slightly beyond said surface 70.

In operation, when button 78 is pressed inwardly, the conducting spring member 77 will engage wire terminal 75 to complete an electrical circuit across the gap 74, allowing battery 56 to provide current to electrical conductor 63, heating up the same, thereby to ignite the tobacco within the tobacco chamber 61.

FIGURE 6 portrays a similar device as shown in the prior figures, however, in this embodiment the electrical conductor or heating element 81 is depicted as being situated on the side portions of insulating member 82, which is frictionally mounted within battery 83.

FIGURE 7 yet discloses another embodiment of the instant invention whereby a rectangular battery 85 is conveniently seated within a rectangular shaped opening in the holding member 86 which has a threaded portion 87 engaging a compatible threaded portion 88 on bowl 89. To ensure firm contact between battery terminals 90, 91, and the terminal contact points 92 and 93 respectively, of heating element 95, a resilient material 94 is inserted underneath battery 85, and lateral movement of the battery 85 is limited by the four side walls of the fitted holding member 86. The heater element or electrical conductor 95 is helically wound around a cylinder 96 which is located in the center of and integral with the inside base of bowl 89. Heating element or electrical conductor 95 is connected to both switch 97 and female recharge plug within aperture 98, which switch 97 and plug have the same elements and operate in the same aforesaid manner having reference to FIGURES 4 and 5, their description and operation. The battery con-
tainer in the instant embodiment is useful in those cases where it is desired that the battery not be exposed to outside elements.

A smoking pipe rack 131 is shown in FIGURE 8 with a base 132 on vertical side 133, the base having cut-out portions 134–137 therein, so shaped to conform to the contour of a conventional smoking pipe bowl 138 for receiving the same. A bar member 139 is located near the top portion of vertical side 133 for holding the stem portion 140 of a smoking pipe in line with its respective cut-out portion 134, the pipe has been seated.

Each of the cut-out portions 134–137 is provided with male plug assemblies 141–144 respectively, more clearly depicted in the sectional view of FIGURE 9. Each plug consists of a pair of conductive members 145 and 146, respectively mounted on spring members 147 and 148, and connected to wires 149 and 150. As shown by the circuit diagram in FIGURE 10, male plugs 141–144 are wired in parallel with a diode 151, and then hooked in series with a diode 152 and load resistor 153 to terminal points of a switch 154, the other side of said switch being connected to a conventional 110 volts A.C. line.

As a smoking pipe of the type heretofore described in FIGURES 1–7, having a battery and female recharge plug, is placed within cut-out portion 134, male plug 141 will engage the female member inserted therein to thereby complete an electrical circuit when switch 154 is in the ON position. Due to the unidirectional diode 152, current will only flow in the direction indicated by the arrow, to provide sufficient rectified current to charge the battery through the male plug 141. Diode 151 acts as a voltage limiting diode to avoid high voltage across the male plug outlet 141 when the charging action is not taking place.

It is noted that a simple recharge mechanism for a single smoking pipe could be utilized in the form of a compact unitary device, comprising a conventional 110 volt A.C. plug outlet wherein there is provided a resistor and pair of diodes as shown in FIGURE 10, for conversion of the current to a D.C. nature.

What is claimed is:
1. A smoking pipe comprising a stem connected to a bowl and tobacco chamber, an electrical conductor seated in said chamber, a battery with terminal means, forming a recess in said pipe, means for positioning the battery in said recess means with the terminal means normally disconnected from the electrical conductor, switch means located on the pipe for connecting the terminal means to said electrical conductor, and a recharge outlet mounted in said bowl and electrically connected to said battery allowing the battery to be recharged from an outside source.
2. In a smoking pipe, the combination recited in claim 1 wherein said battery acts also as said switch means whereby the battery is resiliently mounted to normally be biased out of contact from the electrical conductor, the battery being adapted to engage said electrical conductor when the battery is urged against said resilient means.
3. In a smoking pipe, the combination recited in claim 1 wherein said electrical conductor is helically wound about a conical extension of a portion of the bowl within the tobacco chamber.
4. In a smoking pipe the combination recited in claim 1 including resilient means for normally biasing said switch means to disconnect said terminal means from the electrical conductor for controlling the flow of current, the switch means being adapted to connect said
terminal means with the electrical conductor to cause current to flow when the switch means is urged against said resilient means.

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