Sept. 24, 1968 YOW-JIUN HU 3,402,723

SMOKING PIPE APPARATUS

Filed Oct. 11, 1963 3 Sheets-Sheet 1

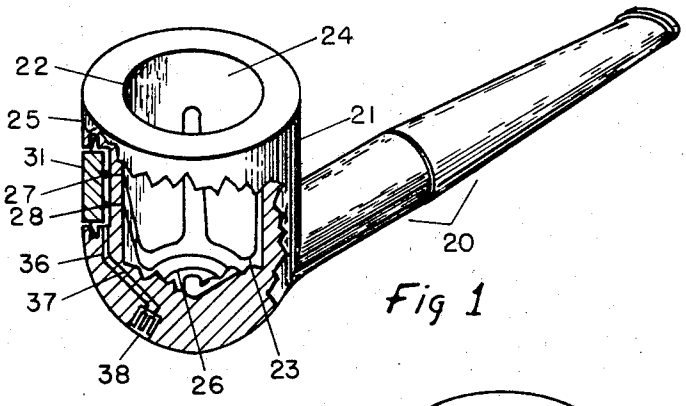


Fig 1

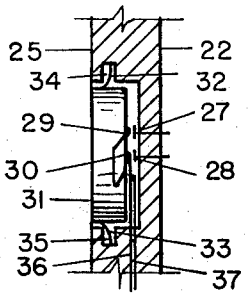


Fig 2

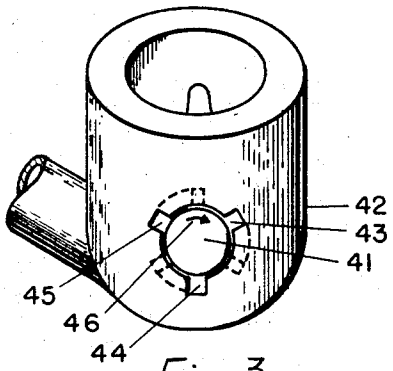


Fig 3

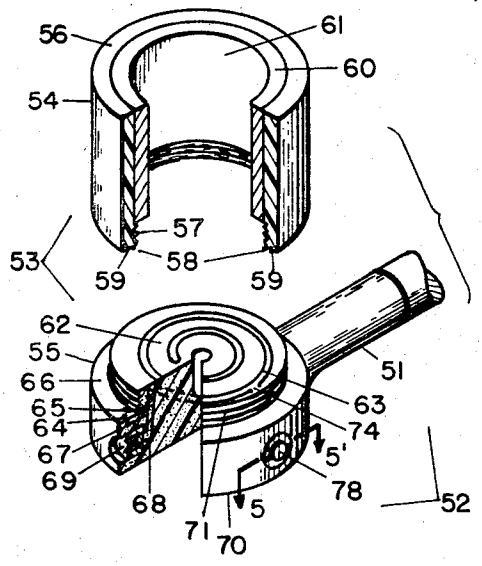


Fig 4

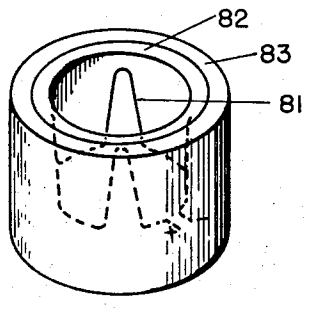


Fig 6

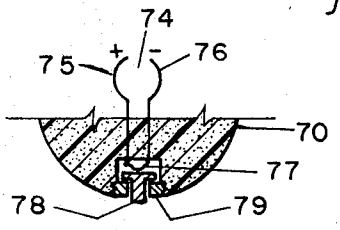


Fig 5

INVENTOR

YOW-JIUN HU

Jacob Frank

ATTORNEY

SMOKING PIPE APPARATUS

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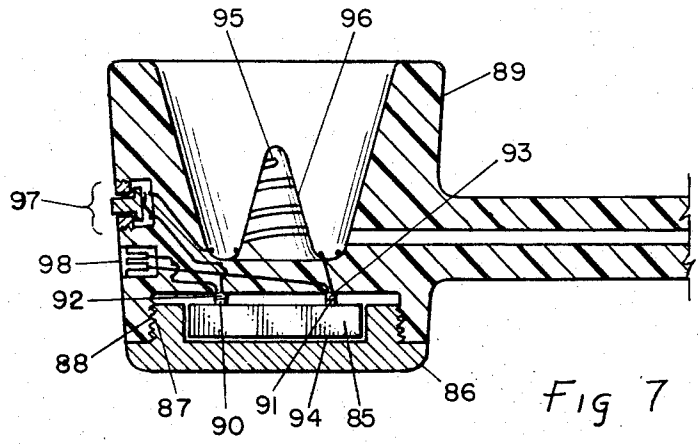


Fig 7

INVENTOR
YOW-JIUN HU
Jacob Frank
ATTORNEY

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SMOKING PIPE APPARATUS

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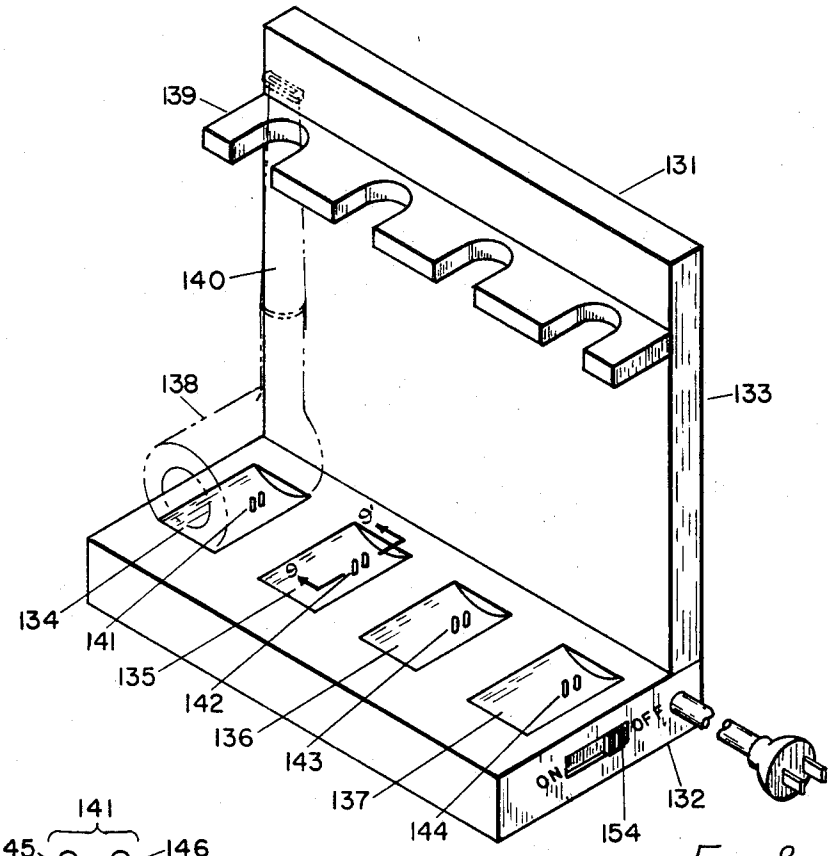


Fig 8

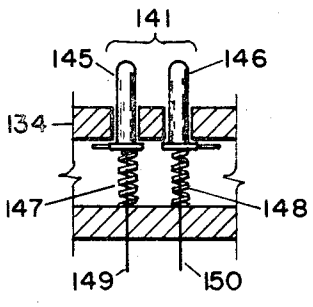


Fig 9

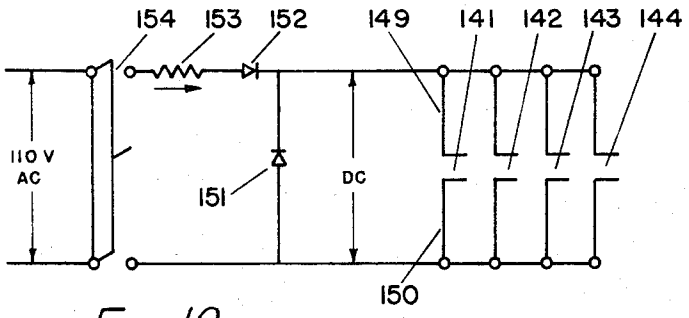


Fig 10

INVENTOR
YOW-JIUN HU
Jacob Frank
ATTORNEY

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3,402,723

SMOKING PIPE APPARATUS

Yow-Jiun Hu, Alexandria, Va.
(47 Cummings St., Medford, Mass. 02155)

Filed Oct. 11, 1963, Ser. No. 315,660
4 Claims. (Cl. 131—185)

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 a 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 aforedescribed 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 inconvenience 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 detail 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 heating element **26** 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 leaf 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 leaf 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 leaf 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 through 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 terminals **29** and **30** so that the battery **31** 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** consisting of 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 heating element or electrical conductor **63** having a pair of exposed terminal portions **64** and **65** fastened to a lower surface **66** of the bowl member **55**. Electrical conductor **63** is tapped by a pair of leads **67** and **68** 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 perimeter 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 is 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 T-shaped button **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 conductive 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 conical shaped member **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 aforedescribed manner having reference to FIGURES 4 and 5, their description and operation. The battery container 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** and 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 in which 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 n FIGURE 10, for conversion of the current to a D.C. nature.

It should be understood, of course, that the foregoing disclosure relates to only preferred embodiments of the invention and that numerous modifications and/or alterations may be made therein without departing from the spirit and the scope of the invention, it is desired therefore, that only such limitations be placed on the invention as are imposed by the prior art and set forth in the appended claims.

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, 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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JOSEPH S. REICH, *Primary Examiner.*