Feb. 9, 1943. W. A. DRAEGER 2,310,844

ELECTRIC KNIFE WITH CHANGEABLE POINT

Filed April 9, 1941

Fig. 2.

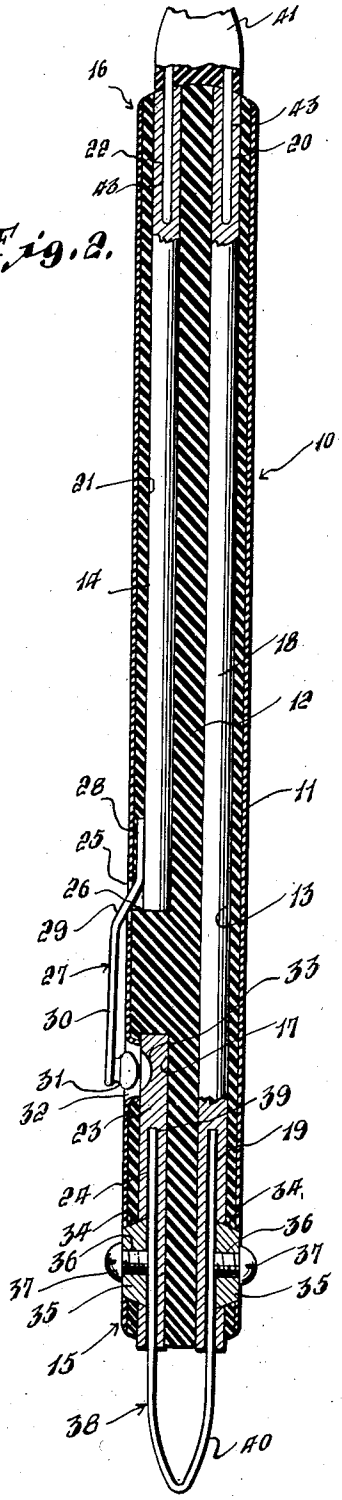
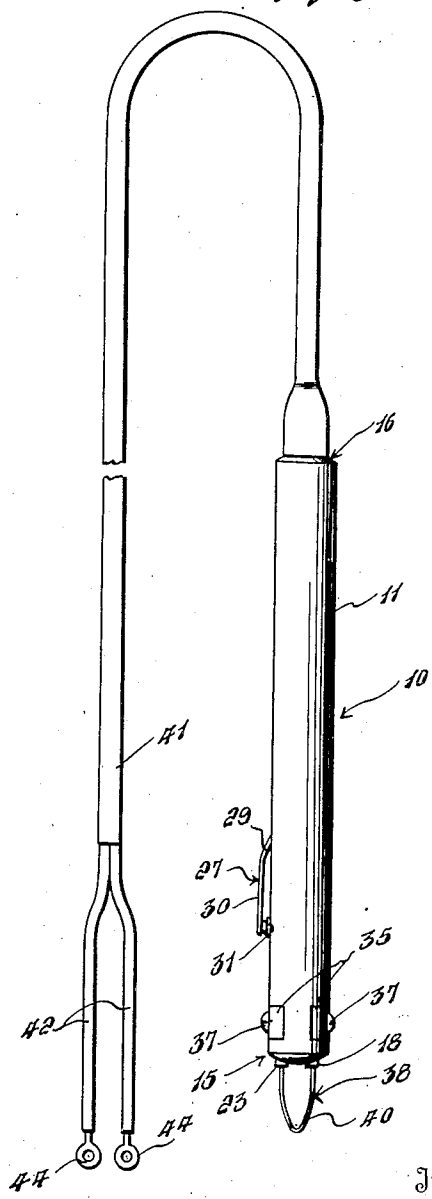


Fig. 1.



Inventor

Walter A. Draeger

By N. F. Fundesh.

Attorney

Patented Feb. 9, 1943 2,310,844

UNITED STATES PATENT OFFICE

2,310,844

ELECTRIC KNIFE WITH CHANGEABLE POINTS

Walter A. Draeger, Dawson, N. Dak.

Application April 9, 1941, Serial No. 387,732

1 Claim. (Cl. 128—303.14)

This invention relates to an improved construction of electric knife especially adapted for use in caponizing chickens, opening boils, abcesses and the like and for many other uses for which a surgical instrument of this type is adaptable.

More particularly, it is an aim of the invention to provide an electric knife so constructed that the wire point thereof may be readily removed and replaced so that a new point may be readily inserted should the old point burn off or otherwise become useless, and also to enable the use of points of different shapes.

Still another aim of the invention is to provide an electric knife wherein the point is made removable and replaceable so that a light gage wire point may be used for current of small voltage or a heavier gage point for use with a current of higher voltage.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, which illustrates a preferred embodiment of the invention, and wherein:

Figure 1 is a plan view of the electric knife, and

Figure 2 is an enlarged longitudinal sectional view, partly in elevation, of the holder and knife point thereof.

Referring more particularly to the drawing, wherein like reference characters designate like or corresponding parts throughout the different views, **10** designates generally the holder in its entirety and which includes an outer casing **11**, of electrical insulating material, and a core **12** which is disposed therein and which is likewise formed of a suitable electrical insulating material. As seen in Figure 2, the core **12** is provided with a longitudinal bore **13** which extends from end to end thereof and which opens outwardly of the end of the core **12**, which forms the end of the holder **10**. The core **12** is also provided with a longitudinal extending recess **14** which extends from adjacent the forward end **15** of the holder **10** and which opens outwardly of the opposite, rear end **16** thereof. Core **12** is provided with a longitudinal recess **17** which is preferably disposed substantially in alinement with the recess **14** and which opens outwardly of the forward end **15** and which extends inwardly to adjacent the inner end of the recess **14** but which is separated therefrom by a portion of the core **12**.

An electrical conductor **18**, preferably of copper, is fixedly disposed in the bore **13** and extends from end to end thereof and is provided with a longitudinal recess **19** which opens outwardly of the forward end **15** of the holder **10**, and a longitudinal recess **20** which opens outwardly of the rear end **16**. A conductor **21**, similar to the conductor **18**, is disposed in the recess **14** and extends from end to end thereof and is provided with a longitudinal recess **22** which opens outwardly of its free end and of the end **16** of the holder **10**. A conductor **23**, of similar material, is disposed in the recess **17** and is provided with a longitudinal recess **24** which opens outwardly of its exposed end and of the holder end **15**.

The casing **11** is provided with an opening **25** which communicates with a recess portion in the core **12**, designated **26**, and which in turn communicates with the inner end of the recess **14**. A switch **27** of resilient conducting material, preferably copper covered spring steel, is provided with an inwardly offset end **28** which is secured in the recess **26** and in engagement with the inner end of the conductor **21**. The switch **27** also includes a portion **29**, which is disposed obliquely to the portion **28** and the outer portion **30** and which projects obliquely through the opening **25**. The portion **30** is disposed on the outer side of the casing **11** and is spaced therefrom and disposed substantially parallel thereto. The portion **30**, at its free end, is provided with a knob **31** which projects from its inner side and which alines with an opening **32** in the casing **11** and core **12** and which communicates with the recess **17**, adjacent the inner end thereof. The conductor **23** is provided with a concave portion **33** which opens into the opening **32** and which is adapted to receive and be engaged by the knob **31** when the portion **30** is pressed inwardly of the holder **10** to bridge the gap between the adjacent ends of the conductors **21** and **23**.

Adjacent the end **15**, the conductors **18** and **23**, the core **12** and casing **11**, are recessed to form outwardly opening inwardly converging recesses **34** in which are mounted metallic inserts **35**, which are shaped to correspond to the recesses **34** and the outer sides of which conform to the curvature of the periphery of the holder **10**, is best seen in Figure 1. The inserts **35** communicate with the recesses **19** and **24** and are provided with threaded openings **36** which extend therethrough for receiving set screws **37**.

The holder **10**, previously described, forms the handle of the electric knife, comprising the invention, and which is provided with a point **38**

formed from a strand of wire which is bent upon itself intermediate of its ends to provide the corresponding ends 39 which are adapted to be inserted into the recesses 19 and 24 and secured therein by tightening the set screws 37 for attaching one end 39 to the conductor 18 and the other end 39 to the conductor 23. The exposed portion 40, forming the intermediate portion of the strand of wire, and which projects from the end 15 of the holder or handle 10, constitutes the point or blade of the electric knife and may be of any desired shape.

A flexible, preferably rubber encased electric cord 41 includes two conductor wires 42 which extend therethrough and which are insulated from one another in a conventional manner. The conductor wires 42 have exposed ends or prongs 43 which project from one end of the cord 41 and which extend into and are suitably secured in the recesses 20 and 22 for connecting one of the ends or prongs 43 to the conductor 18 and the other end or prong 43 to the conductor 21. The opposite ends of the conductor wires 42 are exposed and are provided with eyes 44 which are adapted to be connected to a suitable source of electric current, as for example a dry cell battery.

To operate the electric knife, the holder 10 is grasped similarly to a pencil and the switch 24 is pressed in to bridge the gap between the adjacent ends of the conductors 21 and 23 so that a circuit will be completed through the resistor wire 38 causing said wire to become red hot, at which time the instrument is in condition to be used. Should the point or blade 38 become white hot a heavier point is necessary and the screws 37 may be loosened and the point 38 removed and one of a heavier gage substituted. Likewise, should the point fail to turn red a point of a lighter gage should be substituted or a higher voltage current employed.

It will thus be apparent that points or blades 38 of different shapes and different resistances may be readily applied to or removed from the instrument to accommodate it to different operations and to use with currents of different voltage, as well as to enable a burnt off or broken point to be readily replaced.

Various modifications and changes are contemplated and may obviously be resorted to as only a preferred embodiment of the invention has been disclosed.

I claim as my invention:

An electric knife comprising a holder of insulating material provided with spaced longitudinally extending bores, electrical conductors disposed in the bores and opening outwardly of an end of the holder, said conductors having longitudinally extending recesses which open outwardly of corresponding ends thereof and which open outwardly of said end of the holder, said conductors also having recesses which communicate with the first mentioned recesses and which open laterally outwardly of the conductors, said holder having recesses which communicate with the last mentioned recesses of the conductors, inserts anchored in the last mentioned recesses of the conductors and the recesses of the holder for retaining the conductors in position in the holder, said inserts and the recesses in which they are received being shaped to retain the inserts therein, a knife point formed from a strand of wire, the ends of the strand being disposed in the longitudinal recesses of the conductors, said inserts having threaded openings extending therethrough, and set screws engaging the threaded openings and releasably engaging the ends of the strand for securely connecting the knife point to the conductors.

WALTER A. DRAEGER.