

No. 718,142.

PATENTED JAN. 13, 1903.

J. P. MÜLLER.
CAUTERY.

APPLICATION FILED OCT. 1, 1902.

NO MODEL.

Fig. 1.

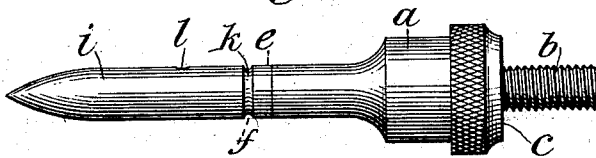


Fig. 2.

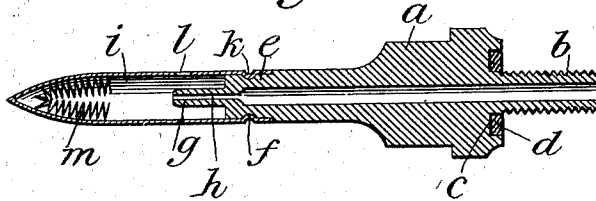
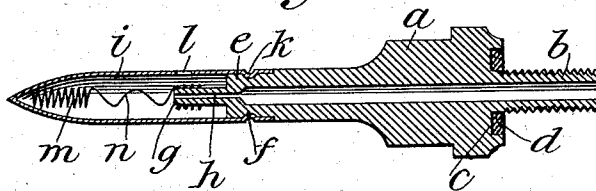


Fig. 3.



Attest:

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UNITED STATES PATENT OFFICE.

JOHN P. MÜLLER, OF NEW YORK, N. Y.

CAUTERY.

SPECIFICATION forming part of Letters Patent No. 718,142, dated January 13, 1903.

Application filed October 1, 1902. Serial No. 125,502. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. MÜLLER, a citizen of the United States, residing in the borough of Manhattan, in the city of New York, State of New York, have invented certain new and useful Improvements in Cauteries, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

10 This invention relates to those tools which, being heated substantially to incandescence by the internal combustion of hydrocarbon vapors, are used in surgery for cauterizing and in the arts for charring surfaces. These
5 tools usually comprise, besides the means for creating and supplying the mixture of hydrocarbon vapor or gas and air, a socket, a burner-tube secured to the socket, a platinum shell, also secured to the socket and covering
20 the burner-tube, a close coil of platinum wire mounted directly upon the tip of the burner tube or nozzle, and a gas-supply tube communicating with the burner tube or nozzle. The burner-tube ordinarily projects nearly to
25 the end of the shell, space being left for the platinum coil only. Much trouble in the use of these tools as heretofore constructed is occasioned either by the breaking off of the platinum coil through the increasing brittleness of the wire and the displacement of the
30 coil, which in the relation which it bears to the nozzle results in failure of the shell to continue to be heated to incandescence, or by the occasional fusing of the platinum wire, which likewise results in inoperativeness of
35 the tool. Furthermore, the construction of the tool in so many parts entails expense in manufacture and difficulty in assembling. In the development of the present invention
40 it has been found that an apparently slight change in the mechanical relation of some of the parts of these tools results in a marked increase in the efficiency and life of the tools, while the cost of manufacture and the difficulty in assembling can be substantially reduced without sacrificing efficiency in any degree.

5 In accordance with this invention the burner-nozzle, through which the mixture of gas and air is admitted to the interior of the shell, not only has a comparatively small bore or passage, but is terminated at a greater dis-

tance from the tip of the shell than heretofore and the coil of platinum wire is placed in the tip of the shell and with such relation to the orifice of the burner-nozzle as to be in the zone of maximum temperature of the burning mixture. The coil is either completely separated from the burner-nozzle or, if it is desirable that it should be supported therefrom, is connected therewith by a single strand of wire, which may be straight or in the form of a drawn-out coil. In either case the body of the platinum coil is separated from the burner-nozzle and is located, as above stated, in the zone of maximum temperature, while there is no sufficient body of wire in proximity to the orifice of the burner-nozzle to interfere with the proper operation of the tool even if such portion of the wire should become fused, and if the wire should break off near the burner-nozzle the main body of the coil will still remain substantially in place in the tip of the shell and the tool will continue to be operative.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a view in side elevation of the improved tool removed from the handle. Fig. 2 is a view of the same in longitudinal central section, the platinum coil being represented as supported within the tip of the platinum shell and separated from the burner-nozzle. Fig. 3 is a view similar to Fig. 2, but showing the platinum coil separated from the burner-nozzle by a drawn-out or expanded strand.

The improved tool consists of three parts only, a burner, a platinum shell, and a platinum coil or other bundle of wire, herein referred to as a "coil." The burner or base *a* has a threaded shank *b* for connection with the tube through which is supplied the gas or gaseous mixture, the body of the burner having in its rear face a recess *c* to receive and protect an asbestos washer *d*, by which the joint between the burner and the supply-tube is packed. Near its forward end the burner is reduced slightly in diameter, as at *e*, to receive the platinum shell, a groove *f* being formed in the reduced portion into which the metal of the shell may be upset to lock the shell in place. At its extremity the burner

is still further reduced to form a burner-tip *g*, having a relatively small bore or passage *h*, by which the quantity of the gas or gaseous mixture passing into the shell is properly regulated. The platinum shell *i* is slipped upon the body of the burner and may be secured thereon by indenting at *k*, as above described, having an aperture at *l* for the escape of the products of combustion. The shell is of such length as to allow for the formation of the aperture *l* back of the extremity of the burner-tip and to allow for the formation of the zone of highest temperature of the burning gases from the burner-tip just back of the tip of the shell, so that the tip of the shell, which is the part used, shall receive the maximum heating which is possible with the given burner. It will be observed that the shortness of the burner-tip and the relation of its extremity to the tip of the shell are material to the attainment of the highest possible efficiency for the tool. As shown in Fig. 2, the platinum coil *m*, which is designed to maintain the heat of the shell somewhat more uniform than would be possible without it, is separated from the burner-tip, being supported wholly by the shell and is located in the zone of maximum temperature, so that the efficiency of the tool shall not be diminished. In this instance it is not directly connected with the burner-tip; but in some instances it may be considered desirable that the coil *m* should be supported from the burner-tip, in which case, as represented in Fig. 3, it may be connected therewith by a single isolated strand of wire *n*, which may be merely a portion of the coil drawn out or expanded. In this latter instance the coil is still separated from the burner-tip and is located in the zone of maximum temperature, while the single strand is in an area of lower temperature and therefore not as likely to be fused, and, fur-

thermore, is itself of such small volume that even if fused it could not interfere with the operation of the tool. If the wire should become brittle and break off, the coil *m* will still remain substantially in its proper position, being supported by the shell, and as it does not form a part of the burner, as heretofore, the efficiency of the tool will even then not be materially diminished.

I claim as my invention—

1. A cautery comprising a burner, a supporting and inclosing shell, and a wire coil, said burner having a reduced portion to form a seat for said shell and a further reduced, relatively short burner-tip, with a small base, said shell having an aperture for the escape of products of combustion, and said coil being separated from said burner-tip and located within the tip of said shell in the zone of maximum temperature of the burning gases from said burner-tip, substantially as described.

2. A cautery comprising a burner, a supporting and inclosing shell, and a wire coil, said burner having a reduced portion to form a seat for said shell and a further reduced, relatively short burner-tip with a small bore, said shell having an aperture behind the extremity of said burner-tip for the escape of products of combustion, and said coil being separated from said burner-tip and located within the tip of said shell in the zone of maximum temperature of the burning gases from said burner-tip, substantially as described.

This specification signed and witnessed this 30th day of September, A. D. 1902.

JOHN P. MÜLLER.

In presence of—

JOHN M. SCOBLE,
M. A. BRAYLEY.