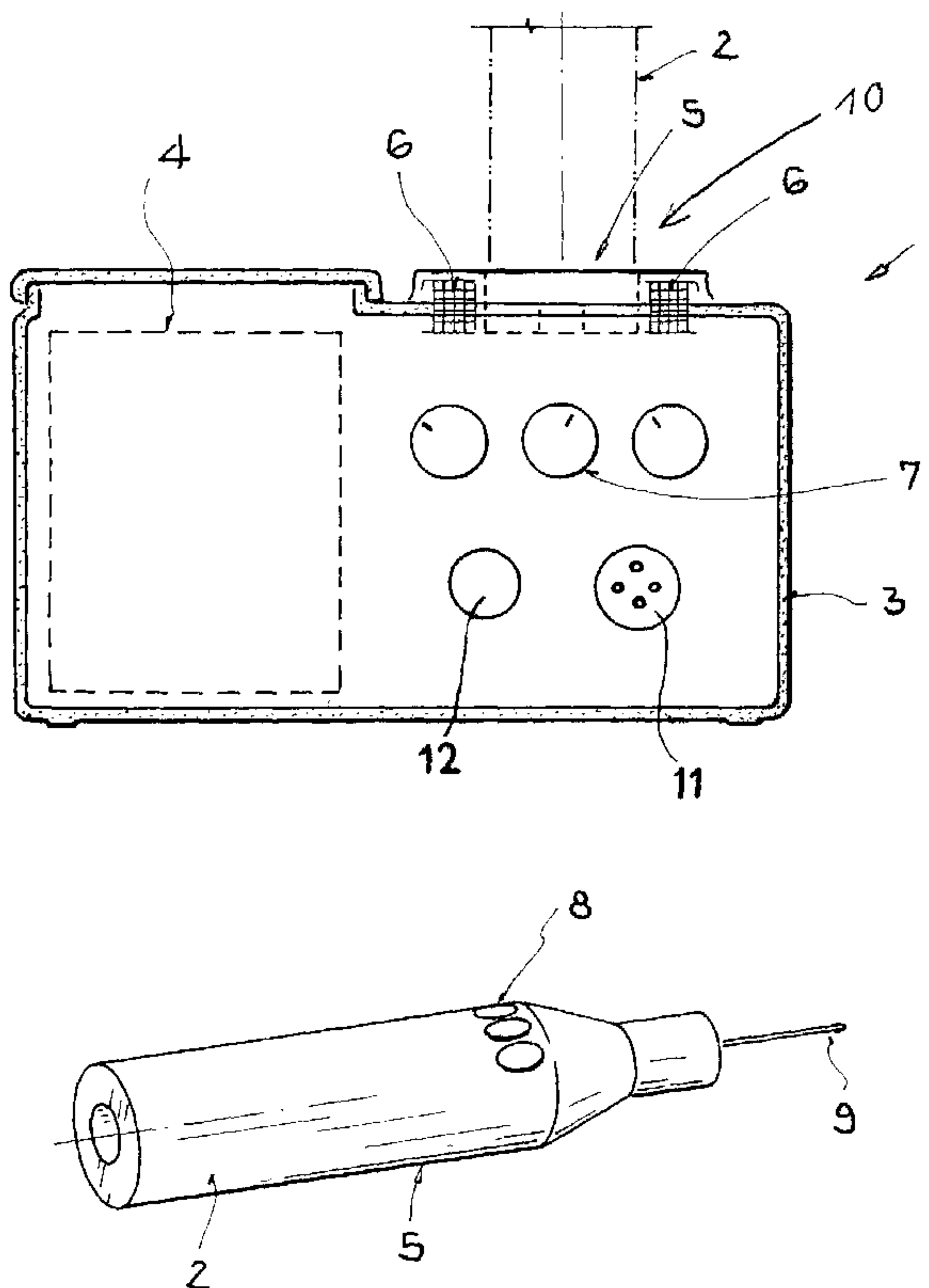




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(54) Titre : DISPOSITIF D'ALIMENTATION EN ENERGIE ELECTRIQUE D'UN STYLO ELECTRIQUE
 (54) Title: DEVICE FOR SUPPLYING AN ELECTRO-PEN WITH ELECTRICAL ENERGY



(57) Abrégé/Abstract:

The invention relates to a device for supplying electrical energy to an electro-pen (2) with an electric drive unit for driving a tool. The device comprises a console with an energy supply unit (1) which supplies the electric drive unit of the electro pen (2) with electrical energy. Said console with the energy supply unit (1) is equipped with an accumulator (4). The electrical energy supply from the console with the energy supply unit (1) to the electro-pen (2) takes place either via a sterilisable cable or inductively without an electrical connection. The console with the energy supply unit (1) is configured in such a way that it can be steam-sterilised. The device is mobile since it is not physically connected to a mains supply or a console. Sterility is also guaranteed.

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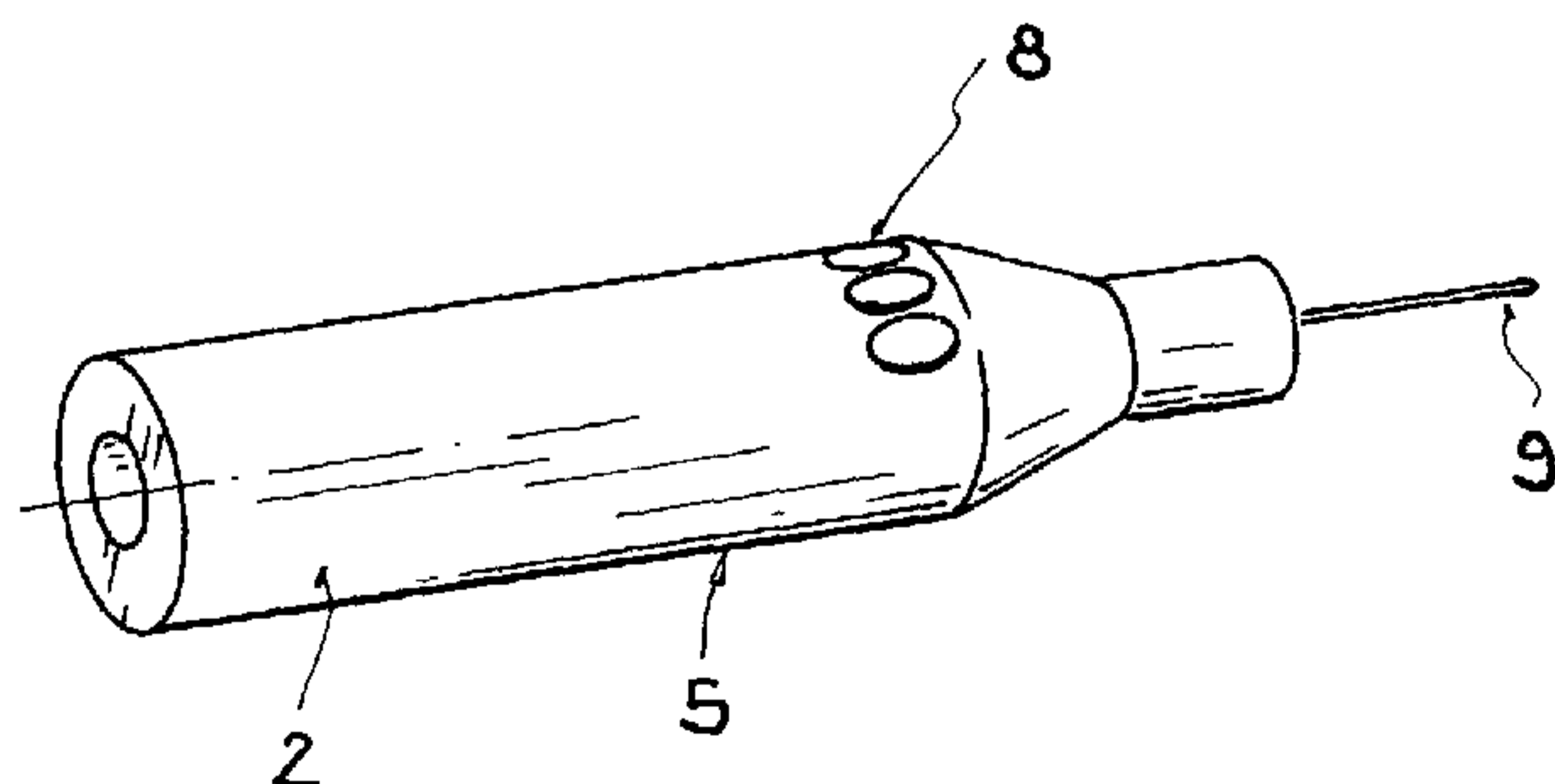
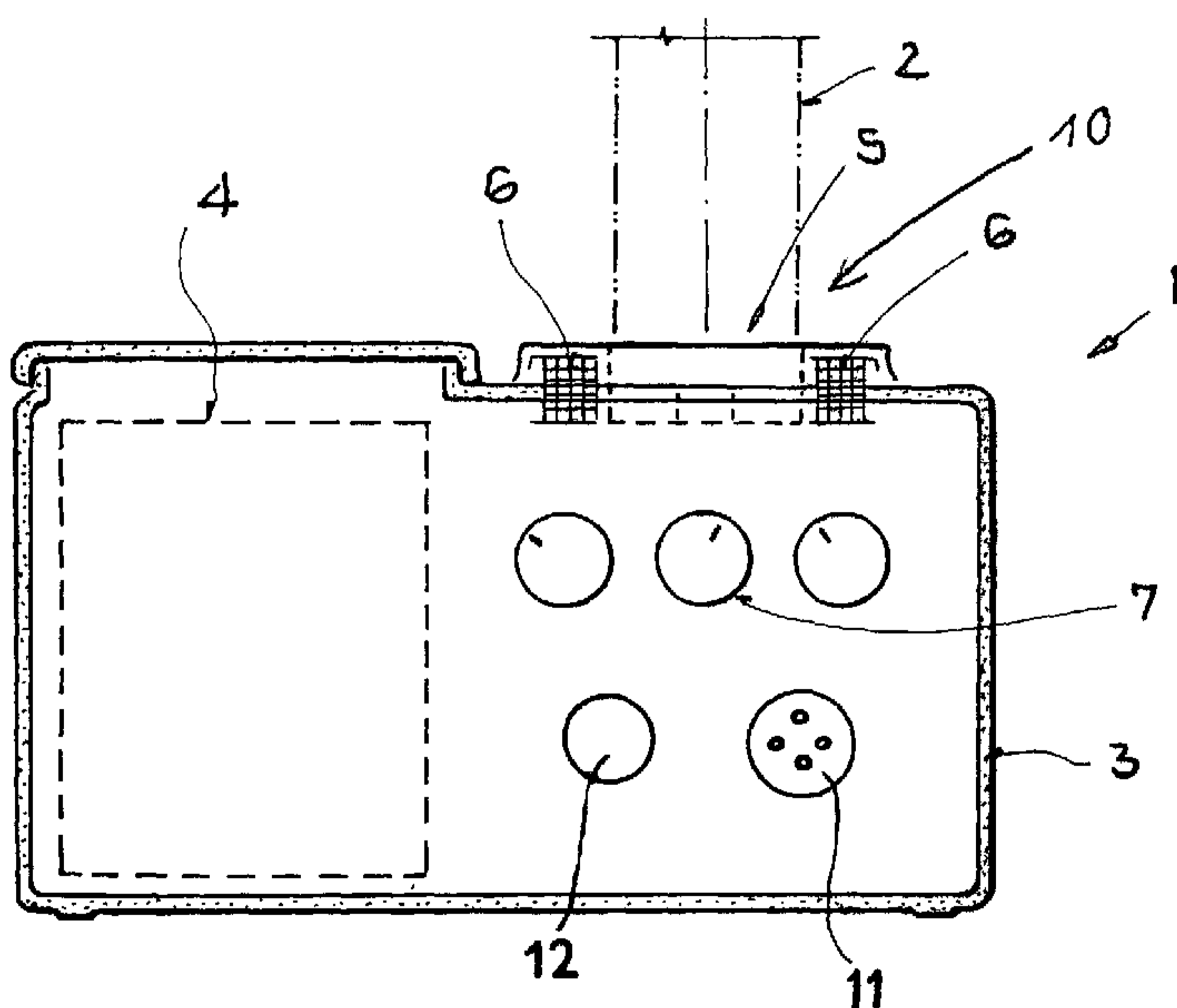
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(54) Title: DEVICE FOR SUPPLYING AN ELECTRO-PEN WITH ELECTRICAL ENERGY

(54) Bezeichnung: VORRICHTUNG ZUR VERSORGUNG EINES ELEKTRO-PENS MIT ELEKTRISCHER ENERGIE



(57) **Abstract:** The invention relates to a device for supplying electrical energy to an electro-pen (2) with an electric drive unit for driving a tool. The device comprises a console with an energy supply unit (1) which supplies the electric drive unit of the electro-pen (2) with electrical energy. Said console with the energy supply unit (1) is equipped with an accumulator (4). The electrical energy supply from the console with the energy supply unit (1) to the electro-pen (2) takes place either via a sterilisable cable or inductively without an electrical connection. The console with the energy supply unit (1) is configured in such a way that it can be steam-sterilised. The device is mobile since it is not physically connected to a mains supply or a console. Sterility is also guaranteed.

(57) **Zusammenfassung:** Die Vorrichtung dient der Versorgung mit elektrischer Energie eines Elektro-Pens (2) mit einer elektrischen Antriebseinheit für den Antrieb eines Werkzeugs. Die Vorrichtung umfaßt eine Konsole mit Energieversorgungseinheit (1), welche die elektrische Antriebseinheit des Elektro-Pens (2) mit elektrischer Energie versorgt. Die Konsole mit Energieversorgungseinheit (1) ist mit einem Akkumulator (4) ausgestattet. Die elektrische Energiezuführung von der Konsole mit Energieversorgungseinheit (1) an den Elektro-Pen (2) erfolgt entweder über ein sterilisierbares Kabel oder induktiv ohne elektrische Verbindung. Die Konsole mit Energieversorgungseinheit

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Abkürzungen wird auf die Erklärungen ("Guidance Notes on
Codes and Abbreviations") am Anfang jeder regulären Ausgabe
der PCT-Gazette verwiesen.*

Device for Supplying an Electropen with Electrical Energy

The invention relates to a device according to the preamble of claim 1 as well as an electropen for use with such a device according to the preamble of claim 9.

Such devices of the generic type find application especially in medicine, in particular in surgery. Electropens are even used, for example, in operations in the visual and hand area.

Electropens according to the state of the art consist of a drive unit in the form of a pen, i.e., in the form of a pen holder, an electric cable, and a console which converts the mains voltage into a low voltage suitable for the drive unit.

From DE-OS 197 13 224 A 1 an electromagnetic pen is known for the treatment of humans and animals. It serves, with the aid of magnetic fields of low intensity, to introduce drugs through the skin of humans and animals without perforating the skin. This electropen is operated with two microbatteries connected in tandem.

These electropens known according to the aforementioned state of the art have the disadvantage that the console with energy supply unit cannot be sterilized due to its construction. Furthermore, the console as a rule is plugged into a socket outlet and is thus immobile.

The objective of the present invention is to provide a device for supplying an electropen with electrical energy, said device being mobile and not physically connected to a mains supply or to a console, wherewith sterility is guaranteed.

According to the invention this objective is realized by the characterizing clause of claim 1.

The device according to the invention has the advantage that the cable to the mains is omitted and thus mobility is ensured. Through the omission of a battery in the electropen, the latter is significantly lighter and thus easier to handle. At the same time any connection of the electropen to the unsterile area is avoided. A further advantage lies in the fact that all the functions of the device can be operated directly by the operator.

In one variant, the electropen used together with the device has, in addition, the advantage that the supply cable is omitted and no large and heavy accumulator has to be integrated into the electropen itself.

Additional advantageous developments of the invention follow from the subordinate claims.

The console with energy supply unit is expediently configured to be liquid-tight in order to ensure that it can be sterilized and is resistant to hot steam. Steam sterilizability occurs at a temperature of 143° C, a relative humidity of 100%, and a pressure of 3 bar.

An embodiment example of the invention is represented in the single figure.

The single figure shows the device according to the invention with console and energy supply unit as well as an electropen.

The console with energy supply unit is denoted in the single figure by the reference number 1. From this, the electropen 2 is supplied with electrical energy either directly via a cable or indirectly via a charging device and small energy storage device. The electropen 2 is equipped with an electrical drive unit 5 for driving a tool. As a rule the electrical drive unit 5 is an electric motor, although other drive units are also conceivable which are moved through translation instead of through rotation.

The console and energy supply unit 1 can be sterilized according to the invention. For this purpose the console and energy supply unit 1 is enclosed in a liquid-tight housing 3. Since the console and

energy supply unit 1 can be sterilized, they can be operated directly by the surgeon, unlike a traditional console and energy supply unit 1.

The console and energy supply unit 1 is independent of the mains and thus mobile and equipped for this purpose with the accumulator 4 as energy source.

In an embodiment variant, a small, rapidly chargeable electrical energy source (for example, a capacitor) is housed in the electropen 2 which can be charged via the accumulator 4 through an electrical or inductive coupling with a corresponding device on the console with energy supply unit 1. This has the advantage that a large and heavy accumulator does not have to be used in the electropen 2. For charging, either electrical contacts or a transformer 6 with at least one coil is used in the console and energy supply unit 1 and in the electropen 2.

The console has a receiving holder 10 at which the electropen can be received for charging.

Since the console with energy supply unit 1 is independent of the mains, due to the accumulator 4 and the construction-related omission of electrical cable feeds from the mains to the console with energy supply unit 1, the entire system is no longer bound to one workplace and is thus mobile and can be moved from one place to another during an operation.

The reference number 7 denotes operating elements of the console with energy supply unit 1 and the reference number 8 denotes the operating elements of the electropen 2.

The console with energy supply unit 1 can however also have a cable connection 12 for operating the electropen 2 (via a cable which can be sterilized), as represented in the single figure.

Finally, the console with energy supply unit 1 is also still provided with a connection 11 to the mains for charging the accumulator 4.

Claims

1. Device for supplying electrical energy to an electropen (2) with an electrical drive unit for driving a tool where the device includes a console with energy supply unit (1) which supplies the electrical drive unit of the electropen (2) with electrical energy, characterized by the fact that

- A) the console with energy supply unit (1) is equipped with an accumulator (4),
- B) the supply of electrical energy from the console with energy supply unit (1) to the electropen (2) takes place either via a cable which can be sterilized or inductively without electrical connection, and
- C) the console with energy supply unit (1) is configured in such a manner that it can be sterilized by steam.

2. Device according to claim 1, characterized by the fact that its electrical and/or electronic components are configured to be liquid-tight.

3. Device according to claim 1 or 2, characterized by the fact that the console with energy supply unit (1) is configured to be independent of the mains and thus mobile.

4. Device according to one of the claims 1 to 3, characterized by the fact that the console with energy supply unit (1) has a connection (11) to the mains for charging the accumulator (4).

5. Device according to one of the claims 1 to 4, characterized by the fact that the console with energy supply unit (1) has an electrical cable connection (12) for connection to the electropen (2) by means of a cable which can be sterilized.

6. Device according to one of the claims 1 to 5, characterized by the fact that the console with energy supply unit (1) has a receiving holder (10) at which the electropen (2) can be received for charging and where locally

the inductive or electrical coupling between the console with energy supply unit (1) and electropen (2) can be produced.

7. Device according to one of the claims 1 to 6, characterized by the fact that either a sterilizable accumulator or non-sterilizable accumulator can be introduced sterilely into the console with energy supply unit (1) with the aid of a sterile covering.

8. Device according to one of the claims 1 to 7, characterized by the fact that a switched-mode power supply is used to charge the accumulator (4).

9. Electropen (2) for use with a device according to one of the claims 1 to 8, characterized by the fact that, in the electropen (2), an electrical energy storage device, preferably a capacitor or an accumulator, is installed which can be charged through an electrical or inductive coupling with a corresponding device on the console with energy supply unit (1) of the device via its accumulator (4).

10. Device according to one of the claims 1 to 8 with an electropen (2) according to claim 9, characterized by the fact that for inductive coupling one or more transformers (6), each with at least one coil, are provided in the console with energy supply unit (1) of the device and in the electropen (2).

11. Device according to one of the claims 1 to 8 with an electropen (2) according to claim 10, characterized by the fact that for electrical coupling one or more transformers (6) with at least two contacts are provided in the console with energy supply unit (1) of the device and in the electropen (2).

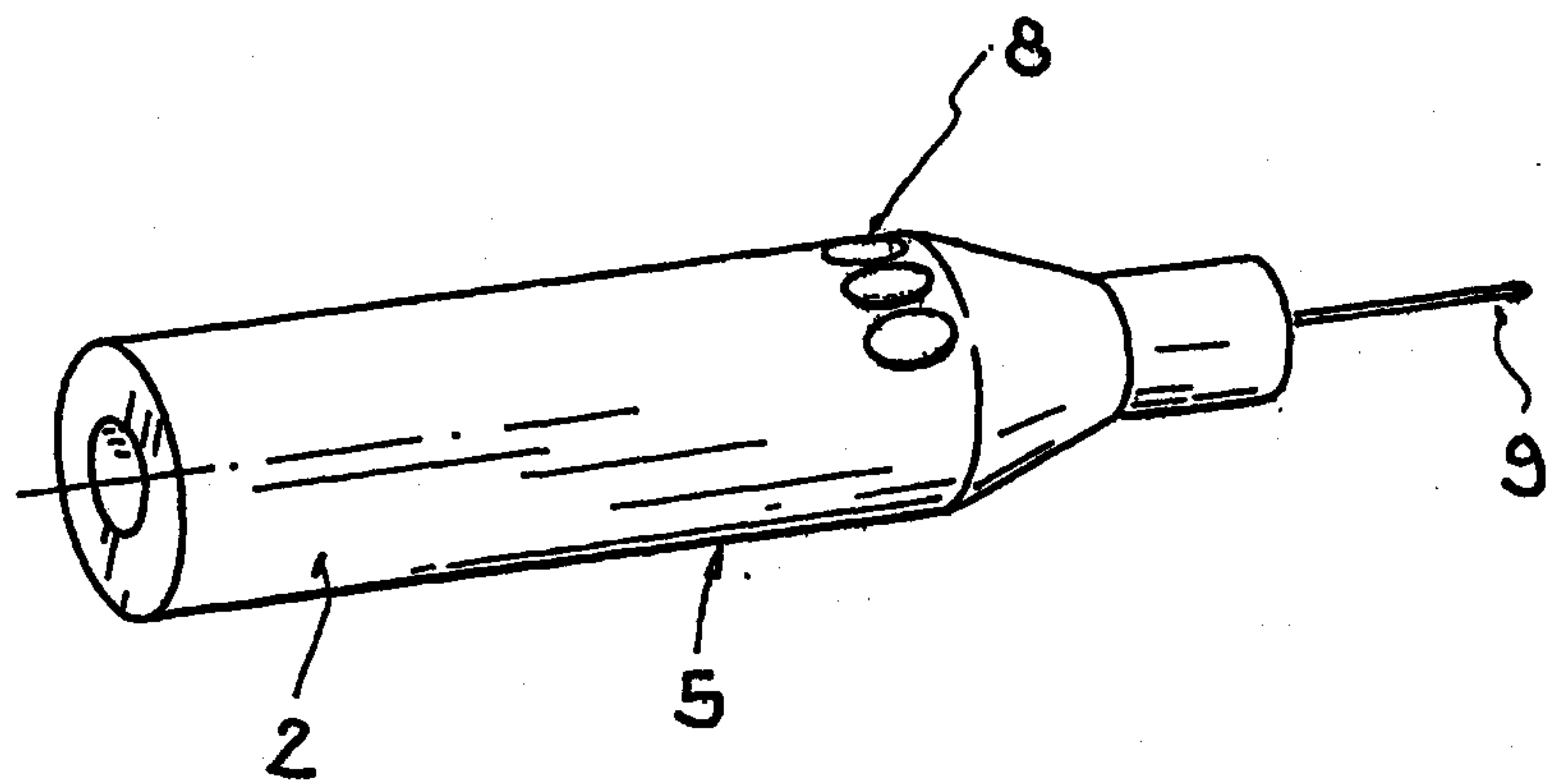
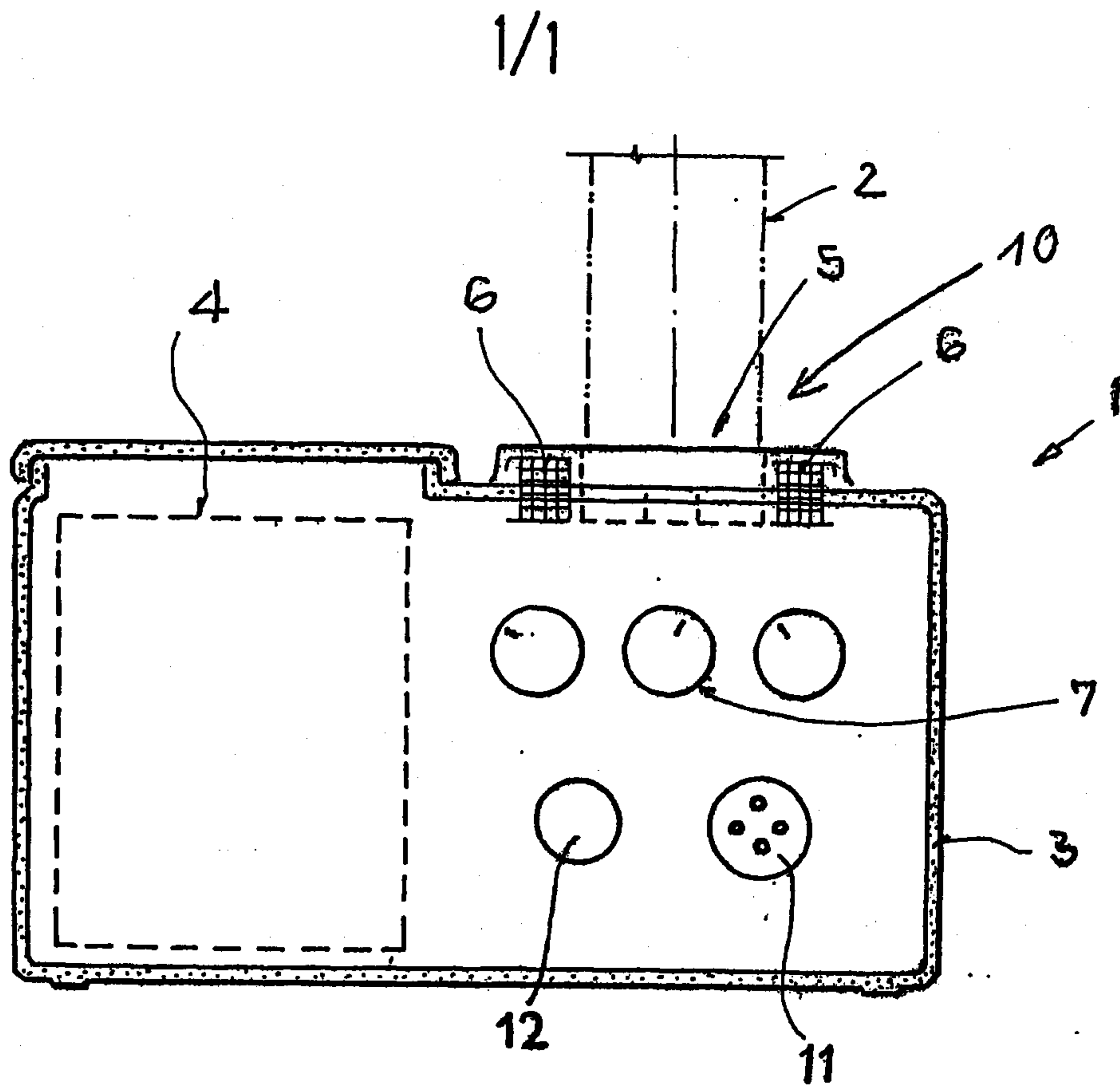


FIG.

