(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 949 005 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.10.1999 Bulletin 1999/41

(51) Int. Cl.[6]: **B05B 1/00**, B05B 9/08, B05B 15/06, A47L 11/34

(21) Application number: **98870073.8**

(22) Date of filing: **08.04.1998**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

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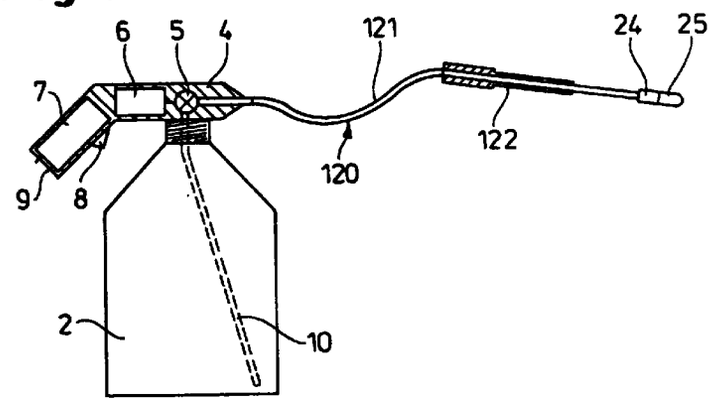
(54) Packaged product for cleaning

(57) The present invention relates to a packaged product comprising a package having a liquid reservoir (2) for containing a cleaning product, and a means for delivering the product in a labour efficient way and in a uniform manner. This is achieved by a packaged product in which the means for delivering the liquid comprises an electrically driven pump (5), and further comprises a spray arm (20), the spray arm (20) having at least one dispensing opening (25). The spray arm being either extended or extendible.

According to a second aspect of this invention a new use is achieved in which a cleaning product is applied to carpets and other floor coverings using a device comprising an electrically driven pump (5).

Fig. 2a



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Description

[0001] The present invention relates to a packaged product for the delivery of cleaning products comprising a surfactant, and to the use of the packaged product.

[0002] Trigger spray devices are known for the purposes of domestic cleaning, for example for cleaning hard surfaces such as windows, baths and ovens, as well as for spot cleaning of floor coverings such as carpets. Most trigger spray devices which are commercially available are manually activated, that is to say that the devices comprise a trigger which is activated by hand by the consumer. Most commonly this manual activation generates liquid pressure in a chamber by means of a positive deplacement pump by means of a positive deplacement pump which in turn drives the liquid from the chamber usually through a dispensing nozzle. Many dispensing patterns are possible, but a conical spray is the most common.

[0003] Large surfaces, such as carpets and other floor coverings are, however, difficult to treat with a hand activated trigger spray device. The large surface area demands repeated manual activation of the device many times. This is laborious, and usually results in an uneven application of product over the whole of the surface.

[0004] An electrically activated sprayer is known from US-A-3 993 250, issued on November 23, 1976, however there is no suggestion that this sprayer could be used for the purpose of cleaning surfaces such as carpets. Furthermore while this sprayer could take some of the laborious work out of the task when compared to manually activated trigger sprayers, it still does not fully address the problem of uneven application of product over the whole surface of the carpet or floor covering.

[0005] An extended arm is known from US-A-3 904 116, issued on September 9, 1975. This device is taught principally for use with the application of insecticides.

[0006] The object of the invention is firstly to provide a packaged product comprising a package having a liquid reservoir for containing a cleaning product, and a means for delivering the product in a labour efficient way and in a uniform manner. A further object of the invention is to provide a new use for the packaged product.

Summary of the Invention

[0007] According to the first aspect of this invention this object is achieved by a packaged product in which the means for delivering the liquid comprises an electrically driven pump, and further comprises a spray arm, the spray arm being either extended or extendible and having at least one dispensing opening so that in operation, the product is pumped by the electrically driven pump from the liquid reservoir, through the spray arm, to the product dispensing opening from which it is dispensed. It is further preferred that the spray arm communicates with the liquid reservoir by means of a flexible connector.

[0008] According to the second aspect of this invention a new use is achieved in which a cleaning product is applied to carpets and other floor coverings using a device comprising an electrically driven pump.

Brief Description of the Drawings

[0009]

Figure 1 shows a diagrammatic representation of a device having an extendible spray arm.

Figure 2a shows a diagrammatic representation of a device which is an alternative embodiment of the invention. This embodiment has a pump mounted on the reservoir.

Figure 2b shows a diagrammatic representation of a device which is an alternative embodiment of the invention. This embodiment has a pump mounted on the spray arm.

Figure 3 shows a diagrammatic representation of a device which is an alternative embodiment of the invention.

Detailed Description of the Invention

[0010] It is an essential feature of the packaged product of the present invention that it comprises an electrically driven pump. The electrically driven pump is used to pump product from the reservoir through the spraying arm and out of the product dispensing opening (or openings) located in the spraying arm. In this way the product can be applied to the surface to be treated. The product dispensing openings are preferably nozzles which are selected so that the sprayed product takes the form of a continuous stream or film, or of a discontinuous stream or film of fine particles, or of a mist, or of a foam. It is most preferred that the spray pattern is in the form of fine particles because this is the most efficient way to cover a large surface area with a small volume of product with an even coverage. In particular the spray pattern may be a flat spray, taking the form of a triangle with its apex at the nozzle, or it may take the form of a conical spray, again with its apex at the nozzle. The spray can be created, for example, by an impinchment type of nozzle, or by using spinner technology, or an oscillating fluid circuit. Other embodiments include a foaming nozzle or a deflection nozzle. Typically the product output is from about 20 ml/minute to about 400 ml/minute, and preferably from about 150 ml/minute to about 250 ml/minute for carpet cleaning.

[0011] It is preferred that the spray arm has one nozzle, but it may also have multiple nozzles located along

its length. The spray arm makes it easier to control where the cleaning product is sprayed. For example, when cleaning carpets the spray arm makes it easier to avoid spraying product onto furniture and walls, and also enables access into corners which would otherwise be difficult to reach. Furthermore, an ergonomically designed spray arm avoids the need for the user to have a bent back when spraying.

[0012] The electrically driven pump may be, for example, a gear pump, an impeller pump, a piston pump, a screw pump, a peristaltic pump, a diaphragm pump, or any other miniature pump. In the preferred embodiment the pump is a gear pump with a typical speed between 6000 and 12000 rpm.

[0013] The electrically driven pump must be driven by a means such as an electric motor. The electric motor typically produces a torque between 1 and 20 mN.m. The electric motor must, in turn be provided with a power source. The power source may be either mains electricity (optionally via transformer), or it may be a throw-away battery, or rechargeable battery. Most preferred are one or more AA rechargeable or disposable batteries, the batteries being housed in the package. The voltage output of the battery is typically between 1.5 and 12 Volts, with a preferred output between 3 and 6V.

[0014] The packaged product according to the present invention is preferably hand-held, and therefore preferably comprises a holding means. The holding means may be any sort of handle which will allow the user to pick up the packaged product and to carry it to the place where the spraying is to be carried out. The handle can be part of the container or of the implement housing. It is likely that the packaged product will be carried around a whole room when a carpet is being cleaned. The handle may be a simple protrusion or indentation which may be gripped by the user, or it may be a more sophisticated design for ergonomic reasons.

[0015] The spray arm may be rigidly extended. However such a spray arm can be difficult to store, and the spray arm is preferably extendible either by means of telescopic or foldable configuration. A telescopic configuration can be a liquid tight telescopic mechanism, or can have a tube running inside.

[0016] The liquid reservoir is preferably provided with a venting means in order to allow air into the reservoir as the product is pumped out. Venting can be obtained through, for example, one way valve, venting membrane, or mechanically or electrically operated valve. Alternatively the product may be contained within a flexible bag within the liquid reservoir, so that the flexible bag collapses as the product is pumped out. The liquid reservoir is also preferably provided with a means to be releasably engaged with the pump/motor assembly. This means that when the reservoir is empty it can be removed from the pump/motor assembly and either discarded or refilled. The full liquid reservoir can then be reconnected to the pump/motor assembly for further use.

[0017] The switch can be any suitable and ergonomic design to be operated usually by fingers or thumb. The switch can be provided with child safety features.

[0018] The cleaning products useful in the present invention can comprise various active components. The most useful components include surfactant; builders; bleach and bleach activators; enzymes and enzyme stabilisers; soil release agents, chelating agents; antiredeposition agents; aqueous or non aqueous dispersing agents; brightener; suds suppressor; dye transfer inhibiting agents.

[0019] Nonlimiting examples of surfactants useful herein typically at levels from about 1% to about 55%, by weight, include the conventional C_{11}-C_{18} alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C_{10}-C_{20} alkyl sulfates ("AS"), the C_{10}-C_{18} secondary (2,3) alkyl sulfates of the formula $CH_3(CH_2)_x(CHOSO_3^-M^+)$ CH_3 and CH_3 $(CH_2)_y(CHOSO_3^-M^+)$ CH_2CH_3 where x and (y + 1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilizing cation, especially sodium, unsaturated sulfates such as oleyl sulfate, the C_{10}-C_{18} alkyl alkoxy sulfates ("AE_xS"; especially EO 1-7 ethoxy sulfates), C_{10}-C_{18} alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the C_{10-18} glycerol ethers, the C_{10}-C_{18} alkyl polyglycosides and their corresponding sulfated polyglycosides, and C_{12}-C_{18} alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C_{12}-C_{18} alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates and C_6-C_{12} alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C_{12}-C_{18} betaines and sulfobetaines ("sultaines"), C_{10}-C_{18} amine oxides, and the like, can also be included in the overall compositions. The C_{10}-C_{18} N-alkyl polyhydroxy fatty acid amides can also be used. Typical examples include the C_{12}-C_{18} N-methylglucamides. See WO 9,206,154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C_{10}-C_{18} N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl C_{12}-C_{18} glucamides can be used for low sudsing. C_{10}-C_{20} conventional soaps may also be used. If high sudsing is desired, the branched-chain C_{10}-C_{16} soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful surfactants are listed in standard texts.

[0020] Figure 1 shows a diagrammatic representation of a device 1 comprising a liquid reservoir. The reservoir is a conventional bottle 2 with a handle 3. The device further comprises a unit 4 which is mounted on top of the bottle 2 and which contains the electrically driven pump 5, an electrical motor 6, and a rechargeable battery 7. An electrical circuit (not illustrated) is completed by means of a switch 8 in order to operate the motor 6 and drive the pump 5. Figure 1 also shows a recharging socket 9. The inlet side of the pump is connected to a

dip tube 10 which extends within the bottle 2 in order to remove product under vacuum from within the bottle when the pump 5 is operating. The outlet side of the pump is connected to an extendible spray arm 20 which comprises two pieces 21, 22. The two pieces are slidably connected 23 so that the spray arm can be extended to its maximum length. Figure 1 also shows an anti-dripping valve 24 and a nozzle 25 mounted at the free end of the spray arm. By free end it is meant the end which is not connected to the pump.

[0021] Figure 2a shows a diagrammatic representation of a device 1 comprising a liquid reservoir. The reservoir is a conventional bottle 2. The device further comprises a unit 4 which is mounted on top of the bottle 2 and which contains the electrically driven pump 5, an electrical motor 6, and a rechargeable battery 7. An electrical circuit (not illustrated) is completed by means of a switch 8 in order to operate the motor 6 and drive the pump 5. Figure 2 also shows a recharging socket 9. The inlet side of the pump is connected to a dip tube 10 which extends within the bottle 2 in order to remove product under vacuum from within the bottle when the pump 5 is operating. The outlet side of the pump is connected to a flexible spray arm 120 which comprises a flexible portion 121 and a rigid portion 122. Figure 2 also shows an anti-dripping valve 24 and a nozzle 25 mounted at the free end of the spray arm.

[0022] Figure 2b shows a diagrammatic representation of a device 1 which is similar to the device shown in figure 2a. However in figure 2b the unit 4 is not mounted directly on to the bottle 2. The flexible portion 121 is connected to the inlet side of the electrically driven pump 5. The dip tube 10 is formed by the free end of the flexible portion.

[0023] Figure 3 shows a diagrammatic representation of a device 1 which can be used with either one hand, or with two hands. The device is shown in cut-away cross-section. The device comprises a liquid reservoir which is a conventional bottle 9 from which liquid is pumped by an electrical pump/motor (5, 6) through a coiled hose 221 to a spray arm 220. The housing 204 also comprises a battery 7 and a switch 8. The spray arm can be attached to the housing of the device (for example by a clipping mechanism) or can be detached from the body of the device, the device being held in one hand, and the spray arm being held in the other hand. The housing 204 is designed so that the bottle 9 is inverted when the device is held by the handle 3 for use. The advantages of this configuration are that no dip tube is required, and fully emptying the bottle is easier. Furthermore, the short distance from the liquid to the pump inlet will allow fast priming of the pump 5 when it is unprimed.

Claims

1. A packaged product for the delivery of cleaning products comprising a surfactant, the packaged product comprising a liquid reservoir (2) for containing a product and a means for delivering the product, the means comprising an electrically driven pump (5), and characterised in that the means further comprises a spray arm (20), the spray arm (20) being either extended or extendible, and comprising at least one product dispensing opening (25), so that in operation, the product is pumped by the electrically driven pump (5) from the liquid reservoir (2), through the spray arm (20), to the product dispensing opening (25) from which it is dispensed.

2. A packaged product according to claim 1 wherein the packaged product further comprises a holding means (3), and wherein the distance from the centre of the holding means (3) to the furthest product dispensing opening (25) is at least 0.2 metres, preferably at least 0.4 metres.

3. A packaged product according to either of claims 1 or 2 wherein the spray arm (20) communicates with the liquid reservoir (2) by means of a flexible connector (121).

4. A packaged product according to claim 1 wherein the electrically driven pump (5) is provided with an electrical power source, the source comprises at least one electrical battery (7), the battery being housed in the package.

5. A packaged product according to claim 4 wherein the battery (7) is rechargeable.

6. Use of a hand-held device comprising a liquid reservoir (2) for containing a cleaning product for the purpose of cleaning carpets and other floor coverings characterised in that the device comprises an electrically driven pump (5), the use comprising the steps of pumping the product by means of the electrically driven pump (5) from the liquid reservoir (2) to a product dispensing opening (25) from which it is dispensed.

7. Use of a hand-held device according to claim 6 wherein the device further comprises a spray arm (20), the spray arm (20) being either extended or extendible, and comprising at least one product dispensing opening (25).

8. Use of a hand-held device according to claim 6 wherein the device comprises a holding means (3), and wherein the distance from the centre of the holding means (3) to the furthest product dispensing opening (25) is at least 0.2 metres, preferably at least 0.4 metres.

9. Use of a hand-held device according to either of claims 7 or 8 wherein the spray arm communicates with the liquid reservoir (2) by means of a flexible

connector (121).

Fig. 1

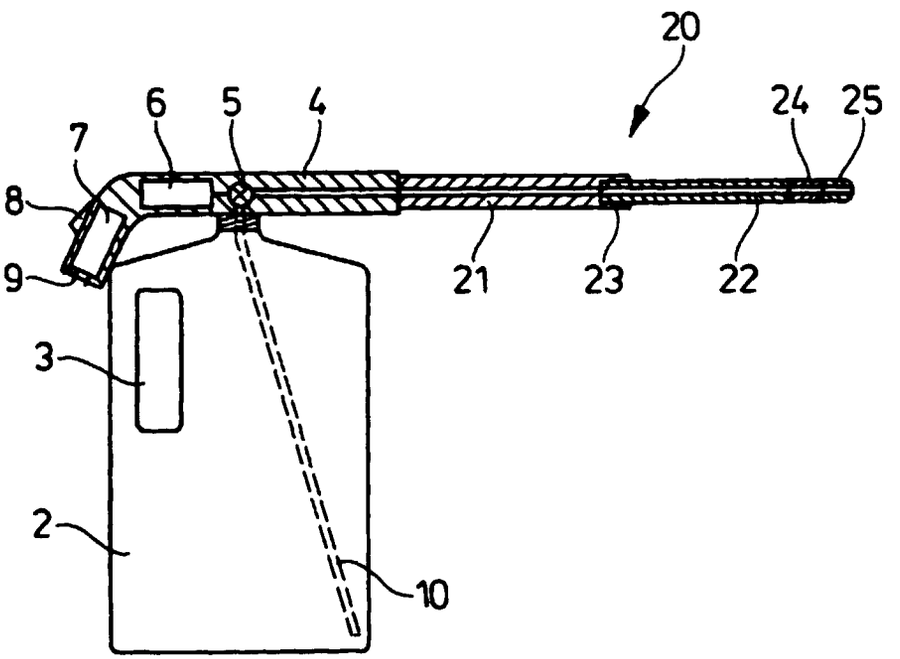


Fig. 2a

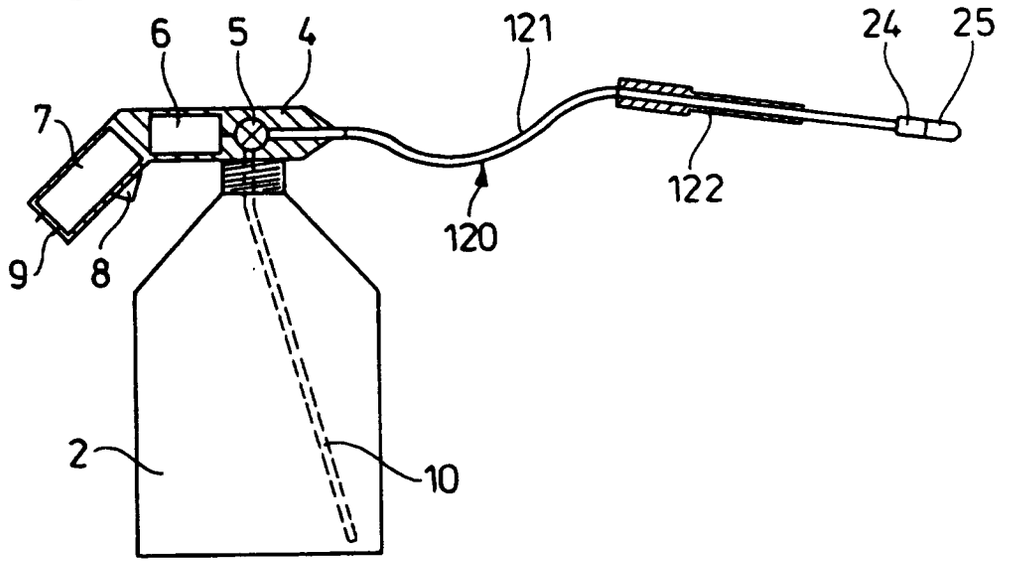


Fig. 2b

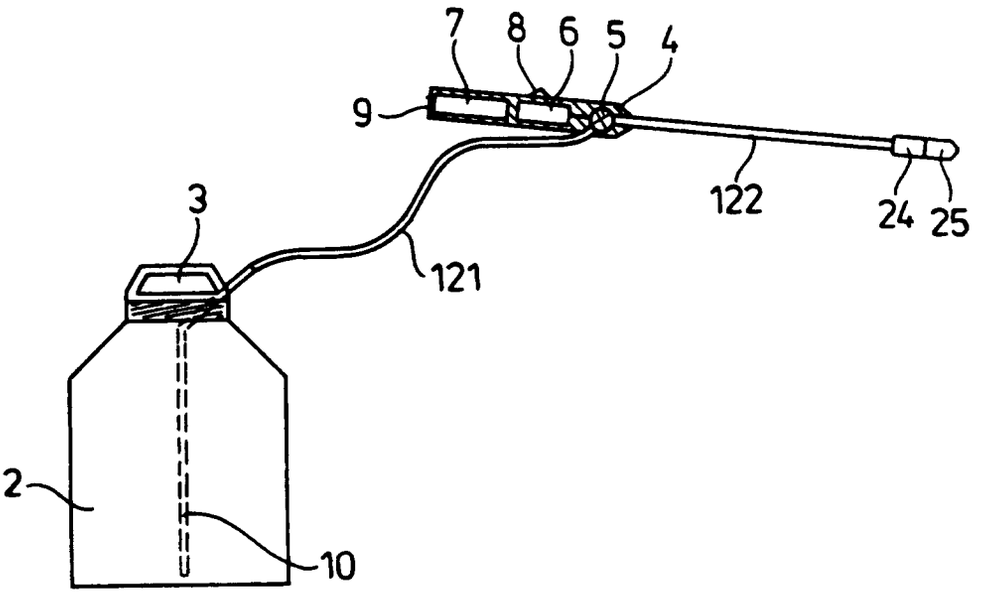
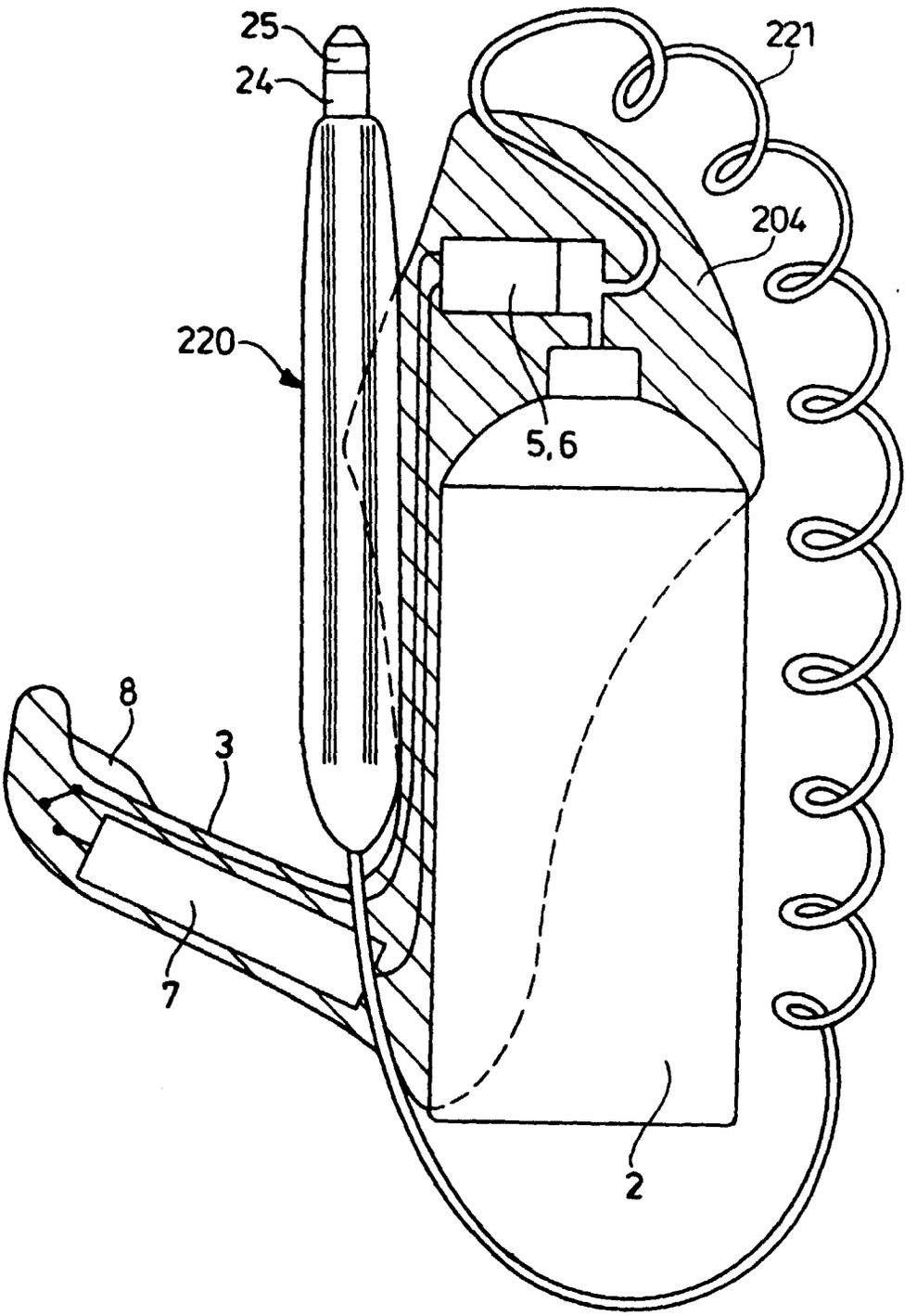


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 98 87 0073

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB 2 232 068 A (KENNETH SIDNEY TEDDER) 5 December 1990 * abstract * * page 5, line 24 - page 6, line 11 * * page 10, last paragraph - page 11, last line; figures 1,3,6 * -----	1-9	B05B1/00 B05B9/08 B05B15/06 A47L11/34

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B06B
B05B
A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 September 1998	Guastavino, L

CATEGORY OF CITED DOCUMENTS

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