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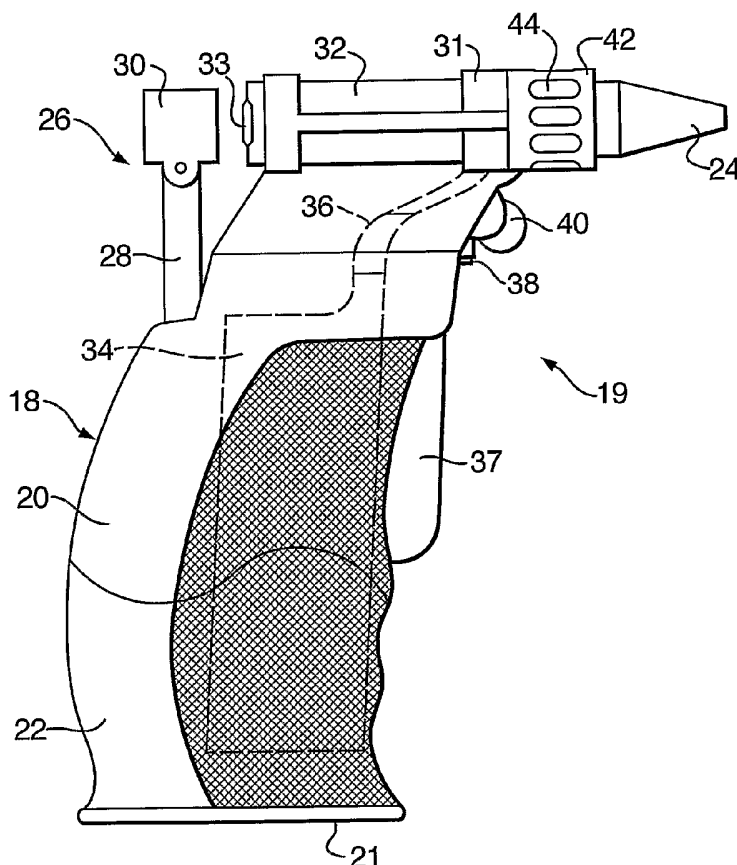
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(54) Title: DISPENSING APPARATUS AND METHOD



(57) Abstract: Dispensing apparatus (2, 19, 46, 50, 80) contains a cleaning, personal care insecticidal or aircare agent impregnated in roller (10) or sheet (64) or contained in a cartridge (32), a geldisc (58) or a cansister, a non-electrical heating means (16, 42, 56, 72), arranged in use to effect heating of a portion of the agent, and means (10, 24, 50, 64, 86) to enable dispensing of the agent from the dispensing apparatus.



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DISPENSING APPARATUS AND METHOD

This invention relates to methods of dispensing cleaning, personal care, pesticidal or aircare agents; and to
5 dispensing apparatus therefor.

There are many known forms of cleaning, personal care and aircare apparatus, in which a reservoir of cleaning composition or personal care composition or volatile
10 aircare composition is connected to a dispensing means such as a roller ball, spray head and the like. Many known applicators simply comprise the reservoir and dispensing means, and when it is desired to dispense the composition, a user effects a mechanical action in order
15 that the composition may flow from the reservoir to the dispensing means and out therefrom. Such devices are adequate for many compositions, but there are disadvantages exhibited when the compositions which are viscous, or require elevated temperature in order to
20 function well. As one example, depilatory and epilatory creams may be relatively viscous, and are sometimes difficult to dispense from known devices. As another example, some cleaning compositions require elevated temperature in order to activate the active cleaning
25 components within the composition.

Attempts have been made to provide devices which incorporate electrical heating means. However, if these devices use mains electricity they must be plugged in,
30 which may not be convenient or even possible. If they use batteries, they may be large and/or quickly exhausted during use and/or unable to provide a large rise in temperature.

It would therefore be advantageous to provide a cleaning, personal care or aircare agent dispensing apparatus in which a heating means is incorporated which is not reliant
5 on battery technology, and does not necessitate the use of large components and external power sources. It would furthermore be advantageous to provide a cleaning, personal care or aircare agent dispensing apparatus in which a large quantity of heat can be generated if
10 required, for example in order to activate desired components of the agent and/or to produce a fast or large rise in temperature.

According to a first aspect of the present invention there
15 is provided dispensing apparatus comprising means (hereinafter "mounting means") to mount a cleaning, personal care, pesticidal or aircare agent (hereinafter "active agent") to the dispensing apparatus, a non-electrical heating means, arranged in use to effect
20 heating of at least a portion of active agent, and means (hereinafter "dispensing means") to enable dispensing of heated active agent from the dispensing apparatus.

By "cleaning agent" we mean any agent or composition
25 capable of providing one or more of a cleaning, disinfecting, sanitizing, neutralising and allergen - combating effect, particularly but not exclusively on a surface of an article, whether in a domestic environment, an institutional environment, an industrial environment or
30 otherwise. It may include water per se.

By "personal care agent" we mean any agent capable of use in a personal care, health, grooming or wellbeing

application, particularly but not exclusively on a bodily surface, notably hair and/or skin.

By "aircare agent" we mean any agent or composition
5 capable of providing a cleaning, disinfecting, sanitizing, neutralising or allergen combating effect in an airspace, whether in a domestic environment, an institutional environment, an industrial environment or otherwise.

10 A "pesticidal agent" herein is preferably an insecticidal or miticidal agent.

The means to mount an active agent may comprise means to house the agent on or in the dispensing apparatus proper;
15 that is, with the heating means and the dispensing means; for example in or on the same housing. The means to house an active agent may comprise an active agent receptacle mounted to the dispensing apparatus.

20 Such a receptacle may comprise a canister, bottle, box, tin, bag, pouch, vial or the like, for example, or a material capable of being impregnated, coated or covered with an active agent, such as a porous or fibrous material, for example. The material may be in the form of
25 a sheet.

The receptacle may be refillable. The receptacle may comprise an inlet, for the ingress of active agent into the receptacle.

30

The receptacle may be fixedly mounted to the dispensing apparatus.

In preferred embodiments, however, the receptacle is demountably mounted to the dispensing apparatus.

Alternatively the means to mount an active agent may
5 comprise a connection or delivery means, arranged to operably cooperate with a separate source of active agent, which source may be a container such as a box, bag, tin, canister, pouch, bottle, vial and the like, for example, or a sheet article such as an agent impregnated wipe, pad,
10 sheet, mat, sponge, for example.

The connection means may comprise a movable member, preferably a rotatable member, such as a roller for example, on which a sheet article containing an active
15 agent may be mounted.

The means to mount the active agent preferably comprises a conduit in fluid communication with the dispensing means.

20 The dispensing means preferably comprises a control means, arranged in use to enable control the amount and/or velocity and/or extent of egress of the active agent. The control means may comprise any suitable device, such as a valve, for example.

25

The dispensing means may comprise a dispensing aperture in fluid communication with the active agent mounting means.

The dispensing aperture may comprise any suitable shape,
30 and may be for example, circular, oval, elliptical, quadrilateral (or any other regular or irregular polygon-shaped aperture). The dispensing aperture may comprise an

elongate slot, preferably a rectangular slot or an elliptical slot.

The dispensing means may comprise a plurality of
5 dispensing apertures, or may comprise a dispensing mesh or screen, through which the active agent may be dispersed.

The dispensing means may comprise a dispensing nozzle. Preferably the dispensing nozzle comprises one or more
10 apertures formed therein. The or each aperture may be as described herein above in relation to dispensing apertures. Preferably the nozzle is demountably connected to the dispensing apparatus.

15 The dispensing means may comprise a rotatable member comprising one or more dispensing apertures. The apertures may be as described hereinabove. The rotatable member may comprise a roller. The roller may comprise a coating or layer of porous or fibrous material, which
20 material allows diffusion of the active agent across substantially the whole roller surface. The material may comprise a sheet of porous or fibrous material.

The dispensing means may comprise a plurality of
25 interchangeable demountable nozzles.

The non-electrical heating means may effect heating of the active agent prior to, during and/or after dispensing of said portion from the dispensing apparatus.

30

The non-electrical heating means preferably comprises a heating means powered by a consumable fluid, and thus preferably comprises fluid consumption means, at which

heat is generated. The fluid consumption means is preferably in fluid communication with a fluid receptacle, or is arranged in use to be operatively connected to a demountable fluid receptacle.

5

The fluid receptacle may comprise a fluid canister, or any other suitable receptacle. Suitably the fluid receptacle is refillable. The fluid receptacle is preferably demountably connected or connectable to the dispensing apparatus.

10

The fluid consumption means comprises means to consume the fluid, for example by the conventional process of flame combustion; and/or to effect non-flame combustion of the fluid so as to generate heat. A preferred apparatus provides heat by non-flame combustion at least in steady-state operation. During start-up it may have undergone flame combustion until conditions were suitable for non-flame combustion.

20

Preferably the fluid is a gas or liquid. The fluid is preferably a gas at ambient temperature and pressure, and which may be liquefied in a pressurised fluid receptacle.

25 Suitable fluids include butane and propane, whether in gaseous form, or liquid form, for example.

Preferably the fluid consumption means comprises a catalytic means able to support non-flame combustion of the fluid, to generate heat.

30

A catalytic means preferably comprises a support part which carries a catalytic material. Suitably the means is

coated with the catalytic material. In preferred
embodiments the consumption means comprises a mesh screen
which carries a catalytic material. The mesh screen may
comprise a substantially planar screen, such as a disc or
5 quadrilateral, or may comprise a mesh three-dimensional
framework for example, such as a mesh cylinder, a coil and
the like.

In many cases the catalytic material may need heating to
10 its catalytically active state, that is, the temperature
at which catalytic oxidation of the fluid commences and is
maintained. To this end the consumption means preferably
comprises an ignition means, arranged in use to initially
ignite the fluid in order to heat the catalytic material
15 to its active state. The ignition means may comprise a
flint wheel or an electrode comprising a piezoelectric
crystal. When the catalytic material is very active, the
heat generated by the ignition means may be sufficient to
heat the catalyst to its active temperature without
20 formation of a flame. However with relatively inactive
catalysts it may be necessary to initiate a flame for a
period of time to heat the catalyst to its catalytically
active state.

25 The catalytic material may comprise a precious metal, more
preferably platinum. Suitably the catalytic material is
supported on aluminium or an aluminate compound, a quartz
compound, a silicate or glass.

30 The apparatus may include means for raising water vapour,
or preferably, steam. This may assist in some of the uses
which are envisaged. For example it may boost the
efficacy of certain sanitising or allergen combating

procedures. Thus the apparatus may have a replenishable water source mounted to it, integral, or separate but connected. The heater means for the water may be additional to the heater means for the active agent or, 5 preferably, the same heater means may be used for both functions.

According to a second aspect of the invention there is provided dispensing apparatus of the first aspect of the 10 invention, having an active agent mounted thereto.

A cleaning agent may comprise (without limitation) one or more ingredients selected from:

15 (1) a surface active agent such as a non-ionic, anionic, cationic, zwitterionic or amphoteric surfactant. Suitable non-ionic surfactants include alkoxyated alcohols, particularly alkoxyated fatty alcohols. These include ethoxyated and propoxyated fatty alcohols, as well as 20 ethoxyated and propoxyated alkyl phenols, both having alkyl groups of from 7 to 18, more preferably 10 to 16 carbon chains in length. Examples of alkoxyated alcohols include certain ethoxyated alcohol compositions presently commercially available from the Shell Oil Company 25 (Houston, TX) under the general trade name NEODOL (trade mark), which are described to be linear alcohol ethoxyates, certain compositions presently commercially available from the Union Carbide Company, (Danbury, CT) under the general trade name TERGITOL (trade mark) which 30 are described to be secondary alcohol ethoxyates, and contain compositions present commercially available from Clariant (Muttenez, Switzerland) under the general trade name GENAPOL (trade mark) and which are described to be

linear and branched alcohol ethoxylates. Examples of alkoxyated alkyl phenols include certain compositions presently commercially available from the Rhône-Poulenc Company (Cranbury, NJ) under the general trade name IGEPAL
5 (trade mark), which are described as octyl and nonyl phenols

(2) a wax or oil. Suitable waxes include synthetic and natural waxes, such as carnauba wax, beeswax, paraffin
10 wax, microcrystalline wax, calendula wax and the like. Suitable oils include synthetic and natural oils such as mineral oil, paraffin oil, plant oils, and the like

(3) a bleaching agent. The bleaching agent may comprise
15 chlorine based bleach, such as an alkali metal chlorite or hypochlorite, or an active oxygen based bleach such as a perborative, percarbonate, perphosphate, persulphate or persilicate salt, for example, a peroxyacid compound with hydrogen peroxide, or percarbonate, perbenzoic acid based
20 compounds and alkyl percarboxylic acid based compounds

(4) an enzyme, for example a lipase, protease, cellulase or amylase

25 (5) a biocide, for example a bactericide, viricide, fungicide, herbicide, algicide or parasiticide

(6) a foaming agent

30 (7) a fragrance

(8) a colorant, for example a pigment or dye

- (9) a builder or filler, which may be inorganic or organic
- (10) a viscosity modifying agent, for example a polymeric or oligomeric compound, such as a polycarboxylic acid compound, or, especially, a salt thereof, a polyacrylic acid, a polyacrylate, a poly(alkylacrylic acid), and/or a poly(alkylacrylate); with the alkyl groups preferably being C₁₋₄ alkyl groups. Suitable poly(alkylacrylic acids) include poly(methylacrylic acid), poly(ethylacrylic acid) and poly(propylacrylic acid). Suitable poly(alkylacrylates) include poly(methacrylate), poly(ethacrylate) and poly(propylacrylate), polyethylene glycols, and polyoxyalkylenes, such as polyoxyethylenes
- (11) buffers, for example borate, phosphate, or carbonate buffers
- (12) inorganic salts and metal oxides
- (13) chelating agents, for example tetrasodium EDTA
- (14) solvents, including water, and organic solvents such as alcohols
- (15) polymers
- (16) inorganic acids, for example hydrochloric acid and nitric acid
- (17) organic acids and/or their corresponding salts, for example citric acid, malic acid, lactic acid, succinic acid and the like

(18) siloxanes.

The cleaning agent may comprise any suitable compound of use in cleaning, which can be a component of a composition
5 which is effective - preferably of increased effectiveness - at elevated temperature. Suitable cleaning agents or compositions include those intended to be used for general cleaning per se, for example detergents, anti-static compositions, bleaches, polishes, descalers, sterilising
10 compositions, stain removal compositions, deodorising compositions, allergen deactivating, anti-bacterial compositions and the like.

A personal care agent may include any one or more of the
15 components (1) to (18) listed above and may alternatively or additionally include one or more of the following ingredients:

(1) a depilatory agent, by which we mean a hair-degrading
20 agent, for example potassium thioglycolate

(2) an epilatory agent, by which we mean a tackifying hair-removal agent, for example a rosin, a gelled polyvinyl alcohol or a sugar-based composition
25

(3) an emollient

(4) a cosmetic colourant

30 (5) a medicinal or pharmaceutical agent or composition

(6) an aromatherapy product, such as a natural aromatherapy oil or scent.

The personal care agent may comprise any suitable personal care agent or composition as are known to those skilled in the art.

5

The personal care agent may for example be a body wash, shower gel, depilatory composition, epilatory composition, cosmetic composition such as make-up, a hair styling product such as a hair gel or hair-cream composition, an
10 anti-bacterial skin and face wash, a moisturising composition, a medicinal topological composition, an aromatherapy composition or insect repellent.

An aircare agent may comprise one or more of the above-
15 mentioned classes of components but in particular may include one or more of:

(1) a volatile insecticide

20 (2) a volatile insect repellent

(3) a volatile miticide

(4) a volatile mite repellent

25

(5) a volatile allergen deactivant.

The active agent may be formulated as a composition which is a solid, liquid or gas, preferably a solid or liquid,
30 at ambient temperature and pressure, and in that form within the device, before heating. It preferably comprises a fragrance in addition to one or more of the volatile components mentioned above.

In preferred embodiments the composition may be heated by the non-electrical heating means, prior to or during dispensing from the device such that the agent undergoes a transformation or partial transformation in physical state. For example if the agent is a solid it may be transformed into a gel, viscous liquid, free-flowing liquid or gas; if the agent is a liquid, including a solution or suspension of solid in liquid, it may become a less viscous solution or suspension, for example, or a gas.

Alternatively or additionally, in some embodiments the composition may be heated such that one or more ingredients which are inactive at ambient temperature become activated. There may be two or more ingredients which when heated, become activated or sensitive and react with one another or react with non-active ingredients. For example the cleaning or personal care agent may comprise an enzyme and an enzyme catalyst, substantial interaction therebetween only occurring on heating the two ingredients above a threshold temperature.

According to a third aspect of the present invention there is provided a method of dispensing an active agent, the method comprising:

- (a) providing dispensing apparatus of the first aspect of the invention;
- (b) mounting a source of active agent to the dispensing apparatus;
- (c) heating at least a portion of the agent; and

- (d) simultaneously or subsequently, dispensing the agent at an elevated temperature.

According to a fourth aspect of the invention there is
5 provided dispensing apparatus comprising a housing on
which is mounted a non-electrical heating means in
operative communication with a rotatable member. This
apparatus may be used to dispense any active agent as
hereinbefore described, as well as other active agents
10 which benefit from heating.

The non-electrical heating means is preferably as
described hereinabove for the first and second aspects of
the invention.

15

The rotatable member may comprise a roller.

The rotatable member may comprise a rotatable cleaning
head. The rotatable cleaning head may comprise a brush
20 head.

The dispensing apparatus preferably comprises a handle.
Suitably the handle is situated at one end of the housing
and the rotatable member is situated remote from the
25 handle. The housing may comprise an elongate housing
comprising a handle at one end thereof and the rotatable
member at the other end thereof.

The type of apparatus and its intended use will be
30 determined by the rotatable member, but may for example be
a toilet brush comprising a rotatable brush head, a food
whisk comprising a rotatable whisk head, a mop comprising
a rotatable mop head, a roller comprising a rotatable

roller head, which may be arranged to mount a cleaning wipe or the like, or alternatively may be a paint roller which includes a rotatable roller head of the type capable of dispensing paint, for example.

5

For a better understanding of the invention and to show how embodiments of the same may be put into effect, the various aspects of the invention will now be described by way of example only with reference to the accompanying drawings in which:

10

Figure 1 illustrates a plan view of a first embodiment of dispensing apparatus of the invention;

15 Figure 2 illustrates a second embodiment of dispensing apparatus of the invention;

Figure 3 illustrates a perspective view of a third embodiment of dispensing apparatus of the invention;

20

Figure 4 illustrates a perspective front view of a fourth embodiment of dispensing apparatus of the invention; and

Figure 5 illustrates a plan view of a fifth embodiment of dispensing apparatus of the invention.

25

We turn firstly to Figure 1.

Figure 1 is a plan view of a first embodiment of dispensing apparatus 2 of the invention. The dispensing apparatus 2 includes a handle 4 from which extends an elongate shaft 5, which splits at its distal end into bifurcated arms 8 and 9, between the ends of which is

30

mounted a means to enable dispensing of a cleaning, personal care, pesticidal or aircare agent from the device in the form of a rotatable roller 10, which also functions as a means to mount any such "active agent" to the dispensing apparatus 2. The roller 10 incorporates a connection means (not shown), on which is mountable a non-woven wipe which is impregnatable with an active agent. Thus the roller 10 forms the means to mount an active agent indirectly via an impregnated cleaning wipe.

10

The dispensing apparatus 2 also incorporates a non-electrical heating means in the form of a heating cylinder 16, consisting of a fine aluminium cylinder mesh, on which is coated a catalytic platinum material. Extending from the mesh 16 is a gas pipe 14, which extends through the right arm 9 of the elongate shaft 5 into the handle 4 where it connects to a butane gas canister 12. At the end of the handle 4, is an access means in the form of a handle cover 17, detachably connected to the end of the handle 4. Thus, in use the cover 17 may be removed in order to gain access to the inside of the handle, and withdraw or insert gas canisters 12, when the gas canister 12 within the handle 4 is empty.

Use of the dispensing apparatus 2 of Figure 1 will now be described. The cover 17 of the handle 4 is firstly opened to enable access to the inside of the handle 4. A butane gas canister 12 is then inserted into the handle 4 and connected to the gas pipe 14 by any suitable means such as a quick fit plug-in means (not shown).

An impregnated wipe, such as a cleaning wipe including a polishing composition or detergent composition, is then

connected to the heated roller 10, such that the wipe substantially adheres to the entire cylindrical surface of the roller 10.

5 When it is desired to use the dispensing apparatus 2 of Figure 1, a user firstly activates the device by pressing the on/off switch 18 which is operatively connected to the gas canister and heated roller 10, such that the heated roller 10 and gas canister are activated. Upon activation
10 of the gas canister 12, gas is transported from the canister along the gas pipe 14 and into the heated roller 10, in the vicinity of the mesh cylinder 16. Also upon activation of the on/off switch 18, an ignition means is activated to ignite the gas in the vicinity of the mesh
15 cylinder 16, such that a small flame and heat is generated, sufficient to transform the catalytic platinum compound on the aluminium mesh cylinder 16 in order to obtain its activation state and auto catalytic function. When the platinum catalyst activates, in the activated
20 state the catalyst generates sufficient heat to continue combustion of the gas coming out from the gas pipe 14, in order to heat the aluminium mesh of the heated cylinder 16, thereby indirectly heating the roller 10 across the entire cylindrical surface thereof, and thus the heating
25 attached cleaning sheet. In this way, the agent impregnated in the cleaning sheet is arranged to heat up, such that its physical state is changed from, for example, a semi solid paste to a viscous liquid, in order that the active agent can be transferred from the sheet to a
30 surface to be treated. Thus the active agent is heated in order to facilitate more rapid and easier covering of the surface to be treated.

We turn next to Figure 2 which illustrates a side view of a second preferred embodiment of dispensing apparatus 19 of the invention. The dispensing apparatus 19 comprises a "gun" format comprising a handle 18 consisting of an upper handle casing 20 and disconnectable lower handle casing 22. The lower handle casing 22 includes a base plate 21. The dispensing apparatus 19 comprises means to mount an active agent in the form of a connector 31 into which the user can insert, for example, a cartridge 32 filled with, for example, a cleaning or polishing composition. The dispensing apparatus 19 includes means for the dispensing of the active agent from the dispensing apparatus 19 in the form of a dispensing nozzle 24 and a manually operable squeeze piston 26 comprising a piston body 28 and removable head 30. The squeeze piston 26 is arranged to be located on the upper portion 20 of the handle 18, such that the head 30 of the squeeze piston 26 is adjacent to one end of the cartridge 32 filled with the active agent. The dispensing apparatus 19 further includes a non-electrical means to heat the active agent within the cartridge 32 in the form of a mesh cylinder 42 constructed of aluminium, and coated with a catalytic platinum agent. The mesh cylinder 42 is covered by a thermally insulating cover (not shown) and includes a number of combustion gas apertures 44 through which gases of combustion may leave the dispensing apparatus 2 during heating. The non-electrical heating means further comprises a butane gas cylinder 34 located within the handle of the device 19, and which is operably connected to a gas pipe 36 the distal end of which is operably connected to the mesh cylinder 42. The heating means further comprises a heating trigger 37 operably connected to both the gas

canister 34 and an ignition means in the form of a flint 38 and spark wheel 40.

During use of the device 19, firstly the lower portion 22
5 of the handle 18 is removed, in order to insert a butane
gas canister 34 into the dispensing apparatus 19. Once
the butane gas canister 34 is connected to the gas pipe
36, the lower portion 22 is reconnected to the upper
portion 20 of the handle 18. The squeeze piston 26 is
10 then rotated away from the handle 18 and connection
bracket 31, such that a cartridge 32 of, for example, wax
polish may be inserted into the connection bracket 31.
The squeeze piston is then rotated back to its rest
position as shown in Figure 2. When it is desired to
15 dispense the polish from the cartridge 32 firstly the user
squeezes the trigger 37, which activates opening of the
butane gas canister 34 in order to release gas through the
gas pipe 36 and into the region of the catalytic mesh
cylinder 42 and simultaneously activates the ignition
20 means comprising the flint 38 and ignition wheel 40. Also
as the trigger 37 is squeezed, rotation of the ignition
wheel 40 is effected which creates a spark from the flint
38 to ignite gas in the region of the catalytic mesh
cylinder 42, and thus begin combustion. The heat of
25 combustion generated is sufficient to activate the
platinum catalyst in the mesh cylinder 42 in order that
the catalyst begins to react and increase the heat of the
mesh cylinder 42 to a temperature sufficient to begin
heating of the polish within the cartridge 32. The
30 squeeze trigger 37 is pressed down continually during the
time in which it is desired to heat the polish coming from
the cartridge 32. In order to dispense the polish from
the cartridge 32 the user with his or her thumb presses

against the head 30 of the squeeze piston 26, such that the head abuts and puts pressure on a piston 33 located at the back of the cartridge 32, which then applies pressure to the polish within the cartridge 32 squeezing it from the front of said cartridge 32 within the mesh cylinder 42. As the composition reaches the mesh cylinder 42 the polish is heated, and becomes less viscous, thereby enabling rapid application from the application nozzle 24 onto a desired surface. Further pressure on the squeeze piston 26 causes rotation of the piston body 28 and head 30 such that continual abutment of the head 30 is achieved on the piston 33 of the cartridge 32.

When it is desired to cease dispensing of the composition from the cartridge 32, the user simply releases pressure on the squeeze piston 26 in order to prevent further polish from being released from the front of the cartridge 32. At the same time, a user releases pressure on the trigger 37, which effects cut-off of gas from the gas canister 34, such that combustion no longer takes place in the region around the mesh cylinder 42. The mesh cylinder 42 cools rapidly due to the catalyst not having sufficient heat to continue activation.

If it is desired to dispense further polish from the cartridge 32 the process described herein above is repeated as and when required.

We turn now to Figure 3 which illustrates a third preferred embodiment of a dispensing apparatus of the invention. The dispensing apparatus 46 comprises a casing 48 on which is connected a means to enable dispersing of an active agent in the form of a dispersal mesh 50 located

covering one end thereof. The casing 48 is a cylindrical casing, being open at the end on which the mesh 50 is situated.

5 Within the casing 48 is situated a butane gas canister 52 connected to a gas pipe 54. The casing 48 also includes means to heat an active agent in the form of an aluminium catalyst coated mesh sheet 56, being a rectangular sheet. The catalytic agent comprises a platinum compound
10 described herein above. The catalytic mesh is located towards the top of the casing 48 to which the dispersal mesh 58 is located. In between the catalytic mesh 56 and the dispersal mesh 58 is located a substantially disc-shaped gel pad of any agent desired to be dispensed into
15 the atmosphere around the dispensing apparatus 46, for example a volatile aromatherapy oil, airborne insect repellent or attractant, airborne insecticidal agent, airborne miticide, airborne allergen deactivant or air freshener.

20

In use, when it is desired to disperse an agent into the atmosphere around the dispensing apparatus 46 a user firstly presses an on/off switch 54 which is operably connected to the butane gas canister 52 and mesh sheet 56.
25 Activation of the on/off switch 54 enables gas to be released from the gas canister 52 through the pipe 54 and to the mesh sheet 56. Activation of the on/off switch also induces ignition of the gas in the region around the mesh sheet 56 by utilising an ignition means as are well
30 known to those skilled in the art (not shown). Ignition of the gas around the mesh sheet 56 causes an increase in heat around the platinum catalyst of the sheet which

activates the catalyst to continue heating of the sheet to a desired temperature.

As the mesh sheet 56 heats up, the area around the gel disc 58 comprising the active agent heats up, inducing a change in the physical state of the gel 58 to a less viscous gel, and induces evaporation of active ingredients within the gel 58. As the ingredients of the gel 58 evaporate, they are induced to move up through the casing 48 of the dispensing apparatus 46 and out through the dispersal mesh 50 at the top of the dispensing apparatus 46, and into the atmosphere around the device.

The dispensing apparatus 46 may comprise means to control the temperature of the mesh sheet 56, in order to control the rate of evaporation and/or dispersal of active ingredients from the gel disk 58 through the dispersal mesh 50 of the dispensing apparatus 46. Thus if it is desired to disperse the active ingredients disk 58 over a long period of time, the heating mesh sheet 56 may be heated to a lower temperature over a long period of time or heated intermittently. If, however, it is desired to disperse a large amount of active ingredient from the gel disk 58 in a short amount of time, the mesh sheet 56 may be heated to a higher temperature in order to induce rapid evaporation of the active ingredient from the gel disk 58.

We turn now to Figure 4 which illustrates a fourth preferred embodiment of dispensing apparatus of the invention. The dispensing apparatus 50 of Figure 4 is for floor cleaning and comprises a handle 52 consisting of a handle grip 56 at one end of handle body 54. At the other end of the handle body 54 is located a cleaning head 56 at

the end of which is connected means to dispense an active agent in the form of a hinged plate member 58 consisting of a first plate 60 and a second plate 62 hingedly connected about a hinge 61. The plate 58 also comprises
5 clips or brackets (not shown) arranged to connect a sheet 64 impregnated with an active agent to the first plate 60. The second plate 62 further comprises means to connect another sheet 66 to said plate 62. In other embodiments the cleaning sheet 64 may be connected to the second plate
10 62, and the drying sheet 66 to the first plate 60. Within the cleaning head 56 is located means to heat the active agent in the form of a butane gas canister 68 operably connected to a gas pipe 70 which leads into the first plate 60 or the plate member 58. Part of the heating
15 means comprises a catalytic mesh sheet 72 in the form of a rectangular aluminium mesh on which is coated a platinum catalyst as described herein above.

Use of the floor cleaning dispensing apparatus 50 of
20 Figure 4 will now be described.

When it is desired to clean or polish a floor, firstly either the sheet 64 impregnated with a suitable composition containing a cleaning agent is connected to
25 the first plate 60, or the second plate 62 of the plate member 58. A drying sheet free from active agent is then connected to the other of the first or second cleaning plate 60, 62. In the embodiments shown in Figure 4, the cleaning sheet 2 is connected to the first plate 60. The
30 dispensing apparatus 50 is then activated by a user pressing the activation button 55 on the handle grip 56, which simultaneously affects opening of the gas canister 68 to allow gas to travel down the gas pipe 70 to the mesh

sheet 72, and ignition of the gas in the region around the mesh sheet 72 to cause heat of combustion which activates the catalyst on the sheet mesh 72. Heat of the mesh sheet 72 then affects heating of the composition on the sheet 64
5 connected to the first plate 60. The composition within the sheet 64 thus changes its physical state to become more viscous, or from a solid to a liquid. The user may then undertake motion of the plate 60 on a floor surface to be cleaned in order to transfer the composition to said
10 surface. Once the surface has been adequately covered with the composition from the pad 64, a user then manipulates the device 50 by changing the angle of the device 50 such that the second plate 62 then contacts the surface. A user then moves the device over the surface to
15 which the composition has been applied, in order to dry the composition using the drying sheet 66 on the second plate 62. In alternative embodiments, the composition-impregnated sheet may be the sheet 66 and the drying sheet may be the sheet 64, and thus the drying sheet be directly
20 heated rather than the composition impregnated sheet 66. In this embodiment, the composition will be applied "cold" to the surface of the floor to be treated via the second plate 62. The user will then activate the device 50 in order to heat the drying pad, such that when the user then
25 manipulates the first plate 60 over the area to which the cleaning composition had been applied, the heated plate affects heating and drying of the composition on the treated surface. In this embodiment the composition is still heated, albeit indirectly, after application of the
30 composition from the dispensing apparatus.

Of course for other embodiments of the dispensing apparatus of the invention, many different applications

can be envisaged. For example the "gun" type dispensing apparatus 19 of Figure 2 may be fitted with various cartridges 32, containing different cleaning and/or personal care compositions. For example the cartridge 32
5 may include shaving foam, make-up, topical pharmaceutical or medicinal compositions, depilatory or epilatory waxes or creams and the like. The nozzle 24, although shown in Figure 2 to have a narrow dispensing aperture at the end thereof may also include a more elongate slot, in order
10 that a wider band of composition may be dispensed from the cartridge 32 and one time. The elongate slot would be suitable for application of for example of depilatory or epilatory creams or cleaning, polishing or de-scaling, for example.

15 We turn now to Figure 5 which illustrates an embodiment of apparatus 80 of the invention. The apparatus 80 comprises an elongate hollow shaft 82 at one end thereof comprising a handle 84 and at the other end thereof comprising a
20 rotatable member in the form of a rotatable cleaning head 86. The rotatable cleaning head 86 includes a plurality of brush filaments 88, such that the cleaning head 86 comprises a rotatable brush head. On the handle is located an on/off switch 90. Within the handle is a gas
25 canister 92, filled with any suitable gas such as butane. Connected to the gas canister is a gas conduit 94 which extends from the canister 92 through the elongate shaft 82 and to an actuator and motor 96. The actuator and motor 96 are operably connected to the cleaning head 86 such
30 that operation of the actuator and motor 96 causes rotation of the cleaning head 86. The apparatus 80 is useful as a toilet cleaning brush.

Use of the apparatus 80 will now be described with reference to Figure 5. When it is desired to clean, for example, a toilet, a user firstly holds the brush by the handle 84 and presses the on/off switch 90 to the "on" position in order to actuate the dispensing apparatus 80. Upon actuation of the on/off switch gas from the gas canister 92 is arranged to flow through the gas conduit 94 to the actuator and motor 96. The actuator and motor 96 comprise means to combust the gas entering the actuator and motor 96 and convert the heat of combustion to rotary motion of the motor 96. Many examples of gas powered rotary motors are known, to those skilled in the art. Upon actuation of the actuator and motor 96, the motor 96 causes rotation of the rotatable cleaning head 86 such that when a user locates the dispensing apparatus 80 within the toilet, the brush filaments 88 clean substantially the entire circumference of the interior of the toilet.

In a second embodiment of the dispensing apparatus 80, the actuator and motor 96 may further comprise a catalytic combustion member as described herein above for previous embodiments, such that the catalytic member heats up. The cleaning head 86 may further include a canister or other suitable receptacle filled with an appropriate cleaning composition, and the canister may be in operable communication with the roots of the brush filaments 88 such that for example, upon actuation of the motor 96 and catalytic heating member, the cleaning composition is forced from the canister or receptacle through the roots of the filaments 88 and out of the cleaning head, having previously been heated by the catalytic heating member. Thus as the cleaning head 86 rotates, the fluid

composition coats the brush filaments 88 in order that the cleaning composition may be transferred to the interior of the toilet and is subsequently acted on by the rotating brush filaments 88.

Claims

1. Dispensing apparatus comprising a mounting means to
mount an active agent selected from a cleaning,
5 personal care, pesticidal and aircare agent to the
dispensing apparatus, a non-electrical heating means,
arranged in use to effect heating of at least a
portion of active agent, and a dispensing means to
enable dispensing of heated active agent from the
10 dispensing apparatus.
2. Dispensing apparatus as claimed in claim 1, wherein
the mounting means comprises a receptacle containing
said the active agent, the receptacle being mounted
15 directly to the dispensing apparatus.
3. Dispensing apparatus as claimed in claim 1, wherein
the mounting means comprises a receptacle containing
said the active agent, the receptacle being connected
20 by a connection means to the part of the apparatus
comprising the dispensing means and the heating means.
4. Dispensing apparatus as claimed in any preceding
claim, wherein the non-electrical heating means
25 effects heating of the active agent prior to or during
its dispensing from the dispensing apparatus.
5. Dispensing apparatus as claimed in any preceding
claim, wherein the non-electrical heating means
30 employs a consumable fluid for power.

6. Dispensing apparatus as claimed in claim 5, wherein the heating means comprises a catalytic fluid-consumption means.
- 5 7. Dispensing apparatus as claimed in claim 6, wherein the catalytic means comprises a part on which is mounted a catalytic material.
8. A method of dispensing a cleaning, personal care, 10 pesticidal or aircare agent, the method comprising:
- (a) providing a dispensing apparatus of any preceding claim;
 - (b) mounting a source of said agent to the dispensing apparatus;
 - 15 (c) heating at least a portion of said agent; and
 - (d) simultaneously or subsequent to the heating, dispensing same at an elevated temperature.
9. Apparatus comprising a housing on which is mounted a 20 non-electrical heating means in operative communication with a rotatable member; and means for feeding a cleaning, personal care, insecticidal or aircare agent to the rotatable member.
- 25 10. Apparatus as claimed in claim 9, wherein the non-electrical heating means comprises a consumable fluid-powered heating means.
11. Apparatus as claimed in claim 9 or 10, wherein the 30 rotatable member comprises a roller.

Fig.1.

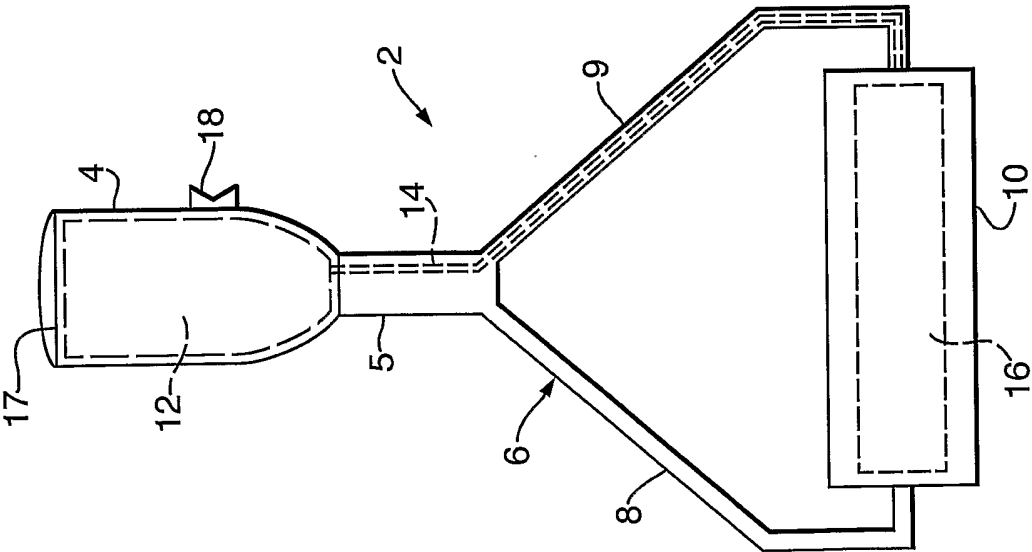
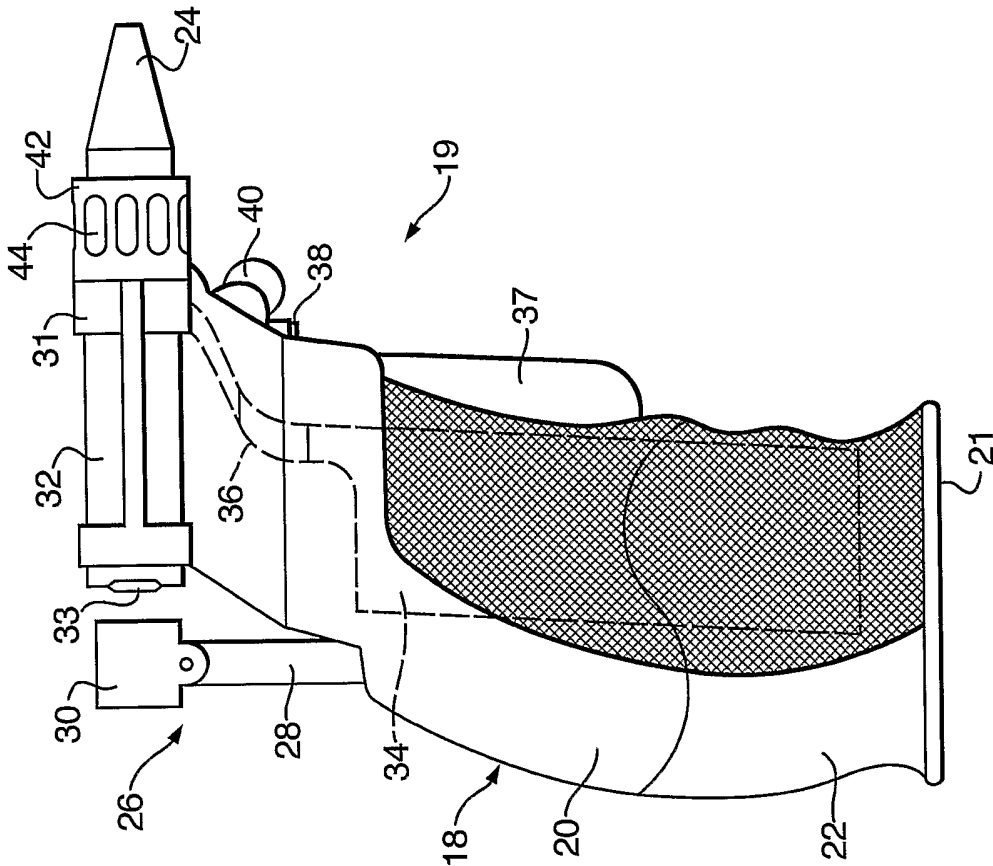


Fig.2.



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Fig.3.

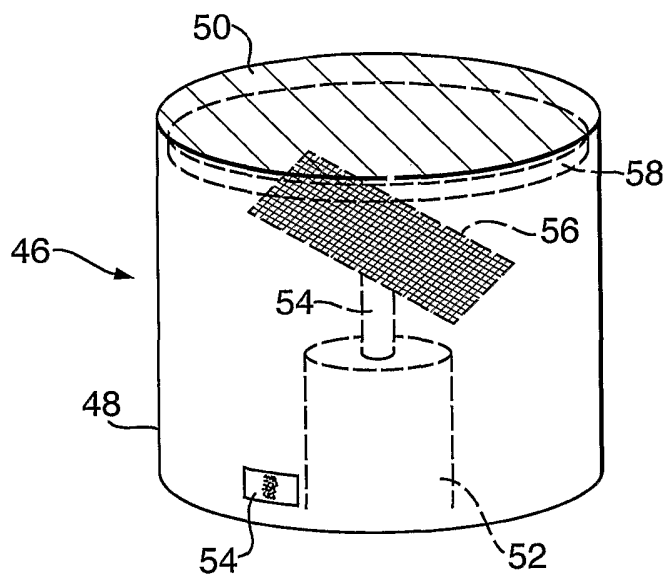


Fig.5.

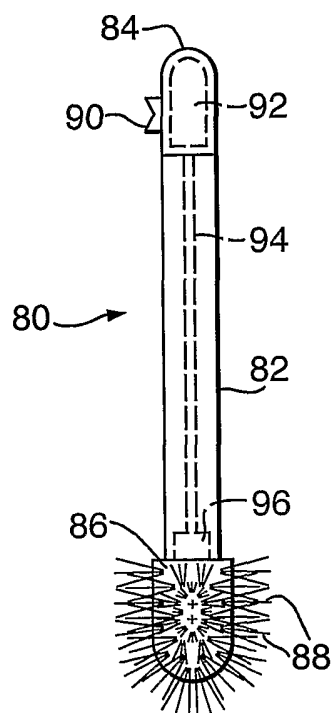
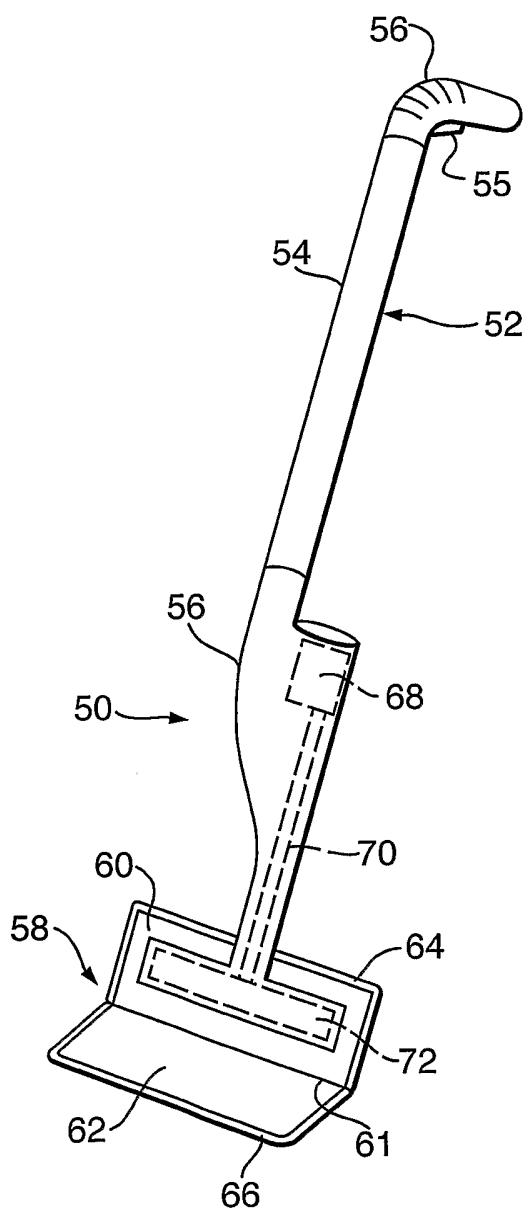


Fig.4.



INTERNATIONAL SEARCH REPORT

International Application No
T/GB2005/002735

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B05C17/00 A46B11/08 A01M1/20 A47L13/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B05C A46B A01M A61L A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

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A	page 1, left-hand column, line 1 - line 24; figures	9,10
X	US 5 928 605 A (BONNEMA ET AL) 27 July 1999 (1999-07-27) abstract; figures 3,5	1,4-8
Y	US 4 465 073 A (SCHWOB ET AL) 14 August 1984 (1984-08-14) abstract; figure 1	1,2,4-8
Y	GB 2 156 440 A (* LOCTITE HOLDINGS LIMITED) 9 October 1985 (1985-10-09)	1,2,4-8
A	page 1, line 5 - line 61; figures 1,2	10
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

27 October 2005

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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