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(54) SURFACE CLEANING APPARATUS

OBERFLÄCHENREINIGUNGSGERÄT

APPAREIL DE NETTOYAGE DE SURFACE

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Description

Description of Invention

[0001] This invention relates to a surface cleaning apparatus. More particularly, this invention relates to an apparatus for cleaning a surface such as a floor or wall which utilises a source of steam. It should be appreciated that the invention is applicable to many other types of surface cleaning apparatus, for example, carpet washing apparatus / vacuums.

[0002] An example of steam cleaning apparatus is known from US2007079470.

[0003] The use of steam cleaners for cleaning floor and other surfaces is well known. For cleaning floor surfaces, a steam cleaner typically has a cleaning head comprising a body able to be moved, by a user, over the surface to be cleaned, the body being adapted to carry a cleaning element of or including a fabric/textile or other material of a steam permeable absorbent nature. Steam (or very hot water) is emitted from the body and passes through the cleaning element to contact the surface being cleaned, with the effect of loosening dirt from the surface. Dirty water from condensation of the steam on the surface is absorbed by the cleaning element.

[0004] The cleaning head, to enable it to be manipulated over the surface being cleaned, may be attached to a wand and steam supplied thereto by way of a hose from a separate steam generator. Alternatively, the wand may itself be provided with a steam generator and supply of water, to form a self-contained steam cleaning device, sometimes referred to as a "stick" or "mop" type of steam cleaner.

[0005] A further provision known in such a steam cleaner is the ability to store a cleaning agent, e.g. a solution of a suitable detergent, to assist the cleaning operation.

[0006] According to the present invention, we provide a steam cleaning apparatus according to independent claim 1.

[0007] Further features of the invention are set out in the dependent claims.

[0008] Embodiments of the invention will now be described by way of example only with reference to the accompanying figures, of which:

FIGURE 1 is a perspective view of a surface cleaning apparatus in accordance with the present invention;

FIGURE 2 is a perspective view of a cleaning head of the apparatus of Figure 1;

FIGURE 3 is a plan view of the cleaning head of Figure 2;

FIGURES 4 and 5 are left and right side views of the cleaning head of Figure 2; and

FIGURES 6 and 7 are rear and front, respectively, views of the cleaning head of Figure 2.

[0009] Referring to figure 1 this shows a surface cleaning apparatus 10 in accordance with the present invention. The apparatus 10 has a cleaning head with a body 20 which is pivotally connected to a user graspable handle 11. Connected to the user graspable handle 11 is a fluid storage container 30 and a housing 50 which houses a steam generator, a pump for feeding water from the fluid storage container 30 to the steam generator and a fluid passage connecting an output from the steam generator to the cleaning head body 20. The working of the internal components of the apparatus 10 will be described in greater detail later.

[0010] It can be seen from the figures that a lower end of the handle 11 is pivotally connected to the body 20 by a connection 11a. In order to aid clarity, the handle 11 has been omitted in figures 2 through 7.

[0011] The cleaning head body 20 is substantially triangular in plan view (see figure 3) and has a rear wall 20a and forwardly facing walls 20b and 20c. The walls 20a, 20b, 20c, define a footprint F which sits adjacent a surface to be cleaned. Advantageously, the apparatus 10 includes a nozzle 40 configured for directing fluid to a surface outside of the footprint F. The nozzle 40 is connected to a forwardmost portion of the cleaning head body 20 (at the junction of the walls 20b, c) and is shaped so as to direct fluid downwardly towards the surface outside of the footprint F. The nozzle 40 is moveable relative to the body 20. For example, the nozzle could be rotationally moveable so as to direct fluid to either side of a midline which extends through the body 20. Alternatively still, the nozzle could be angularly and/or laterally moveable relative to the body 20. Such movement of the nozzle 40 would permit a user to more accurately direct the nozzle 40 on to a surface being cleaned.

[0012] Whilst not shown in the figures, the nozzle may include a portion which is telescopically moveable so as to affect displacement between an outlet of the nozzle 40 and the body 20. In other words, the nozzle 40 could be configured so its overall length could be extended and/or reduced so as to provide the user with a greater control over the distance between an outlet from the nozzle 40 and the surface being cleaned.

[0013] In some embodiments the nozzle 40 may be made from a resilient material such that it is resiliently moveable relative to the body 20. For example, the nozzle could be made from a rubber or rubber-like material.

[0014] In some embodiments the nozzle 40 may be detachably connected to the body 20, for example by a screw, press or bayonet connection fitting. Whilst in the present embodiment a single nozzle 40 is provided, embodiments are also envisaged including two or more nozzles 40. In such embodiments the nozzles could be positioned at any location around the periphery of the cleaning head body 20. For example the one nozzle may be positioned somewhere along the wall 20b whilst another

is positioned somewhere along the wall 20c. In addition, or as an alternative, the nozzle or one of the nozzles may be positioned on the rear wall 20a.

[0015] The apparatus 10 includes a valve for controlling the flow of fluid from the container 30 to the nozzle 40. That valve is actuated by a user operable switch 60 which is positioned on the body 20 of the cleaning head. The switch 60 is hand or foot operable.

[0016] In the present invention, as discussed above, the apparatus 10 includes a steam generator in fluid connection with the water storage container 30. The steam generator includes at least one heating element positioned in a suitable housing which heats water pumped thereto from the container 30 by a pump. The purpose of the steam generator is to boil the water so as to generate steam which is then passed through suitable fluid passages to the underside of the cleaning head body 20 and to the nozzle 40. Thus, the footprint F of the body 20 receives a proportion of the steam generated and, when the valve is opened by pressing the switch 60, steam is permitted to pass through a suitable fluid passage to the nozzle 40. In some embodiment the valve may be configured to permit steam to pass to either the footprint F or the nozzle, or to both footprint F and the nozzle 40 at the same time.

[0017] In some embodiments the apparatus may include a detergent storage container and a detergent passage for directing detergent from the detergent storage container to the nozzle 40. In such an embodiment the apparatus 10 may include a common passage connecting the outlet from the steam generator to the detergent passage so as to provide a combination of detergent and steam to the nozzle 40. As an alternative, the nozzle may include respective outlets from the steam generator and from the detergent passage (i.e. there being two outlets from the nozzle 40). In some embodiments the apparatus may include a device, e.g. a switch or user controllable dial, for controlling the amount of steam and/or detergent which is passed to the nozzle 40. Such a device may include one or more valves positioned in the steam and detergent passages to control the flow of fluid therethrough.

[0018] Although not shown in the figures, the apparatus may include one or more tools for cleaning, with each tool having a conduit, e.g. a flexible pipe or the like, which is connectable to the outlet from the nozzle 40. As an alternative, where the nozzle 40 is detachably connected to the body 20, the conduit for each tool may be connectable to the respective part of the body to which the nozzle 40 connects. Such a connection may be a press connection, a screw threaded connection or a bayonet connection. Other suitable connections are envisaged without departing from the scope of the present invention.

[0019] The present invention is advantageous over prior art apparatus, because of its ability to provide fluid, e. g. steam and/or detergent, to a floor surface outside of the footprint F. This is highly desirable to a user as they can more easily clean stubbornly dirty floor areas. The steam being emitted from the nozzle is preferably at a higher pressure and/or flow rate than that which passes to the footprint F, which means that stubbornly dirty floor areas are more easily and quickly cleaned. For example, the present invention is suited to surfaces such as tiled floors and walls, with the nozzle being particularly useful in cleaning grout joins between adjacent tiles.

[0020] Although not shown in the figures, embodiments of the invention may include a source of suction, e.g. a vacuum source, for removing dirt, emulsified dirt and/or condensed water from the surface being cleaned.

[0021] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1. A steam cleaning apparatus (10) including:

   a cleaning head having a body (20) that defines a footprint (F) to sit adjacent a surface to be cleaned; and
   a fluid storage container; (30)
   wherein the cleaning head includes a nozzle (40) configured for directing fluid from the storage container (30) to a surface outside of the footprint of the body (20), **characterized in that** the nozzle (40) is moveable relative to the body ((20).

2. An apparatus according to claim 1 wherein the apparatus includes two or more of said nozzles, each configured for directing fluid from the storage container to a surface outside of the footprint of the body.

3. An apparatus according to any preceding claim wherein the nozzle is connected to the body.

4. An apparatus according to any preceding claim wherein the nozzle is connected to a forwardly facing part of the body, and/or
   wherein the nozzle is rotationally moveable relative to the body, and/or
   wherein the nozzle is angularly moveable relative to the body, and/or
   wherein the nozzle is laterally moveable relative to the body, and/or
   wherein the nozzle includes a portion which is telescopically moveable so as to effect a displacement between an outlet of the nozzle and the body, and/or
   wherein the nozzle is moveable towards and away from the surface to be cleaned, and/or

wherein the nozzle is resiliently moveable.

5. An apparatus according to any preceding claim wherein the nozzle is detachably connected to the body, preferably
wherein the detachable connection is provided by one of suitable screw or bayonet connection formations provided on the body and nozzle, and/or
wherein the apparatus includes a plurality of said nozzles, each of which is connectable to the body as selected by a user, and/or
wherein the apparatus includes one or more tools for cleaning, each tool having a conduit which is connectable to a respective part of the body to which the nozzle connects.

6. An apparatus according to any preceding claim wherein the apparatus includes a valve for controlling the flow of fluid from the storage container to the nozzle(s).

7. An apparatus according to claim 6 wherein the valve is actuated by a user operable switch, preferably
wherein the switch is configured for controlling the amount of fluid which passes to the nozzle.

8. An apparatus according to any preceding claim wherein the fluid storage container is a water storage container and wherein the apparatus includes:

a steam generator including a heating element(s);
a pump for feeding water from the water storage container to the steam generator; and
a fluid passage for directing steam from the steam generator to a cleaning head of the apparatus,
wherein the apparatus includes a further fluid passage for directing steam from the steam generator to the nozzle.

9. An apparatus according to claim 8, as dependent on claim 7, wherein the switch is configured for controlling the amount of steam which passes from the steam generator to the nozzle and/or to the cleaning head.

10. An apparatus according to any one of claims 1 to 7 wherein the fluid storage container is configured for holding a fluid containing a detergent.

11. An apparatus according to claim 10, as dependent on claim 7, wherein the switch is configured for controlling the amount of detergent which passes from the detergent storage container to the nozzle and/or to the cleaning head.

12. An apparatus according to any one of claims 1 to 7 wherein the fluid storage container is a water storage container and wherein the apparatus includes:

a steam generator in fluid communication with the water storage container, the steam generator including a heating element(s);
a pump for feeding water from the water storage container to the steam generator;
a steam passage for directing steam from the steam generator to a cleaning head of the apparatus;
a further steam passage for directing steam from the steam generator to the nozzle;
a detergent storage container; and
a detergent passage for directing detergent from the detergent storage container to the nozzle, preferably
wherein the detergent passage and the further steam passage are connected to a common passage which connects to the nozzle, and/or
wherein the nozzle includes respective outlets from the further steam passage and from the detergent passage.

13. An apparatus according to claim 12 wherein the apparatus includes a device for controlling the amount of steam and/or detergent which is directed to the nozzle, preferably
wherein the device includes one or more valves, even more preferably
wherein the valve is controlled by a user operable switch.

14. An apparatus according to claim 13 wherein user operable switch is hand or foot operable and is positioned on the body of the cleaning head, or
wherein the apparatus includes a wand / handle and wherein the user operable switch is positioned thereon.

15. An apparatus according to any preceding claim wherein the apparatus includes one or more tools for cleaning, each tool having a conduit which is connectable to the nozzle, and/or
includes a source of suction for removing, for examples dirt, emulsified dirt and/or condensed water, from the surface being cleaned.

Patentansprüche

1. Dampfreinigungsvorrichtung (10), die einschließt:

einen Reinigungskopf mit einem Körper (20), der einen Fußabdruck (F) definiert, um angrenzend an eine zu reinigende Oberfläche zu sitzen; und
einen Flüssigkeitsvorratsbehälter (30);

wobei der Reinigungskopf eine Düse (40) einschließt, die ausgelegt ist, Flüssigkeit aus dem Flüssigkeitsvorratsbehälter (30) zu einer Oberfläche außerhalb des Fußabdrucks des Körpers (20) zu leiten, **dadurch gekennzeichnet, dass** die Düse (40) relativ zum Körper ((20) beweglich ist.

2. Vorrichtung nach Anspruch 1, wobei die Vorrichtung zwei oder mehrere der Düsen einschließt, jede ausgelegt, Flüssigkeit aus dem Vorratsbehälter zu einer Oberfläche außerhalb des Fußabdrucks des Körpers zuleiten.

3. Vorrichtung nach einem vorhergehenden Anspruch, wobei die Düse mit dem Körper verbunden ist.

4. Vorrichtung nach einem vorhergehenden Anspruch, wobei die Düse mit einem nach vorn gewandten Teil des Körpers verbunden ist, und/oder wobei die Düse relativ zum Körper drehbar beweglich ist, und/oder wobei die Düse relativ zum Körper winklig beweglich ist, und/oder wobei die Düse relativ zum Körper lateral beweglich ist, und/oder wobei die Düse einen Abschnitt einschließt, der teleskopisch derartig beweglich ist, um eine Verschiebung zwischen einem Auslass der Düse und dem Körper zu bewirken, und/oder
wobei die Düse in Richtung der zu reinigenden Oberfläche oder von dieser weg beweglich ist, und/oder wobei die Düse elastisch beweglich ist.

5. Vorrichtung nach einem vorhergehenden Anspruch, wobei die Düse mit dem Körper trennbar verbunden ist, vorzugsweise
wobei die trennbare Verbindung durch eine von geeigneten Schraub- oder Bajonettverbindungsformationen bereitgestellt wird, die am Körper und an der Düse vorgesehen sind, und/oder
wobei die Vorrichtung eine Vielzahl der Düsen einschließt, wobei jede davon wie von einem Benutzer selektiert mit dem Körper verbindbar ist, und/oder wobei die Vorrichtung ein oder mehrere Reinigungswerkzeuge einschließt, jedes Werkzeug eine Leitung aufweist, die mit einem jeweiligen Teil des Körpers verbindbar ist, mit dem sich die Düse anschließt.

6. Vorrichtung nach einem vorhergehenden Anspruch, wobei die Vorrichtung ein Ventil zur Regelung des Flüssigkeitsflusses vom Vorratsbehälter zu der/den Düsen einschließt.

7. Vorrichtung nach Anspruch 6, wobei das Ventil durch einen vom Benutzer bedienbaren Schalter betätigt wird, vorzugsweise wobei der Schalter zur Regelung der Flüssigkeitsmenge ausgelegt ist, die zur Düse gelangt.

8. Vorrichtung nach einem vorhergehenden Anspruch, wobei der Flüssigkeitsvorratsbehälter ein Wasservorratsbehälter ist und wobei die Vorrichtung einschließt:

einen Dampfgenerator der ein Heizelement(e) einschließt;
eine Pumpe zum Speisen von Wasser vom Wasservorratsbehälter zum Dampfgenerator; und
einen Flüssigkeitsdurchgang zum Leiten von Dampf vom Dampfgenerator zu einem Reinigungskopf der Vorrichtung,
wobei die Vorrichtung ferner einen Flüssigkeitsdurchgang zum Leiten von Dampf aus dem Dampfgenerator zur Düse einschließt.

9. Vorrichtung nach Anspruch 8, wie von Anspruch 7 abhängig, wobei der Schalter zur Regelung der Dampfmenge ausgelegt ist, die vom Dampfgenerator zur Düse und/oder zum Reinigungskopf gelangt.

10. Vorrichtung nach einem der Ansprüche 1 bis 7, wobei der Flüssigkeitsvorratsbehälter zum Fassen einer Reinigungsmittel enthaltenden Flüssigkeit ausgelegt ist.

11. Vorrichtung nach Anspruch 10, wie von Anspruch 7 abhängig, wobei der Schalter zur Regelung der Menge von Reinigungsmittel ausgelegt ist, die aus dem Reinigungsmittelvorratsbehälter zur Düse und/oder dem Reinigungskopf gelangt.

12. Vorrichtung nach einem der Ansprüche 1 bis 7, wobei der Flüssigkeitsvorratsbehälter ein Wasservorratsbehälter ist und wobei die Vorrichtung einschließt:

einen Dampfgenerator in Flüssigkeitsverbindung mit dem Wasservorratsbehälter,
wobei der Dampfgenerator ein Heizelement(e) einschließt;
eine Pumpe zum Speisen von Wasser vom Wasservorratsbehälter zum Dampfgenerator;
einen Dampfdurchgang zum Leiten von Dampf vom Dampfgenerator zu einem Reinigungskopf der Vorrichtung,
einen weiteren Dampfdurchgang zum Leiten von Dampf vom Dampfgenerator zur Düse;
einen Vorratsbehälter für Reinigungsmittel; und
einen Durchgang für Reinigungsmittel zum Leiten von Reinigungsmittel vom Vorratsbehälter für Reinigungsmittel zur Düse, vorzugsweise
wobei der Durchgang für Reinigungsmittel und der weitere Dampfdurchgang mit einem gemeinsamen Durchgang verbunden sind, der die Düse verbindet, und/oder
wobei die Düse jeweilige Auslasse vom weite-

ren Dampfdurchgang
und vom Durchgang für Reinigungsmittel einschließt.

13. Vorrichtung nach Anspruch 12, wobei die Vorrichtung ein Gerät zur Regelung der Menge von Dampf und/oder Reinigungsmittel einschließt, der/das zur Düse geleitet wird, vorzugsweise wobei das Gerät ein oder mehrere Ventile einschließt, noch bevorzugter, wobei das Ventil durch einen vom Benutzer bedienbaren Schalter gesteuert wird.

14. Vorrichtung nach Anspruch 13, wobei der vom Benutzer bedienbare Schalter
Hand oder Fuß bedienbar ist und am Körper des Reinigungskopfes positioniert ist oder
wobei die Vorrichtung einen Stab / Griff einschließt und wobei, der vom Benutzer bedienbare Schalter daran positioniert ist.

15. Vorrichtung nach einem vorhergehenden Anspruch, wobei die Vorrichtung ein
oder mehrere Reinigungswerkzeuge einschließt, jedes Werkzeug eine Leitung aufweist, die mit der Düse verbindbar ist, und/oder
eine Saugquelle zum Entfernen von, beispielsweise, Schmutz, emulgiertem Schmutz und/oder Kondenswasser von der zu reinigenden Oberfläche.

Revendications

1. Appareil de nettoyage à vapeur (10) comprenant :

une tête de nettoyage (20) dotée d'un corps définissant une empreinte (F) destinée à être placée de manière adjacente à une surface à nettoyer ; et
un réservoir de stockage de liquide ; (30)
dans lequel la tête de nettoyage comprend une buse (40) configurée de manière à diriger le liquide du réservoir de stockage (30) vers une surface à l'extérieur de l'empreinte du corps (20), **caractérisée en ce que** la buse (40) est mobile par rapport au corps (20).

2. Appareil selon la revendication 1, dans lequel l'appareil comprend deux ou plusieurs desdites buses, chacune étant configurée pour diriger le liquide du réservoir de stockage vers une surface à l'extérieur de l'empreinte du corps.

3. Appareil selon l'une quelconque des revendications précédentes, dans lequel la buse est connectée au corps.

4. Appareil selon l'une quelconque des revendications précédentes, dans lequel la buse est connectée à une partie du corps tournée vers l'avant, et/ou

dans lequel la buse est mobile en rotation relativement au corps, et/ou
dans lequel la buse est mobile angulairement par rapport au corps, et/ou,
dans lequel la buse est mobile latéralement par rapport au corps, et/ou
dans lequel la buse comprend une partie mobile de manière télescopique afin
d'effectuer un déplacement entre une sortie de la buse et le corps, et/ou
dans lequel la buse est mobile afin de se diriger vers et de s'éloigner de la surface à nettoyer, et/ou
dans lequel la buse est mobile de manière flexible.

5. Appareil selon l'une quelconque des revendications précédentes, dans lequel la buse est connectée de manière amovible au corps, et, de manière préférentielle,

dans lequel la connexion détachable est fournie par l'une des formations de connexion à vis ou à baïonnette appropriées prévues sur le corps et la buse, et/ou
dans lequel l'appareil comprend une pluralité desdites buses, chacune pouvant être connectée au corps de la manière sélectionnée par un utilisateur, et/ou
dans lequel l'appareil comprend un ou plusieurs outils de nettoyage, chaque outil étant doté d'un conduit pouvant être connecté à une partie respective du corps à laquelle la buse se connecte.

6. Appareil selon l'une quelconque des revendications précédentes, dans lequel l'appareil comprend une soupape destinée à contrôler le débit de liquide du réservoir de stockage vers la ou les buses.

7. Appareil selon la revendication 6, dans lequel la soupape est actionnée par un commutateur manœuvrable par l'utilisateur, et, de manière préférentielle,
dans lequel le commutateur est configuré pour contrôler la quantité de liquide délivrée à la buse.

8. Appareil selon l'une quelconque des revendications précédentes, dans lequel le réservoir de stockage de liquide est un réservoir de stockage d'eau et dans lequel l'appareil comprend :

un générateur de vapeur comprenant un ou plusieurs éléments chauffants ;
une pompe pour l'alimentation en eau du réservoir de stockage d'eau au générateur de vapeur ; et
un passage de liquide pour diriger la vapeur du

générateur de vapeur vers une tête de nettoyage de l'appareil,
dans lequel l'appareil comprend un autre passage de liquide pour diriger la vapeur du générateur de vapeur vers la buse.

9. Appareil selon la revendication 8, soumis à la revendication 7, dans lequel le commutateur est configuré pour contrôler la quantité de vapeur délivrée par le générateur de vapeur à la buse et/ou à la tête de nettoyage.

10. Appareil selon l'une quelconque des revendications 1 à 7, dans lequel réservoir de stockage de liquide est configuré pour contenir un liquide contenant un détergent.

11. Appareil selon la revendication 10, soumis à la revendication 7, dans lequel le commutateur est configuré pour contrôler la quantité de détergent passant du réservoir de stockage de détergent à la buse et/ou à la tête de nettoyage.

12. Appareil selon l'une quelconque des revendications 1 à 7, dans lequel le réservoir de stockage de liquide est un réservoir de stockage d'eau et dans lequel l'appareil comprend :

un générateur de vapeur en communication fluidique avec le réservoir de stockage d'eau, le générateur de vapeur comprenant un ou plusieurs éléments chauffants ;
une pompe pour l'alimentation en eau du réservoir de stockage d'eau au générateur de vapeur ;
un passage de vapeur pour diriger la vapeur du générateur de vapeur vers une tête de nettoyage de l'appareil ;
un autre passage de vapeur pour diriger la vapeur du générateur de vapeur vers la buse ;
un réservoir de stockage de détergent ; et
un passage de détergent pour diriger le détergent du réservoir de stockage de détergent vers la buse, et, de manière préférentielle,
dans lequel le passage de détergent et l'autre passage de vapeur sont connectés à un passage commun connecté à la buse, et/ou
dans lequel la buse comprend des sorties respectives depuis l'autre passage de vapeur et depuis le passage de détergent.

13. Appareil selon la revendication 12, dans lequel l'appareil comprend un dispositif pour contrôler la quantité de vapeur et/ou de détergent dirigée vers la buse, et, de manière préférentielle,
dans lequel le dispositif comprend une ou plusieurs soupapes, et, de manière encore plus préférentielle, dans lequel la soupape est commandée par un commutateur actionnable par l'utilisateur.

14. Appareil selon la revendication 13, dans lequel le commutateur actionnable par l'utilisateur est actionnable à la main ou au pied et est placé sur le corps de la tête de nettoyage, ou
dans lequel l'appareil comprend une baguette/poignée et dans lequel le commutateur actionnable par l'utilisateur est placé sur celle-ci.

15. Appareil selon l'une quelconque des revendications précédentes, dans lequel l'appareil comprend un ou plusieurs outils de nettoyage, chaque outil étant doté d'un conduit pouvant être connecté à la buse, et/ou comprenant une source d'aspiration pour éliminer, par exemple, la saleté, la saleté émulsifiée et/ou l'eau condensée, de la surface nettoyée.

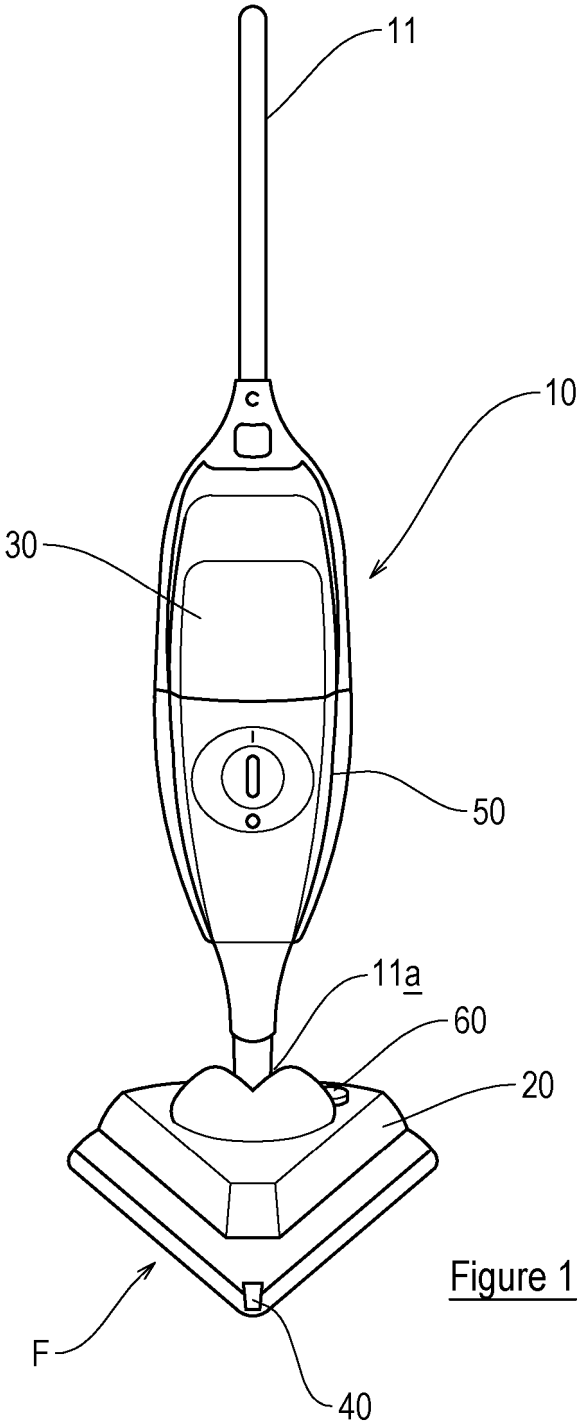

Figure 1

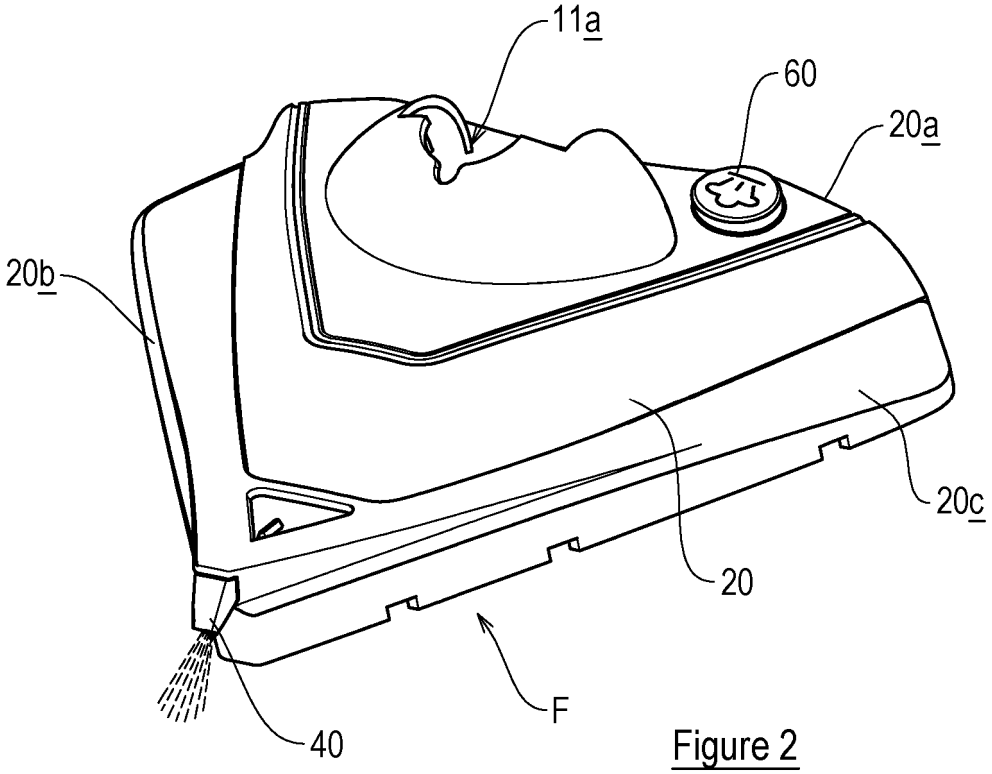

Figure 2

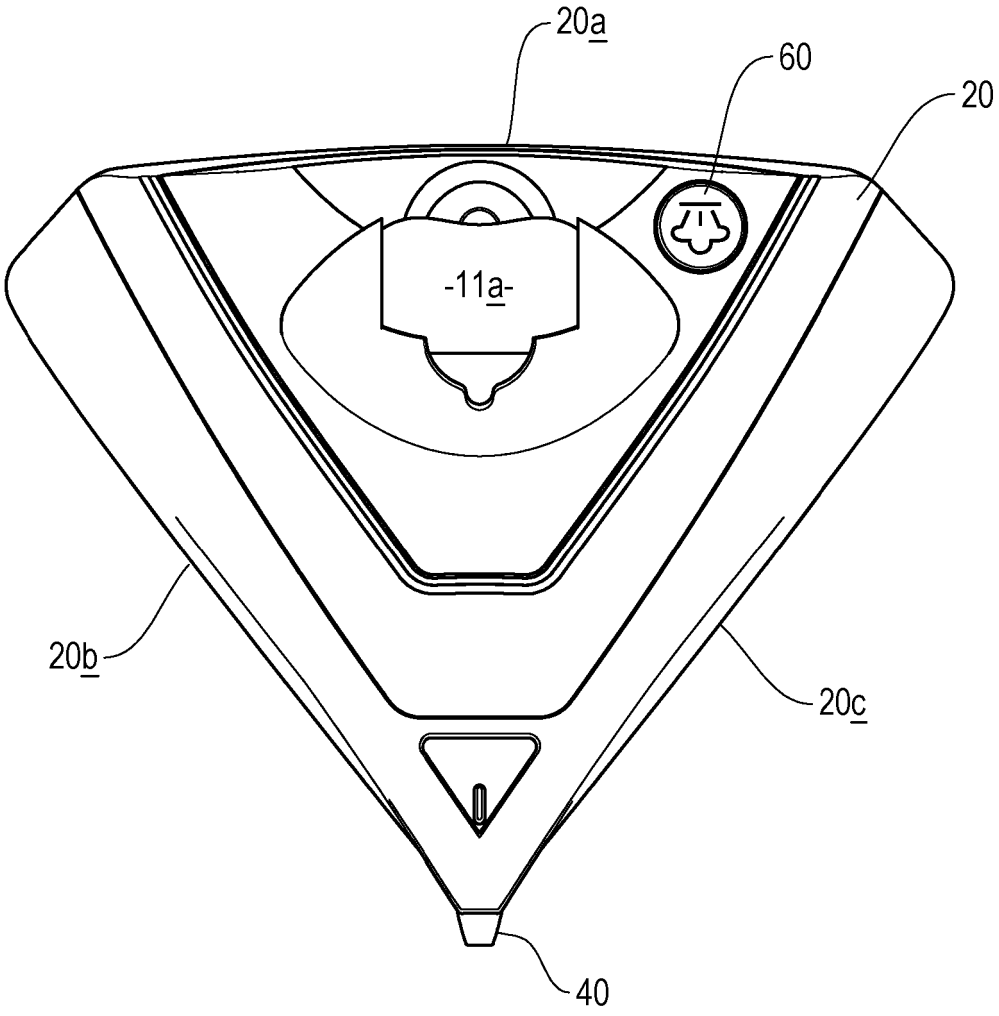

Figure 3

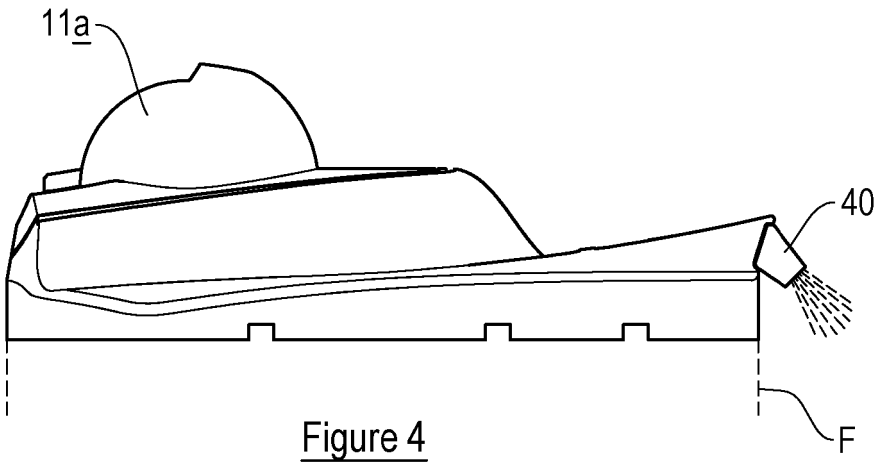

Figure 4

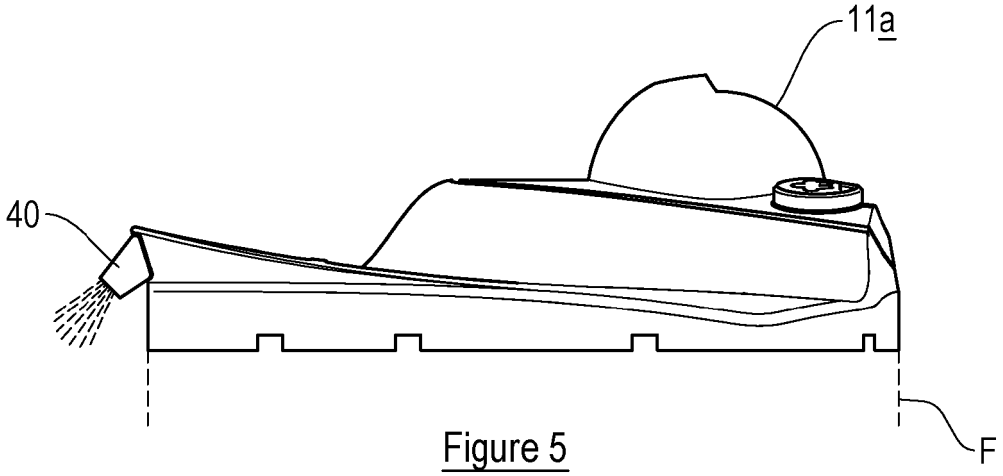

Figure 5

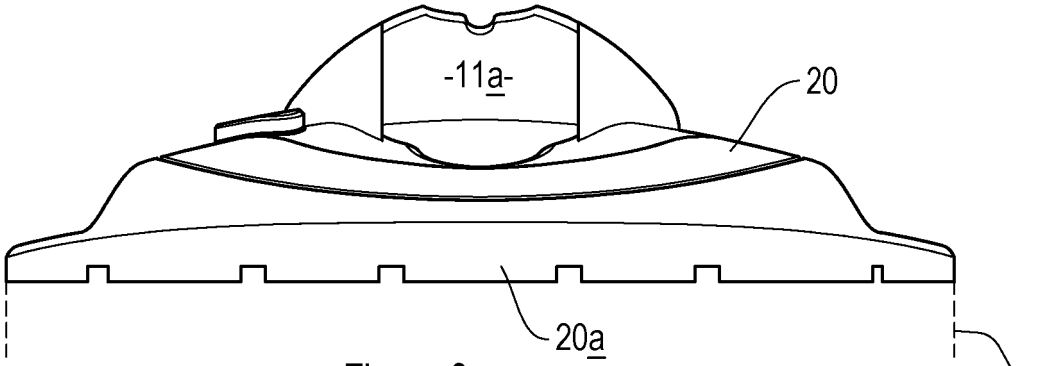

Figure 6

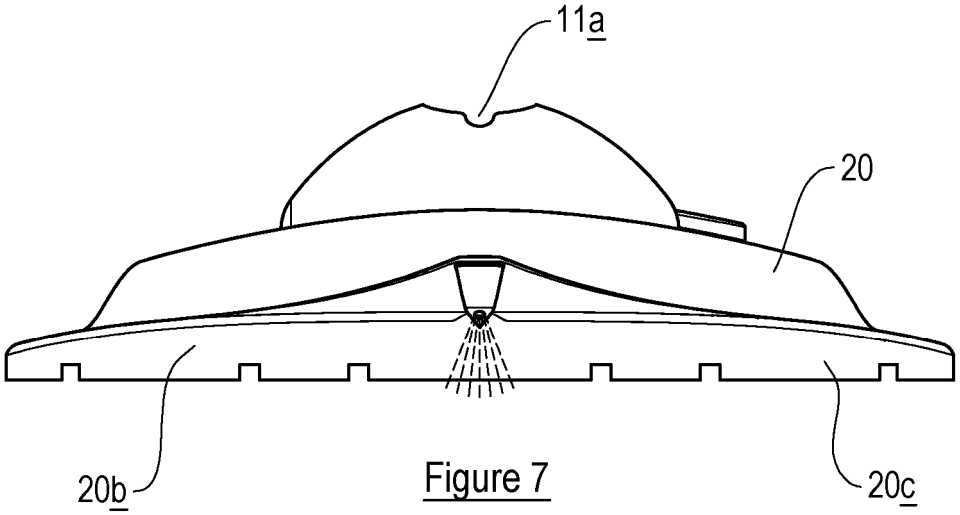

Figure 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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