



(11) **EP 2 803 775 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.11.2014 Bulletin 2014/47

(51) Int Cl.:
E03D 9/03 (2006.01)

(21) Application number: **14162542.6**

(22) Date of filing: **31.03.2014**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **16.05.2013 IT MI20130808**

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(54) **Hygienic device for sanitary appliances**

(57) A hygienic device for sanitary appliances (10) comprises a detergent and/or deodorant means in form of solid block (20) and means (30) for hooking to a peripheral edge of a WC, wherein the hooking means (30) comprise a first engagement portion to the WC (31) and a second engagement portion (32) to the solid block (20) and wherein the solid block (20) comprises at least one rear flat surface (21) for the engagement to the hooking means (30), wherein the second engagement portion

(32) with the solid block (20) comprises a flat surface (33) facing frontwards, having shape and dimensions complementary with the at least one rear flat surface (21) of the solid block, the flat surfaces (21, 33) being arranged in abutment with respect to each other, and wherein a gluing material (40) is arranged at the interface between the rear flat surface (21) of the solid block (20) and the flat surface (33) of the second engagement portion (32) of the hooking means (30).

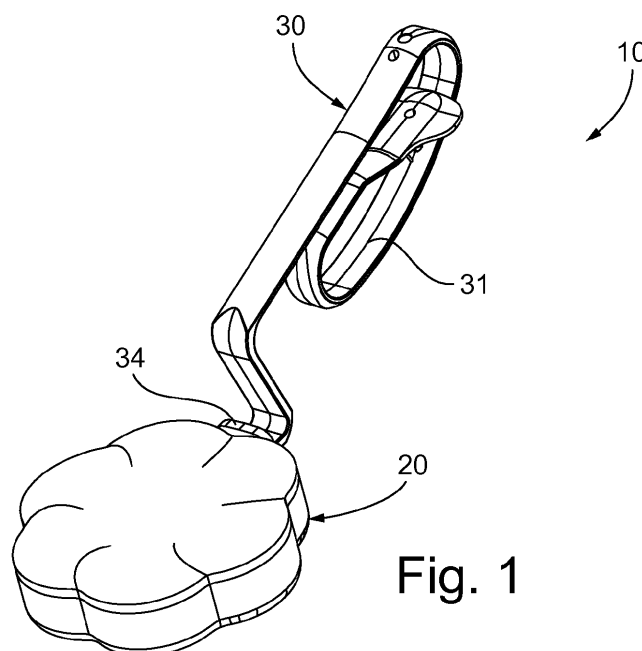


Fig. 1

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Description

[0001] The present invention refers to a hygienic device for sanitary appliances.

[0002] It is the known the use of hygienic devices for sanitary appliances, such as for example a WC, to be hung in the sanitary appliance through a suitable hook which is engaged on the peripheral edge thereof.

[0003] The known hygienic devices can be divided into the so-called "solid tablets", comprising a detergent and/or deodorant means in the solid state, and in the so-called "liquid tablets", comprising a detergent and/or deodorant means for WC in the liquid state dispensed through a bottle.

[0004] In particular, the first type of hygienic devices for WCs usually comprises a perforated dispenser, referred to as "cage", provided with a hook for engaging to the edge of the toilet bowl and containing the detergent and/or deodorant means therein in form of a solid block, also referred to as "soap bar".

[0005] Currently, the detergent and/or deodorant means in the solid state is generally manufactured through an extrusion process.

[0006] Every time the WC water is flushed, the water that directly impacts the cage dispenser element dissolves and washes out a small amount of the detergent and/or deodorant product from the solid block contained in the cage.

[0007] A drawback of such cage devices lies in the high environmental impact of the same. Actually, upon terminating their use, when the detergent and/or perfuming means is consumed, the entire dispenser element, comprising the hook and the cage, is discarded.

[0008] In addition, the cage devices, when applied in the WC, are cumbersome and with an aesthetic appearance that can be deemed as unappealing.

[0009] Even other WC hygienic devices were developed having the solid detergent and/or perfuming means hung on the perimeter edge using a structure less cumbersome than the cage. For example, the application n° WO 2007/107750 A1 shows a solid detergent means in which a plate arranged at the end of the hook is directly embedded for hanging to the peripheral edge of the WC. The solid detergent means substantially has the entire outer surface exposed to the flushed water, the plate being inside the solid block itself.

[0010] The main drawback of such device lies in the very irregular consumption of the detergent and/or perfuming means, which acquires an unpleasant appearance even after a relatively low number of flushes of discharge water. A further drawback regards the production process which requires providing a special step having the formation of a groove in the solid block so as to allow the insertion of the plate.

[0011] Another example of a hygienic device for WC comprising a solid detergent and/or perfuming means is known from the patent application EP 2270286 A1, which teaches how to centrally provide the solid block with a

through hole in which a crosspiece is inserted provided at an end of the hook for hanging to the peripheral edge of the WC.

[0012] Even in this type of devices the size of the structure is smaller than the cage devices, but anyway not to the benefit of the appearance of the solid block, which should receive the through hole. Actually, in this case the support structure always remains visible and as a matter of fact the aesthetic defects of the conventional cage are still present, at least partially.

[0013] A further example consists of the hygienic device shown in the international patent application n° WO 2011/141720 A1, in which the solid block is fitted on one or more pins projecting from an end portion of the hook for hanging on the peripheral edge of the WC.

[0014] A first drawback regards the increasing risk that the solid detergent and/or deodorant block may break during the consumption thereof.

[0015] Furthermore, in cases where the end portion of the hook faces towards the outer part of the device, i.e. exposed to the view of the user, a considerable part of the support structure of the hygienic device is exposed to view. This aspect is perceived as even more unpleasant when the solid block, starting to get consumed, is no longer adherent thereto.

[0016] In the case where the end portion of the hook instead faces towards the wall of the WC, the pins must have a considerable length, so as to prevent them, during consumption from no longer adhering to the solid block thus causing the same to fall. In this manner the pins may however be visible from the front part during the consumption of the block and this event is unwanted.

[0017] An object of the present invention is to provide a hygienic device for sanitary appliances capable of overcoming the aforementioned drawbacks of the prior art.

[0018] Another object of the present invention is to provide a hygienic device for sanitary appliances capable of being consumed regularly and capable of remaining hanged on the hook for the longest possible consumption time.

[0019] Another object of the present invention is to provide a hygienic device for sanitary appliances that is particularly simple and functional, with low costs.

[0020] These objects according to the present invention are attained by providing a hygienic device for sanitary appliances as outlined in claim 1.

[0021] Further characteristics are provided in the dependent claims.

[0022] The characteristics and advantages of a hygienic device for sanitary appliances according to the present invention shall be more apparent from the following exemplifying and non-limiting description with reference to the attached schematic drawings wherein:

figure 1 is a perspective view of a hygienic device for sanitary appliances according to the invention; figure 2 is a side elevational view of the device of figure 1;

figure 3 is a perspective view of the rear side of the detergent solid block of the device of figure 1;

figure 4 is a perspective view of the hooking means of the device of figure 1;

figure 5 schematically shows - in exploded view - the interposition of a gluing material between the solid block and the hooking means of the device of figure 1.

[0023] With reference to the figures, a hygienic device for sanitary appliances, indicated in its entirety with 10, is shown comprising a detergent and/or deodorant means in form of a solid block 20 and means 30 for hooking to a peripheral edge of a WC.

[0024] The hooking means 30 comprise a first engagement portion 31 to the WC and a second engagement portion 32 to the solid block 20.

[0025] The first portion 31 for the engagement to the WC consists of a flexible hook suitable for the engagement around the edge of the WC. Such element may have variable shapes and dimensions.

[0026] The second engagement portion 32 with the solid block 20 comprises a flat surface 33 facing frontwards, i.e. towards the inner part of the WC, and a centring collar 34 arranged at an intermediate position between the second engagement portion 32 to the solid block 20 and the flexible hook 31.

[0027] The solid block 20 may be obtained through any of the known technologies, for example through extrusion or co-extrusion and the subsequent moulding or by casting.

[0028] The solid block 20 comprises at least one rear flat surface 21 for abutting against the flat surface 33 of the hooking means 30.

[0029] The rear flat surface 21 for the engagement with the hooking means 30, according to a preferred embodiment, has a smaller flat dimension with respect to the rear outer surface 23 of the solid block 20.

[0030] According to a preferred embodiment, the rear flat surface 21 of the solid block 20 is arranged in a recessed position in the thickness X of the solid block 20, i.e. it constitutes the bottom of a cavity 22 obtained with respect to a rear outer surface 23 of the solid block 20. In the shown example, the depth of the cavity 22 is equivalent to about half the thickness X.

[0031] In the illustrated example, the rear flat surface 21 of the solid block comprises a circular part arranged substantially centred with respect to the solid block 20 and a portion for the connection with the outer perimeter.

[0032] The flat surface 32 of the hooking means 30 has a complementary shape with respect to the rear flat surface 21 of the solid block 20, also comprising a circular part and a connection portion, so that the second portion 32 for the engagement with the solid block 20 of the hooking means 30 is received in the cavity 22.

[0033] Preferably, the rear flat surface 21 shall be equivalent to 30-70% of the rear outer surface 23 of the solid block 20, preferably between 40% and 50%.

[0034] According to alternative embodiments, not shown, the cavity 22 may have a depth X that is smaller and substantially equivalent to the thickness of the second portion 32 for the engagement with the solid block 20, so that it is flushed with the rear outer surface 23 of the solid block, but not projecting therefrom, when the device 10 is assembled for the very first time.

[0035] Alternatively, in absence of the cavity, the rear flat surface 21 for coupling with the second engagement portion 32 of the hooking means 30 could be part of the rear surface 23 of the solid block 20, obtained as flat in this case. The second engagement portion 32 with the solid block 20 of the hooking means 30 is in this case arranged at a projecting position with respect to the thickness X of the solid block 20.

[0036] Generally the rear flat surface 21 may be reduced to the minimum at 5% of the rear outer surface 23 of the solid block 20.

[0037] In the case where the cavity is not present, the rear flat surface 21 could also be equivalent to 100% of the rear outer surface 23 of the solid block 20. In such case the flat surface 33 of the second engagement portion 32 of the hooking means 30 may at most even project with respect to the solid block.

[0038] During the assembly of the hygienic device 10 according to the invention, the gluing material 40 is arranged at the interface between the rear flat surface 21 of the solid block 20 and the flat surface 33 of the second engagement portion 32 of the hooking means 30, as schematically shown in figure 5.

[0039] For the purpose of the present invention, the gluing material used has a chemical composition compatible with the tablet being exposed to the flushes of discharge water, i.e. the chemical composition is such to keep the rear flat surface 21 of the solid block 20 and the flat surface 33 of the second engagement portion 32 of the hooking means 30 joined during the use of the device. Preferably, the aforementioned gluing material is capable of maintaining the aforementioned surfaces joined for at least 150 flushes of discharge water.

[0040] Examples of gluing materials that can be used are glues based on cyanoacrylate compounds (cyanoacrylic glues). The cyanoacrylic glues are single reactive component adhesives which comprise at least one polymer comprising repetitive units selected, for example, from alkyl or alkoxyalkyl esters of the α -cyanoacrylic acid where:

- the alkyl group is a group comprising from 1 to 8 carbon atoms, preferably from 1 to 4 carbon atoms, and possibly at least one ethylene insaturation;
- the alkoxy group is a group comprising from 1 to 8 carbon atoms, preferably from 1 to 4 carbon atoms, and possibly at least one ethylene insaturation.

[0041] Examples of the aforementioned alkyl or alkoxyalkyl groups are: methyl, ethyl, n-butyl, allyl and methoxyethyl.

[0042] The cianoacrylic glues harden very fast, at room temperature, following the polymerisation reaction of the aforementioned monomers, which can be triggered by the moisture present in the environment and/or on the surface of the tablet.

[0043] Other possible gluing materials that can be used for the purposes of the present invention are the hot melt glues. These glues comprise polymers in solid form at temperatures generally lower than 80°C. The polymers, for example, may be in form of blocks, bars or granulates. Regarding the application, the solid polymer is heated, for example through a hot gun, at a temperature higher than the melting temperature thereof (generally comprised between 120 - 220°C) and then applied in fluid state to the surfaces to be coupled. Upon cooling, the formation of the adhesive joint between the coupled surfaces occurs.

[0044] The hot melt glues may comprise polymers of different nature. For example, the hot melt glues may comprise at least one amorphous polyolefin polymer selected from among: atactic polypropylene, propyleneethylene copolymer, propylene-butene copolymer and propylene-hexene copolymer.

[0045] The hot melt glues may also comprise at least one polymer selected from: ethylene-vinyl acetate (EVA) copolymers, possibly added with elastomers, polyamides, polyesters and polyurethanes.

[0046] The gluing material to be used is also selected depending on the chemical composition of the detergent tablet. The type of components present in the tablet (for example, the type of surfactant or filler used), actually, may affect the adhesion force of the adhesive joint.

[0047] The aforementioned gluing materials may be applied to one or both surfaces of the device to be adhered by using the devices of the prior art.

[0048] After performing the coupling between the solid block 20 and the hooking means 30 so as to have the solid block 20 in abutment against the centring collar 34, the solid block 20 is thus stably held on the second engagement portion 32 of the hooking means 30.

[0049] In the operation in course on the peripheral edge of a WC, at each flush of discharge water the latter impacts the hygienic device with improved consumption for sanitary appliances 10 in a different manner according to the WC model. At the two opposite extreme modes of operation there is a turbulent motion or a rain-like descent adhering to the surface of the WC. In both extreme modes, the water flow impacts the solid block 20 mainly at the rear part, i.e. the side facing the surface of the WC, thus washing away a given amount of detergent and/or perfuming substance, in particular in the portion not covered by the second portion 32 for the engagement to the solid block 20.

[0050] According to the preferred embodiment, wherein the second portion 32 for the engagement to the solid block 20 of the hooking means 30 is contained in the cavity 22, there will be a greater thickness of material bound to be consumed before the beginning of the con-

sumption of the solid block 20 also in the part covered by the hooking means. With the progressive consumption of the solid block 20, actually the progressive infiltration of water at the interface between the solid block 20 and the second engagement portion 32 of the hooking means 30 occurs. This phenomenon causes an erosion of the flat surface 21 of the solid block 20 and thus a reduction of the surface of adhesion with the flat surface 33 of the second engagement portion 32 of the hooking means 30. Advantageously when the adhesion surface is reduced, the solid block 20 has a reduced weight, which may however be held up, thus extending the service life of the product.

[0051] The hygienic device for sanitary appliances subject of the present invention has the advantage of maintaining the integrity of the solid block as long as possible so as to avoid the breaking thereof.

[0052] A further advantage lies in the production simplicity.

[0053] Another advantage lies in the fact that the second engagement portion with the solid block is kept concealed during the entire service life of the product.

[0054] The hygienic device for sanitary appliances thus conceived can be subjected to many modifications and variants, all falling within the scope of the invention; in addition, all details can be replaced by technically equivalent elements. In practice the used materials, as well as the dimensions, may vary according to the technical requirements.

Claims

1. Hygienic device for sanitary appliances (10) comprising a detergent and/or deodorant means in form of a solid block (20) and hooking means (30) to a peripheral edge of a WC, wherein said hooking means (30) comprise a first engagement portion to the WC (31) and a second engagement portion (32) to said solid block (20) and wherein said solid block (20) comprises at least one rear flat surface (21) for the engagement to said hooking means (30), **characterised in that** said second engagement portion (32) with the solid block (20) comprises a flat surface (33) faced frontwards, having shape and dimension complementary with said at least one rear flat surface (21) of the solid block, said flat surfaces (21, 33) being arranged in abutment with respect to each other, wherein a glueing material (40) is arranged at the interface between said rear flat surface (21) of the solid block (20) and said flat surface (33) of the second engagement portion (32) of the hooking means (30).
2. Device according to claim 1, **characterised in that** said hooking means (30) comprise a centring collar (34) arranged at an intermediate position between said second engagement portion (32) to the solid

block (20) and said first engagement portion (31) to the WC, said solid block (20) being arranged in abutment against said centring collar (34).

- 3. Device according to claim 1 or 2, **characterised in that** said rear flat surface (21) of the solid block (20) has smaller dimensions in the plane than a rear outer surface (23) of the solid block (20). 5

- 4. Device according to claim 3, **characterised in that** said rear flat surface (21) equals 30-70% of the rear outer surface (23) of the solid block (20), preferably 40-50%. 10

- 5. Device according to any one of claims 3 or 4, **characterised in that** said rear flat surface (21) of the solid block (20) is arranged in a recessed position in the thickness (X) of the solid block (20), defining the bottom of a cavity (22). 15

- 6. Device according to claim 5, **characterised in that** said cavity (22) has a depth equal to about half the thickness (X) of said solid block (20). 20

- 7. Device according to any one of claims 5 or 6, **characterised in that** said rear flat surface (21) of the solid block (20) comprises a circular part arranged substantially centred with respect to said solid block (20) and a portion for connection with the external perimeter. 25

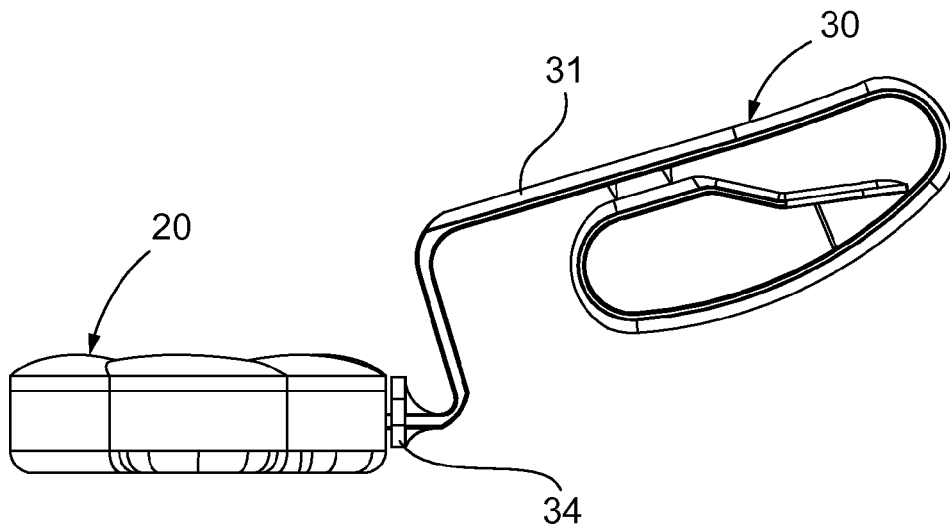
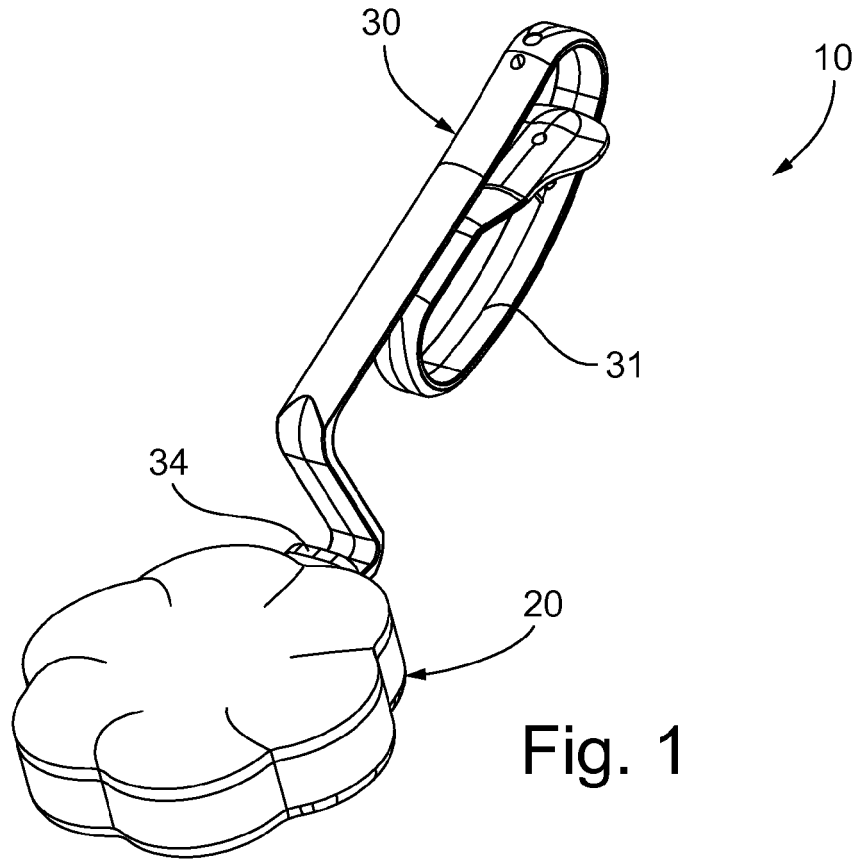
- 8. Device according to claim 1 or 2, **characterised in that** said rear flat surface (21) of the solid block (20) is extended to the entire rear outer surface (23) of the solid block (20), said flat surface (33) of the second engagement portion (32) of the hooking means (30) having dimensions in the plane, smaller, equal or greater than said rear flat surface (21) of the solid block (20). 30

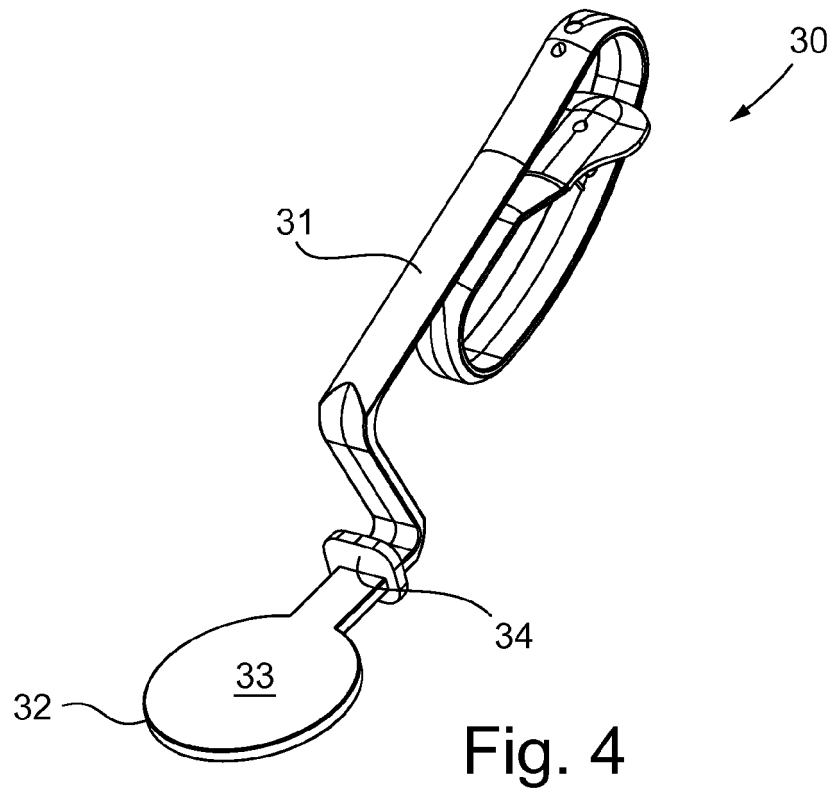
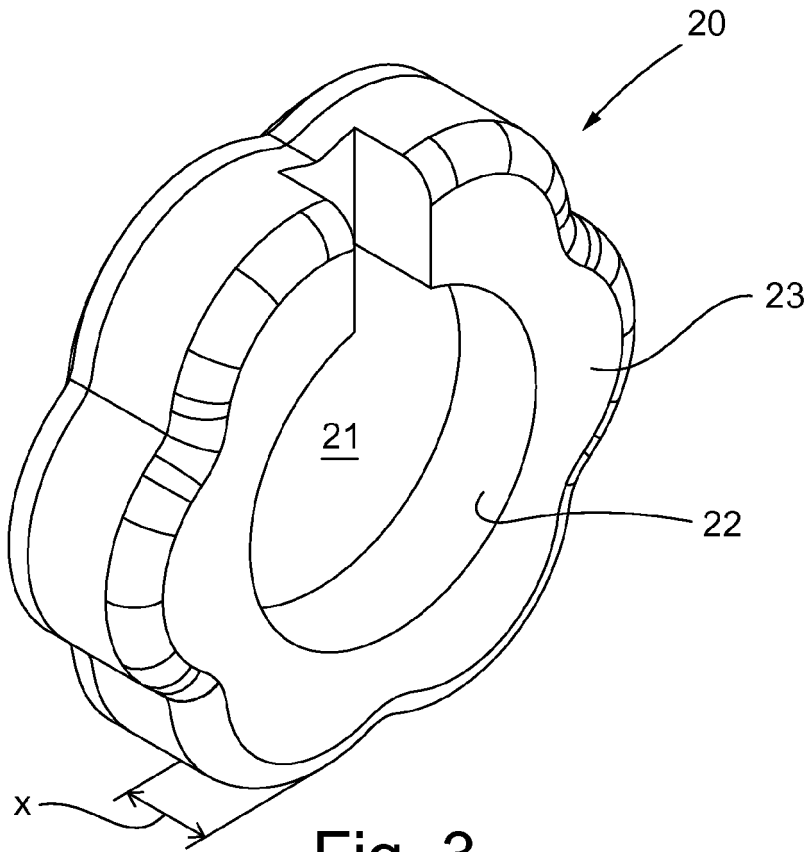
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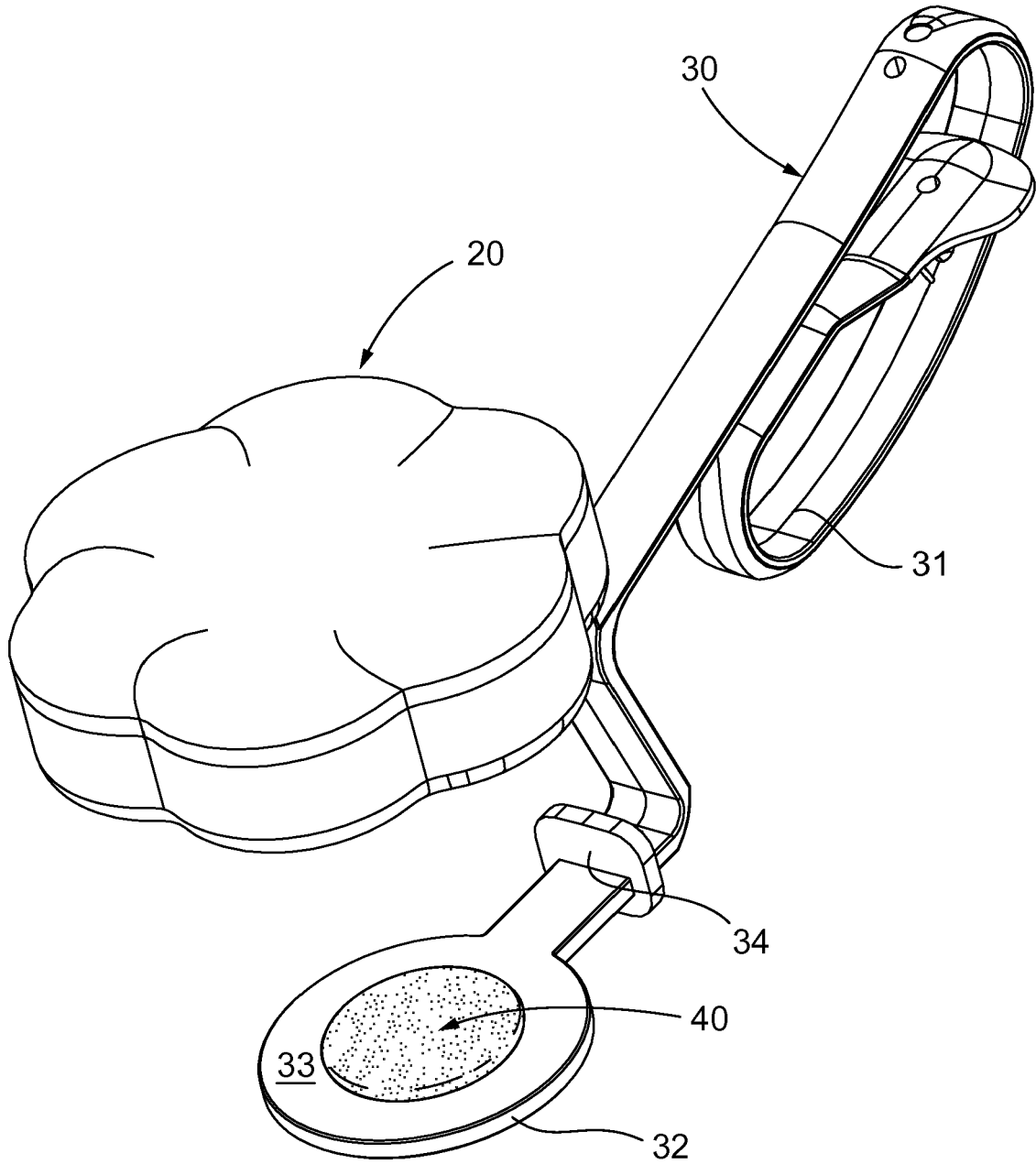


Fig. 5



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