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(54) **DISPENSER FOR A VACUUM CLEANER**

(57) The present invention relates to a dispenser (130, 200) configured to be releasably attached to a suction tube (120) of a vacuum cleaner (100). The dispenser comprises a container (220) configured to receive a deodorising agent (310, 320, 330) arranged in a first state, an activator (210) configured to transform the deodoris-

ing agent into a second state and a dispensing outlet (420) configured to be fluidly connected to a suction passageway of the tube and to release the deodorising agent, arranged in the second state, into the suction passageway.

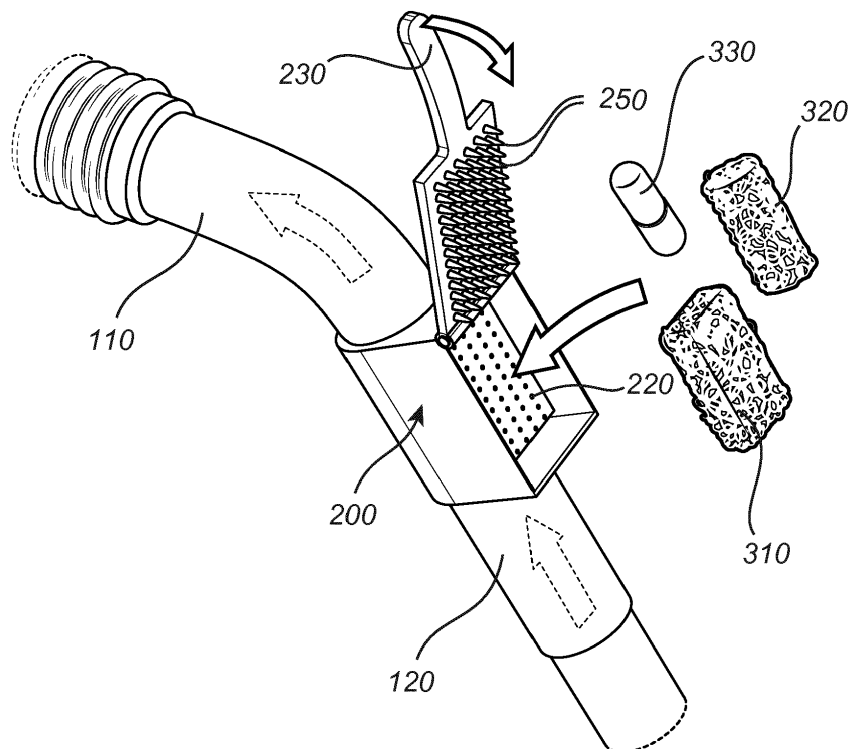


Fig. 3

Description

Technical field of the invention

[0001] The present inventive concept relates to the field of vacuum cleaners. In particular, the present inventive concept relates to odour elimination in vacuum cleaners.

Background of the invention

[0002] Vacuum cleaners used for residential or industrial applications typically use disposable or reusable bags or cartridges in which the dust and other vacuumed substance is collected. Such bags or cartridges have a certain volume capacity to be filled with dust and vacuumed substance after which it must be emptied or replaced for the vacuum cleaner to work efficiently. The frequency of change or cycle of bags and /or cartridge depends on the frequency of use of the vacuum cleaner and the size of the bag or cartridge, and may exceed a monthly basis for applications such as residential vacuum cleaning. Such frequency of change of bags or cartridge may therefore result in odours/smells generated by the collected dust and vacuumed substances contained in the bag for a certain amount of time, and is highly undesirable. Solutions known in the field for such issue typically suggest scented bars, tablet or powder integrated within the bags or cartridges to eliminate the smells when the bag is in use or when the frequency of change or emptying is of a considerable time. However, the longevity of the efficiency of such scented product depends on the time it spends in the bag or cartridge and the volume capacity of the bag or cartridge. Even though the above-mentioned techniques allow for some reduction or elimination of smells and odours in bags or cartridges, there is still a need for a technology allowing for more time sustainable odour elimination.

Summary of the invention

[0003] In view of the above, an object of the present inventive concept is to provide a technology that addresses at least some of the above concerns. This and other objects, which will become apparent in the following, are accomplished by a device as defined in the independent claims. Preferable embodiments are defined in the dependent claims.

[0004] According to a first aspect of the present inventive concept, there is provided a dispenser configured to be releasably attached to a suction tube of a vacuum cleaner. The dispenser further comprises a container configured to receive a deodorising agent arranged in a first state as well as an activator configured to transform the deodorising agent into a second state. The dispenser further comprises a dispensing outlet configured to be fluidly connected to the suction passageway of the suction tube and to release the deodorising agent, arranged

in the second state, into the suction passageway.

[0005] According to a second aspect, a vacuum cleaner is provided, which may comprise a dispenser according to the first aspect.

[0006] By the term "suction tube" it is here meant the component of a vacuum cleaner allowing the transition of dust and/or vacuumed substances from the surrounding environment to the bag or cartridge by means of an air flow generated by the vacuum cleaner itself.

[0007] By the terms "bag" or "cartridge" it is here meant the emptiable and/or removable recipient in which the vacuumed material and/or substance is collected and contained. Such bags or cartridges are usually, but not limited to, consumable products comprising a maximum capacity before necessitating a change. Such suction tube may be formed of a rigid or flexible material, or formed of both a rigid section and a flexible section, as is the case for the majority of vacuum cleaners.

[0008] The dispenser of the present aspect may be configured to be releasably attached to either the flexible section or the rigid section of the suction tube, which allows it to be mountable on the vast majority of model/design of vacuum cleaner. Furthermore, this releasable attachment also allows the dispenser to represent a separate component to any vacuum cleaners, which results in its adaptability to the majority of vacuum cleaner applications.

[0009] Attaching the dispenser to the suction tube allows for easier handling of the deodorising agent, whereas the releasable nature of the attachment facilitates maintenance and replacement of the device in case of technical issues or malfunctions.

[0010] The present aspect may be used with deodorising agents that are consumed during use, such that substantially all deodorising agent is eventually sucked into the bag or cartridge of the vacuum cleaner. In those cases, the deodorising agent needs to be replenished or refilled, rather than replaced. This can be achieved by placing a new item of deodorising agent in the container.

[0011] The present aspect may also be used with deodorising agents of which at least a part needs to be replaced after a certain time span. The dispenser is advantageous in that it allows for the deodorising agent to be replaced independently from the replacement of the bag or cartridge in which the vacuumed material is contained. Indeed, the deodorising agent contained in the container comprised in the dispenser may be replaced or removed at any time regardless of any vacuuming cycles or bag capacity. By the term "vacuuming cycle" it is here meant the cycles defined by the capacity of the bags or cartridge, i.e. the time required for an empty bag to be filled and replaced. Such independence from the bag or cartridge is advantageous in that the dispenser may release the deodorising agent during a longer period of time and with variable dosage. If the vacuumed substance has a more pronounced odour, the dosage may for example be increased such that a greater amount of deodorising agent is released into the suction passageway.

way. Moreover, the dispenser further allows for deodorising agent not to be wasted if a faulty bag or cartridge has to be prematurely removed from the vacuum cleaner or emptied due to malfunction, holes, wrong positioning, etc.

[0012] The present inventive concept further allows for the deodorising agent to transition from a first state into a second state by means of an activator. Such first state and second state may respectively be represented by e.g. compressed fibres and/or loose or free particles, and will be discussed in further detail in connection with subsequent embodiments. In the first state the deodorising agent may have a solid, brick like structure or at least a contained volume of deodorising agent, which allows for the deodorising agent to be easily handled, transported and/or placed in the container. The compact form of the deodorising agent in the first state is further advantageous in that it allows for the agent to be partly used and transferred to another vacuum cleaner, or saved for later use. In its second state, i.e. following the transformation via the activator, the deodorising agent may take a powder or fibre like form allowing the deodorising agent to affect a greater area of the vacuum bag or cartridge, resulting in an improved odour elimination than it would have in its first state. Put differently, the deodorising agent may have a larger active area in its second state than in its first state. Furthermore, the present inventive concept allows for the deodorising agent, when released in its second state, to be mixed with the vacuumed substance already in the suction tube and suction passageway, such that the deodorising agent reaches the bag or cartridge of the vacuum cleaner blended or substantially homogeneously mixed with the vacuumed substance.

[0013] According to an embodiment, the container comprised in the dispenser may be configured to store the deodorising agent, whereas the activator may be configured to gradually release the deodorising agent to the suction passageway during use of the vacuum cleaner. The present embodiment is advantageous in that it allows for the deodorising agent to last for a longer time. By such gradual release, a single unit of deodorising agent may be used for a plurality of vacuuming cycles, i.e., the same deodorising unit may be used for more than one vacuum bag or cartridge. Furthermore, the gradual release allows for a constant or at least sustained quantity of deodorising agent to be released during vacuuming, thereby allowing for an increase in efficiency of odour elimination as fresh deodorising agent may be released over the entire useful life of the vacuum bag.

[0014] According to an embodiment, the activator may be configured to be manually operated by a user of the vacuum cleaner. Such manual operation allows the user to control the dispensing, and for example to decide to either dispense or not to dispense deodorising agent for a specific vacuuming cycle. The user may decide not to use deodorising agent, or use a lesser quantity of deodorising agent, for substantially odourless vacuumed substances, or use a greater quantity of deodorising

agent for vacuumed substances with stronger scent. Further, the user may choose to release an additional or increased dose of deodorising agent, should there be an unpleasant smell from the vacuum cleaner. The present embodiment is advantageous in that it allows the vacuuming to be adapted to a wider range of applications. Such manual operation of the activator therefore allows for the odour elimination to be effective for vacuumed substances having a wide range of odour emanation.

[0015] According to an embodiment, the activator comprised in the dispenser may be configured to be automatically operated, preferably according to a predetermined scheme. Such automatic operation of the activator allows for the deodorising agent to for example be released based on a parameter set by the user. Examples of such parameter may be, but are not limited to, time of use of the vacuum cleaner, volume of vacuumed substances present in the vacuum bag or cartridge, number of vacuuming cycles, etc. Furthermore, the present embodiment is advantageous in that it allows for the reduction of the interaction from the user with the dispenser when performing vacuuming, which may result in less complex use of the vacuum cleaner. Moreover, an automatic operation of the activator allows for a higher accuracy of the dosage of deodorising agent, resulting in a higher efficiency of odour elimination and in less waste of deodorising agent.

[0016] According to an embodiment, the activator may be configured to transform the deodorising agent from a tablet into a plurality of particles. The present embodiment allows for the deodorising agent to transition from a first state, such as a solid tablet form, to a second state, such as a plurality of particles. The particles may be free or loose particles, including for example fibres. Moreover, transforming the agent into a plurality of particles allows the deodorising agent to be precisely dosed and easily transported into the suction passageway. The plurality of particles further allow for an improved distribution of the deodorising agent once in the suction passageway.

[0017] The present embodiment is further advantageous in that the plurality of particles permit the deodorising agent to affect a greater area of the vacuum bag or cartridge. In addition, the tablet form, representing a first state of the deodorising agent, permits easy handling of the deodorising agent resulting in a less complex loading process of the container comprised in the dispenser and, to a certain extent, allows a less cumbersome storage of deodorising agent for the user.

[0018] According to an embodiment, the tablet form of the deodorising agent may represent a capsule. Such capsule may comprise a volume of deodorising agent in a free particle form or powder like form, allowing for a less complex handling of the deodorising agent. Furthermore, the capsule may be a closed capsule that can be opened by the activator, or a gradual release capsule allowing the deodorising agent to be slowly released over time once located in the container. Moreover, capsules may permit a less complex handling of deodorising agent

with regard to storage, transport and loading process into the container.

[0019] According to an embodiment, the dispenser may be configured to receive the deodorising agent in the form of a pellet of compressed fibres (representing the first state), and to release the deodorising agent in the form of separate fibres (representing the second state). The pellet may be transformed into free or loose fibre strings by the activator prior to their release into the suction passageway. The pellet allows for the deodorising agent to be more easily manipulated or handled with regard to the loading process of the container. Furthermore, the present embodiment is advantageous in that the free or loose fibre form permits the deodorising agent to get tangled and intermixed with the vacuumed substance, which may provide an improved odour elimination. Moreover, similarly to the powder like form of the deodorising agent, the separate fibres are relatively easily transported in the suction passageway, especially compared to an entire pellet or tablet. Also similarly to the plurality of particles mentioned in previous embodiments, the separate fibres may permit a greater coverage of the vacuum bag volume, resulting in a more efficient odour elimination.

[0020] According to an embodiment, the dispenser may be configured to release at least part of the deodorising agent upon activation by the user. The present embodiment allows at least part of the deodorising agent to be brought in fluid connection with the suction passageway, such that the deodorising agent may be transported from the dispenser to the vacuum bag or cartridge by means of the flow of vacuumed air. Such release of at least part of the deodorising agent allows it to be mixed with the vacuumed substances at an early stage during their entry into the vacuum cleaner. Furthermore, the release of at least part of the deodorising agent allows for a selective dosage of the deodorising agent by the user. In other words, the user may decide when and what quantity of deodorising agent should be dispensed, which allows for the odour elimination effect to be adapted to different vacuuming applications and situations.

[0021] According to an embodiment, the dispenser may comprise a suction inlet and a suction outlet configured to be releasably mounted in the suction passageway and to direct a suction flow by the dispensing outlet. Such composition of the dispenser allows for the deodorising agent to be released by means of the vacuumed air flow and to be transported through the suction passageway all the way to the vacuum bag or cartridge. Furthermore, the suction inlet and the suction outlet of the dispenser permit the device to be adapted to the majority of vacuum cleaner designs comprising any form of suction tube, as it does not require a separate input of vacuumed air or separate means of transport for the deodorising agent to reach the vacuum bag or cartridge. The simplicity of the composition and minimal amount of connection components of the dispenser further allows for an easy mounting process onto the vacuum cleaner's suction passageway.

[0022] According to an embodiment, the activator may comprise a lever-press mechanism arranged to transform the deodorising agent from the first stage to the second stage. Such lever-press mechanism allows the deodorising agent in the first state, such as e.g. a tablet, capsule, pellet, etc., to be crushed or torn into the second state in which it comprises e.g. a plurality of particles, free or loose fibres, powder like substance, etc. The present embodiment is advantageous in that it may operate directly within the dispenser, thereby allowing the deodorising agent to be ready for release directly after being transformed into the second state by the activator. Furthermore, the lever-press mechanism provides a non-complex use of the activator by the user, which may operate the mechanism simultaneously as manoeuvring the vacuum cleaner. The present embodiment is further advantageous in that it is also adaptable to a wide range of deodorant agent density and hardness, and therefore easily can be adapted to crush both very hard tablets as well as soft ones.

[0023] According to an embodiment, the activator may comprise a grinding mechanism arranged to transform the deodorising agent from the first stage to the second stage. Such grinding mechanism may be activated by turning a knob or a rotating end enabling the deodorising agent to be grinded or grated into its second state. The present embodiment is further advantageous in that it allows for a possibility to correlate the quantity of deodorising agent transformed into a second state with the degree of rotation of the knob or rotating end of the grinding mechanism. Such relation permits the accurate selection of dosages of deodorising agent to be transformed and released into the suction passageway. Furthermore, the grinding mechanism of the present embodiment allows the part of the deodorising agent that has not yet been released to remain in its first state, which may facilitate conservation of its deodorising effect for a longer period of time.

[0024] The deodorising effect may be done by absorbing the odour or masking the odour with a more pleasant smell or a combination of the two.

[0025] It is appreciated that a feature described in relation to one of the aspects may also be incorporated in the other aspect, and that the advantages of the feature is applicable to all aspects in which it is incorporated.

Brief description of the drawings

[0026] The above, as well as additional objects, features and advantages of the present invention, will be better understood through the following illustrative and non-limiting detailed description of embodiments of the present invention. Reference will be made to the appended drawings, on which:

figure 1 illustrates a vacuum cleaner comprising a dispenser releasably mounted on the suction passageway of said vacuum cleaner according to an

embodiment;

figures 2a, 2b illustrate an example of a dispenser according to an embodiment in which the dispenser is shown in a closed and open position;

figure 3 illustrates the dispenser of figures 2a and 2b releasably mounted on the vacuum cleaner suction passageway according to an embodiment;

figure 4 shown an inside view of the dispenser during operation of the vacuum cleaner according to an embodiment;

figure 5a, 5b illustrate an example of a dispenser according to another embodiment in which the dispenser is shown in a closed and open position;

figure 6 illustrates the dispenser of figures 5a and 5b releasably mounted on the vacuum cleaner suction passageway according to an embodiment.

Detailed description of embodiments

[0027] Figure 1 illustrates a vacuum cleaner 100 comprising a main body 160 and a suction tube 150. The suction tube 150 comprises both a rigid section 120 and a flexible section 110. Other models of vacuum cleaner which may be considered as embodiments may comprise only a rigid suction tube or only a flexible suction tube. In the embodiment illustrated in figure 1, a dispenser 130 is releasably mounted on the rigid part 120 of the suction tube 150. The dispenser 130 shown in figure 1 is releasably attached to the suction tube 150 and may be removed to be displaced onto the flexible section 110 of the suction tube 150 or onto a different vacuum cleaner. Furthermore, the dispenser 130 shown in figure 1 is configured to receive a deodorising agent and release it in the suction passageway after the activation of the deodorising agent. Such details regarding the composition of the dispenser 130 will be presented in the detailed description of figures 2 and 5. Figure 1 further shows a vacuum suction head 170 representing the inlet of air flow traveling through the suction tube 150 to the bag 140 comprised in the vacuum body 160. The bag 140 contains the vacuumed substances and has to be replaced or emptied after a vacuuming cycle or following a malfunction e.g. holes, wrong connection, etc. The air flow traveling from the suction head 170 thus transports the released deodorising agent from the dispenser to the vacuum bag 140 resulting in odour elimination in the vacuum bag 140 as well as in the suction tube 150.

[0028] Figures 2a and 2b illustrate an example of a dispenser 200 according to an embodiment. Figure 2a illustrates the dispenser 200 in an open position. In such position, the activator 210 of the dispenser 200 is being fully retracted from the container 220. Moreover, the activator 210 is composed of a lever 230 attached to a compression surface 240 which surface is covered by protrusions 250. The protrusions 250 may take any suitable shape in any suitable amount in order to permit the transition of the deodorising agent from a first state into a second state when the dispenser 200 is in closed posi-

tion. The protrusions 250 are arranged to tear, shred or crush the deodorising agent located into the container 220 into loose particles, free fibres, powder like form, etc. The container 220 is configured to receive deodorising agent in a first state and may comprise any form of opening allowing deodorising agent in a second state to be released in the suction passageway. In figure 2a, the openings of the container 220 are represented by small perforations on its bottom surface. Figure 2b shows the dispenser 200 in a closed position i.e. a position in which the activator 210 has transformed the deodorising agent from first state into a second state. The dispenser 200 shows an inlet 260 and an outlet 270 adapted to releasably mount the dispenser 200 onto the suction tube of the vacuum cleaner. The inlet 260 and the outlet 270 are also configured to be in fluid connection with the suction air flow of the vacuum cleaner traveling from the suction head to the bag and indicated by arrows in figures 2a and 2b. Not visible on figure 2b is the deodorising agent contained in the container 220 in which at least part of the deodorising agent has been transformed into loose particles, free fibres, powder like form, etc. by means of the protrusions 250 of the activator 210.

[0029] Figure 3 illustrates the dispenser 200 of figures 2a and 2b releasably mounted on the rigid section 120 of the vacuum cleaner suction passageway according to an embodiment. Figure 3 shows the dispenser 200 in an open position ready to receive deodorising agent in its container 220. Figure 3 shows examples of deodorising agents in a first state according to embodiments for which the deodorising agent may be a tablet 310, a pellet 320, a capsule 330 or other forms of contained volume of deodorising agent. Following the placement of the deodorising agent 310 in the container 220, the lever 230 is rotated by the user such that the protrusions 250 compress the deodorising agent 310 transforming it into a second state. The deodorising agent in a second state is then released from the container 220 and transported by the air flow through the suction passageway 120 to the bag of the vacuum cleaner. The deodorising agent may be gradually released into the suction passageway 120 through the small perforations in the bottom surface of the container 220. The gradual release may be enabled by the air flow in the suction passageway 120, which may entrap at least some of the deodorising agent as the air flow passes by the bottom surface of the container 220. Alternatively, or additionally, the release may be at least partly effected by the user pushing the activator 210. Thus, the user may increase the dosage of the deodorising agent by adding a pressure on the lever 230. In a further example, the dispenser 200 may be configured to directly release all of the deodorising agent to the suction passageway 200. In such an example, the activator 210 may be configured to transform substantially all of the deodorising agent into the second state at once, and the container 220 adapted to allow most of the deodorising agent to pass into the suction passageway 200 upon the transition from the first state to the second state.

[0030] Figure 4 is a cross sectional view illustrating an inside of a dispenser 200 according to an embodiment, which may be similar to the embodiment of figures 2 and 3. Figure 4 shows the dispenser 200 during operation of the vacuum cleaner, in which the air flow, represented by arrows F, enters the dispenser 200 by its inlet 410 and exits the dispenser 200 by its outlet 420. The activator shown in figure 4 is in a closed position in which the lever 230 has been rotated to permit the protrusions 250 to tear, shred or crush the deodorising agent 220 as it is brought in contact with the protrusions by the passing air flow. The passing air flow may cause the deodorising agent, which may be in the form of for example a tablet 310, a pellet 320 or a capsule 330, to vibrate and move freely in the container 220 in a manner that allows for a gradual transformation of the deodorising agent 230 from a first state to a second state, and thus a gradual release over time.

[0031] The second state of the deodorising agent is shown in figure 4 as loose or free fibres 430 allowing them to be easily transported by the air flow. Moreover, the air flow shown in figure 4 entering the dispenser 200 at its inlet 410 further passes through the container 220 transporting the released deodorising agent in a second state 430. The air flow then exits the dispenser 200 at its inlet 420 carrying with it the deodorising agent in a second state 430 to the bag of the vacuum cleaner. Furthermore, the lever 230 shown in figure 4 may also be gradually moved towards its closed position by the user in order to have a gradual release of the deodorising agent in a second state 430 over time or to release different dosages of the deodorising agent 430.

[0032] Figure 5a, 5b illustrate an example of a dispenser 500 according to another embodiment in which the dispenser 500 is shown in a closed position in figure 5a and in an open position in figure 5b. The dispenser 500 also comprises an air inlet 510 and an air outlet 520 both arranged to be in fluid connection with the suction passageway of a vacuum cleaner. The dispenser 500 further comprises an activator 530 shown in a closed position in figure 5a. Figure 5b shows the dispenser 500 in an open position represented by the activator 530 leaving space for the deodorising agent in a first state, for which the deodorising agent can be a tablet 310, a pellet 320, a capsule 330 or other forms of contained volume of deodorising agent, to be inserted in the container of the dispenser 500. In addition, once inserted in the dispenser 500, the deodorising agent in a first state, e.g. 310 can be seen through the volume indicator 540 allowing the user to determine and select parameters such as the dosages of released deodorising agent through time after transformation of the deodorising agent from a first state to a second state. Such transformation occurs through a grinding mechanism activated by the rotation of the activator 530 operated by the user.

[0033] Figure 6 illustrates the dispenser 500 of figures 5a and 5b releasably mounted on the rigid section 120 of the vacuum cleaner suction passageway according to

an embodiment. The deodorising agent in a first state 310 is shown inserted in the container of the dispenser 500 and its released quantity or volume can be seen through the volume indicator 540. The activator 530 may be operated by the user through a rotation indicated in figure 6 by the rotation arrow which leads to the transformation of the deodorising agent in a first state 310 into a deodorising agent in a second state 610 which is then released into the suction passageway of the vacuum cleaner by the air outlet 520. Furthermore, the deodorising agent in a second state 610, i.e. after rotation of the activator 530 by the user, is represented in figure 6 in a powder like or free particle form, released in the suction passageway and transported to the vacuum bag by the suction air flow represented in figure 6 by the straight arrows.

[0034] In addition, the activators 210 and 530 described in the previous figures and any additional activators according to the described embodiments may be operated automatically. Such automatic activation may be operated through a software or controlled by a controller or actuator which may be located within the dispenser 200, 500 and arranged to automatically operate the activator based on parameters set by the user such as time of use of the vacuum cleaner, volume of vacuumed substances present in the vacuum bag or cartridge, number of vacuuming cycles, etc.

[0035] Other variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference signs in the claims should not be construed as limiting the scope.

Claims

1. A dispenser (130, 200) configured to be releasably attached to a suction tube (150) of a vacuum cleaner (100), the dispenser comprising:

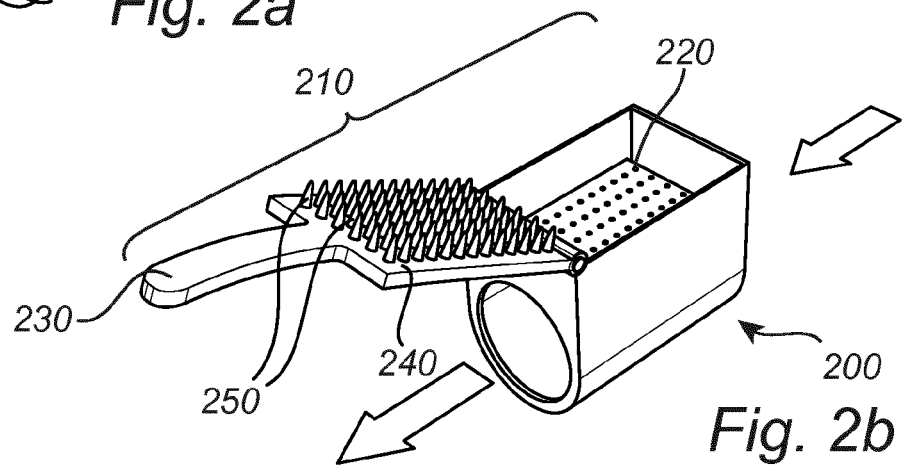
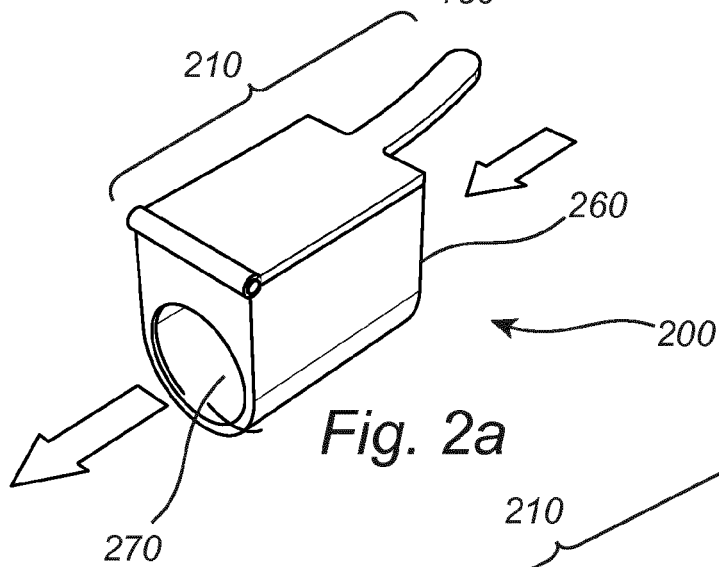
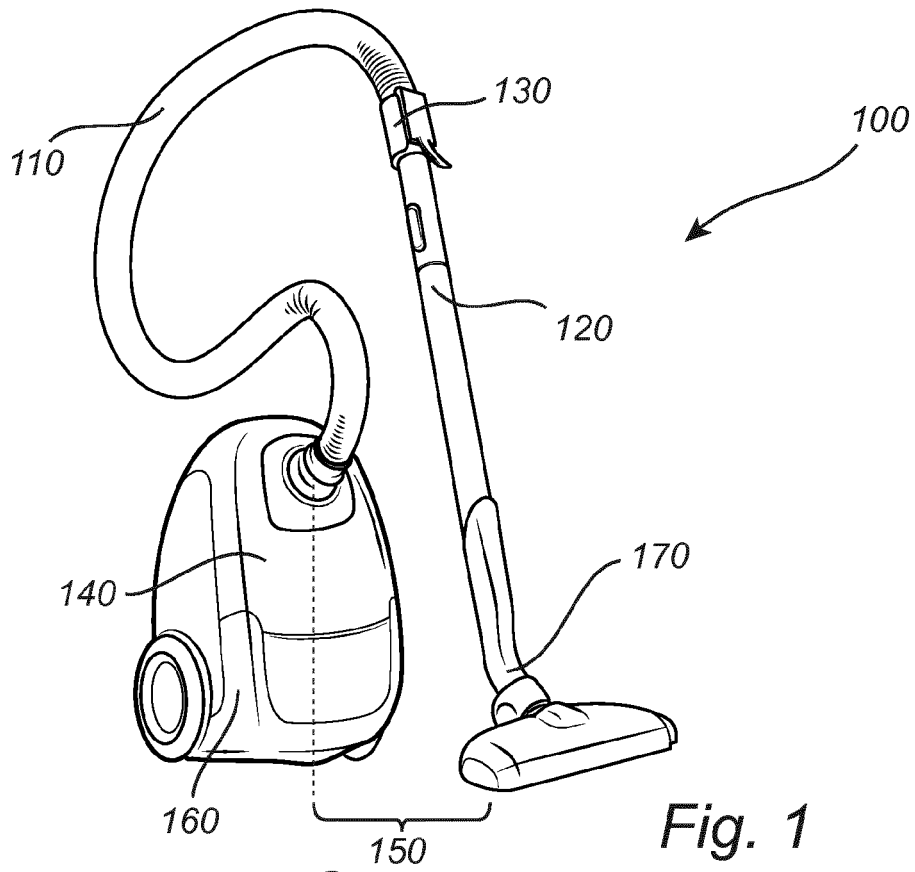
a container (220) configured to receive a deodorising agent (310, 320, 330) arranged in a first state;

an activator (210) configured to transform the deodorising agent into a second state;

a dispensing outlet (420) configured to be fluidly connected to a suction passageway (120) of the tube and to release the deodorising agent, arranged in the second state, into the suction passageway.

2. The dispenser according to claim 1, wherein the container is configured to store the deodorising agent, and wherein the activator is configured to gradually release the deodorising agent to the suction passageway during use of the vacuum cleaner. 5
3. The dispenser according to claim 1 or 2, wherein the activator is configured to be manually operated by a user of the vacuum cleaner. 10
4. The dispenser according to claim 1 or 2, wherein the activator is configured to be automatically operated according to a predetermined scheme. 15
5. The dispenser according to any of the preceding claims, wherein the activator is configured to transform the deodorising agent from a tablet into a plurality of particles. 20
6. The dispenser according to claim 5, wherein the tablet is a capsule. 25
7. The dispenser according to any of the preceding claims, configured to receive the deodorising agent in the form of a pellet of compressed fibres and to release the deodorising agent in the form of separated fibres. 30
8. The dispenser according to any of the preceding claims, further configured to release at least part of the deodorising agent upon actuation by a user. 35
9. The dispenser according to any of the preceding claims, further comprising a suction inlet (260) and a suction outlet (270) configured to be mounted in the suction passageway and to direct a suction flow by the dispensing outlet. 40
10. The dispenser according to any of the preceding claims, wherein the activator comprises a lever-press mechanism (230, 240, 250) arranged to transform the deodorising agent from the first state to the second state. 45
11. The dispenser according to any of the preceding claims, wherein the activator comprises a grinding mechanism arranged to transform the deodorising agent from the first state to the second state. 50
12. A vacuum cleaner (100) comprising a dispenser (130, 200) according to any of claims 1 to 11. 55

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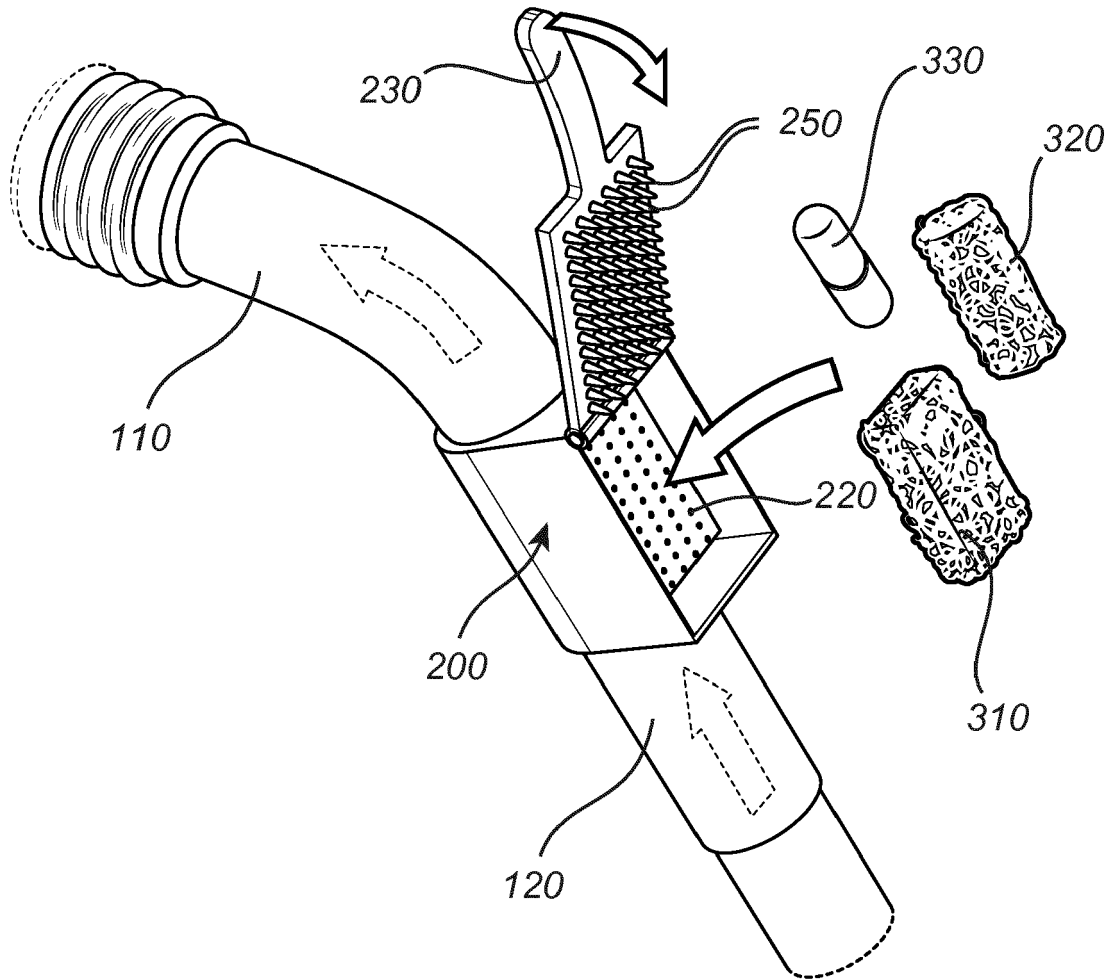


Fig. 3

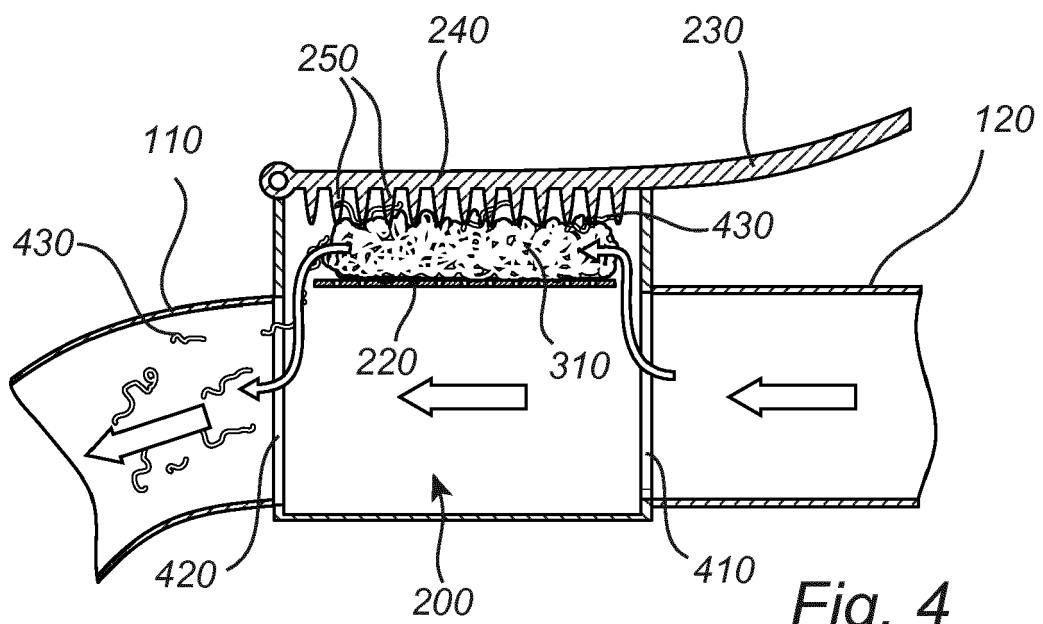
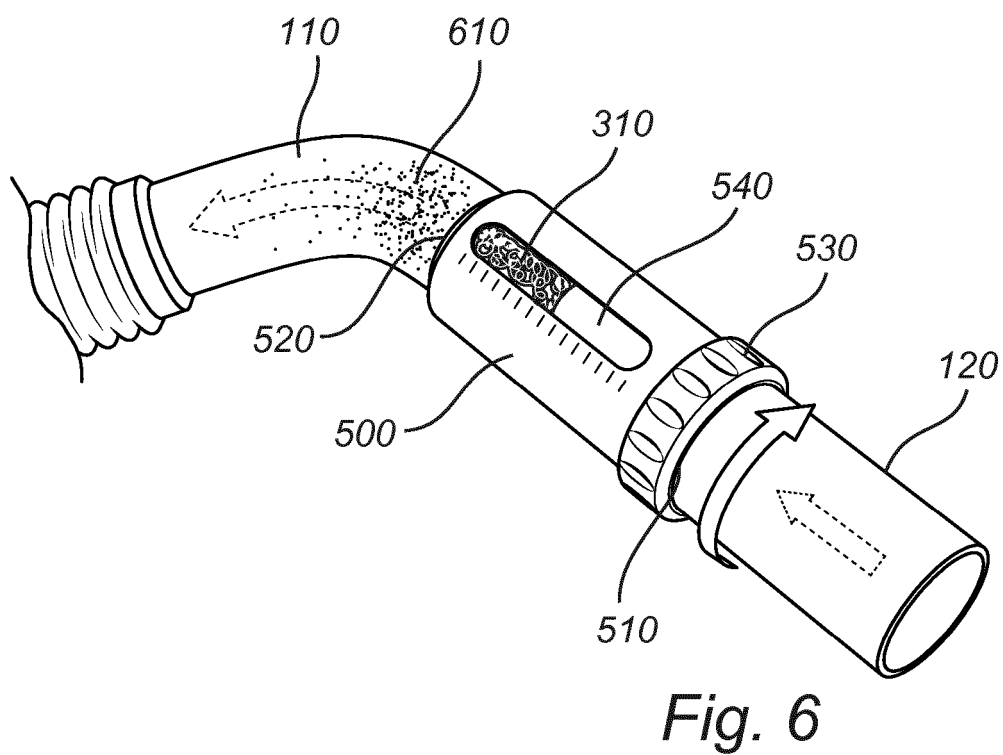
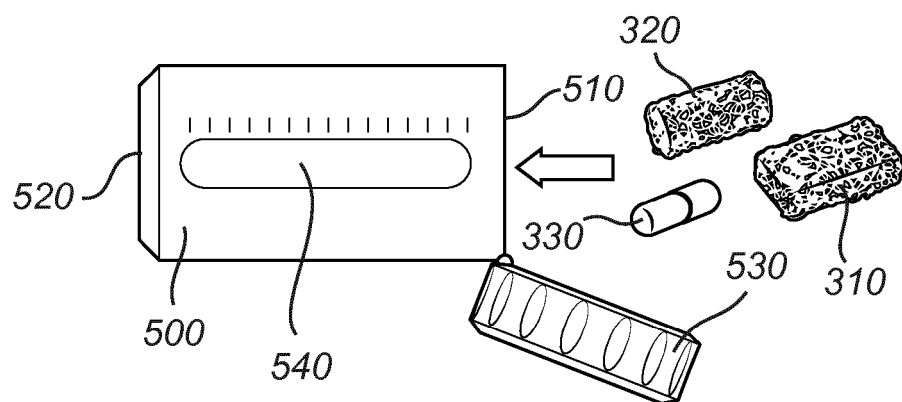
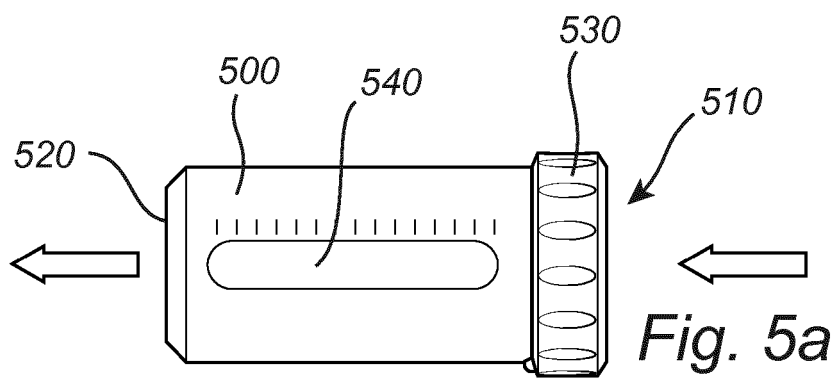


Fig. 4





EUROPEAN SEARCH REPORT

Application Number
EP 19 18 5429

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			A47L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 January 2020	Examiner Blumenberg, Claus
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