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(54) **Domestic cleaning tool for surfaces**

(57) A cleaning tool comprises a support structure (2), a cleaning element (4) connected to the support structure (2), and an impact protector (9) connected laterally to the support structure (2); said impact protector (9) is at least partly spaced from said support structure (2) to define an interface (10) between said impact protector (9) and said support structure (2).

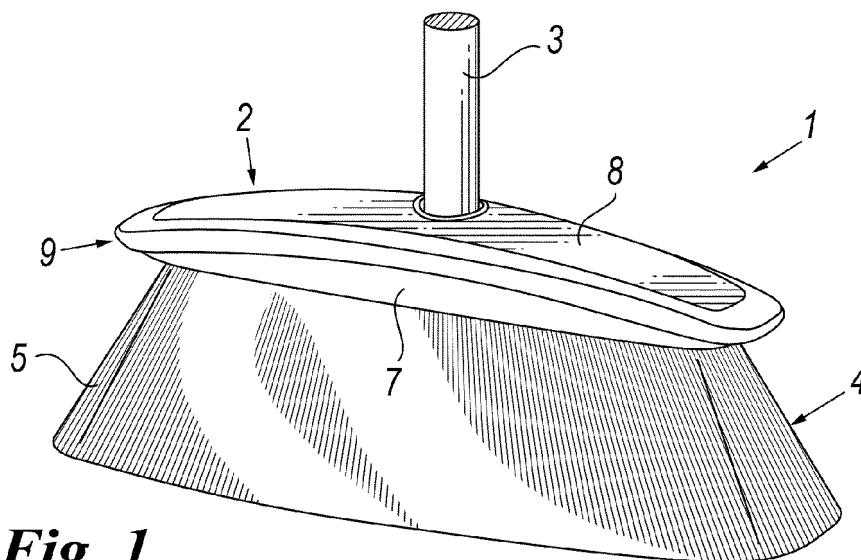


Fig. 1

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Description

[0001] The present invention relates to a domestic cleaning tool for surfaces such as floors, windows, doors, furniture and the like.

[0002] In greater detail, this cleaning tool can be a broom, a scrubbing brush, a mop, a vacuum cleaner accessory, a feather duster, etc.

[0003] Cleaning tools of known type comprise a rigid support body on which bristles, cloth strips, etc. are fixed, according to the type of tool. An impact protector of soft deformable material is mounted on the support body. Positioned laterally to the support body, the impact protector cushions impacts of the support body against walls, skirting boards or furniture, so limiting possible damage to those surfaces to be cleaned or to adjacent surfaces.

[0004] An example of such a tool can be seen in the document FR 2 753 075.

[0005] A drawback of cleaning tools of known type is that they do not allow adequate protection against impacts and possible damage to the surfaces to be cleaned, or to adjacent surfaces.

[0006] The object of the present invention is to provide a cleaning tool which allows more effective preventing of damage to the surfaces to be cleaned or to adjacent surfaces.

[0007] This object is substantially attained by a cleaning tool in accordance with claim 1.

[0008] Further characteristics and advantages of the present invention will be more apparent from the indicative and hence non-limiting description of a preferred but non-exclusive embodiment of a domestic cleaning tool for surfaces, as illustrated in the accompanying drawings, in which:

Figure 1 shows a cleaning tool in accordance with a first embodiment of the present invention;
Figure 2 shows a section through the device illustrated in Figure 1 taken on the line II-II;
Figure 3 shows a cleaning tool in accordance with a second embodiment of the present invention;
Figure 4 shows a section through the device illustrated in Figure 3 taken on the line IV-IV;
Figure 5 shows a cleaning tool in accordance with a third embodiment of the present invention;
Figure 6 shows a section through the device illustrated in Figure 6 taken on the line VI-VI.

[0009] With reference to the accompanying figures, the reference numeral 1 indicates overall a domestic cleaning tool for surface in accordance with the present invention.

[0010] With particular reference to Figures 1 and 2, the cleaning tool shown is a broom. In further embodiments the tool can be a scrubbing brush (Figures 3 and 4), a mop (Figures 5 and 6), a vacuum cleaner accessory (not shown), a feather duster (not shown) or others.

[0011] The tool 1 comprises a support structure 2 of

elongate shape, on which a handle 3 is transversely mounted.

[0012] A cleaning element 4 is fixed onto the support structure 2.

[0013] With reference to the embodiment of Figures 1 and 2, namely the broom, the cleaning element 4 consists of a plurality of flexible bristles 5 which extend from the support structure 2 in a diverging configuration.

[0014] In the case of the scrubbing brush (Figures 3 and 4), the cleaning element 4 consists of rigid bristles 18 disposed substantially parallel to each other.

[0015] In the case of a mop (Figures 5 and 6), the cleaning element (not shown) consists of a plurality of cloth strips fixed to the support structure 2 at their first ends.

[0016] The support structure 2 comprises a base member 7 and a cover 8 connected to the base member 7.

[0017] The cleaning element 4 is fixed to the base member 7.

[0018] The base member 7 and the cover 8 are formed of rigid material. By way of example, the base member 7 and the cover 8 are formed of polypropylene.

[0019] An impact protector 9 is connected laterally to the support structure 2 to prevent damage by impacts of the support structure 2 against walls, furniture or other surfaces.

[0020] The impact protector 9 is formed of deformable material. By way of example, the impact protector 9 is formed of thermoplastic rubber.

[0021] By way of example, the cover 8 and the impact protector 9 are produced by an overmoulding process. In particular, the cover 8 is moulded in a first step, after which the impact protector 9 is moulded.

[0022] According to the present invention, the impact protector 9 is at least partly spaced from the support structure 2 such that an interface 10 is defined between the impact protector 9 and the support structure 2.

[0023] Advantageously, the interspace 10 enables the impact protector 9 to undergo greater deformation within the interspace 10 such as to absorb high intensity impacts more efficiently.

[0024] In greater detail and in accordance with that shown in Figures 1 and 2, the interspace 10 is defined between the cover 8 and the impact protector 9.

[0025] In this respect, the cover 8 comprises a main portion 11 superposed on the base member 7 and at least one lateral wall 12 which projects from the main portion 11 towards the base member 7. As represented, the lateral wall 12 extends about the entire perimeter of the main portion 11 of the cover 8.

[0026] The impact protector 9 lies to the side of, but remains spaced from, the lateral wall 12. In detail, the impact protector 9 comprises a coupling portion 13 fixed at the join between the main portion 11 and the lateral wall 12 of the cover 8.

[0027] The impact protector 9 also comprises a lip 14 which is fixed to the coupling portion 13 and withdrawingly extends parallel to the lateral wall 12.

[0028] With reference to the base member 7, this com-

prises a coupling wall 15 disposed substantially transverse to the lateral wall 12 of the cover 8. In detail, the cover 8 is fixed to the base member 7 by a preferably rigid connection between the lateral wall 12 of the cover 8 and the coupling wall 15 of the base member 7. The coupling wall 15 is defined along the entire perimeter of the base member 7.

[0029] The impact protector 9 extends to the coupling wall 15. In other words, the lip 14 of the impact protector 9 extends until it grazes the coupling wall 15. In this manner, following an impact, the lip 14 is able to deform until it at least partly enters the interspace 10, to absorb and dissipate most of the energy deriving from the impact.

[0030] The impact protector 9 presents, opposite the interspace 10, an external surface 9a of convex shape such as to project from the outline of the support structure 2. In particular, the external surface 9a is provided on the lip 14.

[0031] It should be noted that in the embodiment shown in Figures 5 and 6, namely a mop, the support structure 2 is formed in one piece. In this case, the coupling portion 13 of the impact protector 9 is fixed to one end of the support structure 2, with the lip 14 extending away from the support structure 2. In this case the interspace 10 is defined between the lip 14 and a backing wall 19 which extends away from the support structure 2.

[0032] To limit the excursion of the lip 14 of the impact protector 9 within the interspace 10 and to prevent it, for example, from becoming jammed and losing its functionality, a stop 16 is disposed within the interspace 10.

[0033] In accordance with that illustrated, the stop 16 comprises a tooth 17 which emerges from the coupling wall 15.

[0034] In a first embodiment, the stop 16 comprises a single tooth 17 which extends with continuity along the entire coupling wall 15.

[0035] In a second embodiment, the stop 16 comprises a plurality of teeth 17 which, preferably equispaced from each other, extend along the coupling wall 15.

[0036] The described invention solves the stated technical problem.

[0037] In this respect, the interspace defined between the impact protector and the support structure enables the deformability of the impact protector to be increased such that this latter is able to withstand high intensity impacts in a more effective manner. Consequently, the described cleaning tool reduces the risk of causing damage to the surfaces to be cleaned, and/or to adjacent surfaces.

Claims

1. A cleaning tool comprising:

- a support structure (2);
- a cleaning element (4) connected to the support structure (2);

- an impact protector (9) connected laterally to the support structure (2);

characterised in that said impact protector (9) is at least partly spaced from said support structure (2) to define an interface (10) between said impact protector (9) and said support structure (2).

2. A tool as claimed in claim 1, **characterised in that** the support structure (2) comprises a base member (7) connected to the cleaning element (4) and a cover (8) fixed to the base member (7); said interspace (10) being defined between said cover (8) and said impact protector (9).

3. A tool as claimed in claim 2, **characterised in that** the cover (8) presents a main portion (11) superposed on the base member (7), and at least one lateral wall (12) projecting from said main portion (11) towards said base member (7); said impact protector (9) being to the side of said lateral wall (12) and spaced therefrom.

4. A tool as claimed in claim 3, **characterised in that** said base member (7) presents a wall (15) which couples to the lateral wall (12), said coupling wall (15) being transverse to said lateral wall (12); said impact protector (9) extending to said coupling wall (15).

5. A tool as claimed in any one of the preceding claims, **characterised by** comprising a stop (16) disposed within the interspace (10) to limit deformation of the impact protector (9).

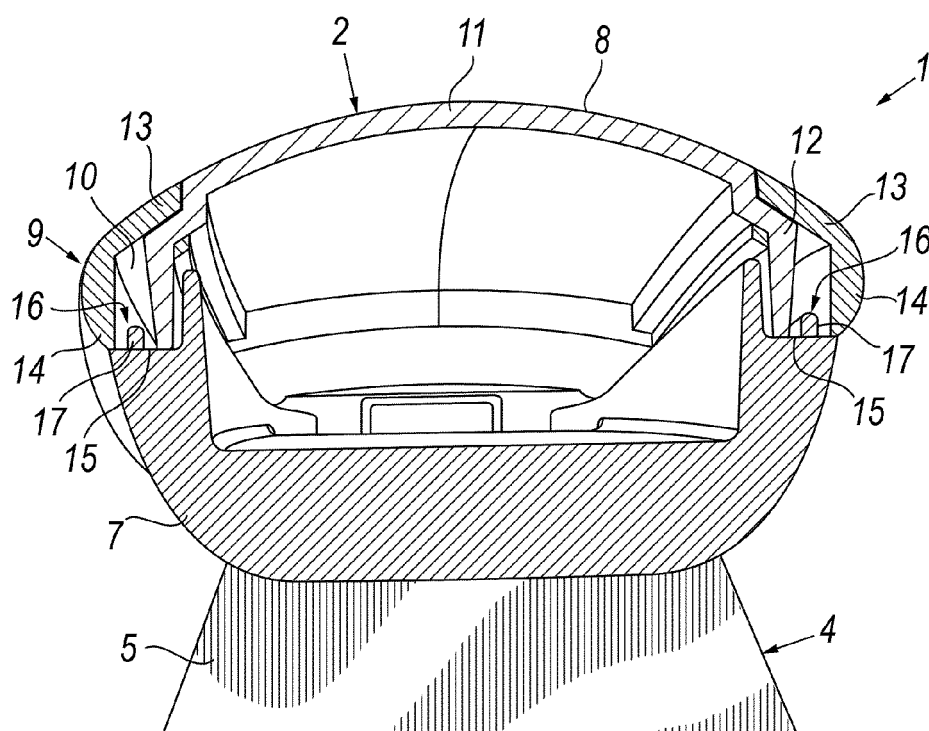
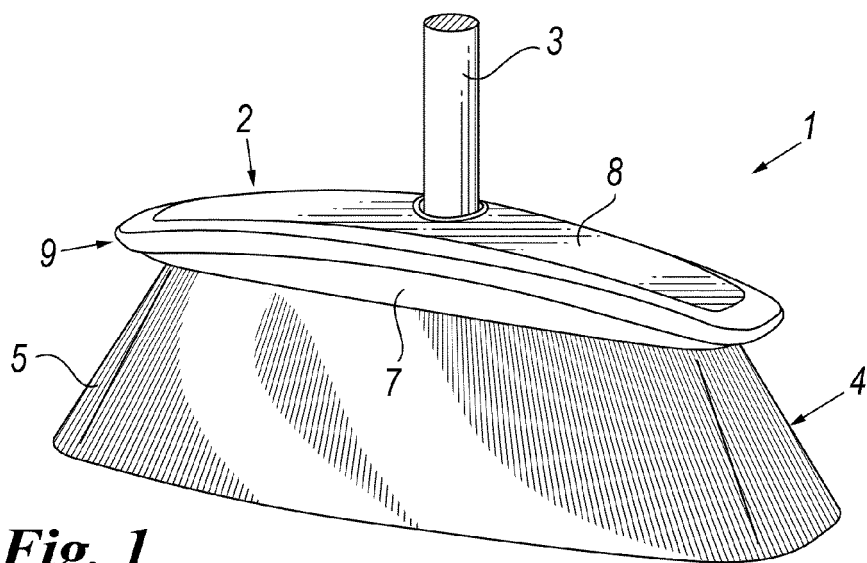
6. A tool as claimed in claim 5, **characterised in that** said stop (16) comprises at least one tooth (17) emerging from said coupling wall (15).

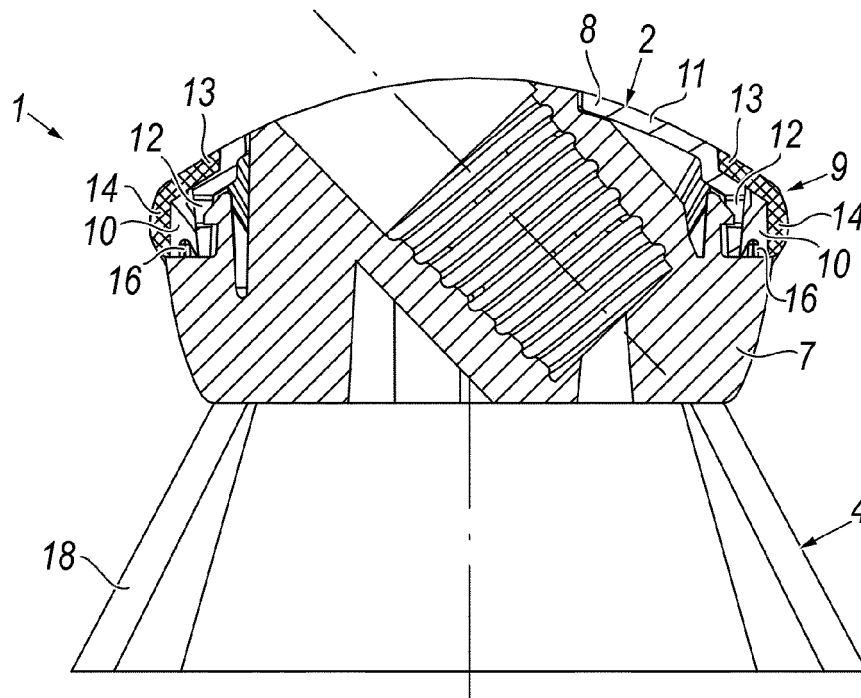
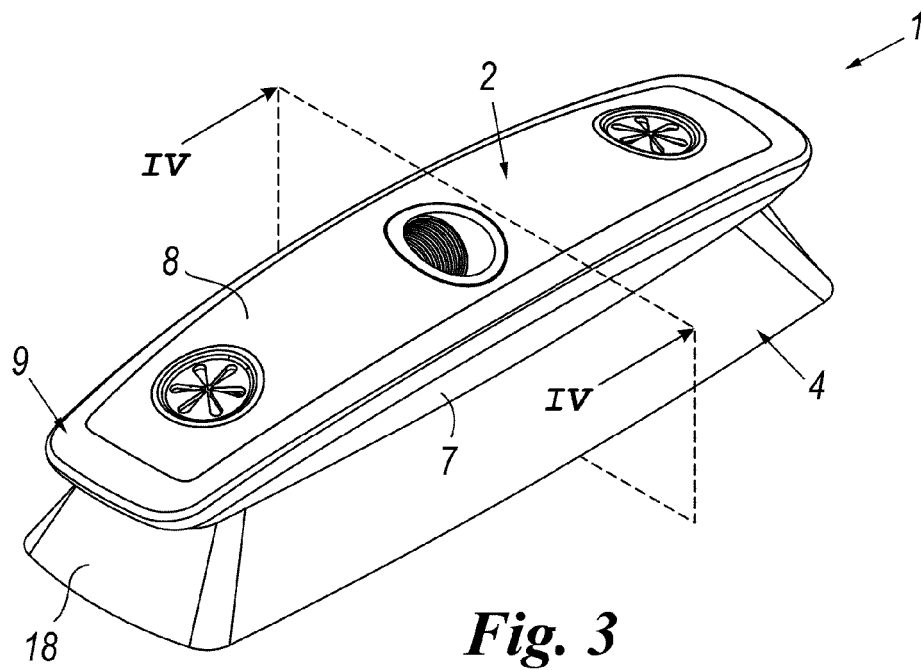
7. A tool as claimed in claim 6, **characterised in that** said stop (16) comprises a plurality of said teeth (17) preferably equispaced from each other.

8. A tool as claimed in claim 6, **characterised in that** said tooth (17) extends substantially along the entire length of the interspace (10).

9. A tool as claimed in any one of the preceding claims, **characterised in that** the impact protector (9) presents, opposite the interspace (10), an external surface (9a) of convex shape.

10. A tool as claimed in any one of the preceding claims, **characterised by** being a broom or a scrubbing brush or a mop.





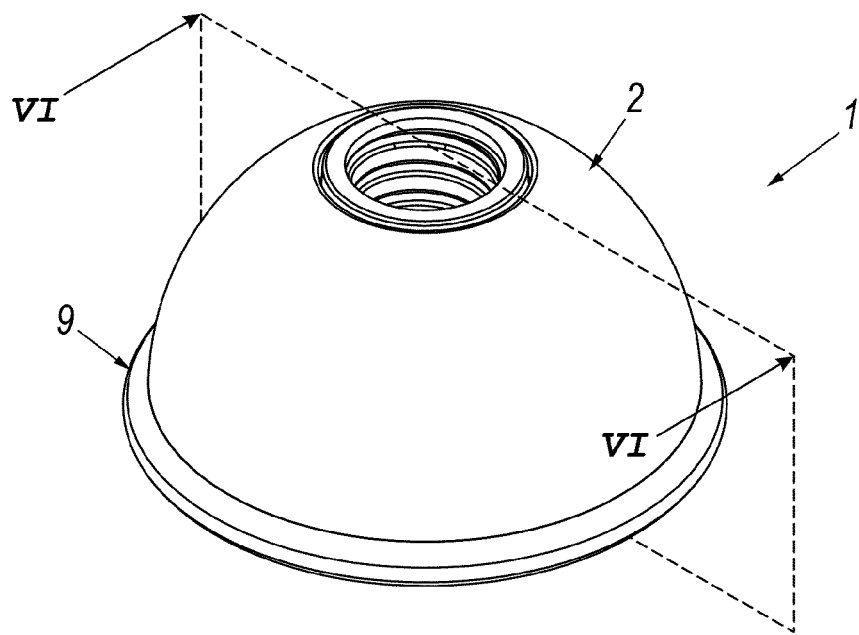


Fig. 5

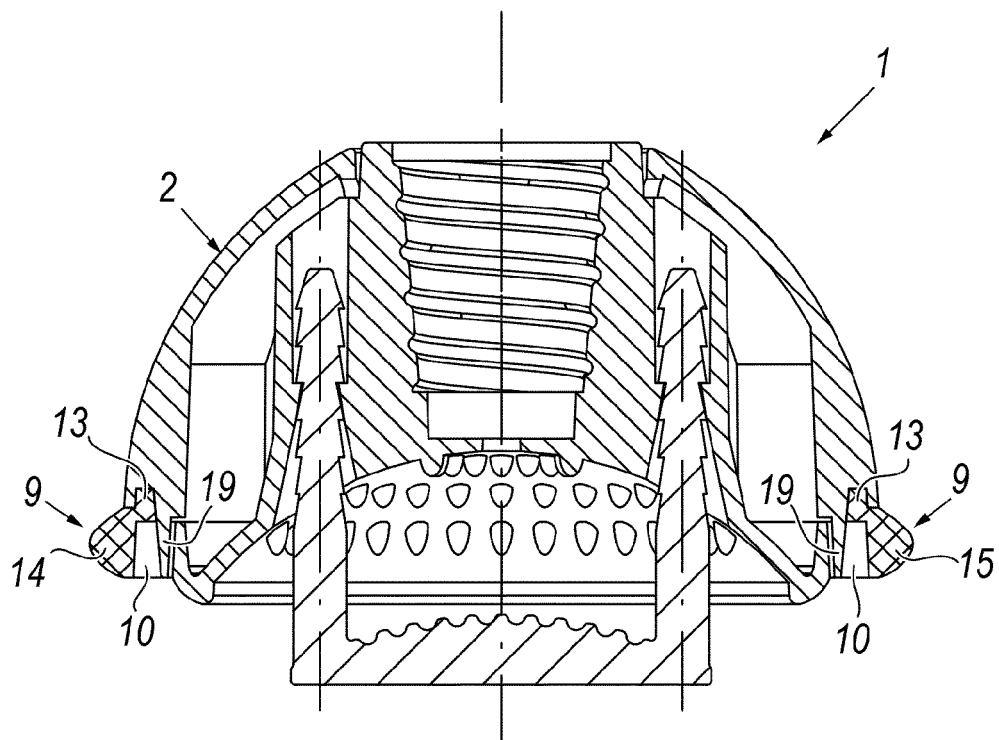


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 13 15 2846

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	FR 2 753 075 A1 (BILLAT SA [FR]) 13 March 1998 (1998-03-13) * figure 1 *	1-10	INV. A47L13/00 A46B5/00 A47L13/48
A	FR 2 562 411 A1 (SOL CHRISTIANE [FR]) 11 October 1985 (1985-10-11) * protection 3; figure 1 *	1-10	
A	US 5 333 345 A (O'DONNELL JERRY L [US]) 2 August 1994 (1994-08-02) * shock absorber 26; figure 2 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L A46B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 July 2013	Examiner Trimarchi, Roberto
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 15 2846

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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09-07-2013

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FR 2753075	A1	13-03-1998	NONE	

FR 2562411	A1	11-10-1985	NONE	

US 5333345	A	02-08-1994	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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