US 20100095475A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2010/0095475 A1

(43) Pub. Date: Apr. 22, 2010

Gomes Melico et al.

(54) **INLET DEVICE FOR CENTRAL VACUUM SYSTEM**

(76) Inventors: **Manuel Alexandre Gomes Melico**, Fernao Ferro, (PT); **Carlos Gomes Meliço**, Fernao Ferro (PT)

Correspondence Address:
CERMAK KENEALY VAIDYA & NAKAJIMA LLP
515 EAST BRADDOCK RD SUITE B
Alexandria, VA 22314 (US)

(21) Appl. No.: **12/593,421**

(22) PCT Filed: **May 15, 2007**

(86) PCT No.: **PCT/IB2007/051862**

§ 371 (c)(1),
(2), (4) Date: **Nov. 16, 2009**

(30) **Foreign Application Priority Data**

Mar. 27, 2007 (PT) 103703

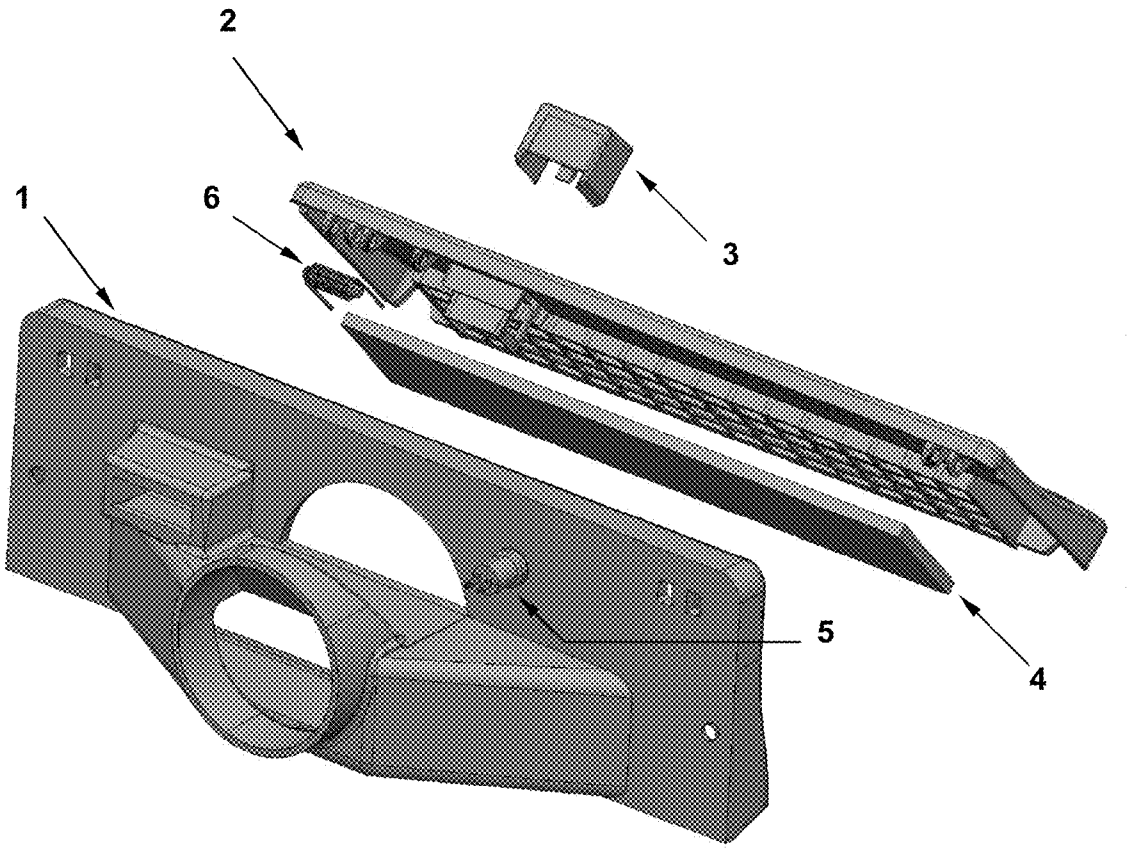
Publication Classification

(51) **Int. Cl.**
A47L 5/38 (2006.01)

(52) **U.S. Cl.** **15/301**

(57) **ABSTRACT**

The present invention consists of or includes an inlet device, of the valve type, used in a Central Vacuum System (CVS) and built into the skirting board, namely in the kitchen of a house. The function of the device is to collect dust and small debris with the aid of a broom into the entrance of this CVS, by means of a micro-switch activated CVS mechanism located in the skirting board, so as to avoid the use of a vacuum cleaner or vacuum tube also connected to the CVS. The device can comprise: a base body which can be assembled on the wall at the height of the skirting board; a cover which engages in the base body; an unlocking button which disengages the cover; a sealing strip which is glued to the base body; a micro-switch which engages in the base body; a helical torsion spring engaged in the cover, by means of a pin, which causes the cover to open in relation to the base body. By pressing the unlocking button the user causes the opening of the cover, which activates the micro-switch, which, in turn conveys an electric signal to the CVS so that it stars to vacuum.



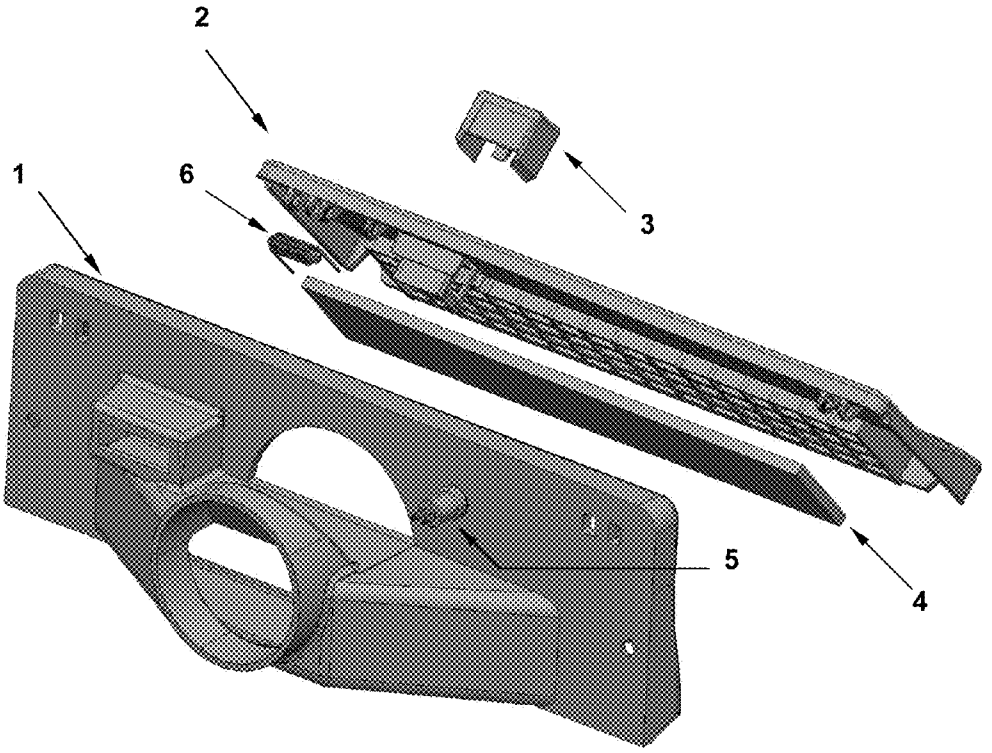


Figure 1

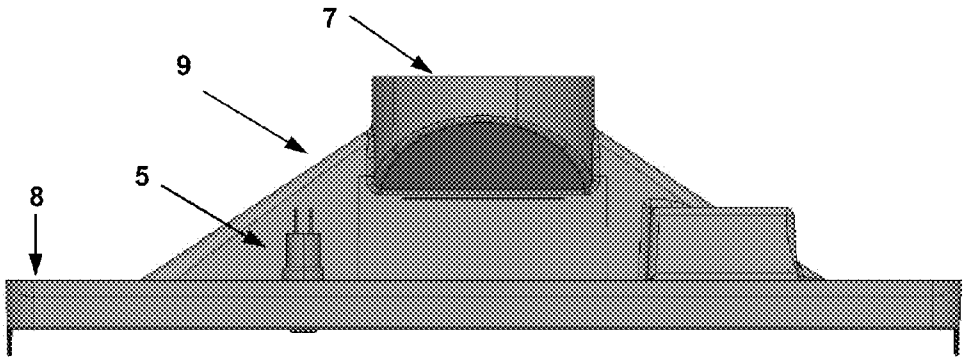


Figure 2

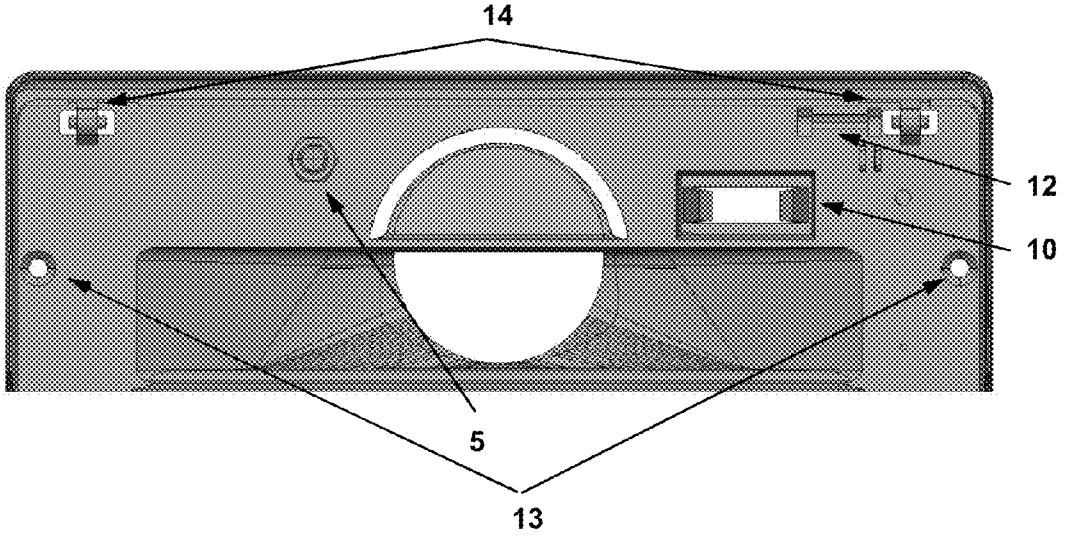


Figure 3

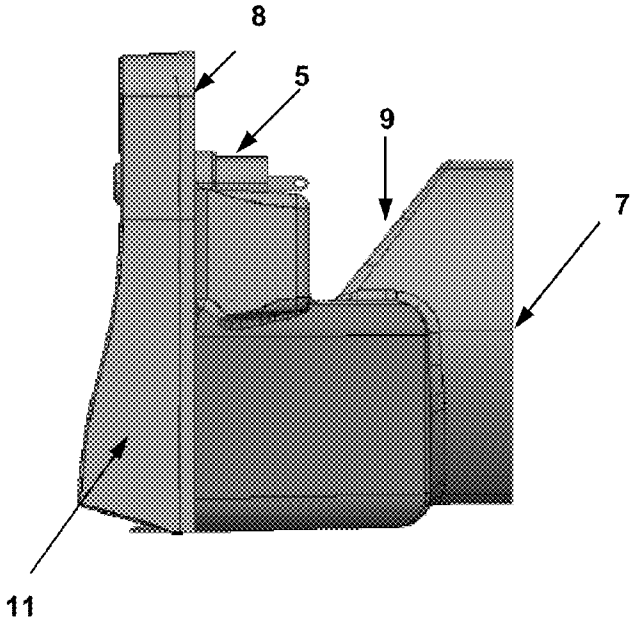


Figure 4

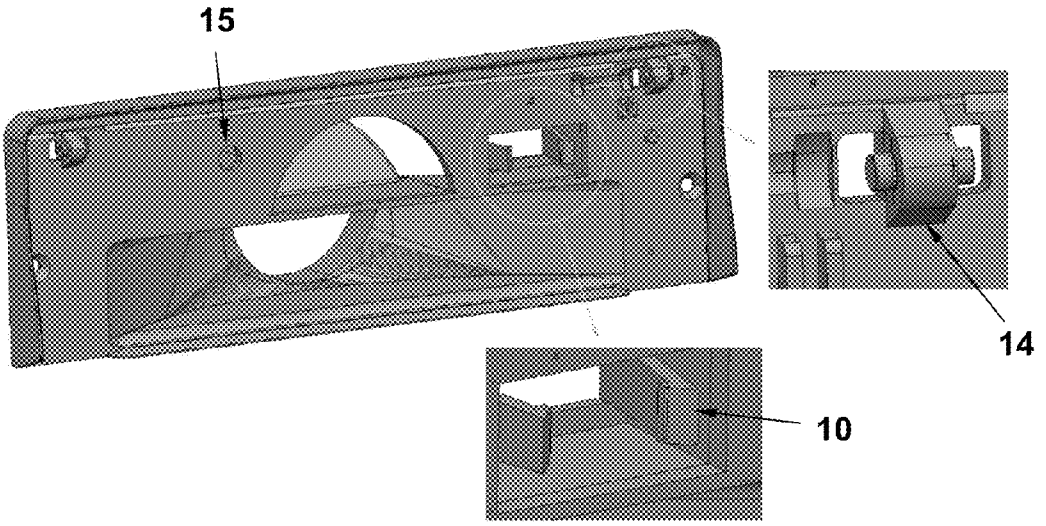


Figure 5

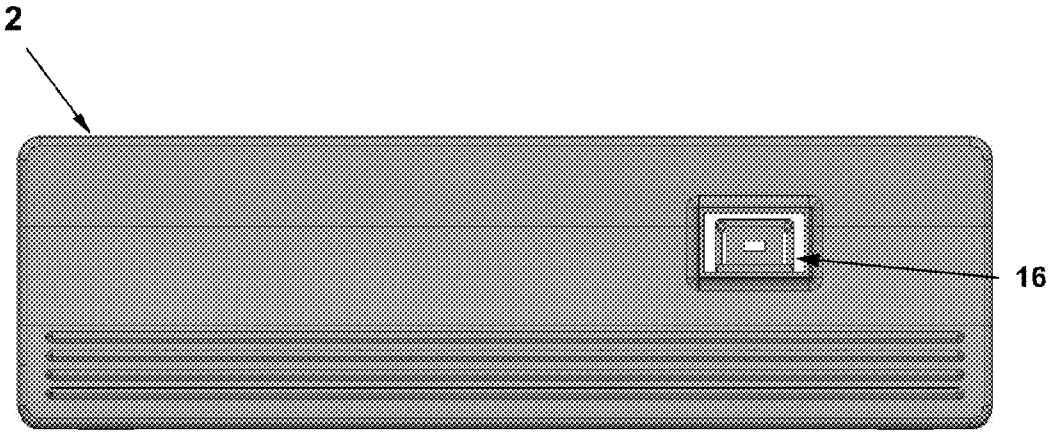


Figure 6

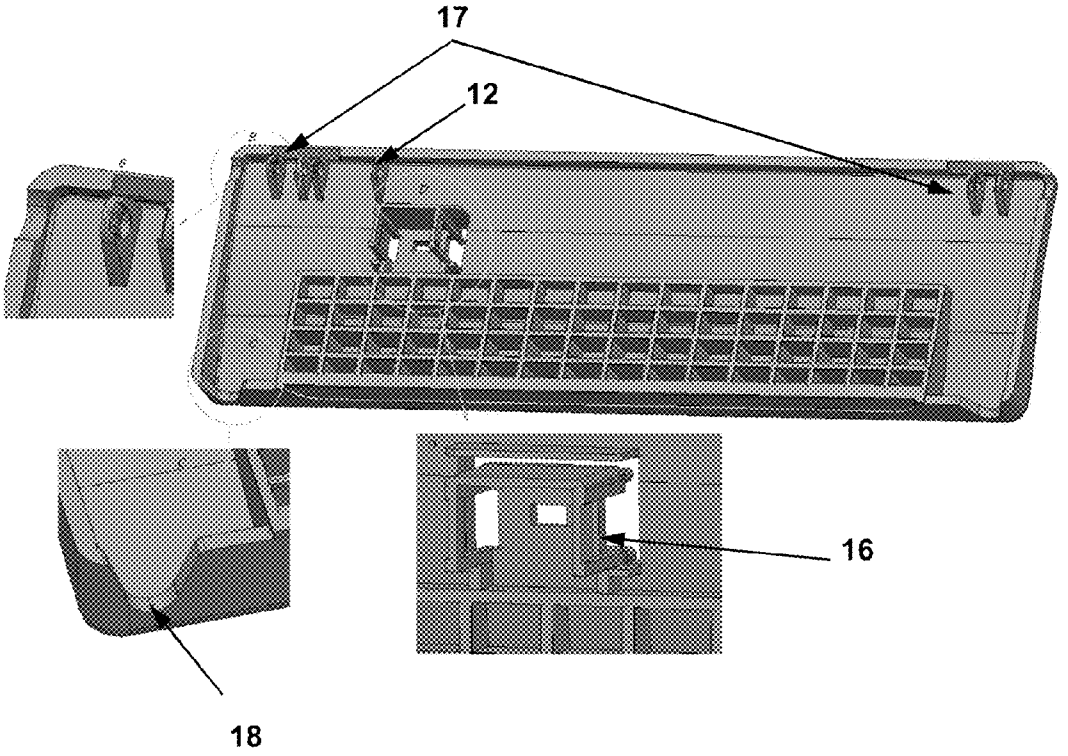


Figure 7

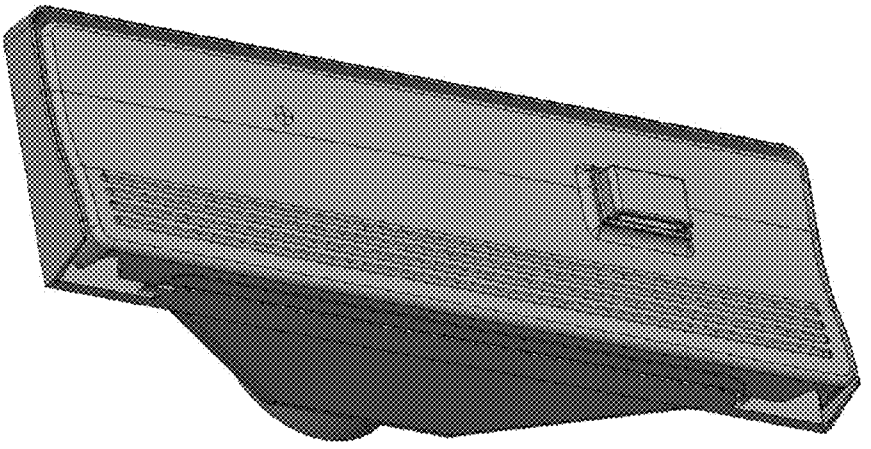


Figure 8

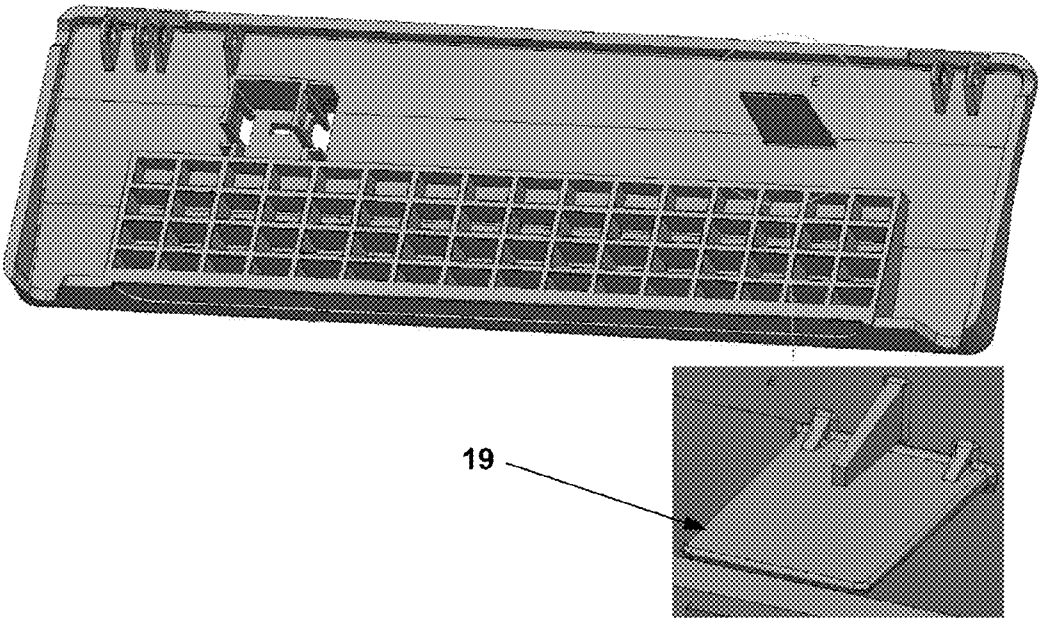


Figure 9

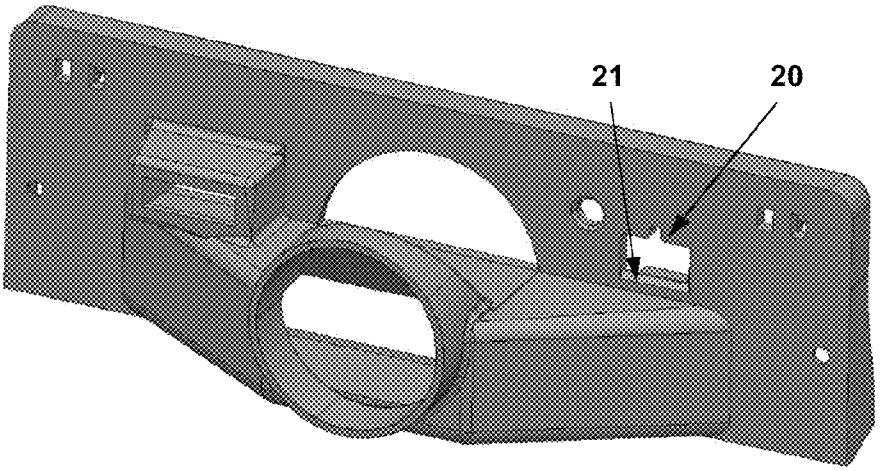


Figure 10

INLET DEVICE FOR CENTRAL VACUUM SYSTEM

[0001] This application is a U.S. national phase filing under 35 U.S.C. §371 of PCT Application No. PCT/IB2007/051862, filed May 15, 2007, claiming priority under 119 to Portuguese patent application number PT103703, the entire disclosures of which being incorporated herein.

TECHNICAL FIELD

[0002] The present invention can consist of or include an inlet device, of the valve type, used in a Central Vacuum System (CVS) and built into the skirting board, namely in the kitchen of a house. The function of the device is to collect dust and small debris with the aid of a broom into the entrance of this CVS, by means of a micro-switch activated CVS mechanism located in the skirting board, so as to avoid the use of a vacuum cleaner or vacuum tube also connected to the CVS.

PRIOR ART

[0003] There are devices in the market which have the same function as the present invention. These devices present different solutions to carry out the CVS activation and for the opening/closure of the inlet device.

[0004] The U.S. Pat. No. 5,504,967 discloses a device which makes its opening/closure by means of a piece that rotates according to a vertical axis through the action of a turning pedal which is pushed by the user's foot. This same pedal, when rotating, turns the respective CVS on and off by means of an electric contact provided by the conduction or not of electricity by a spring between two contacts.

[0005] With regard to this device the present invention presents a completely different system of opening/closure, as while the said turning pedal easily breaks when the user inadvertently steps on it, the present invention uses a button which is not very prominent in relation to the device. The CVS activating mechanism itself is different, given that the present invention uses an electric contact micro-switch which is much more reliable than an electric contact system by means of a spring.

[0006] The U.S. Pat. No. 6,292,977 discloses a device that makes its opening/closure by means of two pieces. A first piece that turns according to a horizontal axis and serves to open/close the entrance of the respective CVS, which is actuated by a spring, which for an open position activates the CVS by means of an electrical contact provided by the conduction of electricity between two contacts. A second piece has an edge that serves for engaging the first piece into the closed position and also comprises a pedal of disengagement which, when lifted by the user's foot opens the fist piece and triggers the operation of the device.

[0007] With regard to this device the present invention also presents a completely different system of opening/closure, as while the said rotating pedal is difficult to operate in the case where shoes higher than the pedal are used, the present invention uses a high sensitivity button which is easily actuated by any type of shoe. The CVS activating mechanism is also different, given that the present invention uses an electric contact micro-switch which is much more reliable than an electric contact system by means of a spring.

BRIEF DESCRIPTION OF THE FIGURES

[0008] The present invention will now be explained below in greater detail by way of the accompanying drawings, in which:

[0009] FIG. **1** shows an exploded perspective view of an exemplary embodiment of the invention, showing the main components;

[0010] FIG. **2** shows a top view of the base body (**1**);

[0011] FIG. **3** shows a frontal view of the base body (**1**);

[0012] FIG. **4** shows a side view of the base body (**1**);

[0013] FIG. **5** shows a perspective view of the base body (**1**) with enlargement of details;

[0014] FIG. **6** shows a frontal view of the cover (**2**);

[0015] FIG. **7** shows a perspective view of the cover (**2**) with enlargement of details;

[0016] FIG. **8** shows a perspective view of the assembly of FIG. **1**, showing the cover in the closed position.

[0017] FIG. **9** shows a perspective view of the cover (**2**) with a protuberance (**19**);

[0018] FIG. **10** shows a perspective view of the base body (**1**) with a through hole (**20**).

SUMMARY OF THE INVENTION

[0019] One aspect that certain embodiments of the present invention addresses is to overcome the drawbacks existing in the current devices since it possesses innovative solutions for the main features of this type of apparatus, such as, for example, strength and reliability.

[0020] Therefore, the inlet device for central vacuum system can comprise:

[0021] a base body (**1**) which can be assembled on the wall at the height of the skirting board;

[0022] a cover (**2**) which engages in the base body (**1**);

[0023] an unlocking button (**3**) which disengages the cover (**2**);

[0024] a sealing strip (**4**) which is glued to the base body (**1**);

[0025] a micro-switch (**5**) which engages in the base body (**1**);

[0026] a helical torsion spring (**6**) engaged in the cover (**2**), by means of a pin, which causes the cover (**2**) to open in relation to the base body (**1**).

DESCRIPTION OF THE INVENTION

[0027] The present invention can be formed, for example, by a set of pieces, shown in FIG. **1**, which is described below, in such a way which renders its running and the advantages that presents apparent in relation to the prior art.

[0028] The base body (**1**), shown in FIGS. **2-5**, is a piece essentially in the parallelepipedic shape, without the rear and lower sides, which has a nozzle (**7**) of standard diameter projecting in its back face, for connection to the CVS by means of a tube contained therein. From said nozzle (**7**) up to the back face (**8**) of the base body (**1**), which lies at the face of the wall when the device is installed, there is a channel (**9**) with a shape which allows to pass from the circular shape of the nozzle (**7**) to a rectangular shape and that works as an entrance for the rubbish when the cover (**2**) is open.

[0029] The base body (**1**) has further locking means of the body (**10**) to hold the cover (**2**) in the closed position, such as

represented in FIG. **8**. These means have two projections for engagement of the locking means of the cover (**16**) and are placed in the back face (**8**) of the base body (**1**), preferably between the said channel (**9**) and the top of the base body (**1**).

[0030] At the top of the base body (**1**) there are, in its inner face, two pivoting means of the body (**14**), which allow the pivoted fixation of the cover (**2**) to the base body (**1**). In addition, in the inner face of the top of the base body (**1**) there are means for fixation of the spring (**12**).

[0031] At the anterior side of the base body (**1**) there are two fixation holes (**13**) in order to allow the hold the device to the wall and one hole (**15**) for placement of the micro-switch (**5**), whereby its contact with the cover (**2**) supplies an electric signal to convey to the CVS the information whether the cover (**2**) is open or closed. That is, when the cover (**2**) is open these means of command carry out the aspiration of the air, which is interrupted when the cover (**2**) closes.

[0032] The lateral faces (**11**) of the base body (**1**) have a small slope upwards at the lower part for the rubbish not to accumulate.

[0033] The cover (**2**), shown in FIGS. **6** and **7**, is a piece essentially in the parallelepipedic shape, without the anterior side, which engages to the base body (**1**) through of the pivoting means of the cover (**17**), which engage the pivoting means of the body (**14**). There are also means of fixation of the spring (**12**) with the support for the respective pin of the spring, in that the said spring (**6**) under pressure causes the opening of the cover (**2**).

[0034] In the cover, there are two locking means of the cover (**16**) that receive an unlocking button (**3**), which is slidably engaged to the locking means of the cover (**16**). When the cover (**2**) is closed, the locking means of the cover (**16**) are engaged to the locking means of the body (**10**). In order to open the cover (**2**) it is necessary for the user to press the unlocking button (**3**), which will push the locking means of the body (**10**) until the connection is released.

[0035] At the back face of the cover (**2**) a sealing strip (**4**) is placed in a position in which, with the cover in the closed position, completely seals the exit of the channel (**9**) of the base body (**1**).

[0036] At the lower face of the cover (**2**) there are two notches (**18**) at the passage of the fixation holes (**13**) in order to allow the installation of the device already totally assembled at the intended place.

[0037] The operation of the device put forward by the present invention is quite simple and reliable. The device is normally with the cover in the closed position. When the user decides to use the CVS by way of the present invention, the unlocking button (**3**) must be pressed, which causes the opening of the cover. With the cover in the open position the micro-switch (**5**), which is fixed at the base body (**1**), conveys an electronic signal to the CVS in order that it begins to vacuum.

[0038] In one exemplary embodiment the cover (**2**) has a protuberance (**19**) placed at about mid height of the cover (**2**). To allow the protuberance (**19**) to fit the base body (**1**) when the cover (**2**) is in the closed position the through hole (**20**) has the shape of the protuberance (**19**) section.

[0039] The protuberance (**19**) forms a stop for said cover (**2**) when it is in open position. When the cover (**2**) is opened by the unlocking button (**3**) the protuberance (**19**) stops in a recess (**21**) located in the base of the through hole (**20**) of the base body (**1**).

[0040] It should be clear that the embodiments of the present inlet device for a central vacuum system previously described are only potential examples of implementation, established merely for a clear understanding of the principles of the invention. Variations and modifications to the embodiments previously referred to can be realized without substantially departing from the spirit and principle of the invention. All these modifications and variations should be included in the scope of the present invention.

1. Inlet device for Central Vacuum System built into the skirting board to collect dust and small debris from the floor, comprising:

a base body which shape is essentially parallelepipedic, without the rear and lower sides, which has a nozzle projecting in its back face for connection to the Central Vacuum System from said nozzle up to the back face of the base body, which has a channel with a shape which allows to pass from the circular shape of the nozzle to the shape of the inlet of the rubbish, further has locking means of the body, has at the top of the inner face of the base body pivoting means of the body, which allow the pivoted fixation of a cover, also has two fixation holes in order to allow to hold the device to the wall and one hole for placement of the micro-switch, whereby its contact with the cover provides an electric signal to supply a command signal to the said Central Vacuum System;

a cover which shape is essentially parallelepipedic, without the anterior side, which engages pivoting means of the body through pivoting means of the cover, has means of fixation of the spring with the support for the respective pin of the spring, in that the said spring under pressure causes the opening of the cover, also has locking means of the cover which, when the cover is in the closed position, are engaged to the locking means of the body;

an unlocking button, slidably engaged to the locking means of the cover, which when pressed by the user will push the locking means of the body until the connection is released;

a sealing strip placed on the back face of the cover, in a position in which, with the cover in the closed position, completely seals the exit of the channel.

2. The device according to claim **1**, wherein the lower face of the cover has two notches in the passage of the fixation holes for the installation of the device already totally assembled at the intended place.

3. The device according to claim **1**, wherein the back face of the base body lies at the face of the wall when the device is installed.

4. The device according to claim **1**, wherein the locking means of the body to hold the cover in the closed position have two projections for engagement of the locking means of the cover and are placed in the back face of the base body, preferably between the said channel and the top of the base body.

5. The device according to claim **1**, wherein the lateral faces of the base body have a small slope upwards at the lower part.

6. The device according to claim **1**, wherein the cover has a protuberance, placed in the back face of the cover at mid-height, that forms a stop when said cover is opened by the

unlocking button and stops in a recess located in the base of the through hole in the base body.

7. The device according to claim **6**, wherein the through hole has the shape of the protuberance section to allow said protuberance to go through the base body when the cover is closed.

* * * * *