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(54) **CIGARETTE BUTTS COLLECTING SYSTEM**

(57) The present invention relates to a cigarette butts collecting system comprising:

- a cigarettes packet holder (1) for housing at least partially a packet of cigarettes (P),
- a first container (2) for containing cigarette butts, provided with a first hole (222) to allow a cigarette butt to be inserted in it and with a first opening (2A) to allow said cigarettes packet holder (1) to be inserted at least partially into it, where said first container (2) is made of fireproof material and coupable with said cigarettes packet holder (1),
- a second container (4) for collecting cigarette butts contained in said first container (2), where said second container (4) is made of fireproof material,
- a connecting element (3) for connecting said first container (2) with said second container (4), where said connecting element (3) is coupable with said second container (4) and has a hollow body (30) to allow said first container (2) to be inserted and slide inside said connecting element (3).

In particular, said first container (2) has a second opening (2B) and comprises a closure element (25) to close said second opening (2B), movable from a closed position to an open position, or vice versa, where said closure element (25) has an end hinged to said first container (2) by a first hinge (27) provided with first elastic means (27A), and said connecting element (3) comprises a first opening (3A) and a first cover (35) to close said first opening (3A).

Said first elastic means (27A) are configured to generate a torque such that said closure element (25) tends to rotate to a predetermined angle outwards with respect to said second opening (2B) of said first container (2), so that, when said connecting element (3) is coupled with

said second container (4) and said first container (2) is inserted and slides in said connecting element (3), said first cover (35) is opened within said second container (4) under the pressure exerted by said first container (2) and said closure element (25) rotates within said second container (4) under the action of said first elastic means (27A), allowing the cigarette butts contained in said first container (2) to fall by gravity into said second container (4) through said second opening (2B) of said first container (2).

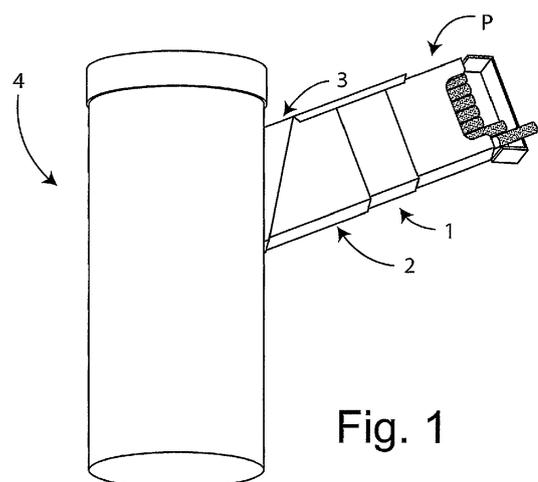


Fig. 1

Description

[0001] The present invention relates to a cigarette butts collecting system.

[0002] In particular, the present invention relates to a system of said type comprising a plurality of components coupleable each other, at least one component being a container for containing cigarette butts, so that a smoker can insert said cigarette butts in said at least one component, avoiding that they are thrown away.

[0003] As it is known, lighting a cigarette means that a plurality of chemicals having irritant, harmful, toxic and carcinogenic effects are dispersed in the environment.

[0004] A part of these chemicals remains in the filter and contaminate that part of non-smoked cigarette that is commonly called cigarette butt or butt.

[0005] In each cigarette butt, hence, it is possible to find many pollutants: nicotine, benzene, toxic gases, such as ammonia and hydrogen cyanide, radioactive compounds, such as polonium-210, and cellulose acetate, the plastic material of which the filter is made.

[0006] Although the harmful load of each cigarette butt is low (of the order of milligrams) the factor that amplifies the problem is the high number of cigarette butts produced.

[0007] Moreover, often the cigarette butts are thrown to the ground, so as to the soil gets dirty, or in the sewers and surface waters, so as that they are contaminated.

[0008] For these reasons, it is become necessary to classify cigarette butts as a toxic waste for the environment and treat them as such, and a law, next to the entry into force, will ban to throw cigarette butts in the environment, with sanctions to the offender.

[0009] Consequently, it is felt as necessary to provide a cigarette butts collecting system.

[0010] Object of the present invention is that to overcome said disadvantages, providing a cigarette butts collecting system having a simple and cheap structure, to avoid that cigarette butts are thrown to the ground, so as to reduce the eco-environmental pollution.

[0011] It is therefore object of the invention a cigarette butts collecting system comprising:

- a cigarettes packet holder for housing at least partially a packet of cigarettes,
- a first container for containing cigarette butts, provided with a first hole to allow a cigarette butt to be inserted in it and with a first opening to allow said cigarettes packet holder to be inserted at least partially into it, where said first container is made of fireproof material and coupleable with said cigarettes packet holder,
- a second container for collecting cigarette butts contained in said first container, where said second container is made of fireproof material,
- a connecting element for connecting said first container with said second container, where said connecting element is coupleable with said second con-

tainer and has a hollow body to allow said first container to be inserted and slide inside said connecting element.

[0012] In particular, said first container has a second opening and comprises a closure element to close said second opening, movable from a closed position to an open position, or vice versa, where said closure element has an end hinged to said first container by a first hinge provided with first elastic means.

[0013] Said connecting element comprises a first opening and a first cover to close said first opening.

[0014] Said first elastic means are configured to generate a torque such that said closure element tends to rotate by a predetermined angle outwards with respect to said second opening of said first container, so that, when said connecting element is coupled with said second container and said first container is inserted and slides in said connecting element, said first cover is opened within said second container under the pressure exerted by said first container and said closure element rotates within said second container under the action of said first elastic means, allowing the cigarette butts contained in said first container to fall by gravity into said second container through said second opening of said first container.

[0015] In a first alternative, said closure element can comprise a first part and a second part, contiguous to said first part and foldable with respect to it, where said first part can be hinged to an end portion of a first wall of said first container, so that, when said closure element is in the closed position, said second part is in contact or substantially in contact with a second wall of said first container, opposite to said first wall.

[0016] In particular, said second part can be provided with a second hole positioned in such a way that, when said second part is in contact with said first container, said second hole is overlapped said first hole. Furthermore, said system can comprise a stopper configured to be inserted in said first hole and said second hole, so as to block said closure element in the closed position.

[0017] In a second alternative, said closure element can be provided with blocking means to be blocked in the closed position and said connecting element can be provided with unblocking means for unblock said closure element from the closed position, so that said closure element moves to the open position.

[0018] Said second container can be provided with a slot to allow said connecting element to be coupled with said second container.

[0019] Furthermore, said second container can be provided with a further hole to allow a cigarette butt to be inserted into said second container.

[0020] Said second container can comprise a body and a cap, where said cap can be coupled in a removable or not removable manner with said body.

[0021] In particular, said further hole can be positioned on said cap.

[0022] Advantageously, said second container can comprise a duct which extends from said further hole inside said second container for a predetermined length.

[0023] With reference to said first elastic means, said first elastic means can comprise a first spring, preferably a torsional spring.

[0024] With reference to the coupling between said first container and said cigarettes packet holder, said first container can be coupled in a removable or not removable manner with said cigarettes packet holder.

[0025] With reference to the coupling between said connecting element and said second container, said connecting element can be coupled in a removable or not removable manner with said second container.

[0026] Furthermore, said second container can comprise:

- detecting means for detecting a cigarette butt when it falls within said second container, where said detecting means are arranged inside said second container,
- a logic control unit, connected to said detecting means, configured to count the number of cigarette butts detected by said detecting means,
- displaying means, connected to said logic control unit, for displaying the number of cigarette butts fallen within said second container, so that a user knows said number of cigarette butts.

[0027] The present invention will be now described, for illustrative, but not limitative purposes, according to its embodiment, making particular reference to the enclosed figures, wherein:

Figure 1 shows the cigarette butts collecting system, object of the invention, where a cigarette packet is partially inserted in a cigarette packet holder;

Figure 2 is an exploded view of the cigarette butts collecting system, object of the invention,

Figure 3 is prospective view of the cigarette packet holder;

Figure 4 is a prospective view of the first container for containing cigarette butts;

Figure 5 is a prospective view of the connecting element;

Figure 6 shows the system object of the invention, when the first cover of the connecting element is in contact with the closure element of the first container of cigarette butts;

Figure 7 shows the system object of the invention, when the first cover of the connecting element is opened within the second container for collecting cigarette butts contained in the first container, due to the sliding of the first container within the connecting element;

Figure 8 shows the system object of the invention, when the closure element of the first container is opened within the second container to allow the cig-

arette butts contained in it to exit from said first container and fall by gravity into second container.

[0028] With particular reference to Figures 1-2, a cigarette butts collecting system is disclosed.

[0029] Said system comprises:

- a cigarettes packet holder 1 for housing at least partially a packet of cigarettes P,
- a first container 2 for containing cigarette butts and for housing at least partially said cigarettes packet holder 1, where said first container is made of fireproof material,
- a second container 4 for collecting cigarette butts contained in said first container 2, where said second container is made of fireproof material,
- a connecting element 3 for connecting said first container 2 with said second container 4, for allowing said first container to be inserted in it and to slide with respect said connecting element.

[0030] The cigarettes packet holder 1 has a first opening 1A to allow cigarette packet P to be at least partially inserted in it (Figure 3).

[0031] The first container 2 comprises a first wall 21, a second wall 22, opposite to said first wall 21, a third wall 23 and a fourth wall 24, opposite to said third wall 21 (Figure 4).

[0032] In particular, each wall 21,22,23,24 has a first end portion and a second end portion, opposite said first end portion.

[0033] In order to allow cigarettes packet holder to be at least partially inserted into the first container a first opening 2A is defined by the first end portion of each wall. Said first container 2 is dimensioned according to the size of the cigarettes packet holder 1 and can be coupled to said cigarettes packet holder 1 in a removable or not removable manner.

[0034] A second opening 2B to allow cigarettes butts contained in the first container 2 to exit from said first container 2 is defined by the second end portion of each wall.

[0035] Said first container 2 comprises a closure element 25 to close said second opening 2B.

[0036] In particular, the closure element 25 is hinged to said first container 2 by means of a first hinge 27 provided with first elastic means 27A, configured to generate a torque such that said closure element 25 tends to rotate by a predetermined angle outwards with respect to said second opening 2B of said first container 2.

[0037] Said first elastic means 27A comprise a first spring and said first spring is preferably a torsional spring.

[0038] Said closure element 25 comprises a first part 251 and a second part 252, contiguous to said first part 251 and folding with respect to it.

[0039] In the embodiment being described, said first part 251 has an end hinged with an end portion of said first wall 21 by means of the hinge 27 provided with said

first elastic means 27A.

[0040] The closure element 25 moves from a closed position, where the cigarette butts are contained within said first container 2, to an open position, wherein said cigarette butts exit from first container 2 through said second opening 2B, and vice versa.

[0041] In particular, when the closure element 25 is in the closed position, the first part 251 closes the second opening 2B of the first container 2 and the second part 252 swung so as to come in contact or substantially in contact with said second wall 22. In particular, said second wall 22 has an inner surface 22A and an outer surface 22B, opposite to said inner surface 22A, and said second part 252 is in contact or substantially in contact with said outer surface 22B of said second wall 22.

[0042] Moreover, the first container 2 is provided with a first hole 222 to insert a cigarette butt inside said first container 2.

[0043] In the example that is described, said first hole 222 is arranged on said second wall 22.

[0044] Moreover, said second part 252 is provided with a second hole 223 arranged in such a way that, when said closure element 25 is in the closed position, said first hole 222 is overlapped on said second hole 223.

[0045] A stopper (not shown) is inserted into said first hole 222 and said second hole 223 to maintain said closure element 25 in the closed position.

[0046] Said stopper is removed before inserting the first container 2 in the connecting element 3.

[0047] Although not shown in the figures, the presence of said stopper is not necessary and it is not necessary that the second part 252 of said closure element 25 is provided with the second hole 223.

[0048] However, it is necessary that said first container 2 is provided with said first hole 222 for the insertion of cigarette butts, which is not necessarily arranged on said second wall 22.

[0049] Furthermore, said first container 2 and said cigarettes packet holder 1 are dimensioned so as to be portable, preferably in a pocket size format.

[0050] The connecting element 3 comprises a hollow body 30 to allow said first container 2 to be inserted in said connecting element and to slide inside the same.

[0051] Said connecting element 3 is dimensioned according to the size of the first container 2.

[0052] In particular, the connecting element 3 comprises a first wall 31, a second wall 32, opposite to said first wall 32, a third part 33, and a fourth wall 34, opposite to said third wall 33 (Figure 5). Said first wall 21 has a length greater than that of said second wall 22.

[0053] In particular, each wall has a first end portion and a second end portion, opposite said first end portion.

[0054] A first opening 3A to allow cigarette butts contained in the first container 2 to fall outside, i.e. inside said second container 4 (as explained in the following), is defined by the first end portion of each wall 31,32,33,34.

[0055] A second opening 3B is defined by the second

end portion of each wall 31,32,33,34.

[0056] Through the second opening 3B the first cigarettes container 2 is inserted in said connecting element 3.

5 **[0057]** Furthermore, the connecting element 3 comprises a first cover 35 to close the first opening 3A and a second cover 36 to close the second opening 3B, each of which has a first end hinged with a respective end portion of said first wall 31 by means of a second hinge 37 and a third hinge 38, and a second free end.

10 **[0058]** The second hinge 37 and the third hinge 38 are respectively provided with second and third elastic means (not shown), respectively comprising a second spring and a third spring, where said second spring and said third spring are return springs.

15 **[0059]** Although not shown in the figures, it is not necessary that the connecting element 3 is provided with the second cover 36.

20 **[0060]** Once the connecting element 3 is coupled with said second container 4, the first container 2 (in which the cigarettes packet holder 1 is housed) is inserted into the connecting element 3 and made to slide in it until the closure element 25 of said first container 2 contacts the first cover 35 of said connecting element 3 (Figure 6).

25 **[0061]** Due to the fact that the first container 2 continues to slide in the connecting element 3, the first container 2 exerts a pressure on the first cover 35 until said first cover 35 is raised within the second container 4 (Figure 7).

30 **[0062]** In other words, the first container 2 overcomes the resistance of said second elastic means of the second hinge 37, so that the first cover 35 opens within the second container 4.

35 **[0063]** Thanks to the action of said first elastic means 27A which the first hinge 27 is provided with, the first part 251 of the closure element 25 rotates within the second container 4, allowing the cigarette butts contained in the first container 2 to fall by gravity into the second container 4 through the second opening 2B of said first container 2 (Figure 8).

40 **[0064]** The second container 4 is provided with a slot 4A configured to allow said connecting element 3 to be coupled with said second container 4.

45 **[0065]** Said connecting element 3 can be coupled with said second container 4 through said slot 4A in a removable or not removable manner.

50 **[0066]** In particular, said second container 4 comprises a body 40, preferably cylindrical, and a cap 41, coupable with said body 40, in a removable or not removable manner.

55 **[0067]** Moreover, said second container 4 and said connecting element 3 are sized in such a way as to be portable, preferably in a pocket size format. When the first container 2, the cigarettes packet holder 1, the connecting element 3 and the second container 4 are dimensioned in such a way that they are in a pocket size format, a user can carry the cigarette butts collecting system with himself.

[0068] Advantageously, the second container 4 is provided with a further hole 4B for the insertion of a cigarette butt within said second container 4.

[0069] Furthermore, it is preferable that the second container 4 comprises a duct 4C which extends from said further hole 4B inside said second container 4 for a predetermined length.

[0070] In this way, once a cigarette butt is inserted into said further hole 4B, said cigarette butt remains inside said duct 4C, so as to extinguish due to absence of air, until a further cigarette butt is inserted in said further hole 4B.

[0071] The insertion of a further cigarette butts into the further hole 4B cigarette causes the fall of the cigarette butt, previously inserted and present in said duct, within the second container 4.

[0072] Although not shown in the figures, an alternative to the stopper above mentioned, said closure element 25 can be provided with blocking means to be blocked in the closed position and said connecting element 3 can be provided with unblocking means to unblock said closure element 25 from the closed position, so that said closure element 25 moves from the closed position to the open position, when said first container 2 is inserted in said connecting element.

[0073] In a variation, not shown in Figures, the second container 4 can comprise:

- detecting means for detecting a cigarette butt when it falls within said second container 4, where said detecting means are arranged inside said second container 4,
- a logic control unit, connected to said detecting means, configured to count the number of cigarette butts detected by said detecting means,
- displaying means, connected to said logic control unit, for displaying the number of cigarette butts fallen within said second container 4, so that a user knows said number of cigarette butts.

[0074] For example, said detecting means can be comprise an optical sensor.

[0075] Advantageously, through the collecting system of the invention, the cigarette butts can be stored in the first container 2 and said first container 2 can be emptied in the second container 3.

[0076] A further advantage is due to the possibility to separate cigarette butts from the cigarette butts collecting system, so that said cigarette butts and said cigarette butts collecting system can be subjected to a respective treatment to be reused.

[0077] The present invention has been described for illustrative, but not limitative purposes with reference to a preferred embodiment, but it well evident that one skilled in the art can introduce modifications to the same without departing from the relevant scope, as defined in the enclosed claims.

Claims

1. Cigarette butts collecting system, comprising:

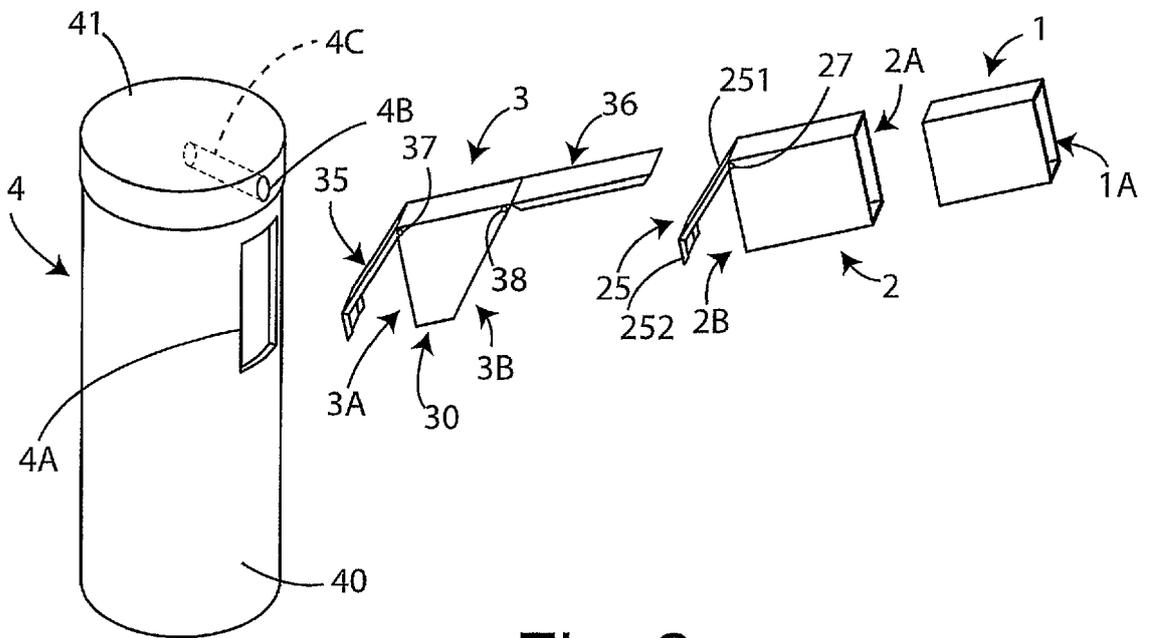
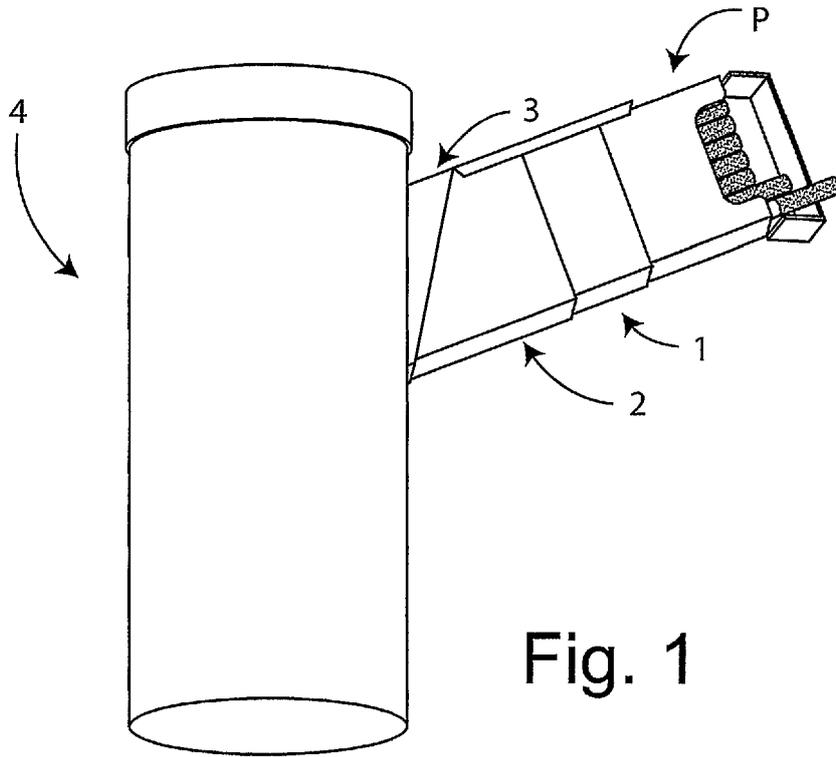
- 5 - a cigarettes packet holder (1) for housing at least partially a packet of cigarettes (P),
- a first container (2) for containing cigarette butts, provided with a first hole (222) to allow a cigarette butt to be inserted in it and with a first opening (2A) to allow said cigarettes packet holder (1) to be inserted at least partially into it, where said first container (2) is made of fireproof material and coupable with said cigarettes packet holder (1),
- 10 - a second container (4) for collecting cigarette butts contained in said first container (2), where said second container (4) is made of fireproof material,
- a connecting element (3) for connecting said first container (2) with said second container (4), where said connecting element (3) is coupable with said second container (4) and has a hollow body (30) to allow said first container (2) to be inserted and slide inside said connecting element (3),
- 20
- 25

where

- 30 said first container (2) has a second opening (2B) and comprises a closure element (25) to close said second opening (2B), said closure element (25) being movable from a closed position to an open position, or vice versa, said closure element (25) having an end hinged to said first container (2) by a first hinge (27) provided with first elastic means (27A),
- 35 said connecting element (3) comprises a first opening (3A) and a first cover (35) to close said first opening (3A),
- 40 said first elastic means (27A) are configured to generate a torque such that said closure element (25) tends to rotate by a predetermined angle outwards with respect to said second opening (2B) of said first container (2), so that, when said connecting element (3) is coupled with said second container (4) and said first container (2) is inserted and slides in said connecting element (3), said first cover (35) is opened within said second container (4) under the pressure exerted by said first container (2) and said closure element (25) rotates within said second container (4) under the action of said first elastic means (27A), allowing the cigarette butts contained in said first container (2) to fall by gravity into said second container (4) through said second opening (2B) of said first container (2).

- 55 2. System according to the previous claim, **characterized in that** said closure element (25) comprises a first part (251) and a second part (252), contiguous to said first part (251) and foldable with respect to it,

- in that** said first part (251) is hinged to an end portion of a first wall (21) of said first container (2), so that, when said closure element (25) is in the closed position, said second part (252) is in contact or substantially in contact with a second wall (22) of said first container (2), opposite to said first wall.
- 5
3. System according to the previous claim, **characterized in that** said second part (252) is provided with a second hole (223) positioned in such a way that, when said second part (252) is in contact with said first container (2), said second hole (223) is overlapped said first hole (222), and **in that** said system comprises a stopper (224) configured to be inserted in said first hole (222) and said second hole (223), so as to block said closure element (25) in the closed position.
- 10
4. System according to claim 1 or 2, **characterized in that** said closure element (25) is provided with blocking means to be blocked in the closed position and **in that** said connecting element (3) is provided with unblocking means for unblock said closure element (25) from the closed position, so that said closure element (25) moves the open position.
- 15
5. System according to any one of the previous claims, **characterized in that** said second container (4) is provided with a slot (4A) to allow said connecting element (3) to be coupled with said second container (4).
- 20
6. System according to any of the previous claims, **characterized in that** said second container (4) is provided with a further hole (4B) to allow a cigarette butt to be inserted into said second container (4).
- 25
7. System according to any of the previous claims, **characterized in that** said second container (4) comprises a body (40) and a cap (41); said cap (41) being coupled in a removable or not removable manner with said body (40).
- 30
8. System according to claim 6 and 7, **characterized in that** said further hole (4B) is positioned on said cap (41).
- 35
9. System according to any of claims 6-8, **characterized in that** said second container (4) comprises a duct (4C) which extends from said further hole (4B) inside said second container (4) for a predetermined length.
- 40
10. System according to any of the previous claims, **characterized in that** said first elastic means (27A) comprise a first spring; said first spring being preferably a torsional spring.
- 45
11. System according to any of previous claims, **characterized in that** said first container (2) is coupled in a removable or not removable manner with said cigarettes packet holder (1).
- 50
12. System according to any of the previous claims, **characterized in that** said connecting element (3) is coupled in a removable or not removable manner with said second container (4).
- 55
13. System according to any of the previous claims, **characterized in that** said second container (4) comprises:
- detecting means for detecting a cigarette butt when it falls within said second container (4), where said detecting means are arranged inside said second container (4),
 - a logic control unit, connected to said detecting means, configured to count the number of cigarette butts detected by said detecting means,
 - displaying means, connected to said logic control unit, for displaying the number of cigarette butts fallen within said second container (4), so that a user knows said number of cigarette butts.



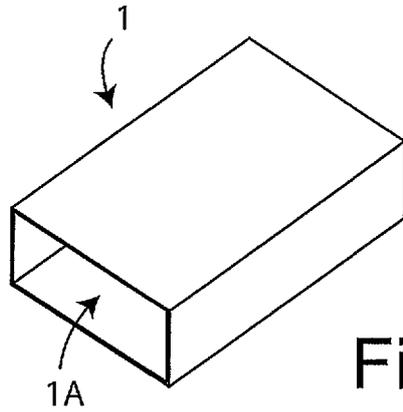


Fig. 3

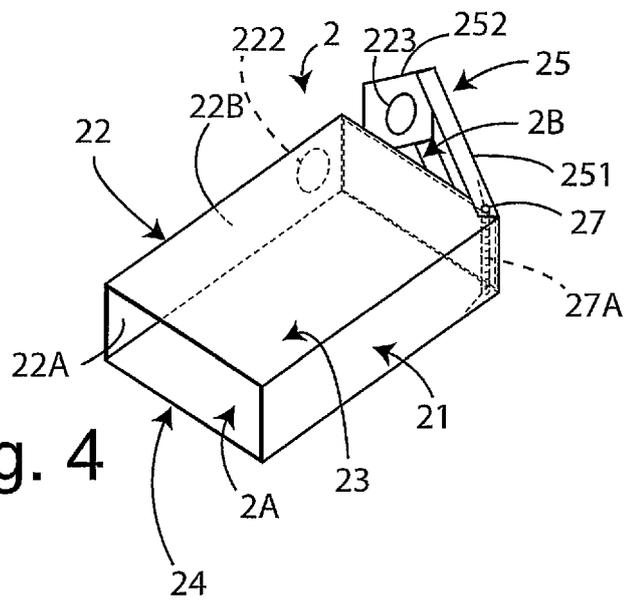


Fig. 4

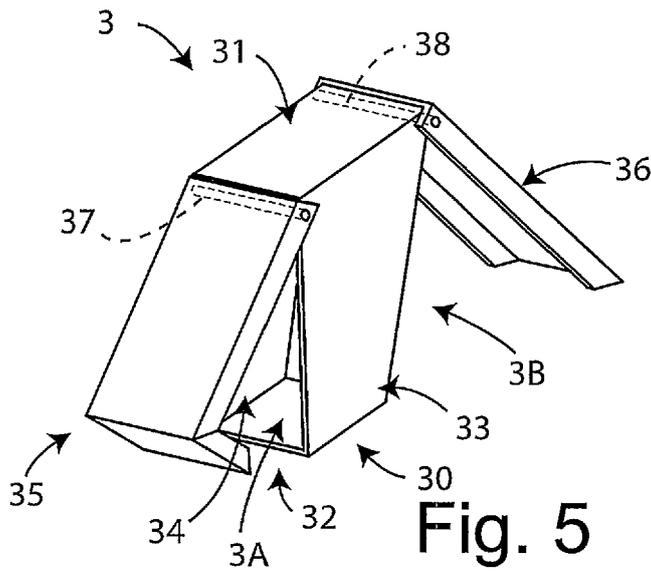


Fig. 5

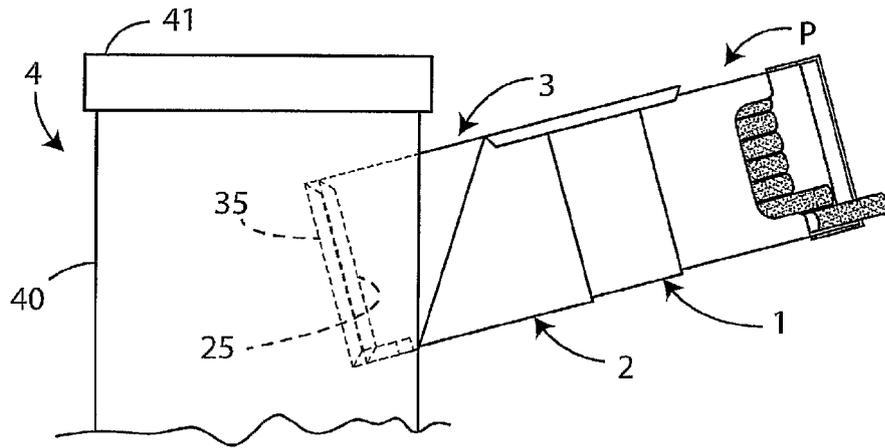


Fig. 6

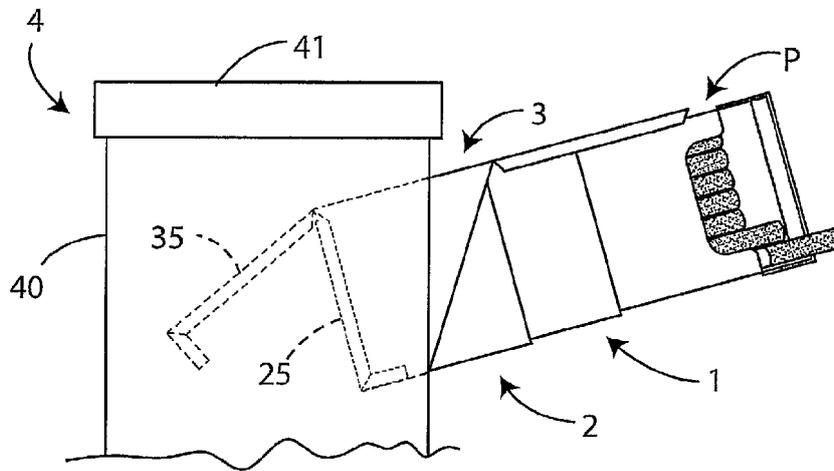


Fig. 7

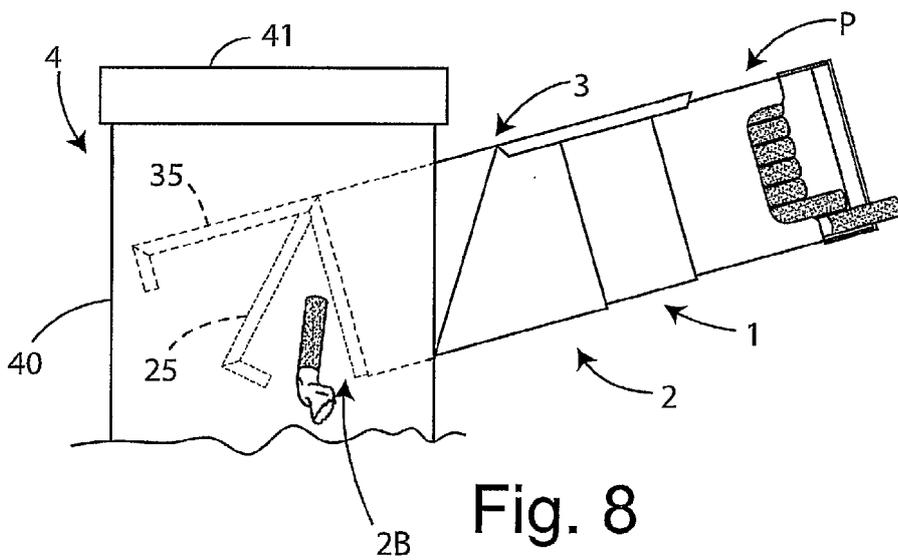


Fig. 8



EUROPEAN SEARCH REPORT

Application Number
EP 16 17 4152

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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)
A	CA 2 228 144 A1 (POSSAMAI MARIO [IT]) 25 August 1999 (1999-08-25) * page 3; figures *	1-13	INV. A24F15/18 A24F19/00 A24F19/10
A	WO 2014/090399 A2 (BRUCK WALTER JÜRGEN [DE]) 19 June 2014 (2014-06-19) * page 21, line 34 - page 22, line 23; figures 13,14 *	1-13	
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			TECHNICAL FIELDS SEARCHED (IPC)
			A24F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 September 2016	Examiner Caballero Martínez
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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26-09-2016

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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