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(71) Applicant: **Nagano, Hideo**
13-5, Shimomeguro 5-chome Meguro-ku
Tokyo(JP)

(72) Inventor: **Nagano, Hideo**
13-5, Shimomeguro 5-chome Meguro-ku
Tokyo(JP)

(74) Representative: **White, Martin David et al**
MARKS & CLERK 57/60 Lincoln's Inn Fields
London WC2A 3LS(GB)

(54) Smoking aid for reducing concentrations of poisonous substances contained in tobacco smoke.

(57) A smoking aid for reducing concentrations of poisonous substances contained in tobacco smoke including a pipe bowl (1a) having a smoke retaining cavity (1b), a stem (1c) coupled with the pipe bowl (1a) and a mouthpiece (2) connected to the stem (1c). A cap-like member (3) is screwed to a top portion of the pipe bowl (1a) such that a space formed between the pipe bowl (1a) and cap-like member (3) can be adjusted. A hole (3b) is formed in a top wall of the cap-like member (3), through said hole (3b) a root portion of a cigarette (4) may be protruded into the smoke retaining cavity (1b). By moving the cap-like member (3) relative to the pipe bowl (1a) to adjust a dimension of the space, it is possible to adjust an amount of clean air introduced into the smoke retaining cavity (1b) to control a dilution of tobacco smoke.

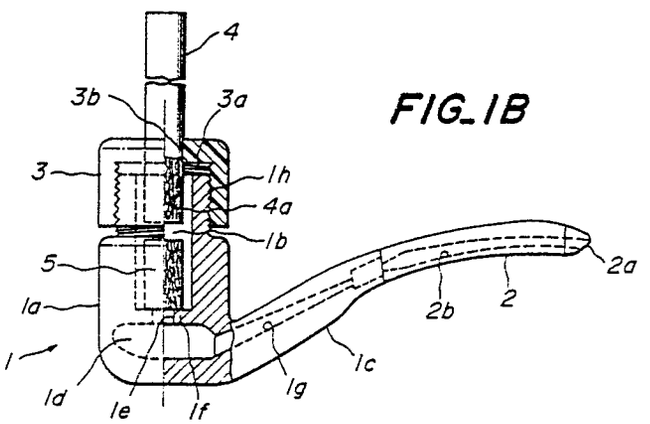

FIG_1B

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SMOKING AID FOR REDUCING CONCENTRATIONS OF POISONOUS SUBSTANCES CONTAINED IN TOBACCO SMOKE

Background of the Invention

Field of the Invention and Related Art Statement

The present invention relates to a smoking aid for reducing concentration of various poisonous substances contained in tobacco smoke.

Nowadays, it has been recognized that a habit of smoking tobacco, particularly cigarettes might be hazardous for the health, because tobacco smoke contains various poisonous substances such as coal-tar and nicotine. In order to decrease concentrations of these poisonous substances contained in the tobacco smoke it has become general that a filter is provided integrally with a cigarette. There have been proposed various kinds of filters in order to absorb the poisonous substances contained in the tobacco smoke in an effective manner. However, such filters could not effectively reduce the concentrations of hazardous substances contained in the tobacco smoke, mainly due to the fact that the filters could not have a sufficient length.

In order to remove more effectively the poisonous substances from the tobacco smoke, there has been further proposed a smoking pipe in the form of a cigarette holder comprising a tubular main body with a mouthpiece at one end and a cigarette holding cavity at the other end and a filter element detachably mounted in the tubular main body. In such a known smoking aid, tobacco smoke is passed through the filter element in the pipe, and the poisonous substances in the smoke are removed by the filter element. However, in such a pipe, it is impossible to adjust an amount of smoke introduced into a smoker, and therefore, the known pipe could not promote the effect of reducing the number of cigarettes smoked by a day. That is to say, when a smoker who is used to smoke twenty cigarettes a day uses the known pipe, it is only possible to reduce the concentrations of poisonous substances contained in tobacco smoke, but it is impossible to reduce the number of cigarettes a day.

Summary of the Invention

The present invention has for its object to provide a novel and useful smoking aid by means of which concentrations of poisonous substances contained in tobacco smoke can be effectively reduced and at the same time a concentration of the tobacco smoke can be adjusted over a wide range by introducing an adjustable amount of clean air into the tobacco smoke, so that a smoker can be effectively protected against the poisonous substances and the number of cigarettes a day can be naturally decreased without an extraordinary effort of the smoker.

According to the invention, a smoking aid for reducing concentrations of poisonous substances contained in tobacco smoke comprises

a main portion for defining a smoke retaining cavity;

a stem portion having a conduit communicated with said smoke retaining cavity;

a mouthpiece portion communicated with said conduit of said stem portion; and

a cap-like member movably secured to said main portion such that a space communicated with said smoke retaining cavity is formed between said main portion and cap-like member, and having a hole through which a root portion of a cigarette is protruded into said smoke retaining cavity; whereby an amount of clean air introduced into said smoke retaining cavity through said space is adjustable by moving the cap-like member relative to said main portion.

Brief Description of the Drawings

Figs. 1A and 1B show an embodiment of the smoking aid according to the invention;

Fig. 2 is a side view of another embodiment of the smoking aid according to the invention;

Figs. 3A and 3B are side views illustrating another embodiment of the smoking aid according to the invention;

Fig. 4 is a side view depicting another embodiment of the smoking aid according to the invention;

Fig. 5 is a side view showing still another embodiment of the smoking aid according to the invention;

Fig. 6 is a perspective view illustrating a sleeve member inserted in the smoking aid shown in Fig. 5;

Figs. 7A and 7B are exploded perspective and cross sectional views, respectively showing still another embodiment the smoking aid according to the invention;

Fig. 8 is a cross sectional view illustrating a modification of the embodiment shown in Figs. 7A and 7B: and

Figs. 9A and 9B are cross sectional and front views, respectively depicting still another embodiment of the smoking aid according to the invention.

Description of the Preferred Embodiments

Figs. 1A and 1B illustrate a first embodiment of the smoking aid according to the invention. In the present embodiment, the smoking aid is constituted in the shape of a tobacco pipe. The pipe comprises a main body 1 including a pipe bowl 1a within which a smoke retaining cavity 1b is formed, and a stem portion 1c. At a lower portion of the pipe bowl 1a there is formed a cavity 1d which is communicated with the smoke retaining cavity 1b via a hole 1e formed in a partition 1f. To the stem portion 1c is detachably secured a mouthpiece portion 2 having a mouthpiece 2a and a conduit 2b which is communicated with the cavity 2d via a conduit 1g formed in the stem portion 1c.

In an outer surface of an upper portion of the pipe bowl 1a is formed a male screw 1h which is engaged with a female screw 3a formed in an inner side wall of a cap-like member 3. In a top wall of the cap-like member 3 there is further formed a hole 3b having a diameter which is equal to or slightly larger than a diameter of a cigarette 4. Therefore, a root portion of the cigarette 4 can be firmly inserted into the hole 3b to such an extent that the root portion extrudes into an inside space of the cap-like member 3 as illustrated in Fig. 1B. The main body 1 of the pipe is made of wood, the mouthpiece stem 2 is made of synthetic resin or metal, and the cap-like member 3 is made of synthetic resin.

According to the invention, the smoke retaining cavity 1b has such a dimension that a filter 5 is inserted therein as shown in Fig. 1b. After the root portion of the cigarette 4 is inserted into the hole 3b of the cap-like member 3, a top end of the cigarette is lighted up, while air is sucked through the mouth piece 2a. Then tobacco smoke is first introduced into the smoke retaining cavity 1b and further flows through the filter 5, cavity 1d, conduits 1g and 2b. In this case, since there is a space between the male screw 1h and the female screw 3a, clean air is introduced into the smoke retaining cavity 1b. It is matter of course that the amount of air introduced into the smoke retaining cavity 1b through the space between the screws 1h and 3a can be adjusted over a wide range by turning the cap-like member 3 relative to the main body 1. That is to say, when the cap-like member 3 is gradually clamped to the main body 1, the space between the screws 1h and 3a becomes narrower and the amount of air sucked through the space becomes gradually decreased. At last when the cap-like member 3 is firmly or tightly coupled with the main body 1, the space between the screws 1h and 3a is closed and no air is introduced into the cavity 1b. In this manner, by turning the cap-like member 3 relative to the main body 1, it is possible to adjust the amount of clean air introduced into the cavity 1b through the space between the main body 1 and the cap-like member 3. When the air is introduced into the smoke retaining cavity 1b, the smoke which is also introduced into the cavity 1b is mixed and diluted with the air. In this manner, the concentration of the smoke can be effectively reduced. Further,the smoke having the concentration reduced by the air is passed through the filter 5, it is possible to reduce concentrations of poisonous substances contained in the tobacco smoke to unharmful level.

In the smoking aid according to the invention, when the cap-like member 3 is loosely coupled with the top portion of the pipe bowl 1a and the amount of air introduced into the smoke retaining cavity 1b through the space between the screws 1h and 3a is increased, the total amount of mixed gas sucked by the user is large, but the amount of tobacco smoke can reduced materially. Therefore, the burning rate of the cigarette becomes slower, so that a smoker can smoke a single cigarette for a longer time period. Further, as the diluted smoke is passed through the filter 5, the poisonous substances in the smoke can be effectively reduced. Due to the above mentioned functions, when the smoker uses the pipe according to the invention, the smoker may have a feeling that he has smoked twenty cigarettes a day, even if he actually smokes only fifteen cigarettes. In this manner, the number of cigarettes a day can be naturally decreased without an extraordinary effort of the smoker. It should be noted that if the cigarette 4 itself has a filter element 4a as depicted in Fig. 1B, the tobacco smoke is passed through the two filters 4a and 5, and thus the hazardous substances in the tobacco smoke can be effectively reduced. According to the invention, the filter 5 placed in the smoke retaining cavity 1b may be the filter element 4a provided in the root portion of the cigarette 4. In this case, after the cigarette 4 has been smoked, the filter element 4a is removed from the cigarette 4 and the filter element 4a thus removed is inserted into the smoke retaining cavity 1b instead of the previous filter 5. In this manner, the filter 5 may be simply renewed every time a cigarette is smoked. Of course, it is also possible to prepare specific filters and replace a used filter by a new one occasionally.

Fig. 2 shows another embodiment of the smoking aid according to the invention. In the present embodiment portions similar to those shown in Fig. 1B are denoted by the same reference numerals used in Fig. 1B and an explanation thereof is omitted. In the present embodiment, on an inner wall of an upper portion of the pipe bowl 1a there is formed a female screw 1i which is engaged with a male screw 6a formed in an outer surface of a side wall of a cap-like member 6. The cap-like member 6 has a hole 6b formed in a top wall thereof, through which the root portion of the cigarette 4 is protruded into the smoke retaining cavity 1b of the pipe bowl 1a. The other construction of the pipe of the present embodiment is entirely same as that of the embodiment shown in Figs. 1A and 1B.

Figs. 3A and 3B illustrate still another embodiment of the smoking aid according to the invention. Also in the present embodiment, the smoking aid is constructed in the form of a pipe. In this embodiment, a sleeve 7 made of synthetic resin is firmly inserted into the smoke retaining cavity 1b of the pipe bowl 1a. In an outer surface of an upper portion of the sleeve 7 is formed a male screw 7a which is engaged with a female screw 3a of the cap-like member 3. Also in the present embodiment, the amount of air sucked into the smoke retaining cavity 1b can be adjusted by turning the cap-like member 3 relative to the main body 1, so that the tobacco smoke can be diluted at will over a wide range. It should be also noted that the diluted tobacco smoke is passed through the filter 5 and any hazardous substances contained in the tobacco smoke can be effectively removed by the filter 5.

In the embodiment shown in Fig. 3A, the tubular sleeve 7 is inserted into the smoke retaining cavity 1b to such an extent that a lower end of the sleeve is urged against the partition 1f. In a modified embodiment, the partition may be integrally formed with the sleeve 7. In such a case, it is possible to use a normal pipe bowl having no partition.

Fig. 4 illustrates another embodiment of the smoking aid according to the invention. In the present embodiment, the smoking aid is constructed in the form of a cigarette holder. The cigarette holder comprises a main body 11 having a head portion 11a in which a smoke retaining cavity 11b is formed, a stem portion 11c and a mouthpiece 11d. The main body 11 may be made of synthetic resin, wood or metal. The smoke retaining cavity 11b is communicated with the mouthpiece 11d via a conduit 11e. In an outer surface of the head portion 11a of the main body 11 is formed a male screw 11f which is engaged with a female screw 12a formed on an inner side wall of a cap-like member 12 made of synthetic resin. In an upper wall of the cap-like member 12, there is formed a hole 12b through which a root portion of a cigarette 13 is protruded into the smoke retaining cavity 11b of the head portion 11a. In the smoke retaining cavity 11b a filter 14 is detachably inserted. In the present embodiment, the amount of air sucked into the smoke retaining cavity 11b through a space between the male screw 11f of the head portion 11a and the female screw 12a of the cap-like member 12 can be adjusted by turning the cap-like member 12 relative to the head portion 11a of the main body 11. In this manner, tobacco smoke is mixed with the clean air and is diluted therewith in the smoke retaining cavity 11b. Then the diluted tobacco smoke is passed through the filter 14, so that concentrations of poisonous substances contained in the tobacco smoke can be materially reduced in an effective manner.

Fig. 5 shows still another embodiment of the smoking aid according to the invention. In the present embodiment, portions similar to those shown in Fig. 1B are denoted by the same reference numerals used in Fig. 1B and their explanation is omitted. In the present embodiment, the smoking aid is shaped in the form of a pipe. The pipe comprises a main body 1 made of wood or corncob and having a pipe bowl 1a within which a smoke retaining cavity 1b is formed. In the smoke retaining cavity 1b of the pipe bowl 1a is inserted a cup-like member 21 made of synthetic resin. In an outer surface of an upper portion of the cup-like member 21 is formed a male screw 21a which is engaged with a female screw 3a formed on an inner side wall of a cap-like member 3 made of synthetic resin. In a top wall of the cap-like member 3 is formed a hole 3b through which a root portion of a cigarette 4 is protruded into the smoke retaining cavity 1b. In the smoke retaining cavity 1b, filter 5 is detachably inserted. At a lower end of the cup-like member 21 there is formed a small hole 21b which is communicated with a conduit 22a of a fitting tube 22 made of synthetic resin. The fitting tube 22 may be secured both to the cup-like member 21 and the pipe bowl 1a with the aid of a suitable bonding agent. To a free end of the fitting tube 22 is detachably secured a pipe stem 23 having a mouthpiece 23a communicated with the conduit 22a of the fitting tube 22 via a conduit 23b.

Also in the present embodiment, the amount of clean air sucked into the smoke retaining cavity 1b through a space between the screws 3a and 21a can be adjusted at will by turning the cap-like member 3 relative to the pipe bowl 1a.

In the present embodiment, the filter 5 may be inserted into a sleeve member 24 made of paper or tin foil. As shown in Fig. 6, a top portion of the sleeve member 24 is cut into a crenelated shape. Each triangular projection 24a of the sleeve member 24 may be bent inwardly when the cap-like member 3 is moved downward relative to the pipe bowl 1a so that a lower end surface to the cigarette 4 presses the projections 24a. Then an amount of the diluted tobacco smoke sucked via the mouthpiece 23a is reduced greatly, because a great part of an upper end surface of the filter 5 is closed by the bent projections 24a of the sleeve member 24.

Figs. 7A and 7B illustrate still another embodiment of the smoking aid according to the invention. The smoking aid of the present embodiment is constructed in the form of a tobacco pipe. The pipe comprises a main body 1 including a pipe bowl 1a having an ornamental decoration on its outer surface. That is to say, the outer surface of the pipe bowl 1a has an appearance of a corn pipe. In the pipe bowl 1a is inserted an L-shaped tube 31 having a cavity 31a formed therein such that a top portion of the tube 31 projects from the pipe bowl 1a. In an outer surface of the top portion of the tube 31 is formed a male screw 31b. A cap-like member 3 has a female screw 3a formed in its inner surface and has a hole 3b into which a cigarette 4 having a filter portion 4a is inserted. In the cavity 31a of the tube 31 there are inserted serially two filters 5a and 5b. The cavity 31a is further communicated with a conduit 32a formed in a stem 32 having a mouthpiece 32b at its free end. The pipe bowl 1a, L-shaped tube 31, cap-like member 3 and stem 32 can be easily dissembled as illustrated in Fig. 7A, so that they can be cleaned easily. Further, these parts are made of plastic material, and thus the pipe can be manufactured in a simple and cheap manner.

Fig. 8 is a cross sectional view showing a modification of the embodiment illustrated in Figs. 7A and 7B. In this embodiment, portions similar to those shown in Figs. 7A and 7B are denoted by the same reference numerals used in Figs. 7A and 7B. In the present embodiment, in the cavity 31a formed within the L-shaped tube 31 are inserted three filters 5a, 5b and 5c in a serial manner. It should be noted that these filters 5a, 5b and 5c have advantageously different construction, but they may have the same construction.

According to the invention, the number of the filters arranged in the cavity may be selected in accordance with the user's taste, so that the pipe can be used for a relatively long time without difficulty.

Figs. 9A and 9B show still another embodiment of the smoking aid according to the invention. Also, in this embodiment, portions similar to those illustrated in Figs. 7A and 7B are represented by the same reference numerals used in Figs. 7A and 7B. In the embodiments illustrated in Figs. 7A, 7B and 8, the bottom of the L-shaped tube 31 has a flat surface, so that the pipe can be stably placed on a flat surface such as a table top, while the lit cigarette 4 is inserted into the cap-like member 3. Then ash of the cigarette might drop on the table. In order to prevent such a disadvantage, in the present embodiment there is provided a ring-shaped ash receiving member 35 made of metal or fireproof plastics. If the ash receiving member 35 is fixed to the cap-like member 3, the operation of inserting a cigarette into the hole 3b of the cap-like member 3 might become difficult. Therefore, in this embodiment, the ash receiving member 35 is arranged movably with respect to the cap-like member 3. The ash receiving member 35 comprises projections 35a and 35b formed on an inner surface near the top and bottom thereof. In the outer surface of the cap-like member 3 are formed an upper circumferential long recess 3c, a lower circumferential short recess 3d and an axial recess 3e connecting the recess 3c and 3d with each other. In the condition shown in Fig. 9A, the ash receiving member 35 is in the lower position and the projections 35a and 35b are fitted in the upper and lower recesses 3c and 3d, respectively. In such a condition when the ash receiving member 35 is rotated, the lower projection 35b is rotated in the recess 3d until it is brought into contact with an end wall of the recess 3d. Then the ash receiving member 35 is rotated together with the cap-like member 3 so that the space between the pipe bowl 1a and the cap-like member 3 can be adjusted.

Fig. 9B shows a condition in which the ash receiving member 35 is in an upper position. The ash receiving member 35 can be brought in this upper position by aligning the lower projection 35b with the axial recess 3e and moving the ash receiving member 35 upward until the lower projection 35b is clamped into the upper recess 3c. Then the ash receiving member 35 may be retained in the upper position by slightly turning it in either direction. In the upper position of the ash receiving member 35, ash will drop within the ash receiving member.

The present invention is not limited to the embodiments explained above, but many modifications and alternations may be conceived within the scope of the invention. For instance, in the above embodiments, the cap-like member is detachably connected to the upper portion of the main body of the pipe or cigarette holder by means of the screw engagement. However, the cap-like member may

be movably coupled with the main portion by means of various coupling mechanisms. Further, the filter is not always necessary to be inserted in the smoke retaining cavity.

In the smoking aid according to the invention, it is possible to adjust the amount of clean air introduced into the smoke retaining cavity by moving the cap-like member relative to the main body in which the smoke retaining cavity is formed, and thus a concentration of the tobacco smoke can be adjusted at will. Therefore, concentrations of poisonous substances contained in the tobacco smoke can be reduced. For instance, when the amount of clean air introduced into the smoke retaining cavity is made large, the amount of air passing through the cigarette is reduced, so that the burning rate of the cigarette is also decreased and the smoker can smoke the cigarette for a longer time period. In this manner, the number of cigarettes a day can be naturally reduced without a great effort.

Claims

1. A smoking aid for reducing concentrations of poisonous substances contained in tobacco smoke comprising:
a main portion (1,7,11,21) for defining a smoke retaining cavity (1b,11b,31a);
a stem portion (1c,11c,23,32) having a conduit (1g,11e,23b,32a) communicated with said smoke retaining cavity (1b,11,31a);
a mouthpiece portion (2,11d,23a,32b) communicated with said conduit (1g,11e,23b,32a) of said stem portion (1c,11c,23,32); and
a cap-like member (3,6,12) movably secured to said main portion (1,7,11,21) such that a space communicated with said smoke retaining cavity (1b,11b,31a) is formed between said main portion (1,7,11,21) and cap-like member (3,6,12), and having a hole (3b,6b) through which a root portion of a cigarette (4) is protruded into said smoke retaining cavity (1b,11b,31a); whereby an amount of clean air introduced into said smoke retaining cavity (1b,11b,31a) through said space is adjustable by moving the cap-like member (3,6,12) relative to said main portion (1,7,11,21).

2. A smoking aid according to claim 1, further comprising a filter (5,14) detachably inserted in said smoke retaining cavity (1b,11b,31a).

3. A smoking aid according to claim 2, wherein said main portion (1,7,11,21) comprises a screw (1h,1i,7a,11f,21a) and said cap-like member (3,6,12) comprises a screw (3a,6a,12a) which is engaged with said screw (1h,1i,7a,11f,21a) of the main portion (1,7,11,21), whereby said space is formed between said screws.

4. A smoking aid according to claim 3, wherein said screws (1h,7a.11f) of the main portion (1.7,11) is a male screw formed in an outer surface of a side wall of the main portion (1,7,11), and said screw (3a,12a) of the cap-like member (3.12) is a female screw formed in an inner surface of a side wall of the cap-like member (3,12).

5. A smoking aid according to claim 4, wherein said main portion (1) comprises a pipe bowl (1a) and said male screw (1h) is formed in an outer surface of a top portion of the pipe bowl (1a).

6. A smoking aid according to claim 3, wherein said screw (1i) of the main portion (1) is a female screw formed in an inner surface of a side wall of the main portion (1), and said screw (6a) of the cap-like member (6) is a male screw formed in an outer surface of a side wall of the cap-like member (6).

7. A smoking aid according to claim 6, wherein said main portion (1) comprises a pipe bowl (1a) and said female screw (1i) is formed in an inner surface of a top portion of the pipe bowl (1a).

8. A smoking aid according to claim 3, wherein said main portion (1,7) comprises a pipe bowl (1a) and a sleeve (7) inserted into said pipe bowl (1a), and said screw (7a) of the main portion (1,7) is formed in an outer surface of the sleeve (7).

9. A smoking aid according to claim 3, wherein said main portion (1,21) comprises a pipe bowl (1a) and a cup-like member (21) inserted in the pipe bowl (1a), and said screw (21a) of the main portion (1,21) is formed in an outer surface of the cup-like member (21).

10. A smoking aid according to claim 3, wherein said main portion (1), stem portion (1c) and mouthpiece portion (2a) are constituted in the shape of a pipe.

11. A smoking aid according to claim 3, wherein said main portion (11), stem portion (11c) and mouthpiece portion (11d) are constituted in the shape of a cigarette holder.

12. A smoking aid according to claim 3, further comprising a sleeve member (24) made of paper and having a crenelated upper edge (24a), said filter (5) being inserted in the sleeve member (24).

13. A smoking aid according to claim 1, further comprising a plurality of filters (5a,5b,5c) detachably inserted in said smoke retaining cavity (31a).

14. A smoking aid according to claim 13, wherein said main portion (1) comprises a pipe bowl (1a) and an L-shaped tube (31) which extends through said pipe bowl (1a) such that an upper portion of the L-shaped tube (31) projects from the pipe bowl (1a), said cap-like member (3) being movably secured to said upper portion of the L-shaped tube (31).

15. A smoking aid according to claim 14, wherein an outer surface of said upper portion of the L-shaped tube (31) is formed a male screw (31b), and in an inner surface of said cap-like member (3) is formed a female screw (3a) which engages with said male screw (31b).

16. A smoking aid according to claim 13, further comprising an ash receiving member (35) arranged on the outer surface of the cap-like member (3) movably in an axial direction of the cap-like member (3).

17. A smoking aid according to claim 16, wherein the ash receiving member (35) has an upper projection (35a) and a lower projection (35b) formed in an inner surface thereof, and the cap-like member has formed in the outer surface thereof an upper long circumferential recess (3c), a lower short circumferential recess (3d) and an axial recess (3e) connecting said upper and lower recesses (3c,3d) with each other, said projections (35a,35b) of the ash receiving member (35) being fitted in said recesses (3c,3d).

FIG_1A

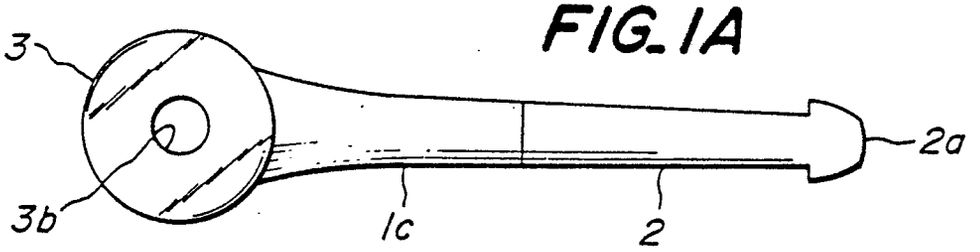


FIG_1B

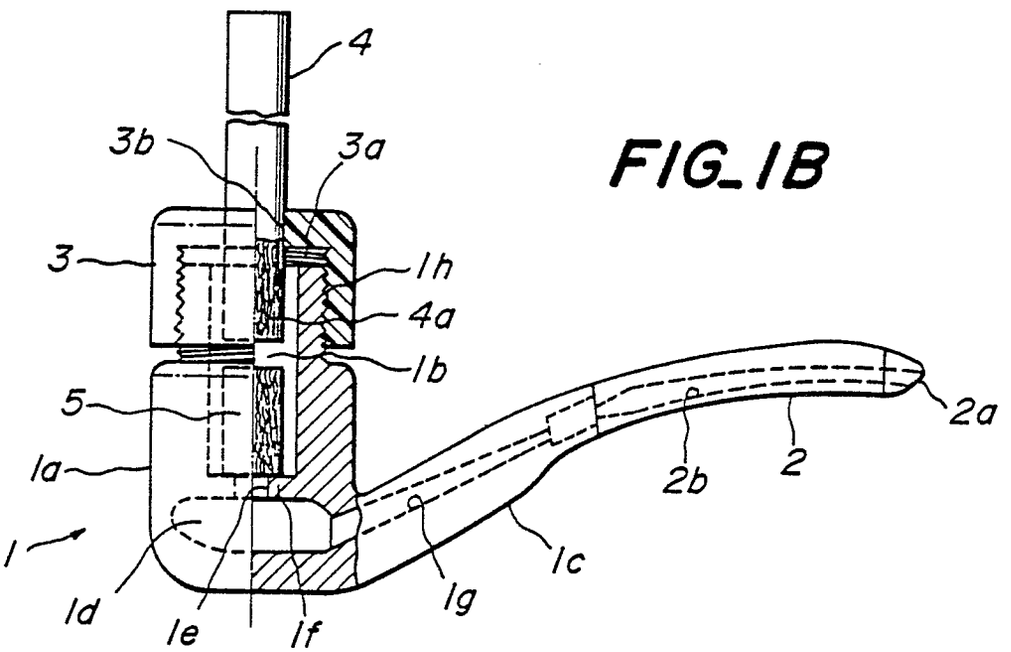
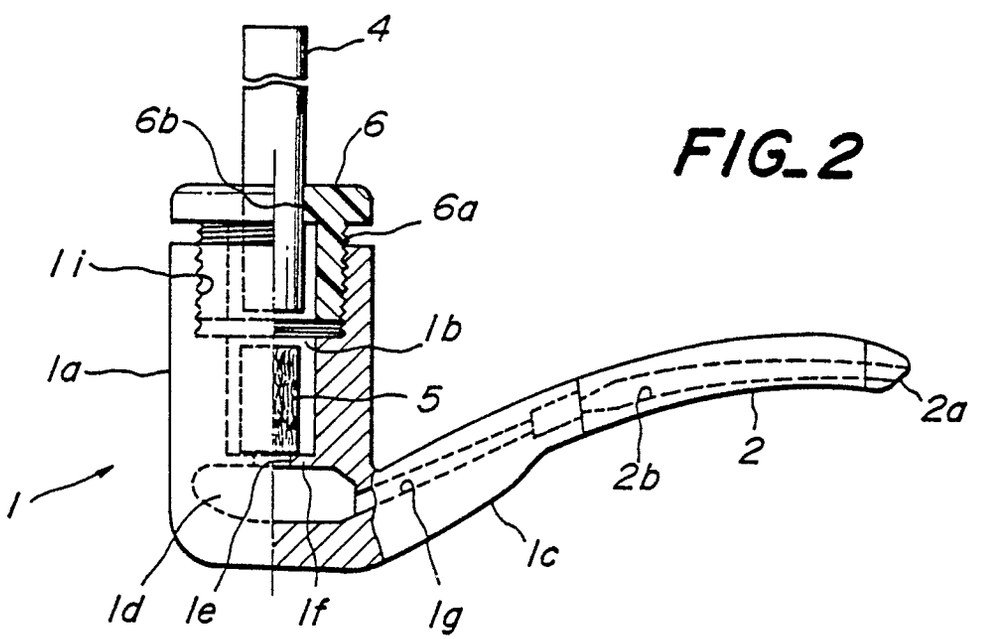


FIG_2



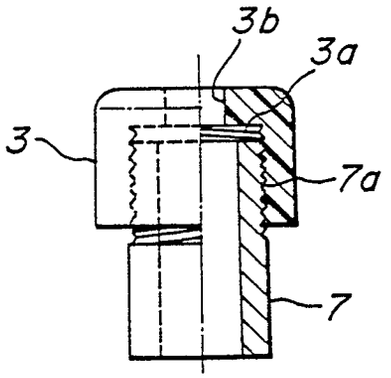


FIG_3A

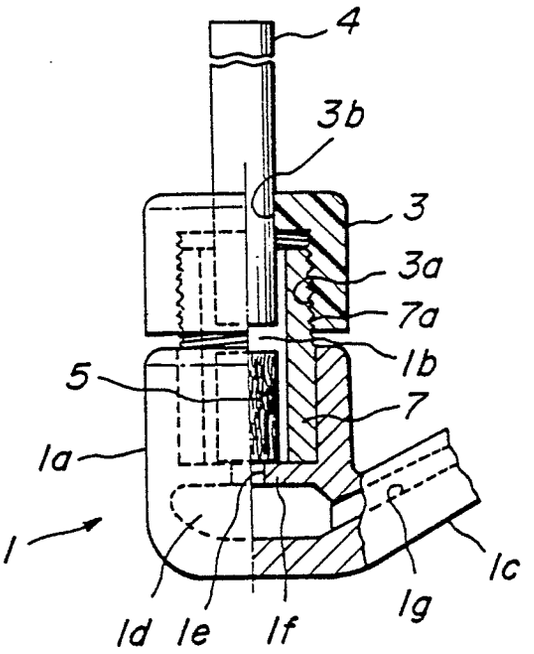


FIG_3B

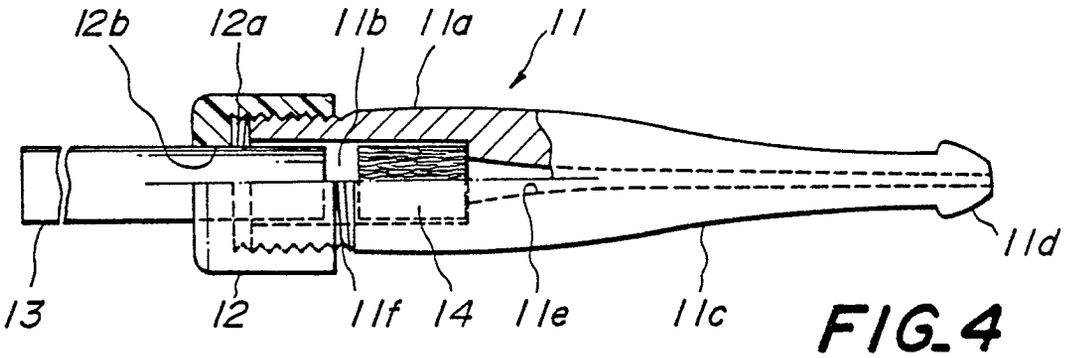


FIG_4

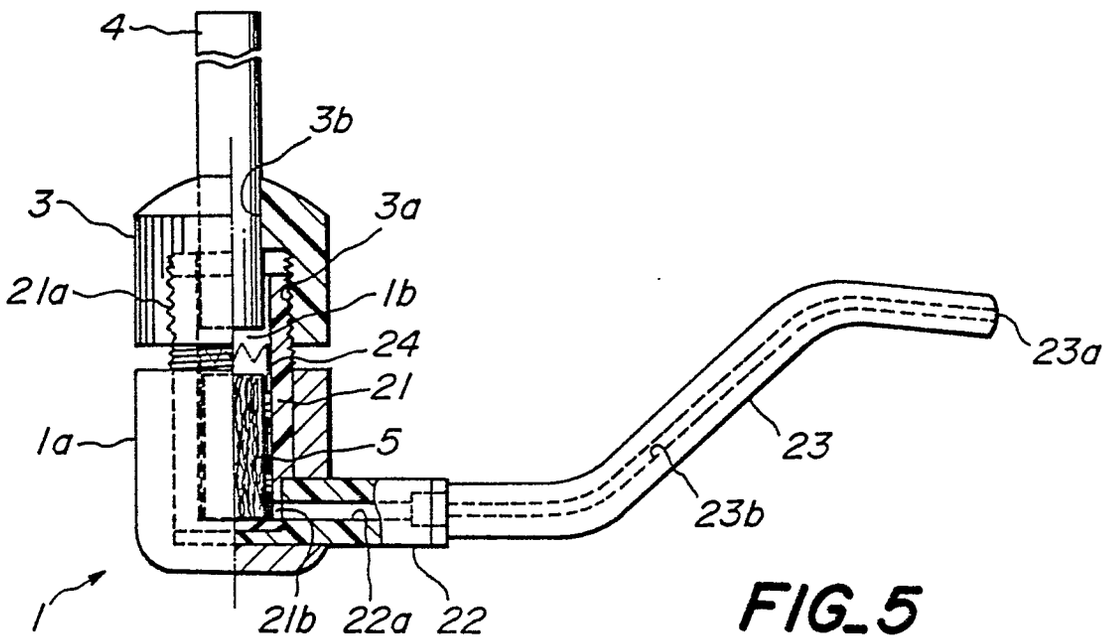
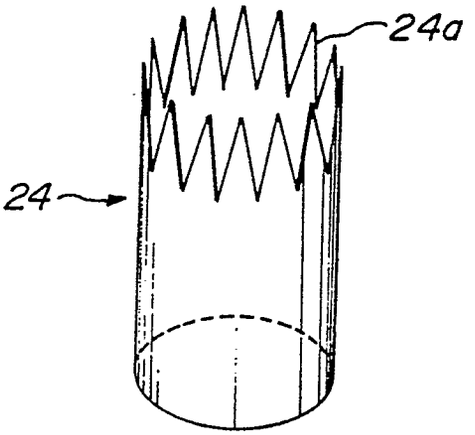


FIG_5

FIG_6



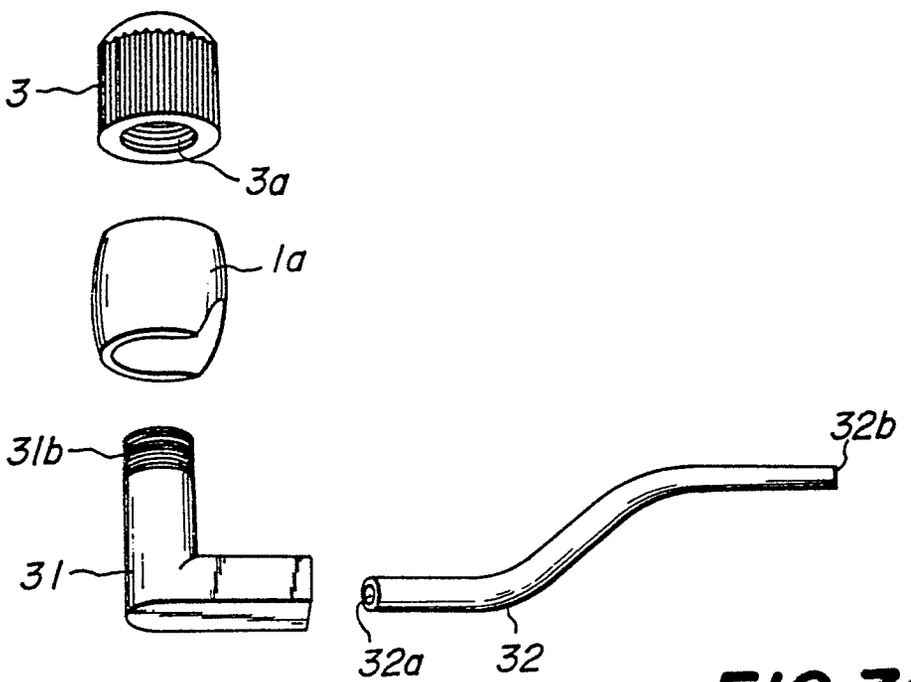


FIG_7A

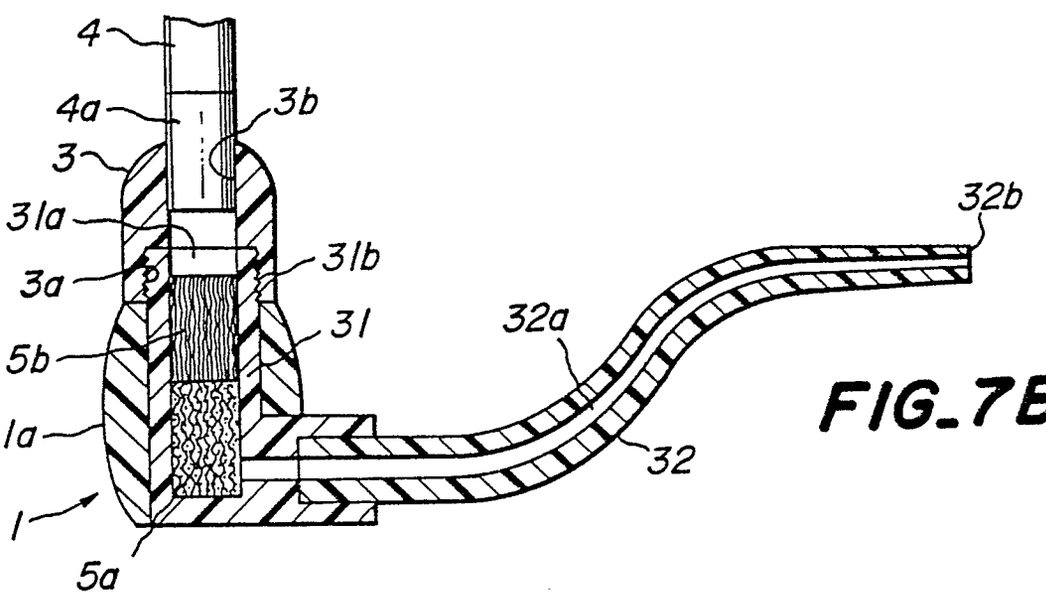


FIG_7B

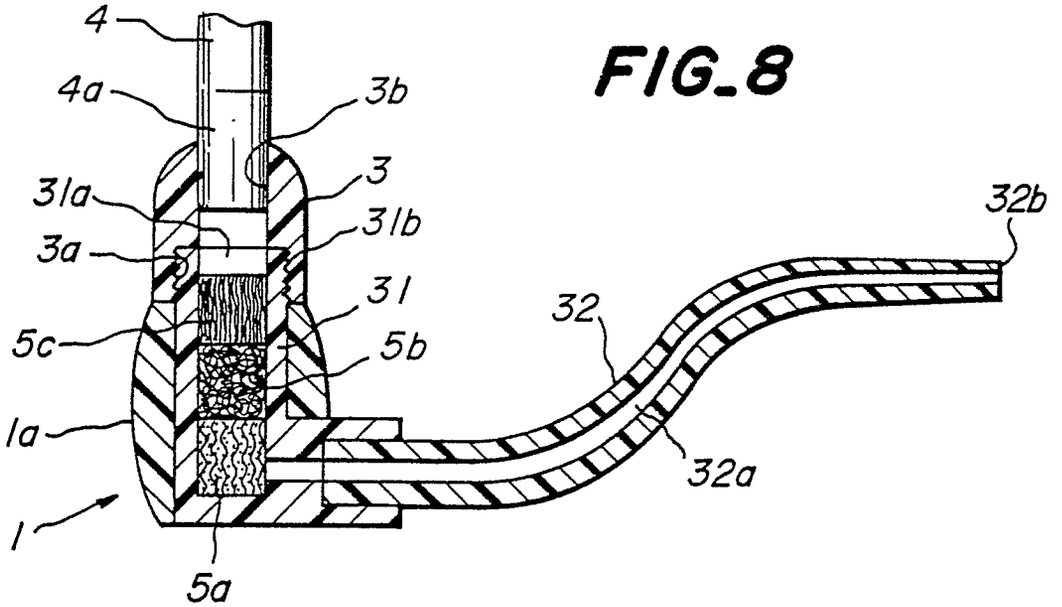


FIG_8

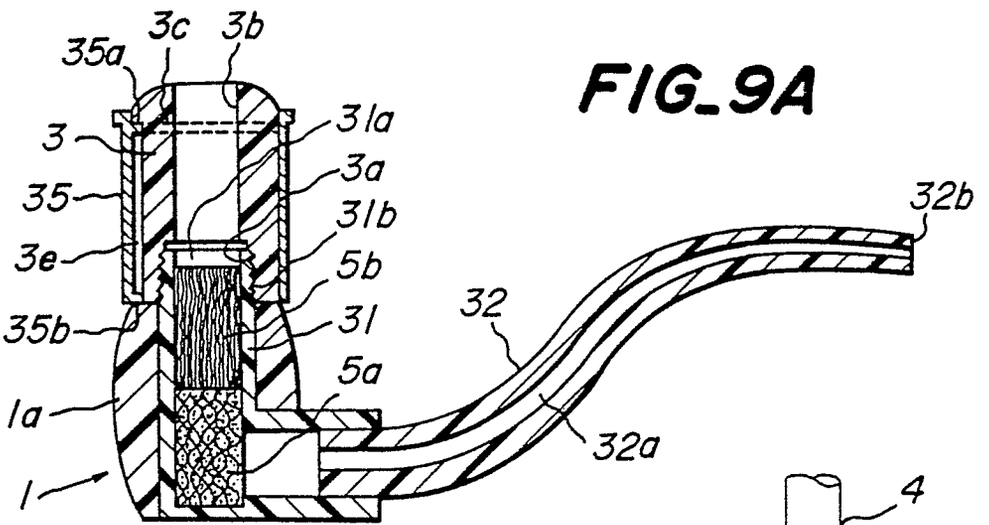


FIG_9A

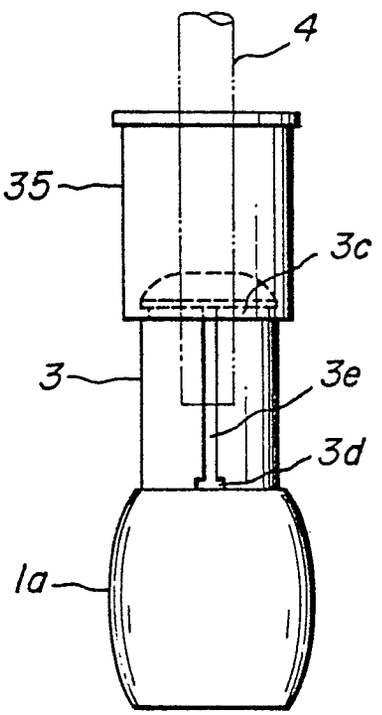


FIG_9B

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 87 30 3051

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl 4)
X	US-A-2 869 883 (DUNBAR) * Figures 6-9; column 5, line 67 - column 7, line 27 *	1	A 24 F 13/04 A 24 F 13/06 A 24 F 13/14
A		4,11	
A	US-A-4 233 998 (RADEY) * Whole document *	10,14-16	
A	US-A-2 642 879 (QUIROZ) * Whole document *	1,10,16	
A	US-A-3 282 271 (AMBRUCH) * Whole document *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2 012 869 (DELCRON PRODUCTS)		A 24 F
A	FR-A- 723 789 (JITKEVITCH)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17-07-1987	RIEGEL R.E.

CATEGORY OF CITED DOCUMENTS

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