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(54) **Wax applicator equipped with air discharge**

(57) The invention relates to a wax applicator equipped with an air discharge, comprising a metal base plate (3) heated with an electric resistance (8). A suction channel system (7) is arranged around the base plate (3) in the wax applicator to suck wax gases and particles in connection with melting of the wax. The wax applicator is equipped with a casing (1), wherein the suction channel system (7) is formed between the base

plate (3) and the lower part of the casing (1). The suction channel system (7) is arranged to encircle the base plate (3). The suction channel system (7) is also arranged higher than the base plate (3) to prevent obstructions. Furthermore, a suction is arranged inside the casing (1).

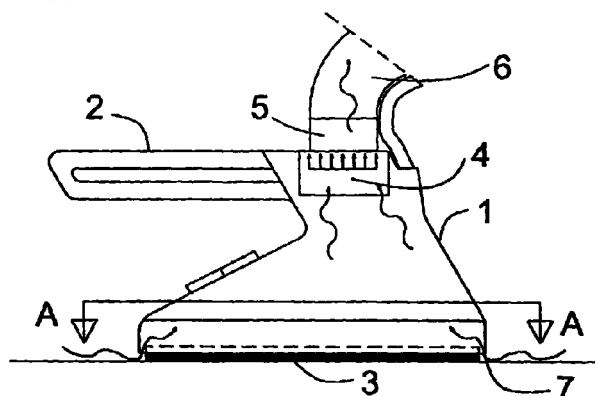


Fig. 1a

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Description

[0001] The invention relates to a wax applicator equipped with air discharge as set forth in the preamble of claim 1. The invention also relates to a casing for a wax applicator equipped with air discharge as set forth in the preamble of claim 9. The invention relates to a wax applicator to be used for applying a ski wax, to be heated with an electric resistance, and having exhaustion of harmful wax gases and particles. By this, it is possible to prevent the gases and smells caused by the waxing from diffusing into breathing air during the waxing.

[0002] Using known wax applicators, in which the application of waxes is based on a base plate heated by an electric resistance, the wax is molten onto the bottom of skis *etc.* When the waxes are applied by heating, wax smells, smoke and steam are discharged into the air. Wax smokes, particularly gases discharged from fluoric waxes, are noxious. Prior known methods for protecting oneself from wax smokes and gases are aspirating filters used by waxing persons as well as improved ventilation of the working room by aeration. Finnish patent application No. 960943 presents one solution for removing wax gases, whereby a ski maintenance table is connected to nozzles equipped with suction for discharging contaminated air.

[0003] Present ways of protection involve certain disadvantages. Respirator filters generally include a face mask, and due to their structure, they leave the eyes of the maintenance person exposed to noxious gases. The masks are often uncomfortable and sweaty. Other persons working in the same room must also protect themselves with an uncomfortable mask. Improved ventilation of the working room is uncomfortable for the ground staff and does not offer sufficient protection at the moment of waxing. Furthermore, the ventilation devices are generally integrated in the solid structures of the working room, which is not best suited to eliminate the problem because of the nature of the skiing sport and the varying skiing locations. A device suitable for waxing skis *etc.* should have such a size and weight that it can be easily moved between different service locations. The removal of the wax gases must be most efficient at the moment of waxing, so that the waxes are not spread widely in the working room. A ski maintenance table connected with suction at the sides and underneath the skis to be fixed to the table does not provide the best possible result for removing smells, because the wax smells, gas and particles heated during the waxing tend to flow upwards in a room space.

[0004] It is an aim of the invention to eliminate the above-mentioned drawbacks of waxing skis *etc.* This aim can be achieved by efficiently removing the harmful particles and gases even before they are allowed to spread from the direct vicinity of the ski *etc.* to be waxed to the working room. This is performed with a wax applicator which is equipped with air discharge and has a

suction channel system needed for discharging harmful gases and particles as well as an outlet pipe system for them. Thanks to its compact size, the wax applicator equipped with a suction channel system is easy to move from one service location to another. With a wax applicator equipped with a suction channel system as presented in the claims, it is not necessary to use face masks or to ventilate the waxing room.

[0005] The operation of the wax applicator equipped with a suction channel system is based on the fact that the wax for a ski *etc.* to be maintained is melted with an electric resistance by means of a heated base plate. Around the base plate, there is a suction channel system which sucks the heated wax gas and particles, tending to flow upwards, directly in connection with melting of the wax. The wax gases are discharged from the device along a pipe system from the waxing room. More precisely, the wax applicator according to the invention is characterized in what will be presented in the characterizing part of claim 1. The casing according to the invention is characterized in what will be presented in the characterizing part of claim 9.

[0006] In the following, the invention will be described in more detail with reference to the appended drawings which show a wax applicator equipped with suction according to the invention more precisely.

Fig. 1a shows an embodiment of the invention in a partial cross-sectional side view.

Fig. 1b shows the embodiment of Fig. 1a seen from the front.

Fig. 1c shows the embodiment of Fig. 1a seen from above.

Fig. 2a shows the embodiment of Fig. 1a from above and as a section along the line A—A of Fig. 1a.

Fig. 2b shows the embodiment of Fig. 1a in a partial cross-sectional side view and as a section along the line B—B of Fig. 2a.

Fig. 2c shows the embodiment of Fig. 1a in a partial cross-sectional side view and as a section along the line B—B of Fig. 2a.

Fig. 3a shows another embodiment of the invention, with auxiliary devices, in a side view.

[0007] In the first structural example of the invention, Figs. 1a, 1b and 1c show the shape of the outer casing, operating principle and parts of the device. The frame 1 of the device consists of a conical casing which is made of a castable material and to which is also coupled a hand-fitted handle 2 for the device. The base plate 3 of the device is a metal plate which has a thick-

ness of about 5 to 10 mm, which is heated with an electric resistance, and whose dimensions are slightly smaller than the circumference of the lower part of the outer casing 1. An electrically operated fan motor 4 producing a directional air flow is installed in the device. On the casing, there is a nozzle 5 equipped with a pipe 6, along which contaminated air is discharged. The device sucks the wax gases from a channel 7 left between the base plate 3 and the casing 1. The level of the lower part of the casing 1 is slightly higher than the level of the lower surface of the base plate, so that molten waxes would not obstruct the suction channel 7.

[0008] When the device is in use, the base plate 3 melts the wax onto the bottom of a ski. The wax gases are sucked by means of the fan motor 4 from the suction channel 7 of the casing 1 surrounding the base plate to the inside of the casing 1, from which they are discharged from the waxing room along a pipe system 6. The pipe system 6 can also be provided with a filter which filters impurities from the air.

[0009] Figures 2a and 2b show the internal structure of the device by means of cross-sections. In Fig. 2a, an adjustable resistor 8 encircling the base plate is needed for heating the base plate 3. In Fig. 2b, the resistance is a protective housing 9, i.e. a protective hood 9, to insulate thermal harms caused by the base plate from the casing 1. Figure 2c illustrates the placing of the base plate 3 with respect to the housing 1 in such a way that contaminated air to be sucked from the suction channel 7 is allowed to flow inside the device without obstruction.

[0010] Another example of the structure of the device is shown in Fig. 3 which differs from the first example with respect to the location of the fan motor 4. The fan motor 4 can be placed farther away in the pipe system 6, wherein more space and alternatives for the design are left inside the casing 1 of the device. The pipe system 6 is coupled in a similar manner to the nozzle 5 on the casing 1. When the fan motor 4 for producing suction in the pipe system is placed in the pipe system, it makes it possible to use the fan motor 4 more efficiently. An air purifier 10, which filters harmful substances from the air led into the pipe system, can be easily connected to the fan motor 4. To generate the suction formed in the device, the pipe system 6 can be equipped with an external fan motor, such as a vacuum cleaner and a central suction dust collector, wherein the air exhaust opening of the vacuum cleaner is equipped with a filter for purifying contaminated air, or the contaminated air is let out from the waxing room. Thus, the size of the pipe system 6 with its nozzle is fitted to match the vacuum cleaner. The pipe system 6 can also be adapted to be connected to a fixed ventilation system of the maintenance room, or the like.

[0011] It is common to both of the structural examples that the pipe system 6 is located upwards from the device, to be fixed in a flexible manner e.g. in the ceiling structure, in such a way that the pipe system is not

under the waxing person's foot when waxing. Also the electric current required by the device can be supplied next to the pipe system. The waxing device should be fixed to the ceiling with a lifting system, where the waxing device is always available when needed. From the ceiling, the pipe system can descend at a more distant location to be coupled to a suction device and to be discharged from the waxing room.

[0012] Two structural examples of the invention have been presented above. The structure and design of the casing 1 can be varied, as well as the shape and size of the base plate 3. The size and length of the pipe system 6 can be varied according to the waxing room. The structure can be modified within the scope of the protective scope defined by the appended claims.

Claims

1. A wax applicator equipped with an air discharge, comprising a metal base plate (3) heated with an electric resistance (8), **characterized** in that a suction channel system (7) is arranged around the base plate (3) in the wax applicator to suck wax gases and particles in connection with melting of the wax.
2. The wax applicator according to claim 1, **characterized** in that the wax applicator is equipped with a casing (1), wherein the suction channel system (7) is formed between the base plate (3) and the lower part of the casing (1).
3. The wax applicator according to claim 1 or 2, **characterized** in that the suction channel system (7) is arranged to encircle the base plate (3).
4. The wax applicator according to any of the claims 1 to 3, **characterized** in that the suction channel system (7) is arranged higher than the base plate (3) to prevent obstructions.
5. The wax applicator according to claim 2, **characterized** in that a suction is arranged inside the casing (1).
6. The wax applicator according to claim 1 or 5, **characterized** in that the casing (1) is provided with a nozzle (5) for introducing wax gases and particles into a pipe system (6) to be installed therein.
7. The wax applicator according to claim 2 or 5, **characterized** in that the fan motor (4) for suction is placed inside the casing (1).
8. The wax applicator according to claim 2 or 5, **characterized** in that the fan motor (4) for suction is placed outside the casing (1), in the pipe system (6) to be installed therein.

9. A casing for a wax applicator equipped with an with
air discharge, which wax applicator comprises a
metal base plate (3) heated with an electric resist-
ance (8), **characterized** in that the casing (1) is
arranged for forming a suction channel system (7) 5
around the base plate (3), which suction channel
system (7) is arranged to suck wax gases and par-
ticles in connection with melting of the wax.
10. The casing according to claim 9, **characterized** in 10
that the suction channel system (7) is arranged to
be formed between the base plate (3) and the cas-
ing (1), wherein the suction channel system (7) is
arranged higher than the base plate (3) to prevent
obstructions. 15

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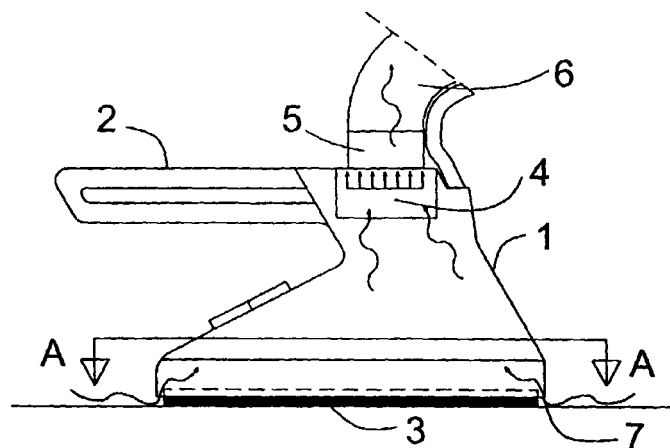


Fig. 1a

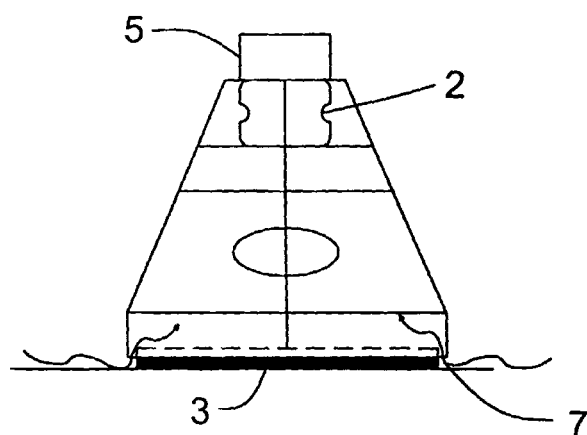


Fig. 1b

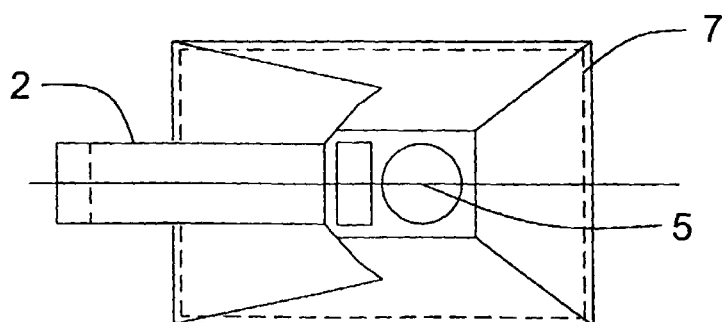


Fig. 1c

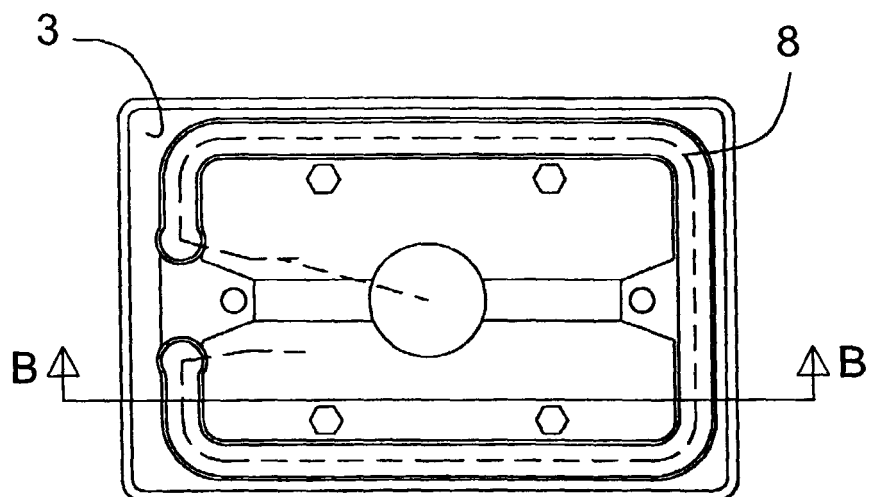


Fig. 2a

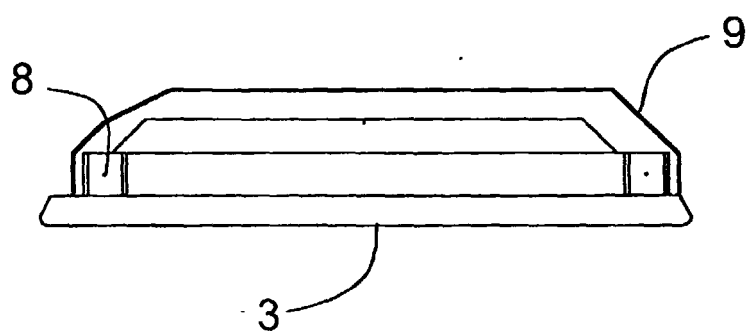


Fig. 2b

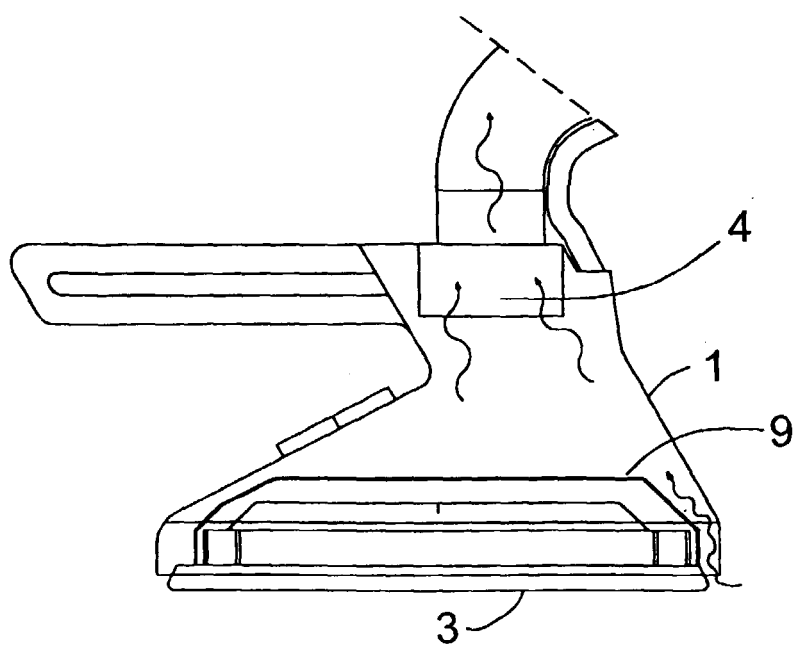


Fig. 2c

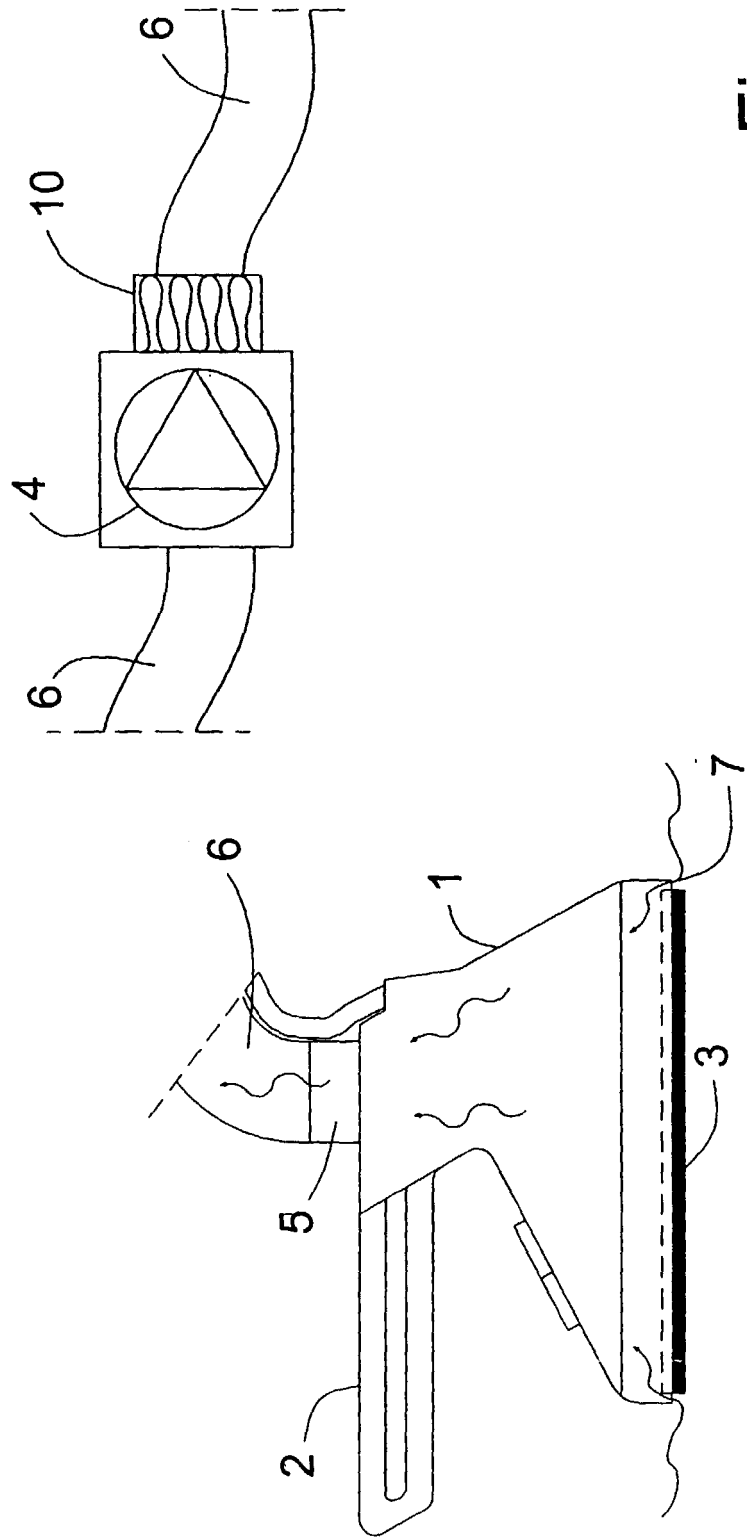


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 00 66 0032

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.C1.7)
A	DE 196 47 774 A (SCHAIRER ERNST GUENTER) 28 May 1998 (1998-05-28) * claim 1; figure 1 *	1,7,9	A63C11/08
A	US 4 308 633 A (BODNER ALEX A ET AL) 5 January 1982 (1982-01-05) * figure 3A *	1,9	
A	FR 2 422 419 A (LAFRANCONI ANDREA LAF) 9 November 1979 (1979-11-09) * claim 1; figure 1 *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.C1.7) A63D A63C
Place of search MUNICH		Date of completion of the search 5 June 2000	Examiner Feber, L
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 66 0032

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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05-06-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19647774 A	28-05-1998	NONE	
US 4308633 A	05-01-1982	NONE	
FR 2422419 A	09-11-1979	IT 1192710 B	04-05-1988
		AT 363027 B	10-07-1981
		DE 2918682 A	23-10-1980
		AT 342479 A	15-11-1980

EPO FORM P0489

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