

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 293 296 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

19.03.2003 Bulletin 2003/12

(51) Int Cl.7: **B24B 23/04**

(21) Application number: **02075787.8**

(22) Date of filing: **01.03.2002**

(84) Designated Contracting States:

**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

Designated Extension States:

AL LT LV MK RO SI

(71) Applicant: **Schollen, Hendrikus Andreas Petrus
Maria**

5004 JC Tilburg (NL)

(72) Inventor: **Schollen, Hendrikus Andreas Petrus
Maria**

5004 JC Tilburg (NL)

(30) Priority: **09.03.2001 NL 1017556**

(54) **Portable grinding or polishing apparatus for removing scratches on different types of surfaces, as glas, stone, plastic etc**

(57) The present invention relates to an improved handgrind and/or polish apparatus or device (1, 11) for removing scratches on several kinds of surfaces (7), such as glass, natural stone, plastic and such, in which the device can be constructed in a surprisingly inventive way in an electric or pneumatic version, in which the ec-

centric rotating basic head (14, 15) with Velcro connection is attached to special polishing discs (2, 3) for working on the surfaces (7), in which the whole is surrounded by special rubber covers (4, 5) to collect the liquid with grinding dust completely and keep a clean working environment.

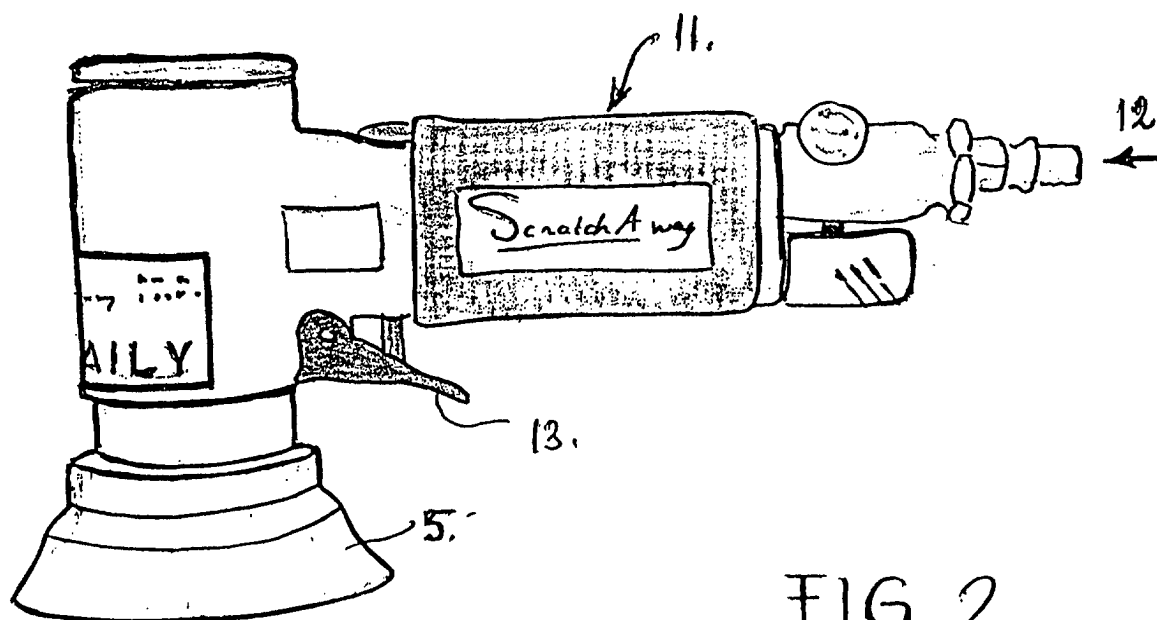


FIG. 2.

EP 1 293 296 A2

Description

[0001] The present invention relates to a special hand-held tool for removing damages, mostly scratches on glass, natural stone or plastic surfaces, in which the surface to be treated is cleaned beforehand, in which the mentioned special hand-held tool is provided with an eccentric rotating basic head with a sanding disc attached on that, and in which with the mentioned basic head with accessories spiral movements are made in order to grind/polish away the mentioned and beforehand humidified and/or with grinding compound applied damages on mentioned surfaces, if necessary.

[0002] A somewhat similar machine is known in the Dutch patent document titled: "Scratch removing system for glass, natural stone and plastic surfaces", dated 04-11-1993, number 9 301 899, also from SCHOLLEN, Hendrikus, Andreas, Petrus, Maria in Tilburg, The Netherlands.

[0003] Here, it concerns a system in the form of a work method and device for removing mainly scratches on glass, natural stone or plastic surfaces, in which the with fluid cleaned and marked scratch is surrounded by a ring sponge and in which the mechanically driven hand-held machine with eccentric basic head is grinded out and finally polished by executing spiral movements over the scratch on the glass, natural stone or plastic surface. On the mentioned eccentric rotating basic head a grinding or polishing disc with a small diameter is attached by means of adhesive and, if necessary, is provided with grinding agent, in which discs can be chosen in accordance with the type of scratch or damage which have to be removed from a surface.

[0004] The known system and especially the device have a number of disadvantages, being that the mentioned ring sponge around the centrifugal splattering fluid with pieces of material of the surface to be treated is rather laborious and difficult, and does not lead to the optimum result and through which in the end working hours are lost. Further, the diameter of the eccentric basic head is rather small so that this requires relatively more working hours, while already suitable larger sanding and polishing discs are available. Furthermore the energy source is important to make at least the correct choice with regard to the present line voltage and/or compressed air and such. Further, the adhesive working of the sanding or polishing disc to the eccentric rotating basic head is not ideal because the work is done in a very humid environment, so as a consequence the mentioned disc is loosened or less fixed and no firm pressure can be executed in order to work fast and efficiently. Shortly, the known hand-held tool has a number of disadvantages, as described above.

[0005] The aim of the present invention is to provide such an improved handgrind and/or polish apparatus, in which the aforementioned disadvantages are solved and of which the use is better and handier and in which the cost price does not have to be increased.

[0006] Therefore a device according to the invention is constructed as a special hand-held tool for removing damages, mostly scratches and such on glass, stone and plastic surfaces, so the mentioned handgrind and/or polish apparatus is further developed in a very inventive manner, that the mentioned eccentric rotating basic head with a sanding disc fixed thereon has a diameter D1 between 40 mm - and 80 mm, preferably approximately 55 mm, in which the connection between the mentioned basic head, which has a soft flexible surface, and the sanding/polishing disc to be used of which the connection comes into being by means of Velcro, in which the mentioned basic head is provided with a special rubber cover with diameter D2, in which for the drive of the mentioned special hand-held tool different energy sources can be used, in which the to be treated surface can be humidified beforehand by means of a plant spray.

[0007] The advantage is to provide a handgrind and/or polish apparatus with which can be worked very efficiently under practically all circumstances and in which the result has a high level.

[0008] Further the device according to the invention is developed in such a way, that the mentioned special rubber cover has a cylinder-feed shape followed by a conical shaped frustum, in which the diameter D2 increases to a diameter D3, which is approximately 50 to 60% larger, in which the mentioned rubber cover protrudes approximately 3 mm in front of the mentioned sanding or polishing disc.

[0009] The advantage is a rubber cover around the work area on the surface to be treated which collects the splattering fluid with pieces of material in a very efficient way, through which the environment stays clean and the treatment obtains a very professional look. Further, provides the rubber cover no obstacle while applying the sanding or polishing disc, therefore the machine is easy in use.

[0010] Furthermore the device according to the invention is developed in such a way, that the mentioned energy source can be an electric source of 230V or 110V at a power of the mentioned hand-held tool of approximately 150W, with a suitable disc diameter of 55mm, in which the weight of the hand-held tool is approximately 1.5 kg (=3.5 lbs).

[0011] The advantage is a powerfully driven machine, which is also very manageable by a professional.

[0012] Further the device according to the invention is developed in such a way, that the mentioned energy source of the hand-held tool can be a pneumatic source with an operating pressure of 5-6 bar (= 90 Psi), in which the consumption of air is approximately 280 l/min (= 62 gallon/min), with a suitable disc diameter of 55 mm, in which the weight of the hand-held tool is approximately 750 gram.

[0013] The advantage is also a powerfully driven handgrind and/or polish apparatus, of half its weight and therefore very suitable for the professional concerning the health and safety Act.

[0014] The preferred construction of the invention will be described by way of example, and with reference to the accompanying drawing, in which:

- Fig. 1 shows a side view of the device constructed as an electric version according to a preferred embodiment of the invention;
- Fig. 2 shows a side view in oblique projection of the device constructed as a pneumatic version according to a preferred embodiment of the invention;
- Fig. 3 shows the attachment of a sanding or polishing disc to the basic head of the device according to figure 1;
- Fig. 4 shows the attachment of a sanding or polishing disc to the basic head of the device according to figure 2;
- Fig. 5 shows a vertical cross-section of the special rubber cover according to a preferred embodiment of the invention to the device according to figure 2, meaning the pneumatic version; and
- Fig. 6 shows a vertical cross-section of the special rubber cover according to a preferred embodiment of the invention to the device according to figure 1, meaning the electrical version.

[0015] Figure 1 shows a side view of the device 1 constructed as an electric version according to a preferred embodiment of the invention. For a good level position in relation to the surface 7 of the sanding or polishing disc 2 and 3 to be treated (see figures 3 and 4) a support 6 is fixed under the rubber cover 4 and 5 (see also figure 2) at the electrical version, because the weight is approximately twice the weight of the pneumatic version of the corresponding device 11 of figure 2. The surface 7 to be treated is humidified beforehand by means of, for example, a plant spray (not shown). The activation of the device 1 is executed by switch 8 through which electrical voltage is fed through the cable 9 with arrow 10 to the electromotor (not shown). The further specifically made movements are described in the patent document number 9 301 899, also from the same applicant and inventor, as mentioned in the introduction of the patent description.

[0016] Figure 2 shows a side view in oblique projection of the device 11 constructed a pneumatic version according to a preferred embodiment of the invention. The compressed air is fed from the direction of arrow 12 and in which the machine is operated by switch 13. Under the rubber cover 5 the basic head (not shown) is situated with fixed thereon the specially developed sanding or polishing disc according to claim 2 by means of a Velcro connection. The pretreatment by humidifying the surface to be treated is already described and the therefore to be executed movements, see figure 1.

[0017] Figure 3 shows the attachment of a sanding or polishing disc 2 to the basic head 14 of the electric ver-

sion of the device 1.

[0018] Figure 4 shows the attachment of a sanding or polishing disc 3 to the basic head 15, in which the rubber cover 5 of the pneumatic version of the device 11 can be pushed (snapped) back.

[0019] Figure 5 shows a cross-section of the special rubber cover 5 according to a preferred embodiment of the invention for the pneumatic version of the device 11, in which the scale is approximately 1:1.

[0020] Idem in figure 6 which shows a cross-section of the rubber cover 4 according to a preferred embodiment of the invention for the electrical version of the device 1, in which the scale is approximately 1:1.

[0021] Finally it has to be emphasized, that the above description constitutes a preferred embodiment of the present invention and that further variations and modifications are still possible without departing the scope of this patent description.

Claims

1. Device constructed as a special hand-held tool for removing damages, mostly scratches on glass, natural stone or plastic surfaces (7), in which the surface (7) to be treated is cleaned beforehand, in which the mentioned special hand-held tool is provided with an eccentric rotating basic head with a sanding disc attached thereon, and in which with the mentioned basic head with accessories spiral movements are made in order to grind/polish away the mentioned and beforehand humidified and/or provided with grinding compound applied damages on mentioned surfaces, if necessary, **characterized in that**, the mentioned eccentric rotating basic head (14, 15) with a sanding disc (2, 3) fixed thereon has a diameter D1 between 40 mm and 80 mm, preferably approximately 55 mm, in which the connection between the mentioned basic head (14, 15) which has a soft flexible surface, and the used sanding/polishing disc (2, 3) of which the connection comes into being by means of Velcro, in which the mentioned basic head (14, 15) is provided with a special rubber cover (4, 5) with diameter D2, in which for the drive of the mentioned special hand-held tool (1, 11) different energy sources can be used, in which the surface to be treated can be humidified beforehand by means of a plant spray.
2. Device as claimed in claim 1, **characterized in that**, the mentioned sanding/polishing disc (2, 3) are of a special developed type, which are directly provided with the necessary ingredients, which both remove and polish, in which the Velcro connection between the sanding/polishing discs (2, 3) and basic head (14, 15) come into being by means of mentioned Velcro connection, in which the mentioned Velcro connection consists of hooks and loops.

3. Device as claimed in claim 1, **characterized in that**, the mentioned special rubber cover 4, 5) has a cylinder-feed shape followed by a conical shaped frustum, in which the diameter D2 increases to a diameter D3, which is approximately 50 to 60% larger, in which the mentioned rubber cover protrudes approximately 3 mm in front of the mentioned sanding or polishing disc. 5
4. Device as claimed in claim 1 **characterized in that**, the mentioned energy source can be an electric source of 230V or 110V at a power of the mentioned hand-held tool (1) of approximately 150W, with a suitable disc diameter of 55mm, in which the weight of the hand-held tool is approximately 1.5 kg (= 3.5 lbs). 10 15
5. Device as claimed in claim 1, **characterized in that**, the mentioned energy source of the hand-held tool (1) can be a pneumatic source with an operating pressure of 5-6 bar (= 90 Psi), in which the consumption of air is approximately 280 l/min (= 62 gallon/min), with a suitable disc diameter of 55 mm, in which the weight of the hand-held tool is approximately 750 gram. 20 25
6. Device as claimed in aforementioned claims, **characterized in that**, the whole of the improved hand-grind/polish apparatus (1, 11) with accessories is put away as a complete system, on a very user friendly and professional way, in a handy constructed suitcase. 30

35

40

45

50

55

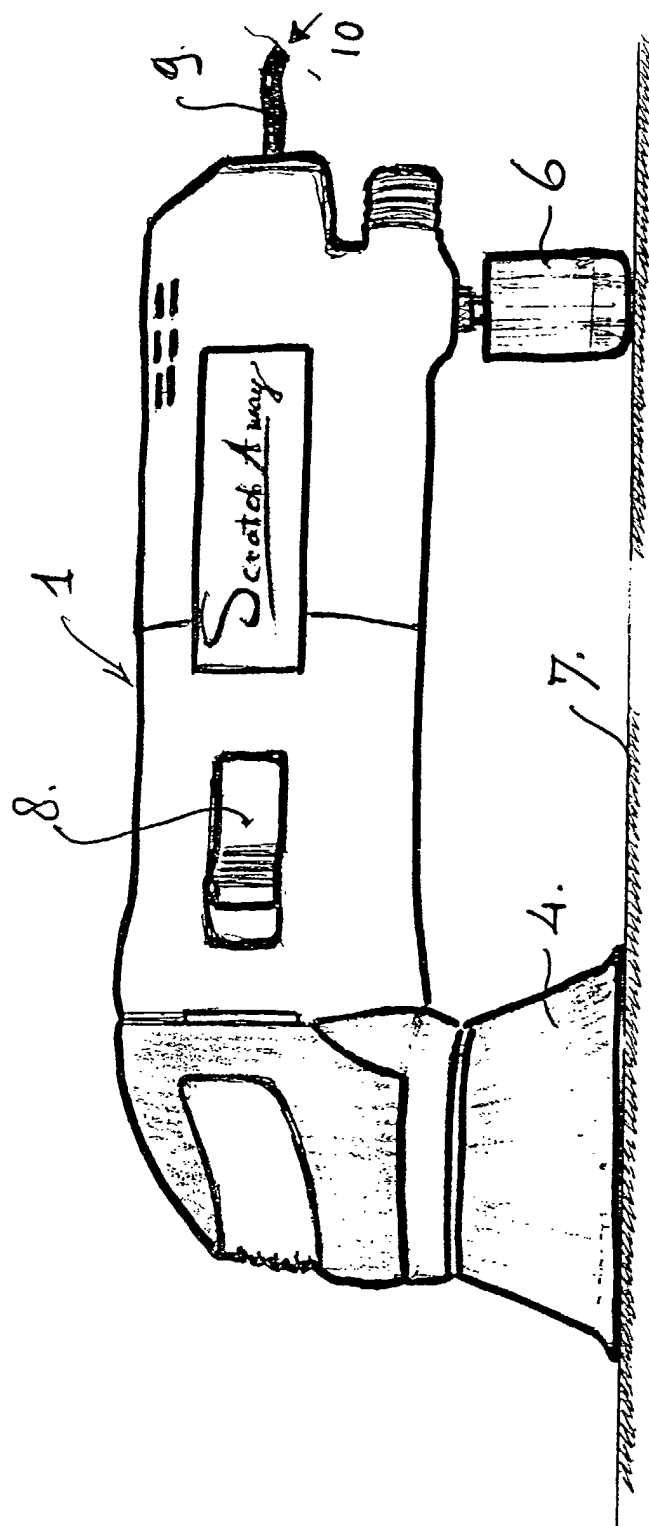
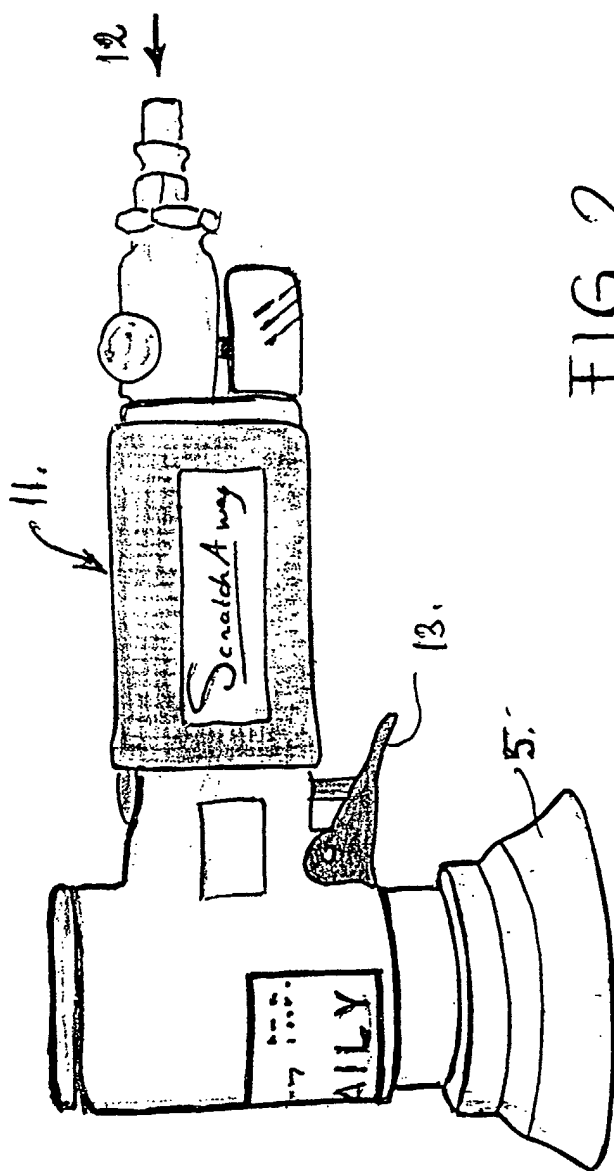


FIG. 1.



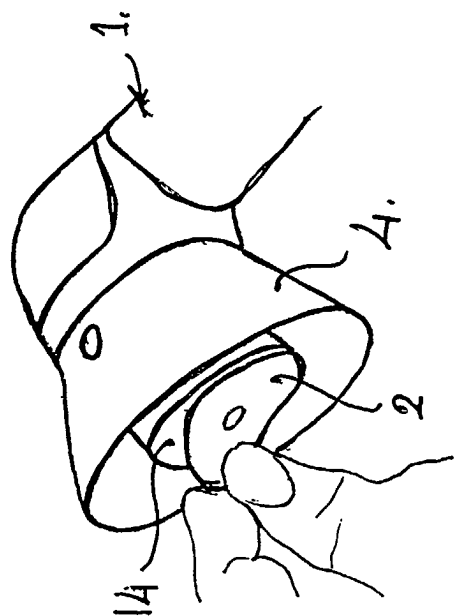
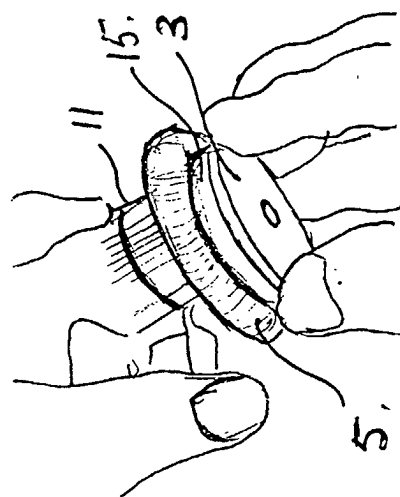
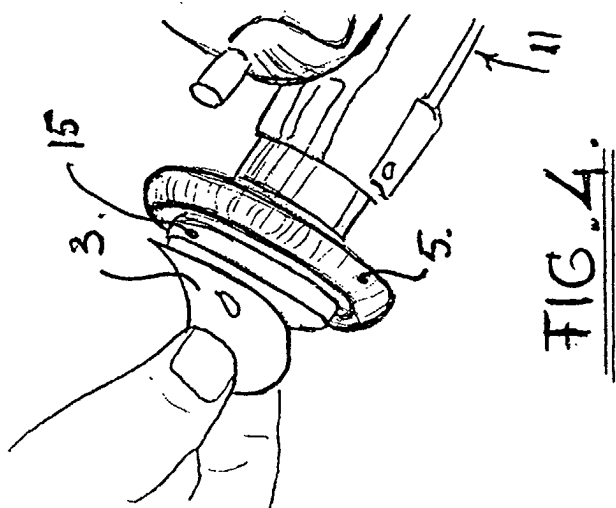
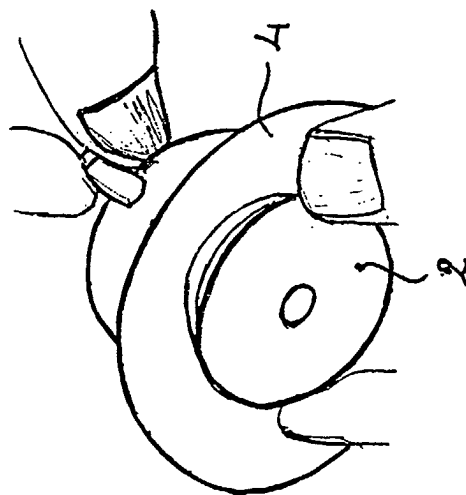


FIG. 3.



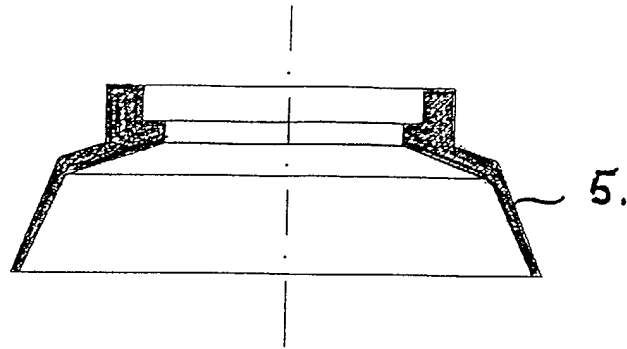


FIG. 5.

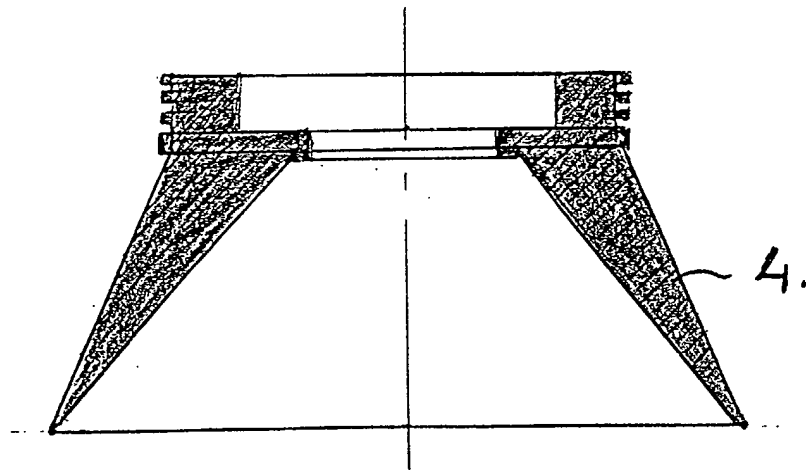


FIG. 6.