

- [54] BRUSH DEVICES
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- [51] Int. Cl. **A41j 51/00**
- [58] Field of Search 38/69, 70, 77.8, 77.81;
68/222

- [56] **References Cited**
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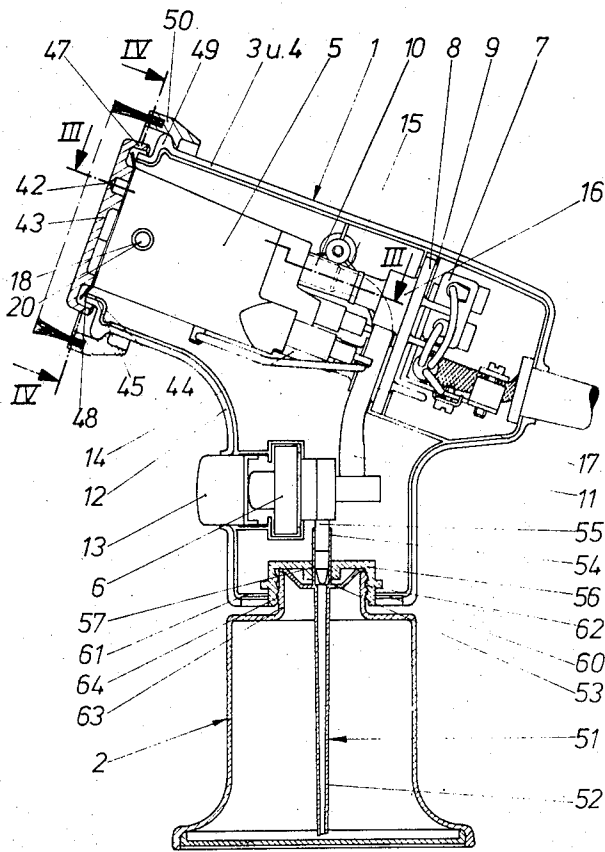
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Primary Examiner—Patrick D. Lawson
Attorney, Agent, or Firm—George R. Clark; Neil M. Rose; John S. Pacocha

[57] **ABSTRACT**

A hand operated brush device is provided which includes a support plate which serves for the fixing of the steam generator, the heating device and the electrical connections to a steam discharge head of the said casing and also serves to have a pump device connected thereto prior to assembly of the device, and a screw cap provided with an opening for the intake of said pump device which screw cap serves to hold together the said steam discharge head which is formed as two casing halves and also serves as a connecting member with a storage or water tank.

11 Claims, 5 Drawing Figures



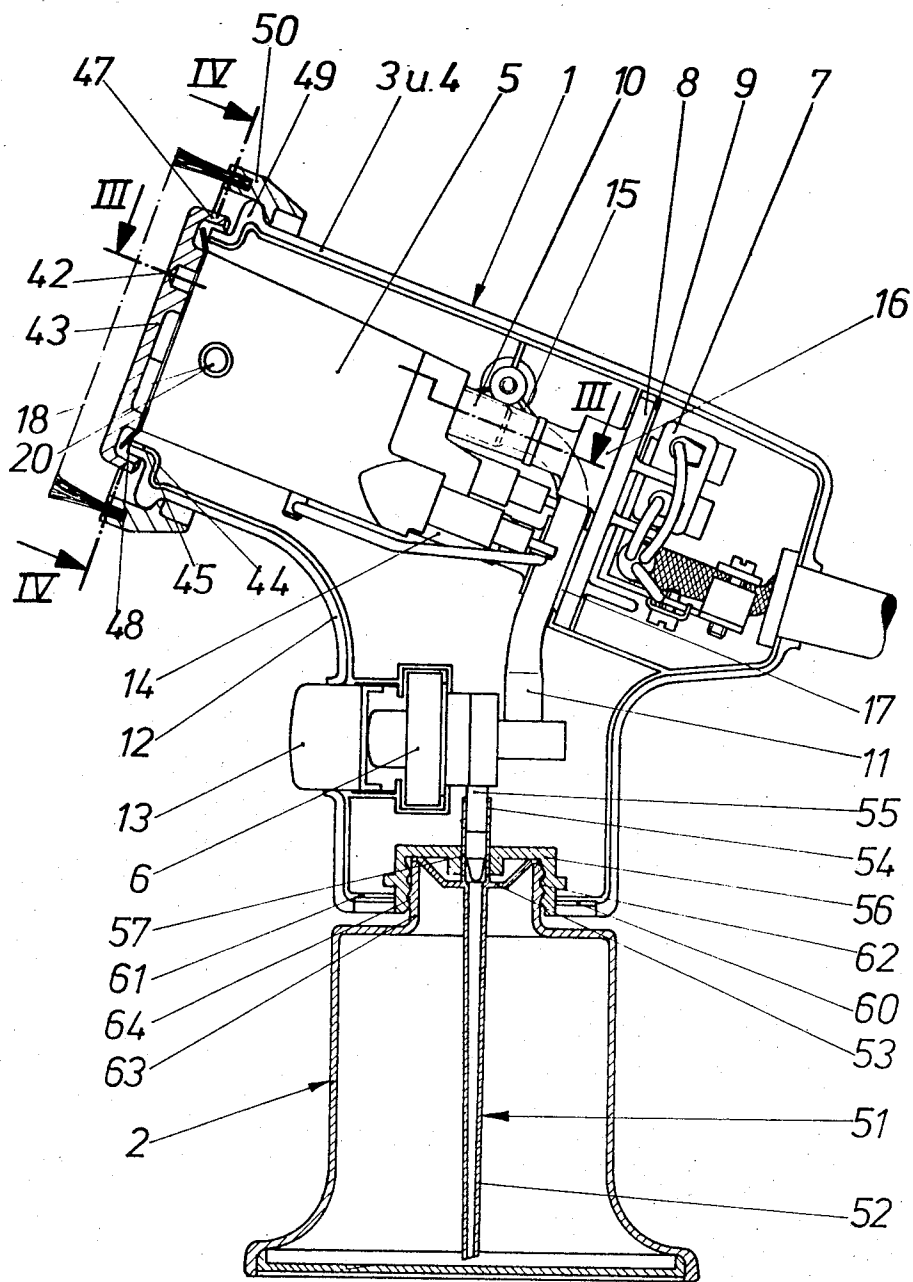


Fig. 1

Fig. 2

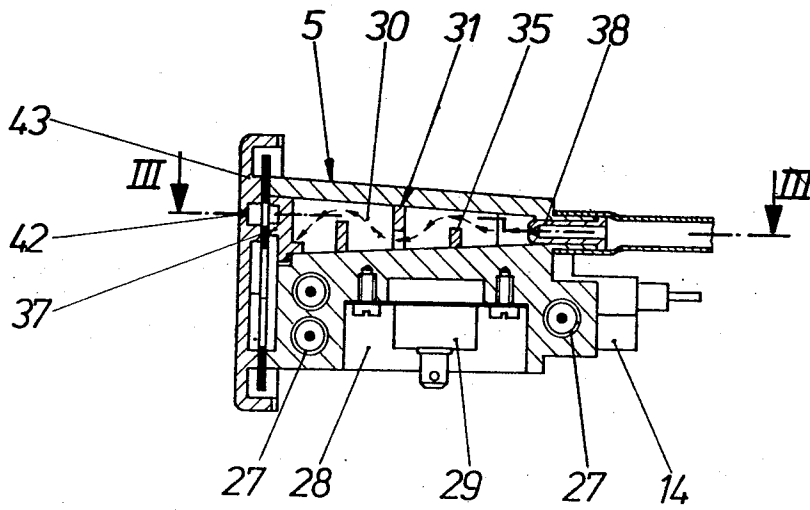


Fig. 3

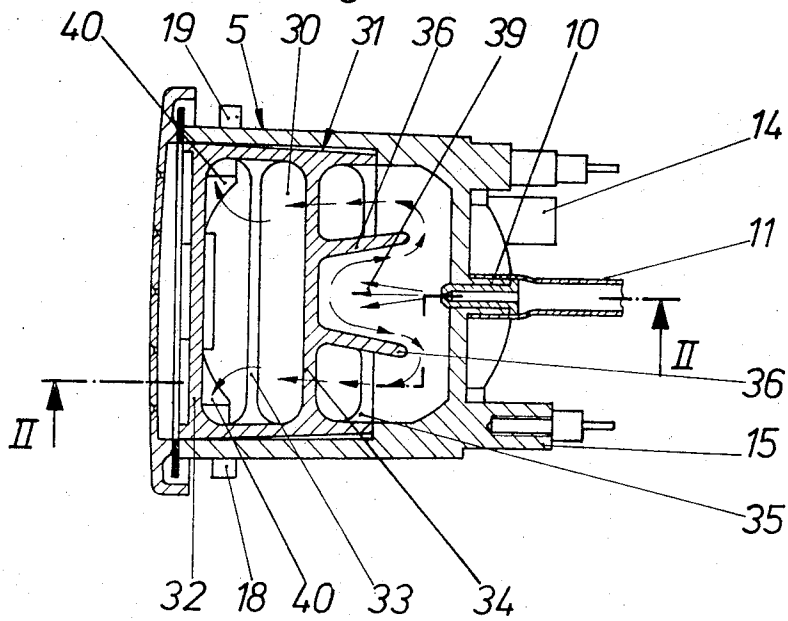


Fig. 4

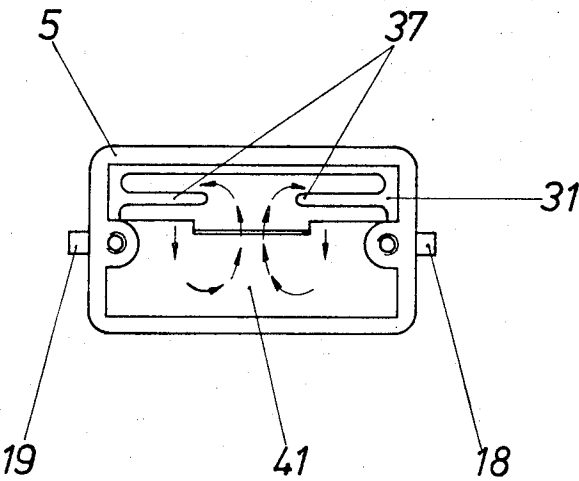
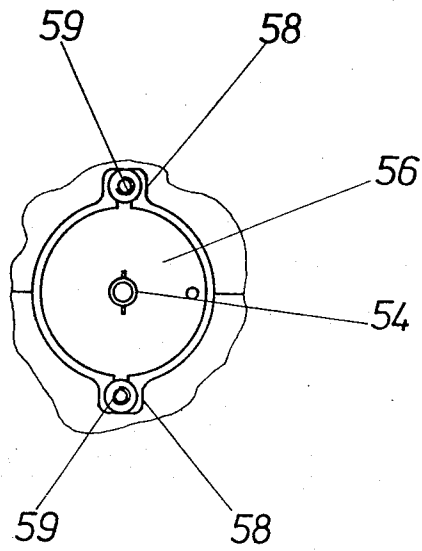


Fig. 5



BRUSH DEVICES

BACKGROUND OF THE INVENTION

This invention concerns improvement in or relating to brush devices and more particularly brush devices of the type which are hand held and operated and which include a brush and an electrical steam generator comprising a heating device and a vaporising chamber arranged in a casing adjacent to a storage tank for the liquid as well as a pump device.

Such devices for freshening up and smoothing clothing have fundamentally long been known. Most components such as e.g., the steam generator with the heating device, the pump device and the electrical connections are arranged in the steam discharge head of the casing while the handle is in the form of a storage or water tank.

Manually operated devices of this type are relatively small and are not suitable for rational manufacture. Thus, for example, no preassembly of components is possible and in addition hot components such as e.g., the steam generator are in direct contact with the casing so that expensive temperature-resistant materials have to be used.

It is an object of the invention to provide a manually operated device of the indicate type which meets the highest requirements but is nevertheless of simple design which can be easily assembled and easily disassembled again.

According to the invention we provide a hand operated brush device of the type described including a support plate which serves for the fixing of the steam generator, the heating device and the electrical connections to a steam discharge head of the said casing and also serves to have a pump device connected thereto prior to assembly of the device, and a screw cap provided with an opening for the intake of said pump device which screw cap serves to hold together the said steam discharge head which is formed as two casing halves and also serves as a connecting member with a storage or water tank.

By means of the screw cap the two casing halves forming the steam discharge head are held together and simultaneously the screw cap serves as a connecting member between the steam discharge head and the storage or water tank. The individual components such as for example the steam generator with the heating device, the pump device and the electrical connections are preassembled on the support plate and during assembly are introduced into the casing as a complete unit. As a result not only are the manufacturing costs considerably reduced but it is thereby achieved that the hot steam generator no longer comes into contact with the casing. The necessary expenditure on thermal insulation can therefore be reduced relative to the known devices and also it is no longer necessary to use temperature resistant material for the casing so that once again costs can be lowered.

The invention will be explained hereinafter as applied to a preferred embodiment, shown in the drawings in greater detail, in which:

FIG. 1 is a longitudinal section through a hand operated brush device according to the invention;

FIG. 2 is a longitudinal section through the steam generator on the line II—II of FIG. 3;

FIG. 3 is a sectional view on the line III—III of FIG. 1 or III—III of FIG. 2;

FIG. 4 is a sectional view on the line IV—IV of FIG. 1; and

FIG. 5 is a plan view of the screw cap.

The hand held and operated brush device shown in FIG. 1 comprises a steam discharge head 1 detachably connected to a storage or water tank 2 and comprising two casing halves 3 and 4. Inside the steam discharge head 1 are provided a steam generator 5, a pump device 6 and electrical connections 7. A support plate 8 serves to receive the steam generator 5 and the electrical connections 7 and is insertable between two pairs of ribs 9 formed on the side walls of casing halves 3 and 4. With the aid of a pipe connection 10 located on steam generator 5 over which pipe connection a tube 11 is pushed the pump device 6 at least during preassembly is suspended directly on the support plate and upon final assembly is merely placed in that part of the casing which is to receive it. A knob 13 which projects through the casing wall 12 serves to operate the pump device 6.

For connection to the support plate 8 the steam generator 5 has advantageously two projections 14 and 15 which are aligned with corresponding projections 16 and 17 on the support plate. Screws passing through projections 16 and 17 of support plate 8 into the projections 14 and 15 of steam generator 5 secure the steam generator to the support plate.

To support the plate 8 in addition two retaining pins 18 and 19 are provided on the steam generator 5 which are provided with insulation rings 20 and are inserted between pairs of ribs formed in casing halves 3 and 4.

As shown in FIG. 2 the steam generator 5 has an electrical heating device 27 which is a spiral tubular heater. Inside its coils the casing of the steam generator 5 has a recess 28 wherein is arranged a thermostat 29. This is connected in the electrical circuit and ensures that the temperature of the steam generator 5 remains within determined limits.

The steam generator 5 also has a vaporising chamber 30 in which is introduced a vaporiser insert 31 in order to provide a labyrinth-like steam chamber.

The vaporiser chamber 31 is made from temperature resistant plastics i.e., preferably glass fibre reinforced polyamide and has a plurality of deflecting and guiding ribs 32 to 37. These deflecting and guiding ribs 32 to 37 are displaced relative to one another and is in particular shown in FIGS. 2 and 3 so that the medium flowing through the vaporising chamber 30 has to change its direction several times.

The water used for vaporising purposes is sprayed into the vaporising chamber 30 with the aid of pump device 6 through a nozzle 38 and in the area 39 impinges on steam generator 5 or vaporiser insert 31 which results in a water-steam mixture.

The vaporiser insert 31 is so designed that the central portion of rib 34 as well as ribs 36 which face one another in a V-shaped manner extend to the base of the vaporising chamber 30 which causes the water-steam mixture to be deflected and forced around the ribs 36 and then corresponding to FIGS. 2 and 3 to flow in the direction of the other end of the vaporising chamber 30.

As a result of the base configuration of the vaporising chamber 30 two steam passage openings 40 are formed in the front part of the steam generator 5 through which the steam which still possibly contains water droplets flows in a cascade 41. After being guided

round ribs 37 of vaporiser insert 31 according to FIGS. 2 and 4 it reaches outlets 42 in a cover plate 43 which seals the vaporising chamber 30 which is open at the front. As a result of the multiple deflection of the steam the water droplets carried along with the steam are prevented from being forced directly through outlets 42.

The nozzle 40 is advantageously made of Teflon and has a very good thermal insulation so that no lime deposit occurs in the nozzle opening which only has a small cross-section.

The two casing halves 3 and 4 of steam discharge head 1 have at the steam outlet side a circular drawn-in rim 44 with a projecting annular flange 45. Cover plate 43 by means of its edge 47 directed downwards steam discharge head 1 projects over flange 45 and is detachably connected to steam generator 5. Between cover plate 43 and steam generator 5 is provided a seal 48 which extends beyond the projecting annular flange 45 of casing halves 3 and 4.

Consequently seal 48 is tensioned between cover plate 43 on the one hand and steam generator 5 or annular flange 45 of the peripheral rim 44 of casing halves 3 and 4 on the other. As a result there is a sealing both between cover plate 43 and steam generator 5 as well as a sealing of the inside of the steam discharge head 1 because the steam flowing back from a surface upon which vapour has been deposited cannot penetrate the inside of the casing.

Finally a bead 40 projects beyond the periphery of the casing halves 3 and 4 and serves to receive a brush frame 50 which can be introduced onto the head 49. When the brush frame 50 is removed from the bead 49 slightly deflects the steam flowing back from a surface upon which vapour has been deposited and thus protects the user's hand.

The pumping device 6 located in steam discharge head 1 is connected with the storage or water tank 2 via an intake 51. Intake 51 is a soft thermoplastic moulded member and in a one piece construction consists of a suction pipe 52, a plate-like seal 53 and a pipe connection 54 which is pushed over the suction tube 55 of pumping device 6.

The plate-like seal 53 serves as a sealing member between the storage and water tank 2 and a screw cap 56 arranged in steam discharge head 1 and which serves as a connecting member between steam discharge head 1 under the storage of water tank 2.

Screw cap 56 has an opening 57 for pipe connection 54 and furthermore two projections 58 according to FIG. 5 are provided on screw cap 56 which serve to fix the screw cap to the casing of the steam discharge head 1. Screws 59 pass through both projections 58, and with the aid of the ring 60, under the seating 61, they serve to secure the two casing halves 3 and 4 together.

Screw cap 56 has a thread 62 which serves to secure the storage or water tank 2 to the steam discharge head 1. The retracted neck 63 of the storage or water tank 2 has a corresponding thread which can be screwed into thread 62. The plate-like seal 53 is clamped between screw cap 56 and the free end of neck 63 to ensure a good seal when the screw top 56 is screwed on.

While there has been illustrated and described a particular embodiment of the present invention, it will be understood that changes and modifications may occur to those skilled in the art, and it is, therefore, contemplated by the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

10 1. A hand operated brush device comprising a steam discharge means formed on two casing halves, a pump, a storage tank, a support plate, a steam generator, a heating means, and said support plate constructed to secure said steam generator and said heating means in said steam discharge means and to support said pump, and a closure means provided with an opening for the intake of said pump, said closure means serving to hold together said casing halves of said steam discharge head and also serving to connect said steam discharge means with said storage tank.

2. A brush device according to claim 1 wherein said two casing halves have ribs between which said support plate is inserted.

3. A brush device according to claim 1 wherein said steam generator includes a vaporising chamber into which is introduced a vaporiser insert constructed so as to produce a labyrinth-like steam chamber.

4. A brush device according to claim 3 wherein said vaporiser insert is made from plastics and has deflecting and guiding ribs as well as steam passage openings.

5. A brush device according to claim 1 wherein the intake of said pump simultaneously serves as the connection between said pump and said storage tank and as a sealing member between said storage tank and said closure means.

6. A brush device according to claim 1 wherein said intake is a suction pipe having a plate-like seal and a connecting pipe formed integrally therewith.

7. A brush device according to any of claim 1 wherein said closure means can be fixed to the steam discharge means with the aid of projections and has a thread and said storage tank has a thread which can be screwed into said thread on said closure means.

8. A brush device according to claim 1 wherein said steam generator has a recess which serves for receiving a thermostat.

9. A brush device according to claim 1 wherein said two casing halves of the steam discharge means has a circular drawn-in rim with a projecting annular flange, a seal is provided which rests on the annular flange, a cover plate is positioned over said seal, and a bead projects beyond the periphery of said casing halves for receiving a brush frame.

10. A brush device according to claim 9, wherein said seal serves both as a sealing member between said cover plate and said steam generator and as a seal for the inside of steam discharge means.

11. A brush device according to claim 1 wherein said steam generator includes a vaporising insert made of glass fibre or reinforced polyamide.

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**UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION**

Patent No. 3,805,425 Dated April 23, 1974

Inventor(s) Hagen Spoida and Kurt Wohlfart

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 42 - after vaporizer, "chamber" should be --insert--;

Column 3, line 29 - after bead, "40" should be --49--;

Column 3, line 31, - before 49, "head" should be --bead--.

Signed and sealed this 19th day of November 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

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