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(71) Applicants:
- **Van Hul, Marcel**
  2550 Kontich (BE)
- **Delbaere, Jean**
  2610 Wilrijk (BE)

(72) Inventors:
- **Van Hul, Marcel**
  2550 Kontich (BE)
- **Delbaere, Jean**
  2610 Wilrijk (BE)

(74) Representative: **Hoorweg, Petrus Nicolaas et al**
Arnold & Siedsma,
Advocaten en Octrooigemachtigden,
Sweelinckplein 1
2517 GK Den Haag (NL)

(54) Device for ironing fabric articles, like clothing, provided with steam supply and discharge means

(57) Device for ironing fabric articles, like clothing, comprising a housing with handle, a soleplate to be heated electrically arranged under the housing and a water reservoir which is arranged if necessary in the housing and which communicates via a controllable supply opening with a chamber for forming steam bounded by the soleplate, wherein the soleplate is provided with apertures connecting to this steam chamber and wherein controllable means are arranged around or in the housing to extract the steam, wherein the extraction means are in direct communication with the steam chamber via a discharge duct, whereby a better control of the steam use and consumption is obtained.

EP 1 300 502 A1

Description

[0001] The invention relates to a device for ironing fabric articles, like clothing, comprising a housing with handle, a soleplate to be heated electrically arranged under the housing and a water reservoir which is arranged if necessary in the housing and which communicates via a controllable supply opening with a chamber bounded by the soleplate for there obtaining steam, wherein the soleplate is provided with apertures connecting to this steam chamber and wherein controllable means are arranged around or in the housing to extract the steam.

[0002] It is generally known for domestic and industrial use to add steam to the fabrics before ironing, which steam is generated by the iron itself by means of a soleplate, which is electrically heated, from water which is dispensed from a reservoir to the steam chamber. The fabrics for ironing can herein be moistened excessively, and this moisture is further evaporated by the heat of the iron. The drawback hereof is that the subsequent drying has a damaging effect on some textile materials. It is already known in industrial use to discharge the generated steam by means of an external fan, which either acts on the ironing board or is connected to the iron such that the steam around the iron is extracted.

[0003] The invention has for its object to improve the extraction of steam, and the device according to the invention is distinguished for this purpose in that the extraction means are in direct communication with the steam chamber via a discharge duct.

[0004] While with such an embodiment the steam does reach the fabrics for ironing, it is discharged again via the same steam apertures, which can take place intermittently. The control system is therefore embodied such that during supply of steam the extraction is interrupted, while when the supply of steam is interrupted the extraction is started. The control system can herein have a determined time constant incorporated, which the user can adjust himself, in order to enable control of the intervals of supply respectively discharge.

[0005] According to another embodiment use is made of per se known channels in the underside of the sole, which channels serve as guide channels for the steam.

[0006] The passages or steam apertures in the sole are herein subdivided into individually separated sections, i.e. the one section serves to supply and the other section to discharge the steam. In this case the steam chamber can be provided with a separating wall such as a transverse partition, which divides this chamber into two sub-spaces, one for supplying the steam and one for discharging the steam. Steam can hereby be permanently supplied and discharged simultaneously. This can also be interrupted, wherein the steam is first supplied and steam can then be discharged. The channels in the sole of the iron extend from the one sub-space to the other sub-space and are connected thereto via passages in the sole.

[0007] In all embodiments the whole sole is heated, so that the steam for extraction will not condense in the laundry for ironing.

[0008] Above mentioned and other features of the invention will be further elucidated hereinbelow on the basis of a number of embodiments.

[0009] In the drawing:

Fig. 1 shows a perspective view of a steam iron according to the invention provided with internal steam extraction means,
Fig. 2 shows a side view of the device of figure 1 with partly broken-away parts,
Fig. 3A and B show different patterns of steam apertures and steam channels in the sole of an iron according to the invention,
Fig. 4 shows a side view corresponding with figure 2 in accordance with a variant of the steam chamber subdivided into sub-spaces and with externally arranged steam supply and steam extraction means.

[0010] The same components in the different figures are designated with the same reference numerals.

[0011] The device according to the invention consists of a housing 1 with a handle 2 arranged thereon and an soleplate 3, which can be electrically E heated by means of a heating element (not shown). The iron is provided with a thermostat 4, all this according to the prior art.

[0012] As is also shown in figure 2, housing 1 is provided with a water reservoir 5 which can be filled with water from the mains via openings (not shown). Sole 3 is embodied with a steam chamber 6 which extends over practically the full length and width thereof. Water reservoir 5 is connected to steam chamber 6 via an opening 7, which opening 7 can be closed by means of a valve 8 which can be operated by a press-button 9, and can be opened manually.

[0013] At another point of steam chamber 6 is arranged an opening 10 which leads to an extraction means 11, here in the form of a fan which is electrically driven by electric motor 12. The outlet of the fan runs via a duct 13 to outlet openings 14 in the wall of housing 1.

[0014] In this embodiment the device operates as follows. By regularly operating valve 7 and thereby opening the passage of water reservoir 5 to steam chamber 6, the admitted water can be changed by the heat of sole 3 into steam which is pressed out through apertures 15. This is also a standard technique and is further assumed to be known. Motor 12 can be energized by a hand-operated pressure switch 16 and fan 11 can thereby be set into rotation, whereby the excess steam in steam chamber 6 can be discharged via opening 10 to outlet opening 14. The steam is further drawn out of the fabrics again via apertures 15 and discharged to openings 14 via steam chamber 6. By doing this intermittently and according to predetermined intervals, the steaming time and the extraction time can therefore be adjusted as de-

sired by the user.

[0015] It is apparent that control means 9, 16 can be embodied such that this can also take place via an electronic control, whereby the steaming and extraction intervals can be set as required by for instance an operating system corresponding to knob 4.

[0016] The sole of the device is shown in figure 3 in two embodiments.

[0017] Figure 3A shows a pattern of apertures as proposed in the embodiment according to figures 1 and 2.

[0018] It is also possible according to figure 3B to embody the sole with shallow channels 17, wherein apertures 15 extend mainly along the periphery of the sole. With such channels 17 the steam can be discharged in effective manner from the fabrics by means of a fan 12. It is recommended to arrange a separating wall, here a transverse partition 18, in the steam chamber as shown in figure 4. Steam chamber 6 is hereby divided into a first section 19 and a second section 19', wherein section 19 can contain the pressurized steam which is pressed out via apertures 15 into the fabrics, while section 19' is connected to opening 20 in the underside of the sole to which the channels 17 lead.

[0019] Figure 4 shows an embodiment wherein the fan is replaced by a stub 21 for connecting to chamber 11', which stub serves to connect a flexible tube 22 which can lead to an external fan (not shown).

[0020] By exerting an underpressure in chamber 11' the steam can be guided via space 19 of steam chamber 6 via apertures 15 and via the fabrics and channels 17 back to space 19' on the other side of transverse partition 18 in the steam chamber and can be discharged via the opening or openings 10.

[0021] The control button 9 for admitting water from reservoir 5 to steam chamber 6 can here also be used to drive the external fan on tube 22. In this embodiment it is also possible to set the external fan 22 into permanent operation or keep it out of operation permanently.

[0022] The invention is not limited to the above described embodiment. Diverse patterns of apertures 15 and channels 17 are thus possible, see figure 3C. Channels 17 herein run to the rear end of soleplate 3 where holes 20' lead to a collecting block 21, to which an extractor means can be connected. Such a block can optionally be coupled as an accessory to an existing iron, wherein the soleplate must then be provided with channels 17 which must lead to holes 20 in attachment 21.

[0023] The separating wall 18 can have any suitable form. An external steam generator can furthermore be used which is connected to steam chamber 6 via a flexible tube ST. Reservoir 5 is then unnecessary. The steam can also be recycled via SA and fed back in condensed form to the external steam generator. Combination of the above described embodiments is possible within the scope of the invention.

Claims

1. Device for ironing fabric articles, like clothing, comprising a housing with handle, a soleplate to be heated electrically arranged under the housing and a water reservoir which is arranged if necessary in the housing and which communicates via a controllable supply opening with a chamber bounded by the soleplate for there obtaining steam, wherein the soleplate is provided with apertures connecting to this steam chamber and wherein controllable means are arranged around or in the housing to extract the steam, **characterized in that** the extraction means are in direct communication with the steam chamber via a discharge duct.

2. Device as claimed in claim 1, **characterized in that** the control system is adapted such that when the supply opening is opened the extraction means are rendered inoperative, and vice versa.

3. Device as claimed in claim 1, wherein the sole is provided with one or more channels, **characterized in that** the channels extend in the sole from an area enclosed by the steam apertures to an area where the extraction means are arranged.

4. Device as claimed in claim 3, **characterized in that** the steam chamber is provided with a separating plate for the purpose of forming two sub-spaces, one of which is the steam supply chamber and the second of which is the steam discharge chamber, wherein the channels extend from the one to the other sub-space.

5. Device as claimed in any of the foregoing claims, **characterized in that** the extraction means are formed by an electrically driven fan.

6. Device as claimed in claim 5, **characterized in that** the fan is accommodated in the housing.

7. Device as claimed in claim 5, **characterized in that** the fan is arranged externally and is connected to the underside of the sole via a tube.

8. Device as claimed in claim 1, wherein the water reservoir and a steam generator are placed externally and can be connected at the sole to the steam chamber via a flexible tube, **characterized in that** the steam extraction means comprise a steam extraction tube which is carried back to the steam generator.

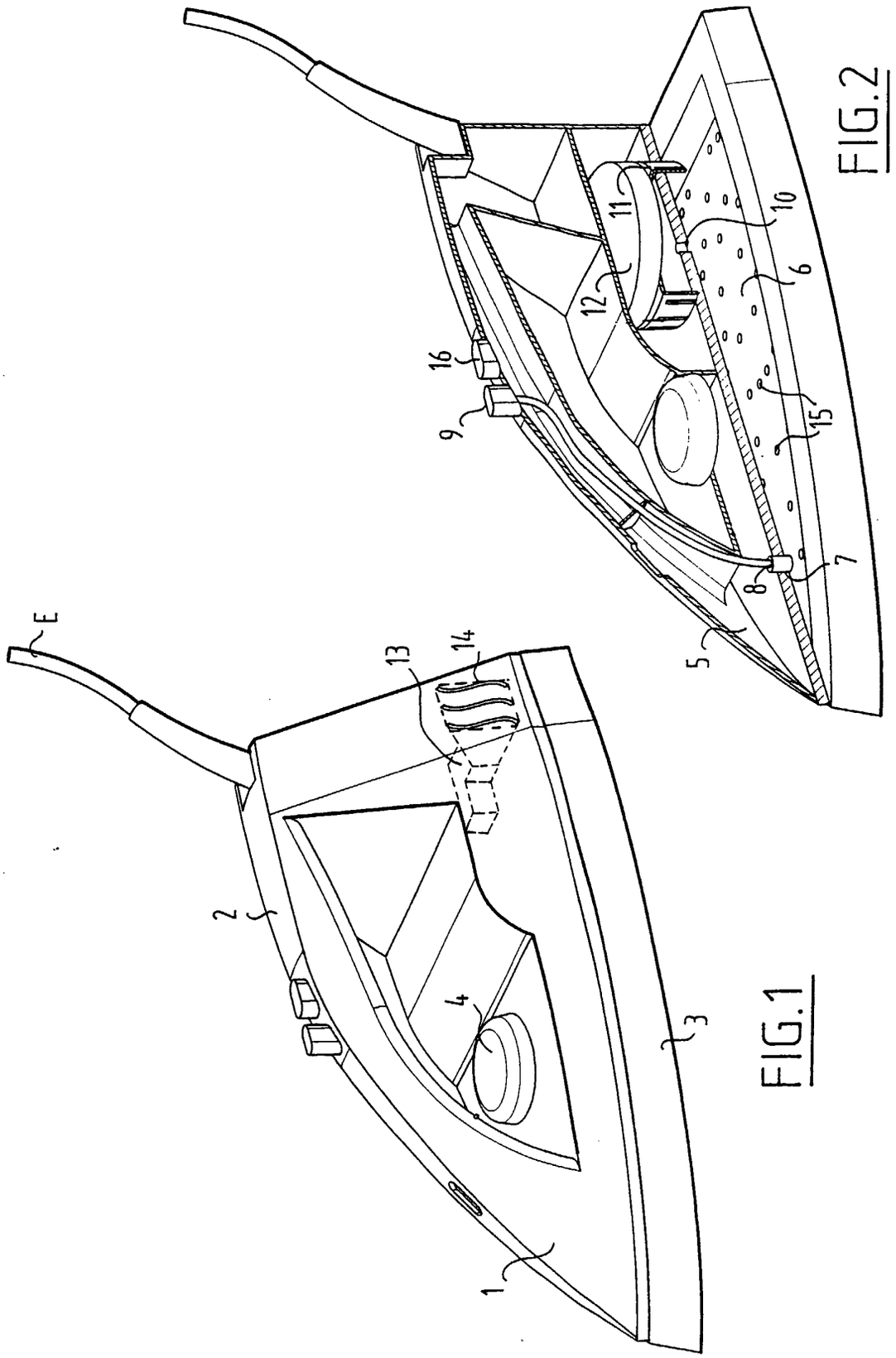

FIG.1

FIG.2

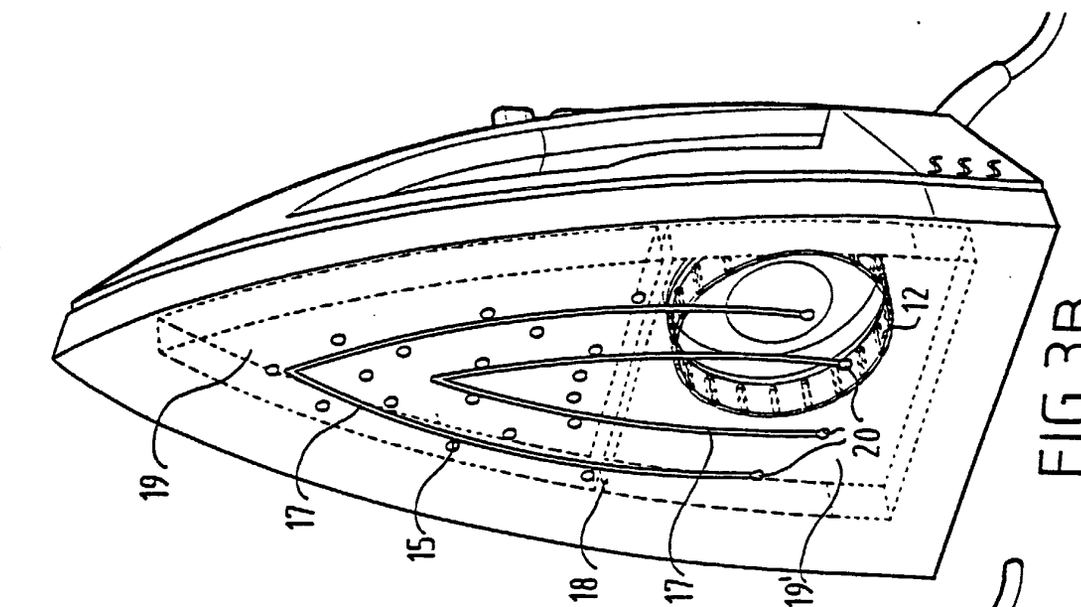

FIG.3B

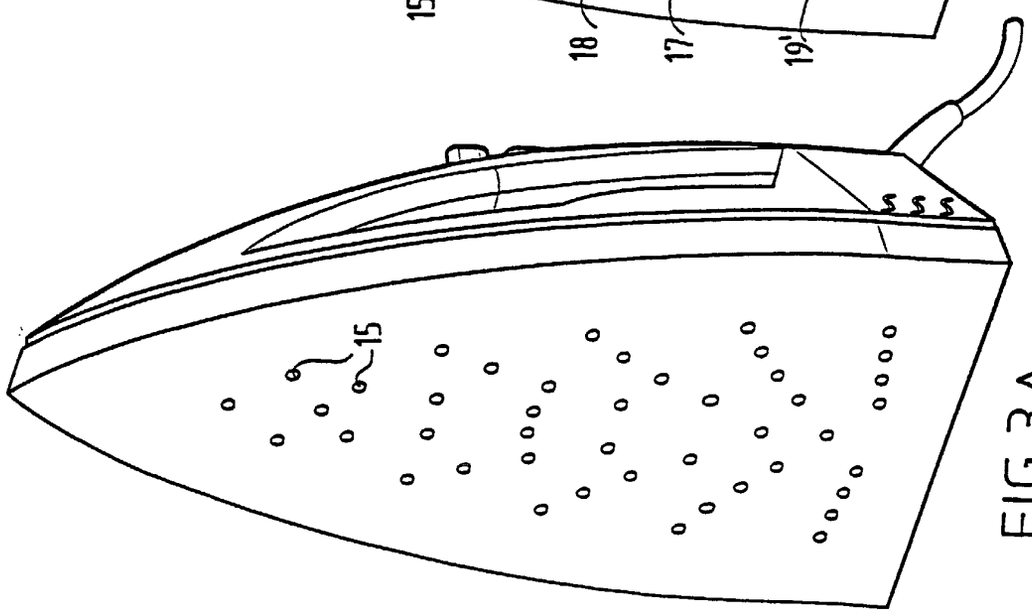

FIG.3A

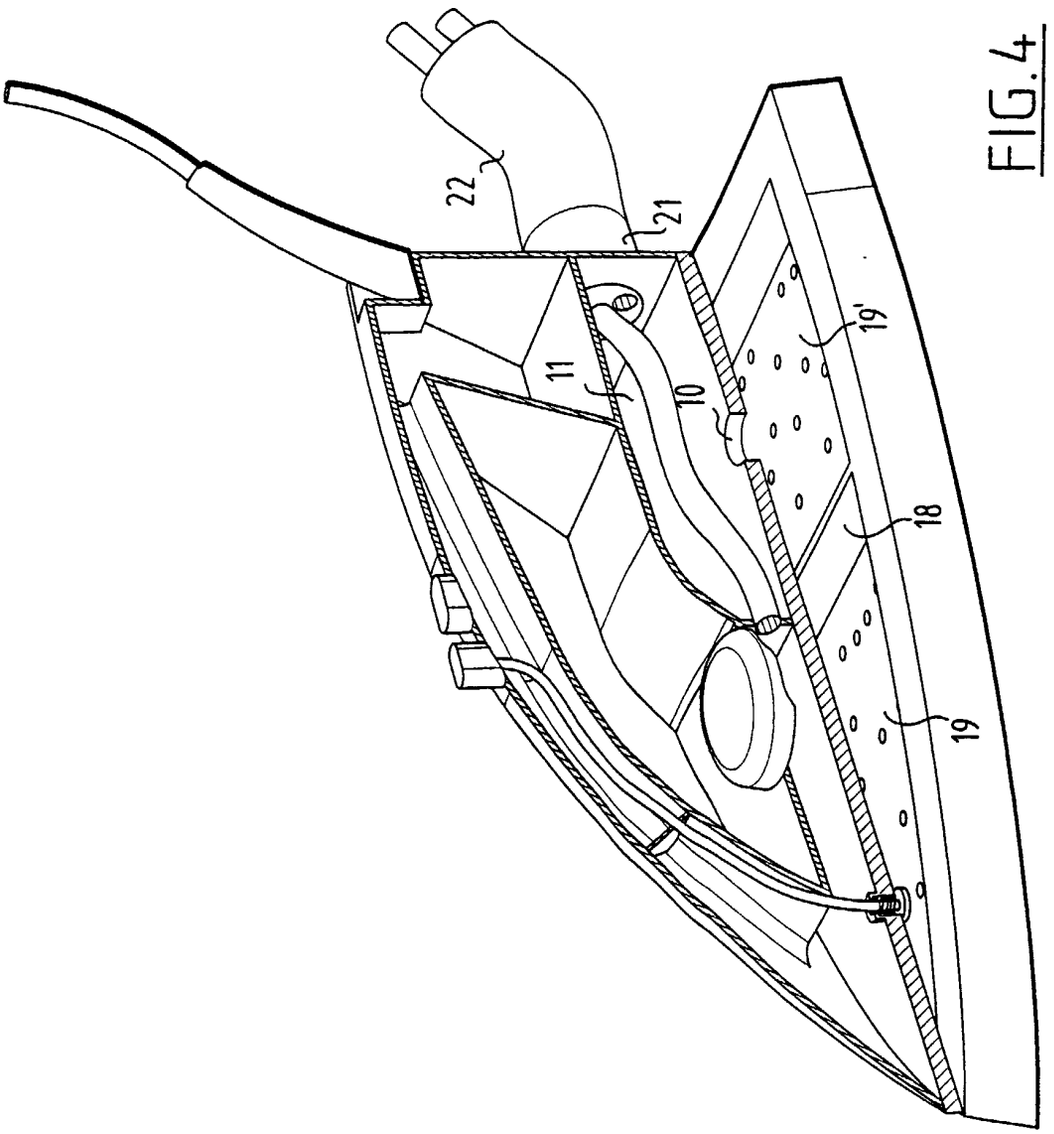

FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 01 20 3792

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	18 April 2002	Norman, P

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