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(54) **Multifunctional steam unit**

(57) Multifunctional steam unit comprising a handle (2) suitable to be fed with the steam produced by a boiler (1), the handle comprising at least one steam connection means (5) to be removably connected to a steam connection counter-means disposed on a tool (4) which uses the steam generated by the boiler (1), said handle (2)

also comprising at least one electricity connection means (6) suitable to be removably connected to an electricity connection counter-means of a tool (4) operating not only with steam but also electrically.

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## Description

**[0001]** The present invention relates to a multifunctional steam unit in accordance with the introduction to the main claim.

**[0002]** In the state of the art, ironing devices of the latest generation use a boiler connected to a smoothing iron. The boilers used can be of various types, for example pressure boilers or steam generators with automatic refill. In certain more recent models there is a tendency to allow the same boiler to be used to connect steam tools of various types, such as a carpet or floor cleaning brush, a glass scraping and cleaning system, or a small brush to remove limestone from sanitary equipment and taps.

**[0003]** In the case of smoothing irons, these are sold permanently connected to a cable, known as a monotube, comprising a steam pipe and a number of electric wires, both to provide the plate of the iron with the electric power necessary to heat it, and to enable the user to feed electrical commands to the boiler by pressing pushbuttons provided on the handle. Hereinafter the term "monotube" will be used to indicate an assembly comprising at least one steam transport pipe and one or more electric cables, in addition to the insulating covering and the necessary connection means.

**[0004]** In the case of tools operating only with steam, such as limestone removal brushes or jets, the various tools present a handle from which a monotube extends, at the end of which there is present a means of plug and socket type for its connection to the boiler. Tool carrier handles also exist for connection to miscellaneous tools operating with steam. In this case the tool alone is of very small dimensions. In the case of tools other than smoothing irons, the purpose of the electric cables is merely to feed electrical control signals to the boiler.

**[0005]** For safety and size reasons the removable double electrical and steam connection is always made at the boiler. Consequently those smoothing irons requiring both steam and electric power for heating the plate have their monotube permanently connected to the handle of the smoothing iron. At the free end of the monotube a connection means is then present removable to the boiler.

**[0006]** Hence if the same boiler is to be used for a smoothing iron and other tools, there is a redundancy of monotubes and connections, with a wastage of material.

**[0007]** Each smoothing iron is also more costly because, in addition to the tool, it comprises the monotube with the means for its connection to the boiler.

**[0008]** An object of the present invention is therefore to provide a multifunctional unit by which the stated drawbacks are overcome, a particular object being to provide a multifunctional steam unit which is more economical than the currently available devices.

**[0009]** A second object is to provide a multifunctional unit requiring less space than the known art.

**[0010]** Said objects are attained by a device the inven-

tive characteristics are defined in the claims.

**[0011]** The invention will be more apparent from the ensuing detailed description of a preferred embodiment thereof provided by way of nonlimiting example and illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of a multifunctional steam unit according to the invention;

Figure 2 shows the multifunctional unit of the invention connected to the plate of a smoothing iron and to a boiler;

Figure 3 is a longitudinal section through the multifunctional unit of the invention;

Figure 4 shows a second embodiment of the multifunctional unit.

**[0012]** With reference to Figures 1 and 2, it can be seen that the multifunctional steam unit of the invention comprises a handle 2 connected permanently to a monotube 3, said handle 2 presenting a first multiple connection means 7 removable to a tool 4 (the plate of the smoothing iron in Figure 2), said multiple connection means comprising a steam connection means 5 and an electricity connection means 6 (as can be seen from Figure 3). The monotube 3 presents a second multiple connection means 8 removable to a steam production boiler 1 (visible in Figure 2), totally similar to the boilers currently used for professional smoothing irons and for domestic use. The first multiple connection means 7 for removably connecting the handle 2 to the tool 4 enables both the steam and the electrical power required for the tool 4 to pass from the handle 2 to the tool 4.

**[0013]** The tool to be connected to the handle 2 can be the functional, and hence handle-less, part of a generic tool which requires both electrical power and steam.

**[0014]** In the commonest case, the tool 4 is the plate of a smoothing iron, as in Figure 2, or the tool can have electrically movable parts, for example a rotary steam brush. The tool 4 presents a multiple connection counter-means to be removably connected to the handle 2, to receive from the handle 2 the electrical power and steam required for its operation. When connected to the tool 4, the handle 2 becomes the handle of the tool 4.

**[0015]** As the connection is made between the handle 2 and the tool 4, the problems relative to the greater space requirement of a removable multiple connection than a fixed multiple connection are easily solved as that part of the handle 2 facing the tool 4 presents a surface and volume such as to easily receive the first multiple connection means 7, which is incorporated into that part of the handle to be connected to the tool 4. The relative multiple connection counter-means or the steam connection counter-means and electricity connection counter-means present in the tool 4 are easily incorporated into a tool such as the plate of a smoothing iron.

**[0016]** For this purpose a special type of connector known as TH022 (patent application MI2004A001439) is preferably used, enabling both steam and electrical pow-

er to be transferred with a high degree of safety, while of small overall size. Similar quick connection means can also be used.

[0017] In its most reduced form, the multifunctional steam unit comprises a handle 2 with a steam connection means 5 and an electricity connection means 6, both removable (Figure 3). Said steam connection means and electricity connection means can be combined into a first multiple connection means.

[0018] In a more extended embodiment, the multifunctional unit comprises both the handle 2 with the means for connection to the tool, and the monotube 3.

[0019] It is possible and also convenient to connect the handle 2, monotube 3 and boiler 1 together non-removably to form a single functional steam unit to be connected to a plurality of tools.

[0020] Although the handle 2 presents a first multiple connection means 7 comprising a steam connection means 5 and an electricity connection means 6, a tool using only steam, such as a steam lance to remove limestone, can be arranged to present a steam connection counter-means to be removably connected only to the steam connection means 5 of the handle 2. The electricity connection means 8 must then comprise a protection system which does not allow dangerous accidental contact when not in use. This problem has already found many solutions, and many electrical connection means exist presenting effective protection of this type.

[0021] The steam connection means 5 can also be disposed on the handle 2 in a different position distant from the electricity connection means 6. In this manner the steam connection means 5 can be designed for connection to already existing tools operating only by steam, in which case the electricity connection means remains unused.

[0022] Figure 4 shows precisely this embodiment, in which the steam connector is at the front of the handle and the electrical energy connector is at the rear. If the smoothing iron is disconnected and instead a steam gun not requiring electrical energy but only steam is to be connected to the handle 2, this is connected only to the front steam connector, leaving the electricity connector free, which because of the security connection means does not constitute a danger of electrical contact to the user.

[0023] In operation, the handle 2 is removably connected to the tool 4 by the first multiple connection means 7 to assume the tool handle function. The end of the monotube 3 suitable to be connected to the boiler 1 is connected to the boiler 1 by the second multiple connection means 8. When the user wishes to change tool, the user disconnects the handle 2 from the tool 4 and connects it to another tool. Again in this case the handle 2 forms the tool handle. In the case of a tool operating both with steam and electricity, this is simpler, less costly and less space-requiring than those tools currently available, as it does not have to comprise the handle, but only the tool operative part and the counter-means for connection

to the handle 2.

[0024] The monotube 3 can be removably connected to the boiler 1 to obtain greater system flexibility overall, but could also be permanently connected to the boiler 1.

5 [0025] The invention also relates to a tool operating with steam and electricity to be connected to the multifunctional steam unit of the invention. This tool hence presents a connection counter-means to be connected to the first multiple connection means 7, so that by connecting the tool to the multifunctional steam unit it becomes provided with a handle and can be then connected to a boiler for steam generation. The term "tool" hence means a tool operating by steam and possibly also by electricity, which is without a handle and hence cannot be used other than in connection with the handle of the multifunctional steam unit. Examples of such tools include a smoothing iron, where the "tool" means only the plate of the smoothing iron, comprising an electrical resistance element for its heating and suitable to spray steam, or a tool which moves while operating with steam, such as a rotary steam brush.

20 [0026] As the tool handle is removable and can be connected to a plurality of different tools, the assembly comprising the tool, boiler, handle and monotube is always simpler and less costly.

25 [0027] The tool alone is also of small overall size, as it does not possess a handle or a monotube for its connection to the boiler.

30 [0028] Different smoothing irons can be connected to the handle 2 if they comprise compatible connection means.

35 [0029] An advantageous characteristic of the invention is that if the smoothing iron develops a fault, only the plate connected to the handle need be replaced, without the need to approach a service centre.

[0030] Steam tools not requiring electricity for their operation can of course be connected to the multifunctional steam unit, such as a steam brush for cleaning carpets or floors, or a limestone removal brush.

40 [0031] In this case the electricity connection means 6 of the handle 2 is not used, and must hence be adequately arranged with a safety system preventing dangerous accidental contact.

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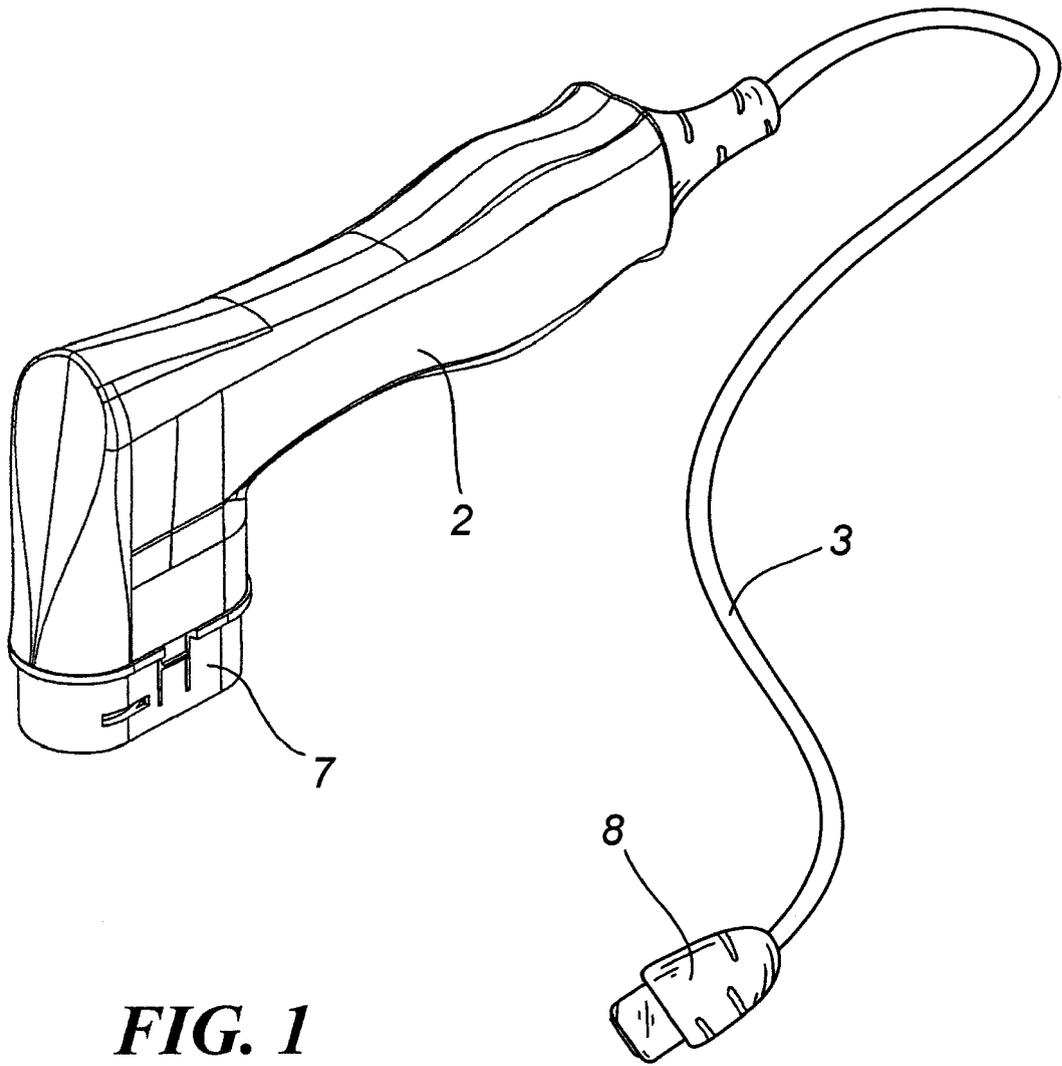
### Claims

1. A multifunctional steam unit comprising a handle (2) suitable to be fed with the steam produced by a boiler (1), the handle comprising at least one steam connection means (5) to be removably connected to a steam connection counter-means disposed on a tool (4) which uses the steam generated by the boiler (1), **characterised in that** the handle (2) also comprises at least one electricity connection means (6) to be removably connected to an electricity connection counter-means of a tool (4) operating not only with steam but also electrically.

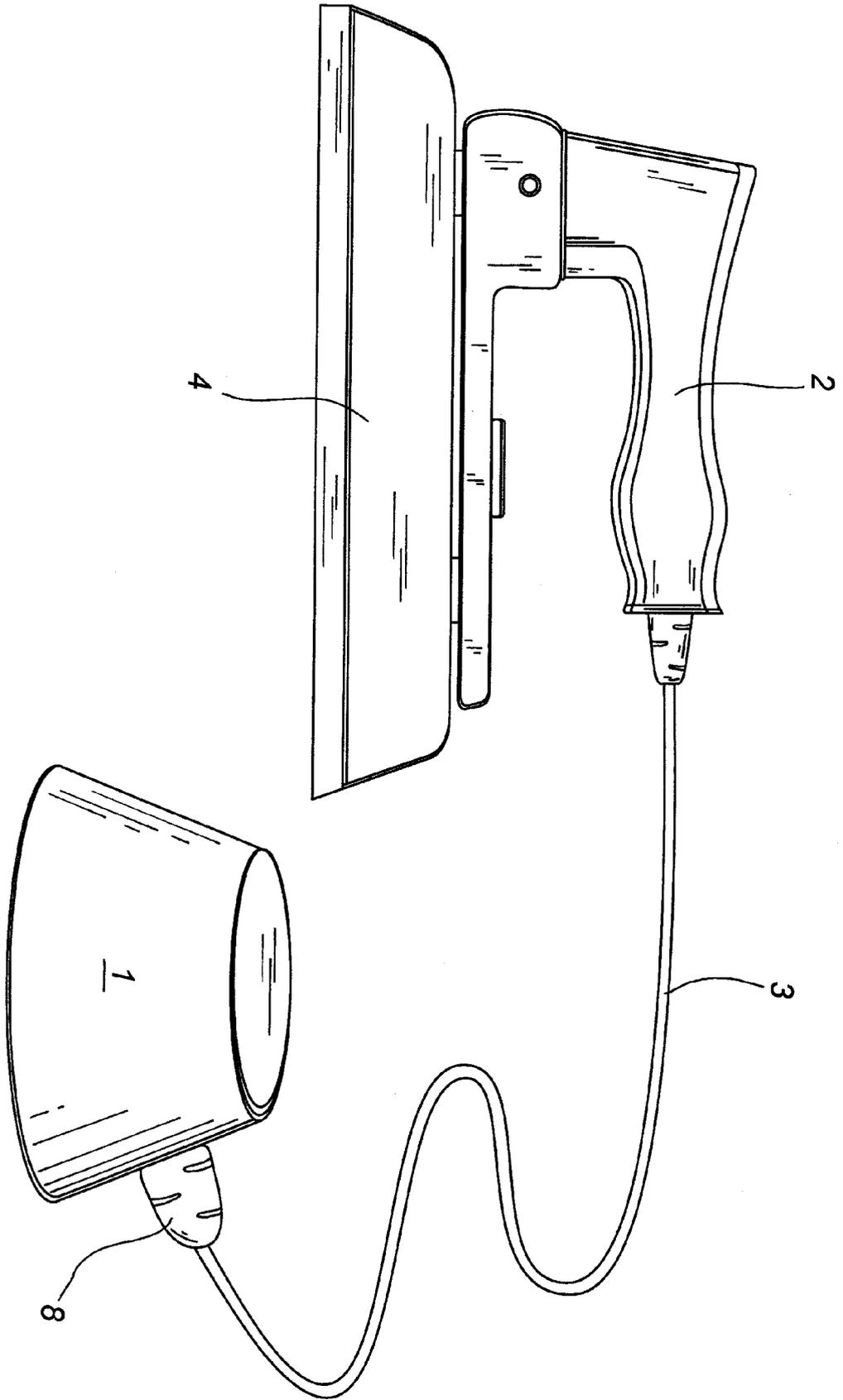
2. A multifunctional steam unit as claimed in claim 1, **characterised by** comprising a monotube (3) for making the connection between the handle (2) and boiler (1). 5
3. A multifunctional steam unit as claimed in claim 2, **characterised in that** said monotube (3) is permanently connected to the handle (2).
4. A multifunctional steam unit as claimed in claim 2, **characterised in that** said monotube (3) is permanently connected to a boiler (1). 10
5. A multifunctional steam unit as claimed in claim 1, **characterised in that** the removable steam connection means (5) and the removable electricity connection means (6) are disposed in a single multiple means (7) for connection to the tool (4). 15
6. A multifunctional steam unit as claimed in the preceding claim, **characterised in that** said multiple connection means (7) is a commercial connector known by the name TH022. 20
7. A multifunctional steam unit as claimed in claim 1, **characterised in that** the removable steam connection means (5) and the removable electricity connection means (6) are disposed in two different positions of the handle (2). 25
8. A tool (4) operating by steam and by electrical energy, **characterised by** presenting at least a steam connection counter-means for connection to the removable steam connection means (5) and to the electricity connection means (6) of a multifunctional steam unit claimed in claim 1. 30 35
9. A tool (4) as claimed in the preceding claim, **characterised in that** the electric current feeds an electrical resistance element for thermal power production. 40
10. A tool (4) as claimed in the preceding claim, **characterised in that** the electrical resistance element forms part of a smoothing iron (4). 45
11. A tool as claimed in claim 7, **characterised by** comprising electrically movable parts. 50

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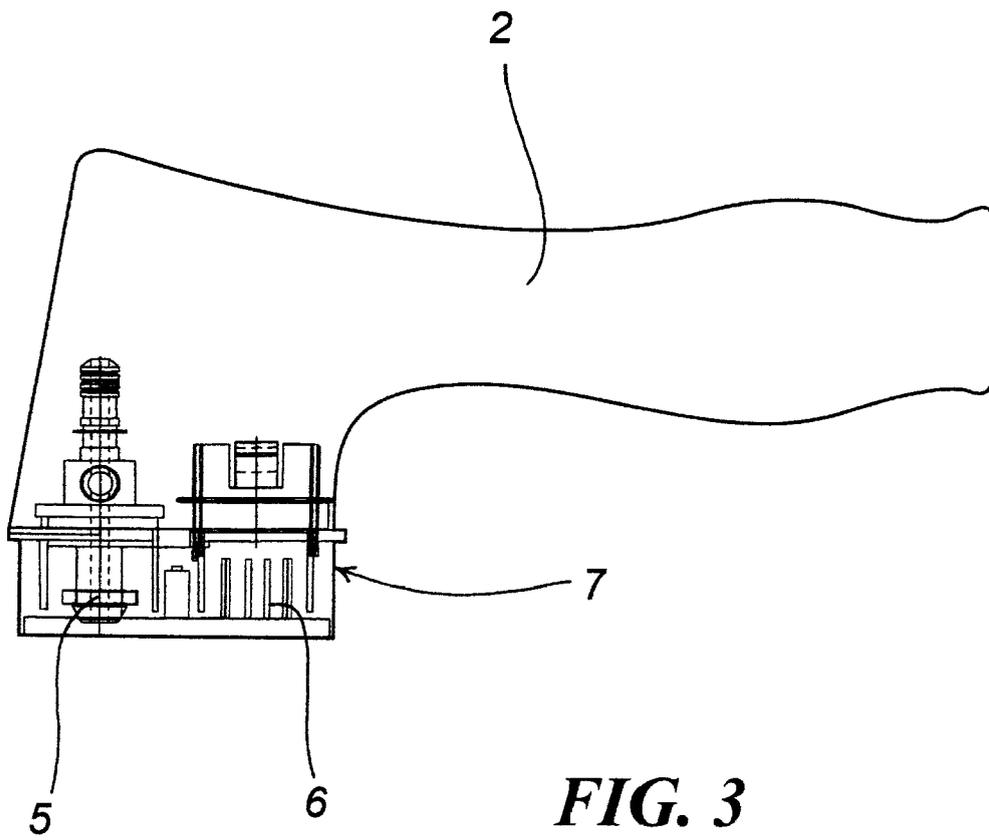
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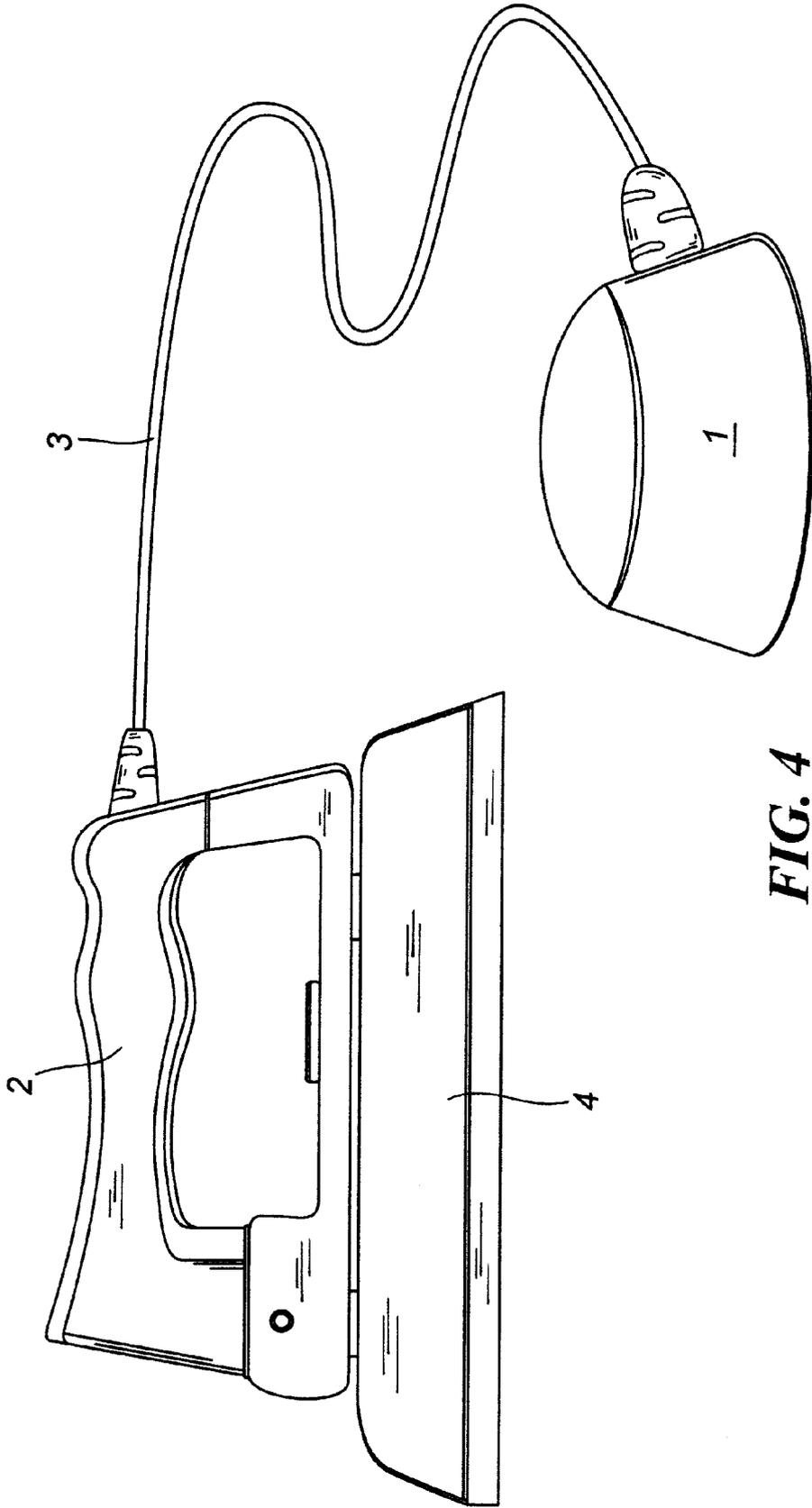
**FIG. 1**



**FIG. 2**



**FIG. 3**



**FIG. 4**



**DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2006/032991 A2 (LONGHI SPA DE [IT]; SCIAN LUCIANO [IT]; MISSIO GABRIELE [IT]) 30 March 2006 (2006-03-30) * the whole document *	1-5,7-9, 11	INV. D06F75/12 D06F75/34 A47L11/34
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A	US 2005/028408 A1 (TOBIAS ANDREW J [US] ET AL) 10 February 2005 (2005-02-10) * page 2, paragraph 33 - page 3, paragraph 45; figures *	1-5,8-10	TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>13 December 2006</b>	Examiner <b>Prosig, Christina</b>
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