



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
08.08.2001 Bulletin 2001/32

(51) Int Cl.7: **A47L 9/28**

(21) Application number: **01101654.0**

(22) Date of filing: **26.01.2001**

(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

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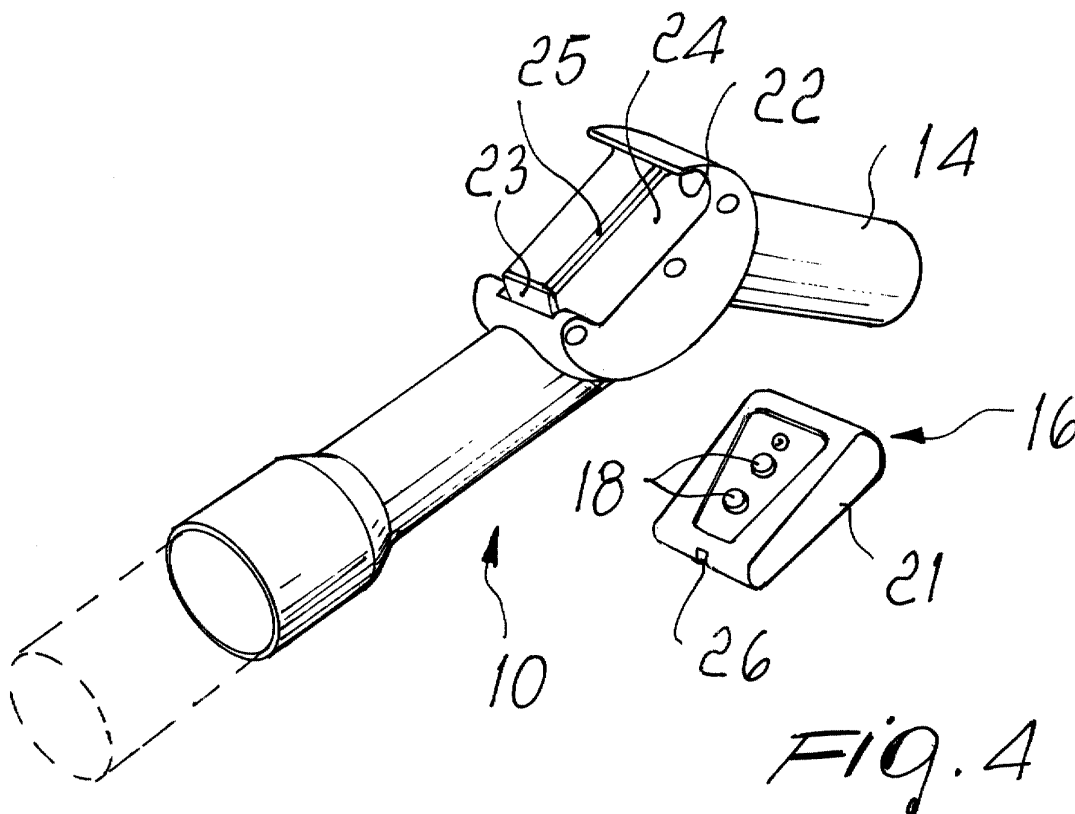
(30) Priority: **01.02.2000 IT PD000030**

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(54) **Control device, particularly for cleaning appliances**

(57) A control device, particularly for appliances used in the field of domestic and/or industrial cleaning, comprising at least one signal transmitter (16) which is

removably located on the handle (14) of the tool of the cleaning appliance and a receiver which is located on the appliance body and is connected to means for controlling the various functions of the appliance.



Description

[0001] The present invention relates to a control device, particularly but not exclusively useful for appliances used in the field of domestic and/or industrial cleaning.

[0002] A wide variety of models of cleaning appliance is currently commercially available, ranging from vacuum cleaners to steam cleaners, irons, combined appliances and others used for cleaning in the home and in public places, such as restaurants, industries, shopping centers, et cetera.

[0003] As regards in particular steam-using appliances, there are various basic construction types which can be distinguished substantially according to the manner in which steam delivery and other components adapted to perform various auxiliary functions are controlled.

[0004] A first construction type provides for a body of the appliance which accommodates the boiler and is extended, for steam dispensing, by means of a hose which ends, at its free end, with a handle which is adapted to control the movement of the possibly replaceable tool of the steam appliance.

[0005] In this first construction type, switches are accommodated at the handle and, by means of electrical connecting wires arranged inside the hose, are connected to an electric valve which in turn controls the flow of steam or other auxiliary functions.

[0006] The connection between the switches and the electric valve occurs substantially at the mains voltage (220 and 110 V) and therefore with considerable danger for the user.

[0007] In order to minimize this danger, the switches must be appropriately insulated, and this requires a considerable expenditure of material and a considerable increase in constructive complexity and manufacturing times.

[0008] Accordingly, this first construction type, besides still not ensuring perfect safety of the controls available to the user, leads to high manufacturing costs.

[0009] A second construction type meant to obviate the drawbacks noted as regards the first construction type again provides for switches which are accommodated in the handle of the tool, but said switches are connected at low voltage (12-18 V) with an electronic board or simply with a transformer, accommodated inside the body of the appliance.

[0010] Although this second solution drastically reduces the risks entailed by the passage of current proximate to the user grip regions, it does not solve the problem of costs.

[0011] While on the one hand the user is better protected (but may still run the risk of low-voltage shocks, which are not dangerous but highly unpleasant), on the other hand the need to use an electronic board or a transformer entails an increase in costs which can be even greater than the above-cited protections on the buttons.

[0012] A third recent type accommodates, inside the handle, a wheel which controls a cable which slides within a sheath which is in turn accommodated inside the steam connection hose.

[0013] The cable reaches inside the body of the appliance, in which it controls the opening or closure of an electric valve.

[0014] Although this third construction type obviates the problem of safety due to the circulation of electric current proximate to the handle, it has characteristics of poor reliability under prolonged and intense use; moreover, experience in the field has shown that it is awkward for the user.

[0015] Another construction type provides for a pneumatic connection between a control located in the handle and a transducer located in the appliance body and preset to control the various functions thereof.

[0016] However, this type has proved itself particularly difficult to adjust and again provides for a connection of parts (tubes for the passage of the pressure pulses) between the handle and the appliance.

[0017] Cleaning appliances, particularly vacuum cleaners, have been recently devised which use an infrared remote control located in the handle and a receiver located in the appliance body.

[0018] Nonetheless, these appliances have shown considerable shortcomings, due mainly to the fact that usually, in use, the body of the user is interposed between the handle and the appliance body and therefore the signals sent by the remote control are not received appropriately by the receiver and this causes severe inconvenience for the user.

[0019] The aim of the present invention is to provide a control device, particularly for appliances used in the field of cleaning, which solves the above-noted drawbacks of conventional devices, particularly obviating completely the problem of user safety.

[0020] Within this aim, an object of the present invention is to provide a control device which is constructively simple and adaptable to the various models of appliance currently provided for specific uses.

[0021] Another object of the present invention is to provide a control device which can be operated easily and ergonomically by the user.

[0022] Another object of the present invention is to provide a control device which leads to production costs and times which are competitive with respect to conventional devices.

[0023] Another object of the present invention is to provide a control device which can be manufactured with known technologies.

[0024] This aim and these and other objects which will become better apparent hereinafter are achieved by a control device, particularly for appliances used in the field of domestic and/or industrial cleaning, characterized in that it comprises at least one signal transmitter which is removably located on the handle of the tool of the cleaning appliance and a receiver which is located

on the appliance body and is connected to means for controlling the various functions of the appliance.

[0025] Advantageously, the transmitter on the handle can be combined with a receiver and the receiver on the appliance body can be combined with a transmitter.

[0026] Further characteristics and advantages of the present invention will become better apparent from the description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figures 1 and 2 are perspective views of a cleaning appliance provided with the device according to the invention, in respective operating configurations;
Figures 3 and 4 are perspective views of the device according to the invention in respective operating configurations;
Figures 5 and 6 are perspective views of the device according to the invention in the handle of an iron, in respective operating configurations.

[0027] With particular reference to the figures, a control device, particularly for appliances used in the field of domestic and/or industrial cleaning, according to the invention, is generally designated by the reference numeral 10.

[0028] The control device 10, in this case, is part of an appliance such as a vacuum cleaner, generally designated by the reference numeral 11 and provided with a body 12 which accommodates per se known suction means, not shown for the sake of simplicity, and to which a flexible hose 13 for the passage of the aspirated air is connected, in this case detachably; a handle 14 is fixed, likewise detachably, to the free end of the hose, and working tools, generally designated by the reference numeral 15, can be connected to the handle.

[0029] The control device 10 comprises a radio-wave transmitter 16 which is detachably arranged on the handle 14 and a receiver 17 which is arranged on the appliance body 12 and is connected to the means for controlling the various functions of the appliance, for example control switches, timers, power regulators, electronic boards, et cetera.

[0030] For this purpose, the transmitter can be provided with various buttons 18, each for a specific function.

[0031] The transmitter 16 is arranged inside a flat box-like body 21 which is separate from the handle 14 and is associated therewith by means of a detachable interlocking coupling.

[0032] With particular reference to the figures, an end edge of the body 21 is in fact rounded in order to be accommodated in a hollow seat 22 of the handle.

[0033] On the opposite side of the handle 14, instead, there is a flexible wing 23 which is hook-shaped and retains, by elastic deformation, the other edge by snap engagement.

[0034] It should also be noted that the surface 24 of

the handle 14 on which the body 21 rests has a raised portion 25 which is adapted to be accommodated in a complementarily shaped seat 26 of the body 21.

[0035] The raised portion 25 is perpendicular to the seat 22 and to the wing 23, so that a retention element is provided in all directions for the body 21.

[0036] In practice it has been observed that the intended aim and objects have been achieved; in particular, it should be noted that the device according to the invention fully solves the problem of user safety while ensuring easy use and structural strength.

[0037] Moreover, the use of radio waves eliminates the drawbacks noted in appliances with infrared controls.

[0038] The possibility to remove the body 21 of the transmitter 16 allows to operate the cleaning appliance even remotely, even from one room to another with the doors closed.

[0039] This can be particularly convenient when a vacuum cleaner is used for example to purify or sanitize the air in a room.

[0040] It is in fact sufficient to close the vacuum cleaner and/or steam cleaner inside the room and then leave with the remote control, activating timer-controlled operation or not.

[0041] The noise produced by the vacuum will be less audible because of the insulation of the room.

[0042] Moreover, it can be particularly convenient to use the appliance for hydromassage by connecting the delivery of the fan to the bathtub.

[0043] The remote control allows to adjust all the functions in full safety, since there are no electrical connections.

[0044] Moreover, the removable transmitter can be particularly convenient for all those directional signals that cause problems in cleaning appliances in general because the body of the user is generally interposed between the handle and the appliance body.

[0045] By removing the transmitter, it can be orientated at will, regardless of the position of the handle with respect to the appliance body.

[0046] Moreover, the constructive simplicity of the invention and its structural adaptability to appliances intended for various services make it economically and constructively competitive with respect to conventional devices.

[0047] Attention is also called to the high level of ergonomics provided by the invention even in its simplest embodiments; this ergonomics can be increased substantially at will in more expensive and sophisticated models.

[0048] The present invention is susceptible of modifications and variations, all of which are within the scope of the inventive concept.

[0049] Thus, for example, transceivers can be used both on the appliance and on the handle.

[0050] In this case, the status of the appliance can be transmitted to the body 21 and indicated by means of

LEDs, displays, optical fibers, et cetera, so that the user can know the settings even remotely.

[0051] Figures 5 and 6 further illustrate the case of a device according to the invention which is integrated in the handle 26 of an iron 27 which can be connected to the appliance. 5

[0052] All the details may further be replaced with other technically equivalent elements.

[0053] The materials and the dimensions may be any according to requirements. 10

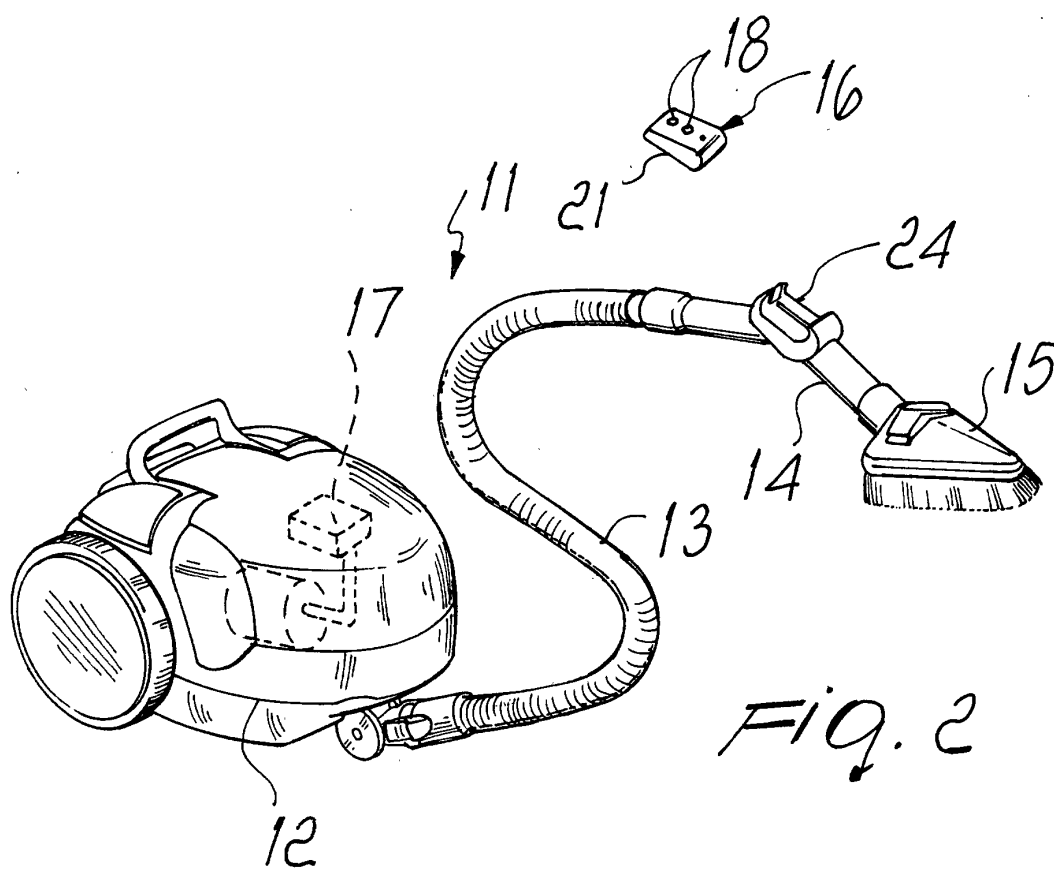
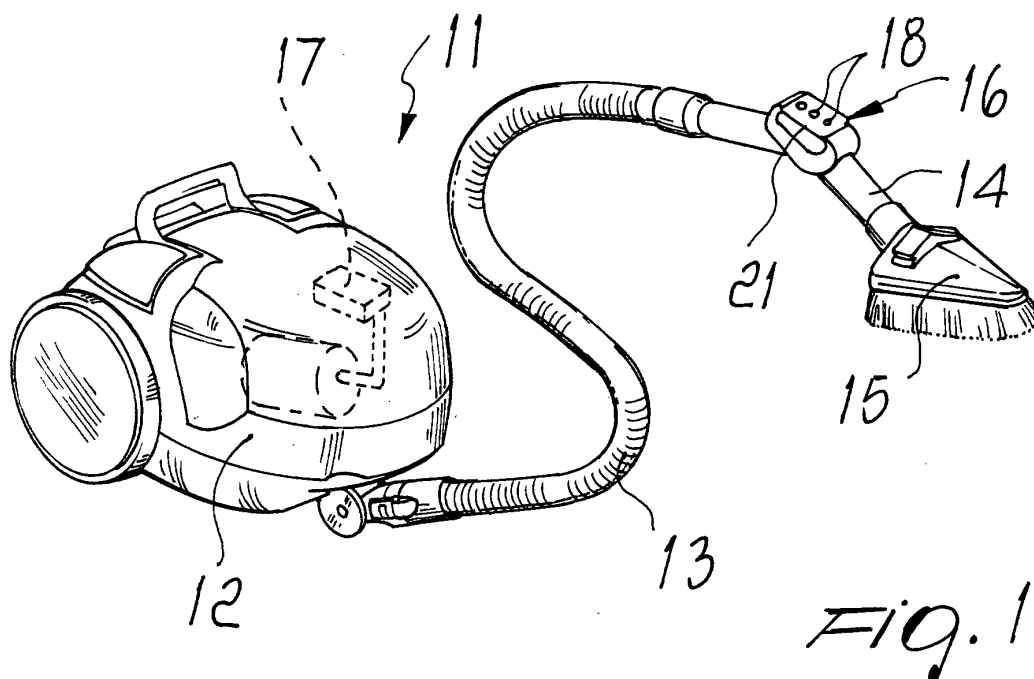
[0054] The disclosures in Italian Patent Application No. PD2000A000030 from which this application claims priority are incorporated herein by reference.

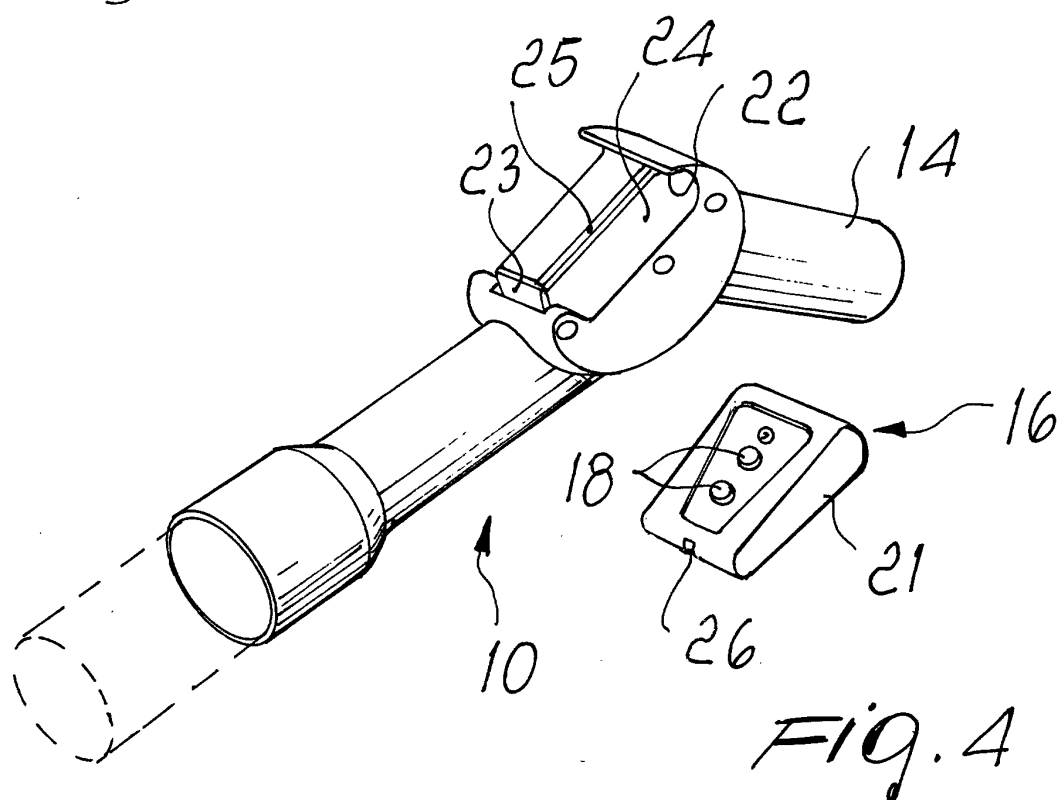
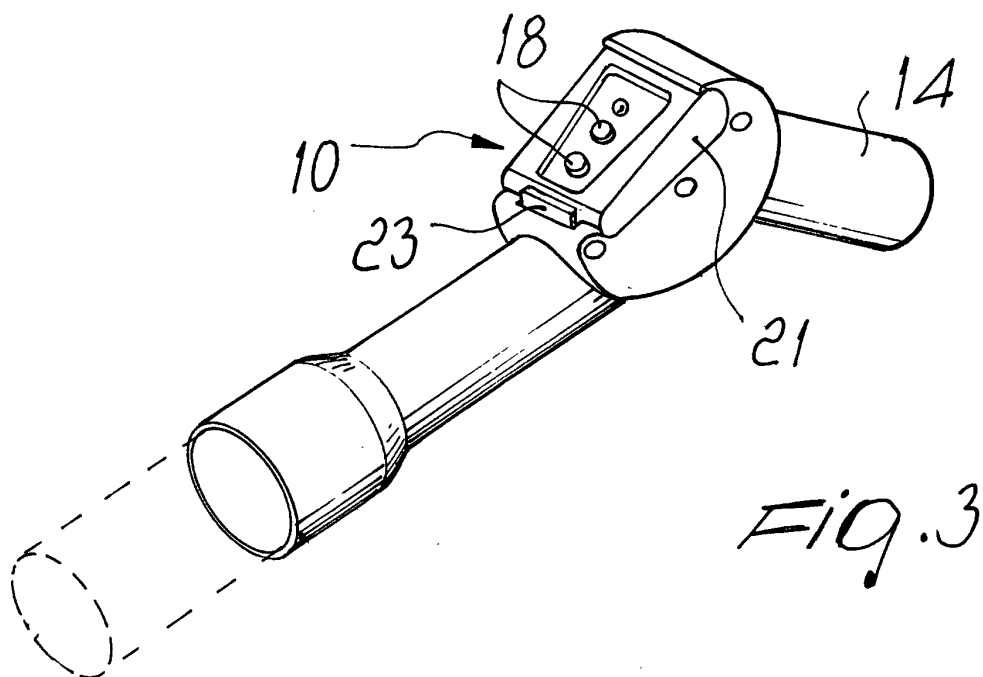
[0055] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs. 15 20

face of said handle for supporting the body of the transmitter there is a coupling between a raised portion and a complementarily shaped seat, said raised portion being perpendicular to said wing, so that a retaining element is provided in all directions for said body.

Claims

1. A control device, particularly for appliances used in the field of domestic and/or industrial cleaning, characterized in that it comprises at least one signal transmitter which is removably located on the handle of the tool of the cleaning appliance and a receiver which is located on the appliance body and is connected to means for controlling the various functions of said appliance. 25 30
2. The control device according to claim 1, characterized in that said transmitter on the handle is combined with a receiver and in that said receiver on the appliance body is combined with a transmitter. 35
3. The control device according to claims 1 or 2, characterized in that said transmitters and receivers are of the radio-wave type. 40
4. The control device according to the preceding claims, characterized in that said means for controlling the various functions of the appliance are control switches, timers, power regulators and the like. 45
5. The control device according to one or more of the preceding claims, characterized in that an end edge of the body of said transmitter is rounded in order to be accommodated in a hollow seat of the handle, a hook-shaped flexible wing being arranged on the opposite side of said handle and retaining, by elastic deformation, the other edge by snap engagement. 50 55
6. The control device according to one or more of the preceding claims, characterized in that on the sur-





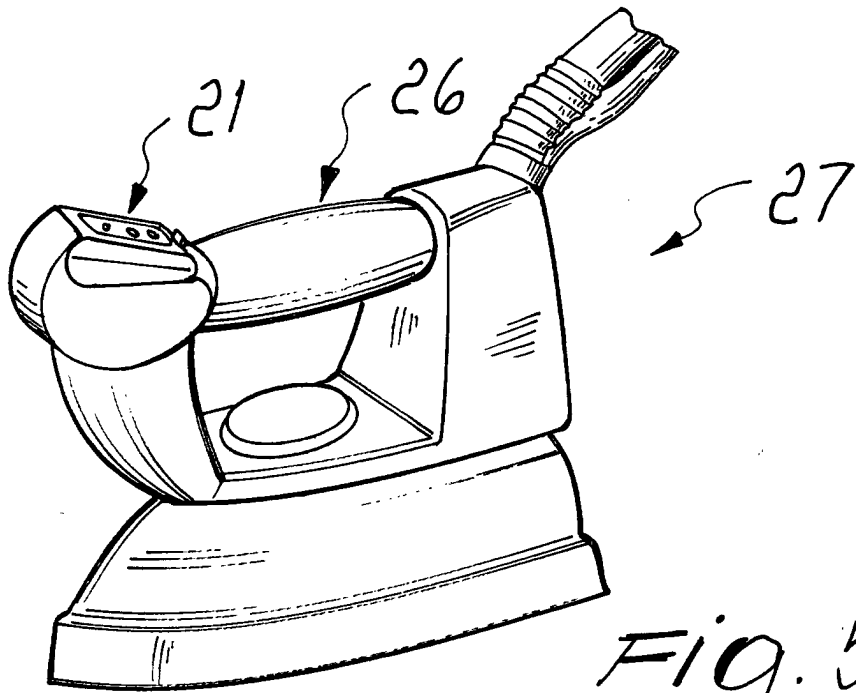


Fig. 5

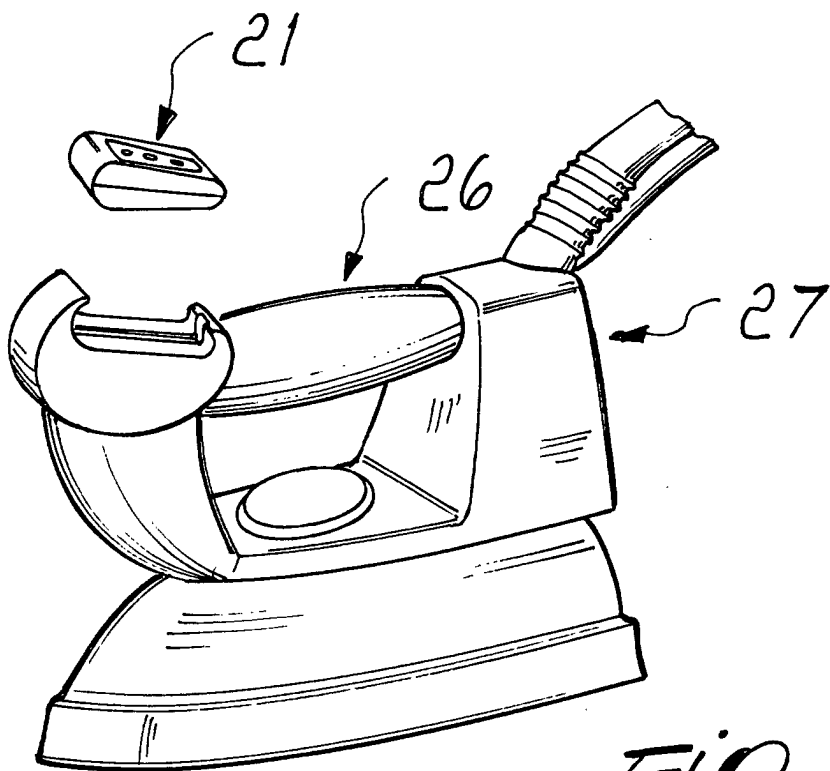


Fig. 6