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(71) Applicant: **Silfra S.P.A.**
28060 Cureggio (Novara) (IT)

(72) Inventor: **Baki Gyozo, Janos**
28060 Cureggio (Novara) (IT)

(74) Representative: **Cicogna, Franco**
Ufficio Internazionale Brevetti
Dott.Prof. Franco Cicogna
Via Visconti di Modrone, 14/A
20122 Milano (IT)

(54) Water discharging device for hydromassaging tubs

(57) Water discharging device for hydromassage tubs actuated by a driving cable (6) to which a pawl (3) is attached that moves the stem (7) of a plug in vertical direction. Together with the pawl the driving cable also moves the swinging link (4) that switches a solenoid valve (20) which opens and closes the connection between outlet (22) and the inlet to the hydraulic circuit (21).

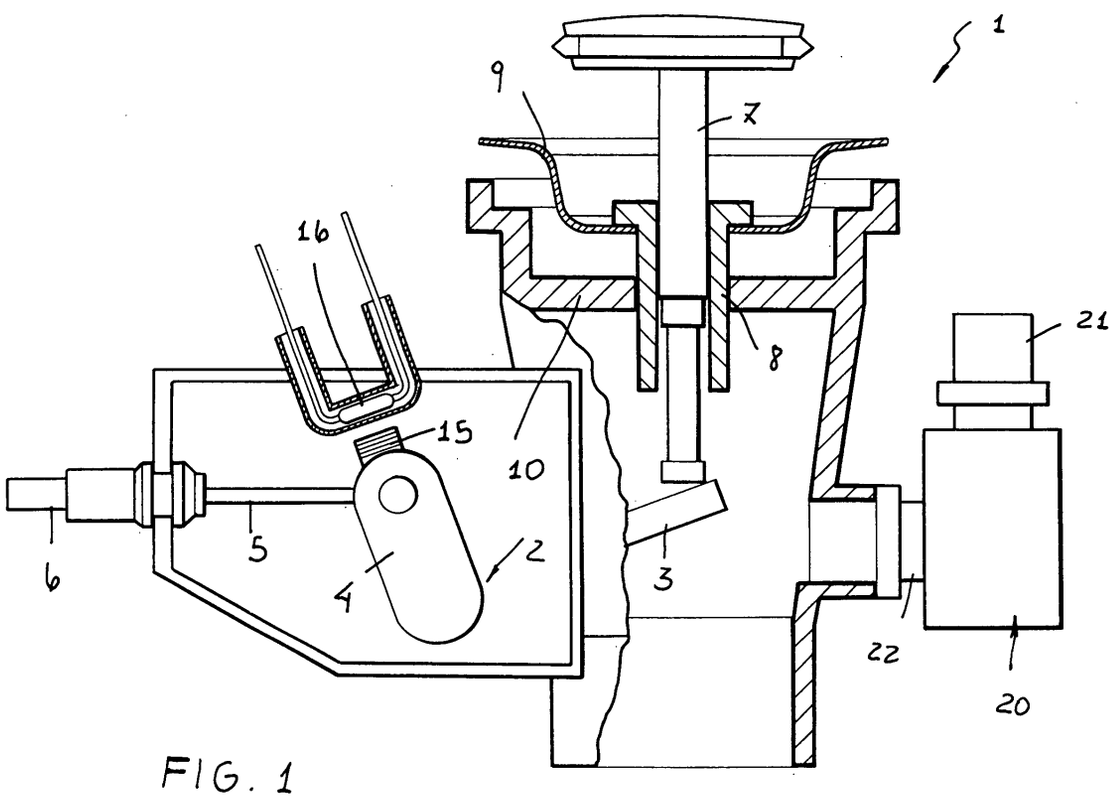

FIG. 1

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a device for discharging or draining water, which has been specifically designed for application to hydromassaging tubs.

[0002] As is known, hydromassaging tubs conventionally comprise a hydraulic circuit including water delivery outlets for delivering water to the tub, through a delivering pump in communication with the inside of the tub.

[0003] In prior solutions, however, as water must be discharged into the tub, the water included in the hydraulic circuit is not drained, since the hydraulic circuit is usually arranged at a level less than that of the tub.

[0004] Thus, an undesired backwater amount remains in the hydraulic circuit, which can represent a bacteric pollution source.

SUMMARY OF THE INVENTION

[0005] Accordingly, the aim of the present invention is to overcome the above mentioned problem, by providing a water discharging or draining device, specifically designed for hydromassaging tubs, which allows to fully solve that problem, while preventing water stagnations thereby improving the hygienic conditions of the tub.

[0006] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a water discharging device which can be so operated as to provide an automatic draining of all the water in the tub and hydraulic circuit water supplying the hydromassaging tub.

[0007] Yet another object of the present invention is to provide such a water discharging or draining device which, owing to its specifically designed construction, is very reliable and safe in operation.

[0008] Yet another object of the present invention is to provide such a water discharging or draining device which can be easily constructed by using easily available elements and materials.

[0009] Yet another object of the present invention is to provide such a water discharging or draining device which is very competitive from a mere economic standpoint.

[0010] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a water discharging device, specifically designed for hydromassaging tubs, characterized in that said device comprises, coupled to a driving device for driving draining means of a hydromassaging tub, an actuator driven by the opening of draining means of a hydraulic circuit coupled to the hydromassaging tub.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of a water discharging device, specifically designed for hydromassaging tubs, according to the invention, which is illustrated in the accompanying drawings, where:

Figure 1 is a schematic view illustrating a detail of the water discharging or draining device according to the present invention;
and
Figure 2 illustrates an electric and hydraulic diagram of the water discharging device according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0012] With reference to the number references of the above mentioned figures, the water discharging or draining device, specifically designed for hydromassaging tubs, according to the invention, which has been generally indicated by the reference number 1, comprises a water draining actuating device 2 comprising a pawl 3 coupled to a swinging link 4, in turn connected to a cable 5 which can slide in a sheath 6 and being driven for opening the massaging tub outlet by raising the plug 7 engaging with the pawl 3.

[0013] The plug 7 is slidably housed, in a per se known manner, in coupling block 8 for coupling the drain element 9 to the sub-drain element 10.

[0014] The main feature of the invention is that on the coupling link 4 of the outlet driving element 2 an actuator is arranged which, in the shown embodiment, comprises a permanent magnet 15 which, in an opening condition, cooperates with a sensor 16 constituted, for example, by a Reed relay.

[0015] The latter drives a solenoid valve 20, controlling the opening of the draining means of the hydraulic circuit of the hydromassaging tub, said draining means including an inlet 21 coupled to the hydraulic circuit and an outlet 22 leading to the underdrain 10.

[0016] With the above disclosed device, as the plug 7 of the hydromassaging tub is opened, the pawl 4 is caused to swing thereby correspondingly actuating the Reed relay 16 and driving the solenoid valve 20 to open the hydraulic circuit, thereby allowing a full water draining to be obtained.

[0017] The above mentioned actuator can also comprise a lug actuating a sensor comprising a microswitch arranged in a sealed enclosure, in order to drive and actuate the solenoid valve.

[0018] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0019] In particular, the fact is to be pointed that the

water discharging or draining device according to the present invention allows to automatically and simultaneously actuate, as the hydromassaging tub plug is opened, also the solenoid valve opening the water draining means of the hydraulic circuit.

[0020] Thus, the water held in the hydraulic circuit tubs and pump is automatically drained, thereby preventing any water stagnations susceptible to cause undesirable smell and bacteria.

[0021] The invention, as disclosed, is susceptible to several modifications and variations, all coming within the scope of the invention.

[0022] Moreover, all of the constructional details can be replaced by other technically equivalent elements.

[0023] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, depending on requirements.

Claims

1. A water discharging device, specifically designed for hydromassaging tubs, **characterized in that** said device comprises, coupled to driving means for driving water draining means of a hydromassaging tub, an actuator which can be driven as the massaging tub water draining means are opened to drive a solenoid valve for opening water draining means included in a hydraulic circuit of the hydromassaging tub.

2. A water discharging device, according to Claim 1, **characterized in that** said driving means for driving the water draining means of the hydromassaging tub comprise a pawl coupled to a swinging link on which is engaged a driving cable which can slide in a sheath.

3. A water discharging device, according to Claims 1 and 2, **characterized in that** said device further comprises sensor means cooperating with said actuator and driving said solenoid valve.

4. A water discharging device, according to one or more of the preceding claims, **characterized in that** said actuator comprises a permanent magnet and that said sensor comprises a Reed relay.

5. A water discharging device, according to one or more of the preceding claims, **characterized in that** said permanent magnet is supported by an end portion of said swinging link.

6. A water discharging device, according to one or more of the preceding claims, **characterized in that** said actuator comprises a lug and said sensor comprises a microswitch housed in a tightly sealed enclosure.

7. A water discharging device, specifically designed for hydromassaging tubs, according to one or more of the preceding claims, and substantially as broadly disclosed and illustrated and for the intended objects.

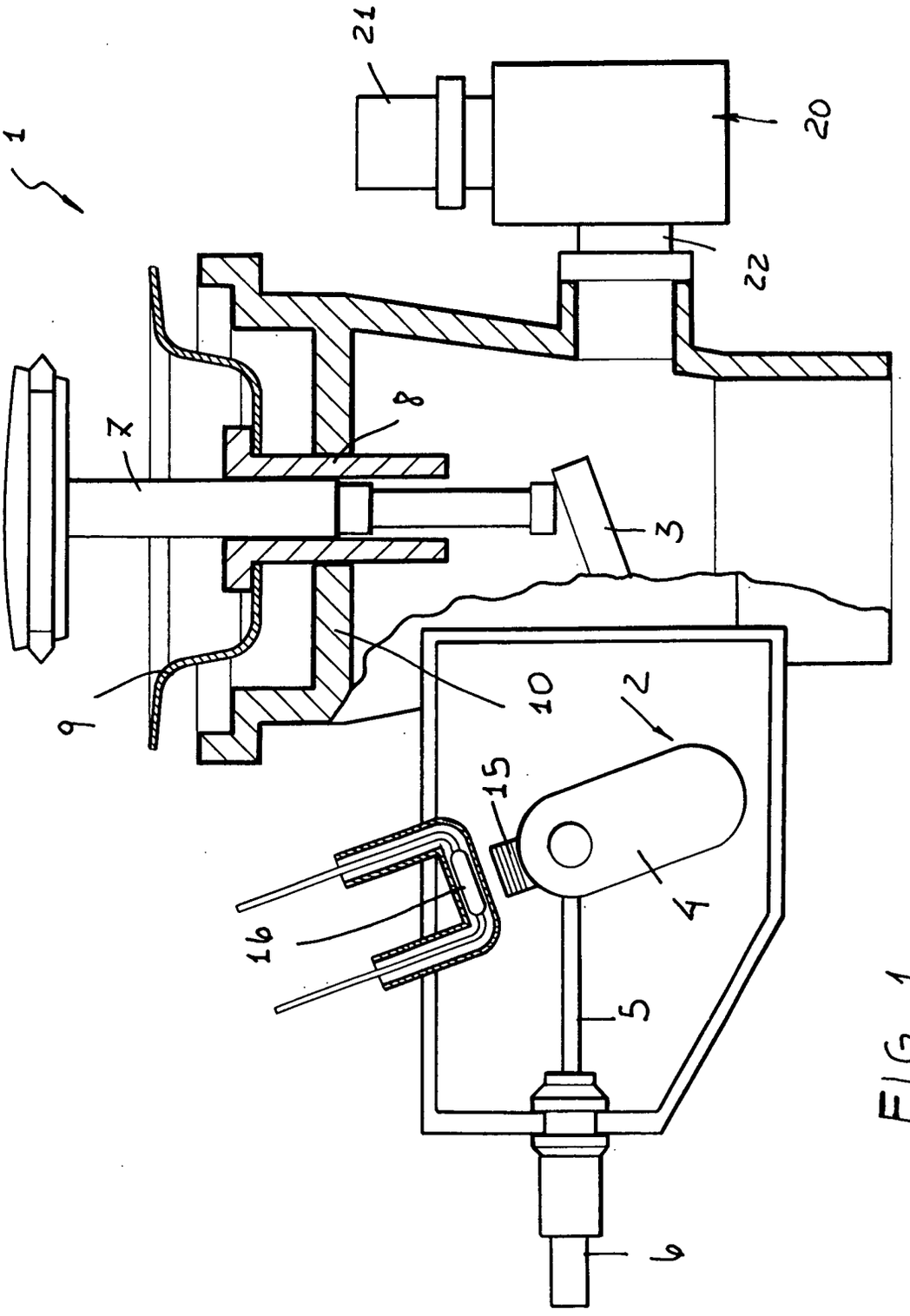

FIG. 1

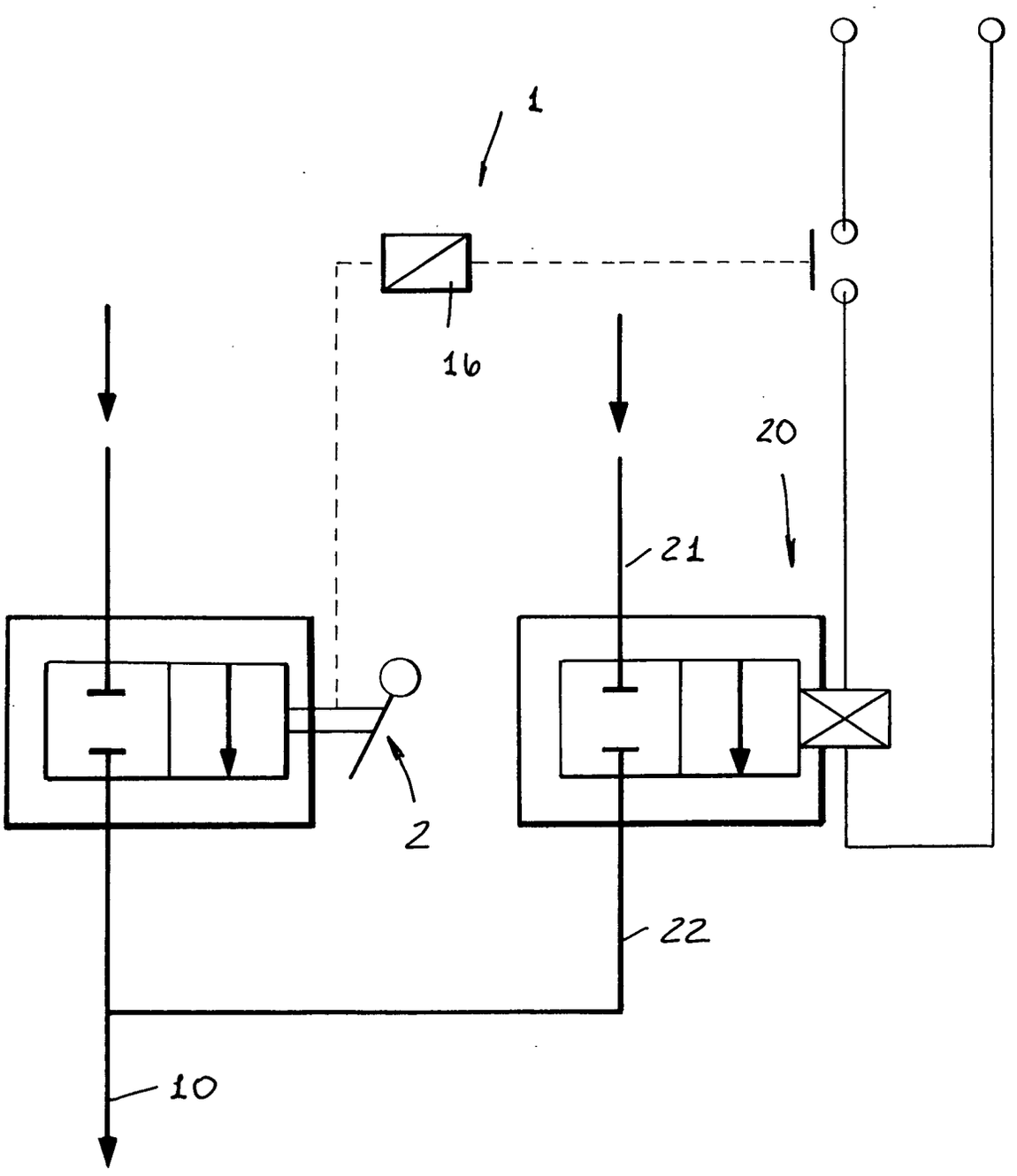

FIG. 2

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PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 02 02 0288

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 381 831 A (VERSLAND ANDERS) 17 January 1995 (1995-01-17) * column 1, line 1 - line 9; figures 1,2 * * column 2, line 30 - line 61 *	1-6	E03C1/22 A61H33/00
X	FR 2 557 175 A (DELEPINE JEAN C) 28 June 1985 (1985-06-28) * page 2, line 2 - line 12; figures 1,2 * * page 3, line 20 - line 25 * * page 4, line 7 - line 9 *	1-6	
X	EP 0 421 520 A (TEUCO GUZZINI SRL) 10 April 1991 (1991-04-10) * column 1, line 27 - line 26; figures 1,2,4 * * column 2, line 31 - line 46 * * column 3, line 23 - line 28 *	1-6	
A	EP 0 312 953 A (JACUZZI EUROP) 26 April 1989 (1989-04-26) * column 2, line 44 - line 47; figure 3 *	1-6	
	-/--		TECHNICAL FIELDS SEARCHED (Int.Cl.7) E03C A47K A61H

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
MUNICH	6 December 2002	Franz, V

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C07)

European Patent Office

INCOMPLETE SEARCH
SHEET C

Application Number
EP 02 02 0288

Claim(s) searched incompletely:
1-6

Claim(s) not searched:
7

Reason for the limitation of the search:

The wording of claims 1-6 is so unclear that they do not fulfill the requirement of clarity laid out in Art. 84 EPC.
Taking into account the description (page 4, line 24 - page 6, line 7) and the figures 1 and 2, in order to enable a meaningful search the following features have been searched:

a water discharging device (in principle corresponding to claims 1-3) , comprising
- a plug,
- the plug having an open position, in which the tub is drained, and a closed position, in which water is kept in the tub,
- the plug being coupled to a pawl,
- the pawl being coupled to a swinging link coupled to a driving cable,
- the swinging link actuating a switch,
- the switch switching a solenoid valve,
- the solenoid valve controlling the opening of the draining means of the hydraulic circuit of the tub.

In a first embodiment (in principle corresponding to claims 4 and 5) the switch comprises
- a permanent magnet and
- a Reed relay,
arranged such that the Reed relay switches when the plug is opened or closed.

In a second embodiment (in principle corresponding to claim 6) the switch comprises
- a lug and
- a microswitch in a sealed enclosure.

Claim 7 does not contain any technical features and has therefore not been searched.

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PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 02 02 0288

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	EP 0 894 903 A (LOTZ HENNER) 3 February 1999 (1999-02-03) * column 3, line 41 - line 47 * ---	1-6	
A	US 5 111 846 A (OESTERLE HELMUT ET AL) 12 May 1992 (1992-05-12) * column 2, line 46 - line 50; figure 6 * * column 4, line 62 - line 68 * -----	1-6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)

EPO FORM 1503 03.82 (P04C10)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 02 0288

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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06-12-2002

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82