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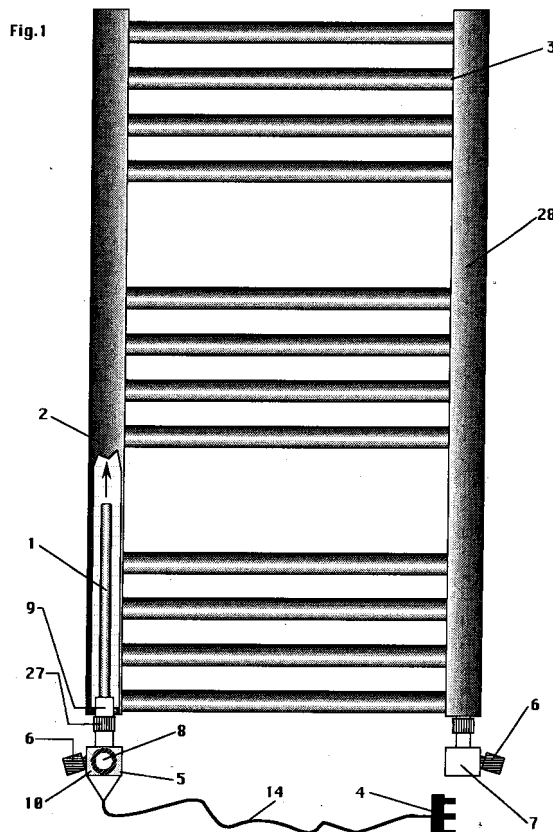
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(54) Stop valve with a passage for inserting a resistance into a radiator

(57) A stop valve with a passage for inserting a resistance into a radiator comprises: a body (10) of a valve (5) presenting a hollow (20) connected both to the heating plant by means of an inlet (8) and to a vertical tube (2) of a radiator (3) by means of an outlet (9), a connecting duct (16) between the inlet (8) and the outlet (9) and a seaming seat (15), on which a closing bar (6) acts for

closing the connecting duct (16) in order to insulate the radiator (3) from the heating plant; a resistance (1) being feed when the heating plant is out; the resistance (1) extending inside the outlet (9) until it is inserted into the vertical tube (2); the centres of the orthogonal sections of the inlet (8) and the outlet (9) lying on the same vertical plane perpendicular to the plane (17) of the wall (18) supporting the radiator (3).



Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a stop valve fitted with a passage for inserting a resistance into a radiator.

[0002] Some radiators used for heating a room, in particular a bathroom, are formed to support the bath linen to be dried; such radiators are filled with water which can be heated in two ways, according to the season.

[0003] In winter, when the heating plant is on, the water is heated by means of a common boiler feeding all radiators of the plant; vice versa, in spring, when the heating plant is out, the water is heated by a resistance introduced into the radiator which, for preventing the dissipation of the heat delivered by the resistance, is insulated from the plant by means of suitable valves.

[0004] The known resistors used for this purpose are inserted into, the horizontal lower tube of the radiator; this feature presents some disadvantages, in particular:

1- the convective motions due to the resistance are obstructed by the small section and the position of the tube, therefore the eventual advantages due to the low level of the tube are missing;

2- for this reason an overheating occurs in the horizontal lower tube; this overheating, by time, blemishing the painting of the tube;

3- the resistance is very near the axis of symmetry of the radiator, so that the convective motions are not biased towards a definite direction; therefore, they have difficulty for activating the circulation.

AIMS AND ADVANTAGES OF THE INVENTION

[0005] The purpose of this invention is to obviate these disadvantages. The invention, as claimed, solves the problem of creating a stop valve with a passage for inserting a resistance into a radiator. The disposition of the resistance in a vertical tube of the radiator allows the convective motions can easily circulate, since the section of the vertical tube is very greater than the section of the horizontal tube; in addition, since the resistance is away from the axis of symmetry of the radiator, the convective motions tend to circulate towards the direction definite by the vertical tube (bottom-up) and, therefore, they have no difficulty to activate the circulation.

[0006] The main advantages offered by the present invention consist in the fact that the horizontal lower tube is not damaged by overheating, since it contains no heat source.

MAIN FEATURES OF THE INVENTION

[0007] The stop valve with a passage for inserting a resistance into a radiator comprises: a valve body presenting a cavity connected to the heating plant by means of an inlet and connected to a vertical tube of a radiator by means of an outlet, a connecting duct between the inlet and the outlet, and a sealing seat, on which a closing bar acts for closing the connecting duct between the inlet and the outlet in order to insulate the radiator from the heating plant, a resistance supported by the body and feed when the heating plant is out, the resistance extending inside the outlet until it is inserted into the vertical tube; the centres of the orthogonal sections of the inlet and the outlet lie on the same vertical plane, perpendicular to the plane of the wall supporting the radiator.

[0008] The outlet consists of two separated and connectable parts; means being provided connecting the two parts of the outlet.

[0009] The body holds the closing bar and an insulating support for an housing bearing the lower end of the resistance; the support is inserted into the lower end of a hollow inside the body to maintain the sealing for the water being in the hollow; finally, the support is integral with an insulating element in which the rheophores are immersed feeding the resistance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Other advantages, features and aims of the invention may be more readily understood by referring to the accompanying drawings, which concern a preferred embodiment, in which:

Fig.1 represents a frontal view of a radiator fitted with a valve according to the present invention;

Fig.2 shows a side view of the radiator of Fig.1;

Fig.3 is a sectional view of the valve with the closing bar in opening position;

Fig.4 is a sectional view of the valve with the closing bar in closing position;

Fig.5 is a view of the valve with the resistance mounted.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

[0011] Figures show a stop valve with a passage for inserting a resistance into a radiator or constructive parts of the valve.

[0012] A resistance 1 is inserted into a vertical tube 2 of a radiator 3, being feed by the current of an electric network or the like by means of a plug 4. The resistance

1 enters into the radiator 3 through a valve 5 fitted with a manually operable closing bar 6 allowing or intercepting the flow of the hot-water from the heating plant into the radiator 3. A second valve 7 fitted with a closing bar 6 is found at the basis of the vertical tube 28 opposite to the tube 2. By means of the valves 5, 7 it is possible to close or open the connection between the heating plant and the radiator 3 (Figures 1, 2).

[0013] The valve 5 presents an inlet 8 connected to the heating plant and an outlet 9 connected to the internal part of the radiator 3, means for holding the resistance 1, sealing elements for preventing water leakage from the valve 5 and electric connections 14 at the end of which the plug 4 is found for feeding the resistance 1.

[0014] The body 10 of the valve 5 presents, in addition to the nipple 11 for the inlet 8, a threaded housing 13 for the lower end of the resistance 1 connected to the rheophore 14 and the outlet 9 (Figures 3,4).

[0015] A connecting duct 16 is provided having a sealing seat 15 on which the closing bar 6 acts for opening or closing the connection between the inlet 8 and the outlet 9.

[0016] The closing bar 6 simply acts by opening or closing the sealing seat 15.

[0017] To maintain the correct distance between the valves 5, 7, although the valve 7 has only the function of closing the connection between the radiator 3 and the heating plant, it is necessary that the centres of the orthogonal sections of the inlet 8 and the outlet 9 lie on the same vertical plane, perpendicular to the plane 17 of the wall 18.

[0018] This feature prevents the decrease or the increase of the distance between the valves 5, 7 which must comply with some standard dimensions.

[0019] The presence of one resistance 1 eases the activity of the convective motions due to the heating of the water for Joule effect.

[0020] The valve 5 is shown in Fig.5 in different scale; said valve comprises a hollow body 10 into which the inlet 8 flows; the body 10 supports the closing bar 6 and an insulating dop 19 for the threaded housing 13 of the resistance 1; the dop 19 is screwed in the lower part of a hollow 20 inside the body 10; said dop 19 also having the function of maintaining the sealing for the water being in the hollow 20; finally, the dop 19 is integral with an insulating element 40 in which the rheophores 14 are immersed feeding the resistance 1.

[0021] The upper threaded part of the hollow 20 is closed by a threaded bushing 21 presenting an internal duct 22 for the passage of the water and the resistance 1 into the vertical tube 2; the bushing 21 screws in the upper part of the hollow 20, the bushing 21 presenting a threaded enlarged part 23 and a cone-shaped seat 24 on which a cone-shaped end 25 of a bush 26 rests.

[0022] The sealing between the cone-shaped seat 24 of the bushing 21 and the cone-shaped end 25 of the bush 26 is obtained by means of tightening of a collar 27 with internal screw thread screwing on the enlarged

threaded part 23 of the bushing 21; rings and similar sealing means (not shown) are also provided for preventing water leakage.

[0023] The bush 26 presents an upper end 29 with external screw thread inserting into a sealing plate 30 closing the vertical tube 2.

[0024] The bush 26 is also fitted with an internal duct 31 for the passage of the water and the resistance 1 into the vertical tube 2.

[0025] This solution allows an easy montage of the valve on the lower part of the radiator.

Claims

1. Stop valve with a passage for inserting a resistance into a radiator, comprising: a body (10) of a valve (5) presenting a hollow (20) connected to the heating plant by means of an inlet (8) and connected to a vertical tube (2) of a radiator (3) by means of an outlet (9), a connecting duct (16) between the inlet (8) and the outlet (9) and a sealing seat (15), on which a closing bar (6) acts for closing the connecting duct (16) between the inlet (8) and the outlet (9) in order to insulate the radiator (3) from the heating plant, a resistance (1) supported by the body (10), the resistance (1) being feed when the heating plant is out, the resistance (1) extending inside the outlet (9) until it is inserted into the vertical tube (2); the valve being **characterised by** the fact that the centres of the orthogonal sections of the inlet (8) and the outlet (9) lie on the same vertical plane perpendicular to the plane (17) of the wall (18) supporting the radiator (3).
2. Stop valve as in claim 1, wherein the outlet (9) consists of two separated and connectable parts; means (24,25,27) being provided connecting the two parts of the outlet (9).
3. Stop valve as in claim 1, wherein the body (10) supports the closing bar (6) and an insulating dop (19) for a threaded housing (13) holding the lower end of the resistance (1); the dop (19) being inserted into the lower part of a hollow (20) inside the body (10) for maintaining the seal for the water being in the hollow (20).
4. Stop valve as in claim 3, wherein the dop (19) is integral with an insulating element (40) in which the rheophores (14) are immersed feeding the resistance (1).
5. Stop valve as in claim 2, wherein the first of the parts compounding the outlet (9), comprises a threaded bushing (21) closing the threaded upper part of the hollow (20); the hollow (20) presenting an internal duct (22) for the passage of the water and the re-

sistance (1) into the vertical tube (2); the bushing (21) screwing in the threaded upper part of the hollow (20).

6. Stop valve as in claim 5, wherein the bushing (21) presents a threaded enlarged part (23) and a cone-shaped seat (24) for the connection to the second of the parts compounding the outlet (9). 5
7. Stop valve as in claim 2, wherein the second of the parts compounding the outlet (9) comprises a bush (26) fitted with a cone-shaped end (25) capable of co-operating with the cone-shaped seat (24) of the bushing (21) for preventing water leakage from the valve; tightening means (27) being provided for tightening the cone-shaped end (25) of the bush (26) on the cone-shaped seat (24) of the bushing (21) 10 15
8. Stop valve as in claim 7, wherein a collar (27) with internal screw thread is provided screwing on the enlarged threaded part (23) of the bushing (21) for sealing the cone-shaped seat (24) of the bushing (21) with the cone-shaped end (25) of the bush (26); rings and similar sealing means are further provided for preventing water leakage from the valve. 20 25
9. Stop valve as in claim 2, wherein the bush (26) is fitted with an internal duct (31) for the passage of the water and the resistance (1) into the vertical tube (2). 30
10. Stop valve as in claim 2, wherein the bush (26) presents an upper end (29) with external screw thread inserting into a sealing plate (30) closing the vertical tube (2). 35

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Fig.1

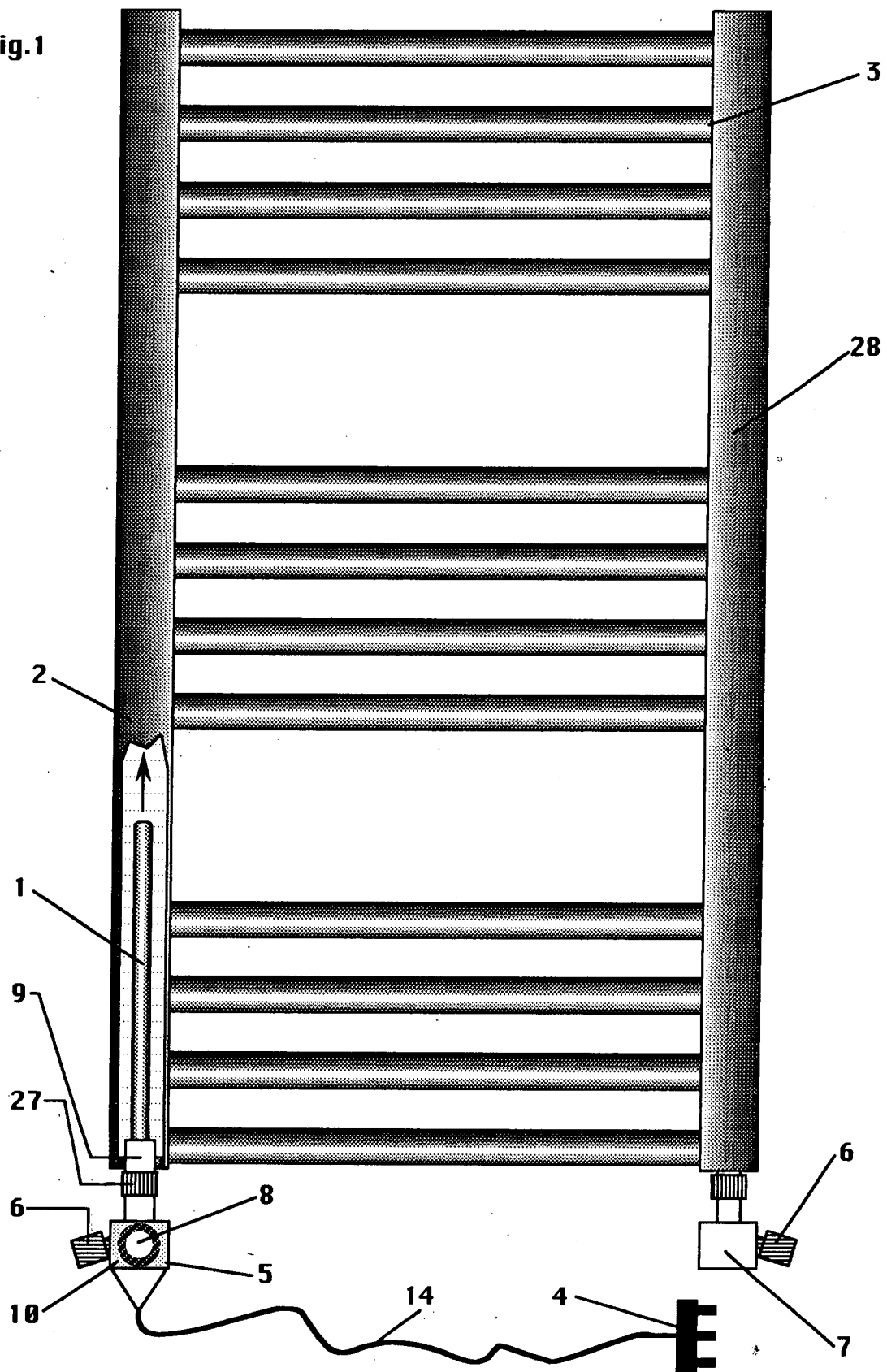


Fig.2

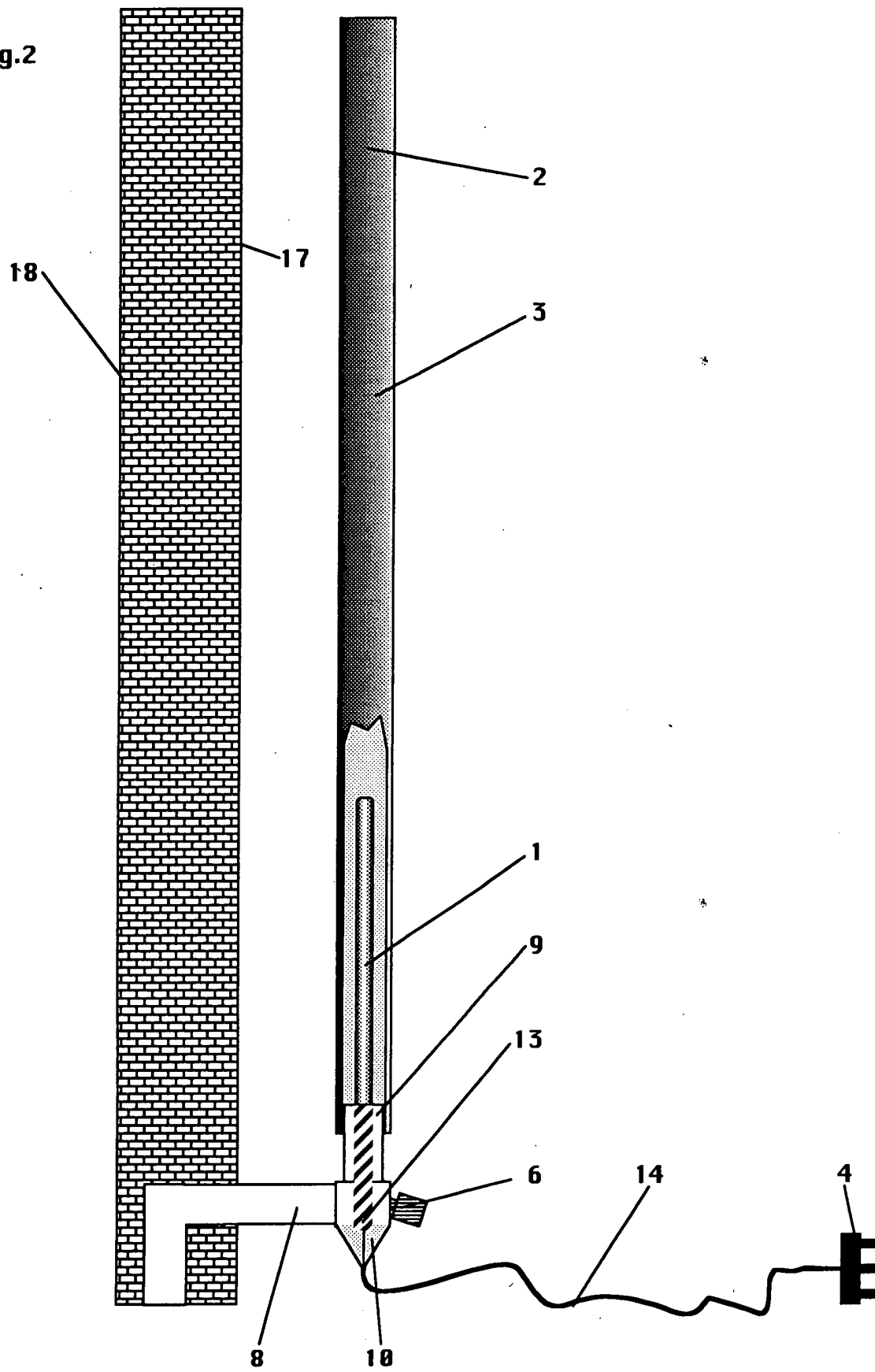


Fig.3

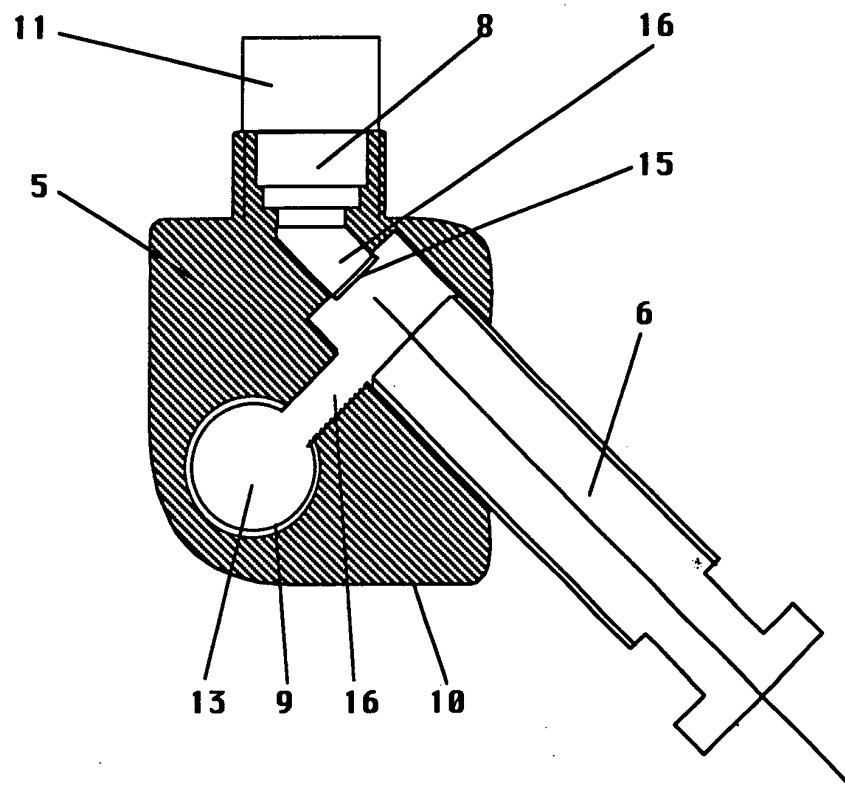


Fig.4

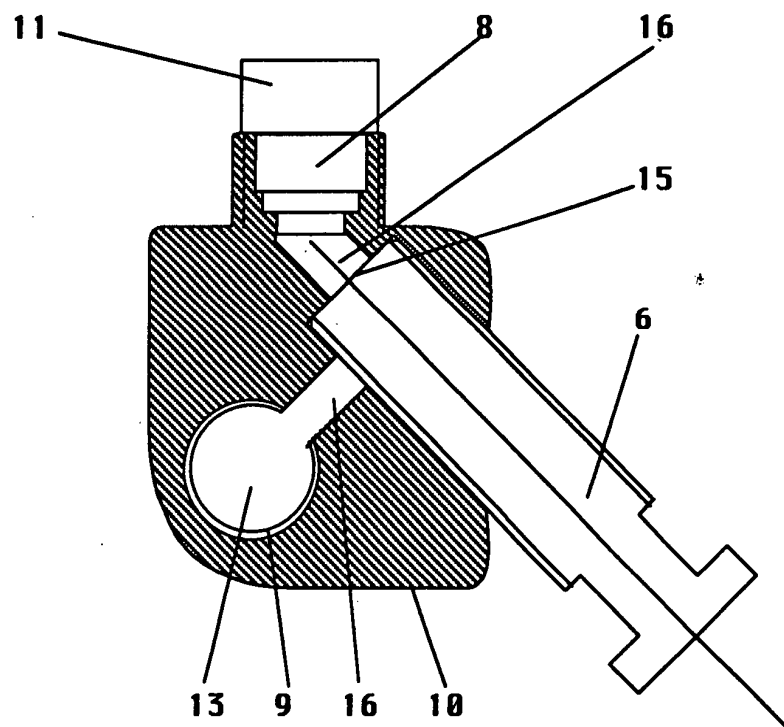
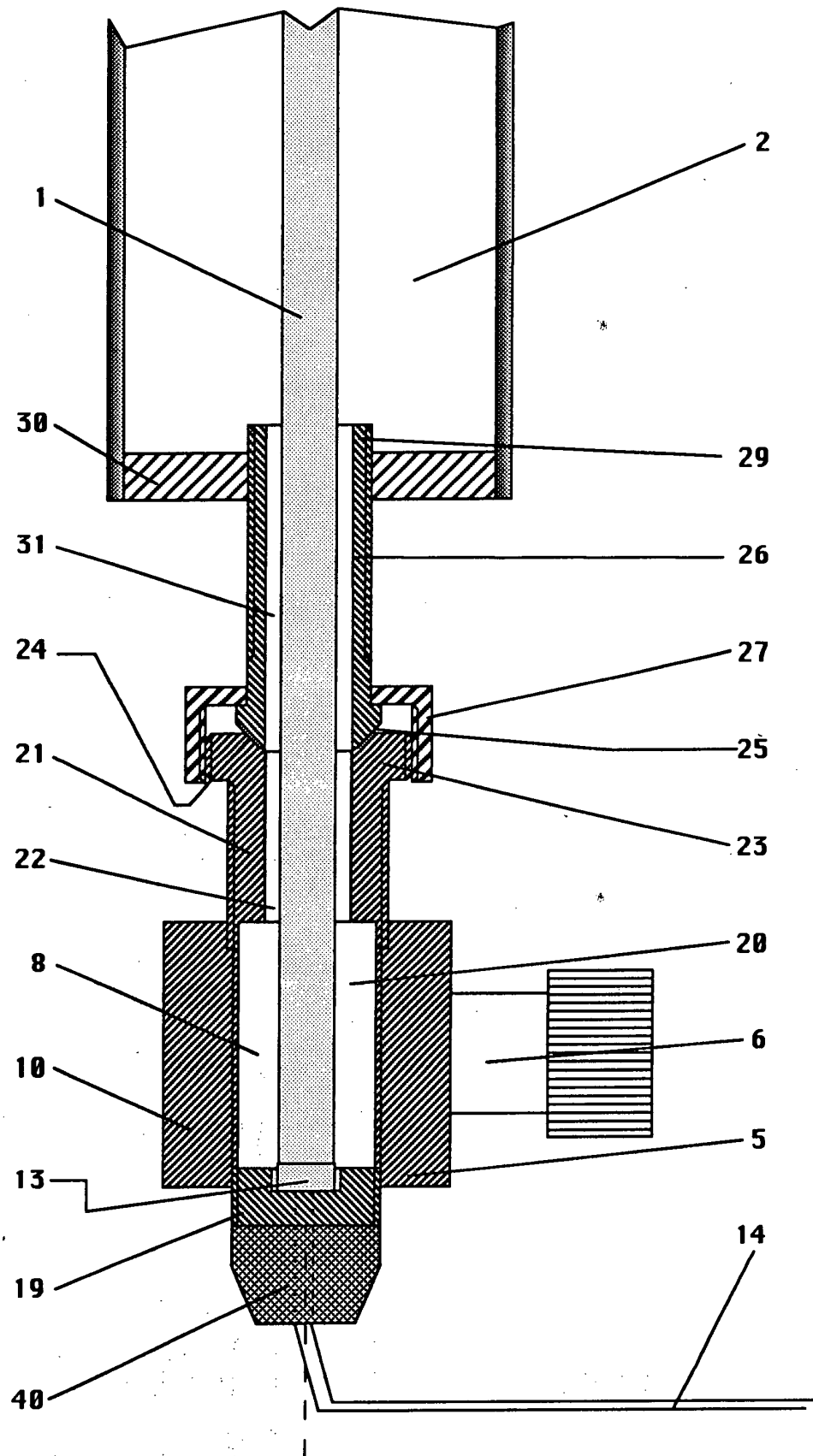


Fig.5





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EUROPEAN SEARCH REPORT

Application Number
EP 01 10 8827

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)
A	DE 295 16 494 U (AGIS SPA) 11 January 1996 (1996-01-11) * the whole document *	1-10	F24D13/04
A	DE 298 12 233 U (F W OVENTROP GMBH & CO KG) 17 September 1998 (1998-09-17) * the whole document *	1-10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F24D F24H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 August 2001	Examiner Van Gestel, H
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 10 8827

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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31-08-2001

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 29516494	U	11-01-1996	IT	VI940057 U1	24-04-1996
			DE	29516494 U1	11-01-1996

DE 29812233	U	17-09-1998	DE	29812233 U1	17-09-1998

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