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(54) Sanitary fitting for bathing and massaging body limbs.

(57) A sanitary fitting comprises: a mixer (3) with two inlets (I_1, I_2) and an outlet (O_1); said inlets (I_1, I_2) are connected with a pipe (1) and a pipe (2), respectively, to obtain water at a desired temperature to be sent to a bath (10); a commutator (5) with an inlet (13) and two outlets (O_2, O_3); a pipe (4) placed between outlet (O_1) and inlet (I_3); pipes (6, 7) connected with outlets (O_2, O_3); delivery fixtures to add water with toilet substances.
Rotating systems (8), connected with commutator (5) via pipe (6), are housed in bath (10); sprinkle systems (9) connected with commutator (5) via a pipe (7); a rest table (25) for the limbs; a discharge (11, 13) with a pump (12) to maintain the water housed in said bath (10) at a constant level; a cover (16) having an entrance (E).

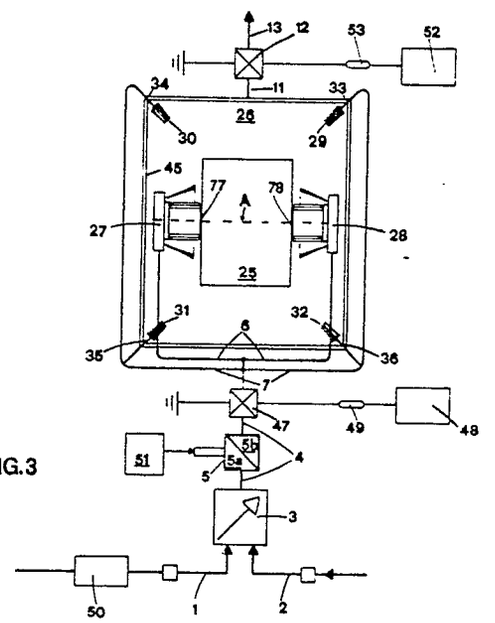

FIG.3

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SANITARY FITTING

The present invention relates to a sanitary fitting comprising: a bath for introduction of one or more anatomic parts; one or more water delivery devices toward the internal room of said bath; one or more massage systems for said anatomic parts and a water discharge system from said bath.

At present no sanitary fittings are known which are to perform the following functions at the same time or, when necessary, in sequence:

- to wash carefully one or more anatomic parts with water at a pleasing temperature, in case mixed with bath-oils and/or with bath-salts and/or with liquid soaps;
- to accomplish a mechanical massage by means of one or more rotating systems;
- to reactivate the blood circulation in the anatomic parts by using sprinkles of water converging to said anatomic parts;
- to maintain said water at a constant level in said bath to prevent said anatomic parts from being washed with water already used;
- to accomplish a carefull rinse of the anatomic parts when they have been washed;
- to dry-up the anatomic parts which have been rinsed.

The present invention is intended to remedy the lacks of the prior art. The invention, as it is characterized in the claims, aims to create a sanitary fitting. By using a fitting of this kind the following result is obtained: the anatomic parts which undergo this treatment are, in addition to be cleaned, released and invigorated.

The advantages obtained by this invention come essentially from the fact that the aforesaid functions are performed by the fitting automatically; therefore, in particular elderly persons, sick or anyway debilitated persons may undergo the treatment with no help from assistants; furthermore said persons undergo the treatment in the most comfortable position.

The invention is described in great detail below by referring to the drawings which illustrate not limiting embodiments in which:

Fig. 1 is a block diagram of a first embodiment of the fitting of the present invention.

Fig. 2 is a top view of a bath which is part of the fitting of Fig. 1.

Fig. 3 shows a plane view of the internal room of said bath and, schematically, some accessories for the fitting.

Fig. 4 is a water rotating system of said fitting.

Fig. 5 is a schematic view of a second embodiment of the fitting of the present invention;

Fig. 6 is a schematic view of a third embodiment of the fitting of the present invention.

The figures show a sanitary fitting or parts of said fitting.

The block diagram of Fig. 1 includes a mixer 3 with a first inlet I_1 and a second inlet I_2. As known, said mixer 3 is able to obtain water having a desire temperature which is an intermediate temperature between hot and cold water temperatures; said mixer 3 being also fitted with an outlet O_1 connected with a pipe 4. A commutator 5 includes: an inlet I_2, connected with said pipe 4 to receive water from said mixer 3; a first outlet O_2, connected with a pipe 6 and a second outlet O_3 connected with a pipe 7. A first part 5a of said commutator 5 communicates with one or more delivery fixtures, not shown, to add water with suitable substances; a first of said delivery fixture being able to deliver a liquid soap to said part 5a via a pipe D_1; a second of said delivery fixtures being able to deliver a bath-oil to said part 5a via a pipe D_2. Other delivery fixtures may be provided to deliver bath-salts solutions and/or other toilet substances to said part 5a via pipes, not shown.

A part 5b of said commutator 5 is able to connect directly said inlet I_2 with said outlets O_2 and O_3, to deliver water without said substances to said pipes 6 and 7.

Said parts 5a and 5b are fitted with known elements, not shown, to close or open the entrance to said pipes 6 and 7 as a person which undergoes the treatment wants thus allowing water to reach said pipes 6 and 7 either from said part 5a or from said part 5b.

The end of said pipe 6, which is not inserted in said commutator 5, is inserted in rotating systems 8; also the end of pipe 7, which is not inserted in said commutator 5, is inserted in sprinkle systems 9.

Said systems 8 and 9 will be described in great detail below; for the moment we precise that said systems are inserted in a bath 10, better shown in Figs. 2 and 3, and that, in the embodiment shown in Figures 1-4, said rotating systems 8 include elements able to deliver water to said anatomic parts.

An hot air producer device 14 comprises a duct 15, which opens in said bath 10 via an inlet port 37, to take hot air into said bath 10 when the operations of said systems 8 and 9 are finished, in order to dry-up the limbs introduced in said bath 10.

Said bath 10 is connected with a pipe 11, fitted with a discharge pump 12, able to extract water from said bath 10 with continuity and to send it to a pipe 14 to maintain the level of the water nearly

constant inside said bath 10. Said device 14 is equipped with overcurrents protection devices, not shown.

If the water pressure is not sufficiently strong to operate said rotating systems 8, a charging pump 47, placed in said pipe 4 downstream said mixer 3, is also provided.

Fig. 2 represents a top view of said bath 10.

To prevent water from exiting from said bath 10, a cover 16 is provided; said cover 16 being placed on the upstream part of said bath 10. Said cover 16 is divided into four parts, marked with 17, 18, 19 and 20, respectively. Said parts 17 and 18 are placed on the front and on the rear part of the cover 16, respectively; said parts 19 and 20 are placed on the right and on the left part of said cover 16, respectively.

Said parts 19 and 20 present, respectively, a first and a second elastic sections 21 and 22, preferably made of continuous brushes, whose borders 23 and 24 develops longitudinally, the one against the other, in the middle part of said cover 16 to form an entrance E through which said limbs my be introduced in said bath 10. Said elastic sections 21 and 22 are able to loose their shape to allow entrance of the lower limbs of a person in said bath 10. When said limbs are introduced in said bath 10, borders 23 and 24 prevent water from exiting from said bath 10 by embracing the ankles with a light pressure.

The internal room of said bath 10 is shown in Fig. 3.

The internal room of bath 10 comprises: a rest table 25 for said lower limbs; said table 25 being raised about a bottom plane 26 of said bath 10 in order to make the position of a person which is, preferably, sitting outside the bath 10, more comfortable.

There are also present:

a first and second identical water rotating systems 27 and 28 which are placed laterally and symmetrically about said rest table 25; either of said rotating systems being better shown in Fig. 4.

Said rotating systems 27 and 28 being connected with said pipe 6 to accomplish washing and subsequent rinse of lower limbs; said rotating systems 27 and 28 being supported by known means, not shown; known elements, not shown, being present to allow shifting of said systems 27 and 28 relative to said table 25 toward the directions defined by the symmetry axis A, in order to obtain the contact between surfaces 77 and 78 and said limbs.

sprinkle systems, including four ejectors 29, 30, 31 and 32 for water under pressure, connected with said pipe 7 and placed on four corners 33, 34, 35 and 36 of said bath 10, respectively, to send sprinkles of water slightly above the rest table 25 to reactivate the blood circulation in the lower limbs. Sprinkles from said ejectors 29, 30, 31 and 32 converge to the lower limbs rested on said table 25; furthermore, to obtain a best reactivation effect, said ejectors 29, 30, 31 and 32 are placed at the upstream and at the downstream zone of said corners 33, 32, 35 and 36, alternatively and are of the revolving kind.

The accesories of the fitting, shown in Fig. 3, consist in said pipes 1 and 2, in said mixer 3, in said commutator 5 connected with an unique delivery device 51 for said toilet substances, in said charging pump 47, in said pipes 11 and 14 and in said discharge pump 12. In this case the pump 47 is placed downstream the commutator 5.

A first voltage transformer 48 is present to feed said charging pump 47, in order to lower the voltage from the values of the supply mains to not dangerous values. A first overcurrent protection device 49 is placed between said transformer 48 and said pump 47 to void dangerous flashover on the feet. A second voltage transformer 52 is present to feed said discharging pump 12, in order to lower the voltage from the values of the supply mains to not dangerous values; a second overcurrent protection device 53 is present in the connection zone between said transformer 52 and said pump 12. A water heating device 50 is provided in sequence to said pipe 1.

Either of said rotating systems 27 or 28 is shown in Fig. 4. The rotating system 27 comprises a bearing plate 40 of rigid material having a bore for introduction of an end of said pipe 6; said pipe 6 being able to send the water, which rotates said system 27 and which, by exiting, washes the limbs rested on said table 25, to the internal room of said system 27.

Said bearing plate 40 having a circular edge 42 able to support a conic surface element 43 whose taper ratio is turned to the outside of said system 27; said element 43 being made of elastic material, preferably a continuous brush, and being able to void water splashes to said cover 16.

In view of a best protection against splashes to cover 16, a splash guard 44 is supported by a wall 45 of said bath 10 in a zone upstream said element 43.

The internal part of said plate 40 is able to house a runner shaped, for example, as a Pelton wheel turbine able to be rotated by the water coming from said pipe 6; the configuration of said runner is known and it will not be furtherly described.

Said runner supports integrally an element 46, whose external surface assumes a conic shape when the runner rotates; the taper ratio of said element 46 being turned to the outside. Said element 46 is constitued by a continuous brush of filiform elastic material able, in operation, to wash

and massage the feet with water coming from the internal part of said plate 40 and added with said substances while the thrust of the water rotates said runner.

Once the washing operation is finished, water comes from said part 5b to rinse the feet just washed.

Fig. 5 shows schematically a second embodiment of a fitting according with the present invention, this figure shows the structures which are not part of the fitting disclosed in Figs. 2- 4, however the elements which characterize the fitting are present also in this second embodiment. In particular, said sprinkle systems 8 and 9 and the hydraulic feeding devices for said systems 8 and 9 are present.

In this embodiment, said rotating systems 8 are constitued by a first and a second electric motors 58 and 63 and by a first and a second rotating elements 60 and 61, kinematically connected with two shafts 59 and 62 of said first and second electric motors 58 and 63, respectively; said rotating elements being laterally and symmetrically disposed about said rest table 25 and being without hydraulic feeding and said shafts 59 and 62 being supported, as known, by bushings, not shown, inserted in holes made in the walls of said bath 10. Known elements, not shown, are present to permit shiftings of said rotating elements 60 and 61 relative to said table 25 toward the directions defined by the symmetry axis A, in order to obtain contact between surfaces 77 and 78 and said limbs.

The electric feed to said motors 58 and 63 is accomplished by a power grid including essentially: a low voltage current generator 54, a conductor 55, a rehostat 56 able to vary the angular velocity of said shafts 58 and 63 and an overcurrents protection device 57.

Fig. 6 shows schematically a third embodiment of the equipment of the present invention and, in particular, the electromechanic and mechanic elements able to rotate said first and second elements 60 and 61 which, also in this embodiment are without hydraulic feeding.

An electric motor 64 is fed by two conductors 65 and 65 connected to a power grid, schematized by two conductors 67 and 68; said grid being fitted with a low voltage current generator, a rheostat and an overcurrents protection device, not shown. Said motor 64 is provided with a shaft 70 supported by known means, not shown, held up by the walls of said bath 10. A first and a second driving wheels 71 and 72 are splined on said shaft 70 and move a first and a second driven gears 75 and 76 by means of a first and a second belts 73 and 74, respectively; said gears 75 and 76 being integral with said shafts 59 and 62 of said elements 60 and 61, respectively. Said belts 73 and 74 may be placed both outside and inside said bath 10. Known elements, not shown, are present to permit said rotating elements 60 and 61 to shift with respect to said table 25 toward the directions defined by the symmetry axis A, in order to obtain contact between surfaces 77 and 78 and said limbs.

In a fourth embodiment of the present invention, now shown, said rotating systems 8 are fitted with rotating elements which are, at least partially, constitued by natural or artificial sponges.

In other embodiment of the invention, said delivery devices are capsules adapted to be inserted in housings made in said pipe 4.

As known, said support means and said bushings for said shafts 59, 62, 70 are fitted with sealing means to prevent water from exiting from said bath 10.

In a further embodiment of the present invention the rotating system 8 consists of three cylindric rollers, made of sponge or bristle, placed near the rest table 25 so that the longitudinal axis of two of said rollers is parallel to the longer side of the rest table 25 and the longitudinal axis of the third roller is parallel to the shorter side of the rest table 25.

These rollers are connected kinematically to one or more electric motors for movements thereof.

In this embodiment the rollers do not deliver water which comes only from said system 9.

Claims

1. Sanitary fitting including at least: a mixer (3), fitted with a first and a second inlets (I_1, I_2) and with a first outlet (O_1); said first and second inlets (I_1, I_2) being connected with a pipe (1) for hot water and a pipe (2) for cold water, respectively; said mixer (3) being able to obtain water at a desired temperature to be sent to a bath (10); a commutator (5), with a third inlet (I_3) and with a second and a third outlets (O_2, O_3); a tube (4) placed between said first outlet (O_1) and said third inlet (I_3); a tube (7) connected with said third outlet (O_3); a predetermined number of delivery fixtures to add water with suitable substances, as soaps, bath-oils or similar; characterized by the fact that said bath (10) houses: a rest table (25) for limbs; first rotating systems (8), able to wash, massage and subsequently rinse said limbs, said rotating systems being fitted with known elements to permit shiftings of said rotating systems (8) relative to said table (25) toward the directions defined by a symmetry axis (A), in order to obtain contact between surfaces (77, 78) and said limbs; second sprinkle systems (9) to reactivate the blood circulation in said limbs; said second systems (9) being connected with said

commutator (5) via said pipe (7); a discharge (11, 13) to maintain the water in said bath (10) at a constant level; said discharge (11, 13) being fitted with a pump (12); a cover (16) to prevent splashes from exiting from said bath (10); said cover (16) being fitted with an entrance (E) through which said limbs may be inserted in said bath (10).

2. Fitting, as in claim 1, characterized by the fact that it is fited with a hot air producer device (14), connected with said bath (10) through a pipe (15), to take hot air into said bath (10) when the operations of said systems (8, 9) are finished, in order to dry-up the limbs introduced in said bath (10).

3. Fitting, as in claim 1, characterized by the fact that said rotating systems (8) are constitued by bearing plates (40) of rigid material, each with a bore (41) for introduction of an end of pipe (6) for connection with said mixer (3); said plate (40) having a circular edge (42) able to support a conic surface element (43) whose taper ratio is turned to the outside of said systems (8); said element being constitued by an elastic material, preferably a continuous brush; the internal part of said plate (40) is able to house a runner shaped, for example, as a Pelton wheel turbine, and able to be rotated by the water coming from said tube (6); said runner supports integrally an element (46) whose external surface assumes a conic shape when the runner rotates; the taper ratio of said element (46) being turned to the outside; said element (46) is constitued by a continuous brush of a filiform elastic material able, in operation, to wash and massage the feet with water coming from the internal part of said plate (40) and, in case, added with said substances while the thrust of the water rotates said runner.

4. Fitting, as in claim 1, characterized by the fact that said rotating systems (8) are constitued by a first and a second electric motors (58,63) and by a first and a second rotating elements (60, 61) kinematically connected with said first and second electric motors (58, 63) through two shafts (59, 62), respectively.

5. Fitting, as in claim 1, characterized by the fact that said rotating systems (8) are constitued by an electric motor (64) with a shaft (70); a first and a second driving wheels (71, 72) being splined on said shaft (70) to transmit movement to a first and a second driven gears (75, 76) by a first and a second belts (73, 74), respectively; said gears (75, 76) being integral with said shafts (59, 62) of said elements (60 ,61), respectively.

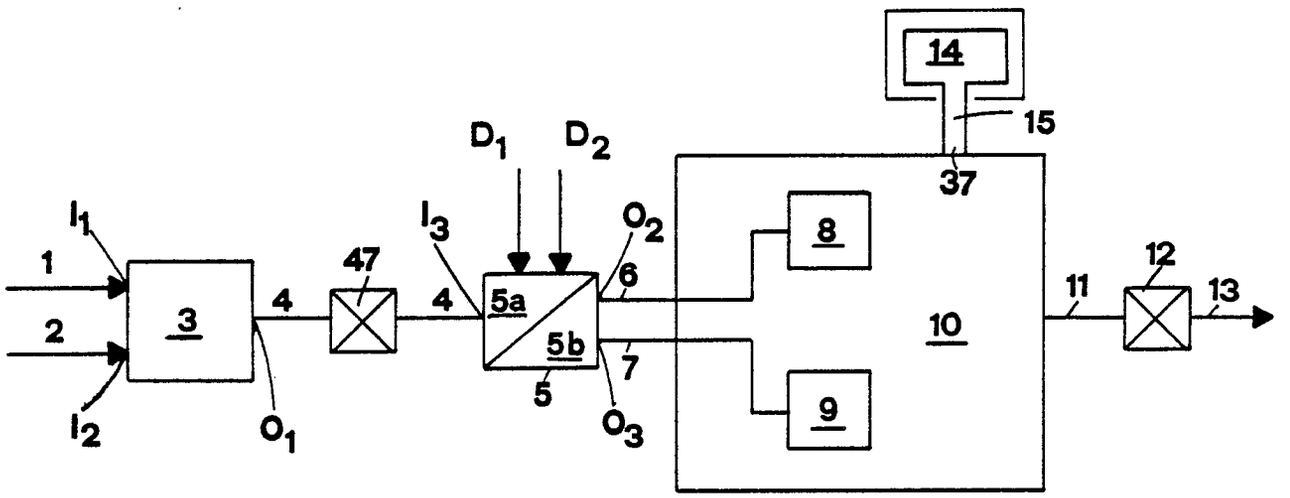
6. Fitting, as in claim 1, 3, 4 and 5, characterized by the fact that said rotating systems (8) include rotating elements constitued, at least partially, by natural or artificial sponges.

7. Fitting, as in claim 1, characterized by the fact that said commutator (5) comprises a first part (5a), connected with said delivery fixtures via pipes (D_1, D_2, ...), to obtain water added with said substances to be sent to said bath 10 and a second part (5b) to send water without said substances to said bath (10); known elements being present to connect said part (5a) or said part (5b) with said pipes (6,7) as a person which undergoes the treatment wants.

8. Fitting, as in claim 1, characterized by the fact that a charging pump (47) is placed in said pipe (4) downstream said mixer (3).

9. Fitting, as in claims 1, 2, 4, 5 and 8 characterized by the fact that said pumps (12, 47), said device (14) and said motors (58, 63, 64) are fed by low voltage power grids; said grids being fitted with overcurrents protection devices.

10. Fitting, as in claim 1, characterized by the fact that said cover (16) comprises at least two opposite parts (19, 20) fitted with a first and a second elastic sections (21, 22), preferably constitued by continuous brushes, whose borders (23, 24) develops longitudinally, the one against the other, in the middle part of said cover (16) to form said entrance (E); said elastic sections (19, 20) being adapted to loose their shape to allow said lower limbs to enter said bath (10); said borders (23, 24) being able to embrace the ankles with a light pressure to prevent water from exiting from bath (10).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D1
D2
I1
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47
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FIG.1

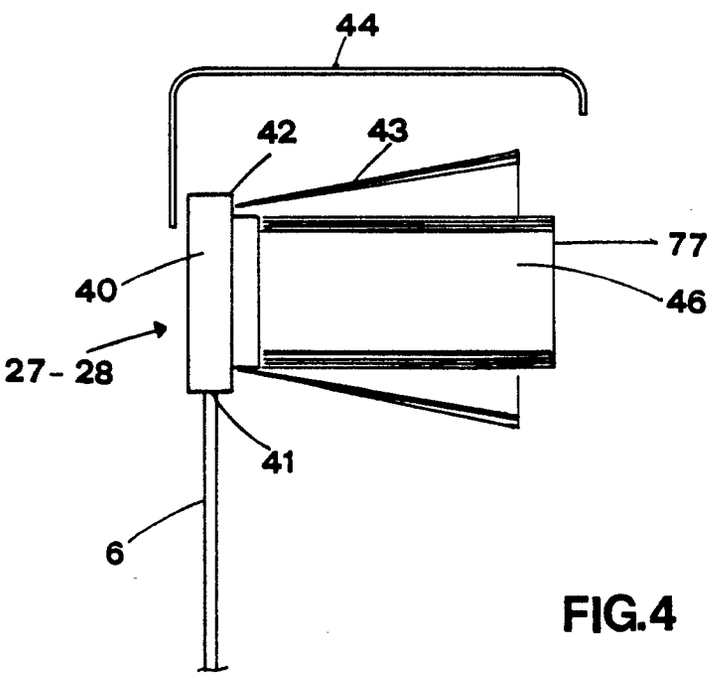
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FIG.4

FIG.2

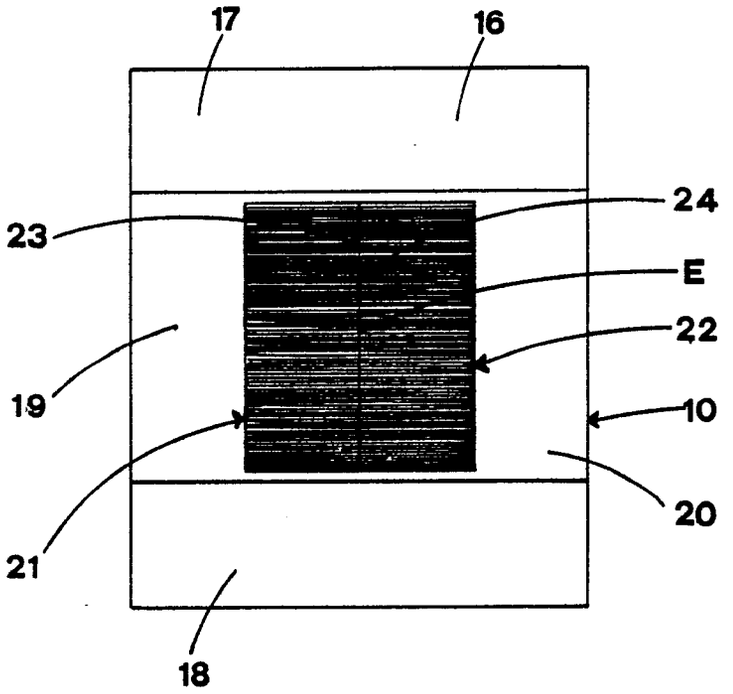
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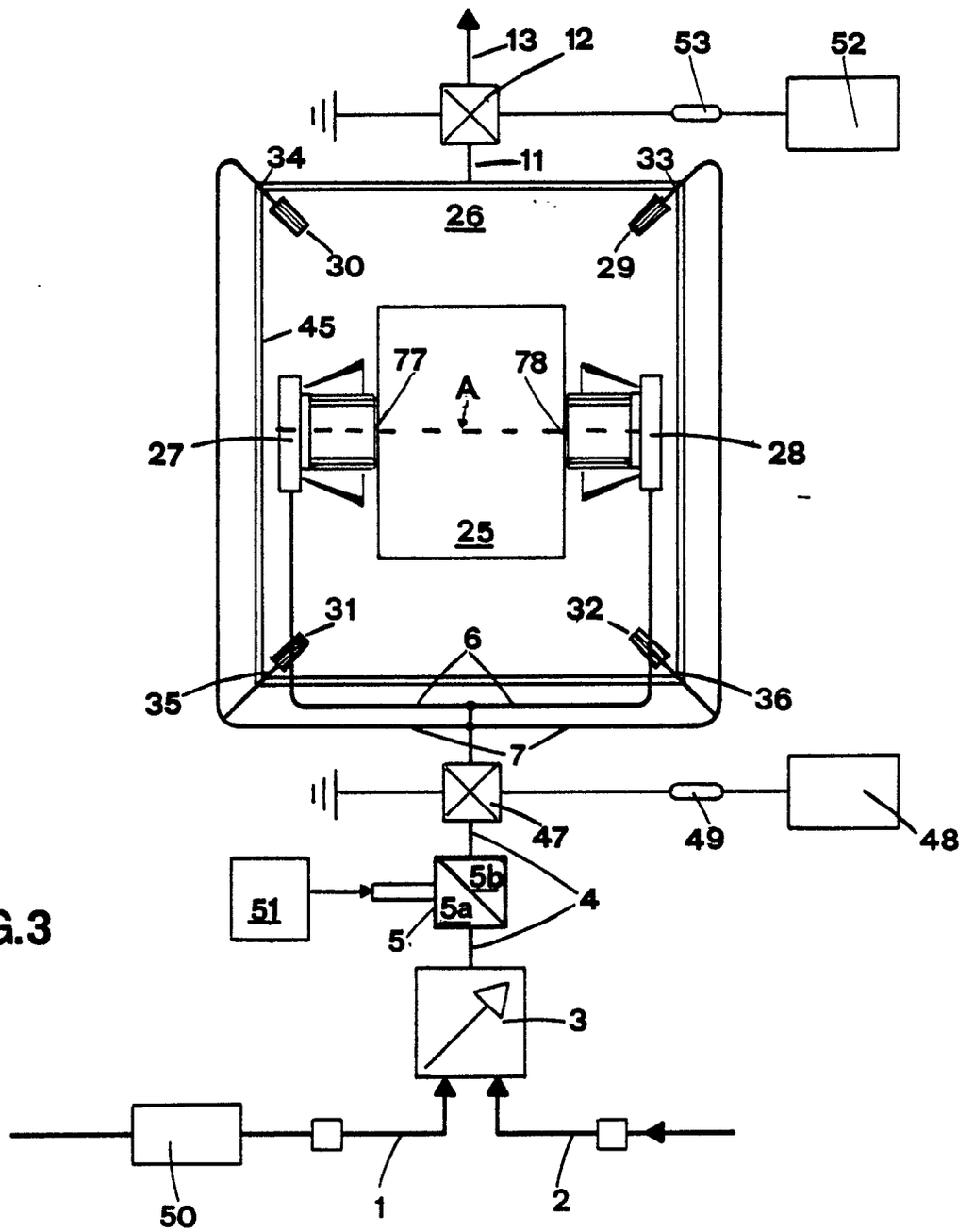
FIG.3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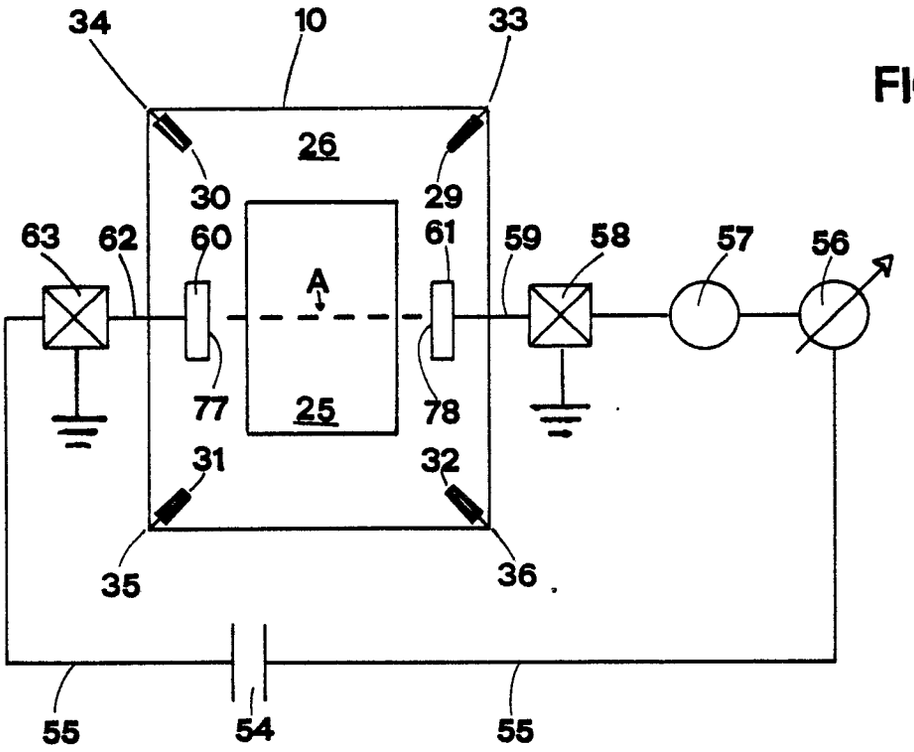
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FIG.5

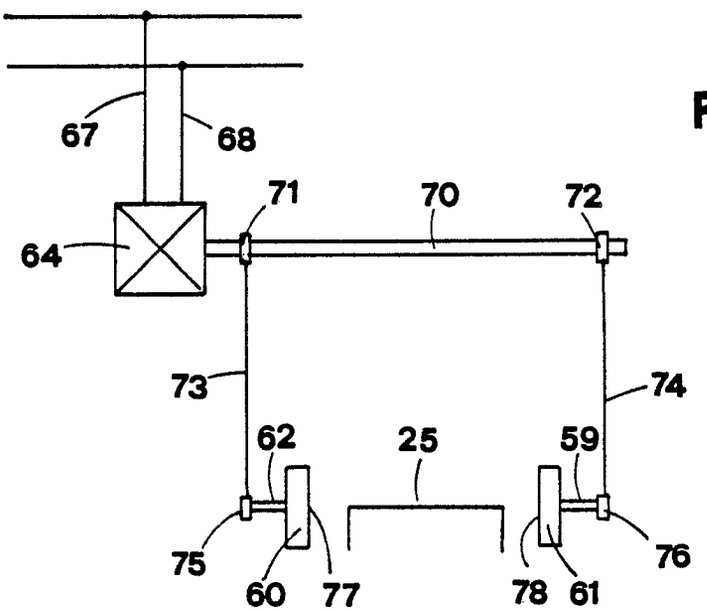
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FIG.6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 20 3000

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.4)
A	US-A-3 918 987 (R.J. KOPFER) * Column 1, lines 10,49-60,65 *	1	A 61 H 35/00 A 61 H 7/00
A	US-A-2 952 859 (J.H. ALCAMO) * Column 1, lines 37-54 *	1	
A	FR-A-2 209 541 (J.P. RAMILLON) * Page 1, lines 33-36; claim 1 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 61 H
A 61 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15-11-1989	GERARD B.E.

CATEGORY OF CITED DOCUMENTS

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