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(71) Applicant: **Gessi S.P.A.**
13037 Serravalle Sesia VC (IT)

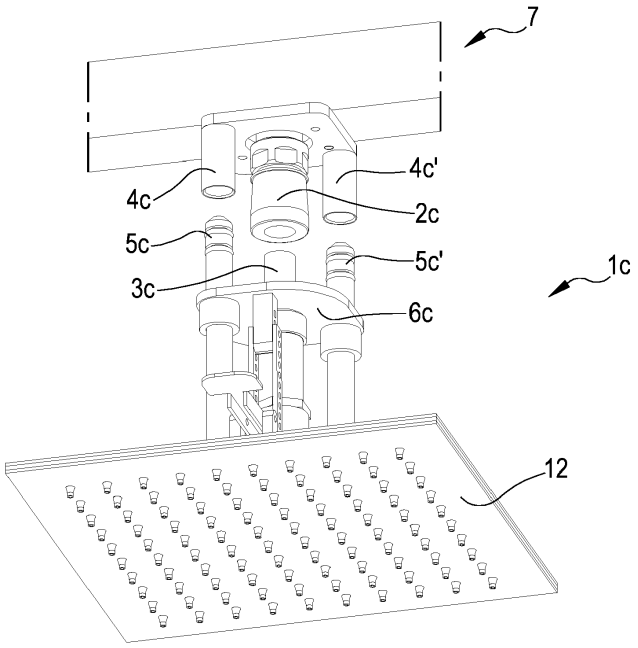
(72) Inventor: **Gessi, Gian Luca**
13037 Serravalle Sesia (IT)

(74) Representative: **Galassi, Alessandro**
PGA S.p.A. Milano
Succursale di Lugano
Via Castagnola 21C
6900 Lugano (CH)

(54) MODULAR SHOWER SYSTEM

(57) The object of the invention is a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall. The system (9) comprises at least one manifold element (7) configured to be mechanically connected to removable and/or interchangeable modules and to hydraulically and electrically supply these modules. The system (9) further comprises at least one module (1a; 1b; 1c; 1d; 1e) applied to the manifold element (7) and comprising at least one functional element. Lastly, the system (9) comprises connection means shared between the modules and the manifold element (7) and configured to realize the mechanical connection of the modules to the manifold element (7) and to realize the hydraulic and/or electrical connection of the modules to the manifold element (7). Advantageously, the manifold element (7) is housed in a containing structure (8). Advantageously, the manifold element (7) performs a load-bearing function for the modules. A further object of the present invention consists of alternative methods for installing the modules in the system (9), the system making use of a control unit (30) for this purpose.

FIG.8



EP 3 375 338 A1

Description

[0001] The present invention refers to a delivery system according to the preamble of claim 1, this delivery system being particularly arranged to be applied to and/or built into and/or recessed in a ceiling or wall.

[0002] The current trend in bathroom showers is that they are increasingly developing into actual wellness spa settings, in which other additional functions are present with respect to the sole shower function. Devices for colour therapy, music therapy and aromatherapy, designed for installation in shower areas, have been developed for this purpose. Therefore, today there are known built-in technical solutions in the form of cubicle showers (installed with increasing frequency in homes, in addition to specialized facilities, among which spas, gyms and hotels), which provide for the shower area to be equipped with one or more of these devices, so that it is possible, in the time taken for a shower, to enjoy the now widely recognized actual relaxing benefits of colour therapy, music therapy and aromatherapy devices.

[0003] However, the Applicant has found that these relaxing effects are highly variable from one person to another. Some people may see the benefits expected from colour therapy, but there are also others who find the greatest level of relaxation from listening to music while showering, just as others may require a sensorial experience in which two or more effects from lights, sounds and/or scents are combined.

[0004] The Applicant has thus found that the technical solutions known today are not optimal solutions. In fact, the shower cubicles currently available on the market (note for example the multifunction Fantasy shower cubicle marketed by the Sanigor company) have the drawback of consisting of a rigid structure, which, although it may suffice for an average user, is not capable of adapting to the specific preferences of each individual user.

[0005] Therefore, the aim of the present invention is to overcome the drawbacks cited hereinabove.

[0006] A further aim of the present invention is to realize a delivery system particularly arranged so as to make the architectural features of the shower areas flexible and capable of being modelled based on the preferences of the users.

[0007] An additional aim of the present invention is to realize a delivery system that also lends itself to being enhanced (or in any case, modified) even a number of times over time, without having to resort to major construction/remodelling work for these additions (or modifications).

[0008] A further aim of the present invention is to realize a delivery system that is capable of ensuring, even for the average user, significant relaxing effects within a rather short amount of time, as an authoritative study (conducted by authorities in the United Kingdom responsible for promoting efficiency in water consumption) has demonstrated that 75% of men and 71% of women take less than ten minutes for a shower.

[0009] A further aim of the present invention is to realize a delivery system that is capable of ensuring the preparation of a shower area with an aesthetic result that is decidedly superior to the multifunction shower cubicles presently available on the market.

[0010] A further aim of the present invention is to realize a delivery system that incorporates a high-performance and state-of-the-art control and adjustment system, which is capable of efficiently contributing to ensuring maximum levels of well-being.

[0011] A further aim of the present invention is to realize a delivery system that incorporates a control and adjustment system that makes use of the most advanced networking technologies, as well as interface devices that ensure very simple and intuitive navigation.

[0012] All of these aims are fully achieved by a delivery system that implements one or more of the following aspects of the present invention.

[0013] A first aspect of the invention concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and comprising at least one manifold element (7) configured to be mechanically connected to at least one removable and/or interchangeable module (1a; 1b; 1c; 1d; 1e) and to hydraulically and electrically supply said at least one module (1a; 1b; 1c; 1d; 1e); at least one removable and/or interchangeable module (1a; 1b; 1c; 1d; 1e), said at least one module (1a; 1b; 1c; 1d; 1e) being applied to said manifold element (7) and comprising at least one functional element and connection means shared between said at least one module (1a; 1b; 1c; 1d; 1e) and said manifold element (7) and configured to realize the mechanical connection of said at least one module (1a; 1b; 1c; 1d; 1e) to said manifold element (7) and to realize the hydraulic and/or electrical connection of said at least one module (1a; 1b; 1c; 1d; 1e) to said manifold element (7).

[0014] A second aspect of the invention, which is dependent on the first aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising a containing structure (8), wherein said manifold element (7) is housed in said structure (8).

[0015] A third aspect of the invention, which is dependent on the second aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said structure (8) is internally hollow and comprises a first lateral section (8p) and a second lateral section (8s), said first lateral section (8p) and said second lateral section (8s) being optionally integral with a section bar (8k), specifically made of a metal material or a plastic material or other material, having a substantially C-shaped cross section, wherein in particular the distance between said first lateral section (8p) and said second lateral section (8s) ranges between 200 mm and 550 mm, preferably between 250 mm and 450 mm, and even more preferably equal to about 350 mm.

[0016] A fourth aspect of the invention, which is dependent on the third aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein a first ridge (80p) projects transversely, optionally substantially perpendicularly, from said first lateral section (8p), particularly in proximity to a free end of said first lateral section (8p), and wherein a second ridge (80s) projects transversely, optionally substantially perpendicularly, from said second lateral section (8s), particularly in proximity to a free end of said second lateral section (8p), said first ridge (80p) and said second ridge (80s) both projecting towards the inside of said structure (8), said first ridge (80p) and said second ridge (80s) being configured to function as guide and/or support elements for said at least one module (1a; 1b; 1c; 1d; 1e), or wherein a first rib-like structure (81 p) projects transversely, optionally substantially perpendicularly, from said first lateral section (8p) and wherein a second rib-like structure (81s) projects transversely, optionally substantially perpendicularly, from said second lateral section (8s), said first rib-like structure (81 p) and said second rib-like structure (81s) both projecting towards the outside of said structure (8), said first rib-like structure (81 p) and said second rib-like structure (81s) being configured to anchor said structure (8) to architectural elements such as plasterboard panels (82p; 82s), said first rib-like structure (81 p) and said second rib-like structure (81s) in particular being integral with said first lateral section (8p) and with said second lateral section (8s), respectively, or welded to said first lateral section (8p) and to said second lateral section (8s), respectively.

[0017] A fifth aspect of the invention, which is dependent on any one of the aspects from the second to the fourth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, said structure (8) further comprising at least one transverse element (83p; 83s), said at least one transverse element (83p; 83s) being arranged in proximity to an end portion of said first lateral section (8p) and to an end portion of said second lateral section (8s), wherein at least one opening (84p; 84s) is obtained in said at least one transverse element (83p; 83s) for the purpose of enabling said manifold element (7) to be supplied hydraulically and electrically.

[0018] A sixth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said manifold element (7) is configured to function as a load-bearing element for said at least one module (1a; 1b; 1c; 1d; 1e).

[0019] A seventh aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, said manifold element (7) having a substantially tubular configuration and comprising a channel (70) for hydraulically supplying said at least one module (1a; 1b; 1c; 1d; 1e) and a cord (77) for the electric supply of said at least one module (1a; 1b; 1c; 1d; 1e), in said channel (70) there being obtained at least one point of water delivery (71a; 71b; 71c; 71d; 71e) and in said cord (77) there being obtained at least one point of electrical energy delivery (85a; 85b; 85c; 85d; 85e), wherein said at least one point of water delivery (71a; 71b; 71c; 71d; 71e), said at least one point of electrical energy delivery (85a; 85b; 85c; 85d; 85e) and the respective arrangements inside said structure (8) are configured to permit the interfacing of said manifold element (7) with said hydraulic connection means and with said electrical connection means.

[0020] An eighth aspect of the invention, which is dependent on the seventh aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, said manifold element (7) further comprising a communication bus configured to transmit signals to said at least one module (1 a; 1b; 1c; 1d; 1e) and/or to receive signals from said at least one module (1a; 1b; 1c; 1d; 1e), said bus optionally coinciding with said cord (77).

[0021] A ninth aspect of the invention, which is dependent on the seventh aspect or the eighth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said connection means comprises a hydraulic fitting (2a; 2b; 2c; 2d; 2e) preferably of the quick-fit type, arranged on said channel (70) at said at least one point of water delivery (71a; 71b; 71c; 71d; 71e), and a hydraulic coupling (3a; 3b; 3c; 3d; 3e) preferably of the quick-fit type, solidly constrained to said at least one module (1a; 1b; 1c; 1d; 1e) and compatible with said hydraulic fitting (2a; 2b; 2c; 2d; 2e).

[0022] A tenth aspect of the invention, which is dependent on the ninth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said connection means further comprises at least one seat arranged on said channel (70) in proximity to said hydraulic fitting (2a; 2b; 2c; 2d; 2e) and at least one contact pin arranged on said at least one module (1a; 1b; 1c; 1d; 1e) in proximity to said hydraulic coupling (3a; 3b; 3c; 3d; 3e) and compatible with said seat, said connection means comprising in particular a pair of seats (4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e') arranged on said channel (70) in positions that are opposite each other with respect to said hydraulic fitting (2a; 2b; 2c; 2d; 2e) and a pair of contact pins (5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e') arranged on said at least one module (1a; 1b; 1c; 1d; 1e) in positions that are opposite each other with respect to said hydraulic coupling (3a; 3b; 3c; 3d; 3e).

[0023] An eleventh aspect of the invention, which is dependent on the tenth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, said at least one seat being preferably arranged on said channel (70) at said at least one point of electrical energy delivery (85a; 85b;

85c; 85d; 85e), wherein said connection means comprises a pair of electrical contacts positioned on the bottom of said seat and on the top of said contact pin, respectively, and wherein an isolating means is preferably applied to said seat and/or to said contact pin so as to electrically isolate said pair of contacts.

[0024] A twelfth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising disconnection means shared between said at least one module (1a; 1b; 1c; 1d; 1e) and said manifold element (7) and configured to enable manual disconnection of the mechanical connection of said at least one module (1a; 1b; 1c; 1d; 1e) to said manifold element (7).

[0025] A thirteenth aspect of the invention, which is dependent on the tenth aspect and the twelfth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said disconnection means comprises a plate (6a; 6b; 6c; 6d; 6e) that is slidable along said at least one contact pin and a linkage for activating said plate (6a; 6b; 6c; 6d; 6e), said linkage being configured in such a manner that said plate (6a; 6b; 6C; 6d; 6e) is brought into abutment with said hydraulic fitting (2a; 2b; 2c; 2d; 2e) and that the disconnection of said at least one module (1a; 1b; 1c; 1d; 1e) from said manifold element (7) takes place when the pressure exerted by said plate (6a; 6b; 6c; 6d; 6e) on said hydraulic fitting (2a; 2b; 2c; 2d; 2e) reaches a predetermined value.

[0026] A fourteenth aspect of the invention, which is dependent on any one of the aspects from the ninth to the thirteenth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises a pipe (10a; 10b; 10c; 10d; 10e) connecting said at least one functional element to said hydraulic coupling (3a; 3b; 3c; 3d; 3e).

[0027] A fifteenth aspect of the invention, which is dependent on the fourteenth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one module (1a; 1b; 1c; 1d; 1e) further comprises flow shut-off means, said means being applied to said pipe (10a; 10b; 10c; 10d; 10e) and configured to stop and/or to reduce the flow of water incoming to said functional element.

[0028] A sixteenth aspect of the invention, which is dependent on the fifteenth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said shut-off means comprises a solenoid valve (11a; 11b; 11c; 11d; 11e) of a bistable type for stopping the flow of water incoming to said functional element.

[0029] A seventeenth aspect of the invention, which is dependent on the sixteenth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said shut-off means comprises a fixed obstruction of said pipe (10a; 10b; 10c; 10d; 10e), said obstruction being configured to prevent said functional element from getting wet.

[0030] An eighteenth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises at least one control device of an electronic type, said control device being configured to control said at least one functional element and/or said shut-off means, a memory of a non-volatile type being in particular associated with said control device.

[0031] A nineteenth aspect of the invention, which is dependent on the eighteenth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises at least one communication node associated with said control device and configured to receive or transmit radio frequency signals on said communication bus or on a communication network.

[0032] A twentieth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises an exposed panel made of a metal material or a glass material or a plastic material or other material, said exposed panel being mounted substantially flush with a free end of said first lateral section (8p) and with a free end of said second lateral section (8p).

[0033] A twenty-first aspect of the invention, which is dependent on the twentieth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said exposed panel substantially has the shape of a rectangle, optionally substantially the shape of a square, and wherein in particular at least one side of said rectangle or of said square is of a length ranging between 50 mm and 350 mm, preferably ranging between 150 mm and 250 mm, and even more preferably equal to about 200 mm, or wherein said exposed panel has a round, oval or polygonal shape or yet another shape.

[0034] A twenty-second aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and comprising a discrete number of removable and/or interchangeable modules (1a; 1b; 1c; 1d; 1e), said modules (1a; 1b; 1c; 1d; 1e) being applied to said manifold element (7) and each comprising at least one respective functional element, wherein said discrete number ranges between 3 and 9, preferably between 4 and 7, and even more preferably equal to 5.

[0035] A twenty-third aspect of the invention, which is dependent on any one of the preceding aspects, con-

cerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one showerhead (12) configured to generate a rainfall jet, said at least one showerhead (12) being optionally arranged downstream of said solenoid valve (11a; 11b; 11c; 11d; 11e).

[0036] A twenty-fourth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one slit (13) configured to generate a water blade, said at least one slit (13) being optionally arranged downstream of said solenoid valve (11a; 11b; 11c; 11d; 11e).

[0037] A twenty-fifth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one vaporizer or atomizer device (14) and a plurality of nozzles (15h; 15k; 15g; 15q) arranged downstream of said at least one vaporizer or atomizer device (14), said at least one functional element optionally comprising means for loading at least one fragrance in said at least one vaporizer or atomizer device (14).

[0038] A twenty-sixth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one lighting device (16), in particular said at least one lighting device comprising at least one RGB LED strip or at least one RGB+W LED strip, said at least one functional element optionally comprising adjustment means for adjusting the intensity and/or colour of the light emitted by said at least one lighting device (16).

[0039] A twenty-seventh aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one speaker (17), said at least one functional element optionally comprising adjustment means for adjusting the volume of the sound emitted by said at least one speaker (17).

[0040] A twenty-eighth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one air diffuser, said at least one functional element optionally comprising adjustment means for adjusting the temperature and/or the speed of the air exiting from said diffuser.

[0041] A twenty-ninth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one drop tube (18) and at least one movable end piece (19), said at least one end piece (19) being arranged at one end of said at least one tube (18).

[0042] A thirtieth aspect of the invention, which is dependent on the twenty-ninth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one functional element comprises at least one upright (20) and at least one holding element for locking said at least one end piece (19), said at least one holding element being applied to said at least one upright (20) and comprising in particular a magnetic plate (21) or a mechanical coupling.

[0043] A thirty-first aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising a control unit (30) for controlling said at least one module (1a; 1b; 1c; 1d; 1e), particularly for controlling said at least one functional element, said control unit (30) comprising storage media and being connected to said cord (77) and/or said bus.

[0044] A thirty-second aspect of the invention, which is dependent on the thirtieth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said control unit (30) comprises a graphic selection and/or display interface (31), said graphic interface (31) comprising in particular at least one touch screen (29), said control unit (30) optionally also comprising an audio interface.

[0045] A thirty-third aspect of the invention, which is dependent on the thirty-first aspect or on the thirty-second aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein, during the installation stage for installing said at least one module (1a; 1b; 1c; 1d; 1e), said control unit (30) is configured to receive an identifier from said at least one module (1a; 1b; 1c; 1d; 1e) and to store said identifier in said storage media.

[0046] A thirty-fourth aspect of the invention, which is dependent on the thirty-first aspect or on the thirty-second aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, there being stored in said storage media a plurality of predefined identifiers, and wherein, during the installation stage for installing said at least one module (1a; 1b; 1c; 1d; 1e), said control unit (30) is configured to perform an assignment procedure suitable for attributing one of said predefined identifiers to said at least one module (1a; 1b; 1c; 1d; 1e).

[0047] A thirty-fifth aspect of the invention, which is dependent on any one of the aspects between the thirty-first and the thirty-fourth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein, during the

stage of operation of said at least one module (1a; 1b; 1c; 1d; 1e), said control unit (30) is configured to reproduce the arrangement of said at least one module (1a; 1b; 1c; 1d; 1e) in said structure (8) on said graphic interface (31) and/or to specify on said graphic interface (31) whether said at least one module (1a; 1b; 1c; 1d; 1e) is active.

[0048] A thirty-sixth aspect of the invention, which is dependent on any one of the aspects between the thirty-second and the thirty-fifth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein the process of switching on said control unit (30) is conditional on the extension of an external action on said graphic interface (31) up to a predetermined time.

[0049] A thirty-seventh aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and comprising a flow rate control valve (40) for adjusting the flow rate in said manifold element (7), particularly in said channel (70), between a flow rate of zero and a maximum flow rate under operating conditions.

[0050] A thirty-eighth aspect of the invention, which is dependent on the thirty-seventh aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising a temperature control valve (41) for adjusting the temperature of the water in said manifold element (7), particularly in said channel (70), said flow rate control valve (40) and said temperature control valve (41) being optionally incorporated in one mixer tap.

[0051] A thirty-ninth aspect of the invention, which is dependent on the thirty-first aspect or on the thirty-seventh aspect or on the thirty-eighth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising a flow sensor installed between said flow rate control valve (40) and said manifold element (7), in particular in said channel (70), said flow sensor being operatively connected to said control unit (30), wherein, optionally, during the stage of switching off said control unit (30), said control unit (30) is configured to perform a safety procedure suitable for preventing deactivation of said at least one module (1a; 1b; 1c; 1d; 1e), in particular deactivation of said at least one functional element, should said flow rate control valve (40) be set at a flow rate differing from a flow rate of zero.

[0052] A fortieth aspect of the invention, which is dependent on any one of the aspects from the thirty-first to the thirty-ninth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising a presence detector, in particular a passive infrared sensor, said the presence detector being operatively connected to said control unit (30).

[0053] A forty-first aspect of the invention, which is dependent on any one of the aspects between the thirty-first and the fortieth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising a microphone, said microphone being operatively connected to said control unit (30), wherein at least one predefined vocal command is stored in said storage media.

[0054] A forty-second aspect of the invention, which is dependent on any one of the aspects between the thirty-ninth and the forty-first aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said control unit (30) is configured so that a signal received from said flow sensor and/or from said presence detector and/or from said microphone is capable of making said control unit (30) switch on automatically.

[0055] A forty-third aspect of the invention, which is dependent on any one of the aspects between the thirtieth and the forty-second aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said control unit (30) comprises at least one communication node suitable for enabling said control unit (30) to communicate with said at least one module (1a; 1b; 1c; 1d; 1e), in particular with said at least one functional element, and/or with at least one remote electronic device.

[0056] A forty-fourth aspect of the invention, which is dependent on any one of the aspects between the thirty-ninth and the forty-third aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and further comprising at least one auxiliary functional element configured to be supplied hydraulically independently of said manifold element (7), and an auxiliary flow rate control valve (42) configured to adjust the flow supplying said at least one auxiliary functional element, wherein said at least one auxiliary functional element particularly comprises a handheld showerhead (45) and/or a fixed sprayer and/or wall-mounted waterfall and/or a floor-mounted spout and/or another type of end-use fixture.

[0057] A forty-fifth aspect of the invention, which is dependent on the forty-fourth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said temperature control valve (41) is configured also to adjust the temperature of the water supplying said at least one auxiliary functional element.

[0058] A forty-sixth aspect of the invention, which is dependent on any one of the aspects between the thirty-ninth aspect and the forty-third aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and configured to be supplied hydraulically independently of said manifold element (7), and comprising at least one diverter valve, said at least one diverter valve being suited to discern whether said flow rate control valve (40) and/or said temperature control valve (41) are serving said manifold element (7) or said at least one auxiliary functional element, wherein said at least one auxiliary functional ele-

ment comprises in particular a handheld showerhead (45) and/or a fixed sprayer and/or a wall-mounted waterfall and/or a floor-mounted spout and/or another type of end-use fixture.

[0059] A forty-seventh aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, said system (9) being electronically managed and having no flow control and/or shut-off devices of a mechanical type.

[0060] A forty-eighth aspect of the invention, which is dependent on the forty-seventh aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, said system (9) having no wall-mounted taps.

[0061] A forty-ninth aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and comprising a suspension system configured to suspend said structure (8) from a ceiling, said suspension system preferably comprising a plurality of cables and/or cords with one end anchored to the ceiling and one end anchored to one of the walls of said structure (8).

[0062] A fiftieth aspect of the invention, which is dependent on any one of the aspects from the first to the forty-eighth aspect, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, and comprising a connection system configured to constrain said structure (8) stably to a ceiling, said connection system preferably comprising one or more dowels (100b) that act between an upper wall of said structure (8) and said ceiling.

[0063] A fifty-first aspect of the invention, which is dependent on any one of the preceding aspects, concerns a delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises position changing means (105) that act between said at least one module (1a; 1b; 1c; 1d; 1e) and said manifold element (7) so as to change the relative position thereof, said position changing means (105) including in particular a telescopic element or a prismatic pair or a cord or a cable or a chain or other means as fastening and adjustment elements.

[0064] The aspects listed above shall become more apparent in the light of the following detailed description of an advantageous embodiment of the present invention. The following description of the invention makes use of the following accompanying figures, of which:

- Figure 1 is a first axonometric view of a delivery system according to the present invention.
- Figure 2 is a second axonometric view of a delivery system according to the present invention, in which several components have been removed to enable several internal components to be seen.
- Figure 3 is an axonometric view of a first removable and interchangeable module that can be applied to a delivery system according to the present invention.
- Figure 4 is an axonometric view of a second removable and interchangeable module that can be applied to a delivery system according to the present invention.
- Figure 5 is an axonometric view of a third removable and interchangeable module that can be applied to a delivery system according to the present invention.
- Figure 6 is an axonometric view of a fourth removable and interchangeable module that can be applied to a delivery system according to the present invention.
- Figure 7 is an axonometric view of a fifth removable and interchangeable module that can be applied to a delivery system according to the present invention.
- Figure 8 is a detailed axonometric view of the delivery system illustrated in Figure 1 and in Figure 2, this detailed axonometric view being focused on the connection means that enable a removable and interchangeable module to be applied to a delivery system according to the present invention.
- Figure 9A is a sectional view of the delivery system illustrated in Figure 1 and in Figure 2, in a first possible installation mode.
- Figure 9B is a sectional view of the delivery system illustrated in Figure 1 and in Figure 2, in a second possible installation mode.
- Figure 9C is a sectional view of the delivery system illustrated in Figure 1 and in Figure 2, in a third possible installation mode.
- Figure 9D is a sectional view of the delivery system illustrated in Figure 1 and in Figure 2, in a fourth possible installation mode.
- Figure 10 is an axonometric view of the delivery system illustrated in Figure 1 and in Figure 2, in the installation mode shown in Figure 9A.
- Figure 11 is an axonometric view of a further delivery system according to the present invention.
- Figure 12 illustrates the delivery system illustrated in Figure 1 and in Figure 2 and it also shows the control unit and the graphic interface of the delivery system according to the present invention.
- Figure 13 illustrates the stage of switching on the graphic interface of the delivery system according to the present invention.
- Figure 14 illustrates the graphic interface of the delivery system according to the present invention, with reference to the removable and interchangeable modules applied to the delivery system.
- Figure 15 illustrates the stage for controlling the removable and interchangeable module shown in Figure 3, by means of the graphic interface of the delivery system according to the present invention.
- Figure 16 illustrates the stage for controlling the removable and interchangeable module shown in Figure 4, by means of the graphic interface of the delivery system according to the present invention.

- Figure 17 illustrates the stage for controlling the removable and interchangeable module shown in Figure 5, by means of the graphic interface of the delivery system according to the present invention.
- Figure 18 illustrates the stage for controlling the removable and interchangeable module shown in Figure 6, by means of the graphic interface of the delivery system according to the present invention.
- Figure 19 illustrates the stage for controlling the removable and interchangeable module shown in Figure 7, by means of the graphic interface of the delivery system according to the present invention.
- Figure 20 is a functional diagram of a delivery system according to the present invention and
- Figure 21 is a front view of a variant of the delivery system according to the present invention.

[0065] In introducing the following detailed description of the invention, it should first be noted that all the numerical parameters (among which the number of removable and/or interchangeable modules equal to five can be cited) and all the dimensional parameters included in the description serve the sole function of examples provided by way of non-limiting explanation.

[0066] A delivery system 9 according to the present invention is illustrated in Figure 1 and in Figure 2. The system 9 is arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall. In particular, the system 9 can be installed on the ceiling, flush with the ceiling or in relief. The system 9 has been conceived for use in a shower area. Therefore, the system 9 is arranged so as to function in combination with additional devices typical of this area, for example a shower floor tray for collecting and draining the water.

[0067] The system 9 can comprise a structure 8 (in the form an application fixed to a ceiling, such as a boxed structure for example), which is suitable for containing structural and/or functional elements of the system 9 and lends the system 9 an optimal aesthetic result. The structure 8 is internally hollow and comprises a first lateral section 8p and a second lateral section 8s. The structure 8 is advantageously obtained from one or more sheets of metal (e.g. of steel) through processes such as cutting and bending. Such processes in particular make it possible to obtain a section bar 8k, specifically made of a metal material, having a substantially C-shaped cross section, and in which the first lateral section 8p and the second lateral section 8s are incorporated. Advantageously, the dimensions of the structure 8 roughly define the shape of a parallelepiped. In this case, solely by way of non-limiting explanation, the structure 8 is of a height ranging between 120 mm and 180 mm, preferably equal to about 150 mm, a length ranging between 600 mm and 1500 mm, preferably equal to 1090 mm and a width ranging between 200 mm to 550 mm, preferably between 250 mm and 450 mm, and even more preferably equal to about 310 mm (the width of the structure 8 substantially corresponding to the distance between the first lateral section 8p and the second lateral section 8s). Importantly, it should be noted that the ranges and measurements reported here are obviously to be understood as preferred ranges and measurements, as the structure 8 (if present) can be of different dimensions with respect to the preferred dimensions indicated above. As an alternative to a metal material such as steel for example, a plastic or other material such as one of the materials commercially known as Corian®, Kevlar® and Krion® can also be used to realize the structure 8.

[0068] The structure 8 can have open longitudinal ends or it can be a structure that is closed on five of its six sides. In this second case, the structure 8 thus comprises a pair of transverse elements 83p; 83s that connect the end portion of the first lateral section 8p with the end portion of the second lateral section 8s. Advantageously, one side of each one of the transverse elements 83p; 83s is adjacent to one edge of the first lateral section 8p and an additional side of each one of the transverse elements 83p; 83s is instead adjacent to one edge of the second lateral section 8s. The transverse elements 83p; 83s are advantageously welded to the ends of the section bar 8k.

[0069] In the case in which the structure 8 is closed on five of its six sides, at least one opening is obtained on it so as to allow pipes and/or cords access to the inside of the structure. Preferably, an opening is obtained on one of the transverse elements 83p; 83s in the form of a through hole. Alternatively, the structure 8 includes a pair of openings 84p; 84s, each of which being obtained in one of the transverse elements 83p; 83s. Advantageously, the position of the openings 84p; 84s is such that they are located at the centre of the transverse elements 83p; 83s and somewhat distanced from the open side of the structure 8.

[0070] The open side of the structure 8 can also be just partially open. Specifically, a prevalently open portion extends between a pair of ridges (which are advantageously identical) that project from the lateral sections 8p; 8s towards the inside of the structure 8. A first ridge 80p projects transversely, advantageously substantially perpendicularly, from the first lateral section 8p, whereas a second ridge 80s projects transversely, advantageously substantially perpendicularly, from the second lateral section 8s. The first ridge 80p and the second ridge 80s are advantageously obtained as integral parts by means of specific bending of the section bar 8k.

[0071] Figures 9A and 10 illustrate a possible installation of the structure 8 when the delivery system 9 according to the present invention is installed flush with the ceiling. A first rib-like structure 81 p projects transversely, advantageously substantially perpendicularly, from the first lateral section 8p, whereas a second rib-like structure 81s projects transversely, advantageously substantially perpendicularly, from the second lateral section 8s. Both rib-like structures 81p; 81s project towards the outside of the structure 8, given that they are configured so as to ensure the fastening of the structure 8 to the architec-

tural elements such as the plasterboard panels 82p; 82s, for example. Once the plasterboard panels 82p; 82s have been assembled onto the structure 8, installation is completed by the application of a layer of plaster for the purpose of improving the aesthetics thereof. Advantageously, the rib-like structures 81p; 81s are welded to the first lateral section 8p and to the second lateral section 8s, respectively. Alternatively, the rib-like structures 81 p; 81s can constitute a single body with the section bar 8k. If the structure 8 is particularly heavy, the installation shown in Figure 9A can be made more solid and stable by introducing additional connection means between the structure 8 and the ceiling, along the extension of the structure 8. In particular, as shown in Figure 9B, a suspension system 100 can be arranged between the structure 8 and the ceiling, this suspension system 100 particularly comprising a plurality of cables and/or cords having one end anchored to the ceiling and one end anchored to one of the walls of said structure 8 that face the ceiling, for example to the upper wall of the section bar 8k and/or to the upper wall of the rib-like structures 81p; 81s.

[0072] Figure 9C shows a possible installation of the structure 8 when the delivery system 9 according to the present invention is installed suspended from the ceiling.

[0073] A suspension system 100a can be arranged between the structure 8 and the ceiling, this suspension system 100a particularly comprising one or more cables and/or cords with anchoring on one end to the ceiling and on the other end to the upper wall of the structure 8 that faces the ceiling. As an alternative to that which appears in Figure 9C, the suspension system 100a comprises a cable or a cord that is fastened to a pair of eyeholes for example (though not excluding other possibilities), the eyeholes being applied to the upper wall of the structure, and along its path the cable or cord passes through one or more additional eyeholes constrained to the ceiling.

[0074] Figure 9D shows a possible installation of the structure 8 when the delivery system 9 according to the present invention is fastened externally to the ceiling. A connection system is applied between the upper wall of the structure 8 and the ceiling. Advantageously, the connection system, in the example shown in Figure 9D, comprises one or more dowels 100b that act between the upper wall of the structure 8 and the ceiling, so as to stably constrain the structure 8 to the ceiling. According to the present invention, the system 9 comprises a manifold element 7 housed in the structure 8 (if present) and at least one removable and/or interchangeable module. Advantageously, the system 9 comprises a manifold element 7 housed in the structure 8 and a discrete number of removable and/or interchangeable modules 1a; 1b; 1c; 1d; 1e, this discrete number preferably ranging between three and nine, even more preferably between four and seven. The ranges reported hereinabove should obviously be understood as preferred ranges, as the delivery system can comprise even more than nine removable and/or interchangeable modules.

[0075] In the embodiments of the present invention shown in the accompanying figures, the system 9 comprises a manifold element 7 housed in the structure 8 and five removable and/or interchangeable modules 1a; 1b; 1c; 1d; 1e. The modules 1a; 1b; 1c; 1d; 1e are applied to the manifold element 7 and each one comprises at least one respective functional element. The modules 1a; 1b; 1c; 1d; 1e advantageously comprise functional elements that differ from each other. It is also possible that two or more of the modules 1a; 1b; 1c; 1d; 1e comprise the same functional element.

[0076] The manifold element 7 is configured to be mechanically connected to the removable and/or interchangeable modules 1a; 1b; 1c; 1d; 1e and to hydraulically and electrically supply the modules 1a; 1b; 1c; 1d; 1e. For this purpose, the system 9 according to the present invention comprises connection means shared between the at least one removable and/or interchangeable module and the manifold element 7. The connection means is configured to realize the mechanical connection of the modules 1a; 1b; 1c; 1d; 1e to the manifold element 7 and to realize the hydraulic and/or electrical connection of the modules 1a; 1b; 1c; 1d; 1e to the manifold element 7. Based on the type of functional element that is associated with a removable and/or interchangeable module, this removable and/or interchangeable module must be supplied only hydraulically, or only electrically, or both hydraulically and electrically. To supply the modules 1a; 1b; 1c; 1d; 1e hydraulically and/or electrically, the manifold element 7 is operatively connected to a water supply system and to an electrical grid. The openings 84p; 84s obtained in the transverse elements 83p; 83s of the structure 8, enable this operative connection of the manifold element 7.

[0077] Through the connection means, the manifold element 7 is capable of functioning as the load-bearing element for the modules 1a; 1b; 1c; 1d; 1e. From a purely architectural point of view, the manifold element 7 is capable of functioning as a "track" along which to arrange the modules 1a; 1b; 1c; 1d; 1e in succession with respect to each other. If the weight of the modules 1a; 1b; 1c; 1d; 1e is particularly significant, the delivery system can comprise a plurality of manifold elements, the modules 1a; 1b; 1c; 1d; 1e being advantageously distributed among the manifold elements so that the manifold elements sustain more or less the same weight. It is also possible to provide a first manifold element that is specialized for the modules which must be supplied hydraulically and a second manifold element that is specialized for the modules which must be supplied only electrically.

[0078] The removability and/or interchangeability of the modules 1a; 1b; 1c; 1d; 1e is undoubtedly a noteworthy feature. In fact, in this manner the user of the system 9 is given the opportunity to choose which modules 1a; 1b; 1c; 1d; 1e to include in the structure 8. In this manner, the system 9 can be customized as regards the choice of modules 1a; 1b; 1c; 1d; 1e (there being available modules 1a; 1b; 1c; 1d; 1e that differ with respect to each

other in the type of associated functional element) and the arrangement of the modules 1a; 1b; 1c; 1d; 1e inside the structure 8. Moreover, should the user wish to make changes over time in the type and/or arrangement of the modules 1a; 1b; 1c; 1d; 1e, these changes can be made quickly and easily, given the modular configuration of the system 9 and particularly owing to the removability and/or interchangeability of the modules 1 a; 1b; 1c; 1d; 1e. Should failures or malfunctioning arise concerning the functional elements associated with the modules 1a, 1b; 1c; 1d; 1e, any maintenance procedures and/or replacements that may be necessary will be carried out just as quickly and easily.

[0079] As can be seen from the attached figures and particularly from the functional diagram in Figure 20, the manifold element 7 has a substantially tubular configuration and it comprises a channel 70 for hydraulically supplying the modules 1a; 1b; 1c; 1d; 1e and a cord 77 for supplying electrical energy to the modules 1a; 1b; 1c; 1d; 1e. Advantageously, the manifold element 7 further comprises a communication bus configured to transmit signals, optionally electrical signals, to the modules 1a; 1b; 1c; 1d; 1e, particularly to the functional elements associated with the modules 1a; 1b; 1c; 1d; 1e, and/or to receive signals, optionally electrical signals, from the modules 1b; 1c; 1d; 1e, particularly from the functional elements associated with the modules 1a; 1b; 1c; 1d; 1e. The signals passing through the cord 77 can be control and/or monitoring signals of various types; these signals can for example comprise command signals directed to one or more of the functional elements associated with the modules 1a; 1b; 1c; 1d; 1e. Advantageously, the communication bus coincides with the cord 77, the signals transmitted to the modules 1a; 1b; 1c; 1d; 1e and received from the modules 1 a; 1b; 1c; 1d; 1e being electrical signals that pass through the cord 77. Alternatively, the communication bus can be a separate element with respect to the cord 77, for example a specific cable for transmitting data, such as an optical fibre cable.

[0080] It can be noted from the functional diagram appearing in Figure 20 that in the channel 70 there are obtained points of water delivery 71a; 71b; 71c; 71d; 71e, that is, a point of water delivery for each removable and/or interchangeable module installed or that can be installed in the system 9. It can also be noted from the functional diagram appearing in Figure 20 that in the cord 77 there are obtained points of electrical energy delivery 85b; 85c; 85d; 85e, that is, a point of electrical energy delivery for each removable and/or interchangeable module installed or that can be installed in the system 9. The points of water delivery 71a; 71b; 71c; 71d; 71e and the points of electrical energy delivery 85a; 85b; 85c; 85d; 85e are arranged in the structure so as to permit the interfacing of the manifold element 7 with the modules 1a; 1b; 1c; 1d; 1e and thus to permit the functional elements associated with the modules 1a; 1b; 1c; 1d; 1e to be supplied hydraulically and/or electrically.

[0081] The connection means comprises hydraulic fittings 2a; 2b; 2c; 2d; 2e, preferably of the quick-fit type, arranged on the channel 70 and coinciding with the points of water delivery 71a; 71b; 71c; 71d; 71e, and hydraulic couplings 3a; 3b; 3c; 3d; 3e which are also preferably of the quick-fit type, but solidly constrained to the modules 1a; 1 b; 1c; 1d; 1e. Compatibility between the hydraulic fittings 2a; 2b; 2c; 2d; 2e and the hydraulic couplings 3a; 3b; 3c; 3d; 3e ensures that when they are connected, in addition to hydraulically supplying the modules 1a; 1b; 1c; 1d; 1e (and thus the functional elements associated with the modules 1a; 1b; 1c; 1d; 1e), they also mechanically support the modules 1a; 1b; 1c; 1d; 1e. The hydraulic fittings 2a; 2b; 2c; 2d; 2e and the hydraulic couplings 3a; 3b; 3c; 3d; 3e are clearly shown in Figure 8. The hydraulic fittings 2a; 2b; 2c; 2d; 2e are advantageously configured in such a manner that the flow rate of water exiting from them is equal to zero in the absence of a connection with the hydraulic couplings 3a; 3b; 3c; 3d; 3e.

[0082] In each one of the modules 1a; 1b; 1c; 1d; 1e, a pipe 10a; 10b; 10c; 10d; 10e leaves from the corresponding hydraulic coupling, so as to hydraulically supply the at least one functional element associated with the removable and/or interchangeable module. If the functional element does not need to be supplied with water, but only needs to be supplied electrically, one section of the pipe 10a; 10b; 10c; 10d; 10e is completely and constantly obstructed, so as to prevent the water from reaching the functional element.

[0083] More generally, a flow shut-off means is also applied to the pipe 10a; 10b; 10c; 10d; 10e and are configured to stop and/or reduce the flow of water incoming to said functional element. If the functional element needs to be supplied with water, the shut-off means can make use of a solenoid valve 11a; 11b; 11c; 11d; 11e comprising a shutter that is capable of reducing the flow of water in the pipe 10a; 10b; 10c; 10d; 10e, until a flow rate of zero is obtained. If the flow shut-off means is only required to enable and/or disable a flow of water through the functional element (flow rate adjustment taking place upstream of the flow shut-off means), it suffices to use a solenoid valve of a bistable type for switching from an inhibited flow state to an enabled flow state and vice versa. The solenoid valve 11a; 11b; 11c; 11d; 11e is controlled by means of electrical control signals advantageously received by the solenoid valve 11a; 11b; 11c; 11d; 11e through the communication bus.

[0084] The modules 1a; 1b; 1c; 1d; 1e are therefore mechanically supported by the manifold element 7 alone, through the connection means described hereinabove. Alternatively, in addition to being mechanically supported by the manifold element 7, the modules 1a; 1b; 1c; 1d; 1e can also be mechanically supported by the structure 8. For example, the first ridge 80p and the second ridge 80s can contribute to supporting the modules 1a; 1b; 1c; 1d; 1e by acting as guide and/or support elements for the modules 1a; 1b; 1c; 1d; 1e, one or more edges of the modules 1a; 1b; 1c; 1d; 1e being able to rest on the first

ridge 80p and on the second ridge 80s and/or being able to slide along the first ridge 80p and along the second ridge 80s.

[0085] Advantageously, the connection means further comprises at least one contact pin arranged on at least one of the modules 1a; 1b; 1c; 1d; 1e and that cooperates with at least one seat arranged on the channel 70. As illustrated in Figure 8, the connection means comprises a pair of contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' in each one of the modules 1a; 1b; 1c; 1d; 1e, and a pair of seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e' for each pair of contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e'. The hydraulic fittings 2a; 2b; 2c; 2d; 2e are preferably found at the centre of the corresponding seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e'. Accordingly, the hydraulic couplings 3a; 3b; 3c; 3d; 3e are found at the centre of the corresponding contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e'. One function of the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' and the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e' inside the connection means is to act as centring elements and/or guide elements for the purpose of facilitating the user in correctly positioning the modules 1a; 1b; 1c; 1d; 1e with respect to the manifold element 7, particularly with respect to the channel 70. In fact, the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' are configured to slide inside the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e' and thus to direct in this manner the positioning of the modules 1a; 1b; 1c; 1d; 1e with respect to the manifold element 7. Advantageously, the shape of the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' and the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e' is axisymmetric, preferably substantially cylindrical in shape.

[0086] Advantageously, the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' and the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e' can also be used for the electrical connection of the modules 1a; 1b; 1c; 1d; 1e to the manifold element 7, particularly to the cord 77. In this case, a seat is arranged on the manifold element 7 at one of the points of electrical energy delivery 85a; 85b; 85c; 85d; 85e and a pair of electrical contacts is positioned with one contact on the bottom of the seat and one contact on the top of the contact pin. When the contact pin has been inserted in the seat, the electrical contacts make contact, thus making it possible for the electrical energy supply to reach the modules 1a; 1b; 1c; 1d; 1e. Isolating means are applied to the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' and/or to the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e' for the purpose of ensuring adequate electrical safety of the system 9. In the example illustrated in Figure 8 for implementation of the connection means, a pair of sealing rings is applied to the lateral surface of each one of the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e'; the sealing rings adhere to the inner lateral surface of the corresponding seat and function as a barrier preventing the intrusion of water in the area in which the electrical connection is realized.

[0087] In any case, the sealing rings applied to the lateral surface of the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' are also useful when the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' have a purely structural function, there being no electric current passing through them. In fact, as they exert friction, the sealing rings make the movement of the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' more uniform and prevent undesirable rotation of the modules 1a; 1b; 1c; 1d; 1e.

[0088] In one alternative form of implementation, the electrical contacts are incorporated in the hydraulic fittings 2a; 2b; 2c; 2d; 2e, as well as in the hydraulic couplings 3a; 3b; 3c; 3d; 3e. In this case, the electrical contacts are arranged in areas of the hydraulic fittings 2a; 2b; 2c; 2d; 2e and hydraulic couplings 3a; 3b; 3c; 3d; 3e which have been suitably rendered unreachable by water. This form of implementation can advantageously make use of the teachings contained in patent EP2327916B1. In a further alternative form of implementation, the electrical contacts are separated by the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' and the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e', as well as by the hydraulic fittings 2a; 2b; 2c; 2d; 2e and the hydraulic couplings 3a; 3b; 3c; 3d; 3e. Advantageously, the system 9 according to the present invention further comprises disconnection means shared by the modules 1a; 1b; 1c; 1d; 1e and the manifold element 7. A primary function of the disconnection means is to offer the user of the system 9 the possibility of manually disconnecting the mechanical connection between at least one module 1a; 1b; 1c; 1d; 1e and the manifold element 7. In fact, the mechanical connection between the modules 1a; 1b; 1c; 1d; 1e and the manifold element 7 must be disconnected in order to proceed with maintenance or replacement of the modules 1a; 1b; 1c; 1d; 1e.

[0089] In one form of implementation (shown in detail in Figures 3 to 7, the teachings of which constitute an integral part of the present description), the disconnection means make use of the contact pins 5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e' and the seats 4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e'. In this form of implementation, the disconnection means also comprises, for each pair of contact pins, a plate and a linkage for activating the plate. The plate is configured like a thin plate that is substantially perpendicular to the contact pins. There is prismatic coupling between the contact pins and the plate, so that the plates can slide along the contact pins. The linkage for activating the plate comprises a first lever that is solidly constrained to the plate and a second lever that is solidly constrained to an activating element, such as a handle for example. The first lever is constrained to the second lever by means of a hinge with a movable pivot point, the second lever being additionally constrained to a structural component of the removable and/or interchangeable module by means of a hinge with a fixed pivot point. The set of levers and hinges creates a linkage mechanism such that when the user activates the second lever, the plate first moves so as to abut the surface of an element of the channel 70 (for example the surface of one of the

hydraulic fittings 2a; 2b; 2c; 2d; 2e) and then presses against this surface. When the pressure exerted by the plate on the surface of an element of the channel 70 reaches a predetermined value, disconnection of the removable and/or interchangeable module from the manifold element 7 takes place. From a structural point of view, the modules 1a; 1b; 1c; 1d; 1e are configured so that each one of them includes an exposed panel that is located at the open side of the structure 8. The set of exposed panels applied to the modules 1a; 1b; 1c; 1d; 1e can advantageously compose a roughly continuous surface which in fact closes the open side of the structure 8. The exposed panels are mounted substantially flush with a free end of the first lateral section 8p of the structure 8 and with a free end of the second lateral section 8p of the structure 8, spaces possibly being provided between the exposed panels and between the latter and the free ends of the first lateral section.

[0090] The spaces between the exposed panels and/or the spaces between the exposed panels and the structure 8 are very useful for they allow a maintenance person to remove the modules 1a; 1b; 1c; 1d; 1e and to inspect the modules 1a; 1b; 1c; 1d; 1 e, or they simply allow for suitable installation of the modules 1a; 1b; 1c; 1d; 1e. In fact, the spaces can provide a maintenance person in charge of the delivery system according to the present invention with sufficient manoeuvring space to remove the exposed panels from the modules 1a; 1b; 1c; 1d; 1e. The spaces can also provide the maintenance person with sufficient space to gain access, manually or by means of a specific tool, to the disconnection means (for example to the linkage for activating the plate) in order to remove the modules 1a; 1b; 1c; 1d; 1e.

[0091] The exposed panel of each one of the modules 1a; 1b; 1c; 1d; 1e is compatible with the functional element installed in each module. The exposed panel is made of a metal material or a glass material. As an alternative to a metal material such as steel for example, and as an alternative to glass, a plastic material such as one of the materials commercially known as Corian®, Kevlar® and Krion® can be used to realize the exposed panel for the modules 1a; 1b; 1c; 1d; 1e. Typically each exposed panel substantially has the shape of a rectangle. In one possible form of implementation, each exposed panel substantially has the shape of a square having one side of a length ranging between 50 mm and 350 mm, preferably ranging between 150 mm and 250 mm, and even more preferably equal to about 200 mm. The ranges and measurements reported here are obviously to be understood as preferred ranges and measurements, as the exposed panel can have a side that is less than 50 mm in length, as well as a side that is greater than 350 mm in length. Alternatively, each exposed panel or the module itself can have a round, oval or polygonal shape or yet another shape.

[0092] In terms of controls, the architecture of the system 9 can comprise that the electrical loads of each one of the modules 1a; 1b; 1c; 1d; 1e (that is to say, the solenoid valve 11a; 11b; 11c; 11d; 11e and/or any further actuators inside the functional elements) are controlled by means of control systems external to the modules 1a; 1b; 1c; 1d; 1e. Alternatively, the system 9 can comprise an architecture based on which the modules 1a; 1b; 1c; 1d; 1e comprise within themselves their own control devices of an electronic type (for controlling the shut-off means and the functional elements in general).

[0093] When the modules 1a; 1b; 1c; 1d; 1e comprise within themselves their own electronic control devices, the presence of a non-volatile memory can also be provided on board the modules. An identifier of the module can be advantageously recorded in this non-volatile memory during the production of the each removable and/or interchangeable module, this identifier encoding essential information for recognition of the module, first and foremost the type of functional element associated with the module. In a simplified form of implementation of the present invention, in which the modules 1a; 1b; 1c; 1d; 1e have no dedicated electronic control devices inside them, the identifier can be stored in a passive device such as a TAG for example, which can be read externally by means of a specific reader. Considering the interfacing with external electronic devices (whether comprised in the system 9 or belonging to apparatuses external to the system 9), the modules 1a; 1b; 1c; 1d; 1e comprise at least one communication node that enables the control devices inside the modules 1a; 1b; 1c; 1d; 1e to exchange data and/or information and/or commands with the outside. The communication nodes can be enabled to receive and transmit on the communication bus described previously. Alternatively, the communication nodes can transmit and/or receive data and/or information and/or commands from the outside by connecting to a communication network, using radiofrequencies. The communication nodes are advantageously arranged for the interfacing of the modules 1b; 1c; 1d; 1e with the Internet.

[0094] As concerns functions, the modules 1a; 1b; 1c; 1d; 1e can offer a selection of functions based on the type of functional elements associated with the modules 1a; 1b; 1c; 1d; 1e. Selecting the modules 1a; 1b; 1c; 1d; 1e with the functional elements of greatest interest, based on one's needs and preferences, the user is actually customizing the delivery system 9. By way of non-limiting example, the figures accompanying the present description show some of the possible functional elements that can be included in the system 9 according to the present invention. The modules 1a; 1b; 1c; 1d; 1e comprise the same connection means and the same disconnection means in order to ensure the interchangeability thereof.

[0095] A music therapy module 1, thus a specialized module for playing music tracks, is illustrated in Figure 3. In fact, the functional element of the module 1 e comprises a speaker 17. In one possible form of implementation, the module 1e comprises a control device with which a non-volatile memory is associated for storing music tracks. Moreover, the module 1 e comprises a com-

munication node (for example a communication node that interfaces with a network using radiofrequencies) to receive from external electronic devices music tracks to be played. The functional element of the module 1e can also comprise adjustment means for adjusting the volume of the sound emitted by speaker 17 and means for selecting the music track to be played.

[0096] A specialized module 1d for delivering a blade of water, or a waterfall jet is illustrated in Figure 4. Downstream of the pipe 10d and the solenoid valve 11d, the module 1d comprises a slit 13 which, as one dimension is markedly greater than the other, is capable of generating the water blade. A specialized module 1c for delivering a rainfall jet is illustrated in Figure 5. Downstream of the pipe 10c and the solenoid valve 11c, the module 1c comprises a showerhead 12 that has a series of openings that are distributed homogeneously on the surface of the showerhead 12 so as to obtain an optimal jet of water to be used for showering. An aromatherapy module 1b, thus a specialized module for generating vapour or mist, is illustrated in Figure 6. Downstream of the pipe 10b and the solenoid valve 11b, the module 1b can comprise a vaporizer device (for example a water heater comprising a tank and an electric heating resistor). Alternatively, downstream of the pipe 10b and the solenoid valve 11b, the module 1b can comprise an atomizer device 14 (suitable for generating a jet of water in atomized form). The module 1 b also comprises a plurality of nozzles 15h; 15k; 15g; 15q arranged downstream of the vaporizer device or the atomizer device 14, the nozzles 15h; 15k; 15g; 15q being suitable for releasing the mist into the area where the module 1 b is installed. Advantageously, means for loading at least one fragrance in liquid form is associated with the module 1b. This loading means is connected to the vaporizer device or to the atomizer device 14 so that once the fragrance has been vaporized or atomized, it can then spread throughout the area where the module 1 b is installed. In this case, the system 9 comprises a dispenser (which can also be positioned at a distance from the module 1b), which is capable of drawing measured amounts from a cartridge or from a bottle in which a supply of the fragrance to be dispensed is available. The loading means also comprises an actuator (such as a pump for example) that is capable of moving the fragrance to the vaporizer device or to the atomizer device 14. The fragrance can be dispensed into the area in a concentrated form or in a form diluted with water introduced into the vaporizer device or into the atomizer device 14 through the solenoid valve 11 b. The module 1b can be provided with a housing compartment for salts and/or crystals and/or granules, which, upon contact with the vapour or mist, release substances that have beneficial properties. In one form of implementation, the module 1 can comprise a vaporizer and an atomizer, the vaporizer serving to generate water vapour in which substances, such as salts and/or crystals and/or granules, having beneficial properties are advantageously dissolved and released, and the atomizer serving instead to generate a mist of a fragrance that has been collected in a concentrated form.

[0097] A colour therapy and/or lighting module 1 a is illustrated in Figure 7. The module 1 a includes a lighting device 16. Advantageously, the lighting device 16 comprises at least one RGB LED strip or at least one RGB+W LED strip. In one possible alternative, the lighting device 16 comprises a spotlight with a LED, or halogen, or fluorescent light source (spotlights suitable for installation in the module 1a are marketed for example by the Artemide firm). The light emanating from the lighting device 16 is preferably white when the module 1 a is prevalently used as a lighting module and it is preferably coloured when the module 1 is prevalently used as a colour therapy module. In this second case, the module 1a advantageously comprises adjustment means for adjusting the intensity and/or colour of the light emitted by the lighting device 16.

[0098] A system 9 comprising, among other things, a handheld showerhead, is illustrated in Figure 11. This module comprises a solenoid valve and an exposed panel from which a flexible tube 18 and an upright 20 emerge. A movable end piece 19 is arranged at the free end of the tube 18 and it can be used as a water delivery device for showering. The upright 20 is used for locking the end piece 19 when it is not in use. For this purpose, in one of its forms of implementation, the upright 20 can comprise a magnetic plate 21 and a steel cable, which is kept tensioned by means of a weight located at one end of the cable and positioned under the structure 8 (In fact, Figure 11 shows this weight resting on the shower floor tray). As the body of the end piece is made of a metal material, a coupling of a magnetic type is created between the end piece 19 and the magnetic plate 21 and it is capable of keeping the end piece 19 in position. The magnetic coupling can be conveniently assisted by a form-locking coupling. For example, in the case in which the body of the end piece 19 is substantially cylindrical in shape, the magnetic plate 21 can thus have a concave surface, suitable for functioning as a resting surface for a portion of the body of the end piece 19. Mechanical jointing that is capable of retaining the end piece 19 in position when it is not in use can be used as an alternative for locking the end piece 19.

[0099] In Figure 11, it can also be noted that the modules supplied hydraulically are arranged above the shower floor tray so that the water delivered by these modules falls by virtue of gravity onto the shower floor tray. However, the modules which are not supplied hydraulically (for example the lighting module as arranged in Figure 11) might not be located above the shower floor tray, so that there is no direct correlation between the overall size of the modules and the size of the shower floor tray.

[0100] It should be stressed that the present invention is not limited only to the modules 1a; 1b; 1c; 1d; 1e appearing in the figures accompanying the present description, as additional modules having different functions with respect to the modules 1a; 1b; 1c; 1d; 1e described above

can be installed in the system 9. It can be assumed, solely by way of explanation, that the system 9 can have an additional drying module, comprising an air heater and an air diffuser capable of generating an air flow having a flow rate suited to use for drying off after showering. In its most advanced configurations, the air diffuser generates a sort of air curtain (preferably a hot air curtain) within which a person can position him/herself to dry off completely after a shower. It can also be assumed that the system 9 can have an additional sauna module, which is capable of significantly raising the air temperature in the area where the system 9 is installed.

[0101] The delivery system according to the present invention advantageously comprises a control unit 30 that enables the user to control the modules 1a; 1b; 1c; 1d; 1e, particularly the functional elements of the modules 1a; 1b; 1c; 1d; 1e. Storage media are associated with the control unit 30. Communication means are also associated with the control unit 30 and they enable the control unit 30 to dialogue, by means of suitable, optionally electrical signals, with additional control devices of an electronic type comprised in the system 9 (for example with any electronic control devices included in the functional elements of the modules 1a; 1b; 1c; 1d; 1e) or with the control devices of apparatuses external to the system 9 (in this regard, as an example of such apparatuses we can cite a smartphone capable of dialoguing with the control unit 30, via cable, if the control unit 30 is provided with a specific port, or via radio frequencies, if the control unit 30 is provided with a specific communication node). By means of a suitable communication node, the control unit 30 can advantageously interface with the Internet.

[0102] As in the functional diagram appearing in Figure 20 for example, the control unit 30 can be supplied electrically by means of the same cord 77 that electrically supplies the functional elements of the modules 1a; 1b; 1c; 1d; 1e as well. In this case, implementing a suitable protocol, the control unit 30 can use the cord 77 as a communication bus.

[0103] The control unit 30 comprises a graphic selection and/or display interface 31, which, in turn, can comprise a touch screen and possibly an audio interface as well. If the control unit 30 is configured to dialogue with an external electronic device, an application can be installed in this external electronic device, and, when running, the application makes it possible to replicate the graphic interface 31 on the screen of the external electronic device. In the figures accompanying the present description, the graphic interface 31 is represented, and by way of example, in the form of a touch screen that is mounted on a wall by means of a specific frame. The rectangular form of the graphic interface 31, and the orientation of the graphic interface 31 according to which the longest side of the rectangle is arranged horizontally, are provided only as examples, for different forms for the graphic interface 31 are possible, as is an orientation of the graphic interface 31 according to which the longest side of the rectangle is arranged vertically.

[0104] A possible embodiment of the graphic interface 31 associated with the control unit 30 is illustrated in Figure 14 and compared with the arrangement of the modules 1a; 1b; 1c; 1d; 1e inside the structure 8. It is easily observable from this comparison that this arrangement is accurately reproduced by the arrangement of the icons within the graphic interface 31, thus making it extremely easy and intuitive for the user to carry out selection procedures by means of the graphic interface 31. The graphic interface 31 is also arranged to specify information concerning the status of the modules 1a; 1b; 1c; 1d; 1e in a manner that is just as easy and intuitive for the user. In particular, the graphic interface 31 is capable of clearly indicating to the user whether a module is active or inactive, for example by means of a different degree of brightness of the respective icon.

[0105] The stage of switching on the graphic interface 31, which requires an external action, is illustrated in Figure 13. For the purpose of preventing the graphic interface 31 from being switched on unintentionally or in any case, accidentally, it is also required that the external action needed to switch on the graphic interface 31 be prolonged for a predetermined amount of time (on the order of a few seconds). In the case in which the graphic interface 31 comprises a touch screen, the required external action is typically a tap on the touch screen by the user. In this case, when the graphic interface 31 is switched on, it switches from an at-rest state characterized by minimum consumption (for example only the sensors for detecting the tap are active) to an operative state in which the graphic interface 31 is available for selection procedures on the part of the user.

[0106] The figures accompanying the present description show by way of non-limiting example, some of the possible activations and/or adjustments that the user of the system 9 can make by means of the graphic interface 31.

[0107] Adjustment of the colour therapy and/or lighting module 1a (that is to say, the module appearing in Figure 7) by means of the graphic interface 31 is illustrated in Figure 15. After having activated the module 1a by pressing the respective icon (which increases in brightness so as to communicate to the user that activation has taken place), the user is given the opportunity to adjust both the intensity and the colour of the light emitted by the lighting device 16, by positioning the cursor for the light intensity bar and the cursor for the colour bar according to his/her preferences. Deactivation of the module 1a also takes place by pressing the respective icon. The graphic interface 31 then clearly indicates to the user that deactivation of the module 1 a has taken place, by decreasing the brightness of the icon and ending the display of the bars. As useful feedback, in the case that an audio interface is present, confirmation of procedures for activation and/or adjustment and/or deactivation of the module 1a can be given to the user by means of specific audio signals.

[0108] Figure 16 illustrates activation of the module 1d

adapted to deliver a waterfall jet (that is to say, the module appearing in Figure 4), by means of the graphic interface 31. The user activates the module 1d by pressing the respective icon, thereby enabling delivery of the waterfall jet. The icon increases in brightness so as to communicate to the user that activation of the module 1d has taken place. Deactivation of the module 1d also takes place by pressing the respective icon. The graphic interface 31 then clearly indicates to the user that deactivation of the module 1d has taken place, by decreasing the brightness of the icon. As useful feedback, in the case that an audio interface is present, confirmation of procedures for activation and/or deactivation of the module 1d can be given to the user by means of specific audio signals. In the form of implementation of the graphic interface 31 appearing in Figure 16, it is not possible to adjust the flow rate and/or the temperature of the water delivered by the module 1d (given that the system 9, as shown in the figures and as explained below, makes use of devices separate from the control unit 30 to adjust the flow rate and/or the temperature of the water delivered by the module 1d). However, it also proves to be possible to provide for adjustment of the flow rate and/or the adjustment of the temperature of the water delivered by the module 1d by means of the graphic interface 31, for example by means of dedicated adjustment bars.

[0109] Figure 17 illustrates activation of the module 1c adapted to deliver a rainfall jet (that is to say, the module appearing in Figure 5) by means of the graphic interface 31. The user activates the module 1c by pressing the respective icon, thereby enabling delivery of the rainfall jet. The icon increases in brightness so as to communicate to the user that activation of the module 1c has taken place. Deactivation of the module 1c also takes place by pressing the respective icon. The graphic interface 31 then clearly indicates to the user that deactivation of the module 1c has taken place, by decreasing the brightness of the icon. As useful feedback, in the case that an audio interface is present, confirmation of procedures for activation and/or deactivation of the module 1c can be given to the user by means of specific audio signals. In the form of implementation of the graphic interface 31 appearing in Figure 17, it is not possible to adjust the flow rate and/or the temperature of the water delivered by the module 1c (given that the system 9, as shown in the figures and as explained below, makes use of devices separate from the control unit 30 to adjust the flow rate and/or the temperature of the water delivered by the module 1c). However, it also proves to be possible to provide for adjustment of the flow rate and/or the adjustment of the temperature of the water delivered by the module 1c by means of the graphic interface 31, for example by means of dedicated adjustment bars.

[0110] Figure 18 illustrates activation of the aromatherapy module 1b (that is to say, the module appearing in Figure 6) by means of the graphic interface 31. The user activates the module 1 b by pressing the respective icon, thereby switching on the vaporizer device or the atomizer device 14. The icon increases in brightness so as to communicate to the user that activation of the module 1b has taken place. Deactivation of the module 1 b also takes place by pressing the respective icon. The graphic interface 31 then clearly indicates to the user that deactivation of the module 1 b has taken place, by decreasing the brightness of the icon. As useful feedback, in the case that an audio interface is present, confirmation of procedures for activation and/or deactivation of the module 1 b can be given to the user by means of specific audio signals.

[0111] Adjustment of the music therapy module 1e (that is to say, the module appearing in Figure 3) by means of the graphic interface 31 is illustrated in Figure 19. After having activated the module 1a by pressing the respective icon (which increases in brightness so as to communicate to the user that activation has taken place), the user is given the opportunity to adjust the volume of sound emitted by the speaker 17 by positioning the cursor for the volume bar according to his/her preferences. The user can also select the music track he/she wishes to listen to by means of dedicated selectors (such as a bar or forward buttons) and move within a music track by means of additional dedicated selectors (such as an additional bar or additional forward buttons). Deactivation of the module 1 e also takes place by pressing the respective icon. The graphic interface 31 then clearly indicates to the user that deactivation of the module 1e has taken place, by decreasing the brightness of the icon and ending the display of the bars and/or forward buttons. As useful feedback, in the case that an audio interface is present, confirmation of procedures for activation and/or adjustment and/or deactivation of the module 1e can be given to the user by means of specific audio signals.

[0112] The graphic interface 31 allows for a possible advantageous embodiment of the present invention, according to which the delivery system is managed (prevalently or completely) electronically and thus has no flow adjustment and/or shut-off devices of a mechanical type, such as the devices constituting traditional wall-mounted taps for example.

[0113] The procedure for installation of the modules 1a; 1b; 1c; 1d; 1e merits attention for the procedure has inventive characteristics that are totally independent of the structural characteristics of the modules 1a; 1b; 1c; 1d; 1e, so that the procedure for installing the modules 1a; 1b; 1c; 1d; 1e described herein below prefigures an invention in itself. Installation of the modules 1a; 1b; 1c; 1d; 1e differs in the case in which the module 1a; 1b; 1c; 1d; 1e comprises an identifier (whatever the form of this identifier may be) or has no identifier.

[0114] In the first case, the control unit 30 receives the connected module's identifier as soon as the connection of one of the modules 1a; 1b; 1c; 1d; 1e to the manifold element 7 has taken place. The control unit 30 thus learns that a predetermined module with a predetermined functional element is arranged in a predetermined position. The control unit 30 thus provides for selecting, among a

plurality of icons stored in the storage media, the icon uniquely associated with the module installed, and for having the graphic interface 31 display this icon in the position on the graphic interface 31 corresponding to the module's installation position in the structure 8. The user may be accordingly required to perform a manual confirmation procedure to end the installation procedure.

[0115] In the second case, following the connection of one of the modules 1a; 1b; 1c; 1d; 1e to the manifold element 7, the control unit 30 has the graphic interface 31 display a plurality of predefined icons, these icons being stored in the storage media associated with the control unit 30. The user then manually selects the icon corresponding to the module installed. By means of this manual assignment, one of the predefined icons is assigned to the module installed, and this icon is then displayed in the position on the graphic interface 31 corresponding to the module's installation position in the structure 8. The user may be accordingly required to perform a manual confirmation procedure to end the installation procedure in this second case as well.

[0116] Once the inventive procedure described above for installation of the modules 1 a; 1b; 1c; 1d; 1e has been carried out, the control unit 30 knows the position of the modules 1a; 1b; 1c; 1d; 1e and is capable of managing them.

[0117] Advantageously, the control unit 30 is operatively connected to a plurality of sensor devices associated with the system 9.

[0118] A first sensor that can be installed in the system 9 is a flow sensor arranged at the inlet of the channel 70. This flow sensor is capable of detecting whether all of the modules 1a; 1b; 1c; 1d; 1e that can be hydraulically supplied are inactive (when the flow rate detected by the flow sensor is a flow rate equal to zero). If at least one of the modules 1a; 1b; 1c; 1d; 1e that can be hydraulically supplied is active, the flow sensor is capable of measuring the total flow rate of water delivered by the modules 1a; 1b; 1c; 1d; 1e. In this manner, the total consumption of water on the part of the system 9 can be displayed on the graphic interface 31, as can an estimate of total energy consumption by the system 9 in the case that the water delivered is hot water for sanitary use.

[0119] A second sensor that can be installed in the system 9 is a presence detector, that is to say, a detector that is capable of verifying whether someone is present or no one is present within a predetermined distance from the detector itself. A passive infrared proximity sensor (commonly called a PIR sensor) can be mentioned as an example of a presence detector suitable for use in the system 9.

[0120] A third sensor that can be installed in the system 9 is a microphone that is capable of providing the control unit 30 with voice control functions. In this case, one or more predefined vocal commands are stored in the storage media, so that when the user says the words corresponding to a predefined vocal command, the control unit 30 acts on the function of the system corresponding to this vocal command; for example, it provides for activating or deactivating a given module. Advantageously, in addition to taking place following a user's prolonged tap on the touch screen (as shown in Figure 13), the stage of switching on the graphic interface 31 can also take place following one or more predetermined signals that the control unit 30 receives from one or more of these sensor devices associated with the system 9. In particular, a signal received from the flow sensor and/or from the presence detector and/or from the microphone is capable of making the control unit 30 switch on automatically. Therefore, the graphic interface 31 automatically becomes active when at least one of the modules 1a; 1b; 1c; 1d; 1e is detected as active (there being detected a flow rate not equal to zero at the inlet of the channel 70), or when a person is detected within the detection area of the presence detector, or when the user is detected from spoken words corresponding to the predefined vocal command for switching on the graphic interface 31 or corresponding to one of the predefined vocal commands for switching on one of the modules 1a; 1b; 1c; 1d; 1e. Likewise, the graphic interface 31 automatically becomes inactive when all the modules 1a; 1b; 1c; 1d; 1e that can be hydraulically supplied are detected as inactive (there being detected a flow rate of zero at the inlet of the channel 70) and/or when no presence is detected in proximity to the point of installation of the presence detector and/or when the user is detected from spoken words corresponding to the predefined vocal command for switching off the graphic interface 31 or all of the devices in the system 9.

[0121] If the control unit 30 comprises a communication node suitable for enabling communication with an electronic apparatus (arranged even in a remote position with respect to the system 9), the graphic interface activation and/or deactivation commands can be given by the user even by means of this electronic apparatus (in a similar manner, additional commands such as for an adjustment of the functional element associated with one of the modules 1a; 1b; 1c; 1d; 1e can also be given by means of this electronic apparatus).

[0122] The delivery system according to the present invention can comprise a manual flow rate control device for adjusting the flow rate in the manifold element 7 (for example the flow control valve 40 illustrated in Figure 12) and it can further comprise a manual temperature control device for adjusting the temperature of the water in the manifold element 7 (for example the temperature control valve 41 which is also illustrated in Figure 12). By means of the flow rate control valve 40, the user can adjust the flow rate of the jet of water delivered through the activated module (possibly also stopping this jet in the case in which a flow rate of zero is selected). Likewise, by means of the temperature control valve 41, the user can adjust the temperature of the jet of water delivered through the activated module. The flow rate control valve 40 and the temperature control valve 41 can be separate devices or devices that are incorporated in the form of a mixer tap.

[0123] For the purpose of preventing the portion of the system 9 downstream of the flow rate control valve 40 from remaining pressurized when all the modules that can be hydraulically supplied are deactivated (with a potential risk of breakage of the shut-off means), the control unit 30 is configured to prevent deactivation by means of the graphic interface 31 of all the modules that can be hydraulically supplied. In fact, by forcing at least one module that can be hydraulically supplied to remain activated, the control unit 30 requires the user of the system 9 to intervene on the flow rate control valve 40 (by selecting the zero flow rate) so as to deactivate all the modules that can be hydraulically supplied. In particular, if the system 9 comprises a flow sensor installed between the flow rate control valve 40 and the manifold element 7, the switching off of the control unit 30 can thus be advantageously conditional on the detection of a zero flow rate by the flow sensor. Lastly, the delivery system according to the present invention can comprise at least one auxiliary functional element which is supplied hydraulically independently of the manifold element 7. A handheld showerhead 45 with a wall-mounted support is shown in Figure 12 as an example of an auxiliary functional element that can be provided in the system 9. As an alternative to the handheld showerhead 45 or in combination with the handheld showerhead 45, the system 9 can comprise additional auxiliary functional elements, including a plurality of fixed sprayers and/or a wall-mounted waterfall and/or a floor-mounted spout (the spout can be used for washing feet) or another type of end-use fixture. These auxiliary functional elements are typically installed when the user intends to provide the shower area with hydromassage functions.

[0124] The flow rate of water delivered by the auxiliary functional elements (that is, the flow rate of water delivered by the handheld showerhead 45 in the example appearing in Figure 12) is adjusted by the user by means of an auxiliary manual flow control device, such as the auxiliary flow rate control valve 42 illustrated in Figure 12. In the presence of at least one auxiliary functional element, the temperature control valve 41 is configured also to adjust the temperature of the water supplying this auxiliary functional element. The temperature control valve 41 can thus be used in combination with the modules 1a; 1b; 1c; 1d; 1e and in combination with the auxiliary functional elements with which the system 9 is equipped.

[0125] In an alternative configuration of the wall-mounted taps with respect to the configuration illustrated in Figure 12, a diverter valve can be provided in place of the auxiliary manual flow control device. By means of the diverter valve, the user establishes whether to have the flow of water reach the manifold element 7 (and therefore the modules 1a; 1b; 1c; 1d; 1e) or reach the auxiliary functional element (for example the handheld showerhead 45) with which the system 9 is equipped. As a result, based on the position assumed by the diverter valve, the flow rate control valve 40 can be used to adjust the flow rate in the manifold element 7 (this flow rate corresponding to the flow rate delivered by the modules 1a; 1b; 1c; 1d; 1 e) or in the auxiliary functional element. Likewise, based on the position assumed by the diverter valve, the temperature control valve 41 can be used to adjust the temperature of the water delivered by the modules 1a; 1b; 1c; 1d; 1e or to adjust the temperature of the water delivered by the auxiliary functional element. Should the system 9 comprise more than one auxiliary functional element, that is to say, more than one auxiliary functional element which is supplied hydraulically independently of the manifold element 7, the diverter valve can comprise (in addition to the setting position corresponding to the manifold element 7) a setting position for each auxiliary functional element present in the system 9.

[0126] In an alternative configuration of the delivery system with respect to the configuration illustrated in Figure 12, only the wall-mounted taps are associated with the shower area in which the modules 1a; 1b; 1c; 1d; 1e are installed and with their complete functionality in terms of the water supply. This can be the case for example if the graphic interface 31 is arranged in a remote position with respect to the shower area. This can also be the case in a form of implementation in which the elements in the delivery system are only controlled mechanically (in this case, each one of the modules 1a; 1b; 1c; 1d; 1e is controlled individually by means of a dedicated mechanical device).

[0127] According to an advantageous variant of the present invention (illustrated in Figure 21), the delivery system 9 is configured in such a manner that the modules 1a; 1b; 1c; 1d; 1e or the functional elements of the modules 1a; 1b; 1c; 1d; 1e or the exposed panels of the modules 1a; 1b; 1c; 1d; 1e are arranged or can be arranged at different heights (that is to say, they can be at different distances from the manifold element 7).

[0128] In the case in which the system 9 is mounted on the ceiling, the variable and/or adjustable height is a substantially or prevalently vertical height, whereas in the case in which the system 9 is mounted on a wall, the variable and/or adjustable height is a substantially or prevalently horizontal height.

[0129] In particular, the modules 1a; 1b; 1c; 1d; 1e differ with respect to each other in the dimension perpendicular to the manifold element 7, so that when the mechanical connection takes place between the modules 1a; 1b; 1c; 1d; 1e, the exposed panels of the modules 1b; 1c; 1d; 1e are found at different distances with respect to the manifold element 7. Alternatively, the modules 1a; 1b; 1c; 1d; 1e comprise position changing means 105 that make it possible to adjust the distance of the exposed panels of the modules 1a; 1b; 1c; 1d; 1e with respect to the manifold element 7. These position changing means 105 (schematically illustrated in Figure 21) can include one or more elements suitable for changing the position of the exposed panels of the modules 1a; 1b; 1c; 1d; 1e with respect to the manifold element 7, such as a telescopic element or a prismatic pair or a cord or a cable or

a chain or other means as adjustment elements.

[0130] The position changing means 105 can be configured in such a manner that the distance of the exposed panels of the modules 1a; 1b; 1c; 1d; 1e with respect to the manifold element 7 is adjusted upon connection of the modules 1a; 1b; 1c; 1d; 1e to the manifold element 7. Advantageously, the position changing means 105 are configured in such a manner that the distance of the exposed panels of the modules 1a; 1b; 1c; 1d; 1e with respect to the manifold element 7 can be adjusted by the user. In a preferred form of implementation (as illustrated in Figure 21, where the modules 1a; 1b; 1c; 1d; 1e are arranged at different heights), each one of the removable and/or interchangeable modules can be adjusted independently with respect to adjustments of the other modules 1a; 1b; 1c; 1d; 1e. However, a simplified form of implementation in which the adjustment of the height of the modules 1a; 1b; 1c; 1d; 1e takes place by means of a one common adjustment should not be excluded.

[0131] For adjustment of the position of the modules 1a; 1b; 1c; 1d; 1e or the functional elements of the modules 1a; 1b; 1c; 1d; 1e or the exposed panels of the modules 1a; 1b; 1c; 1d; 1e, the position changing means 105 are preferably though not solely equipped with an electric actuator that is operatively connected to the control unit 30. In this manner, by means of the graphic interface 31, the user can impart specific commands enabling the position changing means 105 to change the distance of one or more of the exposed panels of the modules 1a; 1b; 1c; 1d; 1e according to his/her own preferences. Using the graphic interface 31, the user can thus choose to move one or more of the exposed panels of the modules 1 a; 1b; 1c; 1d; 1e away from the structure 8 or to keep one or more of the exposed panels of the modules 1a; 1b; 1c; 1d; 1e substantially flush with the structure 8 (that is to say, in the position assumed in Figure 21 by the exposed panel of the module 1e).

[0132] As is the case for all the elements in the delivery system 9 according to the present invention, a completely manual and/or mechanical adjustment process, or a completely electronic and/or assisted adjustment process, or an adjustment process in which electronic controls are combined with mechanical controls, can also be provided for the position changing means 105.

[0133] It is evident from the description provided hereinabove that the present invention is fully capable of achieving the aims for which it has been conceived. In particular, by means of this invention, one achieves the advantage of rendering the architecture of shower areas flexible and customizable based on the preferences of the users. One also obtains the advantage of making available to the user a delivery system that also lends itself to being quickly and easily enhanced (or in any case, modified) even a number of times over time. It should also be emphasized that the present invention makes it possible to realize a delivery system that incorporates a high-performance control and adjustment system and very simple and intuitive navigation.

[0134] All of these advantages, as well as additional advantages of equal importance, are achieved by the delivery system as defined by the following claims, and that which is disclosed and claimed being suited to numerous variants which fall fully within the scope of protection defined by these same claims. Additional variants are also possible; for example, the delivery system can comprise a single module with a plurality of integrated functions or for example, the delivery system can comprise one or more modules that are fixed, rather than being removable and interchangeable.

Claims

1. A delivery system (9) arranged so as to be applied to and/or built into and/or recessed in a ceiling or wall, **characterized in that** it comprises:

   i) at least one manifold element (7) configured to be mechanically connected to at least one removable and/or interchangeable module (1a; 1b; 1c; 1d; 1e) and to hydraulically and electrically supply said at least one module (1a; 1b; 1c; 1d; 1e);
   ii) at least one removable and/or interchangeable module (1a; 1b; 1c; 1d; 1e), said at least one module (1a; 1b; 1c; 1d; 1e) being applied to said manifold element (7) and comprising at least one functional element and
   iii) connection means shared between said at least one module (1a; 1b; 1c; 1d; 1e) and said manifold element (7) and configured to realize the mechanical connection of said at least one module (1a; 1b; 1c; 1d; 1e) to said manifold element (7) and to realize the hydraulic and/or electrical connection of said at least one module (1a; 1b; 1c; 1d; 1e) to said manifold element (7).

2. The system (9) according to claim 1, further comprising a containing structure (8), wherein said manifold element (7) is housed in said structure (8);
   wherein, optionally, said structure (8) is internally hollow and comprises a first lateral section (8p) and a second lateral section (8s), said first lateral section (8p) and said second lateral section (8s) being optionally integral with a section bar (8k), specifically made of a metal material or a plastic material or other material, having a substantially C-shaped cross section, wherein in particular the distance between said first lateral section (8p) and said second lateral section (8s) ranges between 200 mm and 550 mm, preferably between 250 mm and 450 mm, and even more preferably equal to about 350 mm;
   wherein, in particular, a first ridge (80p) projects transversely, optionally substantially perpendicularly, from said first lateral section (8p), particularly in proximity to a free end of said first lateral section

(8p), and wherein a second ridge (80s) projects transversely, optionally substantially perpendicularly, from said second lateral section (8s), particularly in proximity to a free end of said second lateral section (8p), said first ridge (80p) and said second ridge (80s) both projecting towards the inside of said structure (8), said first ridge (80p) and said second ridge (80s) being configured to function as guide and/or support elements for said at least one module (1a; 1b; 1c; 1d; 1e), or wherein in particular a first rib-like structure (81 p) projects transversely, optionally substantially perpendicularly, from said first lateral section (8p) and wherein a second rib-like structure (81s) projects transversely, optionally substantially perpendicularly, from said second lateral section (8s), said first rib-like structure (81 p) and said second rib-like structure (81s) both projecting towards the outside of said structure (8), said first rib-like structure (81 p) and said second rib-like structure (81s) being configured to anchor said structure (8) to architectural elements such as plasterboard panels (82p; 82s), said first rib-like structure (81 p) and said second rib-like structure (81 s) in particular being integral with said first lateral section (8p) and with said second lateral section (8s) respectively, or welded to said first lateral section (8p) and to said second lateral section (8s) respectively;

said structure (8) preferably further comprising at least one transverse element (83p; 83s), said at least one transverse element (83p; 83s) being arranged in proximity to an end portion of said first lateral section (8p) and to an end portion of said second lateral section (8s), wherein at least one opening (84p; 84s) is obtained in said at least one transverse element (83p; 83s) for the purpose of enabling the hydraulic and electric supply of said manifold element (7).

3. The system (9) according to any one of the preceding claims, wherein said manifold element (7) is configured to function as a load-bearing element for said at least one module (1a; 1b; 1c; 1d; 1e);

said manifold element (7) having a substantially tubular configuration and comprising a channel (70) for hydraulically supplying said at least one module (1a; 1b; 1c; 1d; 1e) and a cord (77) for the electric supply of said at least one module (1a; 1b; 1c; 1d; 1e), in said channel (70) there being obtained at least one point of water delivery (71a; 71b; 71c; 71d; 71e) and in said cord (77) there being obtained at least one point of electrical energy delivery (85a; 85b; 85c; 85d; 85e), wherein said at least one point of water delivery (71a; 71b; 71c; 71d; 71e), said at least one point of electrical energy delivery (85a; 85b; 85c; 85d; 85e) and the respective arrangements inside said structure (8) are configured to permit the interfacing of said manifold element (7) with said hydraulic connection means and with said electrical connection means;

said manifold element (7) preferably further comprising a communication bus configured to transmit signals to said at least one module (1a; 1b; 1c; 1d; 1e) and/or to receive signals from said at least one module (1a; 1b; 1c; 1d; 1e), said bus optionally coinciding with said cord (77);

wherein said connection means preferably comprises a hydraulic fitting (2a; 2b; 2c; 2d; 2e), preferably of the quick-fit type, arranged on said channel (70) at said at least one point of water delivery (71a; 71b; 71c; 71d; 71e), and a hydraulic coupling (3a; 3b; 3c; 3d; 3e) preferably of the quick-fit type, solidly constrained to said at least one module (1a; 1b; 1c; 1d; 1e) and compatible with said hydraulic fitting (2a; 2b; 2c; 2d; 2e);

wherein, in particular, said connection means further comprises at least one seat arranged on said channel (70) in proximity to said hydraulic fitting (2a; 2b; 2c; 2d; 2e) and at least one contact pin arranged on said at least one module (1a; 1b; 1c; 1d; 1e) in proximity to said hydraulic coupling (3a; 3b; 3c; 3d; 3e) and compatible with said seat, said connection means comprising in particular a pair of seats (4a, 4a'; 4b, 4b'; 4c, 4c'; 4d, 4d'; 4e, 4e') arranged on said channel (70) in positions that are opposite each other with respect to said hydraulic fitting (2a; 2b; 2c; 2d; 2e) and a pair of contact pins (5a, 5a'; 5b, 5b'; 5c, 5c'; 5d, 5d'; 5e, 5e') arranged on said at least one module (1a; 1b; 1c; 1d; 1e) in positions that are opposite each other with respect to said hydraulic coupling (3a; 3b; 3c; 3d; 3e);

said at least one seat being preferably arranged on said channel (70) at said at least one point of electrical energy delivery (85a; 85b; 85c; 85d; 85e), wherein said connection means comprises a pair of electrical contacts positioned on the bottom of said seat and on the top of said contact pin, respectively, and wherein an isolating means is preferably applied to said seat and/or to said contact pin so as to electrically isolate said pair of contacts.

4. The system (9) according to any one of the preceding claims, further comprising disconnection means shared between said at least one module (1a; 1b; 1c; 1d; 1e) and said manifold element (7) and configured to enable manual disconnection of the mechanical connection of said at least one module (1a; 1b; 1c; 1d; 1e) to said manifold element (7);

wherein said disconnection means comprises in particular a plate (6a; 6b; 6c; 6d; 6e) that is slidable along said at least one contact pin and a linkage for activating said plate (6a; 6b; 6c; 6d; 6e), said linkage being configured in such a manner that said plate (6a; 6b; 6C; 6d; 6e) is brought into abutment with said hydraulic fitting (2a; 2b; 2c; 2d; 2e) and that the disconnection of said at least one module (1a; 1b; 1c; 1d; 1e) from said manifold element (7) takes place when the pressure exerted by said plate (6a;

6b; 6c; 6d; 6e) on said hydraulic fitting (2a; 2b; 2c; 2d; 2e) reaches a predetermined value.

5. The system (9) according to any one of the preceding claims, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises a pipe (10a; 10b; 10c; 10d; 10e) connecting said at least one functional element to said hydraulic coupling (3a; 3b; 3c; 3d; 3e);
wherein, optionally, said at least one module (1a; 1b; 1c; 1d; 1e) further comprises flow shut-off means, said means being applied to said pipe (10a; 10b; 10c; 10d; 10e) and configured to stop and/or to reduce the flow of water incoming to said functional element;
wherein said shut-off means preferably comprises a solenoid valve (11a; 11b; 11c; 11d; 11e) of a bistable type for stopping the flow of water incoming to said functional element;
wherein, in particular said shut-off means comprises a fixed obstruction of said pipe (10a; 10b;10c; 10d; 10e), said obstruction being configured to prevent said functional element from getting wet.

6. The system (9) according to any one of the preceding claims, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises at least one control device of an electronic type, said control device being configured to control said at least one functional element and/or said shut-off means, a memory of a non-volatile type being in particular associated with said control device;
wherein in particular said at least one module (1a; 1b; 1c; 1d; 1e) comprises at least one communication node associated with said control device and configured to receive or transmit radio frequency signals on said communication bus or on said communication network.

7. The system (9) according to any one of the preceding claims, wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises an exposed panel made of a metal material or a glass material or a plastic material or other material, said exposed panel being mounted substantially flush with a free end of said first lateral section (8p) and with a free end of said second lateral section (8p);
wherein in particular said exposed panel substantially has the shape of a rectangle, optionally substantially the shape of a square, and wherein in particular at least one side of said rectangle or of said square is of a length ranging between 50 mm and 350 mm, preferably ranging between 150 mm and 250 mm. and even more preferably equal to about 200 mm, or wherein said exposed panel has a round, oval or polygonal shape or yet another shape;
and/or comprising a discrete number of removable and/or interchangeable modules (1a; 1b; 1c; 1d; 1e), said modules (1a; 1b; 1c; 1d; 1e) being applied to said manifold element (7) and each comprising at least one respective functional element, wherein said discrete number ranges between 3 and 9, preferably between 4 and 7, and even more preferably equal to 5;
and/or wherein said at least one functional element comprises at least one showerhead (12) configured to generate a rainfall jet, said at least one showerhead (12) being optionally arranged downstream of said solenoid valve (11a; 11b; 11c; 11d; 11e);
and/or wherein said at least one functional element comprises at least one slit (13) configured to generate a water blade, said at least one slit (13) being optionally arranged downstream of said solenoid valve (11a; 11b; 11c; 11d; 11e);
and/or wherein said at least one functional element comprises at least one vaporizer or atomizer device (14) and a plurality of nozzles (15h; 15k; 15g; 15q) arranged downstream of said at least one vaporizer or atomizer device (14), said at least one functional element optionally comprising means for loading at least one fragrance in said at least one vaporizer or atomizer device (14);
and/or wherein said at least one functional element comprises at least one lighting device (16), in particular said at least one lighting device comprising at least one RGB LED strip or at least one RGB+W LED strip, said at least one functional element optionally comprising adjustment means for adjusting the intensity and/or colour of the light emitted by said at least one lighting device (16);
and/or wherein said at least one functional element comprises at least one speaker (17), said at least one functional element optionally comprising adjustment means for adjusting the volume of the sound emitted by said at least one speaker (17);
and/or wherein said at least one functional element comprises at least one air diffuser, said at least one functional element optionally comprising adjustment means for adjusting the temperature and/or the speed of the air exiting from said diffuser;
and/or wherein said at least one functional element comprises at least one drop tube (18) and at least one movable end piece (19), said at least one end piece (19) being arranged at one end of said at least one tube (18);
wherein in particular said at least one functional element comprises at least one upright (20) and at least one holding element for locking said at least one end piece (19), said at least one holding element being applied to said at least one upright (20) and comprising in particular a magnetic plate (21) or a mechanical coupling.

8. The system (9) according to one of the preceding claims, further comprising a control unit (30) for controlling said at least one module (1a; 1b; 1c; 1d; 1e), particularly for controlling said at least one functional

element, said control unit (30) comprising storage media and being connected to said cord (77) and/or said bus;
wherein in particular said control unit (30) comprises a graphic selection and/or display interface (31), said graphic interface (31) comprising in particular at least one touch screen (29), said control unit (30) optionally also comprising an audio interface;
wherein, optionally, during the installation stage for installing said at least one module (1a; 1b; 1c; 1d; 1e), said control unit (30) is configured to receive an identifier from said at least one module (1a; 1b; 1c; 1d; 1e) and to store said identifier in said storage media;
or wherein, optionally, a plurality of predefined identifiers are stored in said storage media and during the installation stage for installing said at least one module (1a; 1b; 1c; 1d; 1e), said control unit (30) is configured to perform an assignment procedure suitable for attributing one of said predefined identifiers to said at least one module (1a; 1b; 1c; 1d; 1e);
wherein, preferably, during the stage of operation of said at least one module (1a; 1b; 1c; 1d; 1e), said control unit (30) is configured to reproduce the arrangement of said at least one module (1a; 1b; 1c; 1d; 1e) in said structure (8) on said graphic interface (31) and/or to specify on said graphic interface (31) whether said at least one module (1a; 1b; 1c; 1d; 1e) is active;
wherein, preferably, the process of switching on said control unit (30) is conditional on the extension of an external action on said graphic interface (31) up to a predetermined time.

9. The system (9) according to any one of the preceding claims, comprising a flow rate control valve (40) for adjusting the flow rate in said manifold element (7), particularly in said channel (70), between a flow rate of zero and a maximum flow rate under operating conditions;
preferably further comprising a temperature control valve (41) for adjusting the temperature (41) of the water in said manifold element (7), particularly in said channel (70), said flow rate control valve (40) and said temperature control valve (41) being optionally incorporated in one mixer tap;
in particular further comprising a flow sensor installed between said flow rate control valve (40) and said manifold element (7), in particular in said channel (70), said flow sensor being operatively connected to said control unit (30), wherein, optionally, during the stage of switching off said control unit (30), said control unit (30) is configured to perform a safety procedure suitable for preventing deactivation of said at least one module (1a; 1b; 1c; 1d; 1e), in particular deactivation of at least one functional element, should said flow rate control valve (40) be set at a flow rate differing from a flow rate of zero;
and/or further comprising a presence detector, in particular a passive infrared sensor, said presence sensor being operatively connected to said control unit (30); and/or further comprising a microphone, said microphone being operatively connected to said control unit (30), wherein at least one predefined vocal command is stored in said storage media;
optionally, wherein said control unit (30) is configured so that a signal received from said flow sensor and/or from said presence detector and/or from said microphone is capable of making said control unit (30) switch on automatically; wherein in particular said control unit (30) comprises at least one communication node suitable for enabling said control unit (30) to communicate with said at least one module (1a; 1b; 1c; 1d; 1e), in particular with said at least one functional element, and/or with at least one remote electronic device.

10. The system (9) according to any one of the preceding claims, further comprising at least one auxiliary functional element configured to be supplied hydraulically independently of said manifold element (7), and an auxiliary flow rate control valve (42) configured to adjust the flow supplying said at least one auxiliary functional element, wherein said at least one auxiliary functional element particularly comprises a handheld showerhead (45) and/or a fixed sprayer and/or a wall-mounted waterfall and/or a floor-mounted spout and/or another type of end-use fixture;
optionally, wherein said temperature control valve (41) is configured to adjust the temperature of the water supplying said at least one auxiliary functional element; and/or further comprising at least one auxiliary functional element, configured to be supplied hydraulically independently of said manifold element (7), and at least one diverter valve, said at least one diverter valve being suited to discern whether said flow control valve (40) and/or said temperature control valve (41) are serving said manifold element (7) or said at least one auxiliary functional element, wherein said at least one auxiliary functional element comprises in particular a handheld showerhead (45) and/or a fixed sprayer and/or a wall-mounted waterfall and/or a floor-mounted spout and/or another type of end-use fixture;
and/or electronically managed and having no flow control and/or shut-off devices of a mechanical type; in particular said system (9) having no wall-mounted taps;
and/or comprising a suspension system configured to suspend said structure (8) from a ceiling, said suspension system preferably comprising a plurality of cables and/or cords with one end anchored to the ceiling and one end anchored to one of the walls of said structure (8);
and/or comprising a connection system configured

to constrain said structure (8) stably to a ceiling, said connection system preferably comprising one or more dowels (100b) that act between an upper wall of said structure (8) and said ceiling; and/or wherein said at least one module (1a; 1b; 1c; 1d; 1e) comprises position changing means (105) that act between said at least one module (1a; 1b; 1c; 1d; 1e) and said manifold element (7) so as to change the relative position thereof, said position changing means (105) including in particular a telescopic element or a prismatic pair or a cord or a cable or a chain or other means for adjustment purposes.

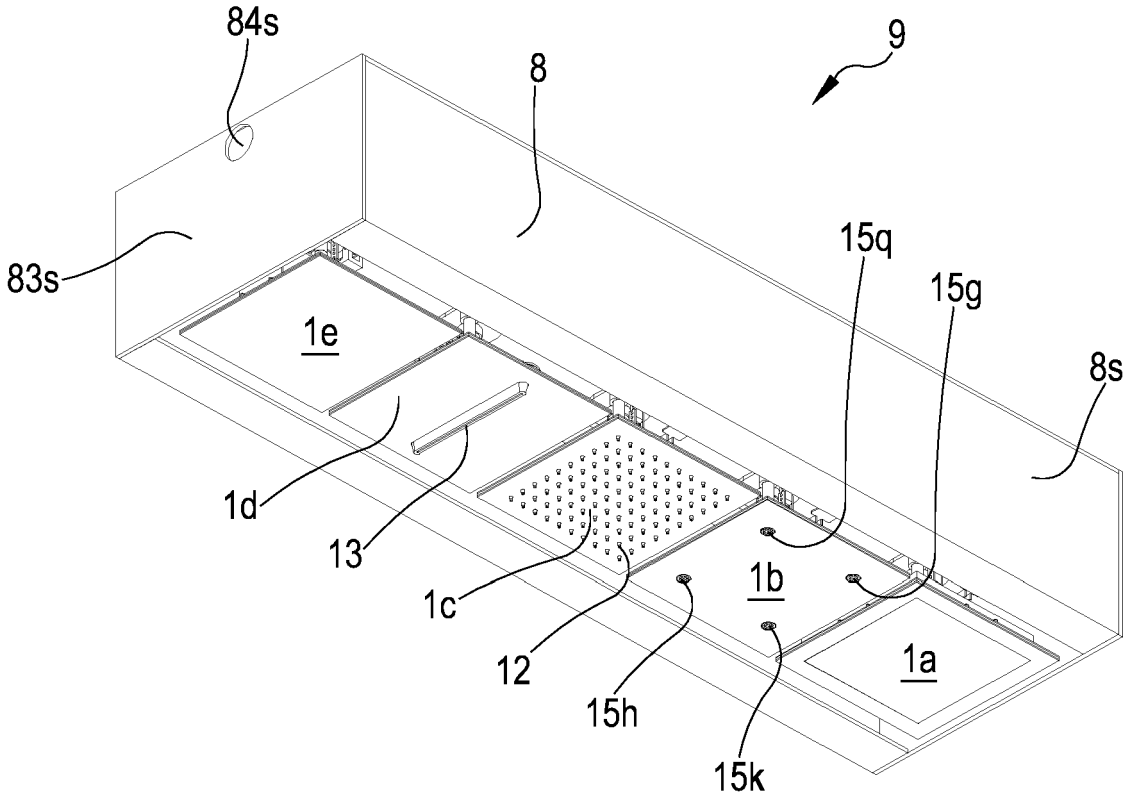

84s
8
9
83s
15q
15g
1e
8s
1d
13
1c
1b
12
15h
1a
15k

FIG.1

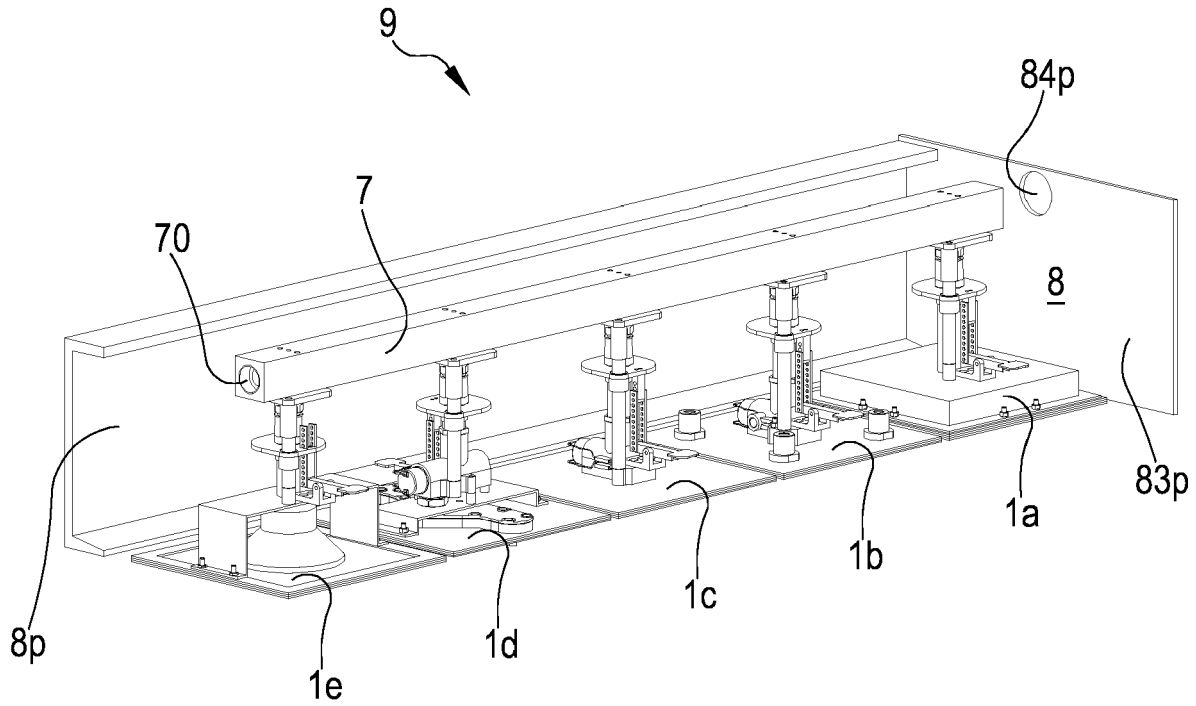

9
84p
7
70
8
83p
1a
1b
1c
8p
1d
1e

FIG.2

FIG.3

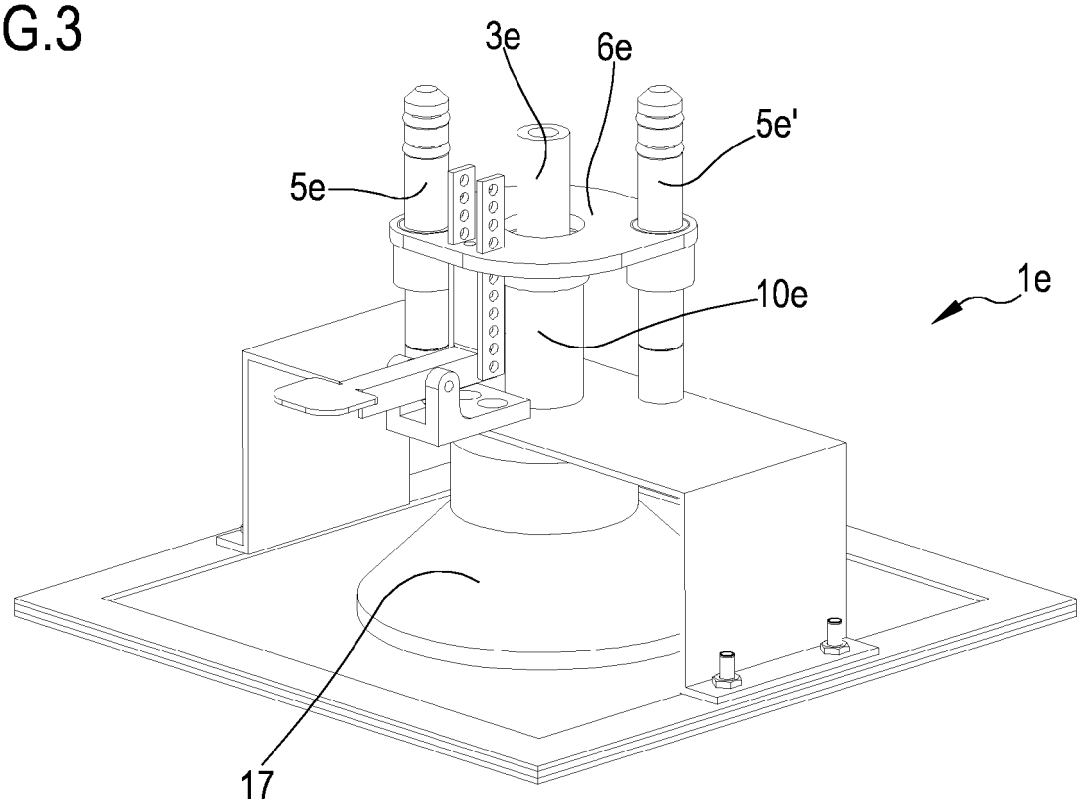


FIG.4

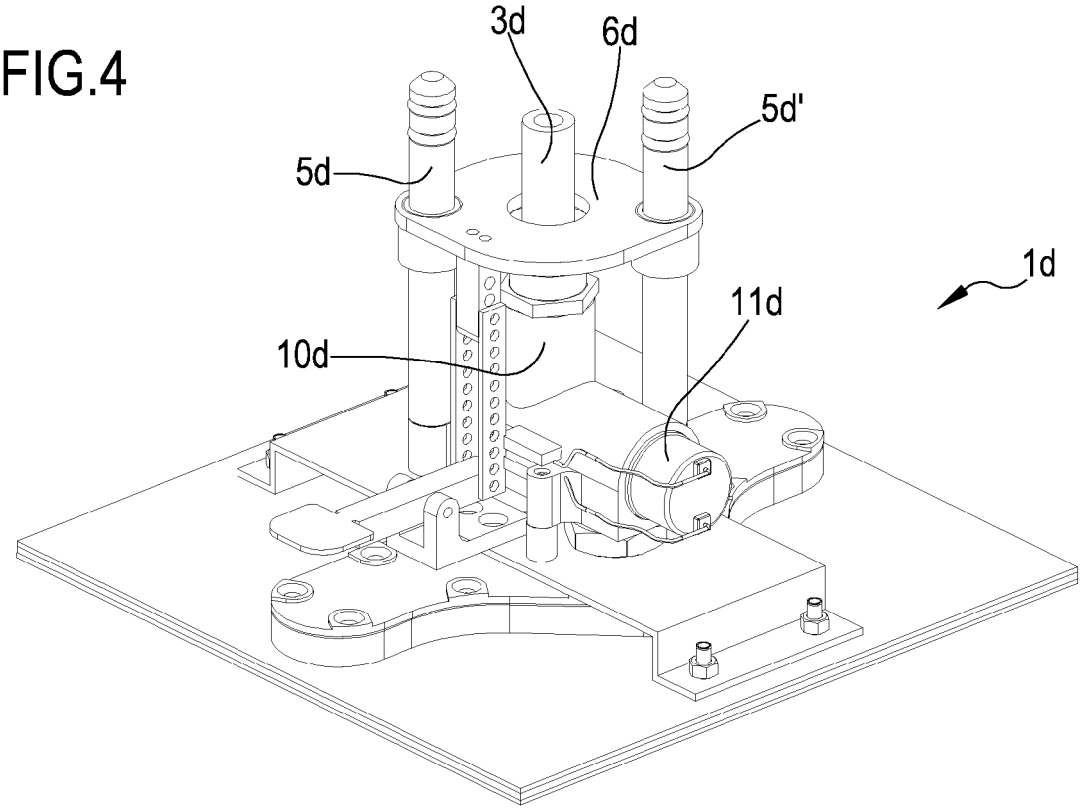


FIG.5

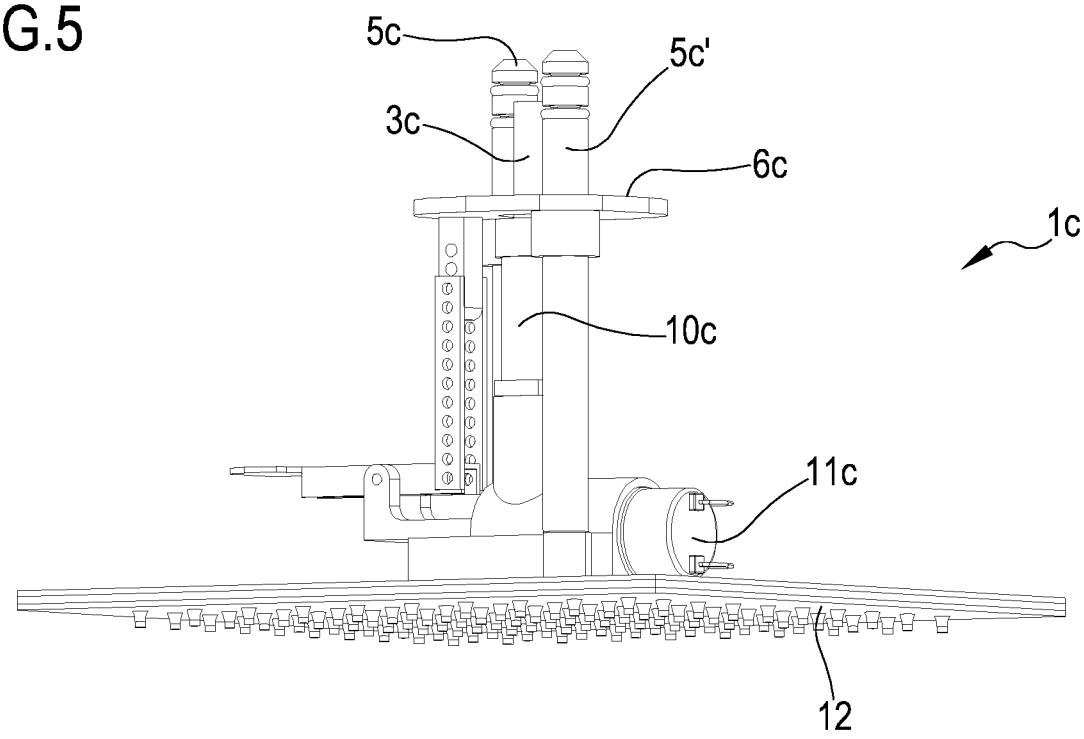


FIG.6

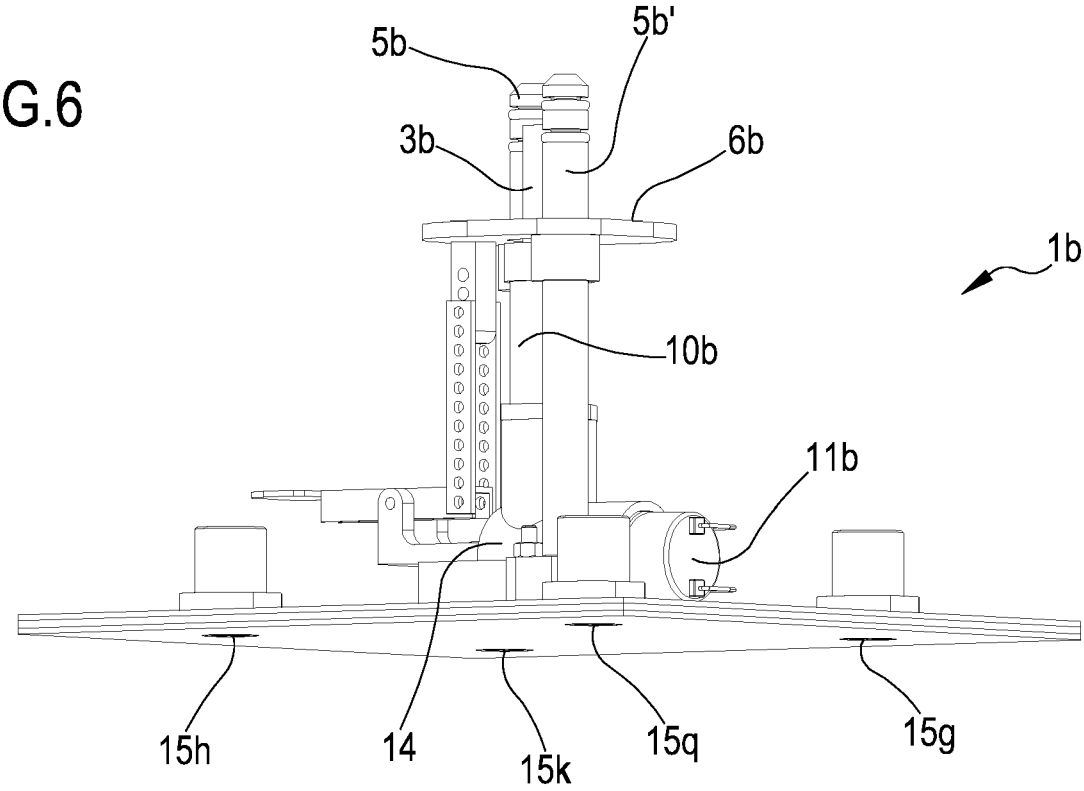


FIG.7

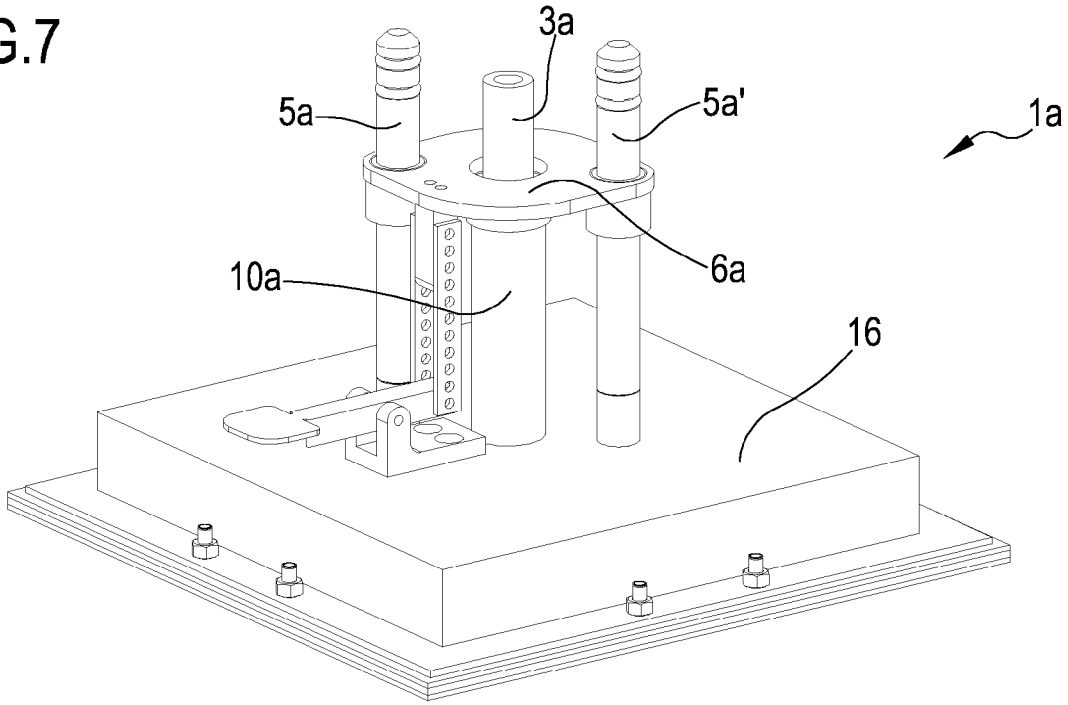
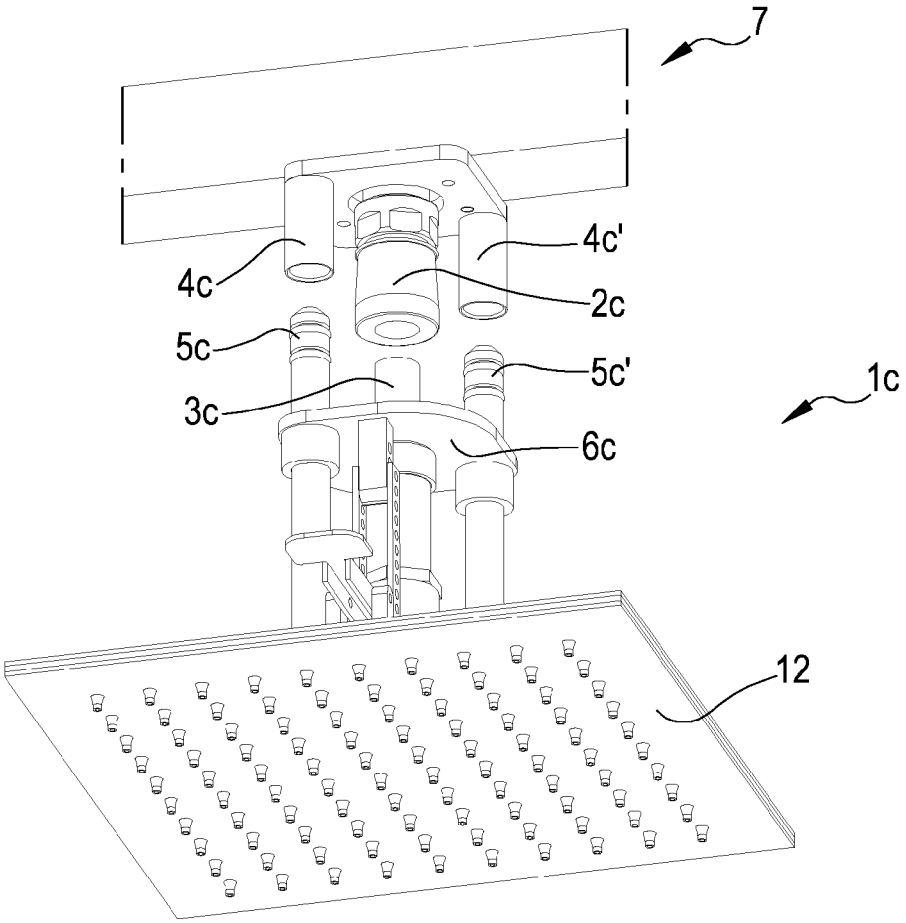
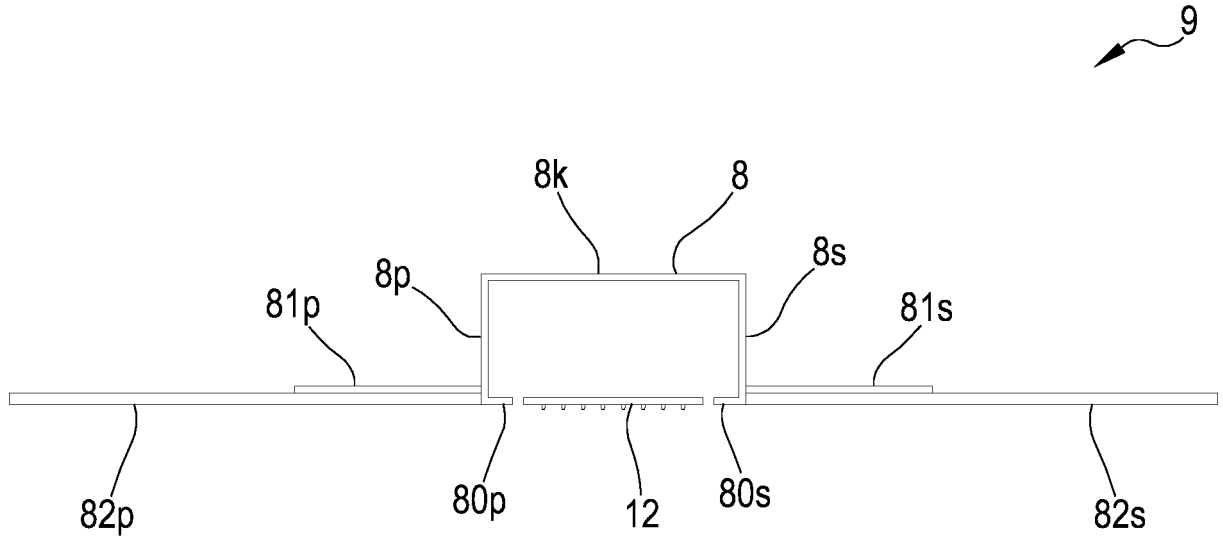


FIG.8

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8k
8
8s
8p
81p
81s
82p
80p
12
80s
82s

FIG.9A

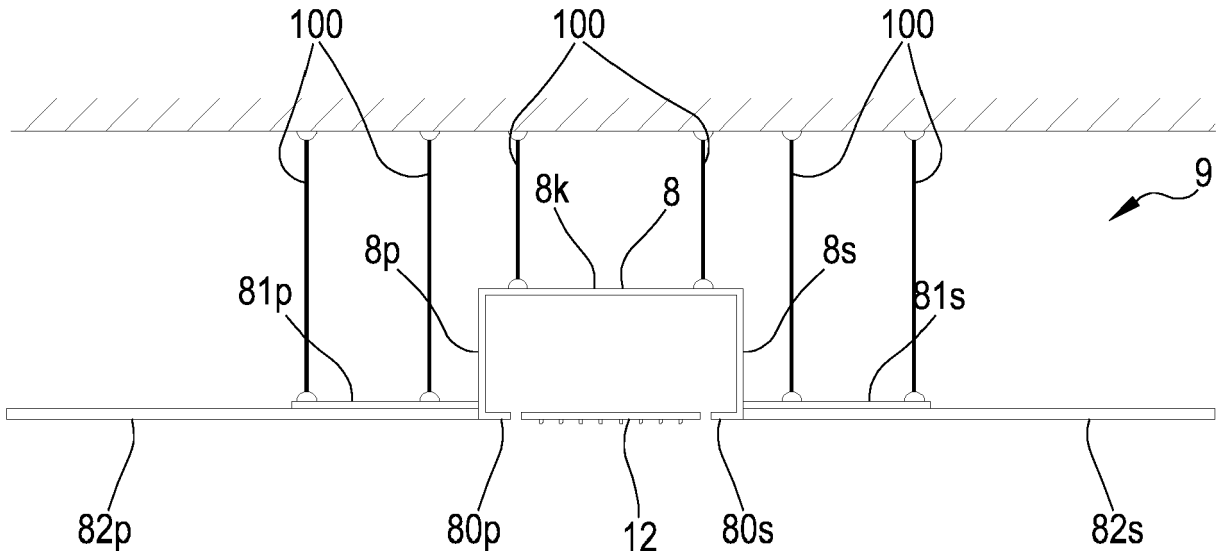

100
100
100
9
8k
8
8p
8s
81p
81s
82p
80p
12
80s
82s

FIG.9B

FIG.9C

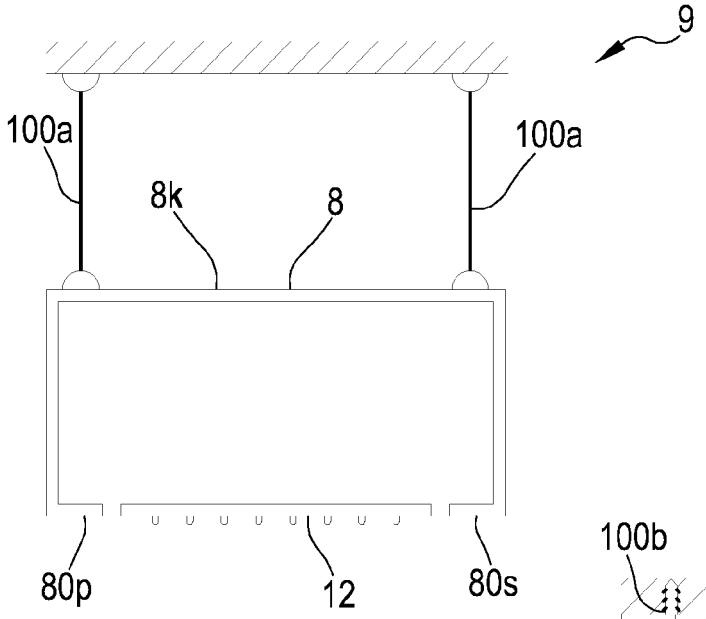
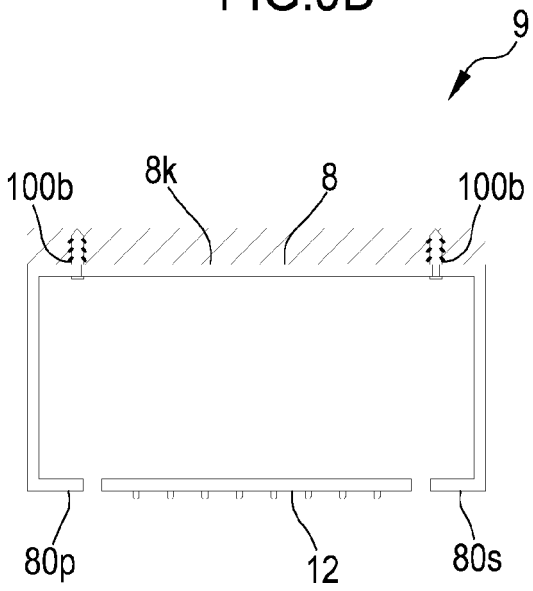


FIG.9D



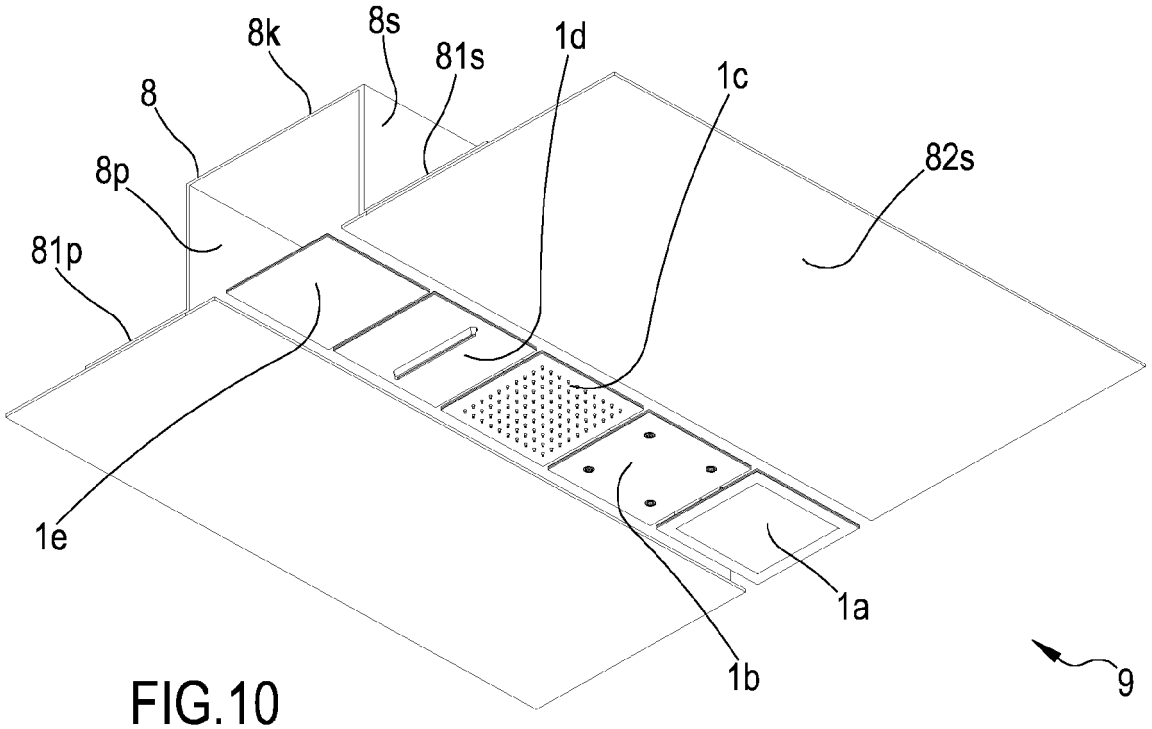
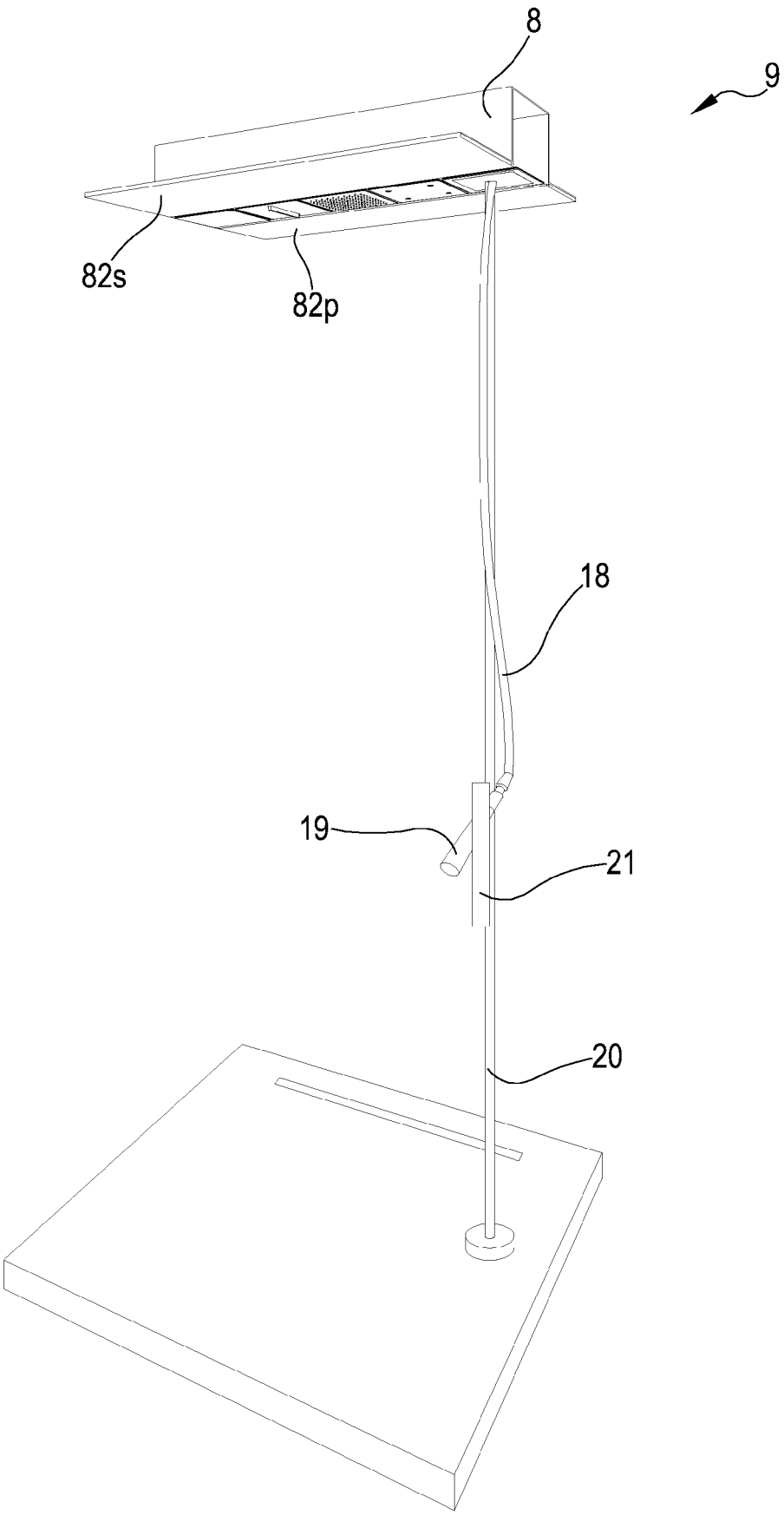


FIG.10

FIG.11



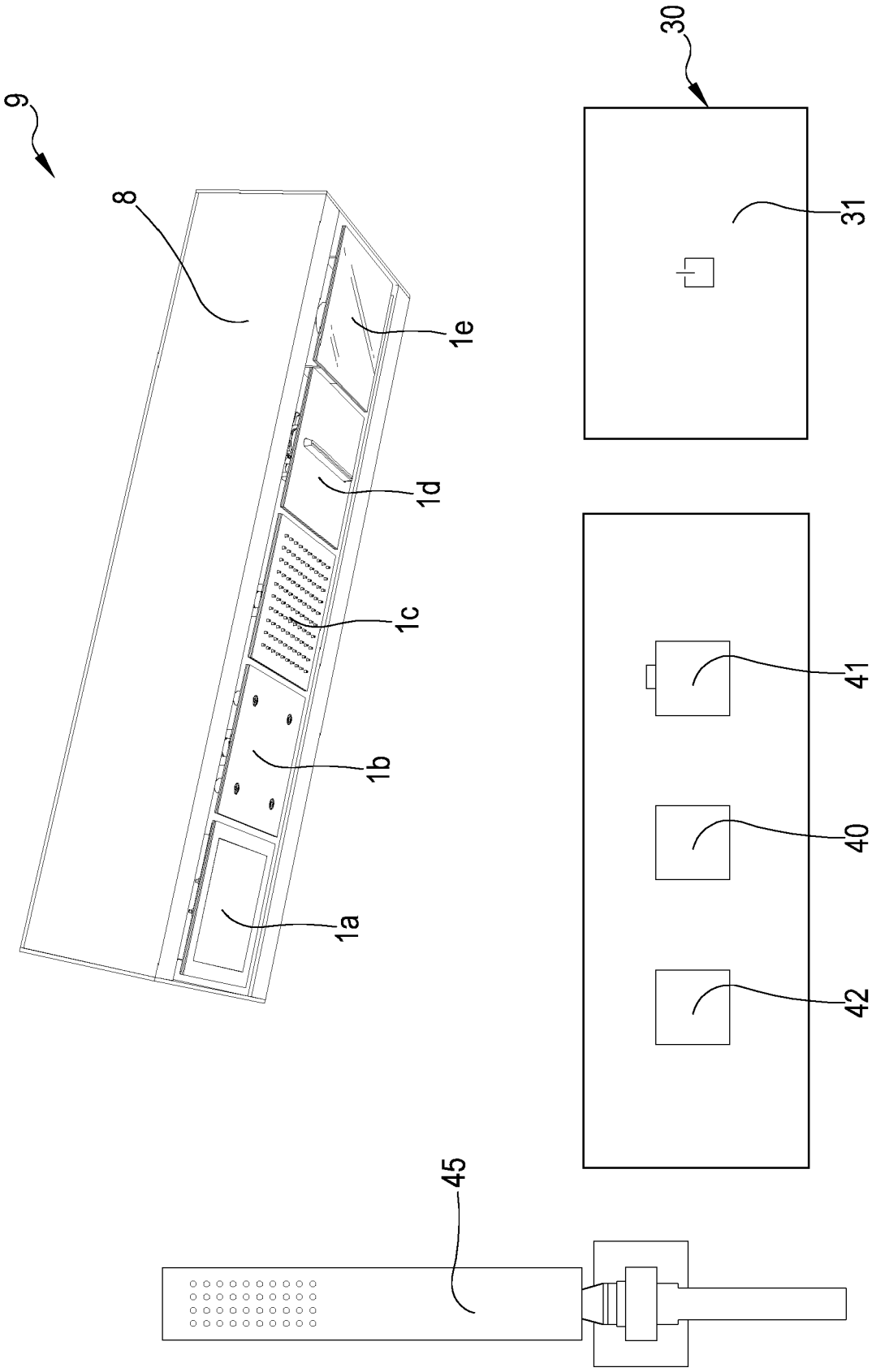


FIG.12

FIG.13

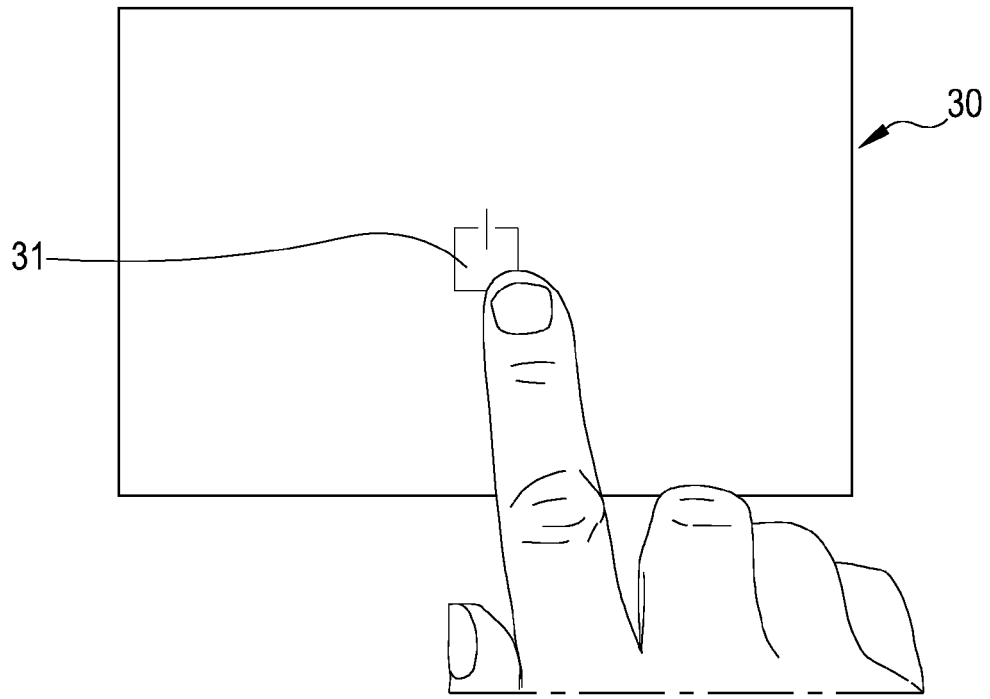
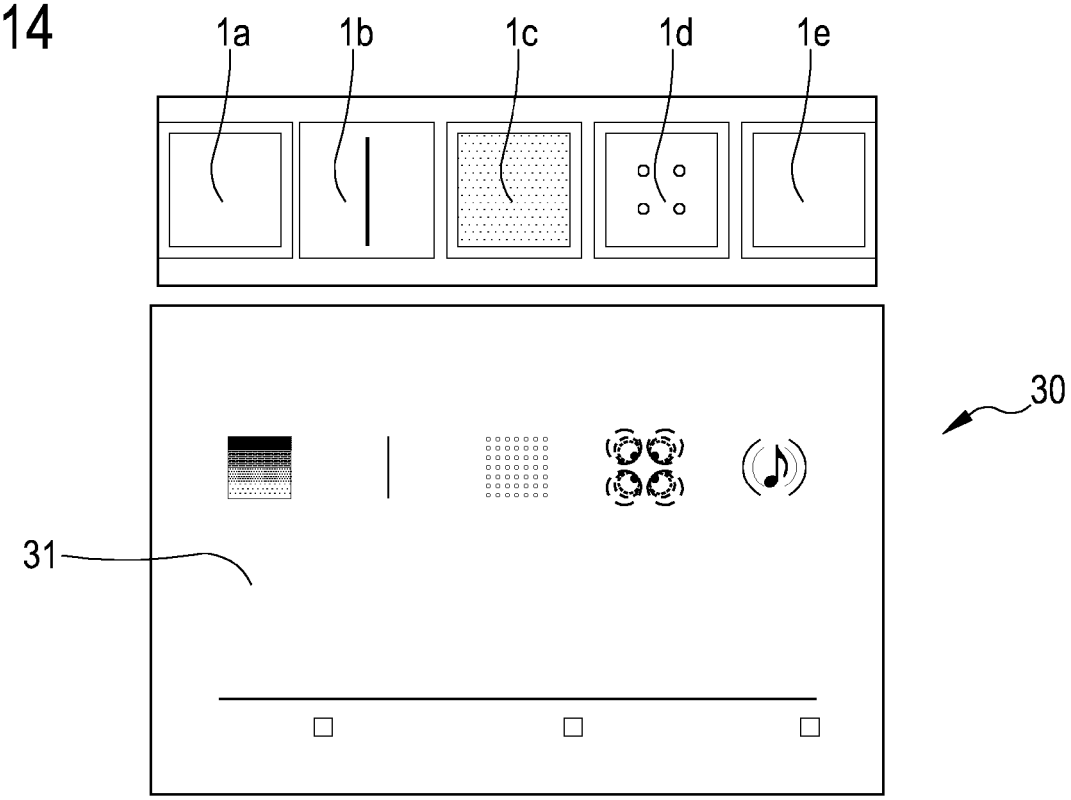


FIG.14



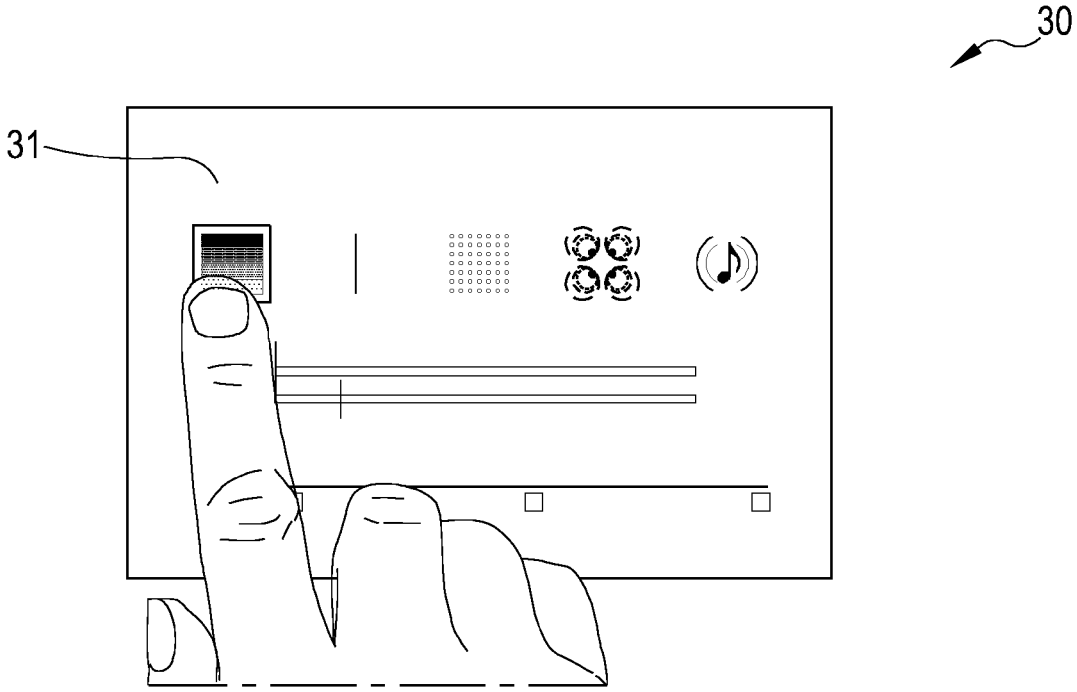


FIG.15

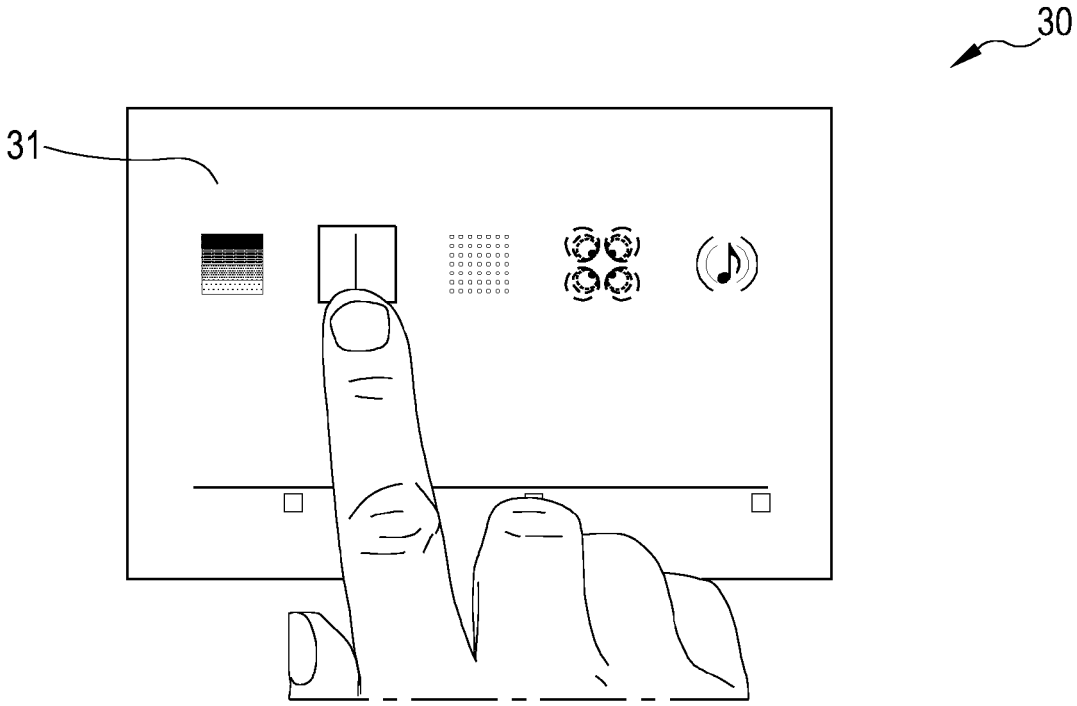


FIG.16

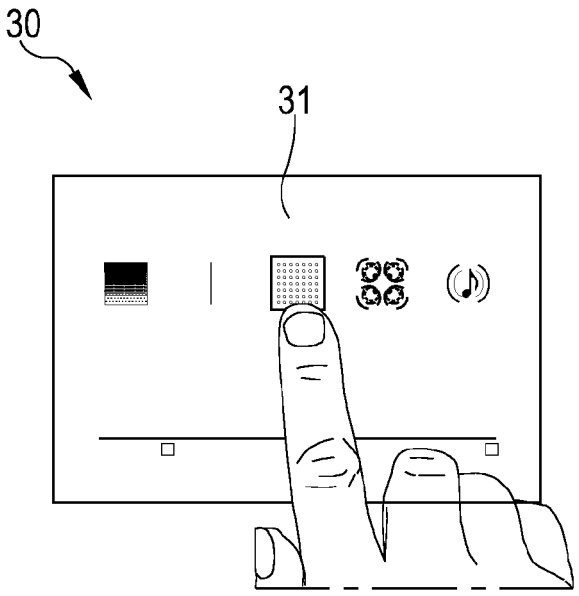


FIG.17

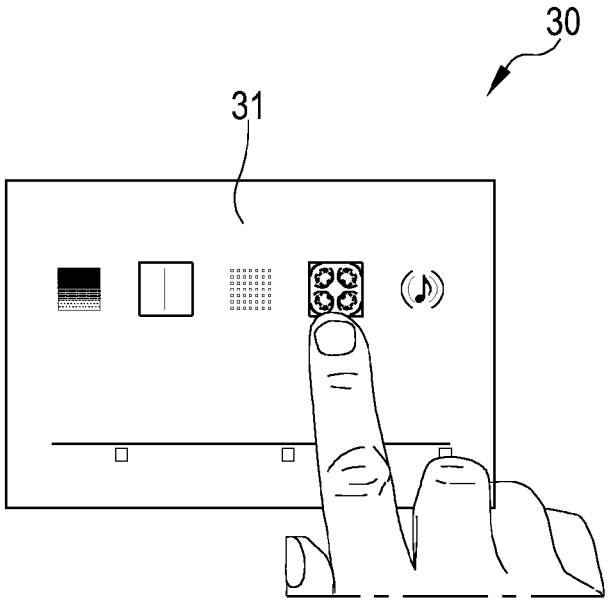


FIG.18

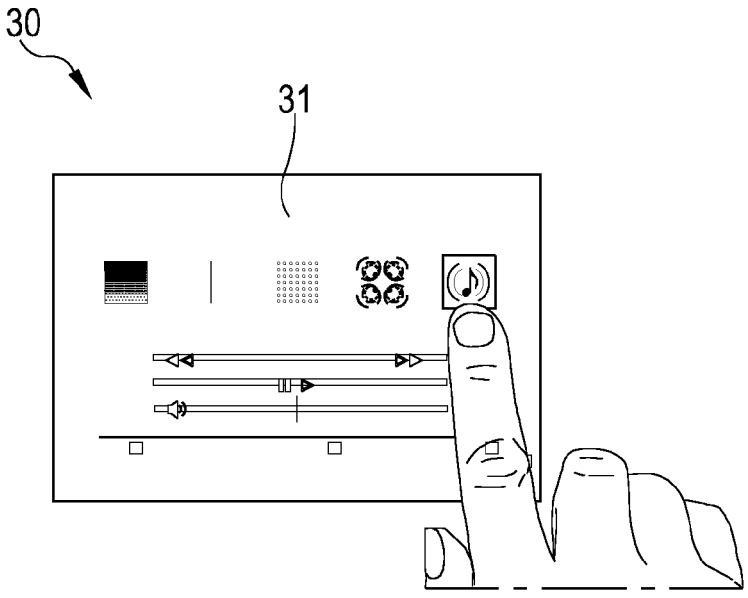


FIG.19

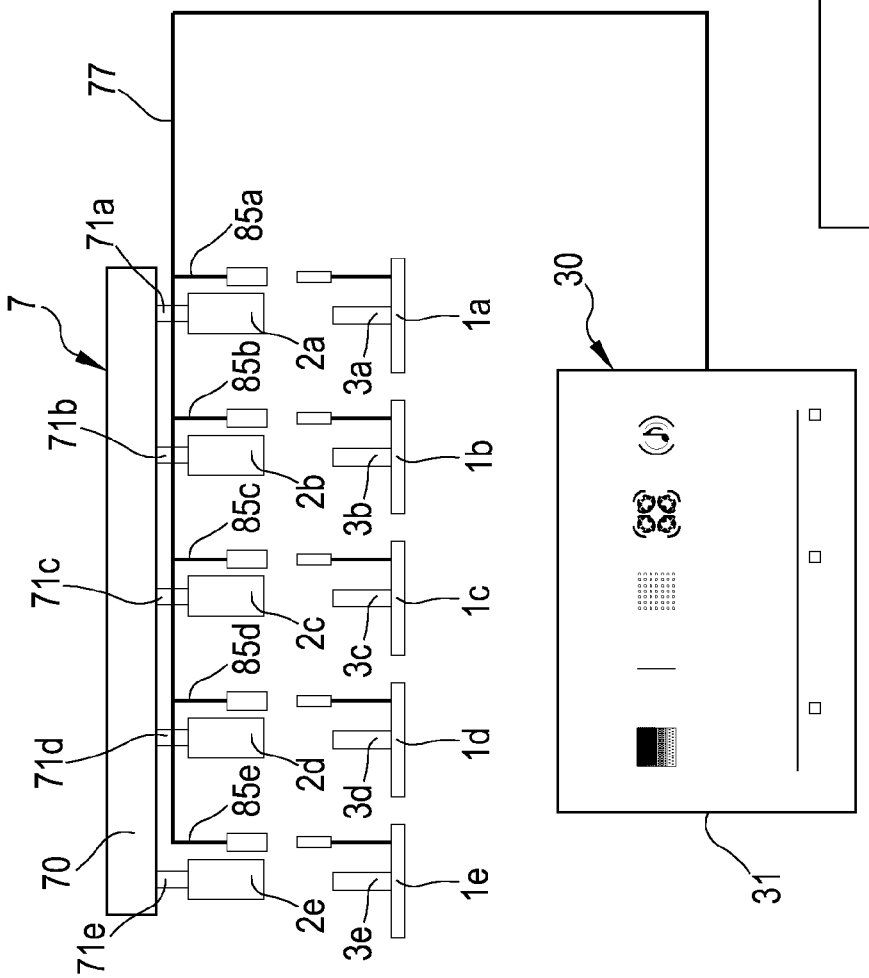

7
70
71a
71b
71c
71d
71e
77
85a
85b
85c
85d
85e
2a
2b
2c
2d
2e
3a
3b
3c
3d
3e
1a
1b
1c
1d
1e
30
31

FIG.20

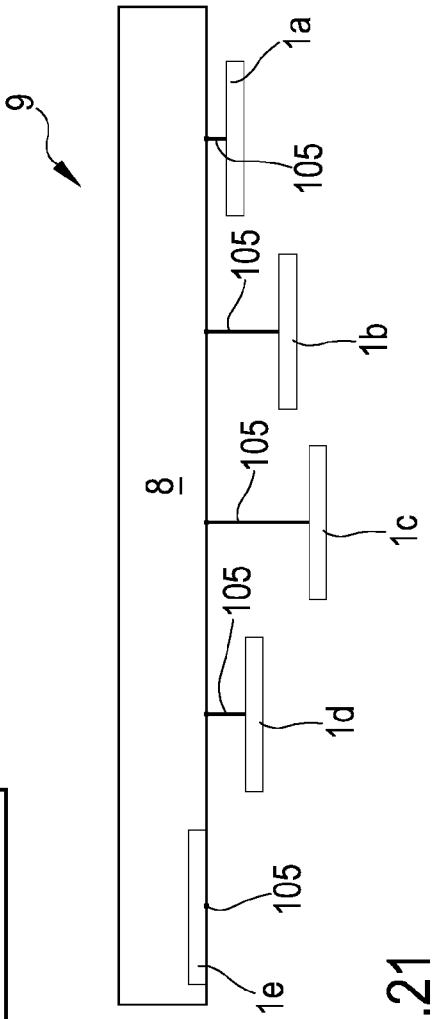

9
8
105
1a
1b
1c
1d
1e

FIG.21

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EUROPEAN SEARCH REPORT

Application Number
EP 18 15 8121

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	US 2008/006707 A1 (NOBILI FABRIZIO [CH]) 10 January 2008 (2008-01-10)	1,4-6,9	INV. A47K3/28 E03C1/04
A	* paragraph [0079]; claim 5; figures 7-9 *	8	
X	DE 103 10 166 A1 (STRAUB ILONA [DE]) 16 September 2004 (2004-09-16)	1,4-6	
A	* paragraphs [0006], [0019]; figure 1 *	8	
X	JP 2 844979 B2 (TOTO LTD) 13 January 1999 (1999-01-13) * figures 1,2,4,5 *	1-5,7-10	

TECHNICAL FIELDS SEARCHED (IPC)

A47K
E03C
A61H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 June 2018	Boyer, Olivier

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01-06-2018

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

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