(19) DANMARK

(10) **DK/EP 2960585 T4**

Patent- og Varemærkestyrelsen

(12) Oversættelse af ændret europæisk patentskrift

(51) Int.Cl.: ***F 24 D 3/16 (2006.01)***

(45) Oversættelsen bekendtgjort den: **2022-12-05**

(80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om opretholdelse af patentet i ændret form: **2022-08-31**

(86) Europæisk ansøgning nr.: **15177566.5**

(86) Europæisk indleveringsdag: **2014-03-21**

(87) Den europæiske ansøgnings publiceringsdag: **2015-12-30**

(30) Prioritet: **2013-03-22 DE 102013102990**

(62) Stamansøgningsnr: **14161125.1**

(84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

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(54) Benævnelse: **Væg- eller loftsbeklædning og modul med samme**

(56) Fremdragne publikationer:
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DE-A1- 19 803 114
DE-A1-102008 020 422
DE-U1-202010 016 878
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Wall or ceiling cladding

[0001] The invention relates to a wall or ceiling cladding with a cooling and/or heating system, in particular a ceiling, plinth or floor heating system, wherein the wall or ceiling cladding is attachable, with at least one mounting profile, to the wall or ceiling of a building.

[0002] Such wall or ceiling claddings, with a cooling and/or heating system, in particular a ceiling, plinth or floor heating system, are known. Suspended ceilings are frequently installed in buildings, particularly office buildings or commercial buildings. These ceilings are increasingly configured as heating and/or cooling ceilings. However, acoustically active ceilings, particularly acoustically absorbent ceilings are installed with the same or similar systems. Such ceilings can, of course, also be thermally activated and are then used in combined manner, as a sound insulation ceiling with thermal activation. In addition, simple ceiling systems for forming the ceiling or as an installation level for accommodating installations are also known. In this regard, these installation ceilings consist, in some cases, of individual panels that are generally inserted into a framework, without a fixed connection. The embodiment of the known systems is generally the same in terms of the fundamental principle. A fine grid is attached, either directly or with direct suspension elements, to a ceiling, a roof or a wall, or, in the case of suspended ceilings, to a coarse grid. This coarse grid in turn is attached to a concrete ceiling or wall by means of wires or metal sheets that are adjustable in length. After installation of the support grid or of the sub-construction, panels are placed into the grid in accordance with the task, or panel-shaped or paneling-shaped claddings are attached to the grid.

[0003] If the panel-shaped claddings are configured as plasterboard systems, these must still be filled with joint compound and sanded. In total, the work for cladding the ceilings is very time consuming. Integration of pipe registers for cooling and heating line systems is also extremely complicated, and this leads to the result that additional mountings must be provided for this purpose, if necessary, or that pipe registers are laid or clamped onto the mounting for the panel covering system or

paneling covering system. In the case of a leak of a pipeline system, this can lead to the result that the entire ceiling cladding, including the sub-construction, must be removed so as to get at the pipeline register, in order to replace and/or repair damaged locations, if necessary. This effort is tremendously great and currently there are no systems that make it possible to get at the pipeline register system directly, without removal of the sub-construction. In total, the work for cladding the ceilings is also very time-consuming, particularly if the surfaces are supposed to demonstrate multiple properties simultaneously, such as, for example, cooling or heat radiation, sound absorption, and so forth.

[0004] A planar heat exchanger element for heating and cooling rooms is known from the document DE 3919143 A1. This heat exchanger element consists of a metal sheet and a flow channel through which a heat-exchanger medium flows, which sheet is affixed to a wall, the floor or the ceiling of a room. In this regard, the flow channels are integrated into the metal sheet during the production process.

[0005] An installation plate for floor or wall heating lines is known from the document DE 202010 008 798 U1. In this regard, the installation plate is a fiber-cement plate, for example a plate consisting of fiber-reinforced light concrete. In this regard, two such installation plates can be laid against one another, with recesses being present in the edge region, into which a pipeline register can be laid.

[0006] A ceiling structure is known from the document DE 202010010566 U1, comprising support rails that are spaced apart from one another, on the underside of which a panel-shaped ceiling element is attached. The support rails are suitable for accommodating transverse bars, on the underside of which a metal heat conduction sheet is attached. The entire structure of the ceiling structure is very complicated, and installation is extremely time-consuming. Joining the metal heat conduction sheets together is only possible using the transverse bars, causing surface area losses for the transfer of heat or cooling to occur.

[0007] A mounting plate for securing the line of a heating system is known from the document US 6,283,382 B1. This is clearly an element for a floor heating system.

Nowadays, experts still predominantly assume that floor heating systems yield better results with regard to the heating effect than a wall or ceiling heating system, for example, according to the heat radiation principle. The mounting plate is not suitable for being disposed on a wall or ceiling of a room.

[0008] A wall or ceiling cladding of the stated type is also known, in the state of the art, from EP 2 006 608 A2. In the wall or ceiling cladding, a mounting profile has a mounting element for the pipeline register of the cooling and/or heating system, on the side facing the room to be cooled or heated, the mounting hole of which element faces the room.

[0009] The document DE 1912396 shows a ceiling radiation heating or cooling system, in which strips of aluminum sheet or similar materials are provided between a heat register. In this regard, a pipe of the pipeline register can be accommodated in a mounting space, which faces a ceiling or a wall to which the ceiling radiation heating system is attached.

[0010] The document DE 3919143 A1 shows a planar heat exchanger element for heating and cooling rooms. The heat exchanger element consists of a metal sheet into which flow channels are integrated during the production process, which channels form a unit with the metal sheet. The document WO 2011/033324 A1 discloses a thermo frame element with channels for accommodating a pipeline register, wherein the channels are formed as indentations in solid material.

[0011] A restriction in the previous state of the art consists in that the wall or ceiling cladding generally has a modular structure for production and transport reasons, in other words consists of multiple individual profiles. When two such profiles are joined together, an interstice then occurs between the profiles, thereby resulting in heat sinks in the total ceiling surface area, and thereby the introduction of heat or cooling into such a climate-control ceiling is significantly impaired.

[0012] It is therefore the object of the invention to further develop the wall or ceiling cladding of the stated type, with a cooling and/or heating system. The development

can be in particular the fact that the wall or ceiling cladding can be produced particularly advantageously, and/or a particularly good heat transfer from a pipeline register to a mounting profile is provided.

[0013] The object of the invention is accomplished by means of a wall or ceiling cladding having the features of Claim 1.

[0014] In this context, the pipeline register has at least one straight section connected rigidly with the holding device in the mounting profile into an integral component.

[0015] This allows a particularly advantageous heat transfer from the pipeline register to the mounting profile.

[0016] According to the invention it is provided that the section of the pipeline register and the mounting profile form a common profile that can be produced in a single manufacturing process, namely the extrusion process. Preferably the section is configured as pipe.

[0017] This makes a particularly simple manufacturing possible.

[0018] According to the invention, the wall or ceiling cladding is characterized in that the mounting profile has each time a concave rib-like design on two opposing side surfaces extending parallel to the first holding device, so that between two adjacent holding devices a second holding device for the pipeline register of the cooling and/or heating system forms the receiving opening of which faces the room. The rib-like design of the opposing side surfaces is formed concave in particular with respect to holding devices. The cooling and/or heating system is preferably a ceiling, floor, wall or plinth heating/cooling.

[0019] In contrast to all other known solutions, it is now possible to divide the pipeline register into multiple modules or mounting profiles, without heat sinks occurring at the interfaces of the individual profiles during installation of the wall or ceiling cladding.

[0020] In the state of the art, it was previously assumed that the pipeline register should be pushed into the mounting profiles, so that easy access to the pipeline register of the heating or cooling system is possible. Now the effort of installation is significantly reduced by integrating the pipeline register into the mounting profile in individual modules for the subsequent ceiling panels or ceiling strips, and separately installing the modules subsequently, thereby making it possible to insert further pipes between the mounting profiles and eliminating heat sinks. Therefore both, the effort for installation and the material requirement for the sub-construction as a whole are reduced. In this regard, the wall or ceiling cladding according to the invention opens up a number of possibilities for simple mountings for the ceiling panels or ceiling strips, which reduce the effort for such a wall or ceiling cladding as a whole. The effort for the sub-construction, if required, is also reduced. In a preferred embodiment, the mounting profile is directly integrated into the ceiling construction or disposed directly on it, thereby reducing the effort for installation to a significant extent.

[0021] The installation times are tremendously shortened. Even better than in the state of the art, it is now possible to structure a ceiling heating or cooling system in modular manner. In this regard, the individual elements are easy to handle because of their dimensions, and can, in particular, be easily joined together. Installation errors are almost completely prevented.

[0022] Because of the direct installation, built-up heights of a few millimeters to centimeters become possible, maximally 3 cm in a preferred embodiment. In this regard, the built-up height is determined solely by the dimension of the pipes that are mounted in the interior. In the construction or structure forms that are made possible by the mounting profile designed accordingly, actively installed surface areas of 100% (according to DIN EN and better) can be produced. It is considered to be advantageous if the profile preferably has cooling-rib-like structures on the back side, i.e. on its side facing away from the room interior. These structures significantly improve the heating and cooling values. This proves to be particularly advantageous

when actively/passively ventilated ceilings and/or ceiling sails or segments are provided.

[0023] Likewise, placement of the profiles in such a manner that no further cladding or coating is necessary becomes possible. Then, a ceiling and/or wall cladding in the manner of a paneling ceiling can be formed, which nevertheless demonstrates the advantages as explained above, and provides the opportunity for creating a wall, ceiling or plinth heating system.

[0024] The solution of the state of the art according to DE 3919143 A1, proposes, in contrast to this, a planar formation as a ceiling heating element, which has multiple pipelines. In this regard, it is obvious that one is tied to a specific raster, which is predetermined by the dimensions of the panel. In contrast to this, the invention is characterized in that individual elements can be joined together without any problems, and thus it is possible to keep the distances relatively small. In this way, the heating or cooling surface area is significantly increased. Optimal surface area utilization of the available surface areas can easily be achieved with the mounting profile as described here.

[0025] The solution according to DE 202010008798 U1 is structured as an installation plate that is formed from fiber-cement panels. These panels are also tied to a specific raster, and therefore a not insignificant loss occurs with regard to the heating or cooling radiation surface area. Also, the production effort for such panels is very great. A modular system that can be varied with regard to the room sizes is therefore not available.

[0026] An advantageous development of the wall or ceiling cladding according to the invention is characterized in that the section is connected at the circumference with the mounting profile, in at least partly thermally active manner, wherein a contact surface is formed at the circumference, which amounts to between 50-100 % of the circumference surface area of the section. This embodiment, in contrast to all the solutions of the state of the art, guarantees that complete transfer of heat or cooling/refrigeration takes place or is possible at the entire circumference of the

pipeline register, in the region of the mounting profile. In this way, a significant increase in the effectiveness of the total heating and/or cooling system is achieved. No solution of the state of the art makes a modular-type mounting profile available, which profile allows not only the advantage of easy and problem-free installation but also the advantage of almost complete transfer of heating and/or cooling power. In the drawing, two embodiments are shown, which provide for 100 % utilization of the available circumference surface area (see Figs.2 and 3).

[0027] The wall or ceiling cladding according to a development of the invention is also characterized in that the mounting profile and/or a sub-construction connected with the mounting profile is/are thermally activatable. In this way, a further increase in the effectiveness of the entire heating and/or cooling system is achieved. The radiation power is further increased by this embodiment.

[0028] A further aspect of the wall or ceiling cladding according to the invention is specified in that the mounting profile can either be directly disposed on or attached to a sub-construction, such as, for example, a wall, a floor, a plinth or a ceiling, by means of suitable fastening means, and/or can be disposed on or attached to the sub-construction as a suspended construction, and/or a fastening means can be disposed in a recess of the first mounting element. Not one of the solutions of the state of the art, as described initially, is characterized in that it can be attached directly, i.e. without corresponding additional sub-constructions, to a wall or ceiling of a room of buildings. A further advantage is the gain in room height, because a very flat construction can be made available.

[0029] The wall or ceiling cladding according to the invention is characterized, in a further variant, in that the mounting profile has an angular deflection at its edge, by means of which it can be put onto or, in particular, attached to a ceiling or wall. This embodiment significantly facilitates installation of the wall or ceiling heating system. It is guaranteed that the mounting profile always lies against the wall, the plinth or floor, or the ceiling with precise fit, without corresponding spacers being required. In particular, a low dimension of the heating and/or cooling system, i.e. a lower distance from the wall or ceiling is achieved. This is particularly important in existing

buildings, where such systems can now be subsequently introduced without any problems. In this connection, the angular deflections or folded edges have at least one shank that extends in the direction toward the interior of the mounting profile, or at least one angularly deflected shank that faces away or is angled away from the mounting profile.

[0030] The solutions of the state of the art require a lot of space, in contrast to the embodiment described here, and significantly reduce the room height due to their constructive dimensions, and, in particular, if a ceiling heating system or a floor heating system is provided. This can lead to the result that building owners decide against such a solution. The embodiment described here solves this problem in excellent manner and makes a system available that is connected with only a small loss of space when installed in an existing building.

[0031] In a further advantageous development of the wall or ceiling cladding according to the invention, the mounting hole of the mounting profile has a cover wall ending flat with the room side. In this way, an optically normal construction is achieved, in which the actual pipelines are not visible to an observer.

[0032] In this development, it is advantageous if the cover wall has a predetermined minimum thickness. In this way, it is ensured that fastening means such as nails or screws, to which further objects can be attached, can be anchored in the cover wall.

[0033] A cover wall or a filling with filling material in a channel formed by the first holding device is provided as protection against mechanical damage. The pipeline register preferably has at least one adapter for connecting the end of a straight section or pipe of the pipeline register for heat distribution or for connecting individual parts or pipes of the pipeline register.

[0034] In this regard, the adapter preferably has an outside diameter that essentially corresponds to the inside diameter of the straight section, so that when the adapter is inserted and/or screwed into the straight section of the pipe register, a positive

locking connection between the adapter and the straight section of the pipeline register is produced.

[0035] In a development of the wall or ceiling cladding according to the invention, at least one sealing element is provided between the adapter and the straight section of the pipeline register. In this way, the connection between adapter and pipeline register is additionally secured to prevent leakage.

[0036] In a development of the wall or ceiling cladding, at least one clamping ring is provided between the adapter and the straight section of the pipeline register for centering and/or fixing the adapter in place in the straight section. In this manner, installation of the wall or ceiling cladding is simplified, because the user is supported in centering the connections.

[0037] Preferably, the at least one clamping ring is disposed between the adapter and the straight section of the pipeline register, in a groove in an adapter wall of the adapter or in a pipeline wall of the straight section, so that when the adapter is pulled out, the clamping ring is pressed between the adapter wall and a pipeline wall of the straight section. The connection between pipeline register and adapter is additionally stabilized by means of this installation step.

[0038] The clamping ring can furthermore be configured as a hollow body, which is filled, in particular, with a binding agent that exits when the hollow body bursts. In this development, the connection between pipeline register and adapter is permanently stabilized.

[0039] In a development of the wall or ceiling cladding according to the invention, the adapter has a self-cutting thread on its free end, and the straight section of the pipe register has a bottleneck, so that the adapter is linked to the straight section by a rotational movement. The screwable connection has the advantage that it is releasable. This is particularly advantageous if changes in the pipeline register are supposed to be undertaken subsequently, and intermediate pieces are supposed to be used, for example.

[0040] Alternatively to the above wall or ceiling cladding, the self-cutting thread can be placed at the free end of the straight section of the pipeline register, and the pipeline register can have an essentially constant inside diameter. This simplifies production of the pipeline register and ensures better access to the screw connection, so that this connection can be retightened or the like.

[0041] If the last mentioned developments of the wall or ceiling cladding according to the invention are provided with a clamping ring, then the clamping ring is preferably disposed within or on the thread.

[0042] In order to simplify installation of the wall or ceiling cladding according to the invention even further, the adapter has, in particular, two bent sections, so that two straight sections of the pipeline register that lie next to one another are linkable by the adapter, wherein in particular, the adapter is configured in multiple parts.

[0043] In a further embodiment, the mounting profile along with the cladding disposed on it can also be used as a floor element, which is statically active and is also able, for example along with screed plates or double-floor plates, to absorb required (traffic) loads of a room. The system according to the invention, consisting of mounting profile and cladding disposed on it, therefore makes it possible for the first time to produce heating and cooling floors that have a low built-up height, are statically active, and make it possible to span cavities between support elements and/or (old) ceiling beams, for example. Therefore a thermally optimally activated system with modifiable cavities can be formed. Because of the configuration and the low built-up height, the system demonstrates short control and regulation behavior in the case of heating up and cooling down.

[0044] Division of the heating and/or cooling systems, which are controlled or regulated separately or have individual control/regulation parcels, also becomes possible.

[0045] A further significant advantage of the invention can be seen in that the mounting profiles permit mounting of the pipes or pipeline registers on the room side. Installation of the wall or ceiling system or of the wall or ceiling cladding according to the invention is thereby significantly simplified. Retrofitting of existing buildings with the wall, floor or ceiling system or the wall or ceiling cladding according to the invention is also possible, and can be implemented in simple manner. A further alternative embodiment provides that the wall, floor or ceiling cladding is made available prefabricated as a module or system. These modules or systems can be installed on existing walls or floors. Preparation of the wall or ceiling cladding on the building side can therefore be eliminated. This proves to be advantageous in the case of pre-fabricated construction or drywall construction, as well as in the case of renovation or retrofitting of existing buildings.

[0046] The invention will be described below, using exemplary embodiments.

[0047] The figures show:

Fig. 1a in a sectional representation, a first embodiment of a mounting profile of the wall or ceiling cladding according to the invention,

Fig.1b in a sectional representation, a second embodiment of a mounting profile of the wall or ceiling cladding according to the invention, with a fastening means,

Fig.1c in a sectional representation, an embodiment of the wall or ceiling cladding according to the invention,

Fig. 2 in a sectional representation, a third embodiment of a mounting profile of the wall or ceiling cladding according to the invention,

Fig.3 in a sectional representation, a fourth embodiment of a mounting profile of the wall or ceiling cladding according to the invention,

Fig.4a in a sectional representation, a first embodiment of the connection, according to the invention, between the adapter and the pipeline register,

Fig.4b in a sectional representation, a second embodiment of the connection, according to the invention, of the pipeline register,

Fig.4c a pipeline register with an adapter, in a top view,

Fig.4d in a sectional representation, a third embodiment of the connection, according to the invention, between the adapter and the pipeline register, and

Fig.5 in a sectional representation, a further embodiment of the adapter according to the invention.

[0048] Fig. 1a, in a sectional representation, shows a first embodiment of a mounting profile 1 of the wall or ceiling cladding according to the invention. The mounting profile 1 comprises a channel 2. The channel 2 has a mounting hole 21 on the side facing the room to be cooled or heated, so that the channel 2 represents a mounting 18 for a pipeline system 6 of the cooling and/or heating system. In this way, it is possible to integrate a straight section 22 of the pipeline register 6 into the mounting profile 1; specifically in such a manner that it can easily be installed from the side or from below, since the mounting means 18 is open on one side 17, after all. The room side 17 is the side that faces the room to be heated or cooled. The planar regions between the individual channels 2 and their mounting holes 21 serve according to the invention as a contact surface 3 for supporting and fastening cover plates as a radiation plate or layer or the like.

[0049] The mounting profile 1 has an angular deflection 10 at its edge, with which it is attached to a ceiling or wall. The mounting profile 1 has a concave, rib-shaped design at each of two opposite side faces 19, which extend parallel to the first mounting element, so that a second mounting element 20 for the pipeline register 6 of the cooling and/or heating system is formed between two adjacent mounting profiles. Its mounting hole 21 also faces the room.

[0050] A sectional representation of a second embodiment of a mounting profile 1 of the wall or ceiling cladding according to the invention with a fastening means is shown in Fig. 1b. This embodiment is similar to that of Fig.1a, with the exception of an additional fastening means 18a, which is disposed at a depression of the first mounting means 18. Particularly preferably, a rib 18b is worked into the profile, which rib serves as a depression for introduction of the fastening means 18a.

[0051] The advantage of the solution according to the invention as compared with the state of the art becomes clear from Fig.1c, which shows an embodiment of the wall or ceiling cladding according to the invention in a sectional representation. When multiple mounting profiles 1 are placed next to one another, according to the invention, straight sections 22 of the pipeline register 6 can be placed in the interstices, as well, thanks to the configuration of the side face 19 of the individual profiles 1. In this manner, the first mounting means 18 and the second mounting means 20 complement one another in ideal manner, so that a very homogeneous heating profile and/or cooling profile can be produced.

[0052] The placement, integration form, and end form of the straight section 22 in the mounting profile 1 are not affected by the configuration of the second mounting means 20 between the mounting profiles 1. Two preferred alternatives of the integration of the pipeline register 6 in a mounting profile 1 are shown in Figs.2 and 3. In Fig.2, the straight section 22 has been inserted into the first mounting means, and subsequently the channel 2 has been filled with filling material 23a, until the channel 2 ends flat with the contact surface 3. In Fig.3, the channel 2 is closed off with a cover wall 23b, without a section having to be inserted.

[0053] The individual straight sections 22 of the pipeline register 6 are connected with one another by means of intermediate pieces or adapters. A first embodiment of an adapter 24 and its connection with the straight section 22 of the pipeline register 6 are shown in Fig.4a, in a sectional representation. The adapter 24, the end section of which is shown, has a self-cutting thread 30 at its free end. The adapter 24 is screwed into the straight section 22 with the thread 30, where it cuts a thread at a

bottleneck 31 in the straight section 22 and thereby produces a connection between adapter 24 and section 22. In addition, the connection is sealed by sealing means, preferably two sealing means 25, which guarantee that the connection will be sealed with regard to fluids in the pipelines even if the adapter 24 has a flange 24a but this flange does not press directly onto the pipeline 22, but rather maintains a distance "a" from the end of the pipeline. The advantage of this method of connection consists in that the connection is sealed and nevertheless is releasable. In this way, sufficient flexibility is achieved when the system is supposed to be serviced or expanded.

[0054] An alternative type of connection between the adapter 24 and the pipeline register 6 is shown in Fig. 4b. As is evident from the sectional representation, a groove 27 is provided in the pipeline wall 28 of the straight section 22. A clamping ring 26 is disposed in the groove 27, over which ring the adapter 24 is pushed, so that the clamping ring 26 is situated between an adapter wall 29 of the adapter 24 and the pipeline wall 28 of the straight section 22, and is clamped in place there. In order to improve the clamping effect and thereby the stability of the connection between the adapter 24 and the straight section 22, the adapter 24 is first pushed in the direction toward the pipeline register 6. The clamping ring 26 cannot follow this movement, because it is held in place in its position by means of the groove 27. After this movement, the adapter is moved away from the pipeline register 6 again by a small distance. This time, the clamping ring 26 follows the movement, since the groove 27, as shown, is configured in ramp shape in crosssection in this direction. Since the distance between adapter wall 29 and pipeline wall 28 decreases in this direction, the clamping ring 26 is clamped in place between these two, and thereby contributes to an improved fixation of adapter 24 and section 22. Two sealing means 25 serve for additional sealing of the connection; these surround the pipeline section and lie closely against the adapter wall 29. This embodiment of the connection has the advantage that the adapter 24 does not have to be turned in a direction when it is fastened in place, but rather can be set on in the desired installation position. Furthermore, this embodiment is simpler to produce in terms of production technology. The adapter 24 is furthermore configured in such a manner, at its ends that engage into the pipe, that it can be easily pushed into the pipe and that, in particular, the seals are not damaged either.

[0055] The placement of adapter 24 and section 22 of the pipeline register 6 is shown in a top view in Fig.4c. In the embodiment shown, the adapter 24 has two bent sections 32, so that it essentially describes a half circle, with which two parallel sections 22 are connected. This embodiment has the advantage that little construction space is used. As will be explained below, however, it can be necessary, on the other hand, to instead compose the adapter of multiple straight and bent sections, in order to guarantee the required flexibility, if the distance of the sections 22 from one another is variable.

[0056] Yet another embodiment of the connection between the adapter 24 and the section 22 is shown in Fig.4d. In this embodiment, the clamping ring 26 is disposed outside of the section 22. It is clamped in place between the section 22 and a cuff-shaped attachment, and thereby fulfills the same task as in the embodiment according to Fig.4b. The clamping ring 26 in Fig.4d is disposed at the end of the adapter 24. In order for the clamping ring 26 to be able to fulfill its function, corresponding flange-like pressing elements 33 are provided, on which the clamping ring 26 is supported. The flange-like pressing elements 33 have, in particular, square or hexagonal attachments, on order to guarantee that the adapter is screwed in well. The embodiment according to Fig.4d is characterized in that the adapter 24 is guided over the pipe 22 from the outside. In this connection, it is presumed that the profile ends jointly with the pipe, in terms of production technology. This is the case, for example, if a pipe is inserted into the embodiment forms according to Figs.1a and 1b, or if a register is defective there. Then a section is removed, and this section is provided with adapters at the end. For this purpose, a cuff-like configuration of the adapter is provided, which adapters are coupled with one another by means of corresponding connection pieces.

[0057] As was already indicated above, the adapter 24 can be structured in multiple parts, both with regard to its radii of curvature and with regard to its structure composed of multiple individual elements. A further embodiment of the adapter according to the invention, having a multi-part structure, is shown in Fig.5.

[0058] The adapter 24 has a transition piece 40 that produces the transition between the adapter 24 and the pipeline register 6 with the straight section 22. For this purpose, the transition piece 40, in the embodiment shown, has an inside thread that is screwed onto an outside thread of the straight section 22. The transition piece 40 furthermore has an outside thread at its opposite end, onto which further elements of the adapter 24 can be screwed. In the embodiment shown, such an element is a curved piece 42, with which the flow direction is rotated by 90° relative to the central axis of the section 22. Consequently, the curved piece 42 has a further inside thread at one of its ends where it is screwed onto the transition piece 40. On its other end the curved piece 42 has another inside thread. An intermediate piece 41 can be screwed into this second inside thread of the curved piece 42 or angled piece, which intermediate piece has an outside thread at its two ends. On the free end, the intermediate piece 41 is connected with a further curved piece 42, for example, which in turn is connected with a further section 22. In this manner, the connection between multiple sections 22 can be produced in very flexible manner. The components referred to as a curved piece or angled piece are also known as fittings in pipeline construction.

[0059] The advantage of this embodiment consists in that when the adapter is screwed into a pipeline, the multi-part configuration makes it possible to set the arcs onto a straight section, so that two pipes can be connected with one another.

[0060] The possible embodiments of the invention are not shown exhaustively here. Further possibilities of implementing the invention are briefly indicated below, taking the aforementioned principles of the invention into consideration. Thus, the mounting means is preferably configured as a channel that is dimensioned, in terms of its width, in such a manner that the pipeline register is held on the basis of the clamping force of the material of the mounting profile.

[0061] In this regard, the channel is configured, in particular, in U shape, and extends in the direction of the wall or ceiling, spaced apart from at least one support surface for cover plates or cover strips of the wall or ceiling cladding, which surface faces the room and is provided on the mounting profile.

[0062] Two support surfaces are provided according to the invention, and the mounting means configured as a channel is disposed between the two contact surfaces, in particular in the center. At least, the mounting means has a rounded part on its side facing the room, which matches the roundness of the pipe or corresponds with it.

[0063] A development consists in that fastening elements for releasable, permanent fastening of the cover plate or cover strip on the mounting profile are provided on the mounting profile or the cover plate.

[0064] The wall or ceiling cladding is developed further, in a further embodiment, in that the fastening means have adhesive or self-adhesive, adherent or self-adherent and/or magnetic properties, and/or that a hook-and-loop closure, preferably a hook-and-loop tape, a clip connection, screw connection or the like is provided as a fastening element, and/or the channel is dimensioned, in terms of its depth, in such a manner that fastening means passed through the cover plates, such as screws having a self-cutting thread or the like, for example, cannot reach the pipeline register or damage it.

[0065] It is furthermore conceivable that a magnet configured, in particular, as a magnetic strip, is provided on at least one of the contact surfaces, in order to attach cover plates composed of magnetically active material, such as sheet steel or steel foil, by means of the magnetic force, and/or that the mounting profile is formed from magnetically active material, and the cover plate has a magnetic strip provided to correspond to it. In this connection, it is preferred if the magnet or magnetic strip is disposed on the side of the mounting profile that faces the ceiling or wall, and is disposed, in the installed state, between the magnet and the cover layer of the mounting profile or the side of the profile as a support. This arrangement is very ingenious, because in this way, additional fastening of the magnets can be eliminated, since it lies on the mounting profile in the installed state.

[0066] Furthermore, a metal foil, a metal sheet, preferably coated with paint or film, a plasterboard or fermacell panel, a plastic panel, a PCM (phase change material)

panel or the like can be used as a cover plate or cover strip, and/or the mounting profile can be fastened to a subconstruction, which forms the connection with the ceiling or wall.

[0067] The cover plate or cover strip can preferably be formed from magnetically active material and/or from transparent material, as a sound protection element with perforation and/or as a cover element with a final surface, for example with a film coating or PCM coating and/or as a lighting element.

[0068] The mounting profile can be disposed in or on a ceiling or wall element, for example as a corrugated metal sheet or a trapezoid metal sheet construction.

[0069] The mounting profile can be molded into the corrugated metal sheet or trapezoid metal sheet construction, or the mounting profile can be fastened into or onto the corrugated metal sheet or trapezoid metal sheet construction.

[0070] The mounting means for the pipeline register can be situated in the ribs of the trapezoid or corrugated metal sheet construction; the pipeline register can be provided for mounting a heating or cooling system; the pipeline register can also be configured as a fuel-burning object.

[0071] The pipeline register can also be configured, at least in part, as an empty pipe for cables, hoses or electrical heat conductors.

[0072] The mounting profile in the trapezoid or corrugated metal sheet construction can be provided so as to be statically active; the surface of the trapezoid or corrugated metal sheet construction can be lined or laminated with statically active materials.

[0073] The trapezoid or corrugated metal sheet construction can be structured in element-like manner; the entire element surface, which faces the room, can be configured as a heat radiator or cold radiator.

[0074] At least the side of the trapezoid or corrugated metal sheet construction that faces the room can be provided with a heat-radiating coating for a room heating system according to the heat radiation principle or heat-absorbent coating for cooling; the trapezoid or corrugated metal sheet construction can be configured as a sandwich element, preferably with an integrated insulation material layer; the insulation material can demonstrate statically active properties, or a surface coating can be provided, which preferably consists of heat-conducting material,

Patentkrav

1. Væg- eller loftbeklædning med et køle- og/eller varmesystem, hvori væg- eller loftbeklædningen har mindst to monteringsprofiler (1), med hvilke væg- eller loftsbeklædningen kan fastgøres til en bygnings væg eller loft, hvor hvert af monteringsprofilerne (1) er anbragt på en rumside (17), der vender ud mod rummet, som skal køles henholdsvis opvarmes, og er forsynet med et første optagelsesmiddel (18) til et rør eller et rørledningsregister (6) af køle og/eller varmesystemet, og hvis optagelsesåbning vender mod rummet, hvori rørledningsregistret (6) har mindst to lige sektioner (22), som er fast forbundet med det respektive første optagelsesmiddel (18) i det respektive monteringsprofil (1) for at danne et integreret byggeelement, hvori hver lige sektion (22) af rørledningsregisteret (6) og det respektive monteringsprofil (1) danner et fælles profil, som kan fremstilles i en enkelt produktionsproces, nemlig ved stangekstrudering, hvori hvert af monteringsprofilerne (1) har to støtteflader (3) og optagelsesmidlet (18), der er dannet som en kanal, er placeret mellem de to støtteflader (3), hvori de plane områder mellem de individuelle kanaler (2) og deres optagelsesåbninger tjener som støtteflader (3) til understøttelse og fastgørelse af dækplader som strålende plade eller lag, **kendetegnet ved, at** på to modsatte sideflader (19), som strækker sig parallelt med det første optagelsesmiddel (18), har hvert monteringsprofil en konkav vulstformet konfiguration, således at der mellem to tilstødende monteringsprofiler (1) dannes et andet optagelsesmiddel (20) for køle og/eller varmesystemets rørledningsregister (6), hvis modtageåbning vender ud mod rummet.

2. Væg- eller loftbeklædning ifølge krav 1, **kendetegnet ved, at** sektionen (22) er udformet som et rør.

3. Væg- eller loftbeklædning ifølge krav 1 eller 2, **kendetegnet ved, at** sektionen (22) i det mindste delvist er termisk virksomt forbundet med omkredsen af monteringsprofilet (1), hvor der på omkredsen er dannet en kontaktflade, som er mellem 50 og 100% af sektionens (22) omkredsflade.

4. Væg- eller loftbeklædning ifølge et af krav 1 til 3, **kendetegnet ved, at** monteringsprofilet (1) og/eller en underkonstruktion, der er forbundet til monteringsprofilen (1), er termisk aktiverbar.

5. Væg- eller loftbeklædning ifølge et af krav 1 til 4, **kendetegnet ved, at** monteringsprofilet (1) ved hjælp af et fastgørelsesmiddel (18a) enten er fastgjort di-

rekte til en underkonstruktion, såsom en væg eller et loft, eller kan arrangeres hhv. fastgøres som en ophængt konstruktion, og/eller at et fastgørelsesmiddel (18a) kan arrangeres i en fordybning af det første optagelsesmiddel (18), og/eller ved, at monteringsprofilet (1) ved sin kant har en vinkelbøjning (10) og ved hjælp af denne kan ligge an mod, især fastgøres til, en væg eller et loft.

6. Væg- eller loftbeklædning ifølge et af de forgående krav, **kendetegnet ved, at** monteringsprofilets (1) optagelsesåbning (21) omfatter en afdækningsvæg (23b), som slutter plant med rumsiden (17), hvor rumsiden (17) fortrinsvis er tilvejebragt som anlæg for et varmestrålende lag til opvarmning eller et varmeabsorberende lag til afkøling, og/eller en magnet eller magnetstrimmel er arrangeret på den hosvendte side af bygningsdelens væg eller loft, for at tjene som et fastgørelsesmiddel til en effektiv magnetisk afdækningsplade henholdsvis afdækningslag, hvor monteringsprofilet (1) i indbygget tilstand er anbragt mellem magneten eller magnetstrimmelen og afdækningspladen.

7. Væg- eller loftbeklædning ifølge et af de foregående krav, **kendetegnet ved, at** afdækningsvæggen (23b) udviser en forudbestemt mindstetykkelse.

8. Væg- eller loftbeklædning ifølge et af de forgående krav, **kendetegnet ved, at** som beskyttelse mod mekanisk skade er tilvejebragt en afdækningsvæg (23b) eller en opfyldning med fyldmateriale (23a) i en kanal (2) dannet i det første optagelsesmiddel (18), og/eller at der til til varmefordeling henholdsvis forbindelse af hvert rør i rørledningsregistret er tilvejebragt mindst et adapter (24) til endeforbindelse for en lige sektion (22) henholdsvis et rør i rørledningsregistret (6), hvor adapteret fortrinsvis omfatter en ydre diameter, som i det væsentlige svarer til den indre diameter af den lige sektion (22), således at ved indsættelse og/eller indskruning af adapteret (24) i rørledningsregistrets (6) lige sektion (22) dannes en formsluttende forbindelse mellem adapteret (24) og den lige sektion af rørledningsregistret (6).

9. Væg- eller loftbeklædning ifølge krav 8, **kendetegnet ved, at** mindst et tætningsmiddel (25) er tilvejebragt mellem adapteret (24) og den lige sektion (22) af rørledningsregistret (6), og/eller at adapteret (24) har et selvskærende gevind (30) ved sin frie ende og rørledningsregistrets (6) lige sektion (22) har en indsnævring (31), således at adapteret (24) ved drejebevægelse bliver forbundet med den lige sektion (22).

10. Væg- eller loftbeklædning ifølge et af de forgående krav, **kendetegnet ved, at** mindst en klemring (26) er tilvejebragt mellem adapteret (24) og rørledningsregistrets (6) lige sektion (22) til centrering og/eller fastgørelse af adapteret (24) i den lige sektion (22), og/eller at mindst en klemring (26) er arrangeret mellem adapteret (24) og rørledningsregistrets (6) lige sektion (22) i en not (27) i en rørledningsvæg (28) af den lige sektion (22), således at klemringen (26) ved udtrækning af adapteret (24) presses mellem adaptervæggen (29) og en rørledningsvæg (28) af den lige sektion (22).

11. Væg- eller loftbeklædning ifølge krav 10, **kendetegnet ved, at** klemringen (26) er udformet som et hult legeme, der især er fyldt med et bindemiddel, som kommer ud, når det hule legeme brister.

12. Væg- eller loftbeklædning ifølge et af krav 1 til 10, **kendetegnet ved, at** det selvskærende gevind (30) er anbragt ved den frie ende af rørledningsregistrets (6) lige sektion (22), og at rørledningsregistret har en i det væsentlige konstant indre diamenter.

13. Væg- eller loftbeklædning ifølge det forgående krav i forbindelse med krav 10, **kendetegnet ved, at** klemringen (26) er arrangeret inden for eller på gevindet (30).

14. Væg- eller loftbeklædning ifølge krav 8 eller et deraf afhængigt krav, **kendetegnet ved, at** adapteret (24) omfatter to bøjede sektioner (32), således at to hosliggende lige afsnit (22) af rørledningsregistret kan forbindes via adapteret (24), især at adapteret (24) er udformet i flere dele.

15. Et især præfabrikeret modul omfattende mindst en væg- eller loftbeklædning ifølge et af kravene 1 til 14.

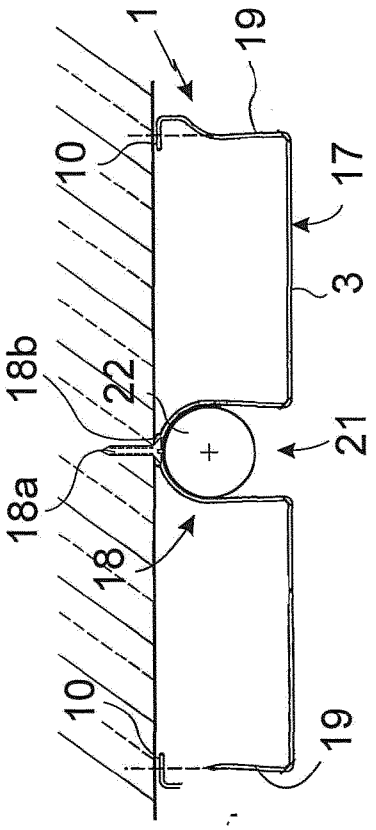

Fig. 1b

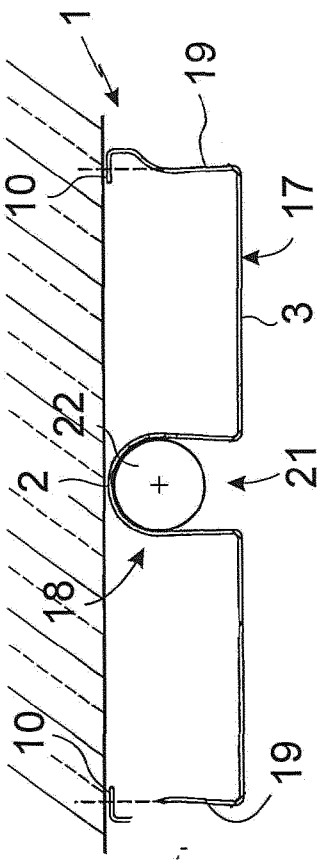

Fig. 1a

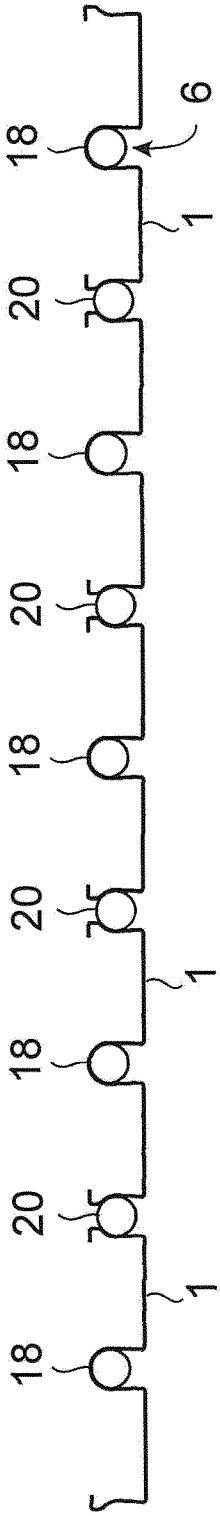

Fig. 1c

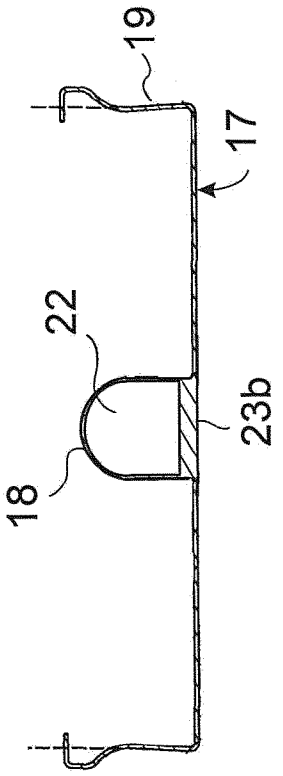

Fig. 3

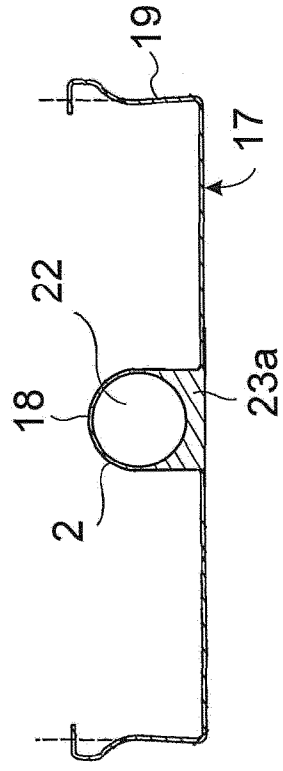

Fig. 2

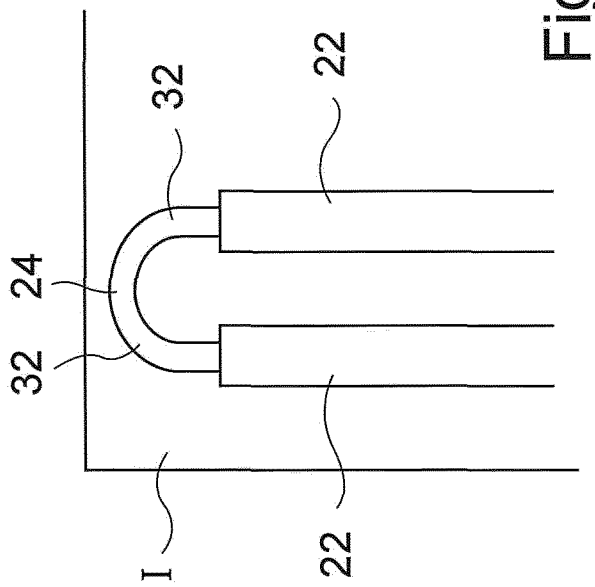

Fig. 4c

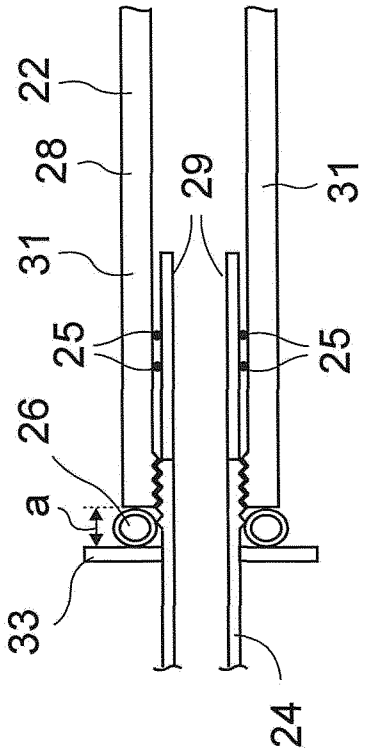

Fig. 4d

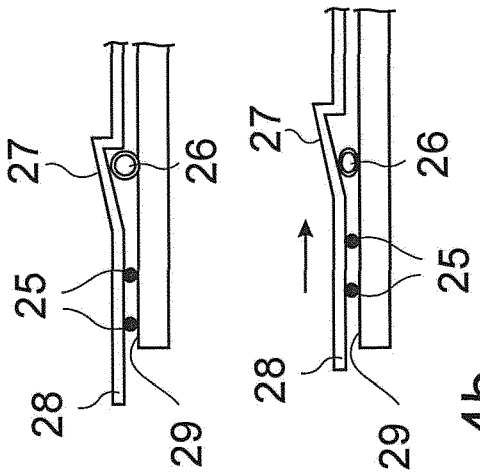

Fig. 4b

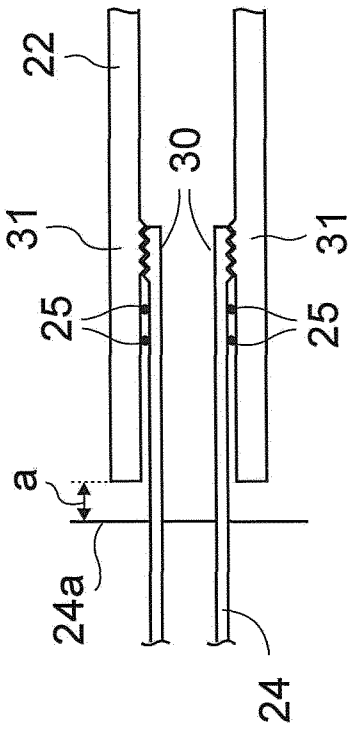

Fig. 4a

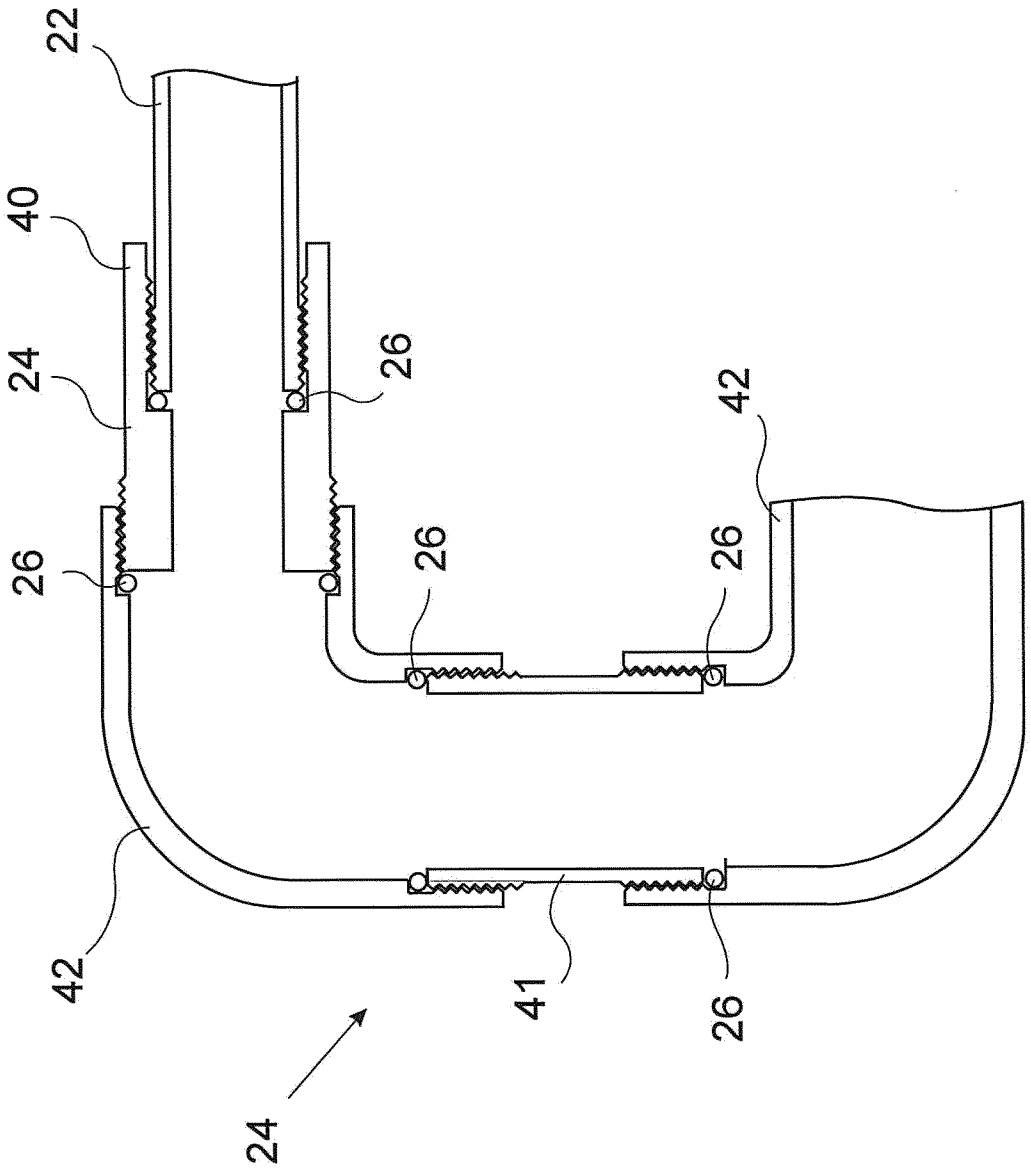

Fig. 5