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US 5435342 A US 4952163 A

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(54) Abstract Title
**Installation conduit for gas intake couplings**

(57) An installation conduit 1 for receiving at least gas intake couplings 4 has a rail-like connection plate (3), on which the gas intake couplings (4) are secured, a H-shaped portion (6) which can be placed onto the connection plate (3), and a cover plate (7) which is secured on end portions (21, 22) of the side walls (13, 14) of the installation conduit (1) which face in the opposite direction to the connection plate (3). There may also be a skylight source (29) and/or a reading light source (31) in the region of the upper and lower side walls respectively. They may be covered by transparent covers (28,30).

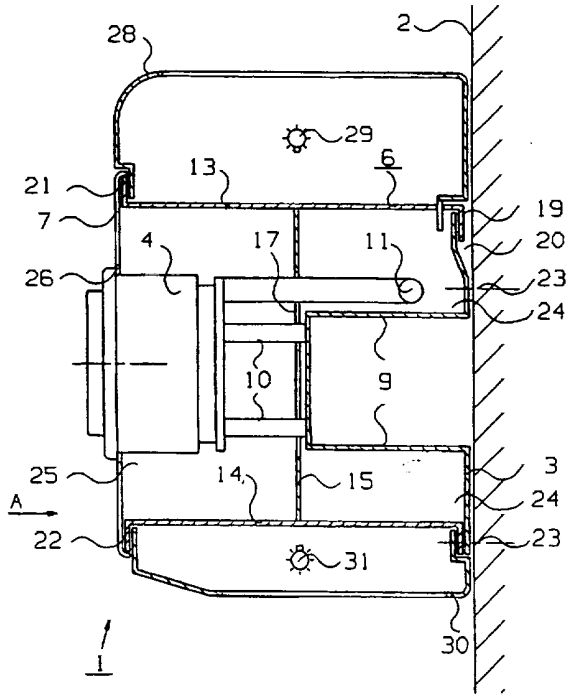


Fig. 1

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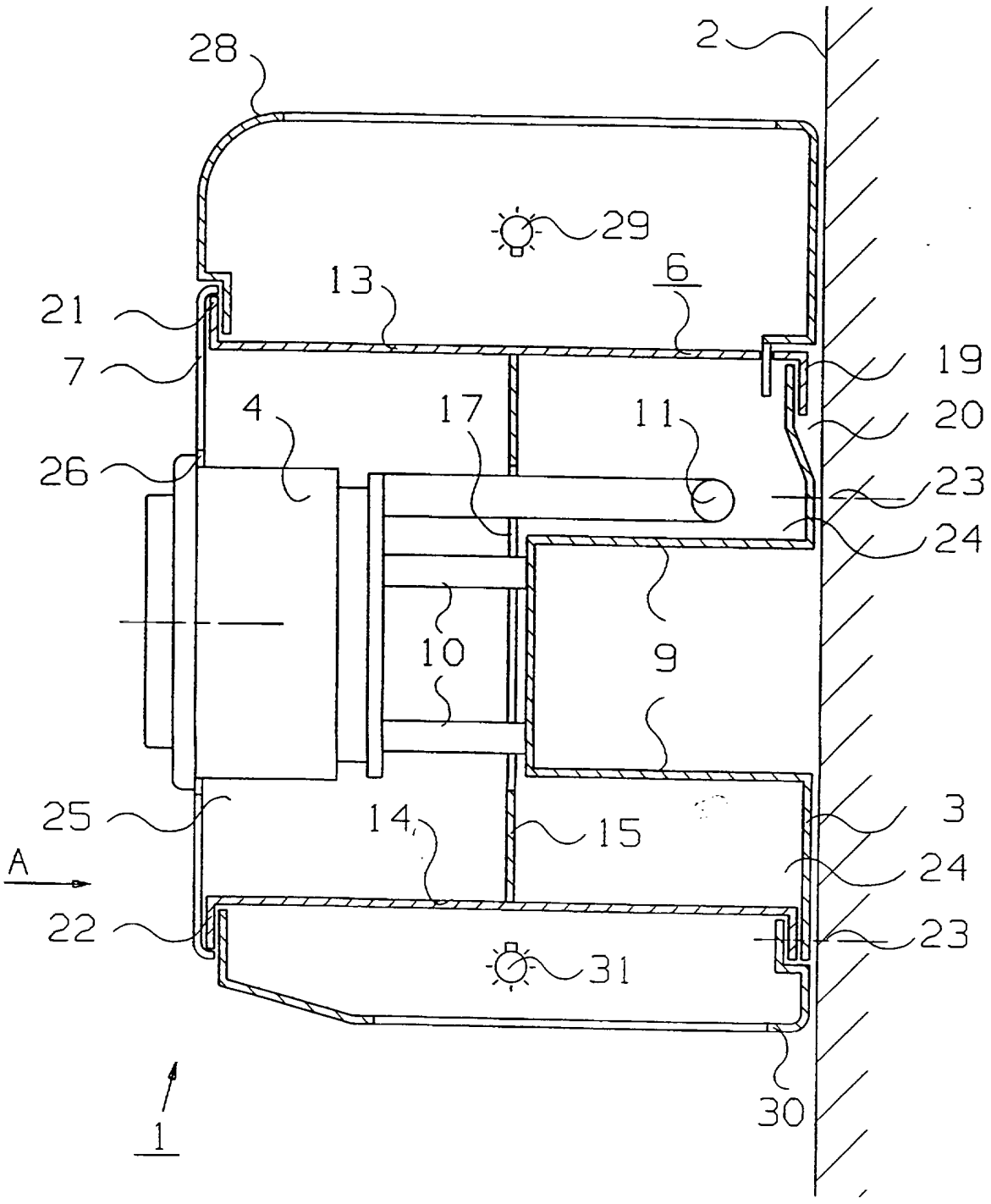
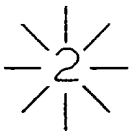



Fig. 1



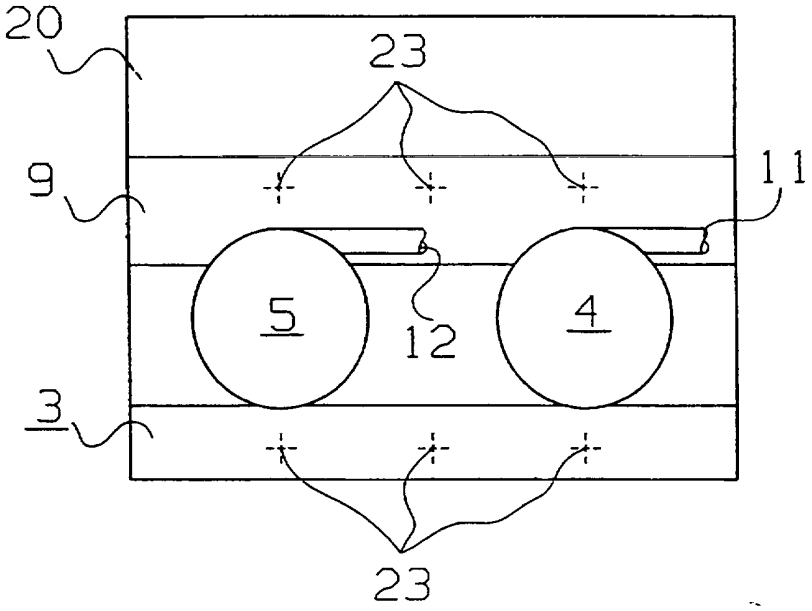




Fig. 2

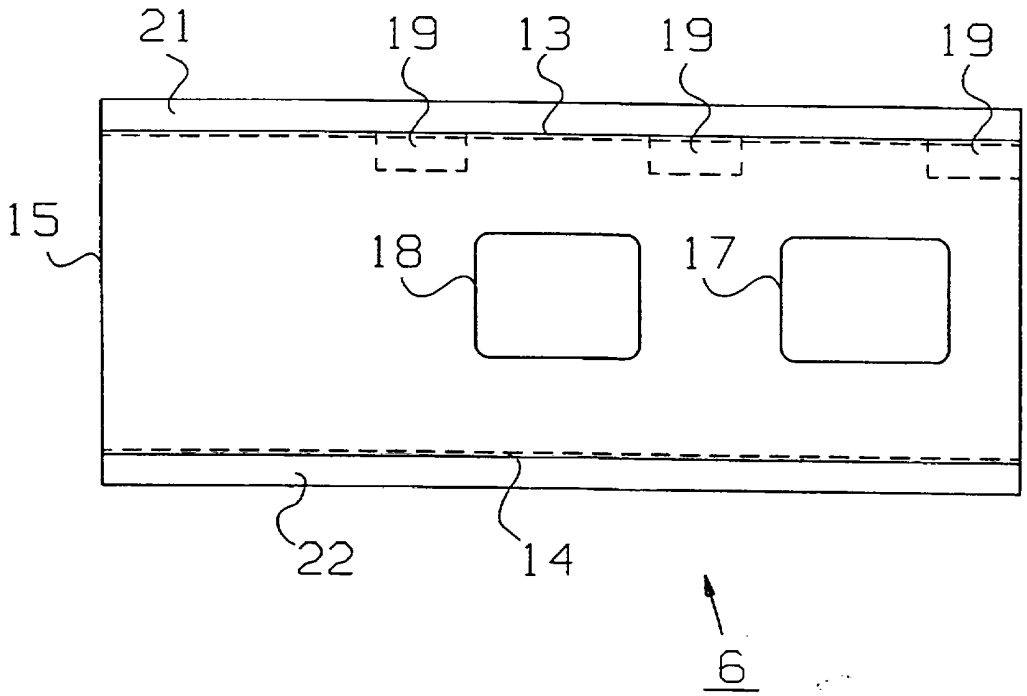



Fig. 3

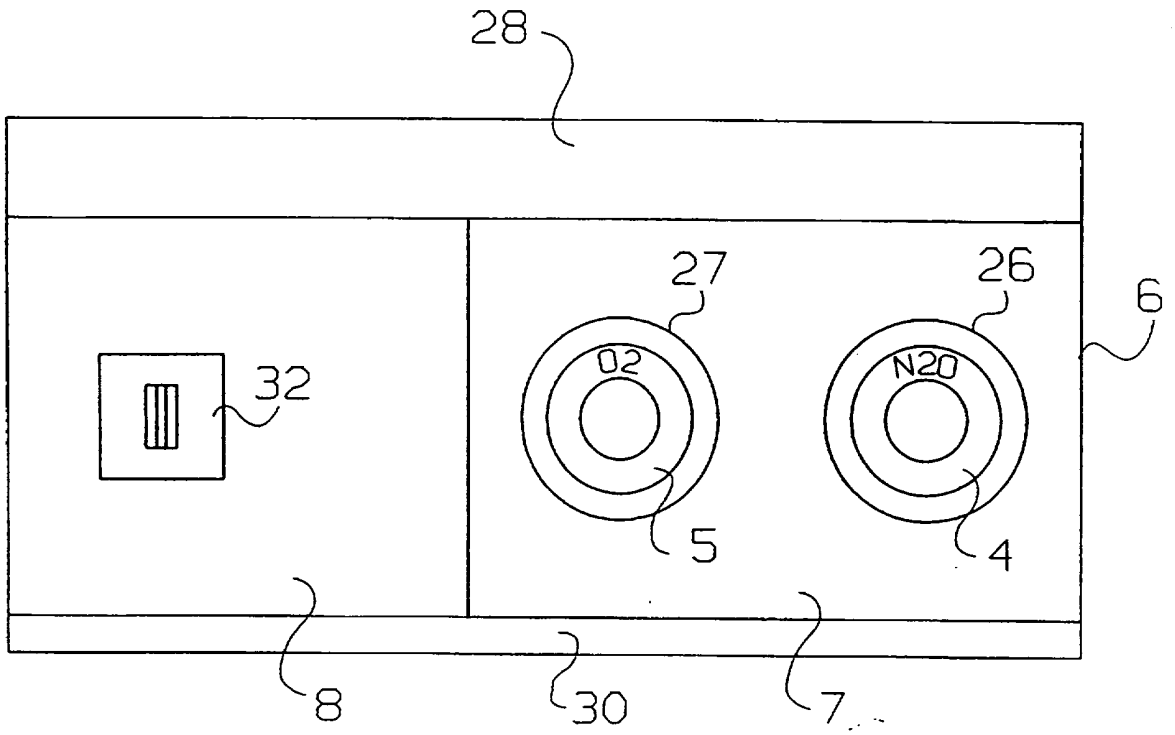



Fig. 4

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# Installation conduit

The invention relates to an installation conduit for receiving at least gas intake couplings.

Installation conduits of the above type are used for providing compressed gases and electrical energy at various locations in a building, and are generally fitted in the building walls. Compressed gases are required, for instance, in medically used areas for therapy apparatus.

DE 39 37 518 A1 discloses an installation conduit through which electrical and pneumatic supply lines are guided to the connections located on cover plates of the installation conduit. The cover plates are designed so that they can be screwed to the side walls of the installation conduit so that a common conduit is enclosed by the cover plates and the side walls. Similar installation conduits are also used for securing building walls.

The disadvantage of the known installation conduit is that the gas supply lines leading to the pneumatic connections, called gas intake couplings below, are only accessible when the cover plate is removed, and joining of the gas supply lines to the connecting pipes of the gas intake couplings is prevented by the side walls of the installation conduit. Since the position of the gas supply lines within the installation conduit changes by removal of the cover plate from the side walls, or assembly of the cover plate on the side walls, testing of the seal has to be carried out both when the cover plate is removed and when it is in place. If the gas connection is tight when the cover

plate is removed but, on the other hand, is not tight when the cover plate is in place, then an analysis of the cause is not possible from the outside. Furthermore, only flexible gas supply lines are used with the known installation conduit, but not fixed pipe lines.

Embodiments of the invention aim to improve an installation conduit of the above type so that the gas supply lines leading to the gas intake couplings can be easily laid and their position cannot be changed thereafter.

According to the invention, there is provided an installation conduit for receiving at least gas intake couplings, the conduit comprising a rail-like connection plate which can be fitted on an assembly surface and on which the gas intake couplings can be secured, a centre portion which can be placed onto the connection plate and which has an upper side wall, a lower side wall and a support plate which joins the side walls together in an H-shape and is located between the side walls, having passages in the support plate in the region of the gas intake couplings, which are dimensioned so that the gas intake couplings can be guided through the passages, and having a cover plate which is secured on end portions of the side walls facing in the opposite direction to the connection plate, and which has through apertures for the gas intake couplings.

Further, preferred features may be found in the dependent claims attached hereto, to which reference should now be made.

An advantage of conduits in accordance with the

invention is basically that first of all a rail-like connection plate used as a securing surface for the gas intake couplings is secured on the wall surface carrying the installation conduit so that the gas intake couplings are fixed on the wall surface and can be connected to gas-type-specific gas supply lines. The gas supply lines can also be designed as copper pipe lines. Since the gas intake couplings are located elevated on the connection plate, the connections to the associated gas supply lines can be effected without any special tool because the connecting pipes of the gas intake couplings are freely accessible from all sides. Testing of the seal of the gas-conveying supply lines and the gas intake couplings is then possible. Because of the free accessibility from all sides, possible leakage points can be easily localised.

In the second step, a centre portion of the installation conduit is placed onto the connection plate and screwed to it. The centre portion comprises two side walls arranged parallel to each other which are joined together in an H-shape by means of a support plate. The centre portion is constructed as a one-piece extrusion profile. The support plate has passages through which the gas intake couplings can be guided when the centre portion is joined to the connection plate. A cover plate is then placed onto the end portions of the side walls remote from the connection plate which is provided with through apertures on a level with the gas intake couplings. In this way, gas intake plugs can be inserted into the gas intake couplings from the outside.

The centre portion is preferably made to be suspended into the connection plate. For this purpose the end region of the upper side wall is provided with

individual arms which are bent downwards at right angles and which can be suspended into a groove located between the connection plate and the assembly surface.

The connection plate is preferably provided with a projection on which the gas intake couplings are mounted. In this way, a free space is produced between the assembly surface and the connecting pipes of the gas intake couplings, which substantially simplifies the joining of the gas supply lines to the connecting pipes.

The support plate is preferably secured between the side walls so that it covers the projection of the connection plate when the centre portion is placed onto the connection plate. In this way, two supply conduits are produced inside the installation conduit, more exactly a first conduit between the projection, the connection plate, the support plate and the side walls, through which gas supply lines can be guided, and a second conduit for electrical lines is bounded by the cover plate, the support plate and the side walls.

The end portions of the side walls are preferably designed to receive additional connection plates. Snap connections are suitable, for instance, as securing elements for the connection plates, the connection plates being fixed to the end portions with them. Additional connection plates can be provided with electrical connection boxes. In this way both pneumatic and electrical energy may be provided with one installation conduit.

The invention is not restricted to the exemplary embodiment shown, but several connection plates with gas intake couplings can also be present in the path of

the installation conduit, and the cover plates can also be provided outside the gas intake couplings with connections for data transmission, so that a connection to a centrally arranged energy supply unit and monitoring unit is possible. By means of the different design and equipment of the cover plates, a modular system structure of the installation conduit can be achieved.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows an installation conduit in longitudinal section,

Figure 2 is a view of a connection plate provided with gas intake couplings, seen in direction A according to Figure 1,

Figure 3 is a view of a centre portion, seen in direction A according to Figure 1, and

Figure 4 is a view of the installation conduit, seen in direction A according to Figure 1.

Figure 1 shows schematically a longitudinal section through an installation conduit 1 which is made of a connection plate 3, secured on an assembly surface 2, having gas intake couplings 4, 5, a centre portion 6 and cover plates 7, 8. In Figure 1 only the gas intake coupling 4 and the cover plate 7 are shown. The connection plate 3 is provided with a U-shaped projection 9 on which the gas intake couplings 4, 5 are secured by means of pins 10. The gas intake couplings 4, 5 have connecting pipes 11, 12 for gas-type specific

gas supply lines not shown in Figure 1. The centre portion 6 comprises an upper side wall 13 and a lower side wall 14 which are joined together by means of a support plate 15. The centre portion 6 is constructed as a one-piece extrusion profile. In the region of the gas intake couplings 4, 5 the support plate 15 has passages 17, 18 which are dimensioned so that they can be guided through the gas intake couplings 4, 5. To secure the centre portion 6 on the connection plate 3, arms 19, bent downwards at right angles, are provided in the end region of the upper side wall 13 and can be suspended into a groove located between the connection plate 3 and the assembly surface 2. The end portions 21, 22 of the side walls 13, 14, remote from the connection plate 3, are designed to secure the cover plates 7, 8, for instance by means of snap connections not shown in Figure 1. The connection plate 3 is secured together with the centre portion 6 on the assembly surface 2 by means of individual screw pins 23 shown only schematically in Figure 1.

The side walls 13, 14, the connection plate 3 with the projection 9 and the support plate 15 limit a first conduit 24 which serves to receive gas supply lines not shown in the Figure. A second conduit 25, limited by the cover plates 7, 8, the side walls 13, 14 and the support plate 15, are provided for electrical lines also not shown in Figure 1. The gas intake couplings 4, 5 are guided outwards via throughflow apertures 26, 27 in the cover plate 7.

The installation conduit 1 is additionally provided with lighting devices. Hence, on the upper side wall 13 there is provided a transparent cover 28 for a skylight source 29, and on the lower side wall 14 there is a cover 30, also transparent, for a reading light

source 31.

Figure 2 shows a view of the connection plate 3 provided with the gas intake couplings 4, 5, seen in direction A of Figure 1. Like components are referenced with the same reference numerals as in Figure 1. The groove 20, schematically shown in Figure 2, is covered by the connection plate 3.

Figure 3 shows a view of the centre portion 6, seen in direction A according to Figure 1, it being possible to suspend its arms 19 into the groove 20, Figure 1, located between the assembly surface 2 and the connection plate 3.

Figure 4 shows the installation conduit 1, seen in direction A according to Figure 1. Arranged near the cover plate 7 located on the gas intake couplings 4, 5 is a cover plate 8 which is provided with an electrical connection box 32. In this way, both electrical energy and pneumatic energy can be provided with the installation conduit 1 of the invention.

Assembly of the installation conduit is carried out in the following steps.

First of all, the connection plate 3 with the gas removal couplings 4, 5 is secured on the assembly surface 2 by means of the screw pins 23 located along the groove 20 (Figure 2). The gas supply lines, not shown in the Figures, are then connected to the connection pipes 11, 12, and testing for gas impermeability is carried out. Possible leakage points can be easily localised and eliminated because of the free accessibility from all sides. The centre portion 6 is then connected to the connection plate 3, with the

arms 19 being suspended into the groove 20, so that the gas intake couplings 4, 5 are guided through the passages 17, 18 located in the support plate 15. Securing of the centre portion 6 together with the connection plate 3 is effected by means of the screw pins 23, Figure 1, located in the region of the lower side wall 14. The cover plates 7, 8 are then set onto the end portions 21, 22 of the side walls 13, 14, Figure 1, Figure 4, and finally the covers 28, 30 are fitted, Figure 1. Since prefabricated components can be used, assembly can be carried out easily and cheaply.

Claims

1. An installation conduit for receiving at least gas intake couplings, the conduit comprising

a rail-like connection plate which can be fitted on an assembly surface and on which the gas intake couplings can be secured,

a centre portion which can be placed onto the connection plate and which has an upper side wall, a lower side wall and a support plate which joins the side walls together in an H-shape and is located between the side walls, having passages in the support plate in the region of the gas intake couplings, which are dimensioned so that the gas intake couplings can be guided through the passages, and

having a cover plate which is secured on end portions of the side walls facing in the opposite direction to the connection plate, and which has through apertures for the gas intake couplings.

2. An installation conduit according to claim 1, wherein the centre portion is constructed to be suspended into the connection plate.

3. An installation conduit according to claim 2, wherein the upper side wall has an end region constructed with arms, and the connection plate has a groove extending in the region of the upper side wall, into which the arms can be suspended.

4. An installation conduit according to any of claims 1 to 3, wherein the connection plate has a projection on which the gas intake couplings are mounted.

5. An installation conduit according to claim 4, wherein the support plate is secured between the side walls in such a way that it covers the projection when the centre portion is placed onto the connection plate.

6. An installation conduit according to claim 4 or 5, wherein a first conduit for receiving the gas supply lines is formed by the projection, the connection plate, the support plate and the side walls.

7. An installation conduit according to any of claims 1 to 6, wherein a second conduit for receiving electrical lines is formed by the cover plate, the support plate and the side walls.

8. An installation conduit according to any of claims 1 to 7, wherein the end portions of the side walls are arranged to receive additional connection plates.

9. An installation conduit according to claim 8, wherein at least one additional connection plate is provided with an electrical connection box.

10. An installation conduit according to any of claims 1 to 9, wherein a ceiling light source with an associated cover is provided in the region of the upper side wall.

11. An installation conduit according to any of claims 1 to 10, wherein a reading light source having a cover covering the reading light source is available in the region of the lower side wall.

12. An installation conduit substantially as herein described with reference to the accompanying drawings.

13. Use of an installation conduit according to any of claims 1 to 12 for supplying energy to appliances in a medical treatment room.

The Patent Office

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| **Application No:** | GB 9919584.4 | **Examiner:** | Richard Nicholls |
| **Claims searched:** | 1-13 | **Date of search:** | 28 October 1999 |

## Patents Act 1977
## Search Report under Section 17

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): F2G (G37) ; H2C (CCK, CCL, CCQ)

Int Cl (Ed.6): F16L ; H02G 3/04, 3/28

Other: Online databases: WPI, EPODOC, PAJ

**Documents considered to be relevant:**

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| A | US 5435342 A | (Allied Healthcare) see especially figures 1 and 2 | |
| A | US 4952163 A | (AMP) see especially all figures | |

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