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(54) **Boiler unit**

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Description

[0001] The present invention relates to a boiler assembly comprising a removable boiler unit and in particular, although not exclusively, to a removable domestic boiler and a method for servicing and maintaining a boiler unit.

[0002] At present a domestic boiler that has broken down or requires servicing has to be worked on in-situ. This requires the maintenance person to carry a large selection of spare parts. If the repair is a complex one, the household may be without heating for a considerable period of time.

[0003] EP 0784192 of NV Radson Alutherm discloses a boiler assembly comprising an 'L' shaped manifold, the base of which is formed with guide ribs to guide a boiler unit onto the base of the manifold, the weight of the boiler unit being supported by said guide ribs.

[0004] According to a first aspect of the present invention there is provided a boiler assembly characterised by a removable boiler unit detachably connected to a manifold unit, the arrangement being such that the manifold unit provides the boiler unit, in use, with a connection interface to a pipework system, characterised in that the manifold unit comprises a rear section and a base section, at least one guide rail being so positioned on the manifold rear section that, during assembly, the boiler unit is moved along the guide rail which support and guides the boiler unit on to the manifold unit, and such that, when assembled, the guide rail spaces the boiler unit above the manifold base section and supports the weight of the boiler unit.

[0005] The boiler unit is preferably a self contained unit comprising the components required for the production of heat, the components being a fan motor, a fan pressure switch, a burner unit, a heat exchanger, a fluid pump, a gas valve and a PCB control box.

[0006] The boiler unit is preferably a self contained unit comprising the components required for the production of hot water, the components being a fan motor, a fan pressure switch, a burner unit, a heat exchanger, a fluid pump, a gas valve and a PCB control box.

[0007] Preferably, the connection interface comprises a plurality of connections between the boiler unit and the manifold unit.

[0008] The pipework system may incorporate a fluid supply and a fluid return, each being connected to the boiler unit via the manifold unit.

[0009] The manifold unit preferably provides the boiler unit with a connection interface to a power supply.

[0010] The power supply is preferably an electrical power supply.

[0011] The connection interface to the power supply is preferably a plug and socket, the arrangement being such that the plug is received by the socket automatically as the boiler unit is assembled on the manifold unit.

[0012] In an embodiment of the present invention the manifold unit preferably provides the boiler unit with a connection interface to a gas inlet pipe.

[0013] The manifold unit preferably provides the boiler unit with a connection interface to a gas outlet duct.

[0014] The manifold unit preferably provides the boiler unit with a direct connection to the gas outlet duct.

5 **[0015]** The connections of the connection interface are preferably quick release connections.

[0016] Preferably, the connections of the connection interface comprise means for isolating the pipework system, which may be used before disconnecting the boiler unit from the manifold unit.

10 **[0017]** Preferably, the boiler unit comprises means to isolate the connections.

[0018] The manifold unit preferably comprises means to isolate the connections.

15 **[0019]** The isolation means may be used to prevent the flow of fluid through the connections. The isolation means may be used to stop the flow of a fluid through the connections prior to the removal of the boiler unit from the manifold unit. The avoidance of the flow of a fluid through the connections prior to the removal of the boiler unit from the manifold unit prevents the requirement for the draining down of the pipework system or the boiler assembly.

20 **[0020]** The isolation means is preferably located at the front of the boiler assembly. The location of the isolation means at the front of the boiler assembly provides easy access to the isolation means.

25 **[0021]** The boiler assembly is preferably capable of being wall mounted or floor standing. The location of the isolation means at the front of the boiler assembly facilitate the boiler assembly being wall mounted or floor standing.

30 **[0022]** The means for isolating the connection is preferably a series of valves.

35 **[0023]** The guide rail preferably comprises a distal end formed with a tapered region.

[0024] The tapered region of the guide rail is preferably a cone shape.

40 **[0025]** The boiler assembly preferably comprises a support rail for supporting the boiler unit during removal and re-assembly.

[0026] The support rail is preferably removable from the manifold unit.

45 **[0027]** The boiler assembly preferably comprises a plurality of support rails for supporting the boiler unit during removal and re-assembly.

[0028] Preferably the boiler assembly comprises two support rails, the arrangement being such that during use thereof each support rail is disposed at respective lower corners of the boiler unit.

[0029] The guide means may comprise a plurality of guide rails along which the boiler unit may slide when assembling and disassembling the boiler assembly.

50 **[0030]** The boiler unit preferably comprises means to measure pressure.

55 **[0031]** The boiler unit preferably comprises control means for controlling the operation of the boiler assembly.

[0032] The boiler unit preferably comprises means for measuring moisture within the boiler unit. The means for measuring moisture is used to provide an alert of any leaks within the boiler unit.

[0033] The boiler unit preferably comprises means for analysing gases. The means for analysing gases is used to provide an analysis of the combustion gases in the outlet and to provide an alert on the combustion rates.

[0034] In one embodiment of the present invention the manifold unit comprises an expansion chamber for the heating pipework system.

[0035] The manifold unit preferably comprises means to measure pressure.

[0036] The boiler assembly preferably comprises security means for preventing unauthorised removal of the boiler unit.

[0037] Preferably the boiler unit is a domestic boiler unit and the pipework system is a domestic pipework system.

[0038] The boiler assembly may comprise remote management means operative to communicate with the boiler assembly via a modem, such that the boiler assembly provides analysis information to the management means. The management means may be used to monitor one or more boiler assembly(ies) remotely and detect potential faults.

[0039] According to a second aspect of the present invention there is provided a heating system characterised in that the system comprises a boiler assembly according to the first aspect of the present invention.

[0040] According to a third aspect of the present invention there is provided a method of servicing or repairing a boiler unit of a boiler assembly according to the first aspect of the present invention, characterised by the method comprising detaching and removing a first boiler unit from a manifold unit; then replacing the first boiler unit with a second boiler unit and connecting the second boiler unit to the manifold unit.

[0041] By replacing the boiler unit with a second boiler unit the heating system may be used while the first boiler unit is being serviced or repaired.

[0042] The present invention may include any combination of the features or limitations referred to herein.

[0043] The present invention may be carried into practice in various ways, but two embodiments will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a schematic view of a boiler assembly comprising a boiler unit and a manifold unit;

Figure 2 is a side view of the boiler assembly shown in Figure 1;

Figure 3 is an isometric front view of the boiler unit shown in Figures 1 and 2, and shows the boiler unit with a front panel removed;

Figure 4 is an isometric rear view of the boiler shown in Figure 3;

Figure 5 is an isometric front view of the manifold unit shown in Figure 1 with the boiler unit removed;

Figure 6 is a schematic view of a further embodiment of a boiler assembly comprising a boiler unit (shown in ghost form) partially assembled on a manifold unit;

Figure 7 is a side view of a corner of the manifold unit shown in Figure 6 and a support rail partially removed from the manifold unit; and

Figure 8 is an isometric rear view of the boiler shown in Figure 6.

[0044] Referring to the Figures 1 to 5, a boiler assembly 1 comprises a removable domestic boiler unit 2 detachably connected to a manifold unit 4, the arrangement being such that the manifold unit 4 provides the boiler unit 2 with a connection interface to a heating pipework system (not shown).

[0045] The boiler unit 2 may be quickly and simply removed from the manifold unit 4 and taken away to be serviced or repaired. In order that the heating system may be used while the servicing is being carried out a replacement boiler unit is connected to the manifold unit 4.

[0046] The boiler unit 2 is a box-like shape comprising a removable front panel 8; two removable side panels 10, 12 each being formed with a handle recess 13; a removable top panel 14; a base panel 16 and a back panel 18. The removable panels of the manifold unit 4 are secured to the unit by a number of screws 20 (not shown in some Figures). The front panel 8 comprises a security lock 22, which helps to prevent unauthorised access to the boiler unit 2. The skilled person will appreciate that any suitable security device may be used to prevent unauthorised access to the boiler unit 2. Disposed below the front panel 8 is a rectangular instrumentation panel 24 that comprises a pressure gauge 26 and a timer 28 for turning the boiler unit 2 on and off. The timer 28 may also be used to indicate when a service is due or to indicate a fault.

[0047] The boiler unit 2 contains an array of standard elements normally found in a domestic boiler including a burner unit 30, a heat exchanger 31, a combustion chamber 32, a fluid pump 34, a pressure switch 36 for a fan, a gas valve 38, a diverter valve 40 for the heat exchanger 31, a water pressure switch 42 and a PCB control box 44. The boiler unit 2 also comprises series of pipe connections 46. The pipe connections 46 are used as water inlet and water outlet ports for the boiler unit 2. One or more of the pipe connections 46 may be used as a gas feed port for the burner 30. The correct rating and design of the connections and the internal pipework would be

chosen for the different functions of the connections 46 and internal pipework. Attached to each connection 46 there is an isolation valve 48 (see Figure 1).

[0048] Disposed at each corner of the boiler unit 2 there is a guide channel 50 each of which extend from the back panel 18 in a direction towards the front of the boiler unit 2. The back panel 18 is also formed with an electrical plug element 54, and a circular port 52 that provides an exhaust for a flue of the boiler unit 2.

[0049] The manifold unit 4 is a substantially L-shaped structure comprising a rectangular rear box section 60 and a rectangular base section 62. The rear box section 60 contains an expansion chamber 64 that is used for the pipework, which contains the heated water. An upper region of the rear box section 60 is formed with an electrical socket 67 and a flue port 66 for the exhaust gases of the boiler unit 2. When the boiler unit 2 is assembled on the manifold unit 4 the flue port 66 aligns and connects with the circular port 52 of the boiler unit 2 and the electrical plug element 54 of the boiler unit 2 is received by the electrical socket 67 of the manifold unit 4.

[0050] The uppermost panel 70 of the rear box section 60 is formed with a series of circular holes 72. One or more pipes of the heating pipework system may use the holes 72 for access into the manifold. The uppermost panel 70 is also formed with a push-out circular section 74, which may be removed to allow access by an exhaust flue (not shown).

[0051] The manifold unit 4 comprises four guide rails 76 extending in a direction substantially parallel to the base section 62. In the assembled state of the boiler assembly the rails 76 are received by the channels 50 of the boiler unit 2 and help provide support for the boiler unit 2.

[0052] The base section 62 comprises a series of pipelines 78 the respective distal ends of which are held on a horizontal bracket 80. Connected to the respective distal ends of the pipelines 78 are respective isolation valves 82. In the assembled state the isolation valves 82 of the manifold unit 4 are connected to the isolation valves 48 of the boiler unit 2 (see Figure 1).

[0053] The boiler assembly 1 may be fitted to an existing domestic heating system or alternatively a whole new heating pipework network may be fitted and connected to the boiler assembly 1. The manifold unit 4 is fixed to the wall or floor of the building. The various water pipes of the heating network are connected to the manifold unit 4. If the boiler unit 2 uses gas then the gas pipe is connected to the manifold unit 4 and the gas exhaust flue is connected to the manifold unit 4. The skilled person will appreciate that any type of boiler may be used, such as an electric boiler or an oil boiler. The boiler unit 2 receives electrical power via the electrical plug 54 and socket 67.

[0054] When the boiler unit 2 is due a service or requires repair the maintenance person isolates the heating pipework system from the boiler unit 2 and the gas supply by closing the isolation valves 48 and 82. The

connections between the respective isolation valves 48 and 82 are undone. The boiler unit 2 is then easily removed from the manifold unit 4 using the handles 13. When removing the boiler unit 2 from the manifold unit 4, the guide channels 50 slide on the rails 76, the electrical connection between plug 54 and the socket 67 is broken and the connection between the circular port 52 and the flue port 66 is broken. There is no need to remove the front panel 8 of the boiler unit 2 as the work is carried out off-site.

[0055] Once the boiler unit 2 has been removed from the manifold unit 4 a replacement boiler unit may be assembled onto the manifold unit 4 and all the connections made so that the heating system may be used while the original boiler unit is being serviced off-site.

[0056] A particular benefit of the manifold unit 4 is that some of the elements of a boiler assembly, such as the expansion chamber 64 and the exhaust flue port 66, which do not normally require servicing may be contained in the manifold unit 4. The boiler unit 2 may contain only those elements that require regular servicing or are likely to need repair. The other elements of a domestic boiler assembly can be left behind when the boiler unit 2 is taken away.

[0057] The boiler unit may comprise a device to measure pressure within one or more of the elements of the boiler assembly, a device for analysing moisture within the boiler unit and a device for measuring the various gases within the boiler assembly. The information from these various devices can be relayed to a remote computer management system via a modem. The computer management system monitors the information received from the devices. Any faults or potential faults are logged and such information may be used by a service technician.

[0058] The boiler assembly may comprise remote management means operative to communicate with the boiler assembly via a modem, the boiler assembly providing analysis information to the management means. The management means may be used to monitor one or more boiler assembly(ies) remotely and detect potential faults.

[0059] In an alternative embodiment (not shown in the Figures) a boiler unit comprises a removable boiler unit that is detachably connected to a pipework system via a connection interface comprising quick release connections. The pipework system comprises isolation valve adjacent to the connections of the pipework system. The boiler unit may also comprise isolation valves adjacent to the connections.

[0060] The isolation valves are used to prevent the flow of a fluid through the connections and they may be used to stop the flow of a fluid through the connections prior to the removal of the boiler unit from the pipework system. The connection interface may comprise an electrical power connection for providing the boiler unit with a power supply and a gas pipe connection for providing the boiler unit with a connection to a gas inlet pipe. The con-

nection interface may also comprise an exhaust connection for providing the boiler unit with a connection to a gas outlet duct.

[0061] Once the boiler unit has been disconnected and removed from the pipework system a replacement boiler unit may be connected to the pipework system so that the heating system may be used while the original boiler unit is being serviced off-site.

[0062] Referring to the Figures 6 to 8, a boiler assembly 1 comprises a removable domestic boiler unit 2 detachably connected to a manifold unit 4, the arrangement being such that the manifold unit 4 provides the boiler unit 2 with a connection interface to a heating pipework system (not shown).

[0063] In this particular embodiment the manifold unit 4 comprises four guide rails 90 extending in a direction substantially parallel to the base section 62. In the assembled state of the boiler assembly the rails 90 are received by channels 95 of the boiler 7 unit 2 and help provide support for the boiler unit 2. The guide rails 90 are each attached to the manifold at one of their respective end so forming a cantilever. The guide rails 90 each have a circular cross section. The distal end 91 of each guide rail 90 is a cone shape to aid the insertion into the respective channels 95.

[0064] The boiler assembly 1 also comprises two removable support rails 94. The support rails 94 have an L-shaped vertical cross section and are used during the assembly and disassembly of the boiler unit 2 from the manifold unit 4 to provide support of the boiler unit 2. In the assembled state the support rails 94 can be removed from boiler assembly 1.

Claims

1. A boiler assembly (1) comprising a removable boiler unit (2) detachably connected to a manifold unit (4), the arrangement being such that the manifold unit (4) provides the boiler unit (2), in use, with a connection interface to a pipework system, whereas the manifold unit (4) comprises a rear section (60) and a base section (62), **characterized in that** at least one guide rail (76) being so positioned on the manifold rear section (60) that, during assembly, the boiler unit (2) is moved along the guide rail which support and guides the boiler unit (2) on to the manifold unit (4), and such that, when assembled, the guide rail (76) spaces the boiler unit (2) above the manifold base section (62) and supports the weight of the boiler unit (2).
2. A boiler assembly (1) as claimed in claim 1 wherein the boiler unit (2) is a self contained unit comprising the components required for the production of heat, the components being a fan motor, a fan pressure switch (36), a burner unit (30), a heat exchanger (31), a fluid pump (34), a gas valve (38) and a PCB control

box (44).

3. A boiler assembly (1) as claimed in claim 1 wherein the boiler unit (2) is a self contained unit comprising the components required for the production of hot water, the components being a fan motor, a fan pressure switch (36), a burner unit (30), a heat exchanger (31), a fluid pump (34), a gas valve (38) and a PCB control box (44).
4. A boiler assembly (1) as claimed in any one of claims 1 to 3 wherein, the connection interface comprises a plurality of connections between the boiler unit (2) and the manifold unit (4).
5. A boiler assembly (1) as claimed in claim 4 wherein the pipework system incorporates a fluid supply and a fluid return, each being connected to the boiler unit (2) via the manifold unit (4).
6. A boiler assembly (1) as claimed in any one of claims 1 to 5 wherein the manifold unit (4) provides the boiler unit (2) with a connection interface to a power supply.
7. A boiler assembly (1) as claimed in claim 6 wherein the power supply is an electrical power supply.
8. A boiler assembly (1) as claimed in claim 7 wherein the connection interface to the power supply is a plug (54) and socket (67), the arrangement being such that the plug (54) is received by the socket (67) automatically as the boiler unit (2) is assembled on the manifold unit (4).
9. A boiler assembly (1) as claimed in any one of the preceding claims wherein in an embodiment of the present invention the manifold unit (4) provides the boiler unit (2) with a connection interface to a gas inlet pipe.
10. A boiler assembly (1) as claimed in claim 9 wherein the manifold unit (4) provides the boiler unit with a connection interface to a gas outlet duct.
11. A boiler assembly (1) as claimed in claim 10 wherein the manifold unit (4) provides the boiler unit (2) with a direct connection to the gas outlet duct.
12. A boiler assembly (1) as claimed in any one of claims 4 to 11 wherein the connections of the connection interface are quick release connections.
13. A boiler assembly (1) as claimed in any one of claims 4 to 12 wherein the connections of the connection interface comprise means for isolating the pipework system, which may be used before disconnecting the boiler unit (2) from the manifold unit (4).

14. A boiler assembly (1) as claimed in any one of claims 4 to 13 wherein the boiler unit (2) comprises means to isolate the connections.
15. A boiler assembly (1) as claimed in any one of claims 4 to 14 wherein the manifold unit (4) comprises means to isolate the connections.
16. A boiler assembly (1) as claimed in claim 14 or claim 15 wherein the isolation means is usable to prevent the flow of fluid through the connections.
17. A boiler assembly (1) as claimed in any one of claims 13 to 16 wherein the isolation means is located at the front of the boiler assembly (1).
18. A boiler assembly (1) as claimed in any one of the preceding claims wherein the boiler assembly (1) is capable of being wall mounted or floor standing.
19. A boiler assembly (1) as claimed in any one of claims 13 to 18 wherein the means for isolating the connection is a series of valves (48, 82).
20. A boiler assembly (1) as claimed in any one of the preceding claims wherein the guide rail (76, 90) comprises a distal end (91) formed with a tapered region.
21. A boiler assembly (1) as claimed in claim 20 wherein the tapered region of the guide rail (76, 90) is a cone shape.
22. A boiler assembly (1) as claimed in claim 1 wherein the boiler assembly (1) comprises a support rail (94) for supporting the boiler unit (2) during removal and re-assembly.
23. A boiler assembly (1) as claimed in claim 22 wherein the support rail (94) is removable from the manifold unit (4).
24. A boiler assembly (1) as claimed in any one of claims 21 to 23 wherein the boiler assembly (1) comprises a plurality of support rails (94) for supporting the boiler unit (2) during removal and re-assembly.
25. A boiler assembly (1) as claimed in any one of claims 21 to 24 wherein the boiler assembly (1) comprises two support rails (94), the arrangement being such that during use thereof each support rail (94) is disposed at respective lower corners of the boiler unit (2).
26. A boiler assembly (1) as claimed in claim 1 wherein the boiler unit (2) comprises means to measure pressure.
27. A boiler assembly (1) as claimed in claim 1 or claim 26 wherein the boiler unit (2) comprises control means for controlling the operation of the boiler assembly (1).
28. A boiler assembly (1) as claimed in claim 1 or claim 26 wherein the boiler unit (2) comprises means for measuring moisture within the boiler unit (2).
29. A boiler assembly (1) as claimed in any one of claims 1 or 26 to 28 wherein the boiler unit (2) comprises means for analysing gases.
30. A boiler assembly (1) as claimed in claim 1 wherein in one embodiment of the present invention the manifold unit (4) comprises an expansion chamber (64) for the heating pipework system.
31. A boiler assembly (1) as claimed in claim 30 wherein the manifold unit (4) comprises means to measure pressure.
32. A boiler assembly (1) as claimed in claim 1 wherein the boiler assembly (1) comprises security means for preventing unauthorised removal of the boiler unit (2).
33. A boiler assembly (1) as claimed in any one of the preceding claims wherein the boiler unit (2) is a domestic boiler unit and the pipework system is a domestic pipework system.
34. A boiler assembly (1) as claimed in any one of the preceding claims wherein the boiler assembly (1) comprises remote management means operative to communicate with the boiler assembly (1) via a modem, such that the boiler assembly (1) provides analysis information to the management means.
35. A heating system **characterised in that** the system comprises a boiler assembly (1) as claimed in any one of claims 1 to 34.
36. A method of servicing or repairing a boiler assembly (1) according to any one of claims 1 to 34, **characterised by** the method comprising detaching and removing a first boiler unit (2) from a manifold unit (4); then replacing the first boiler unit (2) with a second boiler unit (2) and connecting the second boiler unit (2) to the manifold unit (4).

Patentansprüche

1. Kesselanordnung (1) mit einer entfernbaren Kessel-einheit (2), die an einer Verteilereinheit (4) lösbar angeschlossen ist, wobei die Einrichtung dergestalt ist, dass die Verteilereinheit (4) die Kessel-einheit (2) im Gebrauch mit einer Verbindungsschnittstelle zu

- einem Rohrleitungssystem versorgt, wohingegen die Verteilereinheit (4) einen hinteren Abschnitt (60) und einen Basisabschnitt (62) umfasst, **dadurch gekennzeichnet, dass** zumindest eine Führungsschiene (76) so auf dem hinteren Verteilerabschnitt (60) positioniert ist, dass die Kesseleinheit (2) während der Montage entlang der Führungsschiene bewegt wird, die die Kesseleinheit (2) stützt und zur Verteilereinheit (4) weiterführt, und so, dass die Führungsschiene (76) die Kesseleinheit (2) nach der Montage über dem Verteilerbasisabschnitt (62) beabstandet und das Gewicht der Kesseleinheit (2) trägt.
2. Kesselanordnung (1) nach Anspruch 1, wobei die Kesseleinheit (2) eine eigenständige Einheit ist, die die Komponenten umfasst, die für die Erzeugung von Wärme erforderlich sind, wobei die Komponenten ein Gebläsemotor, ein Gebläsedruckschalter (36), eine Brenneinheit (30), ein Wärmetauscher (31), eine Fluidpumpe (34), ein Gasventil (38) und ein Leiterplatten-Schaltkasten (44) sind.
 3. Kesselanordnung (1) nach Anspruch 1, wobei die Kesseleinheit (2) eine eigenständige Einheit ist, die die Komponenten umfasst, die für die Erzeugung von Heißwasser erforderlich sind, wobei die Komponenten ein Gebläsemotor, ein Gebläsedruckschalter (36), eine Brenneinheit (30), ein Wärmetauscher (31), eine Fluidpumpe (34), ein Gasventil (38) und ein Leiterplatten-Schaltkasten (44) sind.
 4. Kesselanordnung (1) nach irgendeinem der Ansprüche 1 bis 3, wobei die Verbindungsschnittstelle mehrere Verbindungen zwischen der Kesseleinheit (2) und der Verteilereinheit (4) umfasst.
 5. Kesselanordnung (1) nach Anspruch 4, wobei das Rohrleitungssystem eine Fluidzufuhr und eine Fluidrückführung beinhaltet, die jeweils über die Verteilereinheit (4) mit der Kesseleinheit (2) verbunden sind.
 6. Kesselanordnung (1) nach irgendeinem der Ansprüche 1 bis 5, wobei die Verteilereinheit (4) die Kesseleinheit (2) mit einer Verbindungsschnittstelle zu einer Energieversorgung versieht.
 7. Kesselanordnung (1) nach Anspruch 6, wobei die Energieversorgung eine Elektroenergieversorgung ist.
 8. Kesselanordnung (1) nach Anspruch 7, wobei die Verbindungsschnittstelle zur Stromversorgung ein Stecker (54) und eine Steckdose (67) ist, wobei die Einrichtung dergestalt ist, dass der Stecker (54) automatisch von der Steckdose (67) aufgenommen wird, wenn die Kesseleinheit (2) auf der Verteilereinheit (4) montiert wird.
 9. Kesselanordnung (1) nach irgendeinem der vorhergehenden Ansprüche, wobei in einer Ausführungsform der vorliegenden Erfindung die Verteilereinheit (4) die Kesseleinheit (2) mit einer Verbindungsschnittstelle zu einem Gaseinlassrohr versieht.
 10. Kesselanordnung (1) nach Anspruch 9, wobei die Verteilereinheit (4) die Kesseleinheit mit einer Verbindungsschnittstelle zu einem Gasauslasskanal versieht.
 11. Kesselanordnung (1) nach Anspruch 10, wobei die Verteilereinheit (4) die Kesseleinheit (2) mit einer direkten Verbindung zu dem Gasauslasskanal versieht.
 12. Kesselanordnung (1) nach irgendeinem der Ansprüche 4 bis 11, wobei die Verbindungen der Verbindungsschnittstelle Schnelltrenverbindungen sind.
 13. Kesselanordnung (1) nach irgendeinem der Ansprüche 4 bis 12, wobei die Verbindungen der Verbindungsschnittstelle Mittel zum Isolieren des Rohrleitungssystems umfassen, welche verwendet werden können, bevor die Kesseleinheit (2) von der Verteilereinheit (4) getrennt wird.
 14. Kesselanordnung (1) nach irgendeinem der Ansprüche 4 bis 13, wobei die Kesseleinheit (2) Mittel zum Isolieren der Verbindungen umfasst.
 15. Kesselanordnung (1) nach irgendeinem der Ansprüche 4 bis 14, wobei die Verteilereinheit (4) Mittel zum Isolieren der Verbindungen umfasst.
 16. Kesselanordnung (1) nach Anspruch 14 oder Anspruch 15, wobei das Isolierungsmittel dazu verwendbar ist, den Fluss von Fluid durch die Verbindungen zu verhindern.
 17. Kesselanordnung (1) nach irgendeinem der Ansprüche 13 bis 16, wobei sich das Isolierungsmittel an der Vorderseite der Kesselanordnung (1) befindet.
 18. Kesselanordnung (1) nach irgendeinem der vorhergehenden Ansprüche, wobei die Kesselanordnung (1) dazu imstande ist, an der Wand befestigt zu werden oder auf dem Boden zu stehen.
 19. Kesselanordnung (1) nach irgendeinem der Ansprüche 13 bis 18, wobei das Mittel zum Isolieren der Verbindung eine Reihe von Ventilen (48, 82) ist.
 20. Kesselanordnung (1) nach irgendeinem der vorhergehenden Ansprüche, wobei die Führungsschiene (76, 90) ein distales Ende (91) umfasst, das mit ei-

nem verjüngten Bereich ausgebildet ist.

21. Kesselanordnung (1) nach Anspruch 20, wobei der verjüngte Bereich der Führungsschiene (76, 90) eine Kegelform ist. 5
22. Kesselanordnung (1) nach Anspruch 1, wobei die Kesselanordnung (1) eine Tragschiene (94) zum Tragen der Kesseleinheit (2) während einer Entfernung und erneuten Montage umfasst. 10
23. Kesselanordnung (1) nach Anspruch 22, wobei die Tragschiene (94) von der Verteilereinheit (4) entfernt werden kann. 15
24. Kesselanordnung (1) nach irgendeinem der Ansprüche 21 bis 23, wobei die Kesselanordnung (1) mehrere Tragschienen (94) zum Tragen der Kesseleinheit (2) während einer Entfernung und erneuten Montage umfasst. 20
25. Kesselanordnung (1) nach irgendeinem der Ansprüche 21 bis 24, wobei die Kesselanordnung (1) zwei Tragschienen (94) umfasst, wobei die Einrichtung dergestalt ist, dass während ihres Gebrauchs jede Führungsschiene (94) an jeweiligen unteren Enden der Kesseleinheit (2) angeordnet ist. 25
26. Kesselanordnung (1) nach Anspruch 1, wobei die Kesseleinheit (2) Mittel zum Messen von Druck umfasst. 30
27. Kesselanordnung (1) nach Anspruch 1 oder Anspruch 26, wobei die Kesseleinheit (2) Steuermittel zum Steuern des Betriebs der Kesselanordnung (1) umfasst. 35
28. Kesselanordnung (1) nach Anspruch 1 oder Anspruch 26, wobei die Kesseleinheit (2) Mittel zum Messen von Feuchtigkeit in der Kesseleinheit (2) umfasst. 40
29. Kesselanordnung (1) nach irgendeinem der Ansprüche 1 oder 26 bis 28, wobei die Kesseleinheit (2) Mittel zum Analysieren von Gasen umfasst. 45
30. Kesselanordnung (1) nach Anspruch 1, wobei die Verteilereinheit (4) in einer Ausführungsform der vorliegenden Erfindung eine Expansionskammer für das Heizrohrleitungssystem umfasst. 50
31. Kesselanordnung (1) nach Anspruch 30, wobei die Verteilereinheit (4) Mittel zum Messen von Druck umfasst. 55
32. Kesselanordnung (1) nach Anspruch 1, wobei die Kesselanordnung (1) Sicherheitsmittel zum Verhindern eines unautorisierten Entfernens der Kessel-

einheit (2) umfasst.

33. Kesselanordnung (1) nach irgendeinem der vorhergehenden Ansprüche, wobei die Kesseleinheit (2) eine Haushalts-Kesseleinheit und das Rohrleitungssystem ein Haushalts-Rohrleitungssystem ist.
34. Kesselanordnung (1) nach irgendeinem der vorhergehenden Ansprüche, wobei die Kesselanordnung (1) Fernverwaltungsmittel umfasst, die dazu funktionsfähig sind, mit der Kesselanordnung (1) über ein Modem zu kommunizieren, so dass die Kesselanordnung (1) die Verwaltungsmittel mit Analyseinformationen versorgt.
35. Heizsystem, **dadurch gekennzeichnet, dass** das System eine Kesselanordnung (1) nach irgendeinem der Ansprüche 1 bis 34 umfasst.
36. Verfahren zum Warten oder Reparieren einer Kesselanordnung (1) nach irgendeinem der Ansprüche 1 bis 34, **dadurch gekennzeichnet, dass** das Verfahren das Lösen und Entfernen einer ersten Kesseleinheit (2) von einer Verteilereinheit (4); anschließend das Ersetzen der ersten Kesseleinheit (2) durch eine zweite Kesseleinheit (2) und das Verbinden der zweiten Kesseleinheit (2) mit der Verteilereinheit (4) umfasst.

Revendications

1. Ensemble de chaudière (1) comprenant une unité de chaudière amovible (2) raccordée de manière détachable à une unité de collecteur (4), l'agencement étant tel que l'unité de collecteur (4) dote l'unité de chaudière (2), à l'usage, d'une interface de raccordement à un système de tuyauterie, alors que l'unité de collecteur (4) comprend une section arrière (60) et une section de base (62), **caractérisée en ce que**, au moins un rail de guidage (76) est positionné sur la section arrière (60) du collecteur de sorte que, pendant l'assemblage, l'unité de chaudière (2) est déplacée le long du rail de guidage qui supporte et guide l'unité de chaudière (2) sur l'unité de collecteur (4), et de sorte que, lorsqu'il est assemblé, le rail de guidage (76) éloigne l'unité de chaudière (2) au-dessus de la section de base (62) du collecteur et supporte le poids de l'unité de chaudière (2).
2. Ensemble de chaudière (1) selon la revendication 1, dans lequel l'unité de chaudière (2) est une unité autonome comprenant les composants requis pour la production de chaleur, les composants étant un moteur de ventilateur, un commutateur de pression de ventilateur (36), une unité de brûleur (30), un échangeur de chaleur (31), une pompe de fluide (34), une soupape de gaz (38) et un boîtier de com-

- mande PCB (44).
3. Ensemble de chaudière (1) selon la revendication 1, dans lequel l'unité de chaudière (2) est une unité autonome comprenant les composants requis pour la production d'eau chaude, les composants étant un moteur de ventilateur, un commutateur de pression de ventilateur (36), une unité de brûleur (30), un échangeur de chaleur (31), une pompe de fluide (34), une soupape de gaz (38) et un boîtier de commande PCB (44). 5
 4. Ensemble de chaudière (1) selon l'une quelconque des revendications 1 à 3, dans lequel l'interface de raccordement comprend une pluralité de raccords entre l'unité de chaudière (2) et l'unité de collecteur (4). 10
 5. Ensemble de chaudière (1) selon la revendication 4, dans lequel le système de tuyauterie comprend une alimentation de fluide et un retour de fluide, chacun étant raccordé à l'unité de chaudière (2) par l'intermédiaire de l'unité de collecteur (4). 15
 6. Ensemble de chaudière (1) selon l'une quelconque des revendications 1 à 5, dans lequel l'unité de collecteur (4) dote l'unité de chaudière (2) d'une interface de raccordement à une alimentation de puissance. 20
 7. Ensemble de chaudière (1) selon la revendication 6, dans lequel l'alimentation de puissance est une alimentation de courant électrique. 25
 8. Ensemble de chaudière (1) selon la revendication 7, dans lequel l'interface de raccordement à l'alimentation de puissance est une prise mâle (54) et une prise femelle (67), l'agencement étant tel que la prise mâle (54) est reçue par la prise femelle (67) automatiquement lorsque l'unité de chaudière (2) est assemblée sur l'unité de collecteur (4). 30
 9. Ensemble de chaudière (1) selon l'une quelconque des revendications précédentes, dans lequel, dans un mode de réalisation de la présente invention, l'unité de collecteur (4) dote l'unité de chaudière (2) d'une interface de raccordement à un tuyau d'entrée de gaz. 35
 10. Ensemble de chaudière (1) selon la revendication 9, dans lequel l'unité de collecteur (4) dote l'unité de chaudière d'une interface de raccordement à un conduit de sortie de gaz. 40
 11. Ensemble de chaudière (1) selon la revendication 10, dans lequel l'unité de collecteur (4) dote l'unité de chaudière (2) d'un raccordement direct au conduit de sortie de gaz. 45
 12. Ensemble de chaudière (1) selon l'une quelconque des revendications 4 à 11, dans lequel les raccords de l'interface de raccordement sont des raccords à libération rapide. 50
 13. Ensemble de chaudière (1) selon l'une quelconque des revendications 4 à 12, dans lequel les raccords de l'interface de raccordement comprennent des moyens pour isoler le système de tuyauterie, qui peut être utilisé avant de déconnecter l'unité de chaudière (2) de l'unité de collecteur (4). 55
 14. Ensemble de chaudière (1) selon l'une quelconque des revendications 4 à 13, dans lequel l'unité de chaudière (2) comprend des moyens pour isoler les raccords. 60
 15. Ensemble de chaudière (1) selon l'une quelconque des revendications 4 à 14, dans lequel l'unité de collecteur (4) comprend des moyens pour isoler les raccords. 65
 16. Ensemble de chaudière (1) selon la revendication 14 ou la revendication 15, dans lequel les moyens d'isolation peuvent empêcher l'écoulement du fluide à travers les raccords. 70
 17. Ensemble de chaudière (1) selon l'une quelconque des revendications 13 à 16, dans lequel les moyens d'isolation sont positionnés à l'avant de l'ensemble de chaudière (1). 75
 18. Ensemble de chaudière (1) selon l'une quelconque des revendications précédentes, dans lequel l'ensemble de chaudière (1) peut être monté sur un mur ou reposer sur le sol. 80
 19. Ensemble de chaudière (1) selon l'une quelconque des revendications 13 à 18, dans lequel les moyens pour isoler le raccordement sont une série de soupapes (48, 82). 85
 20. Ensemble de chaudière (1) selon l'une quelconque des revendications précédentes, dans lequel le rail de guidage (76, 90) comprend une extrémité distale (91) formée avec une région progressivement rétrécie. 90
 21. Ensemble de chaudière (1) selon la revendication 20, dans lequel la région progressivement rétrécie du rail de guidage (76, 90) est en forme de cône. 95
 22. Ensemble de chaudière (1) selon la revendication 1, dans lequel l'ensemble de chaudière (1) comprend un rail de support (94) pour supporter l'unité de chaudière (2) pendant le démontage et le remontage. 100
 23. Ensemble de chaudière (1) selon la revendication

- 22, dans lequel le rail de support (94) est amovible de l'unité de collecteur (4).
24. Ensemble de chaudière (1) selon l'une quelconque des revendications 21 à 23, dans lequel l'ensemble de chaudière (1) comprend une pluralité de rails de support (94) pour supporter l'unité de chaudière (2) pendant le démontage et le remontage. 5
25. Ensemble de chaudière (1) selon l'une quelconque des revendications 21 à 24, dans lequel l'ensemble de chaudière (1) comprend deux rails de support (94), l'agencement étant tel, que pendant son utilisation, chaque rail de support (94) est disposé au niveau des coins inférieurs respectifs de l'unité de chaudière (2). 10
26. Ensemble de chaudière (1) selon la revendication 1, dans lequel l'unité de chaudière (2) comprend des moyens pour mesurer la pression. 15
27. Ensemble de chaudière (1) selon la revendication 1 ou selon la revendication 26, dans lequel l'unité de chaudière (2) comprend des moyens de commande pour contrôler le fonctionnement de l'ensemble de chaudière (1). 20
28. Ensemble de chaudière (1) selon la revendication 1 ou la revendication 26, dans lequel l'unité de chaudière (2) comprend des moyens pour mesurer l'humidité à l'intérieur de l'unité de chaudière (2). 25
29. Ensemble de chaudière (1) selon l'une quelconque des revendications 1 ou 26 à 28, dans lequel l'unité de chaudière (2) comprend des moyens pour analyser les gaz. 30
30. Ensemble de chaudière (1) selon la revendication 1, dans lequel, dans un mode de réalisation de la présente invention, l'unité de collecteur (4) comprend une chambre d'expansion (64) pour l'installation de tuyauterie de chauffage. 35
31. Ensemble de chaudière (1) selon la revendication 30, dans lequel l'unité de collecteur (4) comprend des moyens pour mesurer la pression. 40
32. Ensemble de chaudière (1) selon la revendication 1, dans lequel l'ensemble de chaudière (1) comprend des moyens de sécurité pour empêcher le retrait non autorisé de l'unité de chaudière (2). 45
33. Ensemble de chaudière (1) selon l'une quelconque des revendications précédentes, dans lequel l'unité de chaudière (2) est une chaudière domestique et le système de tuyauterie est un système de tuyauterie domestique. 50
34. Ensemble de chaudière (1) selon l'une quelconque des revendications précédentes, dans lequel l'ensemble de chaudière (1) comprend des moyens de gestion à distance pouvant fonctionner pour communiquer avec l'ensemble de chaudière (1) par l'intermédiaire d'un modem, de sorte que l'ensemble de chaudière (1) fournit l'information d'analyse aux moyens de gestion. 55
35. Système de chauffage **caractérisé en ce que** le système comprend un ensemble de chaudière (1) selon l'une quelconque des revendications 1 à 34.
36. Procédé pour entretenir ou réparer un ensemble de chaudière (1) selon l'une quelconque des revendications 1 à 34, **caractérisé en ce que** le procédé comprend les étapes consistant à détacher et retirer une première unité de chaudière (2) d'une unité de collecteur (4) ; remplacer ensuite la première unité de chaudière (2) par une deuxième unité de chaudière (2) et raccorder la deuxième unité de chaudière (2) à l'unité de collecteur (4).

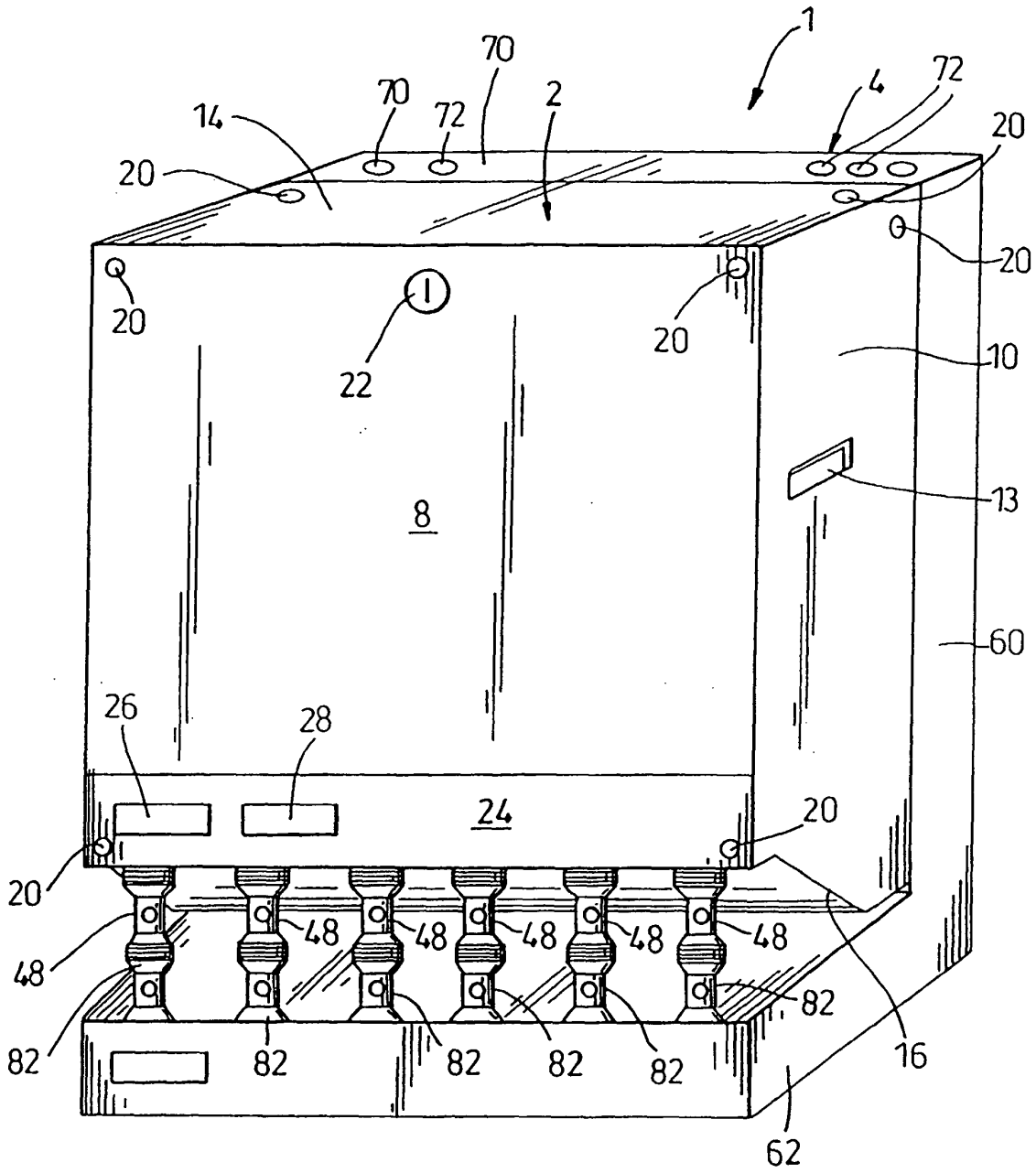


Fig. 1

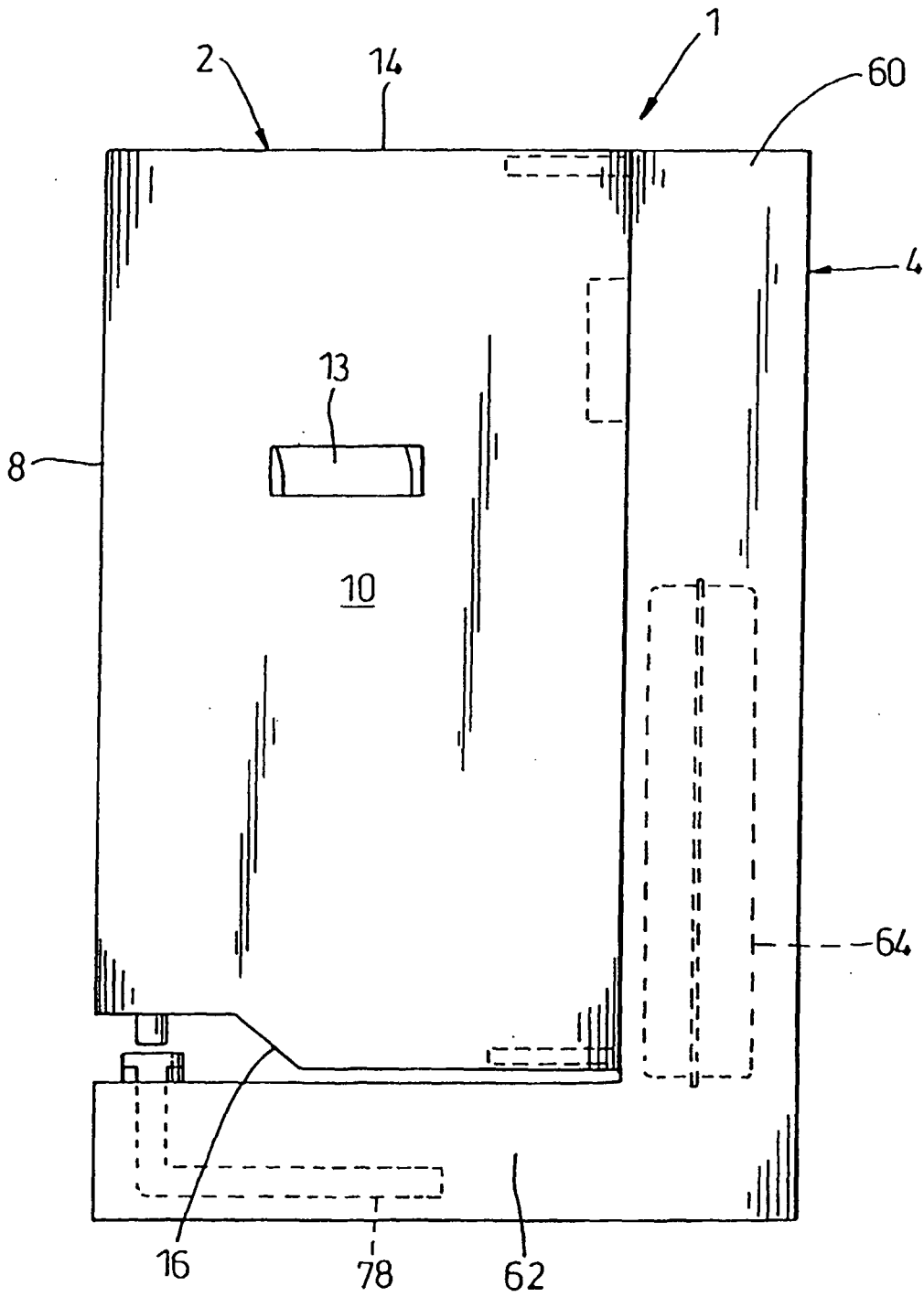


Fig. 2

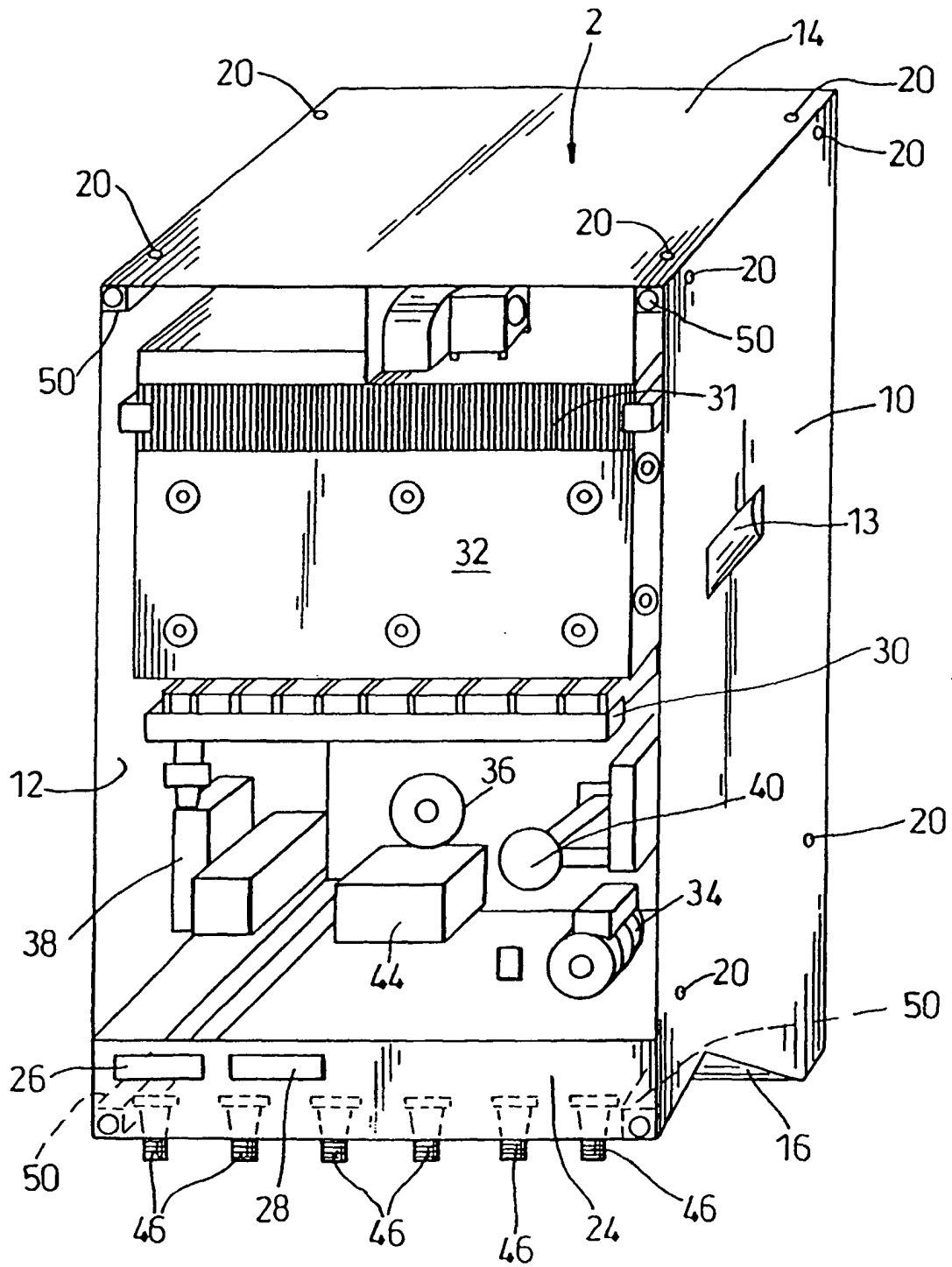


Fig. 3

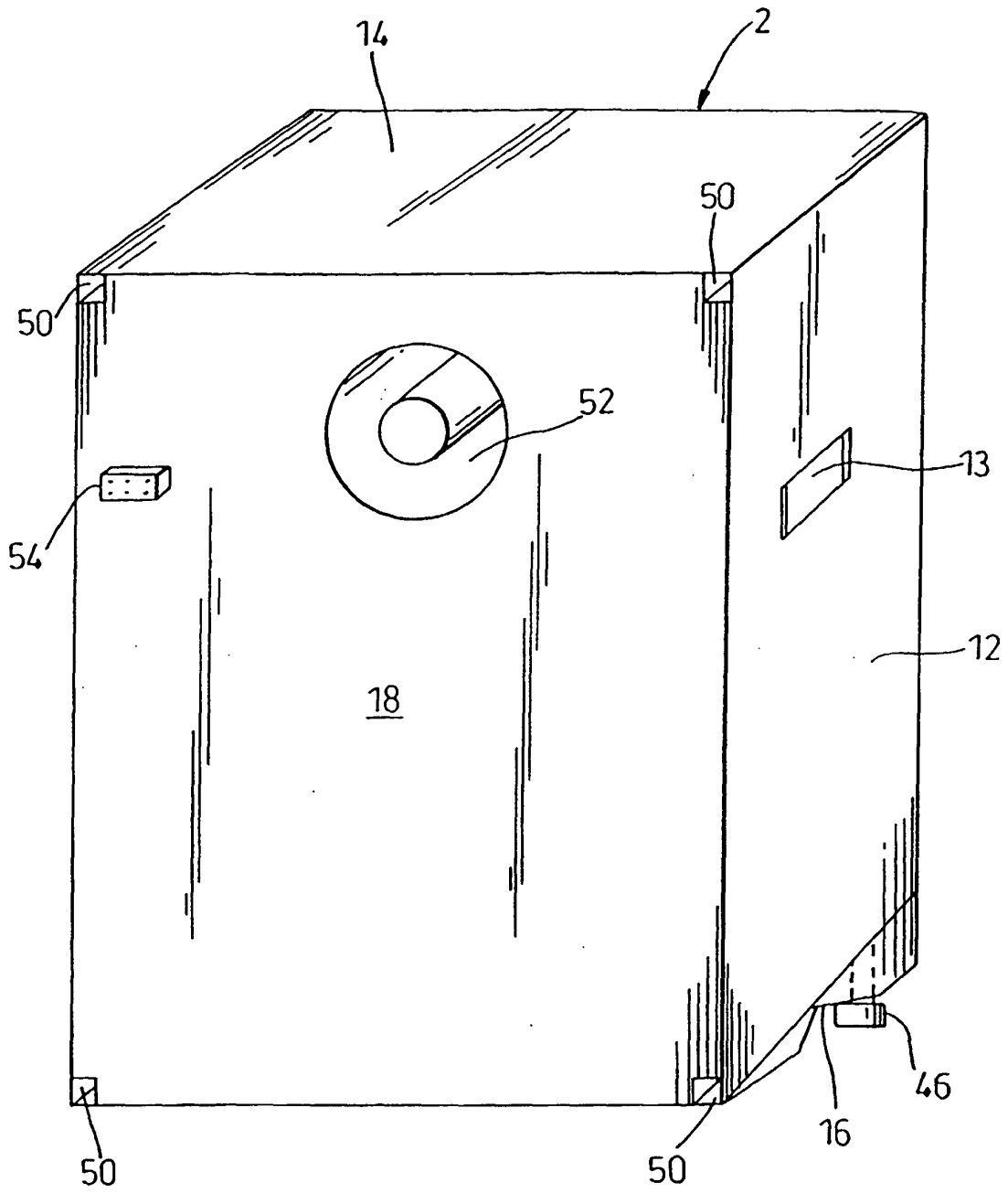


Fig. 4

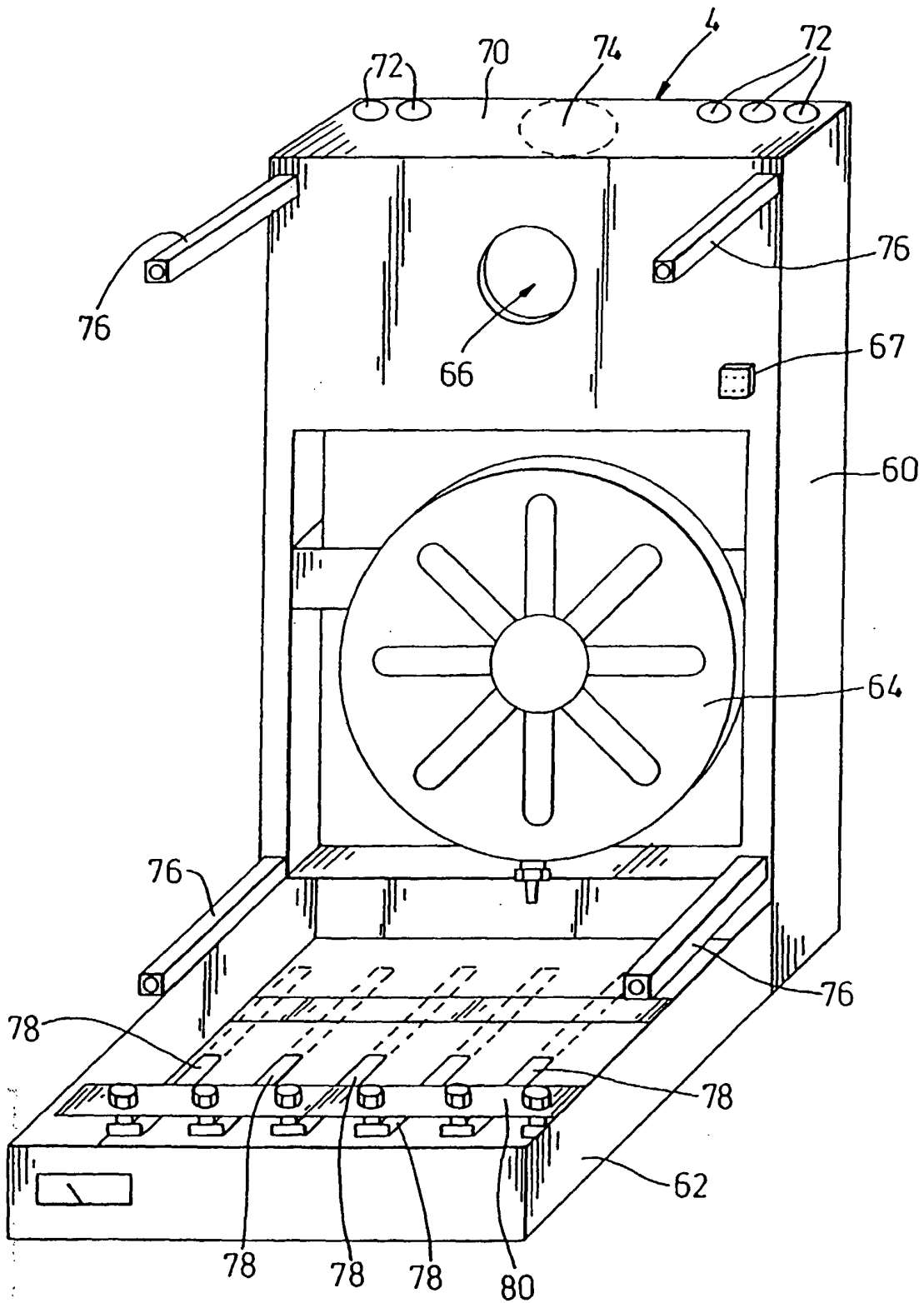


Fig. 5

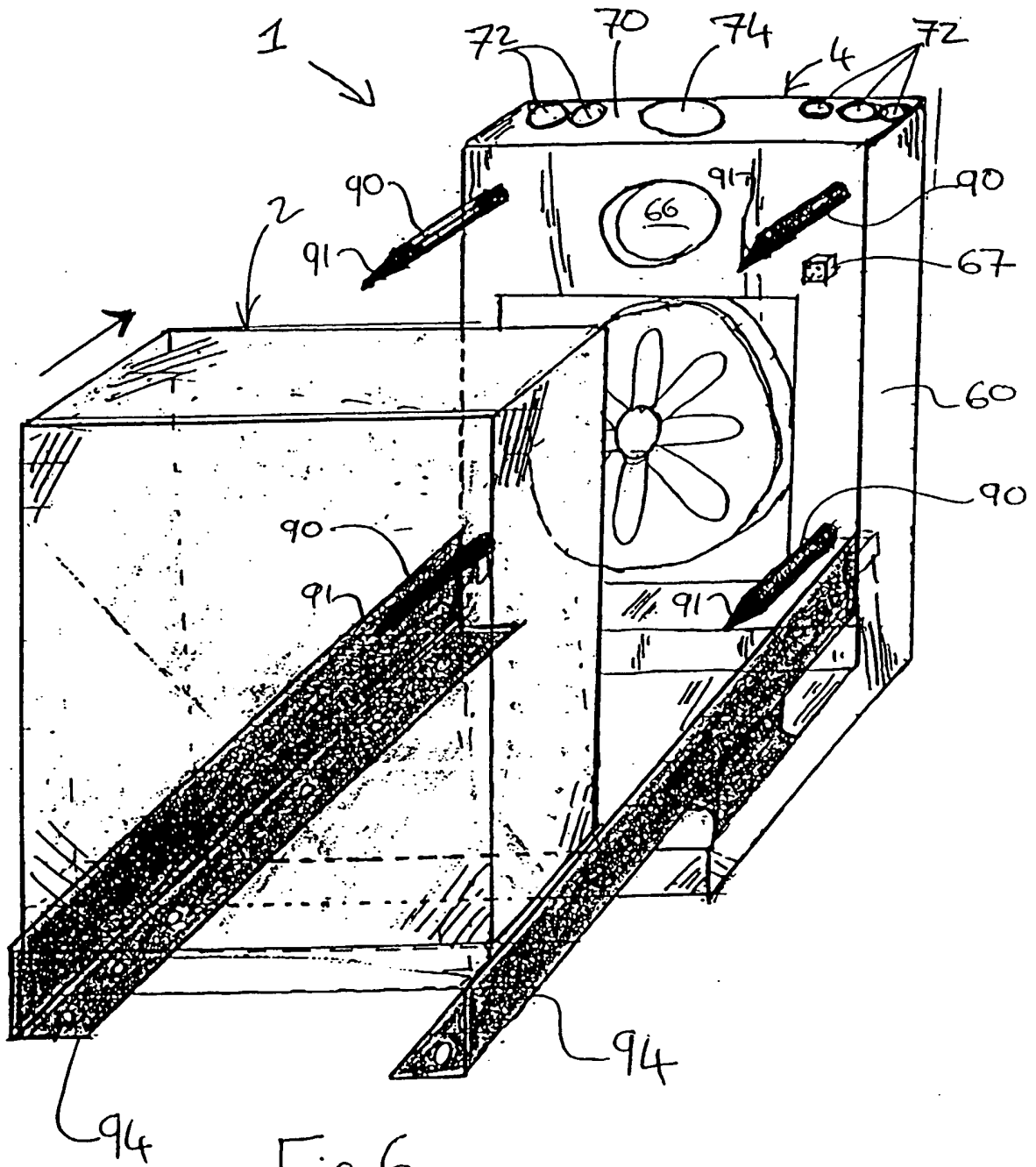


Fig 6

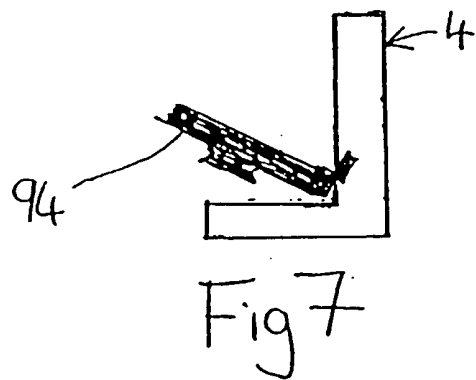


Fig 7

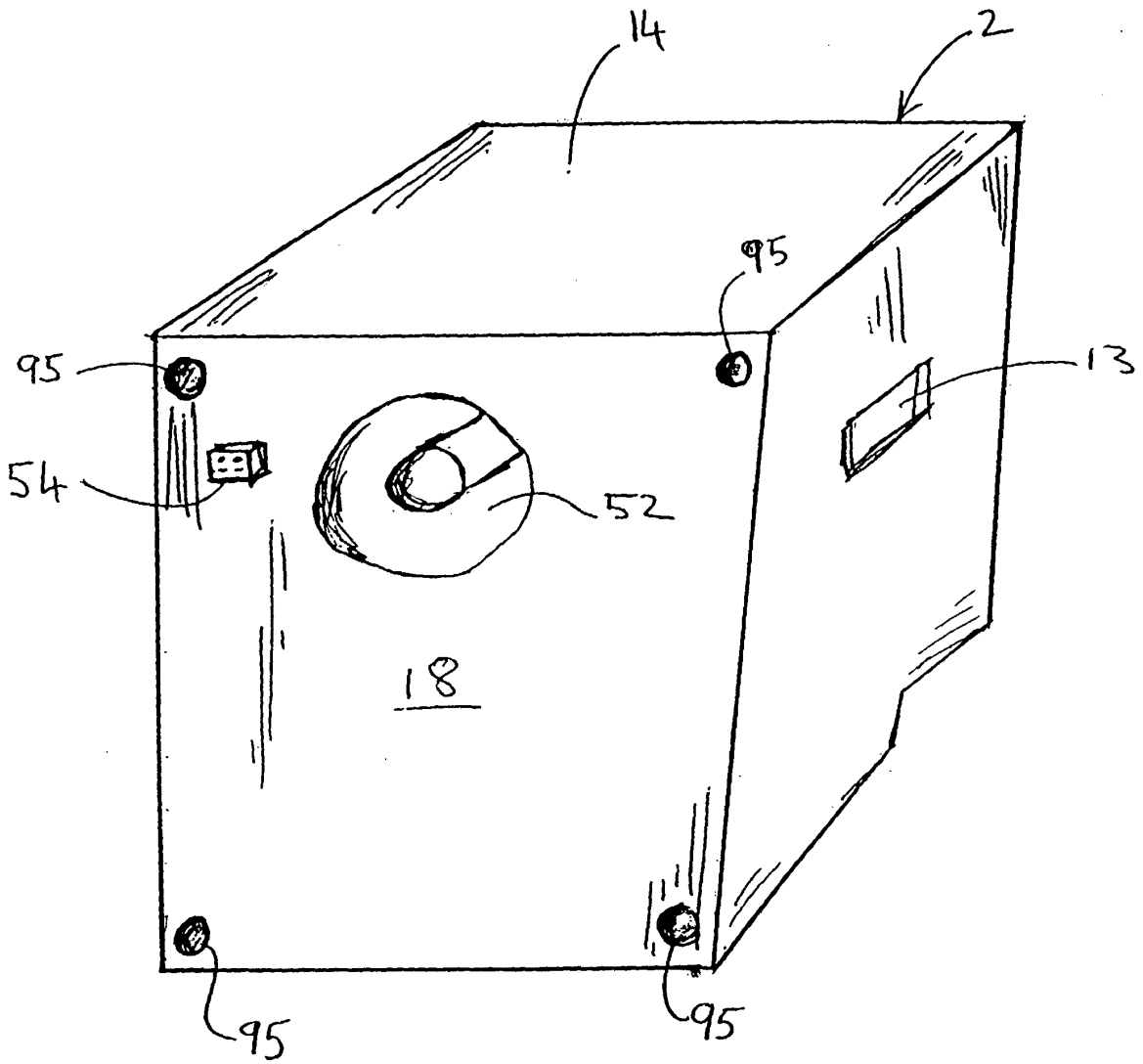


Fig 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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