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(54) HEATING INSTALLATION

(71) I, HANS VIESSMANN, a German Citizen of Im Hain 3559 Battenberg/Eder, Germany, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to the interconnection of electric cables in electric regulating and control circuits of heating systems, especially heating systems with two or more heating circuits.

The wiring of regulating and control circuits for heating systems presents considerable difficulties even today and involves substantial consumption of time and work requiring the employment of electrical engineering specialists. This means in practice that a heating fitter can install the heating circuit of a heating system but then has to wait for completion of the electrical circuit before he can conduct the first test heating. This frequently involves a wastage of time as heating specialists and specialists for the electrical circuit often cannot synchronise their work times. Apart from the resulting waiting and starting-up times, wiring work for the electrical circuit has to be carried out individually by hand. Added to this is the fact that highly varied heating regulation and control elements and apparatus are used today and the situation is made even more difficult when two or more heating circuits have to be regulated and controlled.

The aim of the invention is to simplify the installation of the electrical circuit of a heating system so that it can be carried out by a heating fitter by example by means of factory-prepared cable plug connections, so that the heating fitter can conduct a test heating soon after the heating circuit of the system has been installed.

Viewed from one aspect the invention provides a heating system having an electrical regulating and control circuit, wherein pre-fabricated electric cables in said circuit are interconnected by means of a connector box comprising a plurality of terminals which receive plugs on said cables, the terminals having multiple connections

which are wired amongst each other inside the box, so that the electric cables are interconnected in the manner required for correct functioning of the system.

Viewed from a further aspect the invention provides a method of installing a heating system, wherein there is provided electric control apparatus for a source of heat in the system, and an electric control element in a heating circuit of said system, said method comprising the steps of interconnecting said apparatus and element in a regulating and control circuit by providing a first, pre-fabricated electric cable having one end adapted to be connected to said control apparatus and the other end provided with a plug; providing a second, pre-fabricated cable having one end adapted to be connected to said control element and the other end provided with a plug; connecting the said one ends to said control apparatus and control element respectively; and interconnecting the said other ends of said cables by receiving the plugs on respective terminals of a connector box, the terminals having multiple connections which are wired amongst each other inside the box whereby to interconnect said cables in a manner required for correct functioning of the system.

In carrying out the invention, in preferred embodiments all the regulating and control elements belonging essentially to a heating system, have appropriate plug terminals which are connected by factory-prefabricated cables with plug connections via the connector box to boiler control apparatus also provided with plug terminals, whereby, without further action and if the local conditions so require, the connector box can be installed separately from the boiler control apparatus and can then be connected to the boiler control apparatus via an appropriate cable with plug connections.

Two embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which:—

Figure 1 is a side view of a connector box in accordance with the invention;

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Figure 2 is a top view of the connector box, open;

Figure 3 shows the connector box installed in the basic regulating and control circuit of a heating system having a boiler and two heating circuit control elements;

Figure 4 shows the connector box installed in the basic regulating and control circuit of a heating system having a boiler and several heating circuit control elements.

In the Figures, 1 designates a connector box, 2 denotes terminals adapted to receive plugs on electric cables and 3 denotes multipolar connections of the terminals arranged inside the box 1 and wired amongst each other in a predetermined manner, as shown in Figure 2.

Figure 3 shows the arrangement of the connector box 1 in an electrical regulating and control circuit for two heating circuit control elements 4 and 5 which are connected to the connector box via cables 6 having plugs received on terminals on the control elements and also plugs received on terminals 2, whence they are connected via a cable 7 again having a plug received on a terminal on the connector box to boiler control apparatus having a terminal receiving another plug on cable 7. A pump 9 and an oil burner (not shown), if such are used, are likewise connected directly to the control apparatus 8 with cables having suitable plugs.

Figure 4 shows an arrangement for a heating system having more than two heating circuits, where the connector box 1, as it is not arranged directly in the region of the boiler 10, is connected to the boiler control apparatus 8 by a longer cable 7, again having a suitable plug.

Hence, by the design and interposition of the connector box 1 the otherwise relatively expensive wiring between the heating control elements 4, 5 and the boiler control apparatus 8 is essentially simplified, merely plug and terminal connections having to be made, which can be done by a heating fitter himself.

#### WHAT I CLAIM IS:—

1. A heating system having an electrical regulating and control circuit, wherein pre-fabricated electric cables in said circuit are interconnected by means of a connector box comprising a plurality of terminals which receive plugs on said cables, the terminals having multiple connections which are wired amongst each other inside the box, so that the electric cables are interconnected in the manner required for correct functioning of the system.

2. A heating system as claimed in claim

1, wherein said regulating and control circuit comprises control apparatus for controlling a source of heat in the system and a control element in a heating circuit of said system.

3. A heating system as claimed in claim 2 wherein said control apparatus is provided with a terminal which receives a plug at the end of a said cable remote from said connector box, and said control element is provided with a terminal which receives a plug at the end of another said cable remote from said connector box.

4. A heating system as claimed in claim 2 or 3, including a plurality of heating circuits each provided with a said control element.

5. A heating system substantially as hereinbefore described with reference to Figs. 1, 2 and 3; or 1, 2 and 4 of the accompanying drawings.

6. A method of installing a heating system, wherein there is provided electric control apparatus for a source of heat in the system, and an electric control element in a heating circuit of said system, said method comprising the steps of interconnecting said apparatus and element in a regulating and control circuit by providing a first, pre-fabricated electric cable having one end adapted to be connected to said control apparatus and the other end provided with a plug; providing a second, pre-fabricated cable having one end adapted to be connected to said control element and the other end provided with a plug; connecting the said one ends to said control apparatus and control element respectively; and interconnecting the said other ends of said cables by receiving the plugs on respective terminals of a connector box, the terminals having multiple connections which are wired amongst each other inside the box whereby to interconnect said cables in a manner required for correct functioning of the system.

7. A method as claimed in claim 6, wherein said one ends of said first and second cables are provided with plugs, which are connected to said control apparatus and control element by being received by respective terminals thereon.

8. A method of installing a heating system, substantially as hereinbefore described with reference to the accompanying drawings.

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