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(54) Radiant battery adaptable to multipurpose coverings, particularly for house heating systems

(57) Object of this invention is a solution of a radiant surface element module. Main features are radiant surface modules (A) with fins (4, 5, 6, 7, 8, 9, 10) parted off near the upper duct (2) to be aligned to fins (4' - 10') of a movable cap (C) to link to the upper duct (2), said cap (C) being able to be linked to lateral protection elements (21) supporting tanks (30) as dehumidifiers besides allowing the support of a lower conveyor (40) for the flow of the air into the radiator (A). Further, a socket-joint (51) and its covering cap (52) are disclosed for closing a hole for the passage of a core of each radiator element (E'), said hole being accomplished radially to an upper duct (2) and axially at the column (3) for the vertical connection with a lower duct (1) with possibility of applying a covering cap (52), the cap element (C) can be linked by means of flexible extremities (4") and (6") to projections (53, 54) of the upper duct (2).

Fig.4

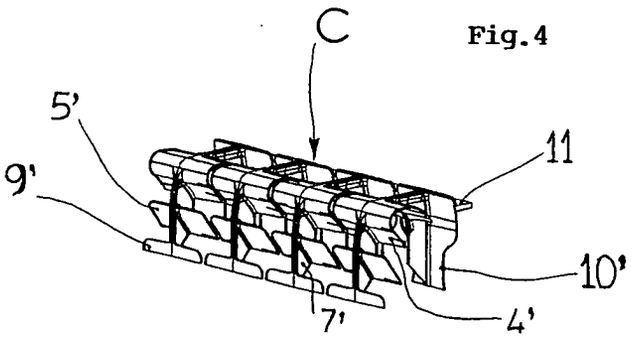

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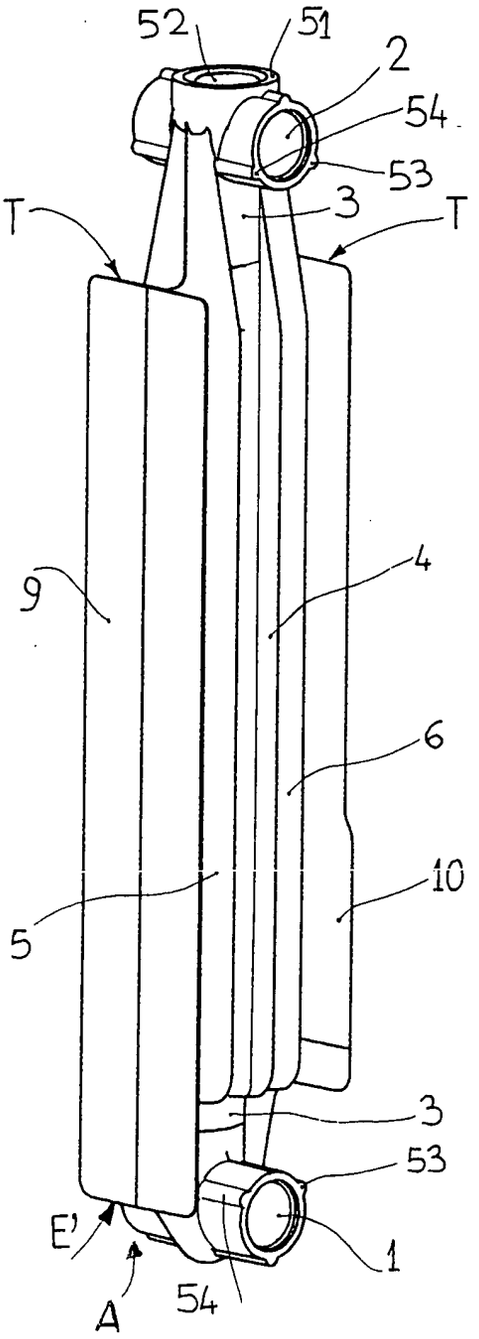
Fig. 9



Description

[0001] The present invention relates to a radiant battery or modules thereof which have a simplified structure and are adaptable to multipurpose coverings, particularly for use in house heating systems.

[0002] It is an object of this invention to provide a series of constructive devices which can further increase simplification of the shape of and assembling of batteries or modules of radiant surface elements, particularly for house heating systems.

[0003] It is an other object of the present invention to provide a new constructive solution of a battery or radiant surface element module, in particular for house heating systems, which allows to simplify completion thereof during the stage of die casting or pressing and storage thereof, and further makes it possible to provide radiant elements that combine aesthetical features and interior decoration with advantages of cleanliness, safety and best environmental conditions.

[0004] Another feature of the present invention is to provide modules of radiant panels having a first duct for the delivery of heating water and communicating with an other second duct for the collection of the heating water by means of columns to which vertical little fins of the conventional radiant type are linked, but which are interrupted near the upper first duct such that they can be aligned to little fins provided on a respective interchangeable cap to be linked to the upper first duct, for example by engagement, wherein the same upper duct in turn can be linked to side and lower elements which act protective and decorative, and that can be fitted in or linked directly to the same cap in any manner, or that can be applied on the sides or on a base of the radiant element.

[0005] One of the features of this invention is to provide an alternative position of a hole being adjusted for passage of a die pressed core of each single radiant element, said hole being provided radially to an upper duct and axially to a column linking vertically two ducts by welding, threading on, engaging with or by hooking a closing cap also for conveying warm air.

[0006] Radiator for house heating systems are well known. Such radiators comprise one or more batteries or radiant element modules properly fixed to each other, each module including a first duct for the delivery of heating water and for communicating with another second parallel duct for collecting the heating water by means of vertical column or tube which is fixed to a line or row of fins which can absorb the heat of the heating system's water and convey it into the room to be heated.

[0007] Particularly, radiators are known that, besides being provided with peripheral fins on the column or tube linking the delivery duct and the collection duct, comprise also two opposing T-shaped fins, the supporting braces of the "T" of which being orientated radially with respect to the respective axes of the column and the heads of which are aligned and placed in one single plane, so that they almost form only one visible radiant surface when looking either at the front or back surface of the radiant element.

[0008] In these kind of radiators, in order to provide a greater efficiency and functionality, the front surfaces of the heads of the mentioned T-shape fins are interrupted near the upper first duct, while the inner fins (i.e. the supporting braces) of each column have an end bent as a deflector, in order to allow air to be heated around the fins along the column and to flow and expand in the room to be heated.

[0009] This well known constructive device surely allows the present kind of radiator to achieve a good thermal yield, but its accomplishment involves a series of constructive difficulties having a negative influence on the final price, e.g. difficulty in accomplishing the heads with the deflectors of the fins and the necessity of having supply of such heads for each height and module of radiator as well as the difficulties and costs with respect to the production and management of the moulds of each different type of module for the radiator to be built.

[0010] Besides these constructive and management complications, the actual form of the radiator of the mentioned type involves also some practical difficulties, as well as being difficult to match with the other pieces of furniture of the house.

[0011] Particularly, a practical problem is caused by the presence of upper orifices of the deflectors that form a collection point for dust and dirt and that, because of the T-shape of the fins at sight, are destined to become a breeding-ground for impurities and lack of cleanliness, without possibility of ordinarily cleaning them.

[0012] Another practical problem is caused by the uniform and monochromatic aspect of the radiator that usually contrasts with the polychromatic, familiar and domestic environment, so that they are often hidden by gratings or particular pieces of furniture that create bulk and reduce the yield of the radiator, besides further accumulating dust and dirt.

[0013] Another problem is caused by the danger of sharp edges with which the extremities of the outer T-shape fins of the radiators at issue end and also for which the above mentioned gratings or the particular pieces of furniture are used.

[0014] Finally, a further disadvantage of the radiator of the mentioned type is caused by the difficulty in applying the air dehumidifier tanks that need little hooks for the support of cumbersome bowls that can be anyway an occasion of dangerous contact for children.

[0015] It has been found out that in fact the new simplified shape of the upper part of each radiant module allows to house a connection of a core of a die cast or pressed inner part of the radiant element, without applying the actual bottom or base thereto, normally provided at a lower part, and which can then be linked to a closing cap by welding or screwing.

[0016] A great disadvantage of conventional caps welded or fixed to the bottom of the radiant element with

respect to a closely located seal, is that it is difficult to find the seal as well as uncomfortable to repair it.

[0017] An other disadvantage of these caps is undoubtedly their negative aesthetical aspect, so that it is necessary to make the front piece of the radiator longer in order to cover and hide them at least partially, even if this projection reveals itself unprofitable with respect to the thermal yield of the radiant element.

[0018] A further shortcoming of the use of a radiator bottom part consists in the difficulty of its welding process, in its poor reliability as well as in the cost of this operation with respect to both the machines and the material to be used.

[0019] One object of the present invention is to provide a battery of radiant element of the mentioned type that combines the features of good radiant efficiency with the features of greatest easiness in moulding, stockpiling and sale of different modules, by means of the elimination from its main body of the finned and deflecting upper part, that is accomplished separately and applied subsequently during the laying.

[0020] Another object of the invention is to provide a radiator that allows always the best cleanliness, making the passage to every orifice, i.e. exits of the warm air and to every opening, of the radiant wings possible.

[0021] Further object of the invention is to simplify the number and the management of dies for manufacturing the radiators or radiant batteries and forming stages of the radiant batteries, with consequent reduction of costs.

[0022] Another object of the invention is to provide a radiator that can fit the furniture of the house, with heads of different or same colour as well as with the possibility of providing lateral and bottom projections elements provided in different and customized forms and colours.

[0023] Still an object of the present invention is to incorporate dehumidifier tanks in the covering structure, eliminating them from sight.

[0024] A further object of this invention is to provide each element of the radiant battery with a simplified shape, such that a hole for the application of a die cast core is placed at a point in which it is easier to check the seal and easier to work than the position of caps on the bottoms, as in the prior art.

[0025] With reference to the above mentioned task, it is another object of the present invention to hide said die cast hole and its closing cap.

[0026] A still further object of the present invention is to provide a movable but stable enough fixing of the cap for finishing a flow of warm air which is directed by the fins of the radiant element.

[0027] Last but not least object of the invention is to allow the presence of a deflecting cap element that, besides being a protective and decorative element of the radiator, can also hook and support lateral coverings including possible coverings provided with tanks serving as humidifiers.

[0028] These and other objects of the invention are, in fact, perfectly achieved by the present invention providing radiant batteries as it can be inferred from the following description of the embodiments and from the application of the accessories foreseen by this invention.

[0029] The present invention gives a solution to the above and other problems and difficulties, by simplifying the forming process of each radiant battery, eliminating the problems of forming the deflecting upper fins for the flow of the warm air and the problem of their stockpiling, and further by simplifying and reducing its dies and on the other hand the present invention provides a radiator that ensures the greatest possible cleanliness, the best possible protection against sharp edges, is provided with a dehumidifier tank and can be customized, in order to match any kind of furniture.

[0030] Still with reference to the invention, it has been found out that its structural simplification allows a safe movable fixing of the cap of the head or cap element of the radiant element, without using any screws or engaging system, which are always complex.

[0031] The practical accomplishment of the mentioned solution has, in fact, allowed a substantially simplification of a production process of the single elements and of the batteries of radiators, besides having made the storage and the placing or mounting easier, according to the different objects as suggested, and further has allowed the identification of further simplification with respect to the production and use, increasing the advantages of this solution.

[0032] In order to overcome the structural and management problems, besides other practical problems with respect to the cleaning and the decoration of the rooms in which this kind of radiators are used, the invention provides simplified elements of radiant battery characterized by having parting off or diverging longitudinal fins near an upper duct of the radiant element and an actual curving, so that the fins can be aligned to correspondingly bent deflection fins of a cap element that is provided separately and applied to the upper part of the radiant element, allowing also the hooking and the support of possible protective elements to the radiator's end caps, that can in turn be used to support tanks and/or have the function of tanks in order to humidify a room.

[0033] Thus the subject matter of the invention is a radiant battery being adjustable for multipurpose coverings, particularly for house heating systems, comprising radiant elements having longitudinal fins that are parted off near an upper duct, so that orifices and the deflecting extremities of each element of the battery are located on a separate cap element that can be overlapped and applied to each radiant element; said cap element being provided with continuating fins for each fin of the radiant element with which they align and form flow slopes for air heated by a linear part of the fins, and further provides support for lateral and lower protection elements of the radiator for using said protection elements to support and incorporate tanks as air dehumidifier for the environment to heat.

[0034] According to an advantageous embodiment of the invention the radiant battery has a hole being provided on the upper duct of a radiant element for the passage of a die cast or pressed core of the radiant element, said hole being oriented radially to the upper duct and axially to a column that leads to a lower duct of the same radiant element.

[0035] The present invention improves and finishes radiators by substantially eliminating the conventional bottom and its cap existing in every topical radiant elements, replacing it with the presence of a proper seat for the housing of the die cast core which is provided radially to the upper duct of the radiant element and axially to the column for the linking to the lower duct, thus allowing a more immediate check of possible leakages from its closing cap as well as its easier production.

[0036] These and other features of the present invention will become clear from the description of embodiments thereof, given only by way of example and not being intended limitative, in combination with the attached schematic drawings, in which:

Fig. 1 shows a top view of a side of a main radiant body, provided with upper fins being interrupted and open in an end part thereof for deflection of warm air, according to the present invention;

Fig. 2 shows a top view of the side of a cover or upper movable part of the battery of Fig. 1;

Fig. 3 shows a perspective view of the main body of the battery or set of radiant elements illustrated in Fig. 1;

Fig. 4 shows a perspective view of a set of cap elements or movable upper parts as illustrated in Fig. 2;

Fig. 5 shows a perspective view of the radiant battery of Fig. 3, which can be linked to the cap elements of Fig. 4 as well as a pair of lateral coverings having a protective and decorative function;

Fig. 6 shows a perspective view of the coverings of Fig. 5, being illustrated assembled with the radiant battery of Fig. 1;

Fig. 7 shows a perspective view of the radiant battery of Fig. 1, viewed from the back, to which a set of cap elements of Fig. 2 is already linked and to which a pair of lateral coverings different from those of Fig. 2 besides a further base or lower element can be linked;

Fig. 8 shows a perspective view of another cap element for a radiant element according the present invention as shown in Fig. 9;

Fig. 9 shows a perspective view of a radiant element according to the present invention to which the cap element of Fig. 8 is to be linked;

Fig. 10 shows a perspective view of the cap element of Fig. 8 linked to the radiant element of Fig. 9;

Figs. 11 and 12 show two different views of the cap element of Fig. 8;

Fig. 11 more precisely shows a perspective and partially exploded view of a battery made of four radiant elements like in Fig. 9, which can be linked to the same number of caps lightly modified to house an upper linking lath as represented in Fig. 11; and

Fig. 12 shows the assembled elements of Fig. 4.

[0037] In all drawings same details are represented or are to be understood as being represented by the same reference numbers.

[0038] A radiant battery A of the different attached drawings is understood as being formed by, for example, four radiant elements E of the type provided with a lower duct 1 linked to an upper duct 2 by means of a column 3 which is provided with longitudinal radial fins 4 and with a pair of tangential fins 5 and 6 as well as with a pair of orthogonal radial fins 7 and 8, to which flat heads 9 and 10 are linked.

[0039] As it can be clearly inferred from Fig. 1, according to the present invention, every radiant element E is accomplished by die pressing with an open T on its both sides, so that it is open in the upper part of the fins 4, 5, 6, 7 and 8 as well as in the extremities of the heads 9 and 10, so that the radiant element gets near the upper duct 2 in different ways.

[0040] This embodiment of the present invention allows on the one hand to greatly simplify the die pressing stages of the radiant element E for the reasons as described below and on the other hand to achieve a series of advantages as illustrated below.

[0041] As already mentioned, the present radiators of the invention have a particular deflecting shape with respect to the upper part of the above mentioned fins, said shape having the function of conveying heat absorbed by the fins along their entire height, e.g. to a room to be heated.

[0042] It is moreover known that exactly this part of the radiant element involves the greatest problems during the process of die pressing, resulting in a plurality of discarded articles, because of the complexity of the dies and because of the pressing stages required, besides of requiring complex and expansive provisions of dies and supplying each module of the radiator to the market. In fact, the T-shape allows to eliminate the direct die pressing of the most complex parts of every radiant element E of the radiator A, since the remaining part of the fins of the radiator is fundamentally linear, as it can

be inferred from Fig. 1.

[0043] Moreover, according to the present invention, the deflecting function for the irradiation of heat accumulated by the above mentioned fins is carried out with the same efficiency by a cap element C having fundamentally the same shape of parted off or diverging fins but with the advantage of being die pressed or accomplished separately.

[0044] Such an advantage consists substantially in simplifying the die structure and the processing stages required for pressing a smaller body like that of the cap element C, that is not linked to any part of the die predominantly linear.

[0045] A great advantage of accomplishing the cap element C separately is, anyway, to achieve the possibility of making the cap elements C fit to each module or to any size of radiant element E, eliminating a set of complex and expansive dies and the respective die pressing stages, thus accomplishing radiant elements E having a linear and simple shape with consequent reduction of articles to be discarded and the possibility of reducing the provisions, according to some of the specified objects of the invention.

[0046] As it can be inferred from the Figures 2 and 4, each element of the cap element C is accomplished so that the extremities of the transversal fins 9', 5' and 10' and of the radial fins 3', 7' and 8' can be perfectly put on the corresponding fins 9, 5, 10, 3, 7 and 8 of the element E, in order to create a continuity in the respective flow columns of the heated air.

[0047] Of course, the cap element C is provided with an opening V that allows the cap element C to be inserted on the upper duct 2, for example, by simply pressing it or by means of a subsequent possible fixing to one of the fins below by means of an inner plate and linking screws.

[0048] The cap element C is then provided with a fin 11 provided orthogonally on the back side 10', but is lightly smaller than the side 10' itself, said fin 11 can house a strip longitudinal to the radiator A to hide from sight supporting hooks (not shown) on the wall, besides enlarging the upper supporting area, like a shelf, of the radiator.

[0049] It is clear that a set of cap elements C, separated from the linear element E of the radiator A during the production but linked during the functioning, allows also besides the constructive and management advantages mentioned above, a perfect cleaning of every part of the radiator, wherein it is possible to lift every single element of the cap element C, in order to insert therein means for cleaning the orifice and the columns of the flow of warm air, according to another specified object.

[0050] With reference to Figs. 5 and 6, it can be inferred that the presence of the elements of cap element C allows the application of a pair of lateral protecting elements 21, that by means of upper tapered extremities 22 and 23 can be coupled with an outer edge of the sides of the cap element C and can be supported by them by simple overlapping or due to, for example, a self-tapping screw 24 for being fixed to the corresponding fin of the radiator A.

[0051] The presence of the cap element C allows thus the achievement of another object of the invention, given by the necessity of providing protection from sharp edges of the radiator, since it allows the support of the lateral protection elements 21.

[0052] The same protection elements 21 may be provided with an upper open slot 29 that allows the passage of the upper duct 2 for the delivery and discharge of warm water, i.e. heating water.

[0053] With reference to Fig. 7 it can be inferred that the presence of the cap element C allows further advantageous applications of the radiator A.

[0054] A further application is that of accomplishing lateral protection elements in two parts, a lower part 21a being linked by means of connection or insertion an upper part or head 21b, that in case of maintenance can be taken off separately from the remaining lower part 21a, for example, by taking away some screws applied to holes 24 for the linking of the head 21b to the fin of the duct 2. Similarly, it is possible to provide holes 25 on lateral sides of the lower part 21a for using screws for linkage to the fin(s) 9 and/or 10 of the radiator A.

[0055] A second further embodiment shows the presence of an opening 26 in one or both of the protections 21, in order to house a tank 30 therein, a flanged head 31 of which is linked or can be linked to said protection 21 and is provided with a feeding slot 32 for water to be poured into the tank 30 as dehumidifier for the environment. Another specified object is thus achieved.

[0056] A third embodiment made possible by the presence of the cap element C is given by the possibility of linking, for example by means of screws to be linked to holes 28 of a base of the protection elements 21, an air conveyor 40, which is provided with a deviation wall 43 to be faced against a supporting wall of the radiator and which avoids that the air goes up along the wall, causing the actual traces of dirt above the radiators, the air conveyor working together also with a lath that can be put on the support 11, in order to achieve this function.

[0057] The conveyor 40, besides conveying the air to be heated into its ducts or channels 42 formed by a frame 41, functions also as a skirting board, besides being a protection against lower edges of the radiator.

[0058] The provision of the lateral protection elements 21 with or without the tanks 30 and with or without the base (air) conveyor 40 are the consequent intuition for finishing the decoration of the radiator, which is possible due to using the cap element C and the possibility of such a cap element C to assure proper support and fixing of the other parts.

[0059] The same decorative and finishing elements, which till now have been taken into consideration, can be applied totally or partially to this type of radiator A in any manner by directly fixing them to the fins of the ra-

diator A.

[0060] Consequently, similar or identical protections 21 with or without tanks 30 as dehumidifiers and with or without the base conveyor 30 can easily be applied also to radiators of the kind till now described but accomplished in the traditional way and with similar or identical shape, that means without the presence of the removable cap elements C, since they can be fixed to the fins of the radiator in an arbitrary manner.

[0061] As already mentioned, the embodiment till now described and illustrated can be accomplished also in other constructive forms.

[0062] By the way of example only, the radiant element E can be provided with a different number of vertical fins and consequently also the fins of its cap element C have a corresponding shape to be aligned to those of the base radiator.

[0063] It is also possible to provide a different shape of the top of the head of cap element C for particular aesthetical requirements or for particular uses, as the elements of the cap element C and the other decorative and finishing elements 21, 30 and 40 can be accomplished with different and proper materials and colours as well as with different shapes in relation to specific market demands.

[0064] It is finally possible to alternate or finish the presence of the holes 28 for the fixing of the conveyor 40 to the shoulders 21 by means of an inner rim of the base of said shoulders 21.

[0065] According to the embodiment of Fig. 9, a radiant element E' is provided without the bottom part normally provided radially to the lower duct 1, as represented in Figs. 1 to 7. The same duct 1 communicates with a cavity of a column 3 which is also open to an upper duct 2 for the passage of heating the water.

[0066] Radially to the duct 2 and axially to the hollow column 3, a socket joint 51 is provided having a hole for the passage of a die cast core and can be closed by a cap or cover 52, for example by threading on, cold pressing, possibly sealing or by simple welding the cap 52 to an edge of said socket joint 51, in any case assuring the best tight joint and the possibility of a comfortable check of possible leakages besides making a possible repairing easier, according to one of the specified objects. The covering cap 52 is preferably cylindrical.

[0067] Still with reference to Fig. 9, an outer surface of the upper duct 2 as well as that of the lower duct 1, can be provided with at least two projections or shoulders 53, 54 placed, as shown, with the same orientation with respect to the axis of column 3.

[0068] With reference to Fig. 8, it is clear that a cap element C', besides having bent deflecting fins 4', 5', 6' and 10' that can be coupled to respective straight fins 4, 5, 6 and 10 of the radiant element E' according to the plane of their diverging T, comprises also flexible extremities 4'' and 6'' which are provided with respective joints 56 and 57 for engaging with the above mentioned shoulders 53 and 54 of the upper duct 2, as represented in Fig. 10.

[0069] As an effect of this joining, the cap element C' is linked to the radiator element E' stably enough, even if it can easy be taken off, for example for an inspection or cleaning of the inside of the radiator element E'.

[0070] In this way, the cap element C' provides two functions, deflection, in order to convey or direct air heated by the radiator, as well as coverage of elements in order to hide also the unaesthetic caps 52.

[0071] The elimination of the lower extremity of bottom and cap, with respect to conventional radiators, finally allows to make the height of the head fin 9 of each element E' shorter, since its lower part does not have the task of hiding the presence of the bottom any longer.

[0072] This shortening of the head fin 9 besides favouring the cleanliness of the house, allowing a better passage of the broom or household appliance, also allows to reduce the passivity of an area with a scarce heating ability, as it seems to be said lower extremity of the actual head fins 9.

[0073] Still according to the present invention, an upper chamber 58 is provided on an upper part of the cap element C' also for making the structure more stable.

[0074] The cap element C' can then be linked to each radiant element E', while lateral protection elements 21a and 21b (not illustrated here) can be applied at the beginning and at the end of the row of caps C' for hiding the caps or covers 52 from sight and allowing also the application and the support of possible lateral tanks 30 as humidifiers, also directly made out of the same lateral protections 21a, according some of the specified objects.

[0075] Certainly, the lateral protection elements 21b may be hooked to the cap element C', for example by elastic hooks, which are correspondingly provided with little hooks such that the lower lateral protection elements 21a may be attached to the above mentioned upper lateral protection elements 21b.

[0076] As already mentioned, Figs. 11 and 12 illustrate a further embodiment of the present invention.

[0077] According to this further embodiment, the ceiling of the upper chamber 58 of each of the cap elements C' is cut transversally to house, under pressure, one only lath or screen 60 previously cut to the length corresponding to the sum of the single widths of the different caps C' applied to a corresponding number of radiant elements E' of one or more batteries A that form the radiator to be built.

[0078] This further embodiment allows, on the one hand, to improve the alignment of the different caps C' to each other and to the radiator, while, on the other hand, it allows to increase the degree of pressure of the joints 56, 57 against the shoulders 53, 54 of the duct 2, as an effect of the thrust of the lath 60 against the base of the flexible fins 4' and 6' that support the joints 56 and 57.

[0079] Finally it is emphasized that the shoulders 53 and 54 on the lower duct 1 allow the fixing of a lower

conveyor 40 (not illustrated here), for example, by means of little hooks applied to camps linked to the same conveyor 40.

[0080] Of course, as already specified, the solution till now illustrated can be accomplished also in other embodiments.

[0081] As an example only, there is the possibility of providing only one cap C' for one or more elements E' to cover, and of providing a proper number of elastic extremities 4" and 6" with little joints 56, 57.

[0082] It is also possible to accomplish the radiant elements E' provided with a different number of radiation fins and consequently a cap C' provided with a corresponding number of deflecting fins.

[0083] These and other similar modifications or adjustments are anyway to be understood as falling under the scope of the invention to be protected. The scope of protection is defined by the appended claims.

Claims

1. Radiant battery (A) being adjustable for multipurpose coverings, particularly for house heating systems, comprising radiant elements (E) having longitudinal fins (3 - 10) that are parted off near an upper duct (2), so that orifices and the deflecting extremities of each element (E) of the battery (A) are located on a separate cap element (C) that can be overlapped and applied to each radiant element (E); said cap element (C) being provided with continuating fins (3' - 10') for each fin (3 - 10) of the radiant element (E) with which they align and form flow slopes for air heated by a linear part of the fins, and further provides support for lateral and lower protection elements (21a, 21b, 40) of the radiator (A) for using said protection elements to support and incorporate tanks as air dehumidifier for the environment to heat.

2. Radiant battery (A) according to claim 1, **characterized in that** every radiant element (E) comprises a piece of a lower duct (1) that is linked to a piece of an upper duct (2) by means of a column (3) for the passage of heating water, the column (3) being provided with a set of fins (4, 5, 6, 7, 8) including transversal fins (9, 10) that are transversal to the set of fins (4, 5, 6, 7, 8), said transversal fins (9, 10) being formed to generate tracts (T), and arranged adjacent to provided slopes for the formation of deflection ducts, and orifices for discharging the warm air near the upper duct (2) of each radiant element (E).

3. Radiant battery (A) according to claims 1 and 2, **characterized in that** the deflection ducts of each radiant element (E) and their orifices for discharging the warm air, heated by the columns (3) and by their longitudinal fins, are contained in each corresponding cap element (C) which has an opening (V) for putting it on and fixing it to the tracts at the upper duct (2) of each radiant element (E) as well as a set of sloping fins (4', 5', 9') and a base (40) that can be aligned to the corresponding fins of the radiant element (E).

4. Radiant battery (A) according to claim 3, **characterized in that** each cap element (C) is adjusted to be put on the radiant element (E), and is adjusted to be linked to it, particularly by overlapping its fins (3' - 8') with the diameter of the tracts, or by means for fixing one of its fins to one of the fins of the radiant element (E).

5. Radiant battery (A) according to claim 3, **characterized in that** each cap element (C) is provided with a further horizontal fin (11) for acting together with the other fins (3' - 10') of the cap elements (C) to allow the support of a lath (60) that allows to hide from sight supporting hooks of the radiant battery (A).

6. Radiant battery (A) according to claims 1 to 3, **characterized in that** the cap element (C) when disposed laterally in the radiant battery (A) allows support and fixing of lateral protection elements (21), said lateral protection elements (21) being linkable to and supportable by the cap element (C) particularly by overlapping connected edges (22, 23) as well as by means of screws or means for linking their sides to proper fins of the radiant element (E) by means of holes (24, 25).

7. Radiant battery (A) according to claim 6, **characterized in that** said lateral protection elements (21) are provided in two parts, an upper part (21b) being fixable to the ends of the cap element (C) as well as a lower part (21a).

8. Radiant battery (A) according to claims 1 to 7, **characterized in that** at least one lateral protection element (21) is provided with an opening (26), in which a tank (30) for humidifying water is housed, each tank (30) being provided with a lateral flange (31) that engages with an outer edge of the opening (26) to support said tank (30) to be placed in an inner side of the protection element (21), said flange (31) being provided with an opening (32) to fill the tank (30) with water.

9. Radiant battery (A) according to claims 1 to 8, **characterized in that** the local protection elements (21) being linkable to the cap element (C) allow the support of a conveyor (40) for the air to be heated, said conveyor (40) is provided with a set of holes (42) being part of a grating structure (41), and further is

provided with a blind surface (43) arranged on a side thereof which is to be directed to a wall supporting an installed radiant battery (A) for conveying air towards the openings (32) for avoiding passage of the air along the supporting wall.

10. Radiant battery (A) according to claim 9, **characterized in that** the conveyor (40) is supportable by the lateral protection elements (21), particularly by means of screws going through holes (28) of a base of said lateral protection elements (21) or by means of inner rims of the base for supporting said conveyor (40).

11. Radiant battery (A) according to claims 9 and 10, **characterized in that**, for a better support and housing of the conveyor (40), the base of the lateral protection elements (21) has a skirting board (27) on a side which is to face a wall supporting the radiator battery (A).

12. Radiant battery (A) according to claims 1 to 11, **characterized in that** lateral protection elements (21) and a base element (40), also functioning as skirting board, as well as dehumidificrs (30) suitable to give also a particular decorative effect to the same radiator (A) are attachable to the cap element (C).

13. Radiant battery (A), in particular for house heating systems, **characterized by** a hole being provided on the upper duct (2) of a radiant element (E') for the passage of a die cast or pressed core of the radiant element (E'), said hole being oriented radially to the upper duct (2) and axially to a column (3) that leads to a lower duct (1) of the same radiant element (E').

14. Radiant battery according to claim 13, **characterized in that** the hole for the passage of the die cast or pressed core of the radiant element (E') of the radiant battery (A) comprises a socket-joint (51) linked to the upper duct (2) of said radiant element (E'), its closing being provided by means of a cap (52).

15. Radiant battery according to claim 14, **characterized in that** the socket-joint (51) and the cap (52) of the radiant element (E') are hidable and coverable from sight by putting a cap element (C') thereon, the further cap element (C') being formed such that air heated by the radiant element (E') flows towards the outside of the radiant element (E').

16. Radiant battery according to claim 12 or 15, **characterized in that** it provides at least two projections (53, 54) on a surface of the upper duct (2), said projections (53, 54) being spaced equidistant to an axis of the socket-joint (51) and to the column (3) of each radiant element (E').

17. Radiant battery according to claim 16, **characterized in that** the cap element (C') is fixed removably to the upper duct (2), and further comprises bent deflection fins (4', 5', 6', 10') alignable to corresponding straight fins (4, 5, 6, 10) of the radiant element (E'), and flexible extremities (4", 6") which are provided with respective little joints (56, 57) for engagement with the projections (53, 54) of the upper duct (2) to keep the cap element (C') fixed to the radiant element (E').

18. Radiant battery according to claims 13 and 17, **characterized in that** a screen (60) is applicable transversally to a set of cap elements (C') linked to a same number of radiant elements (E') of a radiant battery (A) after having transversally bored the same cap elements (C') along an upper wall of a chamber (58).

19. Radiant battery, in particular for house heating systems, according to claims 13 to 18, **characterized in that** projections (53, 54) are also provided on the lower duct (1) for supporting an air conveyor (40) or another element of the radiant battery (A) and being used also in a decorative way.

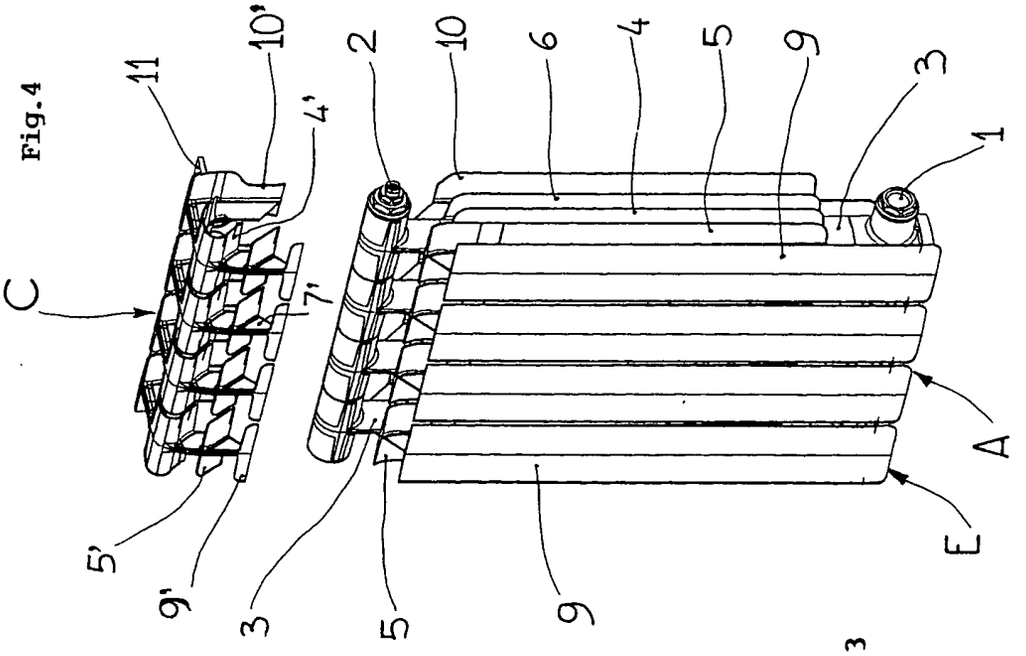


Fig.4

Fig. 3

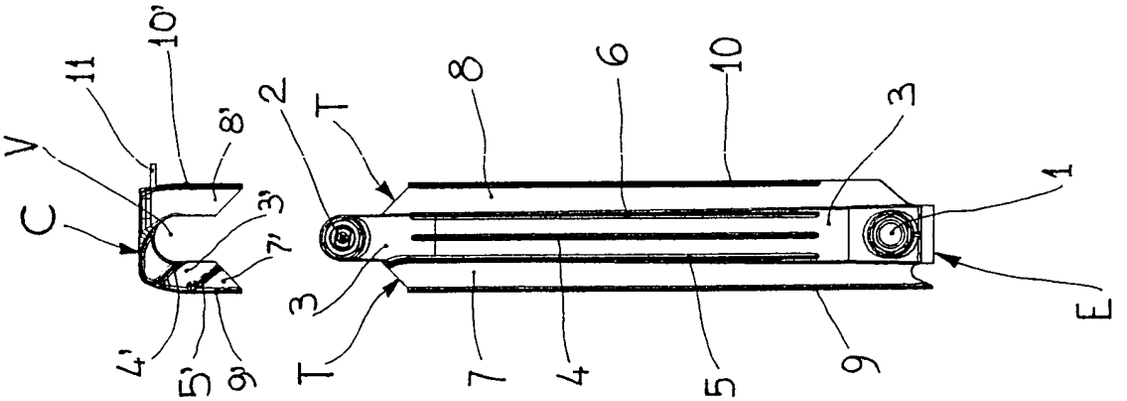
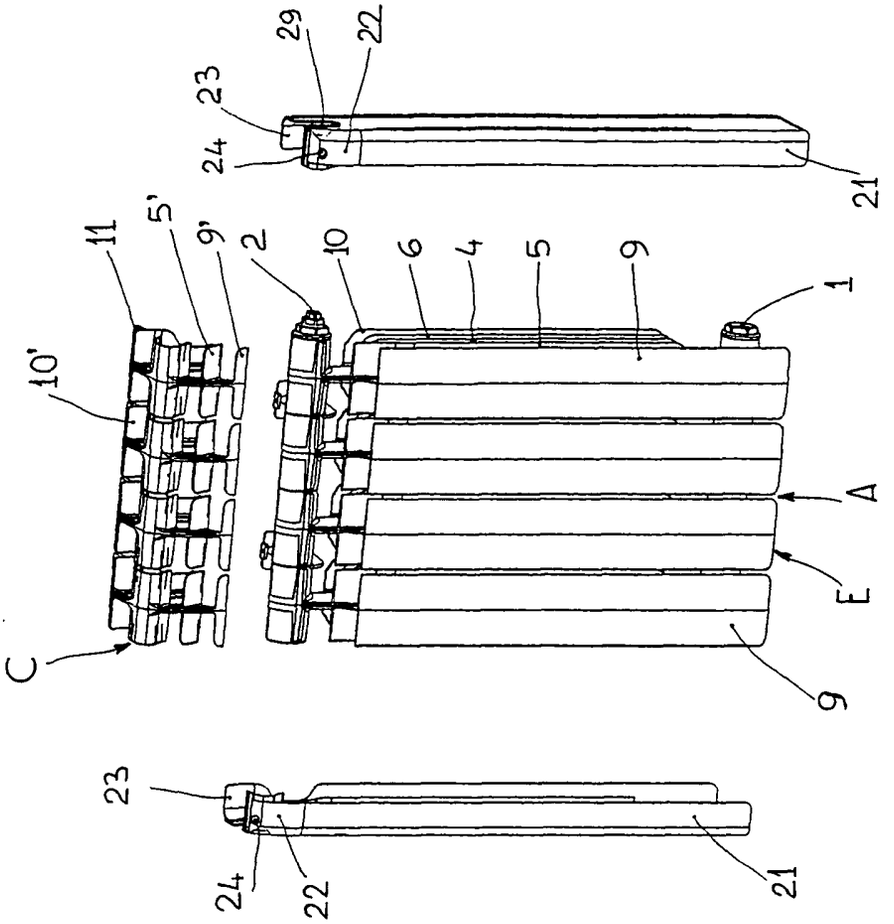


Fig. 2

Fig.1

Fig. 5


29
22
23
24
21
11
5'
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6
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23
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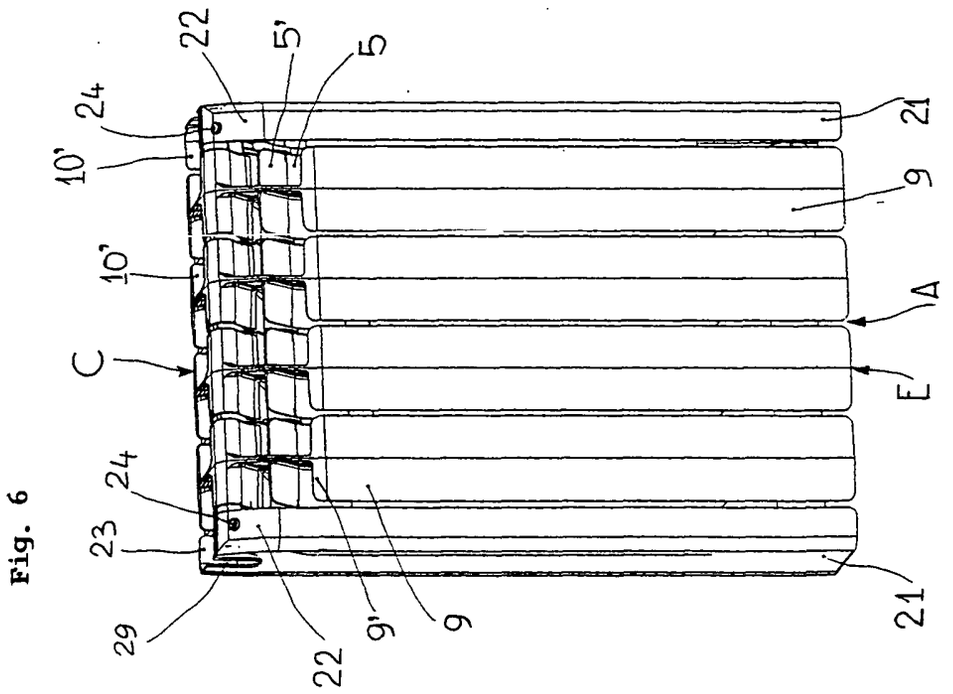
22
21

Fig. 6


22
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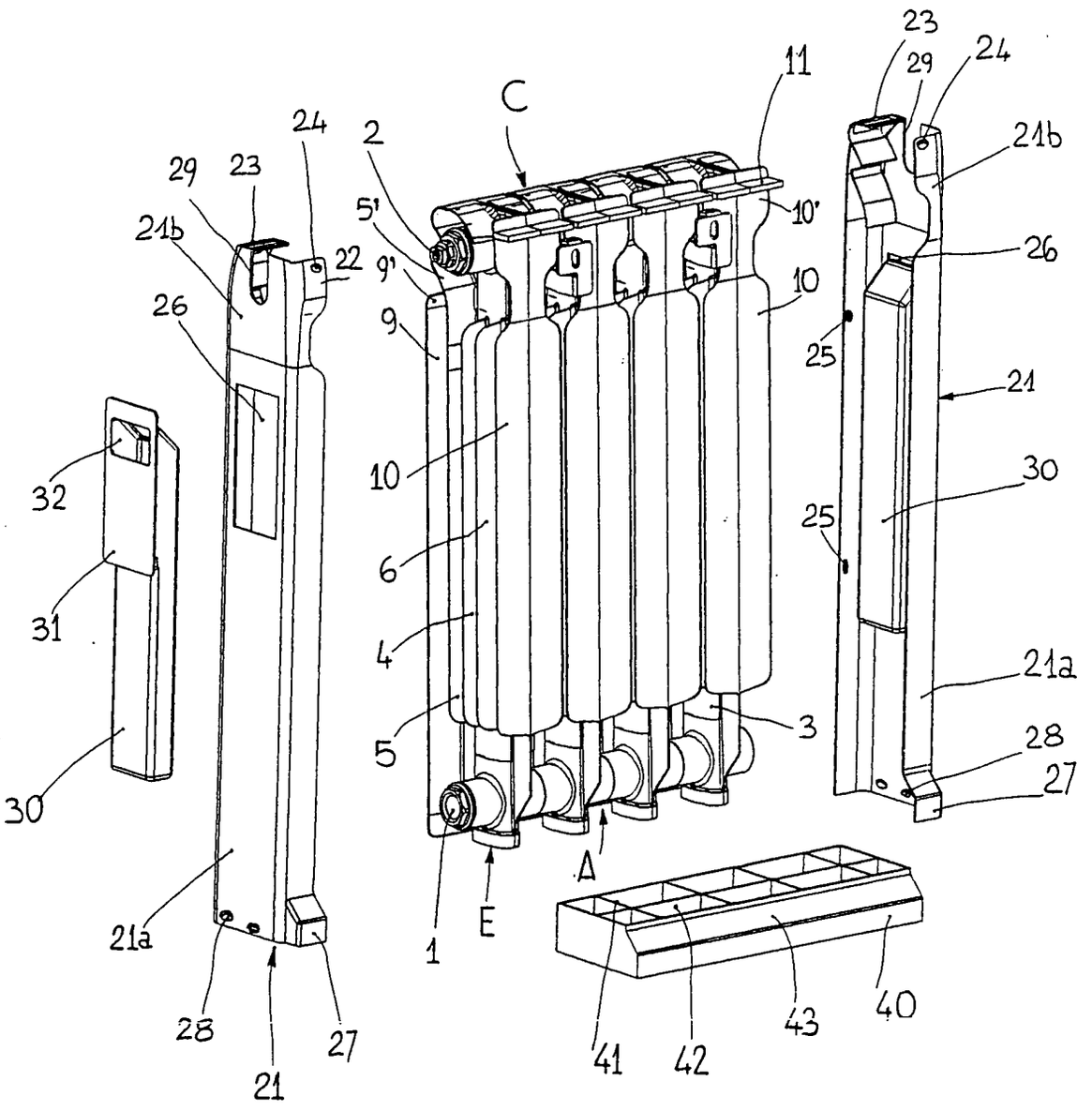
21

Fig. 7


C
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43

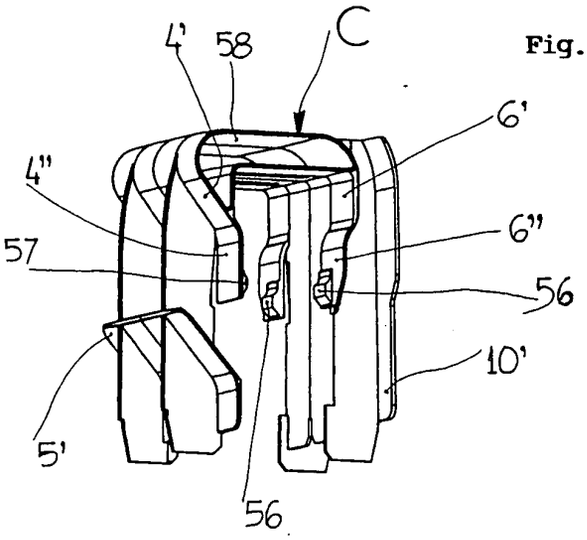

Fig. 8

Fig. 9

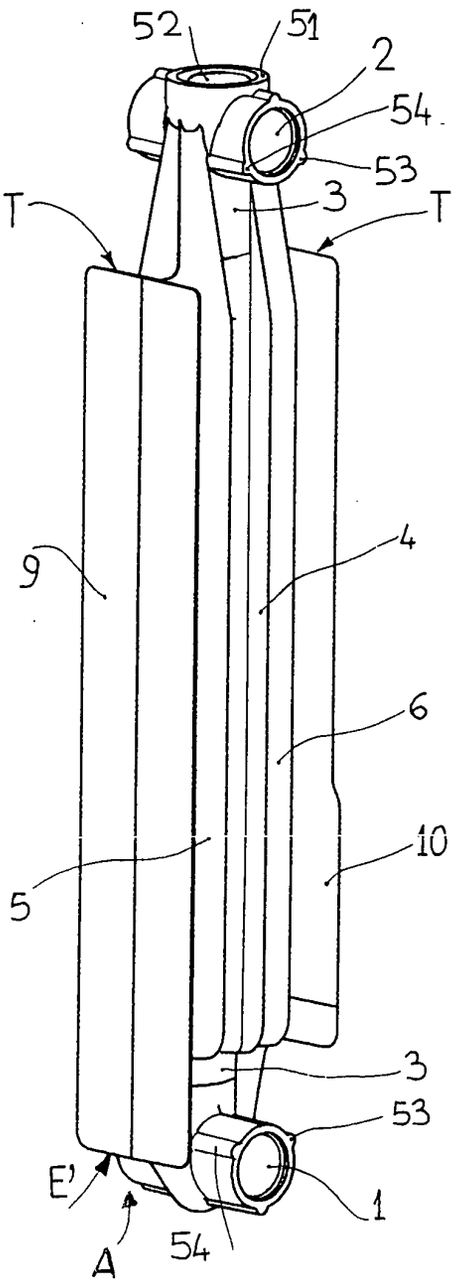

Fig. 10

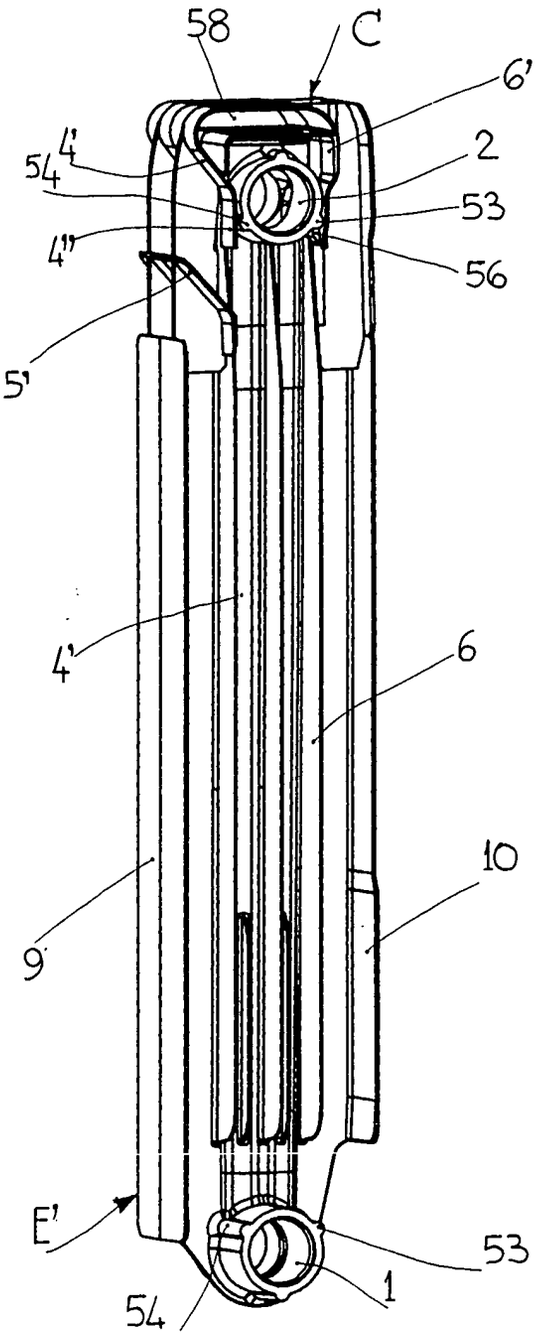

Fig. 11

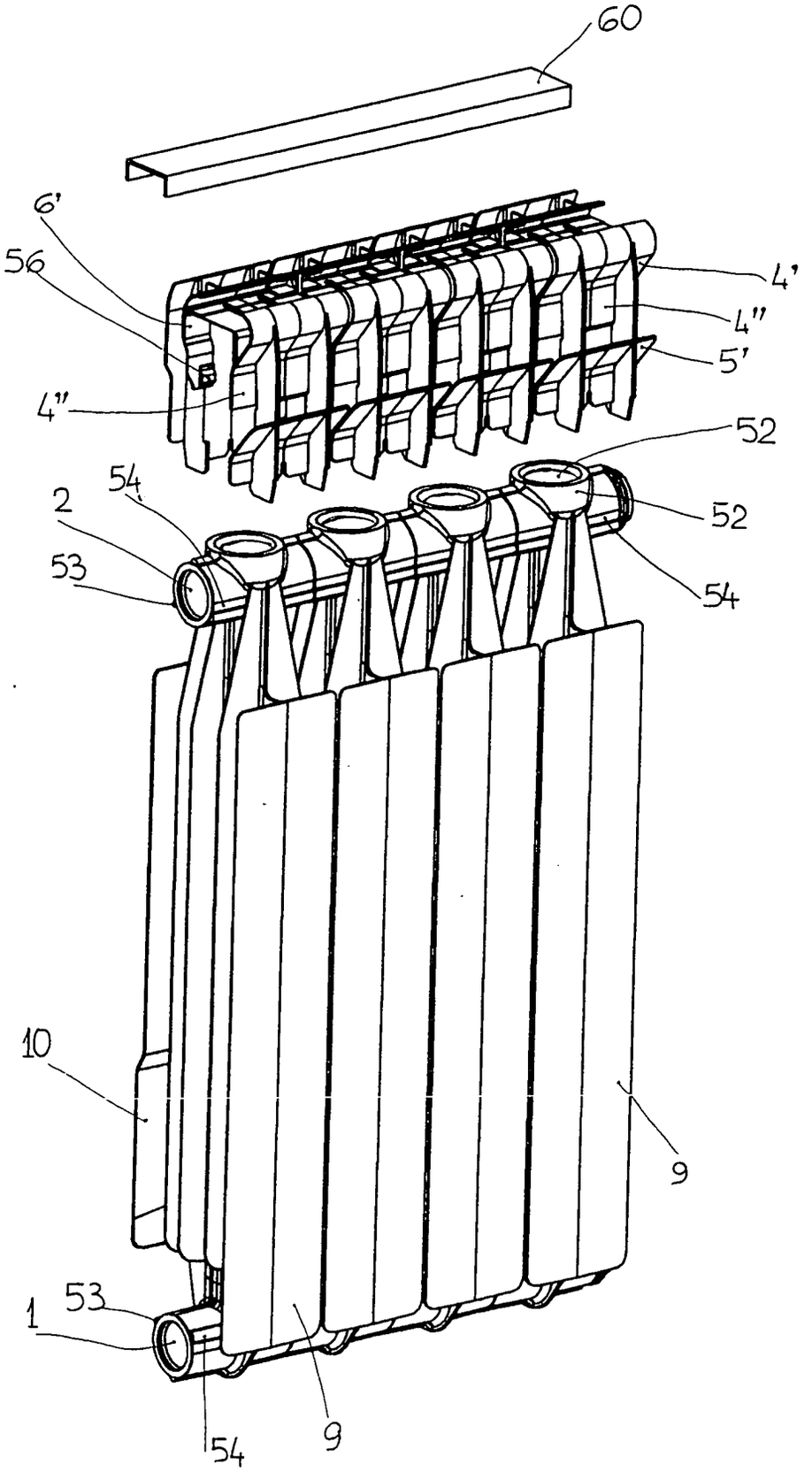

Fig. 12