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(54) **Composite radiator construction**

(57) A composite radiator construction (1) comprises a heating radiator body (2) coupled to a sheet metal cov-

ering assembly (3) by a top latching system (10) and a bottom clamping system (12).

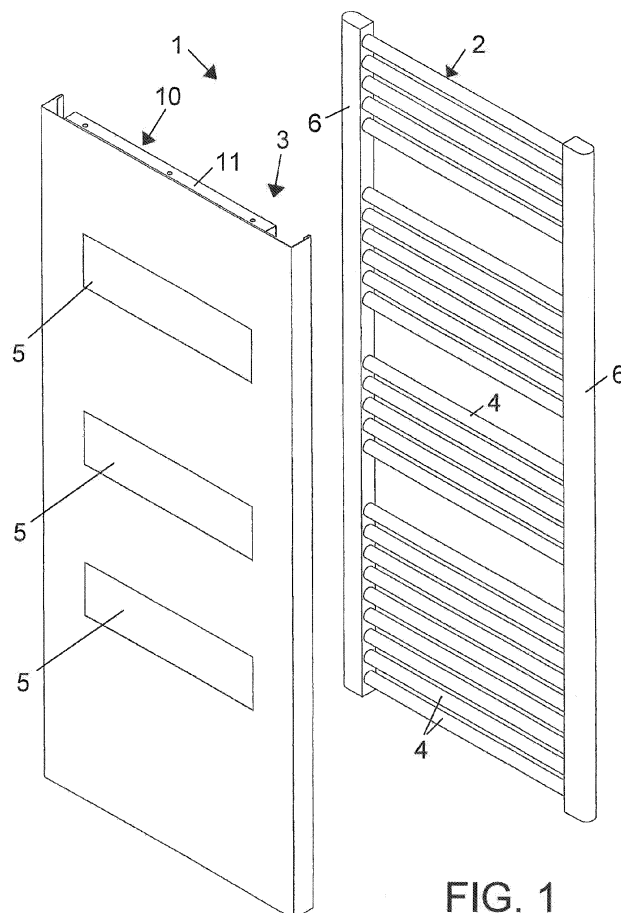


FIG. 1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a composite radiator construction.

[0002] As is known, a conventional prior art radiator substantially comprises a plurality of series coupled elements or modules, arranged in an adjoining arrangement to provide a desired radiating surface.

[0003] The radiator modules may be made either of steel, cast iron or aluminium.

[0004] The radiator shape and size may be variously changed, thereby many aesthetically different radiator constructions are at present available on the market.

[0005] However, for cost saving reasons, the most part of prior radiators have a mutually standardized shape, thereby they have a poor aesthetic design.

[0006] It is also known to conceal to the view prior heating radiators by concealing panels forming box-like structures encompassing the radiator body.

[0007] These systems drastically reduce the radiating efficiency of prior radiators and are insufficient from a power saving standpoint.

SUMMARY OF THE INVENTION

[0008] Thus, the aim of the present invention is to provide such a composite radiator construction allowing to easily and inexpensively make heating radiators of any desired aesthetic design.

[0009] Within the scope of the above mentioned aim, a main object of the invention is to provide such a composite radiator construction allowing to make radiators with a nearly infinite aesthetic variable properties, by a standardized making method.

[0010] Yet another object of the present invention is to provide such a composite radiator construction which may be made starting from easily commercially available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

[0011] Yet another object of the present invention is to provide such a radiator construction which, owing to its specifically designed structural features, is very reliable and safe in operation.

[0012] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a composite radiator construction, **characterized in that** said composite radiator construction comprises a heating radiator body coupled to a sheet metal covering assembly by a top latching system and a bottom clamping system.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Further characteristics and advantages of the present invention will become more apparent hereinafter

from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative but not limitative, example, in the accompanying drawings, where:

Figure 1 is a partially exploded perspective view showing the composite radiator construction according to the present invention;

Figure 2 is a perspective view of the composite radiator construction in an assembled condition thereof;

Figure 3 is a further partially exploded perspective view of the rear side of the radiator construction;

Figure 4 is a perspective view of the rear side of the radiator construction in an assembled condition thereof;

Figure 5 is yet another partially exploded perspective view showing a detail of a bracket clamping system;

Figure 6 is a perspective view of the bracket clamping system of Figure 5 in an assembled condition thereof;

Figure 7 is a perspective view of the rear side of the radiator construction top latching system;

Figure 8 is a view similar to figure 7, but showing the radiator construction in its assembled condition; and Figure 9 is a side elevation view, as cross-sectioned, of the top latching system.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] With reference to the number references of the above mentioned figures, the composite radiator construction according to the present invention, which has been generally indicated by the reference number 1, comprises a heating radiator body 2 associated with or coupled to a metal sheet covering assembly 3.

[0015] The heating body 2 may comprise, for example, a conventional napkin or serviette heater, having different heights and widths.

[0016] More specifically, said heating body comprises a plurality of inner empty spaces, for allowing a napkin or "serviette" to be engaged therein.

[0017] The heating body 2 is made by welding different configuration steel tubes 4 to two uprights 6.

[0018] Said tubes and uprights may have a circular, oval, elliptic, square, rectangular cross section or any other desired configuration cross section.

[0019] The covering assembly 3 substantially comprises a panel which is arranged on the heating body 2 and may be made of a steel, aluminium or any other metal material, or yet other suitable materials, based on the desired radiating features thereof.

[0020] Preferably, the covering assembly 3 comprises a sheet metal element, made of steel or aluminium, punched or laser cut through for providing a desired configuration, and being so bent as to provide its desired end

shape.

[0021] Moreover, said sheet metal element may have different surface finishings and thicknesses.

[0022] As the sheet metal element is made of aluminium, the surface finishing may comprise a raw or coarse aluminium finishing, a mirror finishing, and an anodized aluminium, pre-painted aluminium, screen printed aluminium, etched aluminium, milled aluminium and so on finishing.

[0023] By way of a merely indicative example, the thicknesses of the above sheet metal element may vary from 1 mm to 3 mm.

[0024] As the sheet metal element is made of a steel material, the surface finishings may comprise a brilliant steel, a pickled steel, a galvanized steel, a mirror like steel finishing and so on.

[0025] By way of a merely indicative example, the thicknesses of the steel sheet metal elements may vary from 0.8 mm to 2 mm.

[0026] The sheet metal element, either of aluminium or steel, may be provided with holes or openings of different size and shapes.

[0027] A method for making the composite radiator construction according to the present invention provides to make at first the heating body 2 by cutting to a desired size the mentioned tubes and uprights.

[0028] Then, the uprights are drilled through for allowing the tubes to be engaged therein.

[0029] The tubes may also be so processed as to allow the uprights to be easily engaged therein, or they may be welded by any quick and easy welding method.

[0030] The tubes and uprights are then assembled by different assembling methods, such as welding and soldering, projection welding, TIG welding and so on.

[0031] The thus assembled heating body is then subjected to proper testing for detecting possible leakages therefrom.

[0032] Then, the thus made heating body is sanded, to remove therefrom all impurities and being finally painted.

[0033] For making the covering assembly 3, the sheet metal panel may be either punched or laser cut, as above disclosed, or by any other suitable method.

[0034] A further following step is a bending step, allowing to transform the flat sheet metal into a panel having a desired shape.

[0035] The covering assembly is then washed, for eliminating impurities therefrom, and then painted.

[0036] The radiating body 2 and covering assembly 3 are then assembled to one another by a top latching system 10 and a bottom clamping system 12.

[0037] Said top latching system 10 comprises contoured section member 11, having a double L shape, including a foamed or soft material edge 13.

[0038] The bottom clamping system 12 comprises clamping brackets 14 for locking the covering assembly on the heating body 2 by insert elements 16 affixed to the covering assembly 3 for properly coupling said brack-

ets.

[0039] The thus made construction is assembled as follows.

[0040] A rubber or foamed soft material protective element or gasket 13 is applied to the already bent and painted covering assembly, to prevent any scratches in its handling.

[0041] Then, at the bottom portion of the sheet metal elements inserts 16 for allowing the brackets 14 to be easily and properly connected are engaged.

[0042] Then, the heating body 2 is arranged in the covering assembly 3 while applying the brackets 14 which are clamped by clamping screw 18.

[0043] The latching and clamping system according to the present invention exploits the elastic properties of the metal sheet material, at the top portion, and of simple brackets, at the bottom portion, thereby allowing an easy handling.

[0044] It has been found that the invention fully achieves the intended aim and objects.

[0045] In fact, the invention has provided a novel composite radiator construction allowing to make a radiator with a nearly infinite number of aesthetic design variations, without modifying the heating body construction.

[0046] In actual practice it is possible to make perforated or patterned or flat covering assemblies.

[0047] Moreover, the inventive composite radiator construction is also suitable to provide an electric radiator with very simple operations, since it is sufficient to apply a heating electric resistance and fill in the radiator proper with a given amount of water and glycol.

[0048] Moreover, the inventive heating body may be easily and quickly mounted either in vertical or in a horizontal arrangement.

[0049] In practicing the invention, the used materials, as well as the contingent size and shapes can be any, depending on requirements.

Claims

1. A composite radiator construction, **characterized in that** said composite radiator construction comprises a heating radiator body coupled to a sheet metal covering assembly by a top latching system and a bottom clamping system.
2. A composite radiator construction, according to claim 1, **characterized in that** heating radiator body comprises a plurality of tubular elements and a pair of uprights in an adjoining relationship with one another.
3. A composite radiator construction, according to claim 1, **characterized in that** said covering assembly comprises a panel arranged on said heating body and made of a heat radiating material.

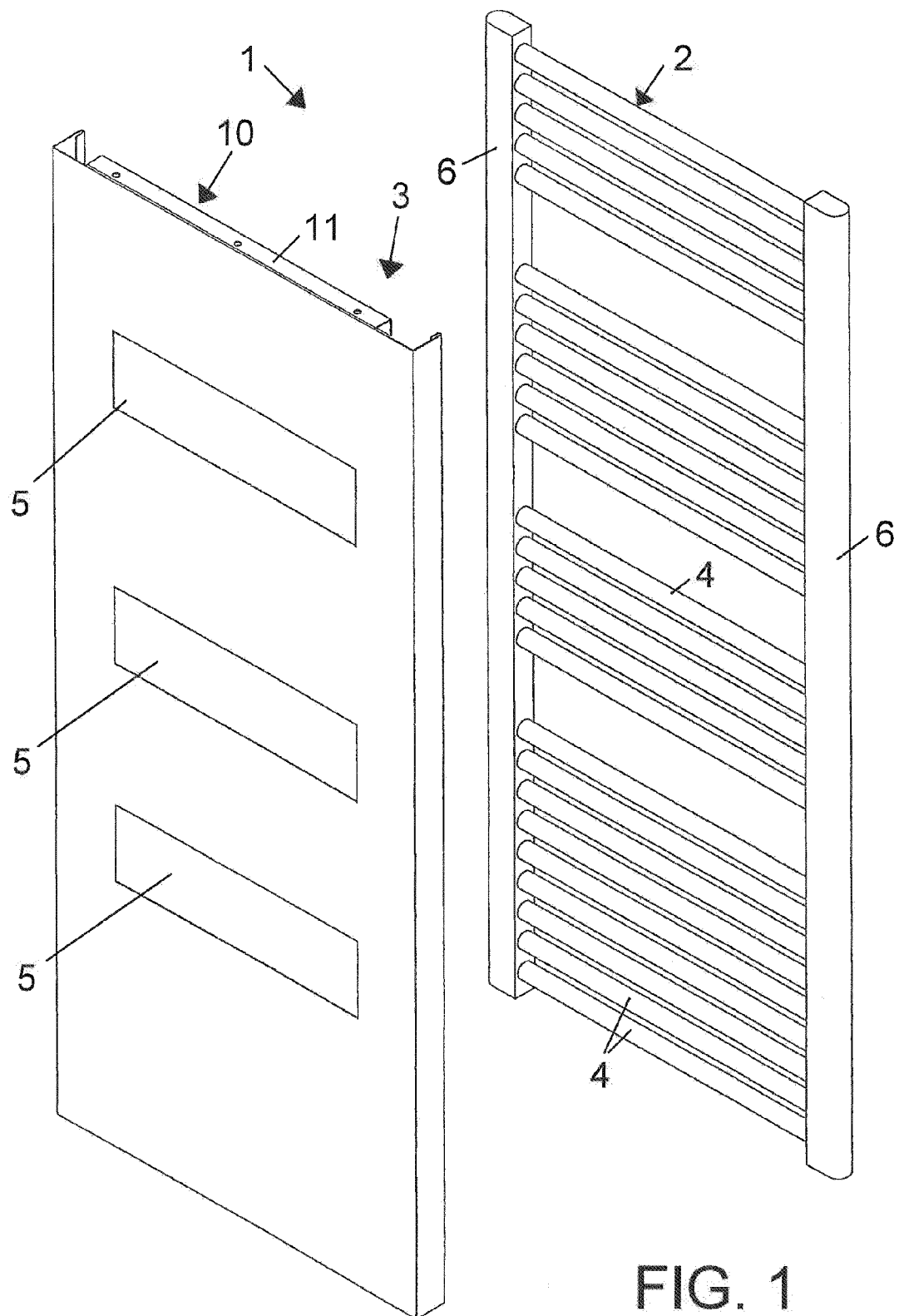
4. A composite radiator construction, according to claim 1, **characterized in that** said covering assembly comprises a metal or aluminium sheet metal element either punched or laser cut to provide a desired configuration, said sheet metal being so bent as to provide a desired configuration and being further surface finished in different thicknesses. 5
5. A composite radiator construction, according to one or more of the preceding claims, **characterized in that** said sheet metal is made of aluminium and said surface finishings are of raw or coarse aluminium, mirror, anodized aluminium, prepainted aluminium, screen printed aluminium, etched aluminium, milled aluminium finishing and so on. 10 15
6. A composite radiator construction, according to one or more of the preceding claims, **characterized in that** said sheet metal is made of steel and said surface finishings are brilliant steel, pickled steel, galvanized steel and mirror steel finishings. 20
7. A composite radiator construction, according to one or more of the preceding claims, **characterized in that** said top latching system comprises a contoured section member, of a double L shape, having a rubber or foamed or other soft material edge 25
8. A composite radiator construction, according to one or more of the preceding claims, **characterized in that** said bottom clamping system comprises clamping brackets locking said covering assembly on said heating radiator body by insert elements clamped to said covering assembly. 30 35

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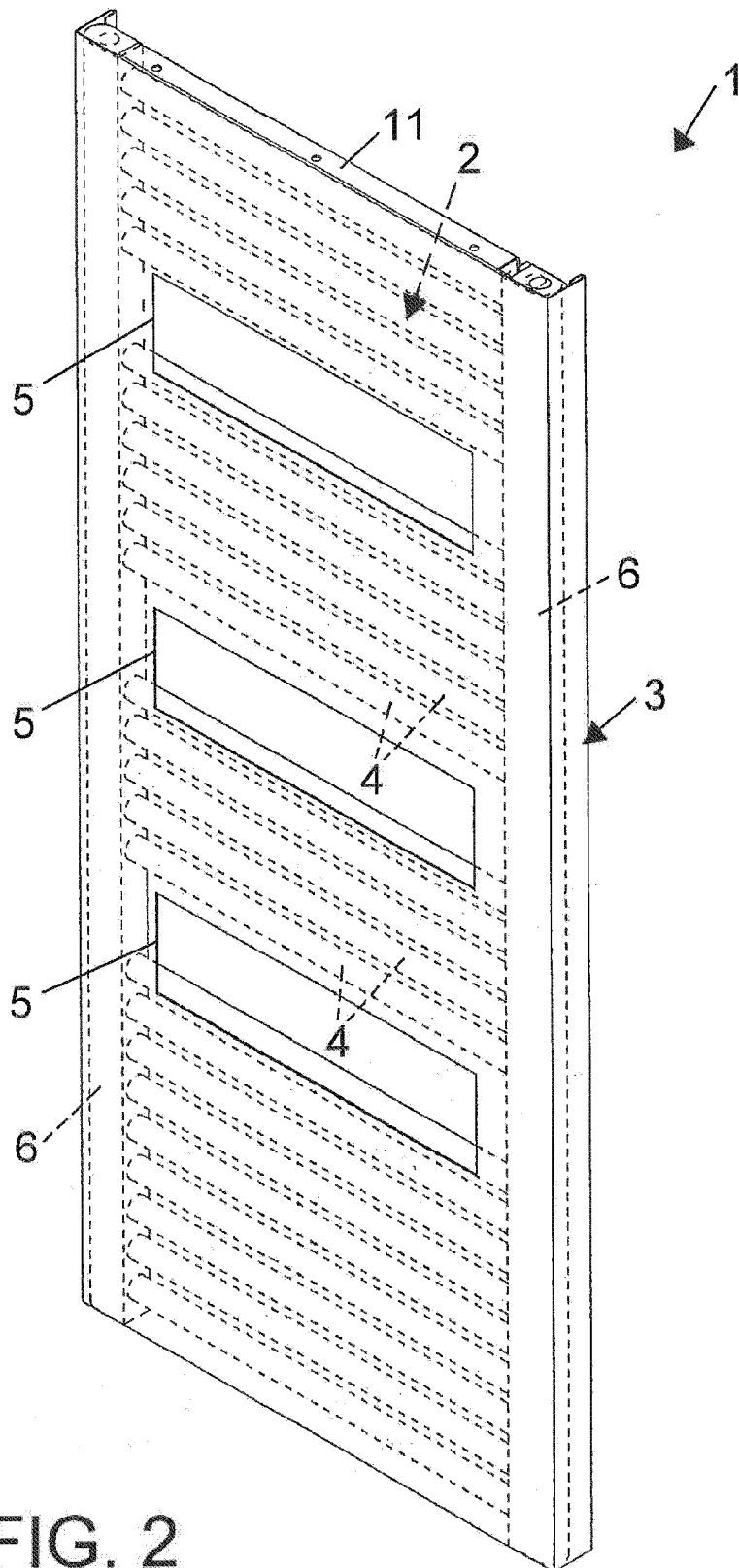


FIG. 2

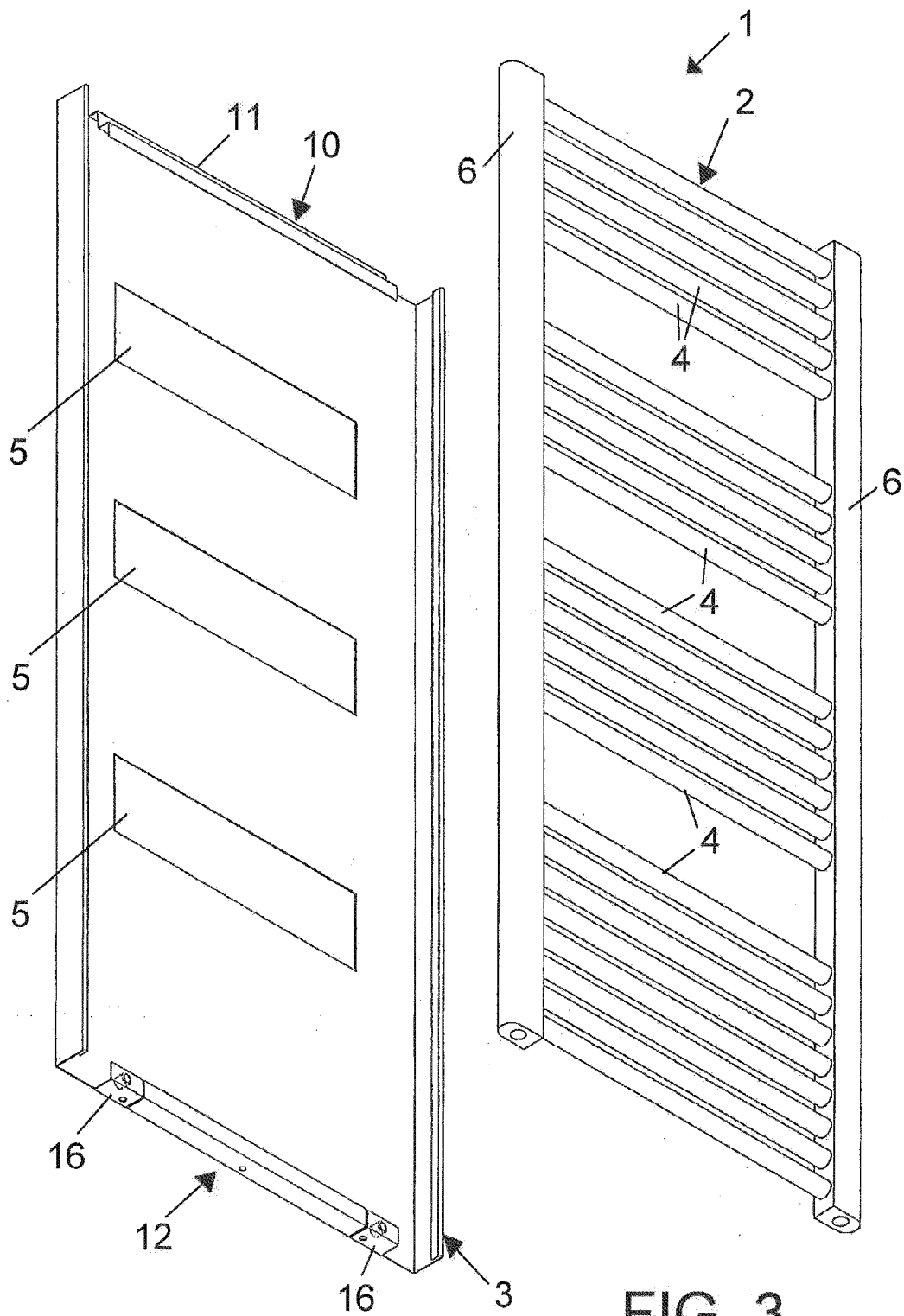
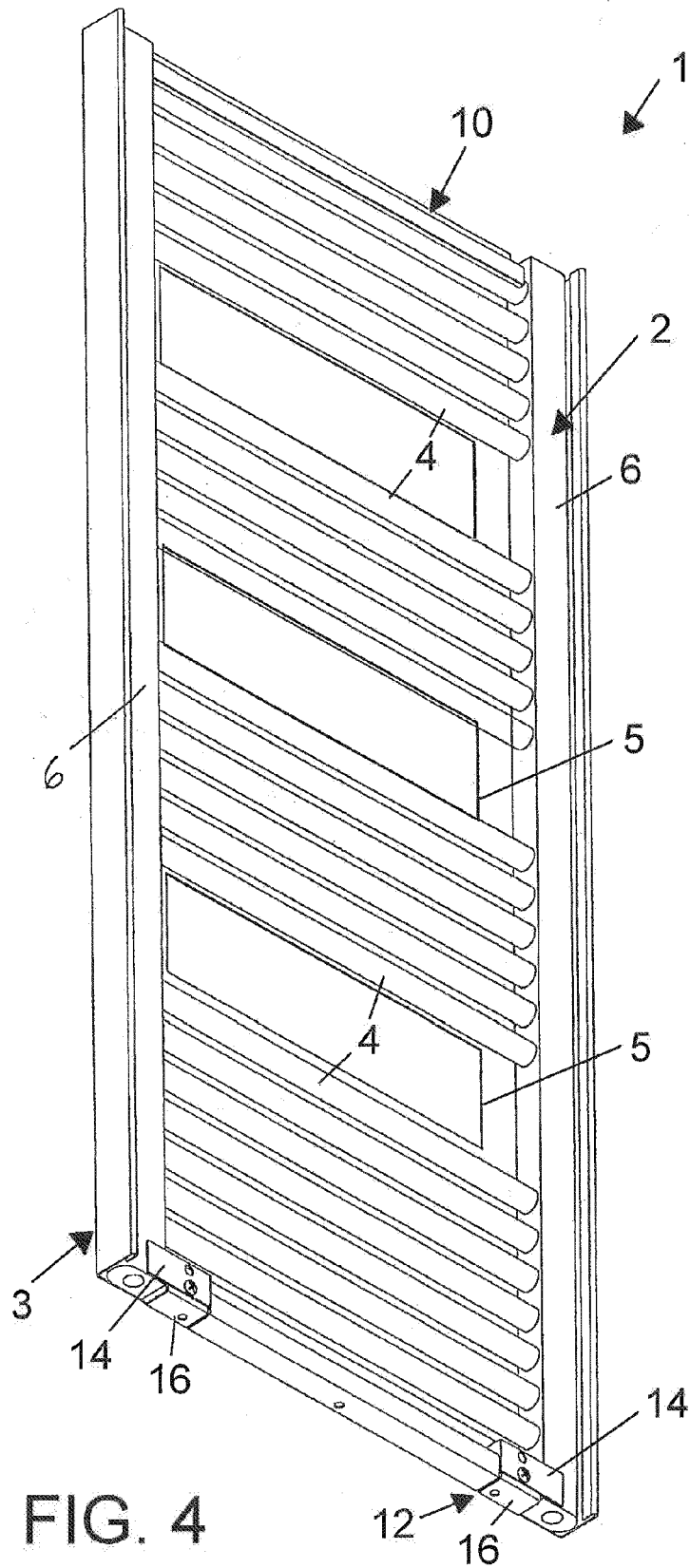


FIG. 3



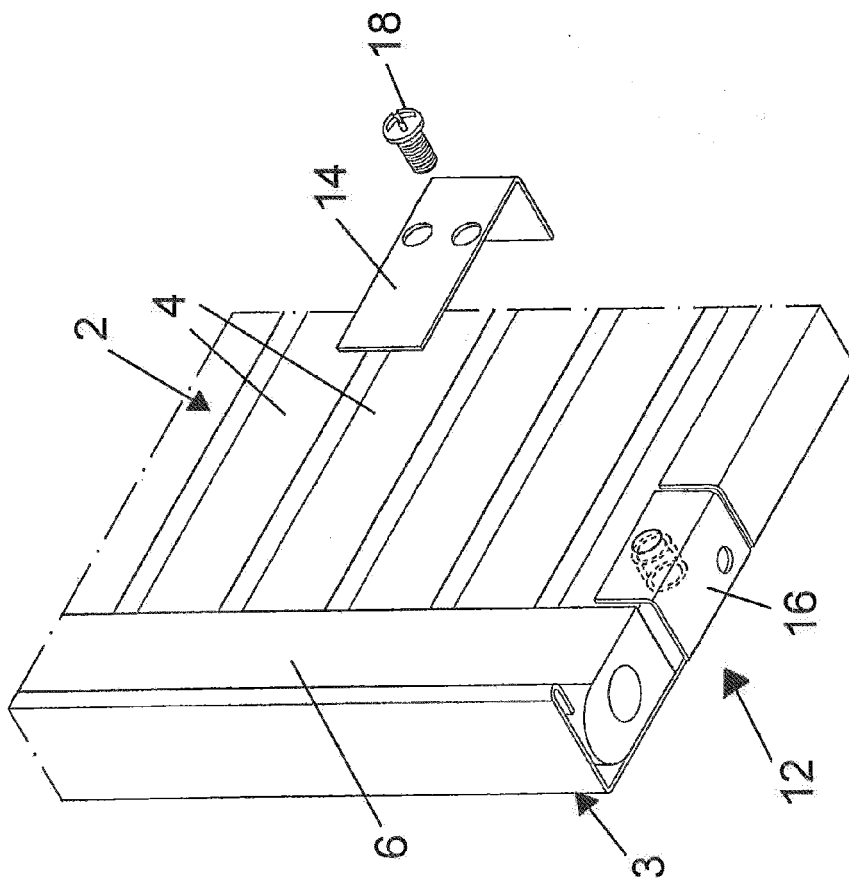


FIG. 5

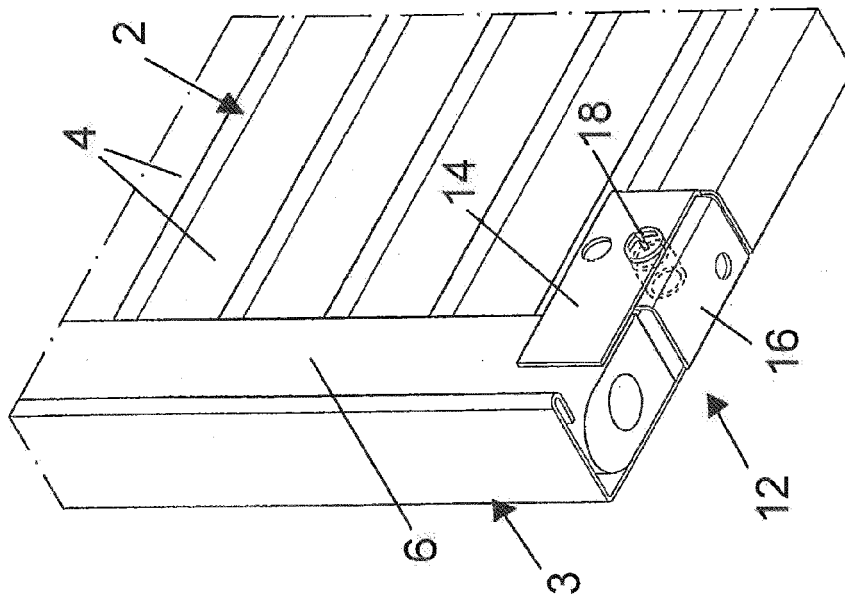


FIG. 6

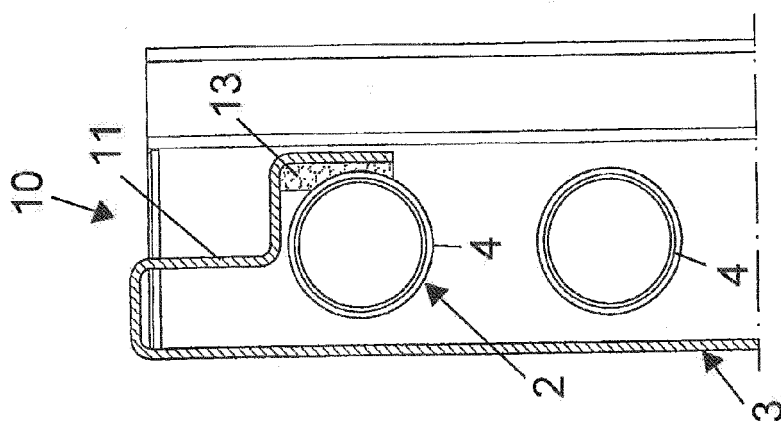


FIG. 9

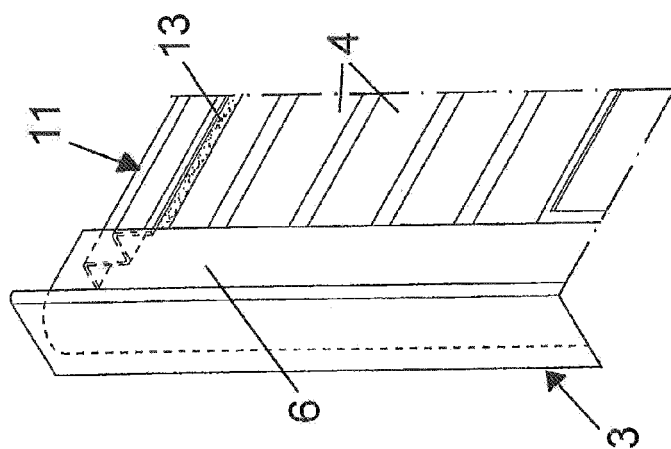


FIG. 8

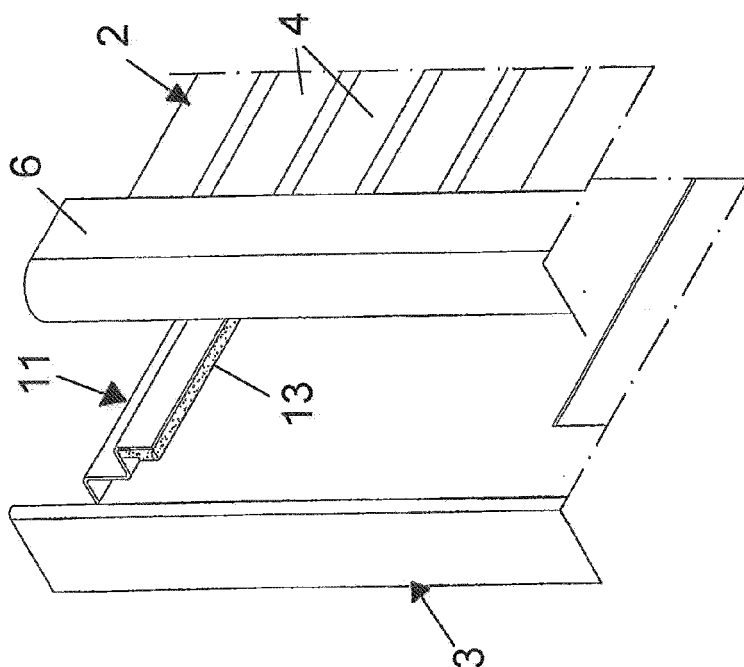


FIG. 7