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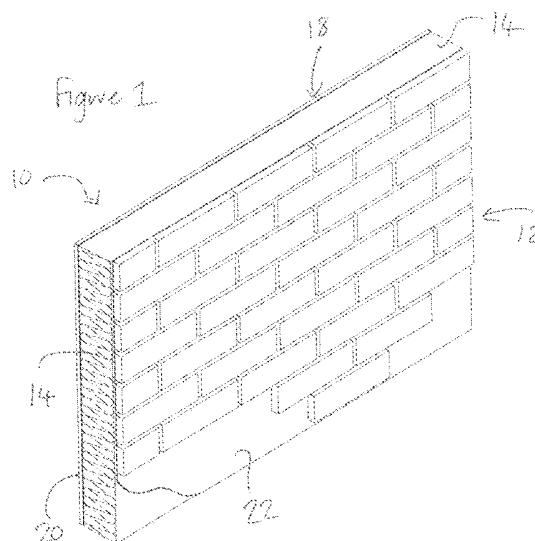
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(54) Title of the Invention: **Building insulation**
Abstract Title: **Insulation panel**

(57) A pre-assembled thermal panel unit 10 for attaching to the exterior of a building, the panel having a cladding layer 12 mounted on a thermal insulation layer 14. The cladding layer may have a brickwork, or block, tile or clay finish. The brickwork may use brick slips so as to appear as a conventional brickwork array for the exterior surface of a building. The insulation layer 14 has a plane outer face to which the cladding layer is affixed preferably via an adhesive layer 22. The panel includes a rigid backing layer 18 on which the insulation layer and cladding layer are carried. A method for modifying a building using the thermal panel unit is also disclosed, wherein the panel is attached to the external surface of the building and the cladding layer becomes the new external surface.



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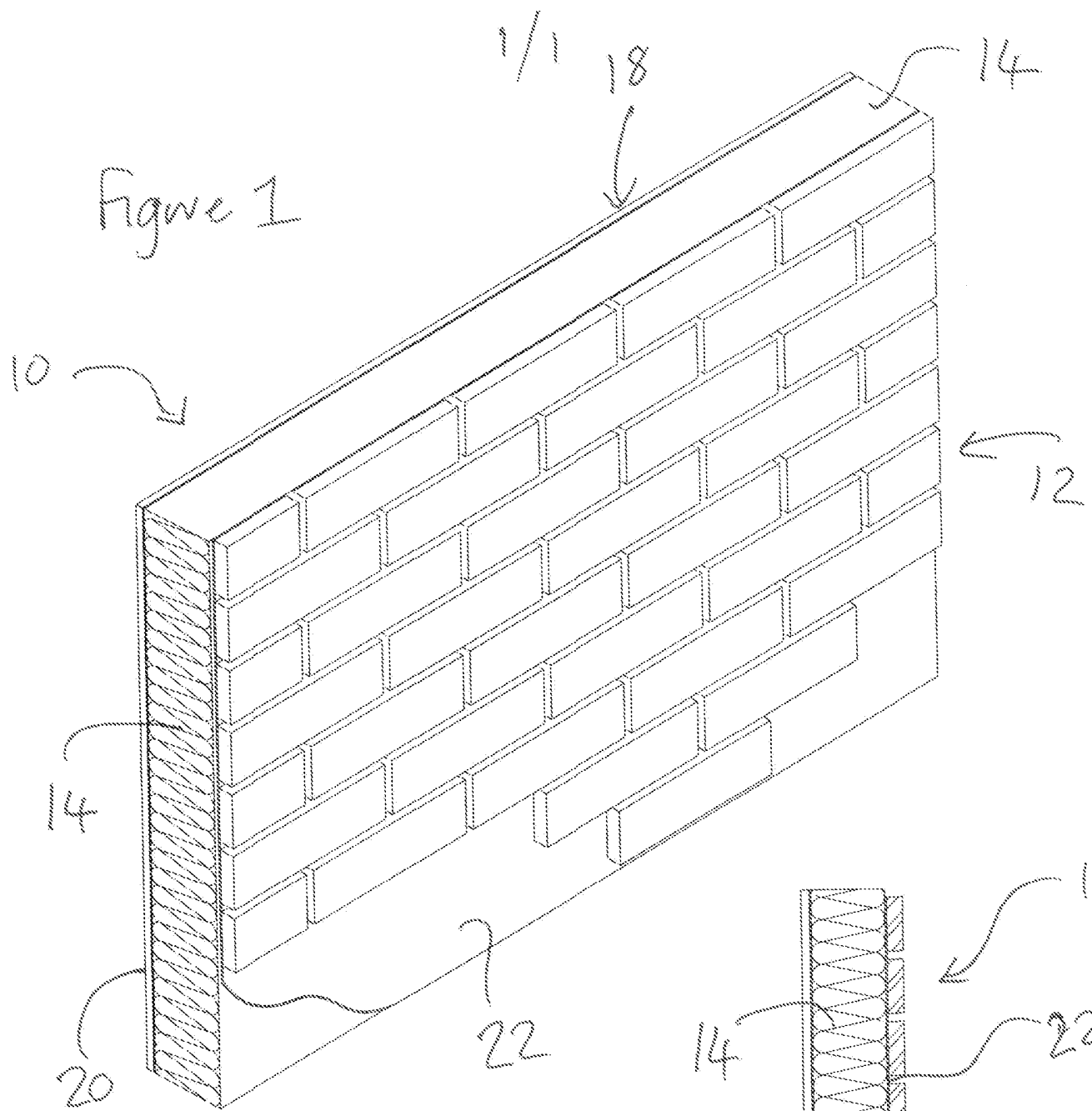
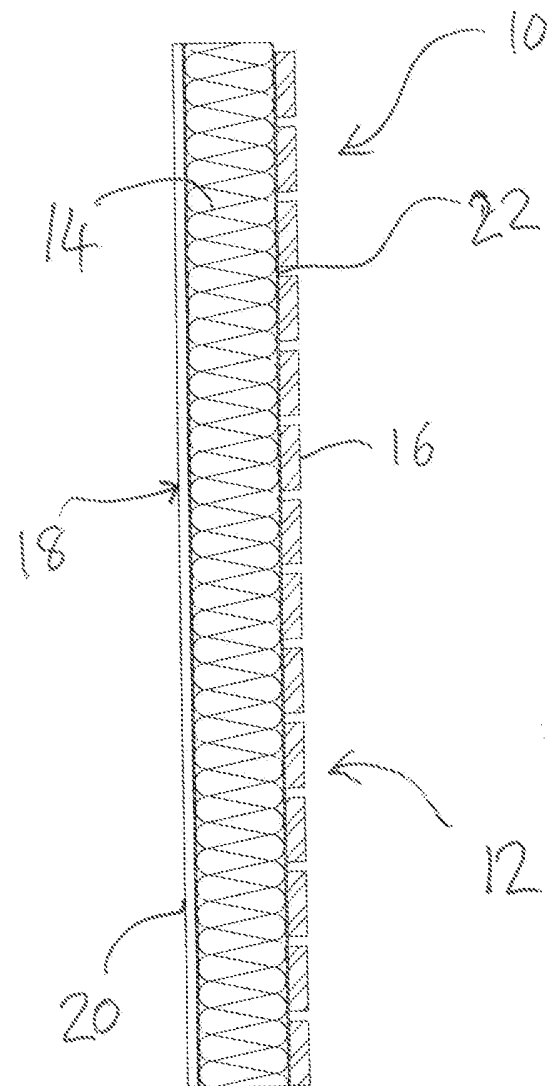


Figure 2



Building Insulation

The present invention relates to building insulation and methods for insulating buildings.

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Energy efficient buildings rely at least in part on effective heat insulation. It is known to provide cavity wall insulation between the inner and outer skin of an external wall of a building. However, providing existing housing stock with such insulation is not always practical or possible, particularly with buildings of single skin construction.

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An object of the invention is to provide an alternative method or material for insulating buildings, particularly, but not exclusively, for insulating existing buildings, i.e. for retro-fit applications.

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According to a first aspect of the invention, there is provided a thermal insulation panel for the exterior of a building, the panel having a cladding layer and a thermal insulation layer, wherein the cladding layer is mounted on the thermal insulation layer and has an outer surface intended to define an exterior surface of a building.

20

The panel is advantageous in that it can be provided in pre-assembled form, for direct application to an existing building, e.g. by bonding the pre-assembled panel to the existing exterior surface of a building (whereby the cladding layer becomes the exterior surface of the building, with the insulation layer interposed between the cladding layer and the pre-existing exterior surface of the building).

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The panel is of particular advantage for use with existing single skin buildings and other buildings for which the use of cavity wall insulation is either impractical or not possible. However, the panel may also be used in addition to conventional cavity wall insulation, or in other forms or methods of construction.

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Another aspect of the invention provides a method of modifying a building, the method including the steps of: mounting a cladding layer and thermal insulation layer to a pre-existing exterior surface of a building, whereby the cladding layer becomes the exterior surface of the building, with the thermal insulation layer interposed between the cladding layer and the pre-existing exterior surface of the building, for the purpose of improving the thermal insulation characteristics of the building.

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A further aspect of the invention provides a method of construction, the method including the steps of: mounting a cladding layer and thermal insulation layer to pre-existing brick- or block work of a building, whereby the cladding layer becomes an exterior surface of a building, with the thermal insulation layer interposed between the cladding layer and the pre-existing brick- or block work, for the purpose of improving the thermal insulation characteristics of the building.

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A still further aspect of the invention provides a thermal insulation system for a building, the system having a cladding layer and a thermal insulation layer, wherein the cladding layer is mounted on the thermal insulation layer and has an outer surface

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intended to define an exterior surface of a building, for incorporation in the outer skin of a building.

5 Other aspects and preferred features of the invention will be readily apparent from the following description of a preferred embodiment of the invention, which is made, by way of example only, with reference to the accompanying drawings, in which:

10 Figure 1 is a schematic perspective view of a preferred embodiment of a thermal insulation panel, in partially complete form (for illustrative purposes); and

Figure 2 is a schematic cross-sectional view of the panel in Figure 1.

15 Figures 1 and 2 show a thermal insulation panel 10, which includes a cladding layer 12 mounted on a supporting layer of thermal insulation 14. In use, the outer surface of the cladding layer 12 is intended to define an exterior surface of a wall or building, e.g. with the thermal insulation layer 14 interposed between the interior of a building and the cladding layer 12.

20 The insulation panel 10 is preferably in the form of a pre-assembled unit, e.g. the cladding layer 12 is applied to the insulation layer 14 prior to incorporation in a building. The pre-assembly may take place on site or at a remote location.

25 In this embodiment, the cladding layer 12 consists of brick slips 16, applied in rows, to a layer of adhesive 22 on the thermal insulation layer 14. This gives the appearance of a conventional brickwork finish. In other embodiments, the cladding layer may incorporate one or more of brick-, block-, or tile-type elements (instead of, or in addition to the brick slips 16), in an array which gives a conventional 'exterior' appearance.

30 As can be seen most clearly in Figure 2, the insulation layer 14 has a plane outer face (i.e. the outer face of the insulation layer 14 is devoid of significant projections or the like), to which the cladding layer 12 is readily applied, irrespective of orientation. In the case of a brick- or block-type cladding array, the array can be pointed before or (more usually) after the panel 10 has been incorporated in a building.

35 The panel 10 preferably includes a backing layer 18 on which the insulation layer 14 is mounted. The backing layer is preferably a rigid backing board (e.g. made of GRC) on which the insulation layer 14 and cladding layer 12 is carried, so that the panel is generally self-supporting and readily transferable as a pre-assembled unit (e.g. in transit from a remote assembly location), prior to incorporation in a building or wall. Advantageously, the backing layer 18 has a plane face 20, so that the panel 10 can be readily mounted adjacent an existing plane surface of a building, e.g. a pre-existing external wall.

45 The panel 10 is advantageous in that it can be provided in pre-assembled form, for direct application to an existing building, e.g. by bonding the pre-assembled panel 10 to the existing exterior surface of a building (whereby the cladding layer becomes the exterior surface of the building, with the insulation layer interposed between the

cladding layer and the pre-existing exterior surface of the building). The panel 10 is preferably secured to the existing wall or building surface using mechanical fixings.

The panel 10 is of particular advantage for use with existing single skin buildings and
5 other buildings for which the use of cavity wall insulation is either impractical or not possible. However, the panel 10 may also be used in addition to conventional cavity wall insulation, or in other forms or methods of construction.

Claims

1. A thermal insulation panel for applying to the exterior of a building, the panel having a cladding layer and a thermal insulation layer, wherein the cladding layer is mounted on the thermal insulation layer and has an outer surface intended to define an exterior surface of a building.
2. An insulation panel according to claim 1 in the form of a pre-assembled unit.
3. An insulation panel according to claim 1 or claim 2 wherein the cladding layer includes one or more of a brick-, block-, clay- or tile work finish.
4. An insulation panel according to claim 3 wherein the cladding layer consists of one or more of a brick-, block- or tile-type elements mounted on the thermal insulation layer in an array which appears as a conventional brick-, block- or tile work array.
5. An insulation panel according to claim 4 wherein the elements are in the form of brick slips adhered in rows to a plane face of the thermal insulation layer.
6. An insulation panel according to any of claims 1 to 5 wherein the thermal insulation layer is a layer of mineral or stone wool insulation.
7. An insulation panel according to claim 6 wherein the insulation layer has on plane outer face to which the cladding layer is affixed.
8. An insulation panel according to any preceding claim wherein the panel includes a backing layer on which the insulation layer is mounted.
9. An insulation panel according to claim 8 wherein the backing layer is a rigid backing board on which the insulation layer and cladding layer are carried.
10. An insulation panel according to claim 9 wherein the backing layer has a plane face for mounting adjacent an existing plane surface of a wall or building.
11. A method of modifying a building, the method including the steps of: mounting thermal insulation over a pre-existing exterior surface of a building, and providing rows of cladding elements in an array on a plane surface of the thermal insulation, whereby the cladding elements become the exterior surface of the building, with the thermal insulation interposed between the cladding elements and the pre-existing exterior surface of the building, for the purpose of improving the thermal insulation characteristics of the building.
12. A method of wall construction, the method including the steps of: mounting thermal insulation over a wall skin, and providing rows of cladding elements in an array on a plane surface of the thermal insulation, whereby the cladding elements define an exterior surface of the wall, with the thermal insulation interposed between

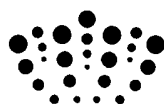
the cladding elements and the pre-existing wall skin, for the purpose of improving the thermal insulation characteristics of the wall.

5 13. A method according to claim 11 or claim 12 wherein the method includes the use of a panel according to any one of claims 1 to 10.

10 14. A thermal insulation system for a building, the system having a cladding layer and a thermal insulation layer, wherein the cladding layer consists of rows of cladding elements mounted in an array on a plane surface of the thermal insulation layer, wherein the cladding elements define an exterior surface of a building, for incorporation in the outer skin of a building.

15 15. A thermal insulation system according to claim 14, incorporating a panel according to any one of claims 1 to 10.

16. A thermal insulation panel or system substantially as herein described with reference to Figures 1 and 2.



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Examiner: Mr Philip Lawrence

Claims searched: 1-10, 16

Date of search: 10 May 2010

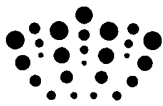
Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-10	GB2251008 A (MILL), see Abstract and Figures noting portions 1, 2 & 4.
X	1, 3-7	GB2121081 A1 (STOTMEISTER), see Abstract and Figures noting portions 10 & 32.
X	1-7	DE3116977 A1 (GROETZ), 25.11.1982 (see WPI Abstract Accession No. 1982-M0755E [37] and Figures noting portions 22, 24 & 25).
X	1-10	EP0211752 A (LAFARGE), 25.02.1987 (see WPI Abstract Accession No. 1987-051861 [08] and Figures noting portions 1, 2, 4 & 7).
X	1-10	FR2624169 A (ISOVER), 09.06.1989 (see WPI Abstract Accession No. 1989-214927 [30] and Figures noting portions 2, 3 & 4).
X	1-10	US6240691 B1 (HOLZKAEMPER), see Abstract, Col. 4 lines 1-29 and Figures noting portions 1, 2, 4 & 5.
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Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

Worldwide search of patent documents classified in the following areas of the IPC

E04B; E04F

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
E04B	0001/76	01/01/2006
E04B	0001/78	01/01/2006
E04F	0013/08	01/01/2006
E04F	0013/14	01/01/2006