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(54) **CLADDING SYSTEM**

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(57) **ABSTRACT**

An architectural cladding kit; and a method of preparing architectural masonry slips for subsequent attachment to a substrate employs a plurality of joint brackets having a base and two free ends. The joint brackets engage with a plurality of substantially rectangular masonry slips, each slip including an outer face; an inner face; two oppositely directed edge faces; and a slot formed in each edge face. The joint bracket is attachable to a substrate such as a building structure. Each joint bracket free end is adapted for engagement within the slot formed in an edge face of two opposed masonry slips which are attached to the substrate by an adhesive. The joint brackets ensures that the masonry slips cannot fall even if the adhesive connection were to fail.

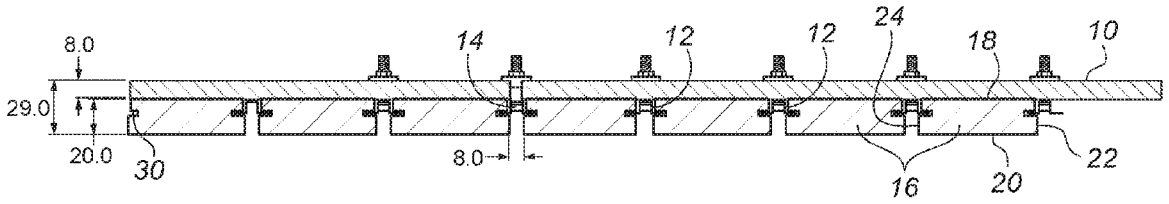


Fig. 1

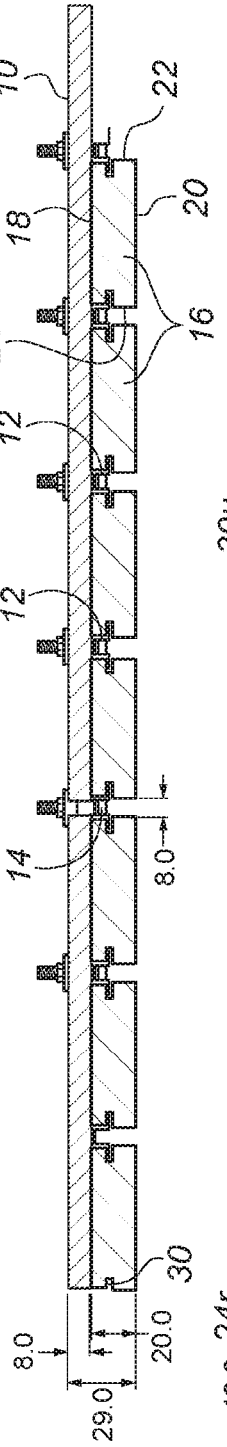


Fig. 2

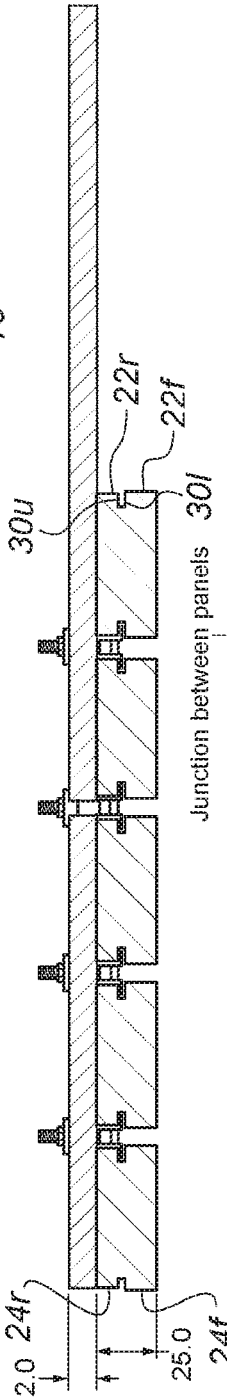


Fig. 3

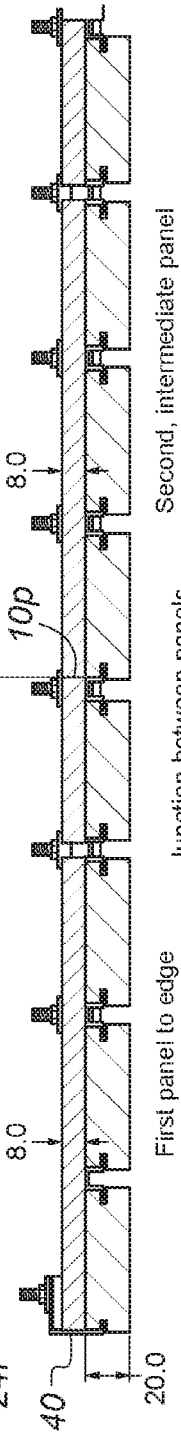
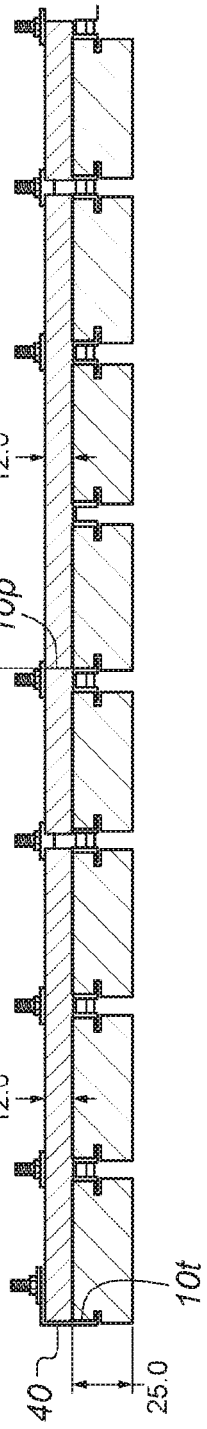


Fig. 4



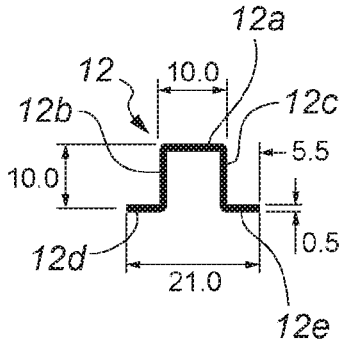


Fig. 5a

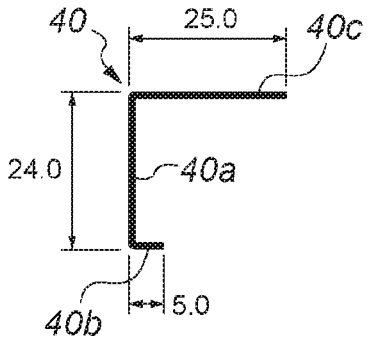


Fig. 5b

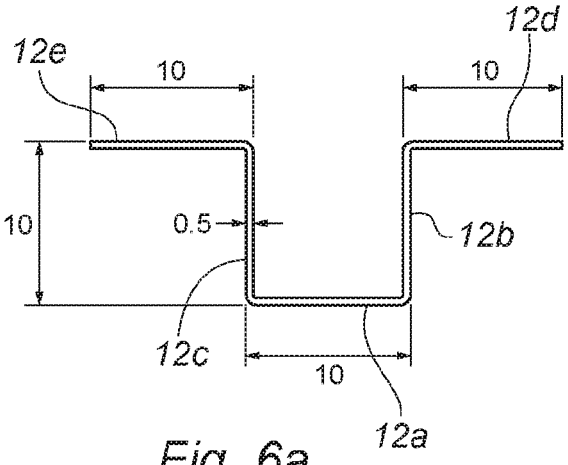


Fig. 6a

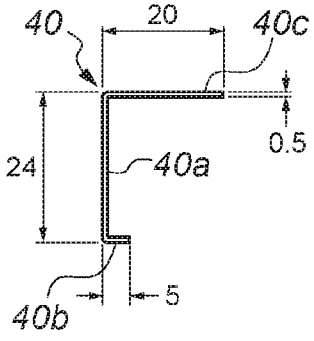


Fig. 6b

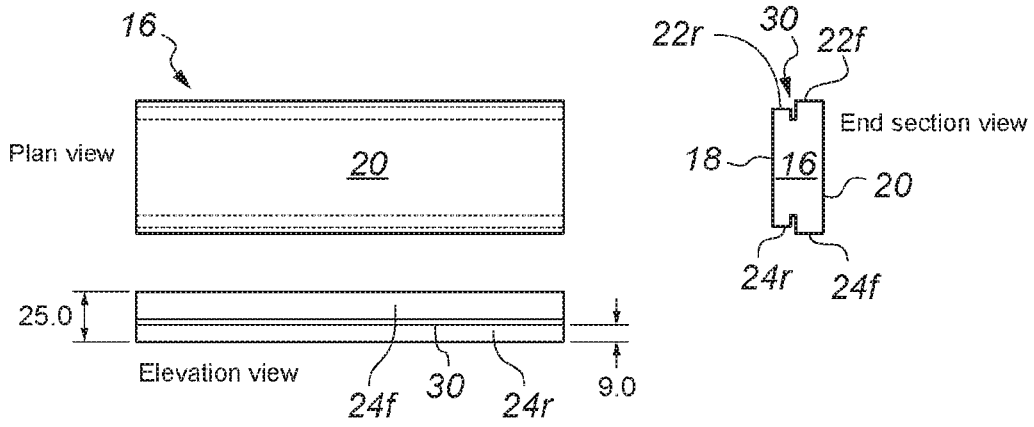


Fig. 7

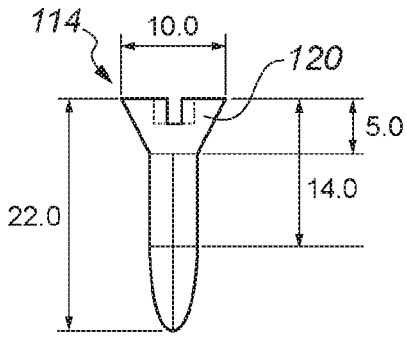


Fig. 8a

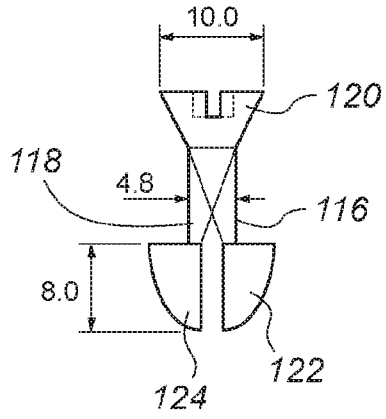


Fig. 8b

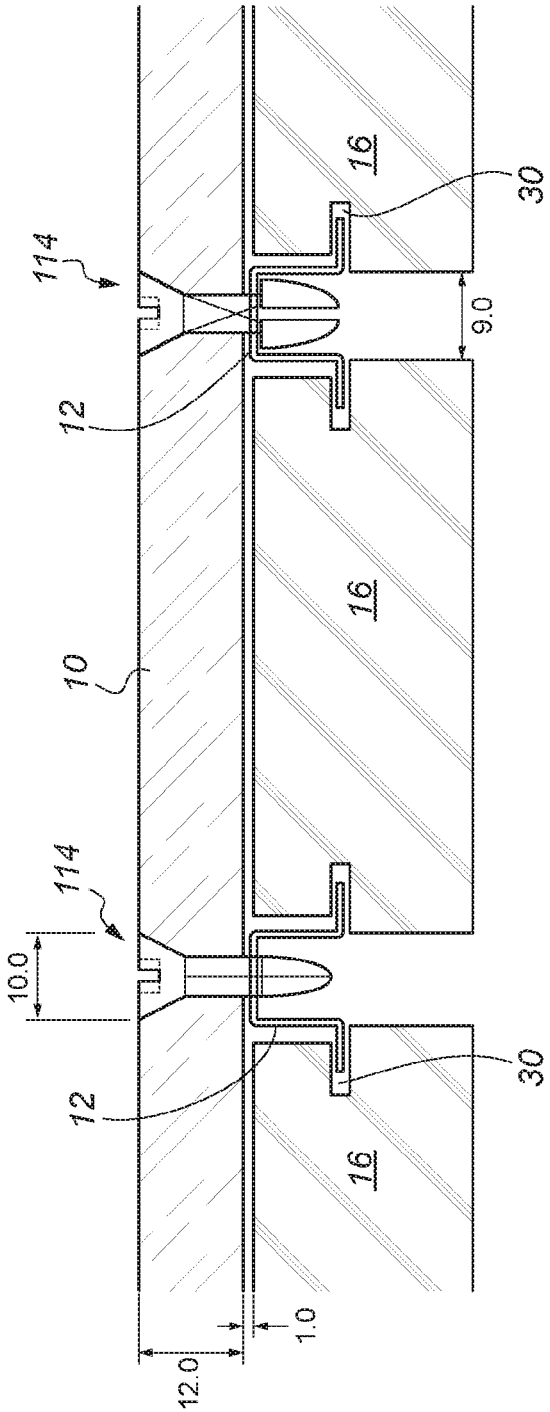


Fig. 9

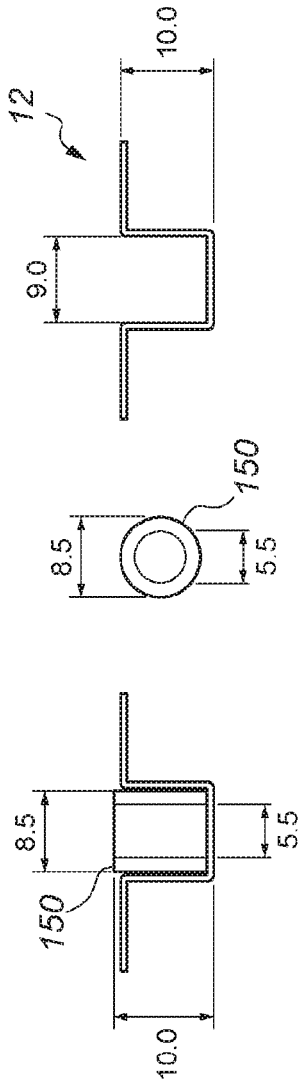


Fig. 10

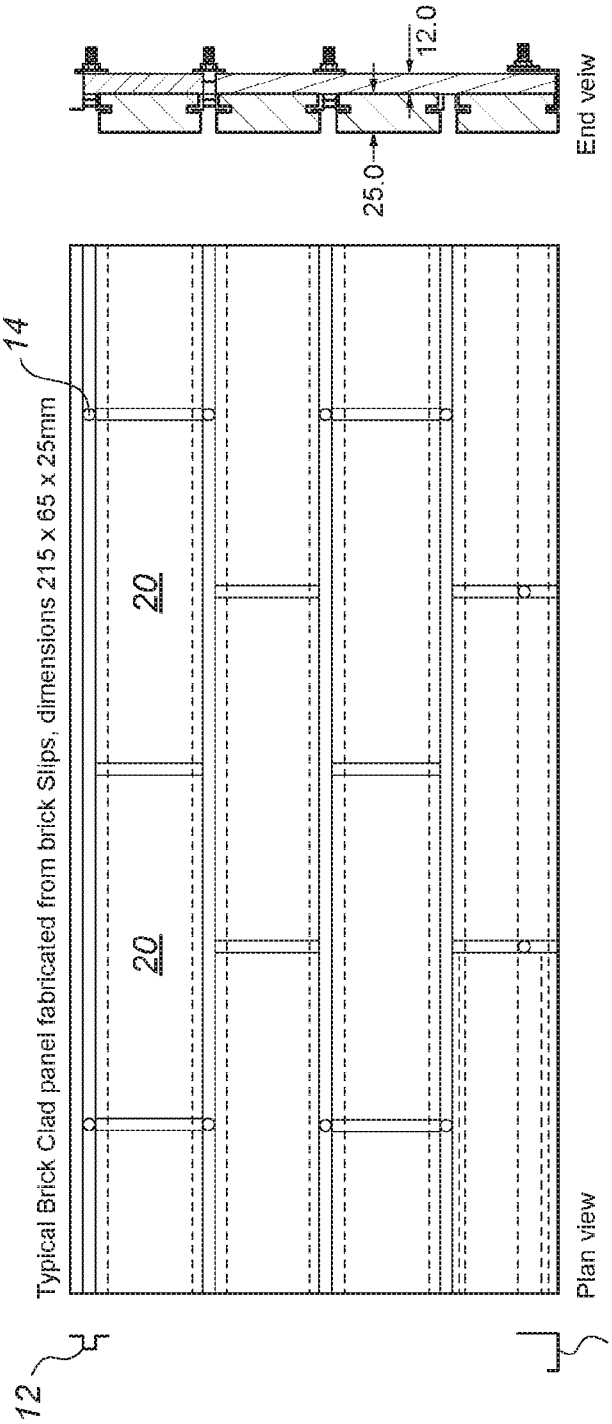

12.0
25.0
End view
14
Typical Brick Clad panel fabricated from brick Slips, dimensions 215 x 65 x 25mm
20
20
Plan view
12
40

Fig. 11

CLADDING SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a cladding system and particularly, though not exclusively, to an architectural cladding kit for attachment of masonry slips to walls, ceilings, openings, reveals, soffits or other overhanging, inclined or vertical surfaces.

2. Description of the Related Art

[0002] Modern architectural practices involve providing the appearance of solid thick-wall brickwork which, for reasons of cost, are actually constructed from thin-wall, single leaf brickwork. It is also known to achieve the appearance of solid thick-wall brickwork by adhering cut and profiled brick slips (also known as veneer bricks) onto concrete slabs which are in turn attached to an underlying structural frame of a building. A related architectural trend involves exposing brickwork on ceilings, openings and hanging soffits. This effect can also be achieved by adhering cut and profiled brick slips onto, for example, ceiling-mounted concrete slabs.

[0003] Concrete slab substrates can be large and therefore very heavy thus adding considerable additional loads to a building structure. Moreover, the requirement to manoeuvre such large, heavy and often fragile, and hence easily damaged decorative features from ground level and through scaffolding to an external building surface presents practical difficulties for the brickwork or cladding contractor. Furthermore, for safety and insurance reasons, there is reluctance on the part of some contractors, and warranty and insurance providers such as the United Kingdom's NHBC, to rely solely on adhesives to secure heavy ceiling-mounted or wall-mounted masonry products and the masonry slips or components embedded within their structure.

[0004] A need has therefore been identified for a fail-safe means for securing architectural cladding to walls, ceilings, reveals openings, soffits and other over-hanging surfaces, and which overcomes or at least ameliorates one or more of the aforementioned problems.

SUMMARY OF THE INVENTION

[0005] According to a first aspect of the present invention there is provided an architectural masonry cladding kit comprising a panel substrate; at least one joint bracket having a base and two free ends; a plurality of resiliently expandable fasteners for fastening the at least one joint bracket to the panel substrate; and at least two substantially rectangular masonry slips of a material selected from the group comprising clay bricks, natural or cast stone, ceramic tiles, and concrete tiles; each slip including:

[0006] (i) an outer face of a first width;

[0007] (ii) an inner face of a second width which is less than the first width;

[0008] (iii) two oppositely directed edge faces each having a length and depth dimension; and

[0009] (iv) a slot formed in each edge face;

wherein each slot divides its edge face into front and rear portions, wherein the front portion extends from the outer face to the slot, and the rear portion extends from the inner face to the slot; and wherein the joint bracket is substantially U-shaped and provided with no more than two oppositely directed flange extensions at its respective free ends; each flanged extension being adapted for engagement within an aforementioned slot to thereby indirectly attach the masonry slips to a building structure via the panel substrate.

[0010] It will be appreciated that the free ends of a series of joint brackets provide a fail-safe means of supporting the masonry slips in the event that a conventional adhesive bond between the inner face of the slip and an underlying substrate should fail.

[0011] Optionally, each slot extends width-wise into the slip along a notional axis extending parallel to both the inner and outer masonry slip faces.

[0012] Whilst this slot arrangement has been found to be optimal, it will be appreciated that the slot could instead be inclined towards the inner face and/or have a non-rectangular cross-sectional profile.

[0013] Optionally, each slot extends lengthwise in a straight line along the full length of each edge face.

[0014] Such an arrangement allows the use of elongate joint brackets which support the slips along their entire length; or a number of aligned shorter joint brackets which provide support to the slips at discrete spaced apart intervals along their length.

[0015] By reducing the width of the inner face and rear portion, additional space is available to accommodate adhesive or mortar between the edge faces of each slip and its associated joint bracket thus enhancing the bond between the two.

[0016] Optionally, the depth of the front portion is greater than the depth of the rear portion.

[0017] Suitable intermediate panel substrates may include one or more of cement particle board, plastics, woods including water and boil-proofed ply-woods, hardwoods, timber or Metsec® studwork, sheet steel, composite sheet materials including nylons, glass-reinforced plastics, etc. However, it will be appreciated that direct fixing of masonry slips to precast concrete or block work structural walls may also be appropriate in certain renovation scenarios.

[0018] Optionally, the joint bracket is substantially U-shaped and provided with oppositely directed flange extensions at its respective free ends, each for engagement within a said slot.

[0019] As such, the joint bracket assumes a square omega shaped (Ω) sectional profile which advantageously matches the general outline of the "top-hat" profile defined by the opposing slots (i.e. the brim of the hat), the opposing rear portions of each edge face (i.e. the walls of the hat), and the surface of the substrate to which the joint bracket and masonry slips are attached (i.e. the upper surface of the hat). This profile also minimises the volume occupied by the joint bracket within the space between adjacent masonry slips, and hence maximises the available pointing depth. In particular, mortar can be inserted into substantially the full depth of the volume between adjacent masonry slips which affords certain structural advantages discussed in more detail below.

[0020] Optionally, the cladding kit further comprises a C-shaped end bracket having a first flange extension at one of its respective free ends for engagement within a said slot; and a second flange extension at the other of its respective free ends for engagement with the building structure and/or an intermediate panel substrate.

[0021] The C-shaped end brackets are used to support slips located at the outermost edge of a clad area.

[0022] Optionally, the depth of each slot within each edge face is greater than the length of each flange extension on the joint bracket.

[0023] By providing an oversized slot and a reduced width rear portion this permits some lateral movement or play to facilitate adjustment, insertion and removal of slips from the flange extensions.

[0024] Optionally, one or more surfaces of the joint bracket are roughened or textured.

[0025] Additionally or alternatively, one or more apertures are formed through the said one or more surfaces of the joint bracket.

[0026] By providing roughened, textured or perforated surface features on the joint bracket this provides a mortar key to reduce the risk of masonry detaching and falling out of the gap between adjacent slips.

[0027] According to a second aspect of the present invention there is provided a method of preparing architectural masonry slips for subsequent attachment to an inverted surface, including the steps of:

[0028] (i) providing a plurality of substantially rectangular masonry slips, each slip including an outer face; an inner face; and two oppositely directed edge faces each having a length and depth dimension and a slot formed therein;

[0029] (ii) providing a panel substrate;

[0030] (iii) providing a plurality of joint brackets each having a base and no more than two free ends for joining two adjacent slips;

[0031] (iv) providing a supply of mortar and/or adhesive;

[0032] (v) applying adhesive to surfaces of either, or both, of the panel substrate and a slip;

[0033] (vi) adhering the slip to the panel substrate;

[0034] (vii) repeating steps (iv) and (v) to produce a first single aligned course of slips on the panel substrate;

[0035] (viii) engaging one free end of a joint bracket within the aligned slots in each non-perimeter edge face of said aligned course of slips;

[0036] (ix) adhering a second single aligned course of slips on the panel substrate alongside the first course whilst engaging slots along the opposing edge faces of the second course with the other free end of the joint bracket; and

[0037] (x) filling the space between opposing edge faces of said first and second courses, and down to the base of the joint brackets, with said mortar and/or adhesive;

wherein, when attached to an inverted surface, the free ends of each joint bracket are each capable of supporting the weight of the respective inverted courses thus providing a fail-safe support for the inverted masonry slips in the event of a failure of the adhesive bond applied between each masonry slip and the panel substrate.

[0038] Optionally, the method includes the steps of adhering further courses of slips to the substrate alongside each preceding course and engaging slots along the opposing edge faces of adjacent courses within the flange extensions of an interposed joint bracket.

[0039] It will be appreciated that multiple courses of slips can be adhered as required to fill a panel substrate.

[0040] Optionally, the method includes the further step of engaging the aligned slots in each edge face of the first single aligned course of slips with a free end of a C-shaped end-bracket.

[0041] Optionally, the method includes the further step of attaching the C-shaped end-bracket to a perimeter edge of the panel substrate.

[0042] It will be appreciated that steps of engaging the aligned slots with a free end of a C-shaped end-bracket, and attaching said bracket to a perimeter edge of the panel substrate may be performed either before step (v) above or after step (vi) above.

[0043] Optionally, the method includes the further step of mechanically fastening the joint brackets to the panel substrate.

[0044] Optionally, the joint brackets are fastened to the panel substrate by means of a resiliently expandable fastener.

[0045] Advantageously, no part of the U-shaped joint bracket extends behind the inner face of a masonry slip. By locating the U-shaped joint brackets such that they are entirely confined within the space between opposing edge surfaces of adjacent masonry slips, this affords several advantages which will become evident below.

[0046] Further features and advantages of the first, second aspects of the present invention will become apparent from the claims and the following description.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

[0047] Embodiments of the present invention will now be described, by way of example only, with reference to the following diagrams, in which:—

[0048] FIG. **1** is sectional view showing the component parts of a cladding kit in which masonry slips are attached to a ceiling panel substrate;

[0049] FIG. **2** is a sectional view corresponding to that of FIG. **1** whereby the ceiling panel substrate and masonry slips are of increased thickness;

[0050] FIG. **3** is a sectional view corresponding to that of FIG. **1**, showing a terminal end bracket and a manner in which panel substrates may be adjoined;

[0051] FIG. **4** is a sectional view corresponding to that of FIG. **2**, showing a terminal end bracket and the manner in which panel substrates are adjoined;

[0052] FIG. **5***a* is a sectional view of the joint bracket shown in FIGS. **1** to **4**;

[0053] FIG. **5***b* is a sectional view of the end bracket shown in FIGS. **3** and **4**;

[0054] FIGS. **6***a* and **6***b* are sectional views of alternative joint and end brackets;

[0055] FIG. **7** shows end, plan and elevation views of a masonry slip;

[0056] FIG. **8***a* is a side view of a fastener for use in the present invention;

[0057] FIG. **8***b* is a sectional view the fastener of FIG. **8***a* rotated to illustrate its expanded state;

[0058] FIG. **9** shows the side and sectional views of the fasteners of FIGS. **8***a* and **8***b* in-situ fastening a joint bracket to a ceiling panel substrate;

[0059] FIG. **10** shows a joint bracket of the present invention in combination with a fastener insulator collar; and

[0060] FIG. **11** shows end and plan views of a typical masonry clad panel substrate.

DETAILED DESCRIPTION OF THE INVENTION

[0061] FIGS. **1** and **2** each show a ceiling structure of a building including a cement particle board substrate **10** having a thickness of 8 mm or 12 mm respectively, and a density of 1300 kg/m^3. A number of spaced apart joint brackets **12** (shown in more detail in FIGS. **5***a* and **6***a*) are attached to the substrate **10**. Each joint bracket **12** is integrally formed from a single piece of sheet stainless steel—having a thickness of 0.5 mm—which has been cold rolled into a square omega shaped sectional profile. Alternative materials for the joint brackets **12** may include nylon and/or plastics or any other materials having the appropriate strength characteristics. Each joint bracket **12** is provided with a planar base **12***a* having a width of 10 mm; two planar walls **12***b*, **12***c* extending perpendicularly from either side of the base **12***a*, each having a height of 10 mm; and a flange extension **12***d*, **12***e* extending perpendicularly from the ends of the planar walls **12***b*, **12***c* which are remote from the base **12***a*, each having a length of between 5 mm (FIGS. **5***a*) and 10 mm (FIG. **6***a*) to account for differing tolerances in the slot lengths between different brick materials. The surface planes of the flange extensions **12***d*, **12***e* are each orientated so as to be parallel to the surface plane of the base **12***a*.

[0062] Each joint bracket **12** is connected to the substrate **10** by a suitable fixing means. In one embodiment (e.g. as shown in FIGS. **1** to **4** and **8**) the fixing means comprises a hex bolt **14**, the head of which is received within the U-shaped space defined by the base and wall surfaces **12***a, b, c* of the joint bracket. The a hex bolt **14** extends through the substrate **10** and a washer and Nyloc nut are tightened against its upper side surface to thus securely fasten the joint bracket **12** to the lower side surface of the substrate **10**.

[0063] In an alternative embodiment (see FIGS. **8***a* and **8***b*), a one-piece plastics expandable fastener **114** having a split shaft is employed to connect the joint bracket **12** to the substrate **10**. The split shaft (best shown in the sectional view of FIG. **8***b*) comprises two shaft members **116**, **118** which are resiliently hinged together proximate the head **120** of the expandable fastener **114**. The distal ends of the shaft members **116**, **118** are in the form of bulbous ends **122**, **124**. The shaft members **116**,**118** can be pivoted and/or twisted relative to one another about their connecting hinge so as to overlap one another. In the particular example illustrated, the shaft members **116**, **118** and their bulbous ends **122**, **124** are capable of overlapping one another in a manner similar to scissor blades. In doing so, the combined diameter of the bulbous ends **122**, **124** in at least one plane is reduced to be less than the diameters of the apertures within the substrate **10** and the base **12***a* of the joint bracket **12**.

[0064] It will be appreciated that this structural relationship, together with the inherent resilience of the plastics material, allows the two shaft members **116**, **118** and their bulbous ends **122**, **124** to be squeeze through the aforementioned aperture. Once the bulbous ends **122**, **124** pass through the aperture they resiliently expand. In doing so, their combined diameter in the at least one plane mentioned above is greater than the diameters of the apertures within the substrate **10** and the base **12***a* of the joint bracket **12** (i.e. as shown on the right in FIG. **9**). The expandable fastener **114** is thereby effectively locked in an engaged position and cannot easily be removed from the aforementioned apertures. Advantageously, no secondary item such as a nut is required to secure the fastener **114** in its locked condition. The fastener **114** may be used in addition to alternative types of fasteners. For example, the aforementioned hex bolt **14** may be used in strategic positions corresponding to the presence of structural members such as battens, posts, beams and steel framing, whereas the expandable fasteners may be used in other positions intermediate those structural members.

[0065] The head **120** of the expandable fastener **114** is configured to receive a driving instrument to assist in inserting it through the aforementioned apertures. When fully inserted, the head **120** may be countersunk within a correspondingly shaped recess formed in the surface of the substrate **10**.

[0066] As shown in FIGS. **8***a* and **8***b*, the fastener **114** has the following measurements:

Overall length: 22 mm
Length of head **120**: 5 mm
Length of bulbous end **122**, **124**: 8 mm
Length of shaft members **116**, **118** (minus bulbous end): 9 mm
Maximum width of head **120**: 10 mm
Maximum combined width of shaft members **116**, **118**: 4.8 mm
Minimum combined width of bulbous end **122**, **124**: 4.8 mm
Maximum (expanded) width of bulbous end **122**, **124**: >10 mm

[0067] Other conventional metallic fasteners such as self-tapping Tek® screws, rivets, woodscrews, cartridge nails, and nuts/bolts etc. may also be used to secure the joint bracket **12** to the substrate **10**. However, since the joint bracket **12** will usually be formed from stainless steel, galvanic or bimetallic corrosion can occur over time and compromise the strength and reliability of the connection between the fastener and the joint bracket **12**. In a worst case scenario, the connection may fail. To avoid this potentially dangerous scenario, a tubular insulation collar **150** is positioned within the U-shaped space bounded by the base **12***a* and side walls **12***b*, **12***c* of the joint bracket **12**. As shown in FIG. **10**, the insulation collar has a length 10 mm; an outer diameter of 8.5 mm and an inner diameter of 5.5 mm. The insulation collar **150** serves to isolate the shaft of any fasteners from the majority of the surface area of the joint bracket **12**.

[0068] A series of cladding masonry slips **16** (shown in more detail in FIG. **7**)—i.e. clay brick slips, natural or cast stone, ceramic tiles, or concrete tiles—are adhered to the substrate **10** in a conventional manner (e.g. by means of a two part epoxy adhesive having a density of 1650 kg/m^3). However, the masonry slips **16** are additionally connected to the flange extensions **12***d*, **12***e* of each joint bracket **12** to provide a fail-safe connection to the substrate **10**.

[0069] Each masonry slip **16** comprises an inner face **18**, an outer face **20**; and two oppositely directed edge faces **22**, **24** each having a length dimension (i.e. perpendicular to the plane of the paper) and a depth dimension (i.e. between the inner and outer faces **18**, **20**). A slot **30** is formed in each edge face **22**, **24**. Each slot **30** has a breadth along a notional width-wise axis which extends perpendicularly with respect to both edge faces **22**, **24**; and has a length which extends in a straight line along the full lengthwise extent of each edge face **22**, **24**.

[0070] Each slot **30** divides its edge face **22**, **24** into front and rear portions **22***f*, **22***r* and **24***f*, **24***r*. The front portions **22***f*, **24***f* are bounded by the edge of the outer face **20** and the

slot **30**; and the rear portions **22***r*, **24***r* are bounded by the edge of the inner face **18** and the slot **30**. As can be seen by comparing FIGS. **1** and **2** (or FIGS. **3** and **4**), the depths of the respective front and rear portions **22***f*, **24***f* and **22***r*, **24***r* may be equal or non-equal. For example, the depths of both the front and rear portions in FIG. **1** are 9 mm whereas in FIG. **2** the depth of the front portions **22***f*, **22***r* is increased to 14 mm. Indeed the overall depth of the masonry slip **16** of FIG. **2** is 5 mm greater than that of FIG. **1**, and its associated substrate **10** is also 4 mm thicker. In each case, the slot **30** has a height in the depth direction of 2 mm.

[0071] As shown in FIGS. **1** to **4**, the width of the inner face **18** is marginally less than that of the outer face **20**. Accordingly, the lowermost surface **301** of the slot **30** projects slightly beyond its corresponding uppermost surface **30***u*. As is clear from FIGS. **1** to **4**, the breadth of each slot **30** as measured along its lowermost surface **301** is greater than the length of each flange extension **12***d*, **12***e* of the joint bracket **12**. The combination of an oversized slot **30** and a reduced width inner face **18** permits a degree of lateral movement or play which is necessary to facilitate adjustment, insertion and removal of masonry slips **16** from each flange extension **12***d*, **12***e*. It also accommodates variation in slot depth/breadth due to manufacturing tolerances.

[0072] As shown in FIGS. **3** and **4**, an end bracket **40** is used as a terminal support for engaging with slots **30** located at the peripheral edge of an area of cladding. As best shown in FIGS. **5***b* and **6***b*, each end bracket **40** is integrally formed from a single piece of sheet stainless steel—having a thickness of 0.5 mm—which has been bent or cold rolled into an asymmetrical, square-cornered C-shaped sectional profile. Each end bracket **40** is provided with a planar base **40***a* having a height of 24 mm; and two planar flange extensions **40***b*, **40***c* extending perpendicularly from either side of the base **40***a*. The lower flange extension **40***b* measures between 5 mm and 10 mm in length and is locatable within a slot **30** of a masonry slip **16**. The upper flange extension **40***c* measures between 20 mm (FIG. **6***b*) and 25 mm (FIG. **5***b*) in length and is locatable against the upper surface of substrate **10**.

[0073] The process for manufacturing and installing architectural cladding according to the present invention is as follows. Firstly, masonry slips **16** are manufactured in a workshop at, or off-site from, the construction site. Here, an experienced brick-cutting operator would cut suitably dimensioned masonry slips **16** using a masonry saw with appropriate dust extraction or water based dust suppression in place. When cut to a correct thickness the slips **16** are passed through a purpose made spindle slot cutting process to form the elongate slots **30** along their end faces **22**, **24**. The prepared slips **16** are then dried and blown clean with compressed air to remove all dust and loose granular material.

[0074] A suitable panel of substrate material **10** is cut to the required dimensions and laid on a bench or surface in readiness for fabrication. The surface of the panel substrate **10** is abraided with grit paper and is also blown clean with compressed air. The panel surface is then coated with well mixed fresh two part epoxy adhesive (British Board of Agrément (BBA) approved or UKAS approved), and combed to a thin layer ready for laying slips **16** thereon. The inner surface **18** of each slip **16** is coated with the same adhesive and the thin layer wiped off to leave a smear of adhesive over its whole inner surface **18**. The prepared slip is then pressed into the thin layer of adhesive on the panel substrate **10** and this is repeated until a single course length is complete.

[0075] The above process is started at a peripheral edge of the substrate panel **10** and a flange **40***b* of a C-shaped end cap/bracket **40** is then fitted into the aligned slots **30** along the edge face **24** of the first course of slips **16**. Individual slips **16** may be adjusted in position before the adhesive cures to provide an even joint width and a straight alignment as required by the design. The straight steel length of the C-shaped end cap/bracket **40** assists in this process. A first flange extension **12***d* of the elongate omega shaped joint bracket **12** is inserted into the slots **30** running along the opposite edge face **22** of the first course of slips **16** with any necessary positional adjustments being made.

[0076] A second course of slips is then pushed into position with individual slots **30** in each slip being engaged with the opposing flange extension **12***e*. The straight edges of the omega shaped joint bracket **12** therefore ensures that the second course of slips extends parallel to the first course. The process steps of coating the panel substrate **10** with adhesive; sliding joint brackets **12** into slots **30** in the previous course; and pressing adhesive-smeared slips **16** into position is repeated until the panel substrate **10** is completely covered (see FIG. **8**).

[0077] Each joint bracket **12** may be secured to the substrate panel **10** along its length (for example, by a series of fasteners of the type described above) after one course of slips is positioned, and before the next course is positioned alongside. Alternatively, the process of securing all joint brackets **12** to the substrate panel **10** may be performed after all masonry slips **16** are correctly positioned, either before or after the adhesive has cured.

[0078] Where two panel substrates **10** are to be joined (see FIGS. **3** and **4**), the final course on the first panel substrate **10** is completed by fixing a base **12***a* of a joint bracket **12** along its intermediate perimeter edge **10***p*. In doing so, the outer flange extension **12***e* extends beyond the intermediate perimeter edge **10***p* to enable its engagement within slots **30** in the first course of slips of the adjoining panel substrate **10**. A further C-shaped end cap/bracket **40** is fitted to the terminal perimeter edge **10***t* of a panel **10**.

[0079] Once the adhesive is fully cured, individual panel substrates **10** may have other holes drilled and other fixings and/or sub-frames attached in readiness for their direct or indirect mechanical attachment to a building structure by a cladding contractor. A series of panel substrates **10** may be seamlessly connected together as indicated in FIGS. **3** and **4** with gaps pointed in-situ. Alternatively, pointing may be performed prior to lifting individual panel substrates **10** into position, this being advisable in the case of, e.g., hanging soffits where slips **16** are fully inverted.

[0080] The fixing of clad sections must meet engineers' requirements for the support of load and structural strength, e.g. using test data (provided by the United Kingdom Accreditation Service (UKAS) or other accredited laboratories prescribed for such activities). The mechanical fixing methods and arrangements used to secure the substrate panels **10** to the building structure—e.g. by hex bolts **14**—are prescribed and recommended by organisations such as the NHBC and other warranty bodies. A scissor jack may be the most appropriate device to assist installation on site. Substrate panels **10** can be bolted together in situ to create

a solid independent hanging surface with soft joints allowing movement around the perimeter margins to prevent stress cracking or fractures.

[0081] Although particular embodiments of the invention have been disclosed herein in detail, this has been done by way of example and for the purposes of illustration only. The aforementioned embodiments are not intended to be limiting with respect to the scope of the appended claims. It is contemplated by the inventor that various substitutions, alterations, and modifications may be made to the invention without departing from the scope of the invention as defined by the claims. In particular, the precise dimensions of the various surfaces in each of the joint bracket, end bracket and masonry slips can each be adjusted to suit particular requirements. Also, the order of performing each of the individual method steps of the second embodiment can be varied.

1. An architectural masonry cladding kit comprising:

a panel substrate;

at least one joint bracket having a base and two free ends;

a plurality of resiliently expandable fasteners for fastening the at least one joint bracket to the panel substrate; and

at least two substantially rectangular masonry slips of a material selected from the group comprising clay bricks, natural or cast stone, and concrete tiles; each slip including:

(i) an outer face of a first width;

(ii) an inner face of a second width which is less than the first width;

(iii) two oppositely directed edge faces each having a length and depth dimension; and

(iv) a slot formed in each edge face;

wherein each slot divides its edge face into front and rear portions; wherein the front portion extends from the outer face to the slot; and the rear portion extends from the inner face to the slot; and wherein the joint bracket is substantially U-shaped and provided with no more than two oppositely directed flange extensions at its respective free ends; each flanged extension being adapted for engagement within an aforementioned slot to thereby indirectly attach the masonry slips to a building structure via the panel substrate.

2. An architectural cladding kit according to claim **1**, wherein each slot extends width-wise along a notional axis extending parallel to both the inner and outer masonry slip faces.

3. An architectural cladding kit according to claim **1**, wherein each slot extends lengthwise in a straight line along the full length of each edge face.

4.-**5**. (canceled)

6. An architectural cladding kit according to claim **1**, wherein the depth of the front portion is greater than the depth of the rear portion.

7-**8**. (canceled)

9. An architectural cladding kit according to claim **1**, wherein the joint bracket is substantially U-shaped and provided with oppositely directed flange extensions at its respective free ends, each for engagement within a said slot.

10. An architectural cladding kit according to claim **1**, further comprising a C-shaped end bracket having a first flange extension at one of its respective free ends for engagement within a said slot; and a second flange extension at the other of its respective free ends for engagement with the building structure and/or an intermediate substrate.

11. An architectural cladding kit according to claim **9**, wherein the depth of each slot within each edge face is greater than the length of each flange extension on the joint bracket.

12. An architectural cladding kit according to claim **1**, wherein one or more surfaces of the joint bracket are roughened or textured.

13. An architectural cladding kit according to claim **12**, wherein one or more apertures are formed through the said one or more surfaces of the joint bracket.

14. A method of preparing architectural masonry slips for subsequent attachment to an inverted surface, including the steps of:

(i) providing a plurality of substantially rectangular masonry slips, each slip including an outer face; an inner face; and two oppositely directed edge faces each having a length and depth dimension and a slot formed therein;

(ii) providing a panel substrate;

(iii) providing a plurality of joint brackets each having a base and no more than two free ends for joining two adjacent slips;

(iv) providing s supply of mortar and/or adhesive;

(v) applying adhesive to surfaces of either, or both, of the panel substrate and a slip;

(vi) adhering the slip to the panel substrate;

(vii) repeating steps (iv) and (v) to produce a first single aligned course of slips on the panel substrate;

(viii) engaging one free end of a joint bracket within the aligned slots in each non-perimeter edge face of said aligned course of slips;

(ix) adhering a second single aligned course of slips on the panel substrate alongside the first course whilst engaging slots along the opposing edge faces of the second course with the other free end of the joint bracket; and

(x) filling the space between opposing edge faces of said first and second courses, and down to the base of the joint brackets, with said mortar and/or adhesive;

wherein, when attached to an inverted surface, the free ends of each joint bracket are each capable of supporting the weight of the respective inverted courses thus providing a fail-safe support for the inverted masonry slips in the event of a failure of the adhesive bond applied between each masonry slip and the panel substrate.

15. A method according to claim **14** comprising the further steps of adhering further courses of slips to the substrate alongside each preceding course; and engaging slots along the opposing edge faces of adjacent courses within the flange extensions of an interposed joint bracket.

16. A method according to claim **14** comprising the further step of engaging the aligned slots in each edge face of the first single aligned course of slips with a free end of a C-shaped end-bracket.

17. A method according to claim **16** comprising the further step of attaching the C-shaped end-bracket to a perimeter edge of the panel substrate.

18. A method according to claim **14** comprising the further step of mechanically fastening the joint brackets to the panel substrate.

19. A method according to claim **18** wherein the joint brackets are fastened to the panel substrate by means of a resiliently expandable fastener.

20. A method according to claim **14** comprising the further steps of adhering further courses of slips to the

substrate alongside each preceding course; and engaging slots along the opposing edge faces of adjacent courses within the flange extensions of an interposed joint bracket; and comprising the further step of engaging the aligned slots in each edge face of the first single aligned course of slips with a free end of a C-shaped end-bracket.

21. A method according to claim **20** comprising the further step of mechanically fastening the joint brackets to the panel substrate.

22. A method according to claim **21** wherein the joint brackets are fastened to the panel substrate by means of a resiliently expandable fastener.

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