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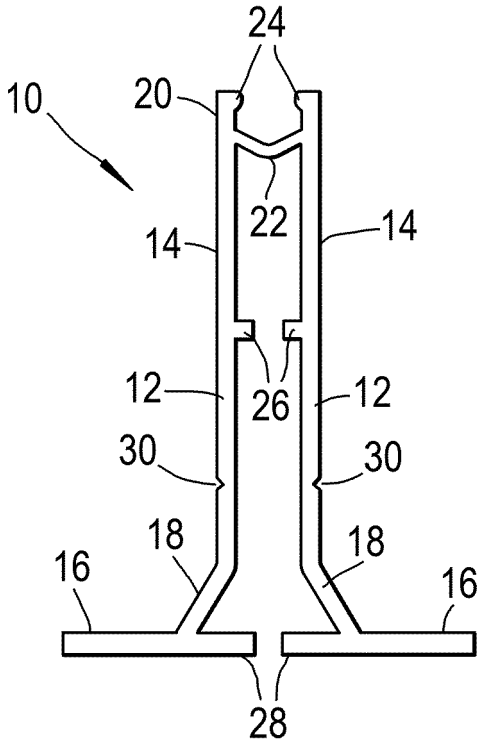
(54) Concrete shuttering

(57) A shuttering unit of resilient material comprising a pair of elements, each element comprising a substantially vertical plate and a substantially horizontal plate joined at substantially the in use bottom of the vertical plate, wherein the two elements are only joined together by a join at substantially the in use top of each vertical plate.

Fig.1



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Description

[0001] The present invention relates to an item for improvement to poured concrete construction.

[0002] Concrete is well known as a versatile construction material. It can be used in pre-cast units or poured on site.

[0003] To control the configuration of a poured concrete construction, the boundaries are set by shuttering. Traditionally, concrete shuttering has been provided by bespoke wooden formations or by the combination of standard sized steel components known as roadform.

[0004] The shuttering sets the boundaries of the poured concrete and may also provide a guide for a concrete levelling means such as a roller.

[0005] Generally once the concrete has cured the shuttering is removed and is either disposed of or reused. However in certain circumstances it is desirable for the shuttering to be used in such a way that it cannot be removed once the concrete is cured. In this situation the shuttering is known as "lost".

[0006] Lost shuttering may be desirable, for instance, when an area of concrete - such as a foundation or floor for a building - is required which is too large to be poured and levelled in a single process.

[0007] Lost shuttering would be used, for example, when constructing a concrete floor to divide a large area into smaller subdivisions in order to ease construction. Once the concrete has cured the shuttering is left embedded within the concrete, flush with or slightly below the finished surface of the concrete.

[0008] As concrete cures it shrinks in volume slightly and once cured the concrete is susceptible to small changes in volume due to changes in ambient temperature.

[0009] EP-A-2,365,150 discloses a plastics material shuttering suitable for use as lost shuttering, comprising compressible resilient vertical and horizontal elements.

[0010] Accordingly, the present invention is directed to a shuttering unit of resilient material comprising a pair of elements, each element comprising a substantially vertical plate and a substantially horizontal plate joined at substantially the in use bottom of the vertical plate, wherein the two elements are only joined together by a join at substantially the in use top of each vertical plate.

[0011] The join forms an axis about which the elements can move relative to one another to enable the shuttering unit to be compressed within the open void formed between the vertical plates by the concrete as it is poured. Because the shuttering unit is constructed from a resilient material the unit tends to return to its uncompressed state as the concrete shrinks during curing.

[0012] The join may comprise a section with substantially U-shaped cross-section.

[0013] The join may further comprise at least one ridge on each vertical plate.

[0014] The substantially U-shaped cross-section forms a gutter which may be used to collect a sealant material which may be desired to seal the joint between two sections of concrete on either side of the shuttering unit.

[0015] The ridge or ridges on the vertical plates may engage with a ridge or spring clip on a corresponding removable strip.

[0016] The shuttering unit may be supplied with a suitable corresponding removable strip.

[0017] The removable strip forms a substantially flat surface for guiding concrete levelling means. Once the concrete has cured the strip can be removed, leaving a channel into which sealant can be placed. A sealant ensures that leakage of incident fluids between sections of cured concrete is minimised.

[0018] The provision of a surface for guiding concrete levelling means in combination with being compressible enables the shuttering unit of the present invention to be used in many situations where, in the past, different discrete components would have been required.

[0019] This combination of features enables the shuttering unit of the present invention to be particularly useful because it can be employed either as a crack inducer or a screed rail or simultaneously as a crack inducer and screed rail.

[0020] The removable strip may have means for temporarily securing the strip to the shuttering unit.

[0021] The means for temporarily securing the strip to the shuttering unit may comprise a spring clip or ridges to interact with the ridges of the join of the shuttering unit.

[0022] One or both vertical plates may further comprise one or more ridges on the internal face of the vertical plate.

[0023] The ridge or ridges ensure that the shuttering unit cannot be compressed by more than a pre-set amount.

[0024] One or both of the horizontal plates may be arranged so that part of the horizontal plate extends into the region between the two vertical plates.

[0025] This arrangement further ensures that the shuttering unit cannot be compressed by more than a preset amount.

[0026] Each vertical plate may be joined to its corresponding horizontal plate via an intermediate plate-like section.

[0027] The intermediate plate-like section may be angled between the horizontal and the vertical.

[0028] One or both of the vertical plates may comprise one or more indentations in the external face.

[0029] An indentation in the external face of a vertical plate allows placement of a drill to make a hole in the plate. Pre-formed indentations enable a set of holes to be made in precise alignment so as to allow for the insertion of reinforcement bars. Holes may be desired or not desired according to the requirements of the building project and therefore the choice of whether to make holes or not increases the range of projects which the shuttering can be used in. However if holes for reinforcement bars are required, it is important for them to be precisely

aligned so as to minimise the risk of concrete leaking into the void between the two vertical plates.

[0030] The shuttering unit may be of plastics material.

[0031] The shuttering unit may be formed integrally.

[0032] An embodiment of the present invention will now be described with reference to the drawings, in which

Figure 1 is a view of the cross-section of the shuttering unit;

Figure 2 is a view of the cross-section of the join of shuttering unit of the present invention as shown in Figure 1 and the removable strip of the present invention; and

Figure 3 is a view of the cross-section of the removable strip of the present invention.

[0033] Referring to Figure 1 there is provided an integrally moulded plastics material shuttering unit 10 which has a pair of elements 12, each element 12 having a vertical plate 14 and a horizontal plate 16. Each vertical plate 14 and its corresponding horizontal plate 16 is joined via an intermediate plate-like section 18 which forms an angle between the vertical and the horizontal.

[0034] The elements 12 are joined together by a join 20 at the top of each element 12. The join 20 features a U-shaped gutter 22 and ridges 24.

[0035] Each vertical plate 14 has a ridge 26 on the internal face of the plate 14.

[0036] Each horizontal plate 16 has a part 28 which extends into the region between the two vertical plates 14.

[0037] Each vertical plate 14 has an indentation 30 in the external face. In use, the indentation 30 can be used to guide a drill in order that holes, if desired, may be aligned. Holes may be desired for the insertion of reinforcement bars. If such reinforcement bars are used it is important that the required holes are aligned so as to minimise the risk of concrete leaking into the void between the two vertical plates.

[0038] Referring to Figure 2 there is provided an integrally moulded plastics material shuttering unit 10 shown in engagement with a corresponding removable strip 40. The removable strip 40 has a flat top surface 42 and arms 44 which form a spring clip for corresponding removable engagement with ridges 24.

[0039] Referring to Figure 3 there is provided a removable strip 40 has a flat top surface 42 and arms 44 which form a spring clip for corresponding removable engagement with ridges (not shown) of a shuttering unit (not shown).

[0040] In use, the ridges 26 on the internal faces of the vertical plates 14 and the parts 28 of the horizontal plates 16 which extend into the region between the vertical plates 16 prevent excessive compression of the shuttering unit 10. The top surface 42 of the removable strip 40 provides a guide for the concrete levelling means. Once the concrete has cured the removable strip 40 can be removed, leaving a U-shaped gutter 22 which can collect a sealant.

Claims

1. A shuttering unit of resilient material comprising a pair of elements, each element comprising a substantially vertical plate and a substantially horizontal plate joined at substantially the in use bottom of the vertical plate, wherein the two elements are only joined together by a join at substantially the in use top of each vertical plate.

2. A shuttering unit according to Claim 1, wherein the join comprises a section with substantially U-shaped cross-section.

3. A shuttering unit according to Claim 1 or Claim 2, wherein the join further comprises at least one ridge on each vertical plate.

4. A shuttering unit according to any preceding claim, further comprising a suitable corresponding removable strip.

5. A shuttering unit according to Claim 4, wherein the removable strip further comprises means for temporarily securing the strip to the shuttering unit.

6. A shuttering unit according to Claim 5, wherein the means for securing the strip to the shuttering unit comprises a spring clip or ridges.

7. A shuttering unit according to any preceding claim, wherein one or both of the vertical plates comprises one or more ridges on the internal face.

8. A shuttering unit according to any preceding claim, wherein one or both of the horizontal plates is arranged so that part of the horizontal plate extends into the region between the two vertical plates.

9. A shuttering unit according to any preceding claim, wherein each vertical plate is joined to its corresponding horizontal plate via an intermediate plate-like section.

10. A shuttering unit according to Claim 9, wherein the intermediate plate-like section is angled between the horizontal and the vertical.

11. A shuttering unit according to any preceding claim, wherein one or both of the vertical plates comprises one or more indentations in the external face.

12. A shuttering unit according to any preceding claim,

wherein the shuttering unit is formed of plastics material.

13. A shuttering unit according to any preceding claim, wherein the shuttering unit is formed integrally.

Fig.1

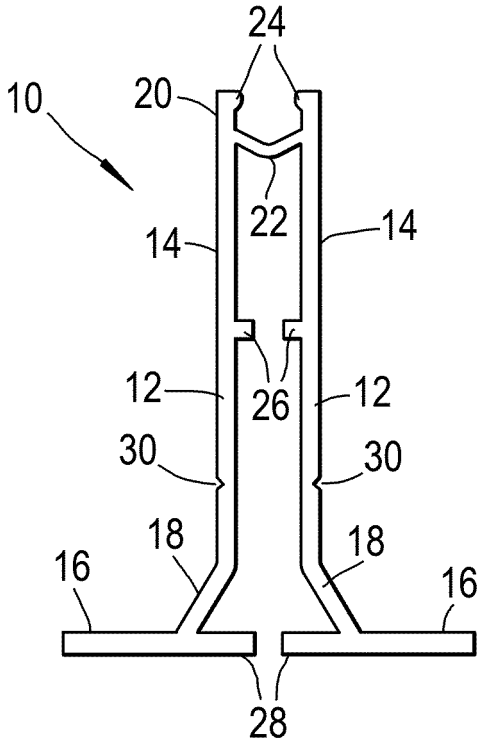


Fig.2

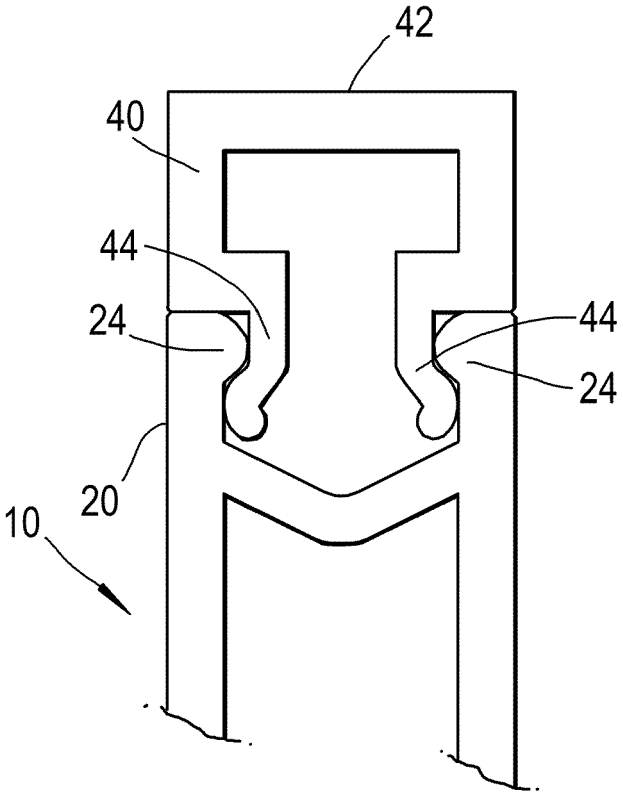
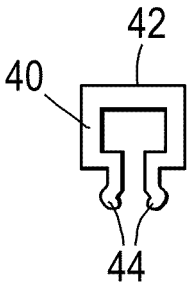


Fig.3



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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