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(54) A building unit.

(57) A building unit having projections and receiving cavities, normally used for toys, which is adapted for constructing real walls and the like by positioning a reinforcing envelope around the surfaces of a block of foamed material, like polystyrene foam, which surfaces are devoid of projections and cavities.

That envelope may be a metal sheet or a tube of resilient material and is preferably coated with a coating to give a brick-like aspect to the building unit. Also the provision of a circumferentially extending bevel, attributes to that aspect.

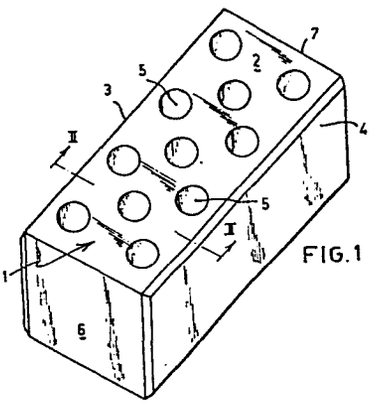

FIG.1

EP 0 069 428 A2

A BUILDING UNIT.

The present invention relates to a building unit, consisting substantially of a plastics core, having on one of the surfaces a plurality of regularly mutually spaced projections and having corresponding receiving cavities on the diametrically opposed surface, so that the building unit is adapted to cooperate with other building units.

Such building units could be called "LEGO-bricks", but LEGO-bricks can be considered only to be toys and in fact no real walls, houses and the like can be built therewith. All the same there is especially in warm countries a considerable need of well insulating building materials which can be used by unskilled labourers without problems. The property of the LEGO-system that after the construction is decomposed, the bricks can be used again, is furthermore also interesting for the industrialised world, for instance when constructing information stands and the like.

In order to achieve a proper insulation, a low weight and a production, which is as cheap as possible, it is, however, not realistic to just embody the known LEGO-bricks in greater dimensions.

If one wants to achieve all the above mentioned items, it has to

be prescribed that a reinforcing envelope is positioned around the surface of a block of foamed material, like polystyrene foam, which surfaces are devoid of projections and receiving cavities.

The reinforcing envelope may be a metal sheet or a tube of resilient material.

If small differences in size should be equalized it is required to adapt the feature that at least one of the surfaces of the plastics core is provided with a circumferentially extending bevel, so that two cooperating building units may show a brick-like joint.

The constructed wall can be reinforced by filling the receiving cavities with cast resin or concrete, if the projections are formed by removable pins.

If the building units have two series of projections and receiving cavities it is furthermore possible to provide at least one continuous bore in a center surface of the building unit, said bore having a collar in its central portion. Then by means of long studs and pertaining base plates and nuts a plurality of superimposed building units can be anchored to form together with a foundation a rigid structure.

The building units of the invention can be produced by first pressing and severing a plastics core and first coating an envelope web planar, then profiling and curving same and finally positioning it around the plastics core.

If said envelope web is a sheath of resilient material, it can be stretched prior to being positioned around the core.

The invention will be further elucidated hereinafter on the basis

of the drawing, in which by way of example a plurality of components of a building system according to the invention is illustrated. In the drawing is illustrated by:

Fig. 1 in perspective a plan view of a building unit, fig. 2 a cross-section according to the line II-II of fig. 1, and fig. 3 an accessory with the aid of which a wall, composed of the said building units, can be secured to an existing partition, and by which simultaneously a point of suspension is provided, with the aid of which something can be suspended from the constructed wall.

The building unit which is illustrated in fig. 1 and 2, consists of a core 1 of polystyrene. In the upper surface 2 four cylindrical receiving cavities are provided along each of the side walls 3 and 4, the arrangement being such, that the distance between a frontal surface 6 or 7 and the center of the adjacent receiving cavity is half the center-to-center distance between two adjacent receiving cavities. The same applies to the transverse direction which is perpendicular thereto. On the lower surface 8 only cylindrical projections 9, as visible in fig. 2, are provided. The latter are position in the same pattern as the above described receiving cavities 5, and therefore they can be inserted into the receiving cavities 5 of a building unit which is therebeneath. Up to here the building units, do, irrespective of the selection of material, very much resemble the known LEGO-bricks and it goes without saying that in this system all kinds of different unit shapes may appear, which can be made to cooperate with each other according to each time the same principle of projections and receiving cavities, which are arranged in a regular pattern.

The invented building unit has as its most important characteristic that around the surfaces of the core where no

projections and receiving cavities are present, a reinforcing envelope 10 is provided. This has been done because polystyrene foam is hardly able to receive tensile strain. Moreover this envelope 10 may serve as basis for a coating 11 of for instance brick aspect. It appeared to be efficient to provide said brick aspect, or other coatings to the envelope when it has not yet been placed around the core and is therefore still in the planar condition yet.

If the envelope consists of metal, like aluminium, it is possible to preliminarily make indents therein, so that after being bend the envelope can also be folded at substantially 45^{o}, so that the envelope also abuts the oblique surfaces 12 between at least four of the intersecting surfaces between the upper and lower wall on the one hand and the front and side walls on the other hand. Because of said oblique surfaces joints are imitated when stacking the building units (not illustrated), which are destined, in a known manner, to camouflage small irregularities. The envelope may also have, in a manner not illustrated here, a lap riveting and be secured to the core by means of a small pin.

If the envelope is a sheath of elastic material, then it can be placed around the core by stretching it in a manner which is used for instance when coating cushions for bus seats.

Between the series of receiving cavities 5 and corresponding projections 9 furthermore a series of continuous bores 14, provided with collars 13, is shown. The part of the core 14 between the collars 13 has a diameter which is sufficient to leat a connection member like a (not illustrated) screw bar pass. A base plate may be provided on the collar to support a nut which is screwed on the screw bar.

Another way of reinforcing a wall which is composed of the invented building units consists in replacing the projections 9 by removable fitting pins, which are located in continuous receiving holes. If all fitting pins are removed from opposite receiving holes, cast resin or concrete can be cast therein.

Of the innumerous possibilities there are to add special accessories to the building unit to obtain a total structure system, an accessory 15 is elucidated hereinafter on the basis of fig. 3, and consisting of a metal sheet with holes 16 which are provided with a hollow folded edge 17 or with holes 18 with half a folded edge 19. It goes without saying that said holes are arranged according to one and the same pattern and that they have the same diameter as the receiving cavities 5 and projections 9. The polystyrene is sufficiently flexible to receive such an edge 17 or 19 between the outer periphery of a projection and the inner peiphery of a receiving cavity.

The illustrated accessory 15 has a folded edge 20 at its other end, in which an opening 21 is provided with the aid of which it can be screwed onto an existing wooden wall. At the diametrically opposed end a in cross-section triangularly folded edge 22 is provided, having such dimensions that after being received in a wall, it protrudes beyond the coating 11 thereof (fig. 2). The edge 22 is also provided with a small hole 23, so that the accessory 15 can simultaneously serve as a support point for a painting, clock or the like article to be hung on the wall.

Of variations in embodiment which are not illustrated the following ones can be mentioned: providing such a recess in the building unit that a flower pot can be placed therein, said recess communicating with the core 14 in which wires extend which feed water to the plant, placed in the pot, because of capillarity and

using the continuous receiving holes 5 or bores 14 to receive cables and tubes for the provision of electricity.

With the above described building units walls can be composed which are easily displaceable and after being used they can be dismounted, and used in another composition again, When using suitable materials for particularly the envelope, the building units has sufficient fire resistance.

Within the scope of the claims also other embodiments than the ones, illustrated in the drawing, are covered.

CLAIMS:

1. A building unit, consisting substantially of a plastics core, having on one of the surfaces a plurality of regularly mutually spaced projections and having corresponding receiving cavities on the diametrically opposed surface, so that the building unit is adapted to cooperate with other building units, characterized in that a reinforcing envelope (10) is positioned around the surfaces of a block (1) of foamed material such as polystyrene foam, which surfaces are devoid of projections (9) and receiving cavities (5).

2. A building unit according to claim 1, characterized in that the reinforcing envelope is a metal sheet or a tube of resilient material.

3. A building unit according to claim 1 or 2, characterized in that at least one of the surfaces of the plastics core is provided with a circumferentially extending bevel, so that two cooperating building units may show a brick-like joint.

4. A building unit according to any of claims 1-3, characterized in that the projections (9) are dummy pins.

5. A building unit with two series of projections and receiving cavities according to any of claims 1-4, characterized in that in

a center surface of the building unit at least one continuous bore (14) is provided, having a collar (13) in its central portion.

6. A method for the production of a building unit according to any of the preceding claims, characterized in that first a plastics core (1) is pressed and severed and an envelope web is first coated planar, then profiled and curved and finally positioned around the plastics core.

7. A method according to claim 6, characterized in that the envelope web is a sheath of resilient material and that it is stretched before it is positioned around the core.

8. A method according to claim 6, characterized in that the resilient sheath is obtained by spraying a plastics coating.

9. A product and method as illustrated in the drawing and/or discussed on the basis thereof.

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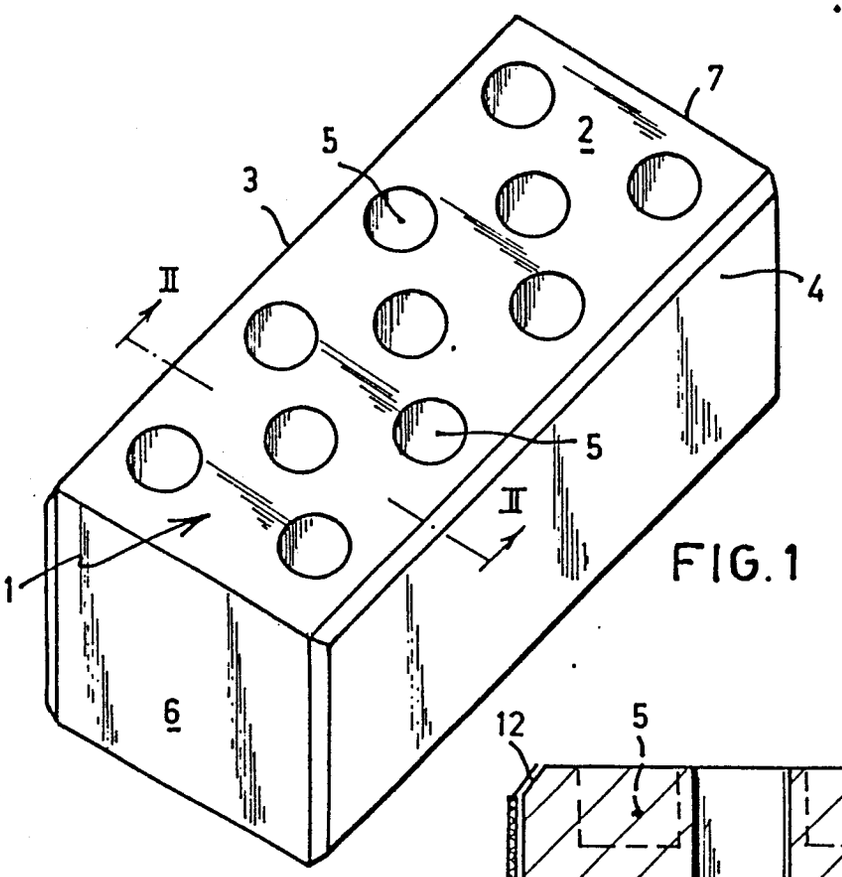

FIG. 1

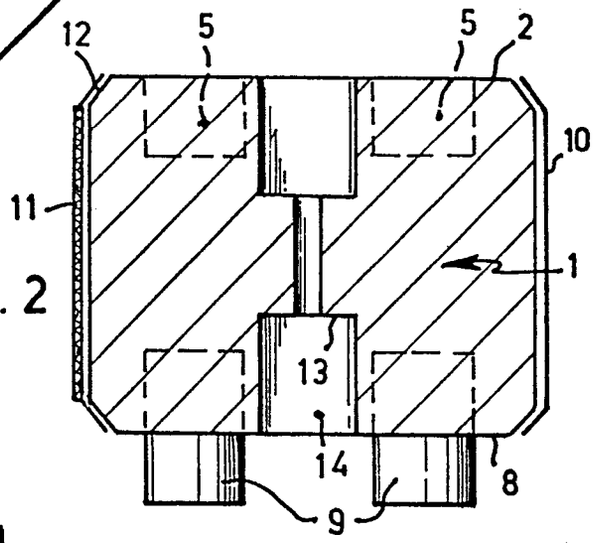

FIG. 2

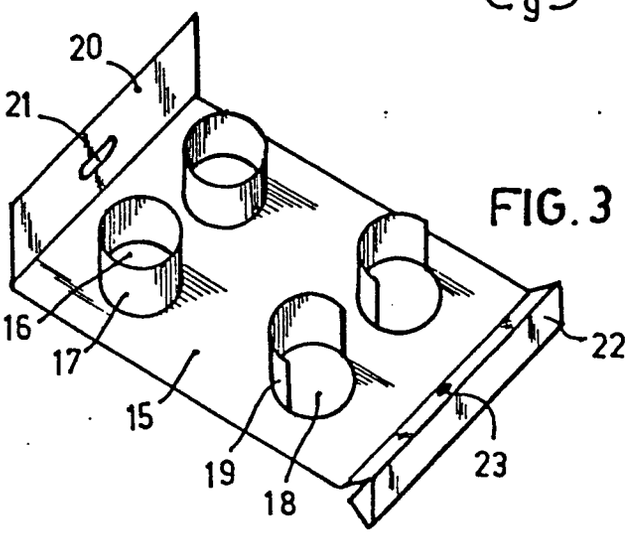

FIG. 3