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(54) Modular unit

(57) Modular unit (A) characterized by a substantally circular base, and a shape obtained by the combination of a substantially cylindrical body and a substantially frustum body, cohaxial one to the other, the latter being placed on a base of the cylindrical body, the external surface of said modular unit being characterized by the presence of notches (5), (7) and projections (4), (6), (6'), symmetrically and alternately placed so that at least one of said projections of a first element be housed in a corresponding notch of a second unit and the two units mortise one another.

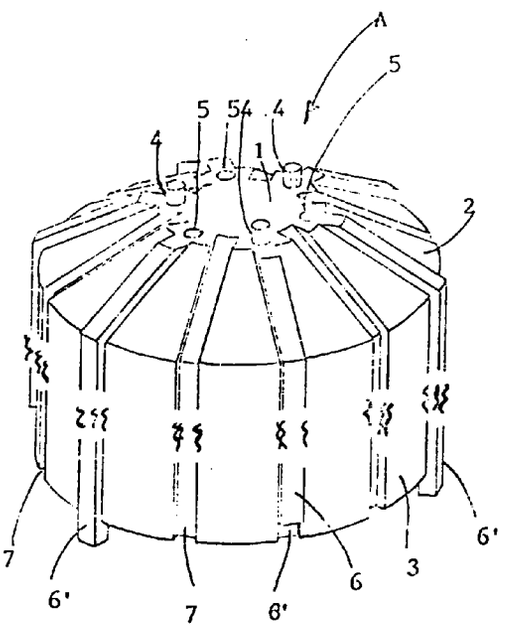

Fig. 1

EP 0 729 903 A2

Description

FIELD OF THE INVENTION

The present invention relates to a modular unit.

DETAILED DESCRIPTION OF THE INVENTION

The modular unit according to the present invention is characterized by a substantally circular base, and a shape obtained by the combination of a substantially cylindrical body and a substantially frustum body, cohaxial one to the other, the latter being placed on a base of the cylindrical body.

The modular element according to the invention can be either hollow or not; it is preferably hollow. Its dimensions are not binding in that its cylindrical part can be shaped much elongated with respect to the frustum.

The external surface of the unit according to the invention is characterized by notches and projections, placed symmetrically alternated to one another, so that at least one of said projections of a first unit can be inserted in a corresponding notch of a second unit and both units turn out mortised each other. The joint takes place by drawing close two modular units so that a notch of a first unit corresponds to a projection of a second unit, and then applying a light pressure.

The invention will be Ilustrated with the aid of the following figures, which show some preferred embodiments which should not be considered limiting the invention.

BRIEF DESCRIPTION OF THE FIGURES

Fig. 1 is a perspective view of a first embodiment of the invention.

Fig. 2 is a front view of the modular unit of fig. 1.

Fig. 3 is a top view of the modular unit of fig. 1.

Fig. 4 is a perspective view of a second embodiment of the invention.

Fig. 5 is a partial perspective view of a third embodiment of the invention.

Fig. 6 is a partial top view of the modular unit of fig. 5.

DETAILED DESCRIPTION OF THE FIGURES

With particular reference to fig. 1, the modular unit according to the invention is generically indicated with (A). As shown by the figure, the modular unit (A) is characterized by a shape obtained by superimposing a frustum on a cylinder, cohaxial one another, the major base of the frustum and the base of the cylinder being the same; the minor base of the frustum, thus constituting the minor base of unit (A), will be identified with (1) ; the frustum surface will be identified with (2) and the cylinder surface will be identified with (3); the combination of frustum surface (2) and cylinder surface (3) will be indicated as lateral surface of unit (A). The slant of the frustum surface (2) with respect to the plane of the base is preferably about 30°. The notches and projections according to the invention are symmetrycally placed on the surface of unit (A) and the number of notches is the same of the number of projections.

As evident in fig. 1, there are two different kinds of notches and projections: there are pins (4) and corresponding notches (5), both placed on the minor base (1); there are elongated projections (6) e (6') and corresponding elongated notches (7), both placed on the lateral surface of unit (A).

The pins section is preferably circular, as shown by the figure, but any kind of section will be suitable, provided that it does not prevent the use of said pins (4), which have to be mortised in the corresponding notches (5) of different units (A). Preferably, the pins (4) and the notches (5), alternately and symmetrically placed on the minor base (1), are placed in correspondence of the elongated projections (6) and (6'), or alternatively, in correspondence of the elongated notches (7). With respect to the elongated projections (6) and (6'), they have preferably a square or rectangular section and are placed on the lateral surface of unit (A). In particular, the elongated projections (6') are prolonged below the cylindric surface (3), while the elongated projections (6) terminate correspondingly short of the rim of such surface, so that the recess (6") is created. In this manner, when two different units (A) are placed in contact between them via their major basis, the external terminal parts of the elongated projections (6') of a first unit (A) mortise the corresponding recesses (6") of a second unit (A).

The repetetiveness of the set: elongated projection (6), elongated notch (7), elongated projection (6'), elongated notch (7), on the lateral surface of the unit (A) will be preferably 3.

With particilar reference to fig. 2, it is a front view of the unit (A). As can be seen, the elongated projections (6') protrude from the profile of the unit (A) of the same as the projections (6) indente, thus producing the recess (6"), which, mortises the protruding part of the projection (6').

With particular reference to fig. 3, it is a top view of unit (A). When seeing such figure, it can be appreciated the symmetric structure of unit (A). There are present: the pins (4), the notches (5), the elongated projections (6) and (6') and the elongated notches (7).

With reference to fig. 4, it shows in perspective a particular embodiment of the invention wherein, given the modular unit (A'), the notches and projections are only present on the minor base (1') and on the frustum surface (2'), and are not present on the cylinder surface (3').

Fig. 5 is a partial perspective view of another ebodiment of the invention, relating to a modular unit (A") obtained by superimposing a frustum on a cylinder cohaxial one another, however in this case the dimension of the major base of the frustum is smaller than the one of the cylinder, to at least take into account the real

thickness of unit (A''), when it is superimposed to another one.

In fig. 5 the minor base of the frustum, which constitutes the minor base of the unit (A''), is indicated with (1''); the lateral surface of the frustum is indicated with (2'') and the lateral surface of the cylinder is indicated with (3''); while the part of surface substantially anular resulting by the non complete overlapping between the major base of the frustum andd the cylinder base is indicated with (8). Also in this embodiment, the notches and the corresponding projections are symmetrically placed on the surface of the unit (A''), moreover the number of the projections is equal to the number of the notches.

As can be seen in fig. 5, in this case the pins (4'') are placed on the minor base (1''), and the pins (11) are placed at one end of the projection (12) and preferably on the other end there is a corresponding notch (10); however it is to be noted that the number and the locations of the pins (4'') and (11) and of the corresponding notches (5'') and (10) are not binding and can be varied with respect to what shown in the figures; it is only necessary to maintain a sort of symmetry in order to allow an easy mortise of a plurality of modular units. For example in fig. 6 the dotted circle (9) can indifferently identify a pin or a notch or nothing. In this case the projections in the shape of pins have a circular section, as shown in figs. 5 and 6, however any section could be useful, provided that it is not an obstacle to the operability of said pins (4'') and (11), which is that of being mortised in corresponding notches (5'') and (10) of other units (A''). Preferably, the pins (4'') and notches (5'') are alternatively and symmetrically placed on the minor base (1'').

As far as the surfaces (2'') and (3'') are concerned, it can be seen that they are shaped in a particular manner. Such a shape, indicated with (16) in figs. 5 and 6, in practice consists in an erosion of the surfaces (2'') and (3'') in correspondence of the elongated projections (14) and (12) and sideways to them; its funtion is substantally to furnish a more efficaceous mortise to corresponding elongated notches (15) and (13) of other units (A''), to produce the mutual mortise. The same function is performed by the erosion of the lateral surface (2'') identified with (17) in correspondence to the lower end of the elongated notch (15), that is the one in correspondence of the anular surface (8).

The slant of the frustum surface (2'') with respect to the plane identified by the substantially anular surface (8) is preferably about 30°.

With respect to the elongated projections (12) and (14), they preferably have a square or rectangular section and are placed on the lateral surfaces (3'') and (2'') of the unit (A''), respectively. In particular, the elongated projections (11) can bear, on their ends, either pins (11) or notches (10), which are used for the mortise with other units (A'').

The repetetiveness of the set: elongated projection (12), elongated notch (13), on the lateral surface (3'') and elongated projection (14), elongated notch (15), on the lateral surface (2'') of the unit (A) will be preferably 3.

With particular reference to fig. 5, it can be seen that the projections (14) are placed in correspondence of the projections (12) and the notches (15) are placed in correspondence of the notches (13), however they do not blend into one another to at least allow the mortise with other units (A'') of given thickness.

The drawings attached should be considered only indicative of the modular units of the invention and modifications could be possible, particularly in the production of the units, which are to be considered pertaining to the invention itself.

Some of the possible combinations among different modular units according to the invention are obtained by drawing close and then mortise: two lateral cylindric surfaces, two lateral frustum surfaces, two major bases, two minor bases, or, in the case of hollow units, male-female connection to the frustum part of a first unit which inserts in the cylindric part of a second unit.

Article wich can be realized in order to have the external surface shaped with notches and projections as described for the unit according to the invention are: lids or caps for cases, cases for liquids or solids, the internal part of them being shaped in different manners with respect to the use of the article (i. e., thread, projections for friction and bayonet joint, ecc.). Moreover, the unit according to the invention, thanks to its external shape and to the presence of the notches and projections, can be mortised with a plurality of other analogous units in order to obtain fancy shapes.

The units can be realized with all the materials which, according to their nature, allow to obtain notches and projections, such as: plastics, rubber, wood, metals, ecc..

Claims

1. Modular unit (A) characterized by a substantally circular base, and a shape obtained by the combination of a substantially cylindrical body and a substantially frustum body, cohaxial one to the other, the latter being placed on a base of the cylindrical body, the external surface of said modular unit being characterized by the presence of notches (5), (7) and projections (4), (6), (6'), symmetrically and alternately placed so that at least one of said projections of a first element be housed in a corresponding notch of a second unit and the two units mortise one another.

2. Modular unit according to claim 1 characterized in that it is hollow.

3. Modular unit (A) characterized by a shape obtained by the combination of a substantially cylindrical body and a substantially frustum body, cohaxial one to the other, the major base of the frustum and the base of the cylinder are equal; said unit (A) having

a minor base (1), a frustum lateral surface (2) and a cylinder lateral surface (3) and being characterized in that notches and projections are symmetrically placed on the minor base (1), on the lateral surfaces (2) and (3), and not on the major base, the number of the projections being equal to the number of the notches.

4. Modular unit according to claim 3 characterized in that the slant of the frustum surface (2) with respect to the plane of the base surface is about 30°.

5. Modular unit according to claim 3 characterized in that the projections and notches are of two kinds:

   - the projections are in shape of pins (4), placed on the minor base (1), and in shape of elongated projection (6) and (6'), placed on the lateral surfaces (2) and (3) of unit (A);
   - the notches are notches (5), suitable to house corresponding pins (4) placed on the minor base (1), and elongated notches (7), placed on the lateral surfaces (2) and (3).

6. Modular unit according to claim 5 characterized in that the pins (4) and the corresponding notches (5) have a circular section.

7. Modular unit according to claim 5 characterized in that the elongated projections (6) and (6') and the corresponding elongated notches (7) have square or rectangular section.

8. Modular unit according to claim 5 characterized in that the pins (4) and the notches (5), alternately and simmetrically placed on the minor base (1), are placed in correspondence of the elongated projections (6) and (6').

9. Modular unit according to claim 5 characterized in that the pins (4) and the notches (5), alternately and simmetrically placed on the minor base (1), are placed in correspondence of the elongated projections (7).

10. Modular unit according to claim 5 characterized in that the elongated projections (6') protrude from the profile of the cylindric surface (3), and correspondingly the elongated projections (6) terminate short of the rim of said surface, thus producing the recess (6").

11. Modular unit according to claim 5 characterized in that the repetetiveness of the set: elongated projection (6), elongated notch (7), elongated projection (6'), elongated notch (7), on the lateral surface of the unit (A) will is 3.

12. Modular unit according to claim 3 characterized in that the projections are present only on the minor base and on the frustum surface, while they are not present on the cylinder surface.

13. Modular unit (A") characterized by a shape obtained by the superimposition of a frustum body on a cylindrical body, cohaxial to one another, the major base of the frustum being smaller of the cylinder base; said unit (A") having a minor base (1"), a frustum lateral surface (2"), a cylinder lateral surface (3") and an anular surface (8) and being characterized in that notches and projections are symmetrically placed on the minor base (1") and on the lateral surfaces (2") and (3").

14. Modular unit according to claim 13 characterized in that the projections and notches are of two kinds:

   - the projections are in shape of pins (4"), placed on the minor base (1"), and in shape of elongated projection (12) and (14), placed on the lateral surfaces (2") and (3") of unit (A");
   - the notches are notches (5"), suitable to house corresponding pins (4") placed on the minor base (1"), and elongated notches (13) and (15), placed on the lateral surfaces (3") and (2") respectively.

15. Modular unit according to claim 14 characterized in that the pins (4") and the corresponding notches (5") have a circular section.

16. Modular unit according to claim 14 characterized in that the elongated projections (12) and (14) and the corresponding elongated notches (13) and (15) have square or rectangular section.

17. Modular unit according to claim 14 characterized in that the pins (4") and the notches (5"), alternately and simmetrically placed on the minor base (1"), are placed in correspondence of the elongated projections (14).

18. Modular unit according to claim 13 characterized in that the pins (4") and the notches (5"), alternately and simmetrically placed on the minor base (1"), are placed in correspondence of the elongated projections (15).

19. Modular unit according to claim 13 characterized in that the repetetiveness of the set: elongated projection (12), elongated notch (13), on the lateral surface (3") and elongated projection (14), elongated notch (15), on the lateral surface (2") of the unit (A") is 3.

20. Modular unit according to claim 14 in which the projections (14) are placed in correspondence of the

projections (12) and the notches (15) are placed in correspondence of the notches (13), however they do not blend to at least allow the mortise with other units (A") of given thickness.

21. Modular unit according to claim 14 characterized in that the surfaces (2") and (3") have a shape (16) consisting in an erosion of the surfaces (2") and (3") in correspondence of the elongated projections (14) and (12) and sideways to them; said shape (16) having substantally the function of furnishing a more efficaceous mortise to corresponding elongated notches (15) and (13) of other units (A"), to produce the mutual mortise.

22. Modular unit according to claim 14 characterized in that the lateral surface (2") is shaped with a shape (17) consisting in an erosion of said surface (2") in correspondence to the lower end of the elongated of the elongated notch (15), that is the one in correspondence of the anular surface (8).

23. Use of the modular unit according to claim 1 to produce shaped articles selected among: lids or caps for cases, cases for liquids or solids.

24. Use of the modular unit according to claim 1 to produce shaped articles, which can be mortised among them in order to obtain fancy shapes.

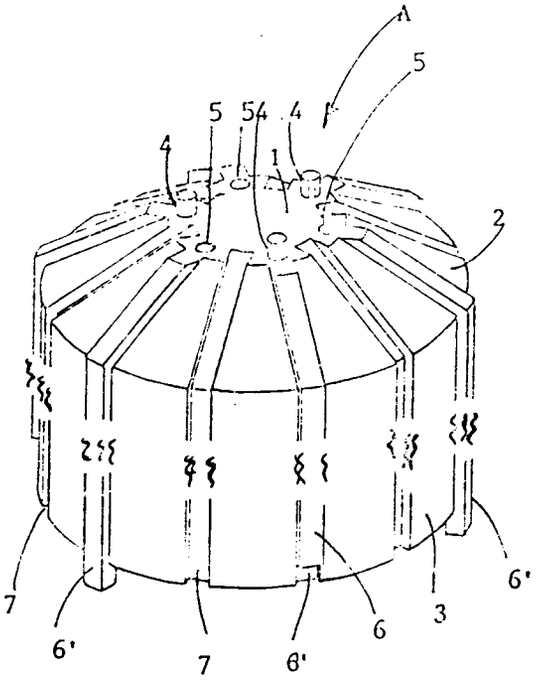

Fig. 1

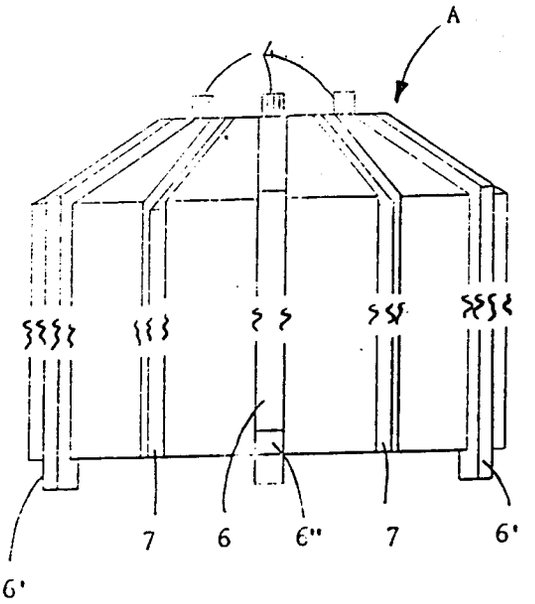

Fig. 2

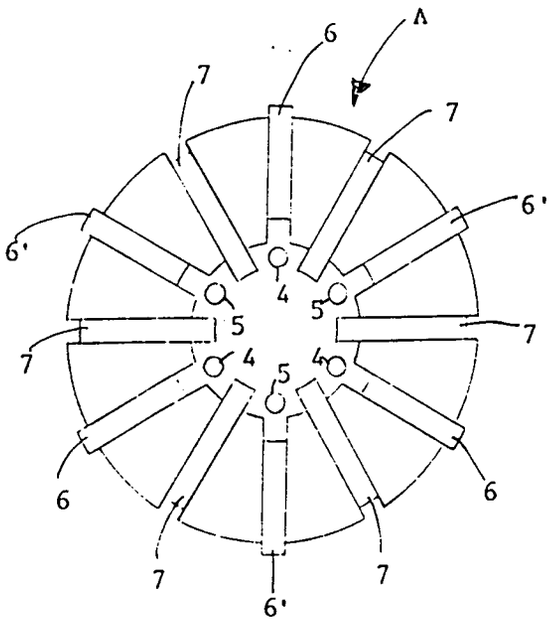

Fig. 3

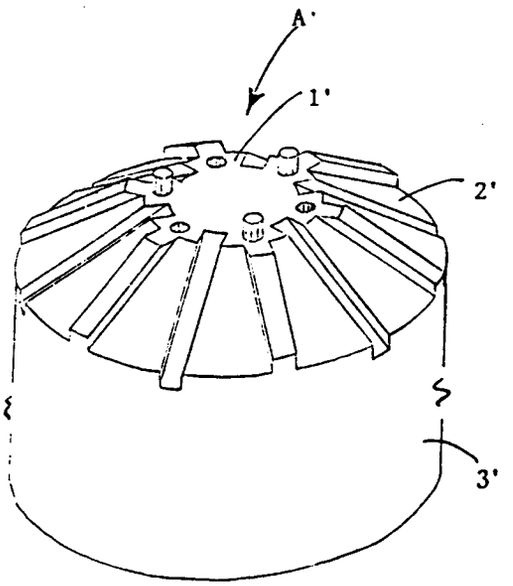

Fig. 4

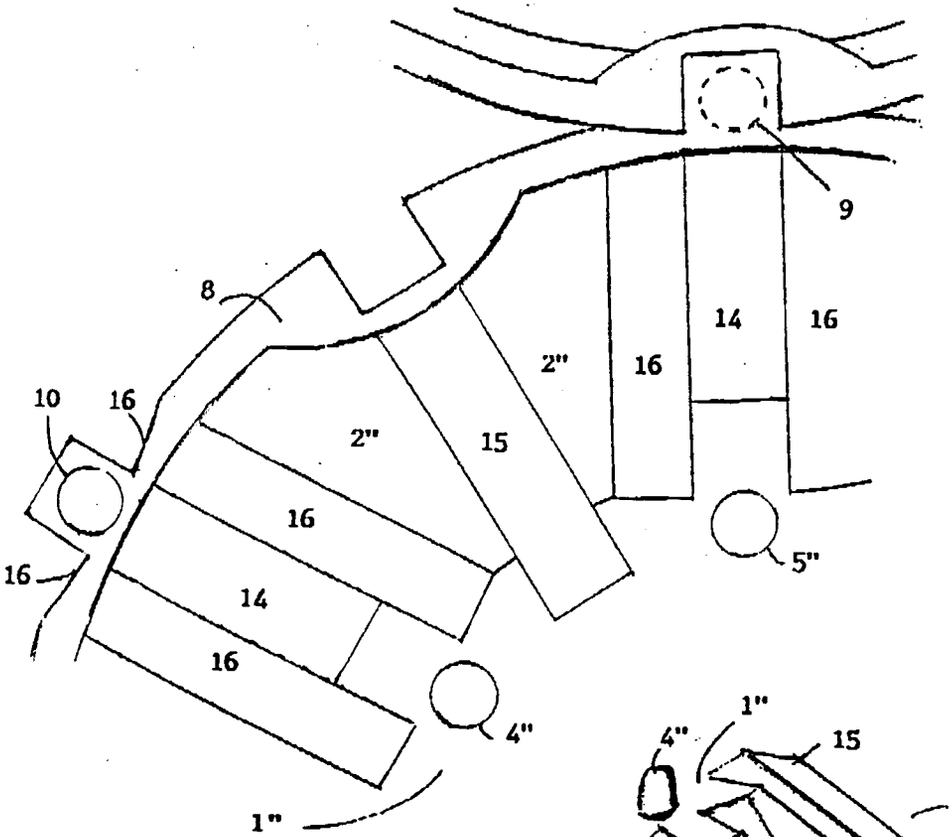

Fig. 6

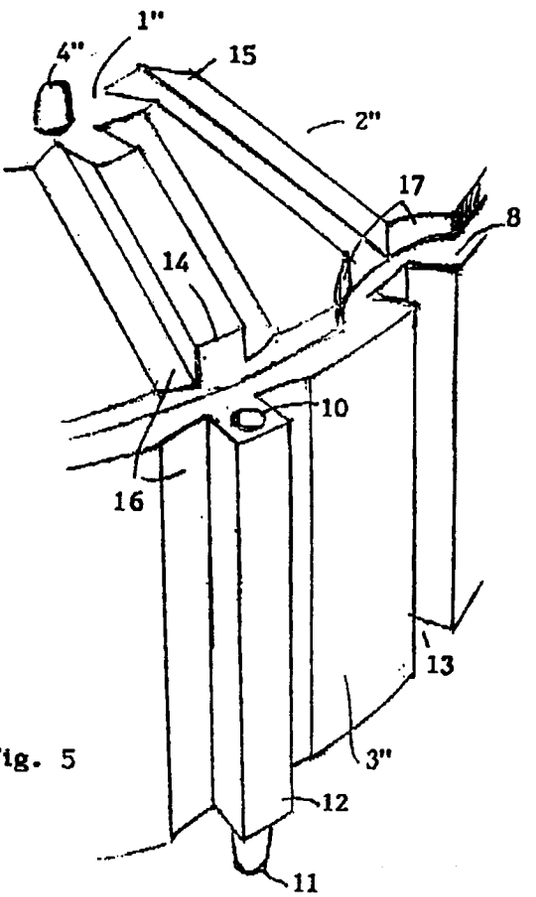

Fig. 5