

Description

This invention relates to a modular frame which is made up of a suitable plastic material and is capable of giving the correct L profile to the top edges of wells or of canalizations or to the edges of openings in general, said frame being arranged so as to be strongly anchored to the cement mortar that fixes it in the installation of the same.

The characteristics of the frame in question and the advantages deriving therefrom will be evident from the following disclosure which is given with reference to the figures shown in the enclosed three drawing sheets, wherein:

- Fig. 1 is a top plan view of the angular member of said frame;
- Figs. 2 and 3 are a top plan view and a bottom plan view of an intermediate member of the frame, respectively;
- Fig. 4 illustrates some structural details of the components shown in Figures 1 and 2, which have been cross-sectioned along the line IV-IV;
- Fig. 5 and 6 illustrate the components shown in Figures 1 and 2, as viewed from the fronts which are shown respectively by the arrows H and K;
- Fig. 7 and 8 illustrate some possible compositions of the modules for the realization of the modular frame in question;
- Figs. 9, 10 and 11 show the top plan view of the various members involved in the realization of the angular portion of the frame.

It is known in the prior art, from the document NL-A-41198, a modular frame having four equal members, each one having a corner portion and a straight portion in a monolithic body.

The modular frame which is the object of this invention is made by mold injection of any suitable plastic material provided with a good resistance to physical-chemical stresses and having a heat expansion coefficient close to that of the cement mortar employed for the installation of the frame itself. The frame is made up mainly of two pieces. It consists of a member that defines the 90° angular portions of the frame as shown for instance by A-A'-A" and A''' in the Figures 1-9-10-11, and of at least an intermediate, straight-line member B as shown in Figure 2. Both elements A-A'-A"-A''' and B are provided at their ends with fixing means so that they can be connected to each other in a very rapid way, for instance with raised members or with dovetail profile cavities (see further in this disclosure). Figure 7 illustrates two consecutive sides of a frame which is made up of an angular member A, in the shape of a square, and of a member B which is connected to an end of A for extending at one's will the side of the frame. Figure 8 illustrates on the contrary three consecutive sides of a frame which are formed by the reciprocal connection of two angular mem-

bers A. The variants of the angular members or of the end members of the frame, shown by the letters A'-A" and A''' and illustrated in Figures 9, 10 and 11, will be considered further in the present disclosure.

In order to meet the various requirements of the market, the members A-A'-A"-A''' and B can be manufactured in combination with different sizes.

With reference now to Figure 4, the particular profile of the members A-A'-A"-A''' and B will be now disclosed.

The profile comprises a part 1 in the shape of a U, whose outer side 101 is lower and preferably of less thickness than the inner side 201. The part 1 is structurally stiffened by means of inner cross members 301 and it is provided on its base portion 401 with wide openings 2, which ensure a strong incorporation of the same portion of section bar into the layer S of cement mortar which is employed for the installation of the frame according to the present invention. The openings 2 can also be employed for the passage of any possible anchoring member (not shown) for the installation of the frame.

The cross members 301 go along the whole height of the side portion 101 whereas they go just along a portion of the height of the side part 201, so that the upper edge of the same cross members is at a slope and the cross members themselves are completely enclosed within said layer S.

About at the middle of the inner side 201 of the part 1 mentioned above the end of the part 3 is fixed, said part being in the shape of an inverted L, so as to realize with the upper portion and viewing the side part 201 an S profile that defines the ledge C of the frame in question, said ledge being suitable to receive the cover, the grid, the door or any other movable closure member. The part 3 is coplanar at its lower portion to the part 1 mentioned above, and is connected to the same by means of inner stiffening cross member 103. The inner cavity of the part 3 is also in engagement with the cement mortar employed for fixing the frame when installing the same. It is to be understood that any possible openings can be provided on the length out of sight of the side part 201, in order to ensure an incorporation of the frame into the mortar layer S of even higher efficiency. Such openings could be open at the lower edge of the side part 201 and might be obtained with no particular complications in the structure of the mold for the production of the components A and B in question, all that being easily understandable and accomplished by those who are skilled in the art.

Some cross members 301 and 103 close the ends of the members A-A'-A" and B, forming in this way the planar fronts.

The intermediate members B (Figure 2) are formed by a portion of suitable length of the section bar disclosed with reference to Figures 4-5-6, for instance of 10 cm length. The angular member A (Figure 1) is made up of two pieces of equal length (for instance of 10 cm length) of the section bar disclosed above, which pieces are integral at one end and such as to form inner Z angles of

90°. The outer side 101 of the member A is rounded at the angular portion as shown by 101' and it is provided at the intermediate point with a break 4 that is also present in the base portion 401 of said section bar. At the points corresponding to the break 4 the profiled parts 1 are provided with cross members 301' having preferably a thickness lower than that of the cross members 301 mentioned above. The break 4 in the angular portion of the member A allows the plastic materials which said member is made up of to shrink during the cooling phase next the molding step and avoids the occurrence of undesired deformations of the same member A.

From Figures 1-6 it can be observed that two restraining coupling means are provided on the front portions of the member A and B, and, more precisely, a seat 5 which is in the shape of a dovetail, and a raised portion 6 which also has a dovetail shape and is complementary to said seat.

The longitudinal axis of the restraining or fixing means 5 and 6 is at right angles to the ideal plane that contains the base portion 401 of the section bar disclosed above. The raised portion 6 is provided at the point where the seat 5 is provided, on the other end of each element A and B, and in addition, as it can be seen from the detailed illustration of the Figures 5 and 6, a seat 5 is open in the upward direction on one end of the members A-B, whereas it is open downwards on the other end. As a consequence, the raised portions 6 of the two ends of the members A-B are staggered in a suitable way along their heights. The restraining or fixing means so realized and so arranged ensure a very precise, strong and reliable connection of the members A and B to each other.

The end member A' illustrated in Figure 9 comes out of the production mold with a U-shape as a plan view and is provided with means 5 and 6 at its ends for realizing the coupling with the straight-line members B. The angular member of Figure 10 is derived from the angular member A of Figure 1, by total removal of the sides of such member. The member A'' shown in Figure 11 is made up, on the contrary of the member A, just for one half of its structure and of the member A' of Figure 10 for the other half of its structure. The cut 4 in the angular portion can be provided or it can also not be provided, as shown in Figure 11.

It is to be understood that the disclosure is referred to some preferred embodiments of the present invention to which small changes and modifications can be made without departing from the scope of this invention as claimed in the enclosed claims.

In the claims given below, the reference symbols in parentheses have been reported with the object to make it easier to read the claims themselves so that such symbols are not to be interpreted in a limitative way as regards the scope of the same claims.

Claims

1. A modular frame, of rectangular or square shape, for defining and providing a profile at the edges of wells, canalizations and other openings, said frame being characterized in that it comprises in combination: corner members (A, A', A'', A''') that make the 90 degree angle portions of the frame and a plurality of intermediate members (B) that form the sides of the frame; the members being manufactured by mould injection of a suitable plastic and/or of any other material, and being provided at their ends with complementary restraining or fixing means, preferably of the dovetail type, which allow said corner and straight members to be connected to each other rapidly and precisely in order to form the rectangular or square shaped frame, to the required modular size; each of said members comprise a part (1) having a U-shaped cross-section, with one side (201) being higher than the other side (101), with inner stiffening ribs (301) extending between the two sides which preferably have the same height as the lowest side at said side and which have just a portion of the height of the other side at the said other side, so that in use said ribs are fully enclosed in a layer (S) of cement mortar employed for the installation of the frame, which layer (S) passes through openings (2) which are provided in the bottom (401) of said U-shaped members, said openings being suitable for the passage of fastening members; the highest side of said U-shaped portion (1) being integral with the end of another portion (3) whose profile has the shape of an inverted L, which is stiffened internally by cross members (103) and which together with the U-shaped portion, in cross-section, has an approximately S-shaped profile, the upper part of the inverted L-shaped portion being suitable to define a ledge (C) of the frame for supporting a cover or a door or of any other closure means to the inside of the frame; means also being provided so that the corner members (A, A', A'', A''') and the intermediate and straight members (B) of the frame be closed at their ends by cross members which realize a planar surface on which seats (5) and complementary raised portions (6) for realizing a fixed joint connection are provided.
2. A modular frame according to claim 1, characterized in that the corner member (A- A'- A''- A''') is preferably with a break (4) in the angular portion which is external to the ledge (C), which regards both the outer side (101) and the base portion (401) of the part (1) which is in the shape of a U, and which is delimited by cross members (301') of such last portion, the whole structure being provided with the view to prevent deformations of said corner member from occurring during the cooling step after the formation step.



90°. The outer side 101 of the member A is rounded at the angular portion as shown by 101' and it is provided at the intermediate point with a break 4 that is also present in the base portion 401 of said section bar. At the points corresponding to the break 4 the profiled parts 1 are provided with cross members 301' having preferably a thickness lower than that of the cross members 301 mentioned above. The break 4 in the angular portion of the member A allows the plastic materials which said member is made up of to shrink during the cooling phase next the molding step and avoids the occurrence of undesired deformations of the same member A.

From Figures 1-6 it can be observed that two restraining coupling means are provided on the front portions of the member A and B, and, more precisely, a seat 5 which is in the shape of a dovetail, and a raised portion 6 which also has a dovetail shape and is complementary to said seat.

The longitudinal axis of the restraining or fixing means 5 and 6 is at right angles to the ideal plane that contains the base portion 401 of the section bar disclosed above. The raised portion 6 is provided at the point where the seat 5 is provided, on the other end of each element A and B, and in addition, as it can be seen from the detailed illustration of the Figures 5 and 6, a seat 5 is open in the upward direction on one end of the members A-B, whereas it is open downwards on the other end. As a consequence, the raised portions 6 of the two ends of the members A-B are staggered in a suitable way along their heights. The restraining or fixing means so realized and so arranged ensure a very precise, strong and reliable connection of the members A and B to each other.

The end member A' illustrated in Figure 9 comes out of the production mold with a U-shape as a plan view and is provided with means 5 and 6 at its ends for realizing the coupling with the straight-line members B. The angular member of Figure 10 is derived from the angular member A of Figure 1, by total removal of the sides of such member. The member A'' shown in Figure 11 is made up, on the contrary of the member A, just for one half of its structure and of the member A* of Figure 10 for the other half of its structure. The cut 4 in the angular portion can be provided or it can also not be provided, as shown in Figure 11.

It is to be understood that the disclosure is referred to some preferred embodiments of the present invention to which small changes and modifications can be made without departing from the scope of this invention as claimed in the enclosed claims.

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2. A modular frame according to claim 1, characterized in that the corner member (A- A'- A''- A'') is preferably with a break (4) in the angular portion which is external to the ledge (C), which regards both the outer side (101) and the base portion (401) of the part (1) which is in the shape of a U, and which is delimited by cross members (301') of such last portion, the whole structure being provided with the view to prevent deformations of said corner member from occurring during the cooling step after the formation step.



3. A modular frame according to claim 1, characterized in that vertical seats (5) and vertical raised portions (6) whose profiles are in the shape of a dovetail are provided on each end of the corner members (A- A'- A''- A''') and of the intermediate straight members (B) for connecting said members to each other, provision being made so that the seats (6) of the two opposite ends of each member be open, upwards on one side and downwards on the other side, and the raised portions are staggered along their heights, so that they can become coupled with said seats, so ensuring a stable and coplanar connection between the various members. 5
4. A modular frame according to the preceding claims, wherein the corner member (A- A'') is in the shape of a square or of an L in a plan view. 10
5. A modular frame according to the claims 1-3, wherein the corner member (A') is in the shape of a U in a plan view and defines a frame of predetermined width. 15
6. A modular frame according to the claims 1-3, wherein the corner member (A'') is of a square shape in a plan view or is provided (A) with at least two consecutive equal sides at 90 degree angle to one another, on which the means (5-6) are provided for realizing a fixed coupling with the other members of the frame itself. 20
7. A modular frame according to the preceding claims, wherein the corner member (A'') is of rectangular shape in a plan view, the fixing means (5-6) being on a minor side and at the right angles, at the points corresponding to the end of the side which is consecutive to the other minor side. 25

Patentansprüche 30

1. Modulrahmen mit rechteckiger oder quadratischer Gestalt zum Bestimmen und Vorsehen eines Profils an den Kanten von Brunnen, Kanalisationen und anderen Öffnungen, wobei der Rahmen dadurch gekennzeichnet ist, daß er in Kombination folgendes aufweist: ECKELEMEN-TE (A, A', A'', A'''), die die 90-Grad-Winkelbereiche des Rahmens ausmachen, sowie mehrere Zwischenelemente (B), die die Seiten des Rahmens bilden; wobei die Elemente durch Spritzguß eines geeigneten Kunststoff- und/oder eines anderen Materials hergestellt und an ihren Enden bevorzugt mit komplementären Halte- oder Fixiermitteln des Schwalbenschwanztyps versehen sind, die die rasche und genaue Verbindung der ECKELEMEN-TE und der geraden Elemente auf die erforderliche Modulgröße ermöglichen; daß jedes der Elemente ein Teil (1) mit U-förmigem Quer- 45

schnitt aufweist, wobei eine Seite (201) höher als die andere Seite (101) ist, wobei sich innere Versteifungsrippen (301) zwischen den beiden Seiten erstrecken, die bevorzugt genauso hoch wie die unterste Seite an der Seite sind und nur die Teilhöhe der anderen Seite besitzen, so daß die Rippen bei Verwendung vollständig in einer Schicht (S) aus Zementmörtel eingeschlossen sind, die zum Einbau des Rahmens verwendet wird, wobei diese Schicht (S) durch im Boden (401) der U-förmigen Elemente vorgesehene Öffnungen dringt und die Öffnungen zum Durchtritt von Befestigungselementen geeignet sind; wobei die höchste Seite des U-förmigen Abschnitts (1) mit dem Ende eines weiteren Bereichs (3) einstückig ausgebildet ist, dessen Profil die Gestalt eines umgedrehten L aufweist, der durch Querelemente (103) im Inneren versteift ist, und der zusammen mit dem U-förmigen Bereich im Querschnitt ein in etwa S-förmiges Profil besitzt, wobei der obere Teil des Abschnitts in Form eines umgedrehten L zum Bestimmen einer Leiste (C) des Rahmens geeignet ist, um eine Abdeckung oder eine Tür oder eine andere verschlußeinrichtung zur Innenseite des Rahmens zu halten; wobei ferner Mittel derart vorgesehen sind, daß die ECKELEMEN-TE (A, A', A'', A''') sowie die Zwischenelemente und die geraden Elemente (B) des Rahmens an ihren Enden durch Querelemente verschlossen sind, die eine flächige Oberfläche realisieren, an der Sitze (5) und komplementäre erhabene Abschnitte (6) zur Realisierung einer festen Knotenverbindung vorgesehen sind.

2. Modulrahmen nach Anspruch 1, dadurch gekennzeichnet, daß das ECKELEMEN-TE (A, A', A'', A''') bevorzugt mit einer Unterbrechung (4) in dem Winkelbereich versehen ist, der außerhalb der Leiste (C) liegt, die sowohl der Außenseite (101) als auch dem Basisabschnitt (401) des Teils (1) zugewandt ist und durch Querelemente (301') des letzten Abschnitts abgegrenzt ist, wobei die gesamte Struktur mit der Absicht vorgesehen ist, Verformungen des ECKELEMEN-TE nach dem Schritt des Ausbildens zu verhindern. 50
3. Modulrahmen nach Anspruch 1, dadurch gekennzeichnet, daß vertikale Sitze (5) und vertikale erhabene Abschnitte (6) mit Schwalbenschwanzprofilen an jedem Ende der ECKELEMEN-TE (A, A', A'', A''') und der geraden Zwischenelemente (B) zur Verbindung der Elemente miteinander vorgesehen sind, wobei dafür gesorgt ist, daß die Sitze (6) der zwei entgegengesetzten Seiten jedes Elements an einer Seite nach oben und an der anderen Seite nach unten geöffnet sind, und daß die erhabenen Abschnitte höhenmäßig derart versetzt sind, daß sie mit den Sitzen gekoppelt werden können, womit eine stabile und koplanare Verbindung zwischen den verschied- 55



denen Elementen gewährleistet ist.

4. Modulrahmen nach einem der vorhergehenden Ansprüche, bei welchem das Eckelement (A, A') in Draufsicht die Gestalt eines Quadrates oder eines L besitzt. 5
5. Modulrahmen nach einem der Ansprüche 1 - 3, bei welchem das Eckelement in Draufsicht die Gestalt eines U aufweist und einen Rahmen mit vorbestimmter Breite bildet. 10
6. Modulrahmen nach Anspruch 1 - 3, bei welchem das Eckelement (A') in Draufsicht quadratisch geformt ist oder mit wenigstens zwei nacheinander gleichen Seiten (A) im 90°-Winkel zueinander versehen ist, an denen die Mittel (5-6) zur Realisierung einer festen Kopplung mit anderen Elementen des Rahmens selbst vorgesehen sind. 15
7. Modulrahmen nach einem der vorhergehenden Ansprüche, bei welchem das Eckelement (A'') in Draufsicht eine rechteckige Gestalt besitzt, wobei die Fixiermittel (5-6) an der Schmalseite und rechtwinklig zu den Punkten liegen, die dem Seitenende entsprechen, das auf die andere Schmalseite folgt. 20

Revendications

1. Cadre modulaire, de forme rectangulaire ou carrée, pour délimiter et constituer un profil sur les bords de puits, de canalisations et autres ouvertures, ledit cadre étant caractérisé en ce qu'il comprend en combinaison : des éléments d'angle (A, A', A'', A''') qui constituent des parties d'angle à 90° du cadre et une pluralité d'éléments intermédiaires (B) qui constituent les côtés du cadre ; les éléments étant fabriqués en moulant par injection une matière plastique appropriée et/ou un autre matériau, et en étant dotés à leurs extrémités de moyens complémentaires d'assemblage ou de fixation, de préférence du type à queue d'aronde, lesquels permettent de relier ensemble rapidement et précisément les éléments d'angle et les éléments rectilignes pour construire le cadre rectangulaire ou carré à la dimension modulaire voulue ; chacun desdits éléments comprend une partie (1) ayant une section transversale en forme de U, donc une branche (201) est plus haute que l'autre (101), avec des nervures intérieures de rigidité (301) reliant les deux branches qui ont de préférence la même hauteur que la branche la plus basse du côté de cette branche, et qui ont seulement de l'autre côté une partie de même hauteur que l'autre branche, de façon qu'en service lesdites nervures soient complètement enfermées dans une couche (S) de mortier de ciment employée pour installer le cadre, laquelle couche (S) traverse des ori-

fices (2) qui sont prévus dans le fond (401) desdits éléments à profil en U, lesdits orifices étant conçus pour laisser passer les éléments de fixation ; le côté le plus haut de la partie à profil en U (1) étant intégralement formé avec l'extrémité de l'autre partie (3) dont le profil à la forme d'un L inversé, cette autre partie présentant intérieurement des traverses (103) servant de raidisseur, et formant avec la partie à profil en U, un profil ayant sensiblement la forme d'un S, la partie supérieure de la partie en L inversé pouvant délimiter un rebord (C) du cadre, destiné à supporter un couvercle ou un volet ou tout autre moyen de fermeture à l'intérieur du cadre ; des troyens étant aussi prévus pour que les éléments d'angle (A, A', A'', A''') et les éléments intermédiaires et rectilignes (B) du cadre soient fermés à leurs extrémités par des traverses qui constituent une surface sur laquelle sont formés des logements (5) et des parties en saillie complémentaires (6) afin de réaliser un assemblage fixe.

2. Cadre modulaire selon la revendication 1, caractérisé en ce que l'élément d'angle (A, A', A'') présente de préférence dans l'angle une coupure (4) qui est à l'extérieur du rebord (C), qui est orientée à la fois vers le côté extérieur (101) et la partie de base (401) de la partie (1) ayant un profil en U, et qui est délimitée par des traverses (301') de cette dernière partie, toute la structure étant construite dans le but d'éviter les déformations dudit élément angulaire susceptible de se produire pendant une opération de refroidissement après l'opération de mise en forme. 25
3. Cadre modulaire selon la revendication 1, caractérisé en ce que des logements verticaux (5) et des parties proéminentes verticales (6) dont les profils ont la forme d'une queue d'aronde sont formées à chaque extrémité des éléments d'angle (A, A', A'', A''') et des éléments rectilignes (B) pour relier lesdits éléments entre eux, des dispositions étant prises pour que les logements (6) de deux extrémités opposées de chaque élément soient ouverts, vers le haut d'un côté et vers le bas de l'autre côté, et que les parties proéminentes soient décalées le long de leur hauteur, de manière à pouvoir être assemblées avec lesdits logements, en créant ainsi une liaison stable et coplanaire entre les différents éléments. 30
4. Cadre modulaire selon les revendications précédentes, dans lequel l'élément d'angle (A-A'') a la forme d'un carré ou d'un L sur une vue en plan. 35
5. Cadre modulaire selon les revendications 1 à 3, dans lequel l'élément d'angle (A') a la forme d'un U sur une vue en plan et délimite un cadre de largeur prédéterminé. 40



6. Cadre modulaire selon les revendications 1 à 3, dans lequel l'élément d'angle (A'') a la forme d'un carré sur une vue en plan ou bien comporte (A) au moins deux côtés égaux consécutifs faisant un angle de 90° entre eux, sur lesquels les moyens (5-6) sont formés pour obtenir un couplage fixe avec les autres éléments du cadre lui-même.

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7. Cadre modulaire selon les revendications précédentes, dans lequel l'élément d'angle (A'') a une forme rectangulaire sur une vue en plan, les moyens de fixation (5-6) étant sur un petit côté et à angle droit, en des points correspondant à l'extrémité du côté qui suit l'autre petit côté.

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