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(54) **Fence of plastic tubes**

Zaun aus Kunststoffrohren

Cloture de plastique tubes

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## Description

**[0001]** The present invention relates to the fencing field, namely fence of plastic tubes, comprising the fence blocks placed and fastened between vertical hollow poles and may be used as decorative and/or security fence.

**[0002]** For a long time fencing installations for strength and aesthetics used traditional materials such as wood, metal (DE10239983A1, US4722514A). Currently, for practical reasons, ecology and better performance qualities, increasingly fences are made of plastic, using recycled plastic household waste.

**[0003]** It is known a decorative security fence comprising vertical poles, between which blocs of security fence are positioned and fastened. Each block consists of interconnected horizontal and vertical plastic tubes. The fence block has at least two horizontal plastic tube elements with galvanized wire inside. The ends of the galvanized wire are attached to the vertical poles and covered with the lengthwise cut plastic tube, which has holes, spaced at the predetermined intervals, for vertical plastic tubes of the said block to be inserted through and properly fixed. The said galvanized wire in the lower horizontal element is inserted through the holess, located on the vertical plastic tubes. The said galvanized wire, stretched between the vertical plastic tubes, makes a wireframe of the fence block, which withstands mechanical loads on the fence and is used to tighten the vertical plastic tubes. See LT patent No: 5684.

**[0004]** The drawback of the known decorative security fence is that metal wire is used to transmit all the loads to the poles holding the fence block. Metal wire is susceptible to moisture and corrodes quickly, while the lengthwise cut horizontal tubes perform only a decorative function, and do not carry mechanical loads. When the decorative elements of the security fence get worn, or if there is a need to replace them due to the wire inserted through the vertical tubes, it is necessary to disassemble the entire fence block. Document US 2009152524 discloses a plastic fence which comprises the features of the preamble of the independent claim 1.

**[0005]** The invention aims to prolong the operational life of the fence, to simplify its assembly process as well as operational service, and to expand the applicability of the fence.

**[0006]** This is achieved by the fence of plastic tubes according to claim 1.

**[0007]** The fence of plastic tubes proposed by this invention, consisting of plastic tubes that are dismountable interconnected, can be used for protection against intrusion, for livestock pens, to fence playgrounds and other places. The fence is easy to assemble, outwardly it is very similar to a metal fence, and therefore it can be easily combined with the latter. In choosing tubes for the fence block, each user based on his/her preferences can easily change the height, length or color of the fence block, while the worn out vertical tubes of the fence block can easily be replaced with the new ones.

**[0008]** The proposed fence of plastic tubes has no metal parts susceptible to moisture. Tubes of different diameters and different colors, produced from recycled plastic waste, can be used for the construction of the fence. The tubular fence is not heavy; to construct such a fence less plastic is required.

**[0009]** The fence block consist of plastic tubes without end caps or other sharp protruding fence elements that may pose serious health risks, for instance, for children climbing over the fence.

**[0010]** For livestock protection, the fence marking can be achieved by replacing some vertical tubes by tubes of a different color. An electric fence installation for control of animals or alarm system detectors can be installed on the upper part of the vertical tubes.

**[0011]** Since the fence of plastic tubes consists only of electrically non-conductive elements, the electrical wiring, lighting, sensors or other electrical or electronic equipment can be installed within the electrically non-conductive plastic tubes.

**[0012]** The details of the invention are provided in the figure, which shows the vertical section of the fence.

**[0013]** The fence of plastic tubes comprises the fence block, composed of two horizontal plastic tubes 1, which are interconnected in a way that is easy to disassemble with the vertical plastic tubes 2 inserted through them. The horizontal plastic tubes 1 of the said fence block has transverse holes, for inserting through the vertical plastic tubes 2, where the diameter and shape of the said holes on the horizontal tubes 1, as well as the diameter and shape of the vertical tubes 2 that get inserted into the said holes, is pre-selected and shaped in such a way as to ensure stable connection that is easy to disassemble. For example, the oval shaped holes are made on the horizontal plastic tubes 1, while the diameter of the vertical tubes 2 is chosen in such a way that by pressing the ends of the said tubes 2, the vertical tube 2 would easily fit into the oval shaped hole, and, after inserting it through the oval shaped hole, it would be tightly pressed.

**[0014]** The fence block is placed between the two bearing vertical hollow plastic poles 3 and it is fastened to them by inserting the ends of the horizontal tubes 1 of the fence block through the holes made at the appropriate height on the poles 3. The ends of the plastic horizontal tubes 1 of the fence block, inserted into the poles 3, inside have infused meshes (not shown in the Figure). The ends of the inserted horizontal tubes 1 are attached to the vertical poles 3 inside them, by piercing the ends of the inserted tubes 1 with the pins 4.

**[0015]** The proposed fence of plastic tubes is mounted in the following way. The horizontal hollow tubes 1 of the fence block are cut to match the predefined length of the fence block. The ends of the tubes 1 are reinforced by infusing the metal mesh inside of the tube.

**[0016]** According to the height and the design of the fence, transverse holes of the appropriate shape are made on the horizontal tubes 1 of the fence block for inserting the vertical tubes 2 of the fence block, for ex-

ample, the oval shaped holes are made on the horizontal tubes (1).

[0017] The vertical tubes 2 of the fence block are cut and accordingly prepared in such a way, that it is easy to insert them through the holes made on the horizontal tubes 1, and the connection between the horizontal tubes 1 and vertical tubes 2 is sufficiently strong. For example, ends of vertical tube 2 are pressed to match the oval shaped holes made on the horizontal tubes 1 of the fence block such, that the pressed ends could easily fit through the corresponding oval holes, where after inserting it through, the vertical tubes 2 would be tightly compressed. In such a way the tubes 2 are inserted through the holes made on the horizontal tubes 1.

[0018] The plastic hollow vertical poles are plastic tube poles 3, which are cut to match the desired height of the fence. At the predetermined height, the holes are drilled through the plastic tube poles 3 for fastening the horizontal tubes 1 of the fence block. According to the predetermined fence installation project, the plastic tube poles 3 are concreted into the ground.

[0019] The horizontal tubes 1 of the fence block are inserted into the holes of the plastic tube poles 3, made to fasten the fence block, and, after tightening the fence block in the position set by the project, they are fastened inside the tube pole 3 by piercing the ends of the horizontal tubes 1 with the pins 4.

## Claims

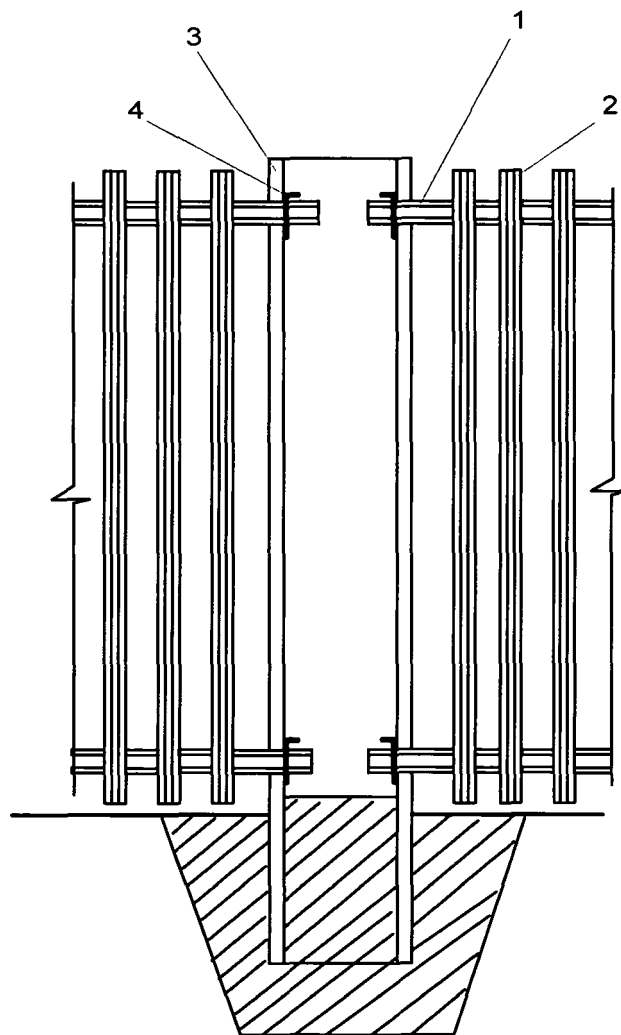
1. Fence of plastic tubes, comprising at least two plastic hollow vertical poles (3), between which a fence block is positioned and fastened, wherein the fence block includes at least two horizontal plastic tubes (1) connected with vertical plastic tubes (2), the fence block being fastened to the plastic hollow vertical poles (3) by inserting the ends of the horizontal tubes (1) through holes made at the predetermined height on said vertical poles (3), **characterized in that** the ends of the inserted horizontal tubes (1) inside have an infused metal mesh, while the ends of said horizontal tubes (1) are fastened to the hollow vertical poles (3) inside of them by piercing the ends of said horizontal tubes (1) with pins (4) to ensure a stable dismountable connection, and **in that** the horizontal tubes (1) of said fence block have transverse holes for inserting through them the vertical plastic tubes (2), wherein the diameter and shape of said transverse holes of the horizontal tubes (1), as well as the diameter and shape of the vertical tubes (2) that get inserted into said holes, respectively are pre-selected and shaped in such a way as to ensure stable dismountable connection.

## Patentansprüche

1. Zaun aus Plastikröhren beinhaltet mindestens zwei hohlen, vertikalen Stangen (3), dazwischen ist ein Zaunblock positioniert und befestigt, dieser Zaunblock besteht aus mindestens zwei horizontalen Plastikröhren (1) und ist mit hohlen vertikalen Plastikröhren (2) verbunden, der Zaunblock ist die Befestigung mit den vertikalen Stangen (3) dies wird ermöglicht durch das Einfügen der horizontalen Röhrenenden (1) in die dafür vorgeschriebenen Öffnungen unter Berücksichtigung der Höhe der vertikalen Stangen (3), **dadurch gekennzeichnet, dass** die Enden der horizontalen Röhren (1) enthalten ein integriertes Metallnetz, welches die Enden der horizontalen Röhren (1) durchdringt und mit den vertikalen Stangen (3) in ihnen durch Durchstechen der Enden der befestigten horizontalen Röhren (1) mit den Stiften (4), um eine stabile demontierbare Verbindung zu gewährleisten, **und dadurch, dass** die horizontalen Röhren (1) haben diagonale Öffnungen um die vertikalen Plastikröhren (2) einzufügen, der Durchmesser und die Form der besagten diagonalen Öffnungen in den horizontalen Stäben (1), sowie der Durchmesser und die Form der vertikalen Röhren (2), ermöglichen eine stabile aber gleichzeitig wiedererlegbare Verbindung der Bauteile.

## Revendications

1. Clôture en tube plastique, comprenant au moins deux barres verticales de plastique creuses (3), entre lesquelles un block de clôture est positionné et fixé, où le bloc de clôture comprend deux tubes horizontaux (1), connectés par des tubes en plastique verticaux (2), le bloc de clôture étant fixé à la barre de plastique creuse (3) en insérant les extrémités des tubes horizontaux (1) à travers les trous pré-réalisés des tubes verticaux (3) dont on en a parlé précédemment, **caractérisé en ce que** les extrémités des tubes horizontaux insérés (1) ont à l'intérieur une maille de métal infuse, tandis que les extrémités des tubes horizontaux (1) sont fixés aux poteaux verticaux creux (3) à l'intérieur d'eux en perçant les extrémités des tubes horizontaux (1) avec des épingles (4) pour assurer une connexion stable démontable, **et en ce que** les tubes horizontaux (1) du bloc de barrière comporte des trous transversaux pour les insérer à travers les tubes en plastique verticaux (2), Le diamètre et la forme de ces trous transversaux sur les tubes horizontaux (1), et sur les tubes verticaux sont bien choisis pour qu'ils s'encastrent conformément, de manière à assurer une connexion stable et démontable.



**REFERENCES CITED IN THE DESCRIPTION**

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