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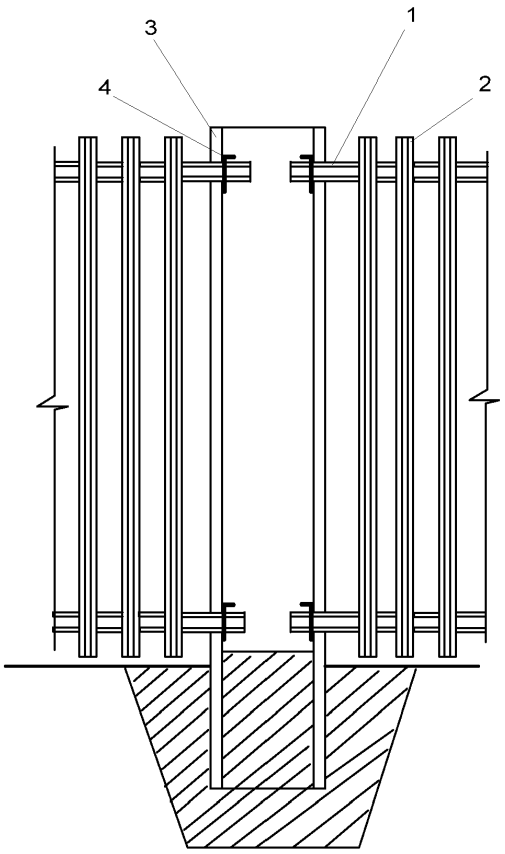
(54) **Fence of plastic tubes**

(57) Fence of plastic tubes comprises vertical plastic hollow poles, between which a fence block is positioned and fastened, which is composed of at least two horizontal plastic tubes 1 with a metal mesh infused at its ends. The horizontal tubes 1 of the said fence block has transverse holes for inserting through them vertical plastic tubes 2, where the diameter and shape of said transverse 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, are pre-selected and shaped in such a way as to ensure stable dismountable connection. The fence block is fastened to the plastic vertical poles 3 by inserting the ends of the horizontal tubes 1 into the holes made on the plastic tube poles 3. The fence block is fastened by piercing the pins through the ends of the inserted horizontal tubes 1 inside the vertical tube poles 3.



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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.

[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] The essence of the invention is that in the fence of plastic tubes, comprising at least two vertical hollow plastic poles, between which a block of fence is placed and fixed, which includes at least two horizontal plastic tubes, connected with the vertical plastic tubes. The fence block is fastened to the said vertical hollow poles by inserting the ends of its horizontal tubes through holes, designed at the appropriate height on the said vertical poles. The ends of the inserted horizontal tubes have infused metal mesh and are attached to the vertical hollow plastic poles inside them by piercing the ends of the inserted tubes with the pins, to ensure stable dismountable connection. The horizontal tubes of the said fence block has transverse vertical holes, for inserting through the vertical plastic tubes, where the diameter and shape of said vertical holes on the horizontal tubes, as well as the diameter and shape of the vertical tubes that get inserted into the said holes, is pre-selected and shaped in such a way as to ensure stable dismountable connection.

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

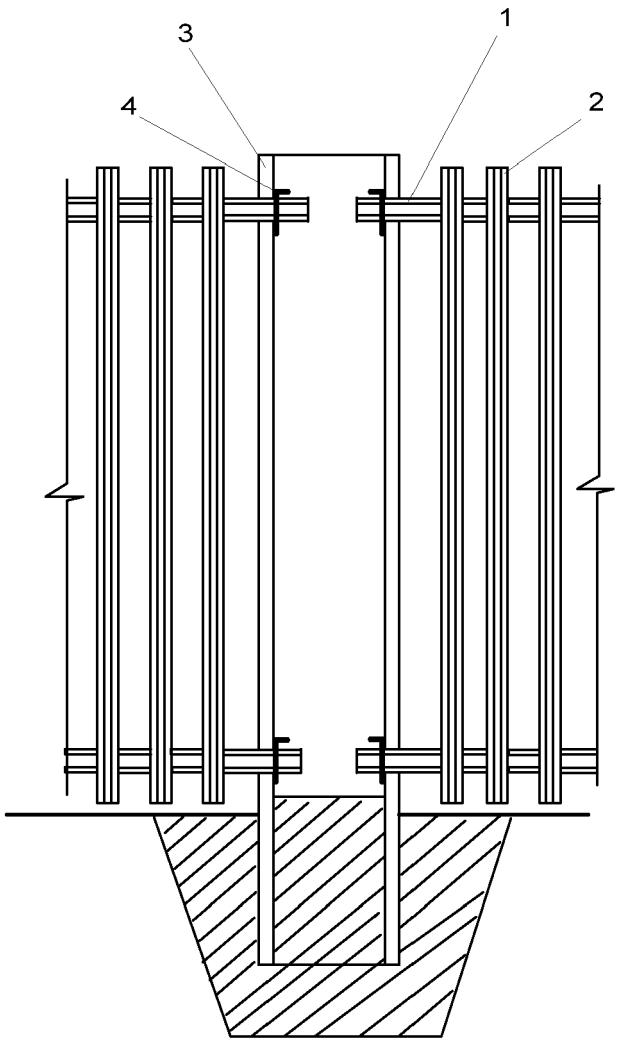
[0017] The vertical tubes 2 of the fence block are cut and accordingly prepared in such a way, that it is easy to insert them through the holes made on the horizontal tubes 1, and the connection between the horizontal tubes 1 and vertical tubes 2 is sufficiently strong. For example, ends of vertical 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, which includes at least two horizontal plastic tubes (1) connected with vertical plastic tubes (2), **characterized in that** the fence block is 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), where
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,
the horizontal tubes (1) of said fence block has transverse holes for inserting through them the vertical plastic tubes (2), where the diameter and shape of said transverse holes on 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.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EUROPEAN SEARCH REPORT

Application Number
EP 14 16 1952

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2009/152524 A1 (KELLER CHRISTOPHER CHARLES [US]) 18 June 2009 (2009-06-18) * page 1, right-hand column, paragraph 16 - page 2, left-hand column, paragraph 21; figures 1-4 *	1	INV. E04H17/14 ADD. A01K3/00
A	GB 2 319 791 A (W H BARKER & SON ENGINEERS LTD [GB]) 3 June 1998 (1998-06-03) * page 3, line 4 - page 13, line 7; figures 1-5 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

E04H
A01K
E01F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 May 2015	Stefanescu, Radu

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 16 1952

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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22-05-2015

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US 2009152524 A1	18-06-2009	NONE	
GB 2319791 A	03-06-1998	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 10239983 A1 **[0002]**
- US 4722514 A **[0002]**
- LT 5684 **[0003]**