



(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.04.2004 Bulletin 2004/17

(51) Int Cl.7: **H01B 11/02**

(21) Application number: **03380222.4**

(22) Date of filing: **07.10.2003**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**
Designated Extension States:
AL LT LV MK

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(30) Priority: **16.10.2002 ES 200202483**

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(54) **Multi-pair cable for analogue, digital, xDSL and broadband systems**

(57) It comprises a combination of colour-coded pairs (1), cabled in units (2) of three or four pairs, said combination of pairs being covered with a plastic protection tape (3), wound helicoidally, on which is a drain wire (4) and on the outside of this is a tape (5), metalized on one side and covered with insulating material on the other, on top of which is a cord (6) for tearing the final cover (7) sealing the whole array and which is made of

PVC or other material with low halogen content. In this way, signal-coupling imbalances at high-frequency can be offset, making said cable suitable for transmitting bi-directional digital signals and in particular xDSL or broadband systems, enabling interoperability of new and existing systems in the cable and making maximum use of the systems it uses, at the same time optimizing the loop length by its low level of longitudinal attenuation loss and low level cross-talk noise.

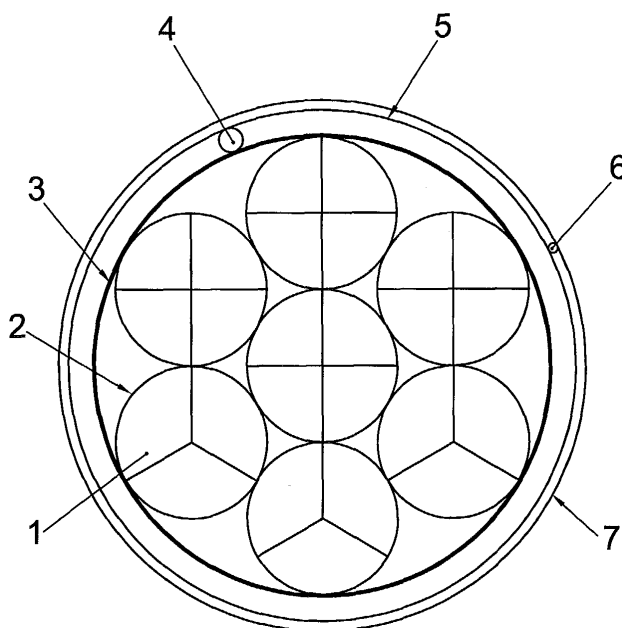


FIG.1

Description

OBJECT OF THE INVENTION

[0001] The present invention refers to shielded multi-pair cables improved for the transmission of analogue and digital systems in general, xDSL and broadband systems, to be used both in the distribution and radio networks in the internal cabling of buildings and in the supply, distribution and outside plant access networks. These cables are made up of pure annealed copper conductors insulated by a layer of plastic dielectric material, paired up and twisted with short pitches of varying torsion in each pair within each basic unit of 25 pairs, identified by means of a colour code for each pair. It comprises a system of cable components with 3 or 4 pairs of cables to optimise the near-end crosstalk or the power sum of all the other generative interfering pairs with respect to the disturbed receiver pair, both in near-end crosstalk at the near end (Power Sum NEXT) and in the far-end crosstalk relationship at the far end (Power Sum ELFEXT), obtaining a correction of the imbalances of high frequency coupling signals, making it ideal for the transmission of bidirectional digital signals and in particular xDSL or broadband systems, enabling the interoperability of either new or existing systems in the cable and the maximum occupation of the systems utilised by the cable as well as at the same time optimising the length of the loop due to low losses of longitudinal attenuation and its low near-end crosstalk.

[0002] The invention also takes into consideration that the common cable nucleus with pairs formed in this way has a metalized shield and drain conductor for the connection from the screen to ground with a flame-retardant pvc cover or material with low halogen content for cables in the interior of buildings and a watertight aluminium-polyethylene cover for cables to be installed outside.

BACKGROUND OF THE INVENTION

[0003] Multi-pair cables commonly available in the market have the disadvantage of not being able to correct the imbalances at high frequency because of the electromagnetic coupling of the pairs, the excessive length of pitches and the employment of a deficient cabling system.

DESCRIPTION OF THE INVENTION

[0004] The improved multi-pair cables object of the present invention consist of units of 25 pairs and within each basic unit of 25 pairs, twisted pairs with short pitches of torsion, different to one another. The nucleus of the cable comprises units of 25 pairs which are formed by cable components of 3 or 4 pairs with short pitches of torsion and wired up separately in relation to the cabling of the pairs. In order to create nuclei of fewer

than 25 pairs, subunits are formed with the cable components of 3 and 4 pairs, or 25 pair units for cables with a greater number of pairs. The cables formed range from 4 to 100 pairs for interior cables and from 16 to 600 pairs for exterior cables. For interior cables a protective tape is placed over the nucleus, with a copper drain wire and a metalized tape on top, finally covered with a flame-retardant pvc cover or a material low in halogen content. For exterior cables the nucleus is protected with a plastic tape and covered with a watertight aluminium-polyethylene cover.

DESCRIPTION OF THE DRAWINGS

[0005] To complement this description and in order to provide a better understanding of the characteristics of the invention, in line with a practical embodiment of the same, a set of drawings accompanies the description wherein, with illustrative rather than limiting characteristics, the following is shown:

Figures 1 and 2 provide a front elevational view of the object of the invention divided into sections, showing a multi-pair cable of 25 and 4 pairs respectively, with units of cabling of 3 and 4 pairs wired to each other, designed for the interior of buildings. These cable unit combinations produce any combination of pair numbers in the cable.

Figures 3 and 4 show the object of the invention duly sectioned in the same combination of cable units of 3 and 4 pairs designed for the construction of exterior cables.

PREFERRED EMBODIMENT OF THE INVENTION

[0006] For the interior cable and looking at figures 1 and 2 one can see that the multi-pair cable for the interior of buildings consists of a combination of pairs (1) in colour code wired up in cable units of 3 or 4 pairs (2) protected by covering them with a plastic tape helicoidally (3), upon which a drain wire (4) is placed with a metalized tape attached helicoidally or longitudinally on one side and an insulating cover (5) on the other, and on top of which a ripcord (6) is positioned and then, finally, a pvc cover or material of low halogen content (7).

[0007] The exterior cable is shown in the figure 3 specification of the 25 pair cable and in the figure 4 specification of the 600 pair cable, sufficing for the description of these the details disclosed for the interior cable, items (1), (2) and (3) of figures 1 and 2 previously described. With regards to the construction of the nucleus for the 25 pair cable, the basic unit of 25 pairs is employed as shown in figure 3, and for cables of more than 25 pairs, as shown in figure 4, with basic 25 pair cable units put together in colour code as shown in (1'-2') of figures 3 and 4. The covering and protection of the cable nucleus is carried out in the same way for external ca-

bles, by placing a plastic tape (3') in figures 3 and 4, positioning a ripcord (4') and finally a watertight aluminium-polyethylene cover (5'). Cables with fewer than 25 pairs are assembled by combining cable units of 3 and 4 pairs as a result of which any range of different cable types is achieved for interior and exterior installations.

Claims

1. Multi-pair cable for analogue, digital, xDSL and broadband systems **characterised in that** it consists of units of 25 pairs, which are formed by cable components of 3 and 4 pairs, with short torsion pitches, different to one another and wired up separately with regard to the cabling of the pairs.
2. Multi-pair cable for analogue, digital, xDSL and broadband systems as claimed in claim 1, **characterised in that** in order to form nucleuses with fewer than 25 pairs, subunits are formed with the cable components of 3 and 4 pairs, while for a greater number of pairs, units of 25 pairs are employed.
3. Multi-pair cable for analogue, digital, xDSL and broadband systems as claimed in the preceding claims, **characterised in that** when designed for an internal installation, it comprises between 4 and 100 pairs, upon which a protective tape for the nucleus is positioned, with a copper drain wire and a metalized tape on top, finally covered with a flame-retardant PVC cover or material of low halogen content.
4. Multi-pair cable for analogue, digital, xDSL and broadband systems as claimed in the claims 1 and 2, **characterised in that** when designed for an external installation, the nucleus is protected with a plastic tape and covered with a watertight aluminium-polyethylene cover.

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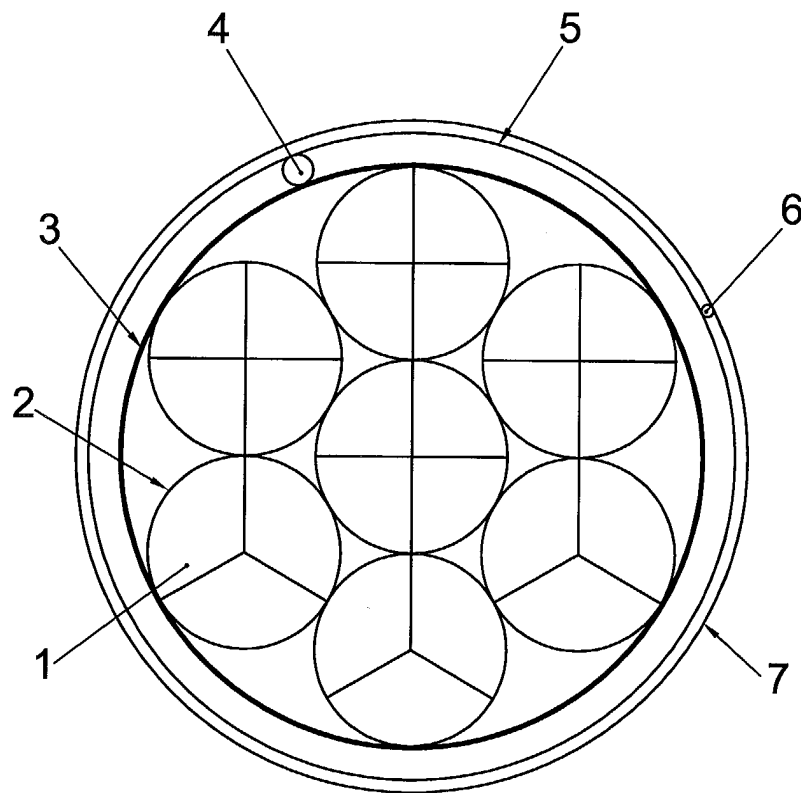


FIG.1

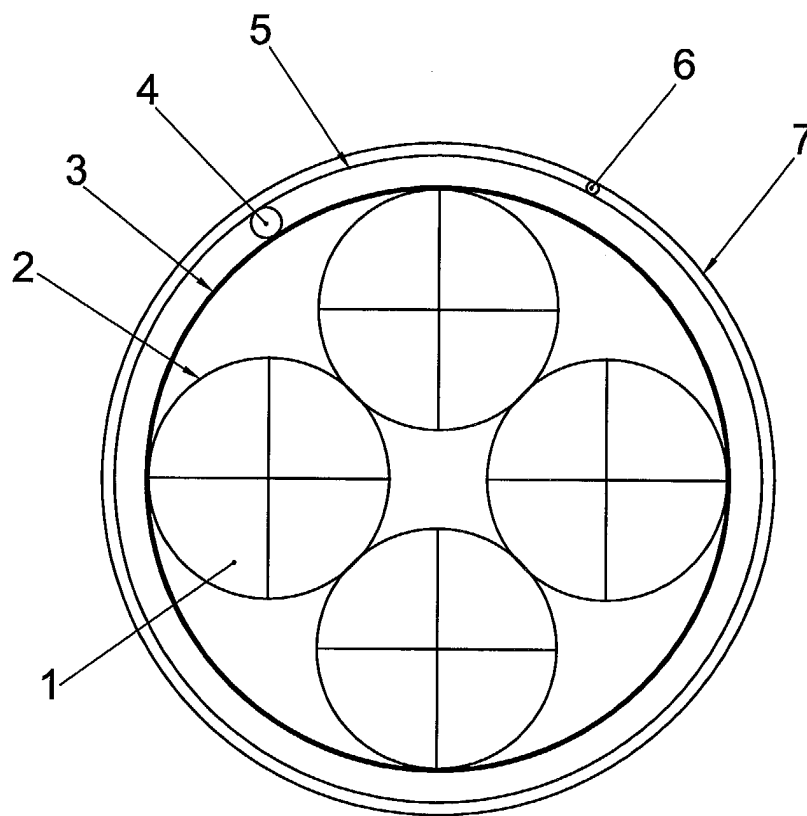


FIG.2

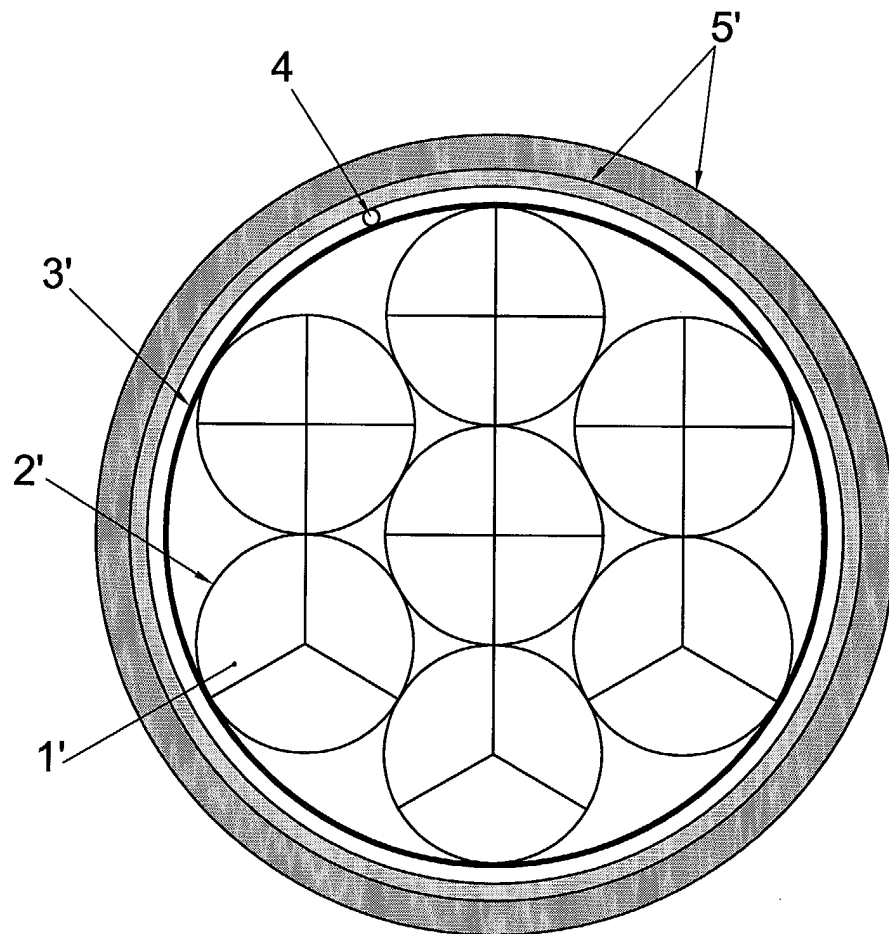


FIG.3

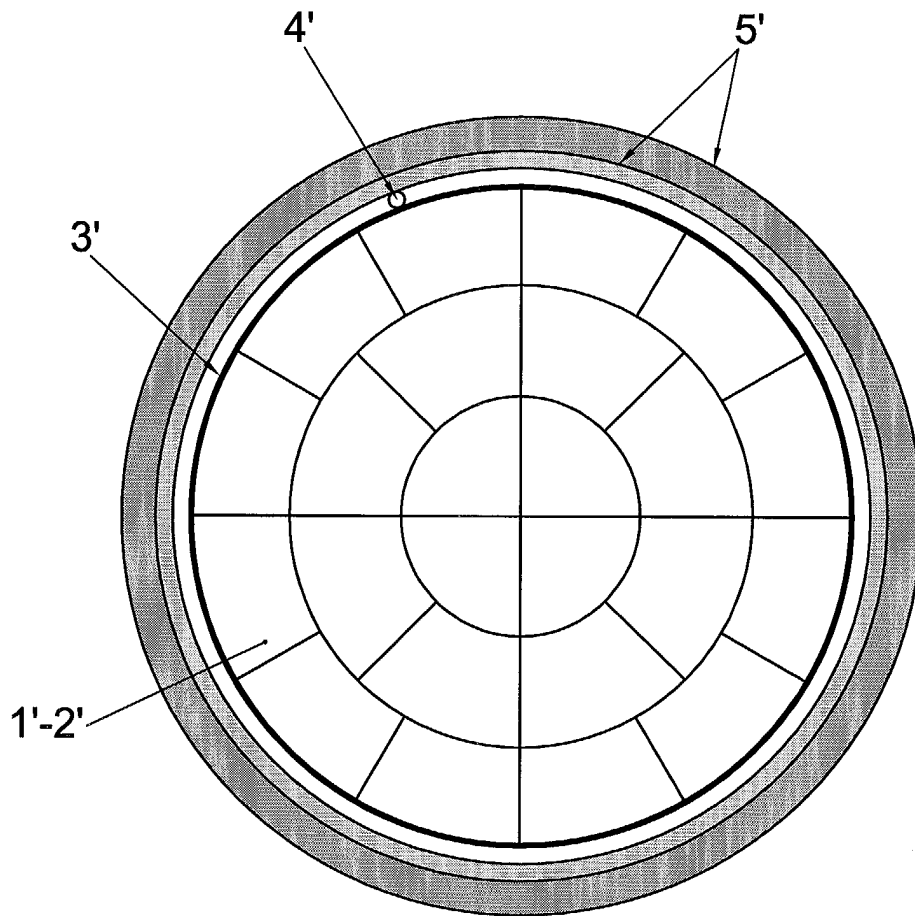


FIG.4