



[12] Specification of Patent for Utility Model

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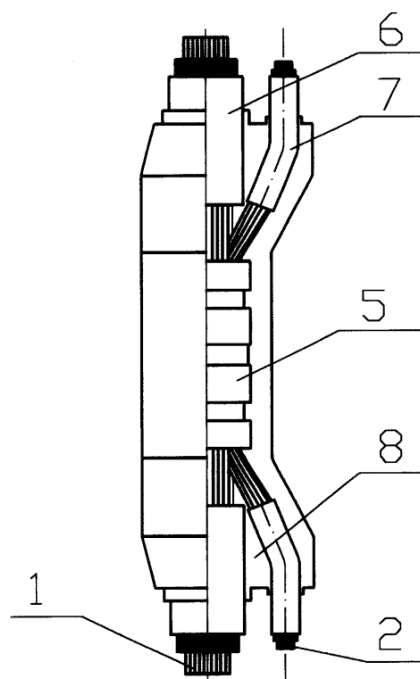
Accompanying drawing(s): 1 page(s)

[54] Title of utility model

POWER CABLE WITH BIDIRECTIONAL K-SHAPED BRANCH

[57] Abstract

A power cable with a bidirectional K-shaped branch, which belongs to the technical field of cables. The power cable is composed of a trunk conductor, branch-line conductors, a trunk insulation layer, branch-line insulation layers, a connector and an outer sheath, wherein the power cable is provided with the K-shaped branch connector, one joint and two branch-line conductor out-leads are provided for the trunk conductor and the branch-line conductors, and directions of the branch-line conductor out-leads are opposite. According to the present utility model, the structure is reasonable and simple, and it is easy to produce and manufacture. A K-shaped branch structure can enable single-branch-joint double-branch power distribution. The branch lines are led out in an upper direction and a lower direction of the branch joint, respectively and can be led to two floor power distribution boxes, respectively. The branch lines no longer need to be bent and turned, so that one branch joint can be omitted, a space occupied for mounting is small, and a line can also be simple and clear. The bidirectionally led branch lines are a whole cable, so that the workload of peeling the cable during production can be decreased, the branch connection reliability of the branch lines can also be improved, the service life of the branch joint can be prolonged, and the power cable has a very good popularization and application value.



Claims

1. A power cable with a bidirectional K-shaped branch, comprising a trunk conductor, branch-line conductors, a trunk insulation layer, branch-line insulation layers, a connector and an outer sheath, wherein the power cable is provided with the K-shaped branch connector, one joint and two branch-line conductor out-leads are provided for the trunk conductor and the branch-line conductors, and directions of the branch-line conductor out-leads are opposite.

2. The power cable with a bidirectional K-shaped branch according to claim 1, wherein the trunk conductor and the branch-line conductors are stranded conductors of TR-type copper single wires complying with the GB/T3953 standard.

3. The power cable with a bidirectional K-shaped branch according to claim 1, wherein the K-shaped branch connector is an elongated C-shaped clamp made of a copper material.

4. The power cable with a bidirectional K-shaped branch according to claim 1, wherein the joint is formed by symmetrical overlapping and crimping of one trunk conductor and two branch-line conductors.

5. The power cable with a bidirectional K-shaped branch according to claim 1, wherein the trunk insulation layer and the branch-line insulation layers are made of an XLPE insulation material.

6. The power cable with a bidirectional K-shaped branch according to claim 1, wherein the outer sheath comprises a K-shaped branch connector sheath, a trunk sheath, and branch-line sheaths.

7. The power cable with a bidirectional K-shaped branch according to claims 1 and 6, wherein the K-shaped branch connector sheath is made of an injection molding material of injection molding grade.

8. The power cable with a bidirectional K-shaped branch according to claims 1 and 6, wherein the trunk sheath and the branch-line sheaths are made of polyvinyl chloride, polyethylene, or low-smoke zero-halogen polyolefin.

Description

POWER CABLE WITH BIDIRECTIONAL K-SHAPED BRANCH

Technical Field

The present utility model relates to a structure of a branch cable, which belongs to the technical field of cables.

Background Art

With the rapid development of society and the unceasing progress of science and technology, prefabricated branch power cables have been applied rapidly and widely. With the increase of people's understanding of the branch cables, the requirements for the branch cables have also increased. Not only are the safety and convenience of power distribution by the cables required accordingly, but the economic requirements for investment are also increasingly high.

Obviously, the branch cable is superior in a power distribution system, and changes conventional power distribution methods in China. A tree structure is a major structural feature of the branch cable, and the branch cable is measured and designed according to a floor structure, prefabricated in a factory, and then mounted and used directly on site. The branch cable is easy to mount and occupies a small space, shortening a mounting cycle and saving additional project costs. An existing branch cable is mainly composed of a trunk conductor, a branch-line conductor, a trunk insulation, a branch-line insulation, a branch connector, and an outer sheath. A C-shaped clamp is used as a connecting member for the branch connector, and a branch line is unidirectionally led out from a branch joint. The reliability requirement for the branch joint of the branch cable is higher, so the fabrication costs are also higher. The more floors that require power distribution by branches, the more branch joints there will be, and the higher the cable costs will be.

Summary

An object of the present utility model is to provide a power cable with a bidirectional K-shaped branch, which has few branch joints, multiple out-leads, low costs and is easy to mount and use.

The object of the present utility model is achieved by a power

cable with a bidirectional K-shaped branch, which comprises a trunk conductor, branch-line conductors, a trunk insulation layer, branch-line insulation layers, a connector and an outer sheath, wherein the power cable is provided with the K-shaped branch connector, one joint and two branch-line conductor out-leads are provided for the trunk conductor and the branch-line conductors, and directions of the branch-line conductor out-leads are opposite. The trunk conductor and the branch-line conductors are stranded conductors of TR-type copper single wires complying with the GB/T3953 standard. The K-shaped branch connector is an elongated C-shaped clamp made of a copper material. The joint is formed by symmetrical overlapping and crimping of one trunk conductor and two branch-line conductors. The trunk insulation layer and the branch-line insulation layers are made of an XLPE insulation material. The outer sheath comprises a K-shaped branch connector sheath, a trunk sheath, and branch-line sheaths. The K-shaped branch connector sheath is made of an injection molding material of injection molding grade. The trunk sheath and the branch-line sheaths are made of polyvinyl chloride, polyethylene, or low-smoke zero-halogen polyolefin.

According to the present utility model, the structure is reasonable and simple, and it is easy to produce and manufacture and to lay and mount, reducing the project costs. A K-shaped branch structure can enable single-branch-joint double-branch power distribution. The branch lines led out in an upper direction and a lower direction of the branch joint, respectively and can be led to two floor power distribution boxes, respectively. The branch lines no longer need to be bent and turned, so that one branch joint can be omitted, a space occupied for mounting is small, and a power distribution line can also be simple and clear. The bidirectionally led branch lines are a whole cable, so that the workload of peeling the cable during production can be decreased, the branch connection reliability of the branch lines can also be improved, and the service life of the branch joint can be prolonged. The power cable is prefabricated in a factory and fast to lay and mount, shortening a project cycle, saving project investment, and achieving good economy. Regarding any branch line, the connection reliability of the branch joint is improved compared with an existing product; the joint has good sealing performance, and is moisture-proof, waterproof, maintenance-free and stable in

performance. The power cable has a very good popularization and application value.

Brief Description of the Drawings

FIG. 1 is a schematic structural diagram of the present utility model; and

FIG. 2 is a schematic diagram of a cross-sectional structure of FIG. 1.

In the figures: 1. Trunk conductor, 2. Branch-line conductor, 3. Trunk insulation layer, 4. Branch-line insulation layer, 5. Connector, 6. Trunk outer sheath, 7. Branch-line outer sheath, 8. Connector outer sheath.

Detailed Description of Embodiments

A trunk conductor 1 and branch-line conductors 2 are formed by stranding TR-type copper single wires complying with the GB/T3953 standard. An elongated copper C-shaped clamp is used to form a K-shaped branch connector 5. One trunk conductor and two branch-line conductors are symmetrically overlapped and crimped by means of the K-shaped branch connector 5 to form one joint and two branch-line conductor out-leads, and directions of the branch-line conductor out-leads are opposite. Trunk insulation layer 3 and branch-line insulation layers 4 are made of an XLPE insulation material. A K-shaped branch connector outer sheath 8 is made of an injection molding material of injection molding grade, and a trunk outer sheath 6 and branch-line outer sheaths 7 are made of polyvinyl chloride, polyethylene or low-smoke zero-halogen polyolefin, ensuring that the connector outer sheath and the cable outer sheath are similar in the terms of material and are tightly combined.

The basic performance of the power cable complies with the GB/T12706-2002 standard that specifies a power cable having a rated voltage of 0.6/1 kV, and a conductor wire core complies with the requirements of Class-2 conductors specified in the GB/3956 standard. The conductors are formed by stranding the copper single wires complying with the GB/T3953 standard, thereby ensuring the purity of the conductors and a product having good electrical conductivity and mechanical properties. XLPE is used as a cable insulation material. After subjected to irradiation or silane cross-linking, this material has good insulation performance, heat

resistance stability and overheat aging performance. The sheath may be formed by extrusion of polyvinyl chloride, polyethylene or zero-halogen low-smoke flame-retardant polyolefin, which depends on user requirements and use environments.

The K-shaped branch connector is the elongated C-shaped clamp, and the copper material of the connector should not be lower than the No. 2 copper (T2) requirement in the GB/T5231 standard. The double branch lines are symmetrically overlapped and crimped, increasing an indentation on the K-shaped branch connector, thereby not only increasing the degree of compression, but also increasing the contact area of the conductors without damaging the cable conductors. Since the branch lines adopts a symmetrical overlapping and crimping structure, the cross-sectional area of this structure is greater than that of a single branch line. The connector generates less heat, dissipates heat quickly and has a small contact resistance, and current transmission has no impact on the joint and will not cause thermal fatigue. Broadly speaking, the joint performance of such a product is superior to that of ordinary products.

The bidirectional crossing of the K-shaped branch connector can greatly reduce the impact of fatigue loosening on the contact conductivity of the trunk conductor and the branch-line conductors, so that the branch connector can not only withstand the impact of excessive current, but also maintain long-term thermal stability and operating life, meeting the life requirement for long-term operation of a power distribution system.

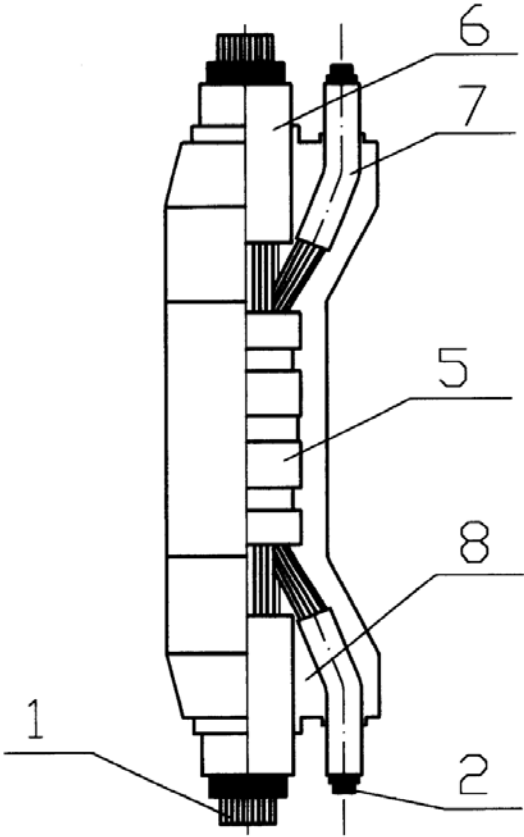


FIG. 1

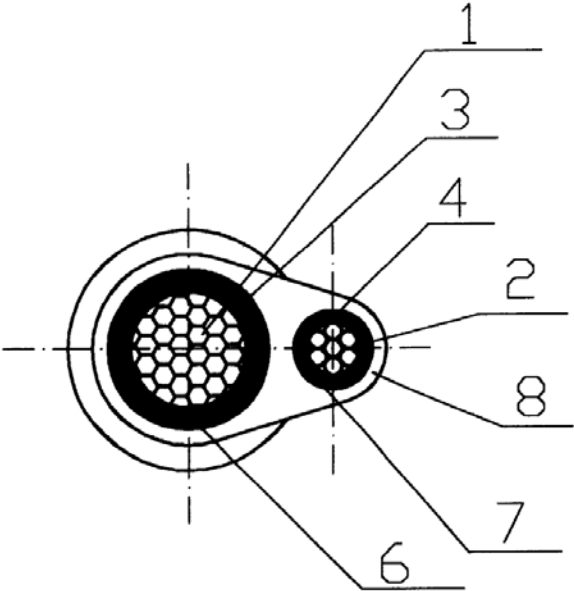


FIG. 2

I, Ella LI MA,

translator to RWS Group Ltd, of Europa House, Chiltern Park, Chiltern Hill, Chalfont St Peter, Buckinghamshire, United Kingdom, hereby declare that I am conversant with the English and Chinese languages and am a competent translator thereof. I declare further that to the best of my knowledge and belief the following is a true and correct translation of the accompanying document "CN2785100Y Wenlin" in the Chinese language.

Signed this 28th day of September 2023

E. LI 李琴
E. LI

For and on behalf of RWS Group Ltd