

SPECIFICATION

Flat type feeder cable

5 The present invention relates to a flat type feeder cable for feeding electric power from a fixed electric power-supply terminal to a moving construction such as, for example, a stacking crane, an elevator and more particularly to a flat type feeder cable for
10 feeding electric power to a moving construction such as an elevator adapted to travel vertically in a narrow or restricted space.

The feeder cable connected to a moving construction is generally called a moving cable. After the
15 installation of the cable, the cable, in use is repeatedly subject to various types of mechanical actions which cause, for example, bending and torsion of the cable. In particular, in the case of a construction which repeatedly moves vertically in a hoistway, the
20 cable is suspended between a fixed electric power-supply terminal and the moving construction, with the intermediate portion of the cable being bent in a U-shape. In such an arrangement, the bent portion of the cable is caused to successively shift along the
25 entire length thereof during the vertical movement of the elevator in the hoistway. In this manner, the cable is continuously subject to the repeated bending actions over the entire length thereof. In order that the moving feeder cable may endure such
30 repeated bending actions well, the cable is required to have sufficient bending characteristics or excellent flexibility.

For the purpose of imparting flexibility to the feeder cables including the conventional round type
35 feeder cables, there has generally been employed, in forming a stranded conductor from insulated cores, a method in which a plurality of insulated cores are subjected to stranding while each of the insulated cores themselves are cause to have no twist in the
40 same direction as or to have a twist in the reverse direction to the direction of the stranding of the insulated cores. (hereinafter referred to as "method of stranding with reverse twist").

When the stranded conductor is formed by strand-
45 ing or cabling a plurality of cores in the manner mentioned above, the insulated cores constituting the stranded conductor are tightly fitted to one another so that the entire body of the cable containing the thus stranded conductor is imparted with a
50 sufficient elasticity or flexibility. The stranded conductor with tight fit of the component insulated cores, however, has a disadvantage that when the end of the stranded conductor is connected to an electric power feeder terminal and the like for the
55 installation of the cable, it needs complicated procedures and takes much time to loose the strand of the end portion of the stranded conductor and separate one insulated core from the other cores. Furthermore, it is difficult to cancel the strand tendency of
60 the separated cores, and therefore, the appearance thereof after it is attached to the electric power feeder terminal is not good. In addition, there are also some disadvantages in operation, for example, it is difficult to gather the end portions of the
65 respective insulated cores into one compact bundle

and accommodate them in a junction box provided in the elevators hoistway.

In a moving feeder cable of this type, in general, materials such as, for example, soft polyvinyl chloride are widely employed as an insulating material for the cores of the cable, from the viewpoint of desired properties such as high flexibility, heat resistance and cold resistance. However, when the stranded conductor is formed by the "method of stranding
70 with reverse twist" and such a material as soft polyvinyl chloride is employed as an insulating material, a sufficient flexibility is imparted to the cable containing such stranded conductor, but a large twist resiliency restoring force generated on the insulated cores tightly fitted to one another, tends to cause the insulating material to be extremely deformed. Such a deformation of the insulating material leads to a danger of breakage of the insulating material, occasionally to a danger of
80 damage or breakage of the core wires.

Furthermore, it is noted that if the clockwise and counter-clockwise torsions occur on the electric power feeder cable installed vertically in a suspended fashion in a narrow or limited space between the elevator cage and the side wall of the elevator hoistway, the cables are likely to be caught on various structures or projections protruding from the wall structures of the elevator hoistway and abruptly collide with the side wall of the elevator
90 cage. This unfavourably leads to such accidents as the outer jacket of the cable being damaged and the cables being broken. Therefore, the moving feeder cable is required to have as a mechanical characteristic excellent torsion-resistance so that the torsion is
95 not readily produced in the cable when the cable is suspended in a vertical disposition.

The present inventors have made intensive studies with a view to eliminating all the above-mentioned disadvantages and succeeded in developing a flat type feeder cable which is excellent in bending characteristics (flexibility), torsion-resistance, compactness, toughness and workability necessary for a moving feeder cable for use with moving constructions located in a restricted space
100 such as, for example, the hoistway of the elevator.

Accordingly, it is an object of the present invention to provide a flat type feeder cable which has a sufficient bending characteristic (flexibility) and which requires only an extremely small space for installing it therein, as compared with the conventional round type feeder cable.

It is another object of the present invention to provide a flat type feeder cable of the kind described, which has a good balance between the torque in the clockwise direction and in the counter-clockwise direction with respect to the central point of a cross-section of the cable and is not subject to torsion during the use thereof in a suspended disposition.

It is a further object of the present invention to provide a flat type feeder cable of the above character, which can be readily loosed at its stranded end portions of the insulated cores constituting the stranded conductor, thereby enabling the cable to be
125 simply and surely connected to a junction box.
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According to the present invention, there is provided a flat type feeder cable comprising an even number of stranded conductors which their respective axes arranged in a line and in a substantially coplanar relationship and an outer jacket made of a flexible material completely covering the stranded conductors, each of said stranded conductors being composed of a plurality of insulated cores stranded together, and wherein an equal number of the stranded conductors are disposed in a symmetrical relationship with respect to the lateral axis of symmetry on a cross section of the cable, the direction of lay of each of half the number of stranded conductors is right-hand while the direction of lay of each of the remaining stranded conductors is left-hand, and each of the plurality of insulated cores constituting each stranded conductor has one twist per one pitch of the stranding of the stranded conductor, said twist having the same direction as the direction of the stranding of the stranded conductor.

The following description taken in connection with the accompanying drawings in which:

Figure 1 shows a cross-sectional view of one form of a stranded conductor used in a flat type feeder cable according to the present invention; and

Figures 2 to 18 show respectively various types of flat type feeder cables embodying the present invention.

In Figures 2 and 3 and Figures 7 to 18, the Figures designated by numbers suffixed by character A show plan views of flat type feeder cables, and the Figures designated by numbers suffixed by character B show diagrammatic cross-sectional views of flat type cables. Figures 4 to 6 show plan views similar to the Figures designated by numbers suffixed by character A.

Referring to Figure 1, there is shown a cross-sectional view of one form of a stranded conductor employed in a flat type feeder cable embodying the present invention. With reference to Figure 1, a vast plurality of core wires 11, 12, 13 ... are stranded. These core wires constitute an element conductor 2. The element conductor 2 is sheathed with an insulating material 3 such as soft polyvinyl chloride and the like to form an insulated core 41. In the same manner as mentioned above, insulated cores 42 and 43 are formed. A plurality of the thus formed insulated cores are stranded, thus forming a stranded core 51, and in the same manner, stranded conductors 52 to 56 are formed.

Figures 2 to 18 illustrate various forms of flat type cables of the present invention in which an even number of stranded conductors 51 to 56 are employed. As is apparent from each of these Figures, the even number of stranded conductors are arranged in parallel, with their respective axes being in a substantially coplanar relationship. These stranded conductors 51 to 56 of even number are wholly covered with an outer jacket 6 made of a flexible material such as, for example, rubber or polyvinyl chloride. The arrangement of the stranded conductors 51 to 56 is characterized also in that an equal number of the even number stranded conductors are disposed in a symmetrical relationship with

respect to the lateral axis of symmetry passing a central point X on a cross-section of the cable.

Further, the direction of lay of each of a number of optionally selected stranded conductors equal to half the number of the stranded conductors 51 to 56 is right-hand, while the direction of lay of each of the remaining conductors is left-hand. Each of the insulated cores constituting the stranded conductors 51 to 56 has one twist by one pitch of the stranding of the stranded conductor and said twist has the same direction as the direction of the stranding of the stranded conductor [reference: "Kosaku no Seizo" (Manufacturing of Stranded Wire) written by Tasaburo Nichioka and published by Seibundo Shinko-sha, Japan, pages 119 to 122]. Thus, there are provided flat type feeder cables 7 according to the present invention.

An illustrative structure of one form of a flat type cable according to the present invention is shown in Figures 2A and 2B. The stranded conductors 51 to 56 are arranged in parallel and respective two adjacent stranded conductors are in contact with each other.

The direction of lay of each of the stranded conductors 51, 52 and 53 is right-hand while the direction of lay of each of the conductors 54, 55 and 56 is left-hand. The structure of another form of flat type feeder cable shown in Figures 3A and 3B, is similar to that shown in Figures 2A and 2B in that the stranded conductors 51 to 56 are arranged in parallel and the respective adjacent two stranded conductors are in contact with each other. However, this form of cable is different from that shown in Figures 2A and 2B in that the direction of lay of each of the stranded conductors 51, 53 and 55 is right-hand while the direction of lay of each of the stranded conductors 52, 54 and 56 is left-hand.

Each of the embodiments illustrated in Figures 4 to 6 has such a structure that the stranded conductors 51 to 56 are arranged in parallel and the respective two adjacent stranded conductors are in contact with each other, similar to that of the embodiment shown in Figures 2A and 2B. However, in the feeder cable shown in Figure 4 the direction of lay of each of the stranded conductors 51, 52 and 55 is right-hand and the direction of the lay of each of the other conductors 53, 54 and 56 is left-hand. In the feeder cable illustrated in Figure 5, the direction of lay of each of the stranded conductors 51, 55 and 56 is right-hand, and the direction of lay of each of the other stranded conductors 52, 53 and 54 is left-hand. In the feeder cable shown in Figure 6, the direction of lay of each of the stranded conductors 51, 53 and 56 is right-hand and the direction of lay of each of the stranded conductors 52, 54 and 55 is left-hand.

Each of the embodiments illustrated in Figures 7A, 7B and 8A, 8B has substantially the same structure as each of the embodiments illustrated in Figures 2A, 2B and 3A, 3B except that the respective adjacent stranded conductors 51 to 56 are disposed at an interval L therebetween through the medium of a portion of the outer jacket 6.

In the embodiment illustrated in Figures 9A and 9B, two groups 81 and 82 of stranded conductors consisting respectively of stranded conductors 51,

52 and 53 and stranded conductors 54, 55 and 56 are arranged in parallel in a row at a spacing L between the two groups as depicted. The respective adjacent stranded conductors in a group are in contact with each other. The direction of lay of each of the stranded conductors 51, 52 and 53 is right-hand while the direction of lay of each of the stranded conductors 54, 55 and 56 is left hand. In the embodiment shown in Figures 10A and 10B, three groups 81, 82 and 83 comprising two neighboring stranded conductors, namely, stranded conductors 51 and 52, stranded conductors 53 and 54 and stranded conductors 55 and 56 respectively, are disposed in parallel. The two adjacent stranded conductors in a group are in contact with each other. The respective groups of 81, 82 and 83 are disposed at an interval L therebetween. The direction of lay of each of the stranded conductors 51, 53 and 55 is right-hand while the direction of lay of each of the stranded conductors 52, 54 and 56 is left-hand.

The flat type cable shown in Figures 11A and 11B as a further embodiment of the present invention is essentially the same as that shown in Figure 8, with respect to the arrangement of stranded conductors. However, in this embodiment of Figures 11A and 11B, in the outer jacket 6 at its portions between stranded conductors 52 and 53 and between stranded conductors 54 and 55, reinforcement members or tension members 91, 92 respectively are embedded longitudinally of the cable. The tension members 91, 92 are made of a material having a sufficient strength, for example a stranded steel wire, a steel strip, a fibre of organic material such as nylon or a carbon fibre. The embodiment illustrated in Figures 12A and 12B is substantially the same as that shown in Figure 10, with respect to the arrangement of stranded conductors. In this embodiment of Figures 12A and 12B, reinforcement members or tension members 91 and 92 similar to those employed in the embodiment of Figures 11A and 11B are respectively buried, extending in a longitudinal direction of the cable in the outer jacket 6 at its portions between the two groups of stranded conductors 81 and 82, and between the two groups of stranded conductors 82 and 83.

The flat type feeder cables illustrated in Figures 11A, 11B and 12A, 12B may be advantageously employed as the cables of an elevator, when the elevator, travelling distance is more than about 60 m. Due to the presence of the reinforcement members, for example, the mechanical strength of the cable against the tension exerted in a longitudinal direction of the cable can be increased. Furthermore, the reinforcement member can be used as a suspension means for the elevator cable, and in that instance, all the tension exerted on the cable is borne by the reinforcement member, so that the cable can be disposed in a suspended fashion with safety without loading an excessive tension onto the insulated cores which are important conductor portions of the cable.

The embodiment illustrated in Figures 13A and 13B is substantially the same as that shown in Figures 2A and 2B. In this embodiment, on both flat surfaces of the jacket 6 at their respective portions

corresponding to the contact portion of stranded conductors 53 and 54, are formed grooves 101 extending in the longitudinal direction of a cable 7. The embodiment shown in Figures 14A and 14B is substantially the same as that illustrated in Figures 3A and 3B. In the embodiment of Figures 14A and 14B, on both flat surfaces of a jacket 6 at their respective portions corresponding to the contact portions of stranded conductors 52 and 53 and of stranded conductors 54 and 55, there are formed respectively, grooves 101 and 102. In the structures of the embodiments mentioned above, when the outer jacket 6 is torn along the grooves, the insulated cores of the adjacent stranded conductors positioned at the portion corresponding to the groove are, at the same time, exposed in the loosed state, so that the working efficiency may be enhanced and working can be easily done.

The embodiment illustrated in Figures 15A and 15B is substantially the same as that shown in Figures 8A and 8B. In this embodiment, there are formed grooves 101 and 102 extending longitudinally on both surfaces of the jacket 6. The grooves 101 and 102 are formed at the respective portions of both surfaces of the jacket 6 corresponding to the intermediate positions between stranded conductors 52 and 53 and between stranded conductors 54 and 55 respectively. The embodiment shown in Figures 16A and 16B is substantially the same as that illustrated in Figures 10A and 10B. In the instant embodiment, on both surfaces of the jacket 6 at their respective portions corresponding to the intermediate portions between two groups 81 and 82 of stranded conductors and between two groups 82 and 83 of stranded conductors, there are formed grooves 101 and 102 extending longitudinally of the cable 7. In the case of such a flat type feeder cable as mentioned above, the jacket can be torn along the grooves 101 and 102 by a simple operation of pulling-apart the respective adjacent sections in the jacket 6 defined by the grooves, so that the groups of the stranded conductors can be easily separated and an operation of connecting the stranded conductors to the junction box group by group can be easily done.

The embodiment shown in Figures 17A and 17B has a structure in which the provision of reinforcement members as described in connection with Figures 11A and 11B and the formation of grooves as described in connection with Figures 15A and 15B are made with respect to a flat type feeder cable as shown in Figures 8A and 8B. In a jacket 6 at its portions between stranded conductors 52 and 53 and between stranded conductors 54 and 55, reinforcement members 91 and 92 made of a material having a relatively high tensile strength are respectively buried in the longitudinal direction of a cable 7. On both surfaces of the jacket 6 at their respective portions corresponding to the positions where the reinforcement members 91 and 92 are buried, there are formed grooves 101 and 102 extending along the whole length of the cable 7. The embodiment illustrated in Figures 18A and 18B has a structure in which the provision of reinforcement members as described in connection with Figures 12A and 12B and the formation of grooves as described in

connection with Figures 16A and 16B are made with respect to a flat type feeder cable as shown in Figures 10A and 10B. In a jacket 6 at its portions between the groups 81 and 82 of stranded conductors, and between the groups 82 and 83 of stranded conductors, reinforcement members 91 and 92 are respectively buried in the longitudinal direction of the cable 7. On both surfaces of the jacket 6 at their respective portions where the reinforcement members 91 and 92 are buried, there are formed respectively grooves 101 and 102 extending along the whole length of the cable 7.

In the case of the flat type cables of the structures shown in Figures 17A, 17B and 18A, 18B, it is to be understood that the flat type cable exhibits the same effect as that explained in connection with Figures 11 to 16. It is also apparent that when the end of the reinforcement member is exposed from the jacket and the exposed reinforcement member is pulled upward along the groove, the jacket can be easily torn along the groove to separate the groups of the stranded conductors, enabling an operation of connecting the stranded conductors to the junction box group by group to be easily done.

As a still further embodiment of the present invention, there can be mentioned a flat type feeder cable in which each of the stranded conductors 51 to 56 is composed of a plurality of insulated cores 41, 42 and 43 each containing an element core 2 that is formed by stranding a vast plurality of core wires 11, 12, 13 ... in the same direction as the direction of the stranding of each of the stranded conductors 51 to 56. Alternatively, there can be mentioned a flat type feeder cable in which each of the stranded conductors 51 to 56 composed of a plurality of insulated cores 41, 42 and 43 each containing an element core 2 that is formed by stranding a vast plurality of core wires 11, 12, 13 ... in the reverse direction to the direction of the stranding of each of the stranded conductors 51 to 56. In the explanation immediately above, reference is made to Figure 1.

It is not clearly shown in Figures 1 to 18 showing various embodiments of the present invention, but it should be noted that each of the plurality of insulated cores constituting each stranded conductor has one twist by one pitch of the stranding of the stranded conductor and this twist has the same direction as the direction of the stranding of the stranded conductor, which is an essential feature of the present invention as described before (this feature is hereinafter referred to as "stranding with the same twist of insulated core").

In embodying the present invention, the number of the insulated cores is not limited to that shown in Figures 1 to 18, that is three. The number of the stranded conductors arranged in a row and in a coplanar relationship is not limited to that shown in Figures 1 to 18, that is six, but can be appropriately set at, e.g. two, four or more than eight insofar as the number is even. It is also understood that the spacing left between the adjacent stranded conductors or the adjacent groups of stranded conductors may be appropriately set.

As described with reference to Figures 2 to 18 (in which like parts or portions are designated by like

numerals or characters), according to the present invention, an even number of stranded conductors are arranged in parallel in a row and in a coplanar relationship and the stranded conductors are wholly covered by a jacket made of a flexible material to form a feeder cable having a flat shape in cross-section. Thus, the thickness of the cable is remarkably reduced with advantage. Therefore, even though each of the stranded conductors has a "stranding with the same twist of insulated core" that is inherently not good for imparting flexibility to a cable, the bending characteristics or flexibility is not impaired, so that the good flexibility necessary for the cable to be bent to form a U-shape can be maintained. Furthermore, it should be noted that the bending characteristic or flexibility of the cable is excellent rather than the conventional round type feeder cable. In addition, since the thickness of the cable is reduced, the required number of flat type cables can be multi-laid one upon another with ease, so that the space necessary for installation of the cable can be extremely reduced. Therefore, the flat type cable of the present invention is very suitable as a moving feeder cable that is installed in a suspended state in an extremely restricted spacing between the inner wall of the hoistway and the elevator cage moving vertically upward and downward. Further, according to the present invention, an equal number of the stranded conductors are disposed in a symmetrical relationship with respect to the lateral axis of symmetry on a cross section of the cable, and the direction of lay of each of half the number of stranded conductors is right-hand while the direction of lay of the remaining stranded conductors is left-hand, so that the moment of rotation produced in the cable due to the stranding of half the number of stranded conductors may be offset by the action of the remaining stranded conductors having the different direction of lay. Accordingly, the flat type feeder cable of the present invention has a good balance between the torque in the clockwise direction and that in the counter-clockwise direction with respect to the central point of a cross section of the cable and is not subject to torsion during the use thereof in a suspended state. In addition, since each of the stranded conductor has a "stranding with the same twist of insulated core", loosening of the stranding conductor can be easily effected, so that an operation for connecting the cable to an electric power feeding terminal or a junction box and to a moving construction such as elevator can be easily done. For example, the end portions of the cores can be easily loosened and, upon connection, can be readily accommodated in the junction box in a compact form. In forming the stranded conductor to be used in the present invention, as described before, the insulated cores are stranded so as to have "stranding with the same twist of insulated core". The thus formed conductor is excellent in production efficiency and gives a great merit in the production thereof in comparison with that produced by the "method of stranding with reverse twist" which has been considered to be indispensable in order to give flexibility to the cable. With the flat type cable of the present invention,

the afore-mentioned drawbacks may be overcome, and excellent bending characteristic (flexibility), torsion resistance, compactness, resiliency and installing workability may be attained, which are all

- 5 necessary for a feeder cable to be used for moving constructions such as elevators travelling in a limited space.

CLAIMS

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1. A flat type feeder cable comprising an even number of stranded conductors with their respective axes arranged in a line and in a substantially coplanar relationship and an outer jacket made of a flexible material completely covering the stranded conductors, each of said stranded conductors being composed of a plurality of insulated cores stranded together, and wherein an equal number of the stranded conductors are disposed in a symmetrical relationship with respect to the lateral axis of symmetry on a cross section of the cable, the direction of lay of each of half the number of stranded conductors is right-hand while the direction of lay of each of the remaining stranded conductors is left-hand, and each of the plurality of insulated cores constituting each stranded conductor has one twist per one pitch of the stranding of the stranded conductor, said twist having the same direction as the direction of the stranding of the stranded conductor.

2. A flat type feeder cable according to Claim 1, wherein each of said plurality of insulated cores contains an element core comprising a vast plurality of core wires stranded in the same direction as the direction of the stranding of said stranded conductor.

3. A flat type feeder cable according to Claim 1, wherein each of said plurality of insulated cores contains an element core comprising a vast plurality of core wires stranded in the reverse direction to the direction of the stranding of said stranded conductor.

4. A flat type feeder cable according to any of Claims 1 to 3, wherein respective adjacent stranded conductors of said stranded conductors are in contact with each other.

5. A flat type feeder cable according to any of Claims 1 to 3, wherein respective adjacent stranded conductors of said stranded conductors are arranged at a predetermined interval therebetween through the medium of the flexible material of the outer jacket.

6. A flat type feeder cable according to any of Claims 1 to 3, wherein said even number of stranded conductors comprises at least two groups of stranded conductors, and respective adjacent stranded conductors in each group being in contact with each other, the respective adjacent groups of stranded conductors being arranged at a predetermined interval therebetween through the medium of the flexible material of the outer jacket.

7. A flat type feeder cable according to Claim 5, which further comprises a reinforcement member buried in the outer jacket at a position between the respective adjacent stranded conductors and ex-

tending longitudinally of the cable.

8. A flat type feeder cable according to Claim 6, which further comprises a reinforcement member buried in the outer jacket at a position between the respective adjacent groups of stranded conductors and extending longitudinally of the cable.

9. A flat type feeder cable according to any preceding claim, wherein the outer jacket has at least one pair of grooves formed with one groove of each of the substantially flat surfaces of the jacket in an opposite relationship and extending longitudinally of the cable.

10. A flat type feeder cable according to Claim 4, wherein the outer jacket has, on both surfaces of the jacket at respective positions corresponding to the contact portion of the respective adjacent stranded conductors, grooves extending longitudinally of the cable.

11. A flat type feeder cable according to Claim 5, wherein the outer jacket has, on both surfaces of the jacket at the respective portions corresponding to the intermediate portion between the respective adjacent stranded conductors, grooves extending longitudinally of the cable.

12. A flat type feeder cable according to Claim 6, wherein the outer jacket has, on both surface of the jacket at the respective portion corresponding to the intermediate portion between the respective adjacent groups of stranded conductors, grooves extending longitudinally of the cable.

13. A flat type feeder cable according to Claim 11, which further comprises a reinforcement member buried in the outer jacket at a position corresponding to the grooves and extending longitudinally of the cable.

14. A flat type feeder cable according to Claim 12, which further comprises a reinforcement member buried in the outer jacket at its portion corresponding to the grooves and extending longitudinally of the cable.

15. A flat type feeder cable substantially as herein described with reference to any of Figures 2A and 2B to 10A and 10B with or without reference to Figures 1 and 11A and 11B to 18A and 18B of the accompanying drawings.



the afore-mentioned drawbacks may be overcome, and excellent bending characteristic (flexibility), torsion resistance, compactness, resiliency and installing workability may be attained, which are all necessary for a feeder cable to be used for moving constructions such as elevators travelling in a limited space.

CLAIMS

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1. A flat type feeder cable comprising an even number of stranded conductors with their respective axes arranged in a line and in a substantially coplanar relationship and an outer jacket made of a flexible material completely covering the stranded conductors, each of said stranded conductors being composed of a plurality of insulated cores stranded together, and wherein an equal number of the stranded conductors are disposed in a symmetrical relationship with respect to the lateral axis of symmetry on a cross section of the cable, the direction of lay of each of half the number of stranded conductors is right-hand while the direction of lay of each of the remaining stranded conductors is left-hand, and each of the plurality of insulated cores constituting each stranded conductor has one twist per one pitch of the stranding of the stranded conductor, said twist having the same direction as the direction of the stranding of the stranded conductor.

2. A flat type feeder cable according to Claim 1, wherein each of said plurality of insulated cores contains an element core comprising a vast plurality of core wires stranded in the same direction as the direction of the stranding of said stranded conductor.

3. A flat type feeder cable according to Claim 1, wherein each of said plurality of insulated cores contains an element core comprising a vast plurality of core wires stranded in the reverse direction to the direction of the stranding of said stranded conductor.

4. A flat type feeder cable according to any of Claims 1 to 3, wherein respective adjacent stranded conductors of said stranded conductors are in contact with each other.

5. A flat type feeder cable according to any of Claims 1 to 3, wherein respective adjacent stranded conductors of said stranded conductors are arranged at a predetermined interval therebetween through the medium of the flexible material of the outer jacket.

6. A flat type feeder cable according to any of Claims 1 to 3, wherein said even number of stranded conductors comprises at least two groups of stranded conductors, and respective adjacent stranded conductors in each group being in contact with each other, the respective adjacent groups of stranded conductors being arranged at a predetermined interval therebetween through the medium of the flexible material of the outer jacket.

7. A flat type feeder cable according to Claim 5, which further comprises a reinforcement member buried in the outer jacket at a position between the respective adjacent stranded conductors and ex-

tending longitudinally of the cable.

8. A flat type feeder cable according to Claim 6, which further comprises a reinforcement member buried in the outer jacket at a position between the respective adjacent groups of stranded conductors and extending longitudinally of the cable.

9. A flat type feeder cable according to any preceding claim, wherein the outer jacket has at least one pair of grooves formed with one groove of each of the substantially flat surfaces of the jacket in an opposite relationship and extending longitudinally of the cable.

10. A flat type feeder cable according to Claim 4, wherein the outer jacket has, on both surfaces of the jacket at respective positions corresponding to the contact portion of the respective adjacent stranded conductors, grooves extending longitudinally of the cable.

11. A flat type feeder cable according to Claim 5, wherein the outer jacket has, on both surfaces of the jacket at the respective portions corresponding to the intermediate portion between the respective adjacent stranded conductors, grooves extending longitudinally of the cable.

12. A flat type feeder cable according to Claim 6, wherein the outer jacket has, on both surface of the jacket at the respective portion corresponding to the intermediate portion between the respective adjacent groups of stranded conductors, grooves extending longitudinally of the cable.

13. A flat type feeder cable according to Claim 11, which further comprises a reinforcement member buried in the outer jacket at a position corresponding to the grooves and extending longitudinally of the cable.

14. A flat type feeder cable according to Claim 12, which further comprises a reinforcement member buried in the outer jacket at its portion corresponding to the grooves and extending longitudinally of the cable.

15. A flat type feeder cable substantially as herein described with reference to any of Figures 2A and 2B to 10A and 10B with or without reference to Figures 1 and 11A and 11B to 18A and 18B of the accompanying drawings.