

Description

This invention relates to electric power cables and is particularly but not exclusively concerned with electric power cables for use with electrical appliances having cutting means such as electric lawn mowers, and electric saws.

Conventional electric power cables comprise a plurality of conductive cores, usually 2 or 3 copper wires each surrounded by a flexible insulative coating usually of plastics material and usually held together within a flexible protective sheath, again usually of plastics material. Hitherto, electric power cables have been constructed so that they tend to lie generally flat on the ground or other surface between the appliance and an electrical power source. This has been found to have certain disadvantages and in particular when used with electric lawn mowers and when used in long lengths between the power source and the appliance. Firstly, as the cable tends to lie flat along the ground, the cable can easily become obscured from the view of the user of the appliance. For example, in use with an electric lawn mower working in long grass, a conventional cable may become hidden in the grass. Fatal accidents have occurred when power cables have become obscured from the view of the user in this way and the mower has cut through the cable, electrocuting the user. Attempts at mitigating this particular disadvantage have included providing the cable with a vividly coloured sheath. Electronic circuit breakers have also been provided but these are complex and prone to failure. Furthermore, to avoid cutting the cable, the user has to re-arrange the cable continually to ensure that it does not lie in the path of the mower. DE-U-7738998 discloses an electric power cable in accordance with the preamble of claim 1.

It is the object of the invention to mitigate the foregoing disadvantages.

According to one aspect of the invention there is provided an electric power cable comprising an electrically-conductive core within an insulating layer, a flexible sheath at least partially encasing the core and layer and a resilient outer sleeve encasing the flexible sheath and formed as a helical coil so that the cable is resiliently extendable between a contracted and an extended condition characterised in that the coil has an extended length to contracted length ratio of greater than 10:1 and in that the wall thickness of the resilient sleeve is 0.5 to 0.8 mm.

In the contracted condition, the turns of the coil may lie closely adjacent to each other. Thus, in the contracted condition the coil may be easily gripped in one hand by a user.

The coil may have a diameter of at least 100 mm, and preferably, about 140 mm. A power cable

of such a diameter is preferable in that it can not be run over by a lawn mower, in use, the lawn mower simply pushing the cable aside. Furthermore, such a cable is advantageous in that the diameter of the coil enhances the cable's visibility and reduces the possibility of the cable becoming obscured from the view of the user.

Preferably, the coil has an extended length to contracted length ratio of about 36:1. Such a cable is advantageous in that as the coil can be resiliently extended, it is unnecessary for the user to gather up or pay out the cable as is required with conventional cables when the appliance is used at a distance from the power source.

The diameter of the resilient sleeve may be about 10 mm, and preferably from 6 to 7 mm.

The power cable may have a connection means in electrically-conductive communication with the core. The connection means may comprise a socket or a plug. Preferably, the cable has a plug at one of its ends and a socket at the other end.

The resilient sleeve may be made from a plastics material such as nylon. It is preferred that the material be resistant to mechanical and chemical damage. Furthermore, it is preferred that the sleeve be finished in a vivid colour e.g. fluorescent orange or yellow to enhance its visibility.

The cable may have 2 or 3 said cores, each of which is at least partially encased within an insulating layer and which may be held together by the aforesaid flexible sheath.

An electrical power cable in accordance with the invention will now be described by way of example only with reference to the accompanying drawings, Figures 1, 2, and 3, in which:

Figure 1 is a side view of a power cable in accordance with the invention shown partly cut away;

Figure 2 is a cross-section of a portion of the cable on line A-A in Figure 1; and

Figure 3 is a side view of a power cable in accordance with the invention having an attached connection means at the ends thereof.

The electric power cable 1 shown in Figure 1 comprises a resilient outer sleeve 10 containing electric wiring indicated generally at 12. A sleeve 10 is made of nylon and is formed into a resilient helix. The wiring 12 is of conventional construction comprising 3 conductive cores of copper wire 13, 14, 15 each surrounded by an insulating layer, 13a, 14a, 15a respectively, and held together within a flexible P.V.C sheath 16. The cable is shown in a slightly extended condition, and has an extended to contracted length ratio of 36:1. The helical coil has an external diameter of approximately 140 mm. The wall thickness of the resilient sleeve 10 is approximately 0.5 mm and its diameter is 6 to

7mm.

The power cable 20 shown in Figure 3 is of similar construction to the power cable 10 of Figures 1 and 2 and corresponding features are given the same reference numeral. A conventional plug 22 is attached to one end 24 of the cable to permit connection of the cable to an electric power source. The other end 26 of the cable 20 may be provided with a socket 22a to form an extension lead, or may be directly connected to an appliance e.g. a lawn mower.

It will be noted that the outer sleeve 10 extends along the sheath 16 to the plug 22. This arrangement is advantageous in that in use, the tension in the helical coil tends to tip the plug 22 in the socket comprising the electric power source, thus tending to lock the plug in position in the socket and inhibiting accidental withdrawal of the plug.

However, if desired the sleeve 10 may be arranged so as to not extend to the connection means. Such an arrangement would be advantageous in a situation where access to the electrical power source were restricted and the greater flexibility of the uncovered sheath would permit easier insertion or withdrawal of the plug.

In the contracted condition the coils of the cable lie closely adjacent each other, e.g. touching as shown in broken lines at 30 in Figure 3.

Whilst the invention has been described with the particular reference to power cables for the use with lawn mowers it will be appreciated the cables in accordance with the invention will find numerous other applications e.g. in workshops, in view of their advantages over conventional power cables.

Claims

1. An electric power cable (1) comprising an electrically-conductive core (13,14,15) within an insulating layer (13a,14a,15a), a flexible sheath (16) at least partially encasing the core and layer and a resilient outer sleeve (10) encasing the flexible sheath (16) and formed as a helical coil so that the cable is resiliently extendable between a contracted and an extended condition characterised in that the coil has an extended length to contracted length ratio of greater than 10:1 and in that the wall thickness of the resilient sleeve is from 0.5 to 0.8 mm.
2. An electric power cable (1) according to claim 1 in which the coil has an extended length to contracted length ratio of about 36:1.
3. An electric cable (1) according to claim 1 or 2 in which in the contracted condition the turns of the coil lie closely adjacent each other.
4. An electric cable (1) according to claim 1, 2, or 3 in which the coil has a diameter (d) of at least 100 mm.
5. An electric cable (1) according to claim 4 in which the coil has a diameter (d) of about 140 mm.
6. An electric power cable according to any preceding claim which has a connection means (22,22a) in electrically-conductive communication with the core (13,14,15).

Patentansprüche

1. Elektrisches Energiekabel (1) mit einem elektrisch leitenden Kern (13, 14, 15) innerhalb einer isolierenden Schicht (13a, 14a, 15a), einem flexiblen Mantel (16), der den Kern und die Schicht zumindest teilweise umschließt, und einer federnden äußeren Umkleidung (10), die den flexiblen Mantel (16) umhüllt und als Schraubenwickel geformt ist, so daß das Kabel federnd zwischen einem zusammengezogenen und einem gestreckten Zustand ausziehbar ist, dadurch gekennzeichnet, daß der Wickel ein Verhältnis zwischen gestreckter Länge und zusammengezogener Länge von mehr als 10:1 besitzt und daß die Wandstärke der federnden Umkleidung 0,5 bis 0,8mm beträgt.
2. Elektrisches Energiekabel (1) nach Anspruch 1, bei dem der Wickel ein Verhältnis zwischen gestreckter Länge und zusammengezogener Länge von ungefähr 36:1 besitzt.
3. Elektrisches Energiekabel (1) nach Anspruch 1 oder 2, bei dem in dem zusammengezogenen Zustand die Windungen des Wickels zueinander eng benachbart sind.
4. Elektrisches Energiekabel (1) nach Anspruch 1, 2 oder 3, bei dem der Wickel einen Durchmesser (d) von zumindest 100mm besitzt.
5. Elektrisches Energiekabel (1) nach Anspruch 4, bei dem der Wickel einen Durchmesser (d) von ungefähr 140mm besitzt.
6. Elektrisches Energiekabel nach einem der vorausgehenden Ansprüche, das ein Anschlußmittel (22, 22a) in elektrisch leitender Verbindung mit dem Kern (13, 14, 15) besitzt.

Revendications

1. Câble électrique (1) comprenant une âme électroconductrice (13, 14, 15) à l'intérieur



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2. An electric power cable (1) according to claim 1 in which the coil has an extended length to contracted length ratio of about 36:1.
3. An electric cable (1) according to claim 1 or 2 in which in the contracted condition the turns of the coil lie closely adjacent each other.

4. An electric cable (1) according to claim 1,2, or 3 in which the coil has a diameter (d) of at least 100 mm.
5. An electric cable (1) according to claim 4 in which the coil has a diameter (d) of about 140 mm.
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3. Elektrisches Energiekabel (1) nach Anspruch 1 oder 2, bei dem in dem zusammengezogenen Zustand die Windungen des Wickels zueinander eng benachbart sind.
4. Elektrisches Energiekabel (1) nach Anspruch 1, 2 oder 3, bei dem der Wickel einen Durchmesser (d) von zumindest 100mm besitzt.
5. Elektrisches Energiekabel (1) nach Anspruch 4, bei dem der Wickel einen Durchmesser (d) von ungefähr 140mm besitzt.
6. Elektrisches Energiekabel nach einem der vorausgehenden Ansprüche, das ein Anschlußmittel (22, 22a) in elektrisch leitender Verbindung mit dem Kern (13, 14, 15) besitzt.

Revendications

1. Câble électrique (1) comprenant une âme électroconductrice (13, 14, 15) à l'intérieur



d'une couche isolante (13a, 14a, 15a), une gaine flexible (16) enrobant au moins partiellement l'âme et la couche et un manchon externe résilient ou élastique (10) enrobant la gaine flexible (16) et formé comme une bobine hélicoïdale, de sorte que le câble est étirable de manière résiliente ou élastique entre un état contracté et un état étiré, caractérisé en ce que la bobine présente un rapport longueur étirée - longueur contractée supérieur à 10 : 1 et en ce que l'épaisseur de la paroi du manchon résilient ou élastique est comprise entre 0,5 et 0,8 mm.

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2. Câble électrique (1) selon la revendication 1, dans lequel la bobine présente un rapport longueur étirée - longueur contractée d'environ 36 : 1.

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Câble électrique (1) selon la revendication 1 ou 2, dans lequel, en état contracté, les spires de la bobine sont très proches les unes des autres.

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4. Câble électrique (1) selon la revendication 1, 2 ou 3, dans lequel la bobine a un diamètre (d) d'au moins 100 mm.

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5. Câble électrique (1) selon la revendication 4, dans lequel la bobine a un diamètre (d) d'environ 140 mm.

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6. Câble électrique selon l'une des revendications précédentes, qui présente des moyens de connexion (22, 22a) en communication électroconductrice avec l'âme (13, 14, 15).

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