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UNITARY VOLT REDUCING DROP CORD

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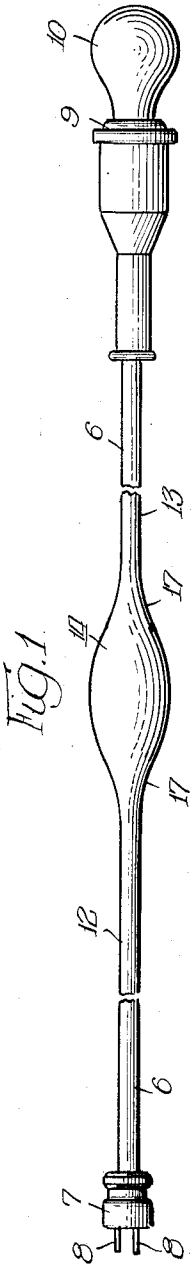


Fig. 1

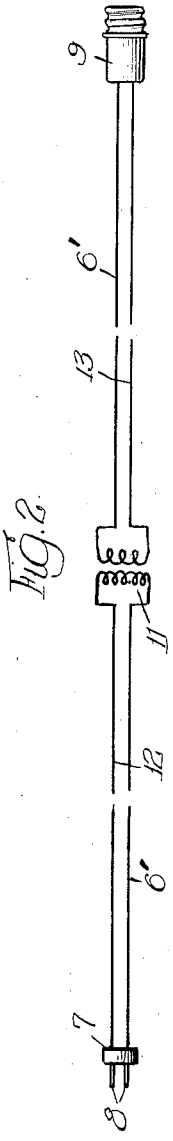


Fig. 2

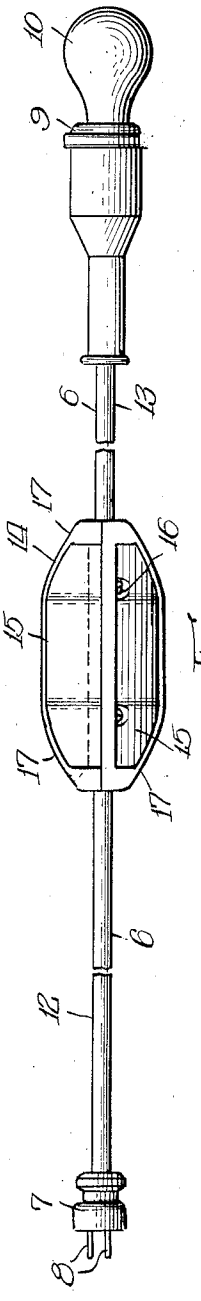


Fig. 3

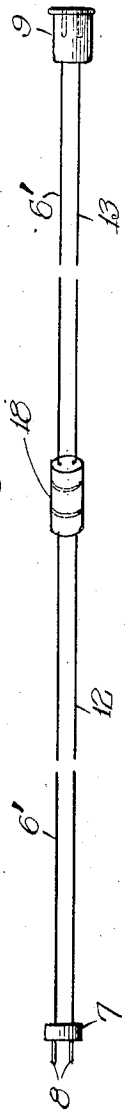


Fig. 4

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UNITARY VOLT REDUCING DROP CORD

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1 Claim. (Cl. 171—97)

This invention relates to drop cords, which includes extension cords and any other cords, cables or conductors extending between a source of electrical supply or energy and an article, device or lamp to which the electric current is to be supplied.

It is desirable and advantageous that workmen be supplied with a lighting fixture or lamp operating on a low voltage. This is particularly true where the lamp or electrical device is to be used or operated in low or damp places or in situations where there exists considerable metal parts or structures, and particularly where the ceiling height or clearance height is low. Heretofore, low voltage lamps or devices have been supplied for use in the above situations and there has usually been a line leading from a source of high voltage, such as for instance 220 volts, to a transformer so that the current could be reduced to the proper voltage of from 6 to 32 volts. Then there has been another drop cord connecting the transformer to the lamp or electrical device to be supplied with current. In these instances there have been two separate drop or extension cords, one leading from the source of supply to the transformer and the other leading from the transformer to the lamp or device. Moreover, the transformers have been of such a character so that either end of either drop cord or extension cord is adapted to be replaced or used for the other. In many of these instances the cords could be interchanged, or the connections could be made by unauthorized parties, or the cords could be connected to the wrong sources.

The present invention overcomes all the inherent disadvantages in the conventional construction, and the primary object of the present invention is to provide a one-piece single unitary drop cord having formed intermediate the ends thereof as a unitary part a transformer or volt reducing assembly whereby the voltage from the plug-in at the source of supply is reduced at the point of usage.

Another important object of the invention is to provide a drop card having a transformer incorporated therewith and made a permanent part thereof to provide a single unitary element having an electrical connecter at one end to make electrical contact with a source of electrical energy and having a connecter at its other end of considerably reduced voltage.

Another object of the invention is to provide a drop cord having one end adapted to make electrical contact with a source of high voltage electrical energy, and its other end provided with an electrical connecter to produce current at a relatively low voltage, there being formed between said connecters as an integral permanent and unitary part of the drop cord a transformer for reducing the voltage between the source of supply and the electrical connecter.

A further object of the invention is to provide a drop cord including electrical conductors arranged in a sheath or cable, there being a transformer arranged intermediate the ends of the conductors providing a unitary element, the transformer reducing the voltage between the ends of the conductors.

Another object of the invention is the provision of a drop cord including a transformer which is made a permanent part of the circuit, the primary of the transformer being provided with approved durable insulating conductors terminating in a plug for connection to the available source of standard voltage supply; the secondary of the transformer also being made a permanent part of the circuit and provided with approved durable insulating conductors of electricity terminating in a socket or receptacle providing only low voltage service.

A still further object of the invention is the provision of a drop cord including a transformer arranged intermediate the ends thereof and formed as an integral unitary part thereof, the transformer being streamlined, water-tight, and of great strength so that when the drop cord is dragged it will pass over obstructions easily and will be capable of operating while lying in water, steam, snow or other forms of moisture without damage or fear of shock or breakage.

Still another object of the invention is the provision of a drop cord having a volt reducer or transformer arranged intermediate its ends, the housing of the transformer having a water-tight connection to the drop cord and formed as an integral unit with the drop cord whereby the unitary construction will prevent wrong connections being made or the changing of the connections by unauthorized parties.

A further object of the invention is the provision of a drop cord including electrical conductors having electrically connected intermediate their ends a transformer to reduce the voltage from one end to the other, there being a single unitary integral casing or cover about the conductors and the transformer so that the conductors and the transformer form a single integral unitary drop cord construction.

A still further object of the invention is the provision of a single one-piece drop cord of a

predetermined length, having formed at one end thereof an electrical connecter for making electrical contact with a source of high voltage current, an electrical connecter at the other end of the cord to make electrical contact with a lamp or other electrical device, with a transformer arranged intermediate the ends as a unitary part of the single drop cord.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates selected embodiments of the invention and the views therein are as follows:

Fig. 1 is a detail view of a single unitary drop cord having a transformer arranged therein intermediate the ends thereof;

Fig. 2 is a similar view of the drop cord adapted for use with alternating current showing a transformer arranged between the ends for reducing the current between the plug and the socket;

Fig. 3 is a view similar to Fig. 1 but showing a modified form of transformer housing; and

Fig. 4 is a view similar to Fig. 3 but embodying a dynamotor for use with direct current.

The particular drop cord herein shown for the purpose of illustrating the invention comprises a cable or sheath 6 preferably made of rubber and containing electrical conductors 6' which are electrically connected to an electrical connecter 7, the connecter 7 being provided with ontact prongs or blades 8 which are adapted to be received in a device or receptacle to make electrical contact between a high voltage source of supply and the conductors encased in the cable 6. The cable 6 and the conductors housed therein are electrically connected to another electrical connecter or socket 9 through which electrical contact is made to an electrical device or to a lamp globe 10.

It is desirable and often necessary that the voltage at the outlet or socket 9 be very low so as to protect persons engaged in using a portable lamp or other electrical device from possible injury or death due to severe electrical shock. Therefore, a transformer has been arranged in the line, but the conventional arrangement was unsatisfactory and dangerous because of the possibility of wrong connections being made or the device being wrongly used. Often, too, the changing of the connections by unauthorized persons has been made. The present invention therefore contemplates the provision of a transformer 11 arranged intermediate the ends of the cable 6 so as to reduce the current from the source of supply at the end of the cable containing the electrical connecter 7 to provide low voltage current to the socket 9. The transformer 11 is of a construction and character so as to reduce standard voltage of from 220 or 110 volts to a low voltage of from 6 to 32 volts or more, as desired or required.

The part 12 of the cable between the connecter 7 and the transformer may be called the primary of the transformer, while the part 13 of the drop cord between the transformer 11 and the connecter or socket 9 may be called the secondary of the transformer.

The transformer 11 is arranged in a housing 14 of a water-tight streamlined construction so that the drop cord may be easily dragged from one location to another. The connections are substantial and water-proof so that the drop cord may be dragged through, or operate successfully in, water, snow, steam or other forms of moisture. The water-tight feature is accomplished by sealing the joints and openings of the casing, or by completely filling the casing with an insulating compound insoluble in water or moisture. The transformer casing or enclosure 14 may be made of rubber and molded integrally with the rubber covered cable or sheath 6, Fig. 1, or the transformer casing or housing 14 may be made of metal comprising a plurality of parts 15 fastened together, as indicated at 16, to provide a strong, durable, water-tight and moisture-proof enclosure. In either instance, Figs. 1 and 3, the transformer housing or enclosure 14 is provided with tapering ends 17 slanting, curving or inclining toward the cable 6 so as to overcome sharp edges to permit the cable to be dragged or slid along the ground or floor and to pass over obstructions easily. The casing 14, therefore, is a unitary integral part of the drop cord itself and is movable therewith. The connections are tight and can not be tampered with, thereby preventing anyone from making the wrong connection; also, all connections are concealed and water-tight.

There is a connection 7 leading to the source of supply and a connection 9 which leads to the device to be operated. As one end must have the contacts concealed, it is impossible to change the connections. The primary portion 12 of the transformer is made a permanent part of the circuit, and approved durable conductors of electricity arranged in the sheath or cable 6 terminate in the plug 7 for connection to the available source of standard voltage supply. The secondary portion 13 of the transformer is also made a permanent part of the circuit and is provided with approved durable insulated conductors of electricity arranged in the sheath or cable 6 and terminates in a socket or receptacle providing only low voltage service. The insulated conductor 13 of the secondary low voltage service can be of such a size and length to meet the needs for areas to be covered.

The transformer enclosure is designed to provide great strength for maximum protection and with the minimum amount of dead weight. The enclosure, therefore, is rugged and durable to withstand hard usage, and being water-tight allows the unit to operate while being subjected to water, snow, steam or other forms of moisture. The water-tight feature of the housing is accomplished by sealing the joints and openings of the casing or by completely filling the casing with compound insoluble in water or moisture. The transformer 11 may be provided with the enclosure 14 which is molded, the transformer parts and connections being molded into an integral rubber casing. Therefore, all connections to the transformer are made before molding into the rubber housing. The conductors also are vulcanized to the housing so as to make the entire drop cord and housing a one-piece unit.

In cases where a volt reducing element is required for direct current supply, the housing contains a dynamotor 18, Fig. 4, which operates from a 110 or 220 volt direct current circuit so as to supply low voltage of 6 to 32 volts direct or alternating current to the secondary conductors 13 of the single unitary drop cord.

The invention provides a rugged, sturdy, portable drop cord device having a transformer or volt reducing element arranged intermediate its ends forming a unitary part of the drop cord whereby a single element is provided which may be carried or dragged easily and readily from place to place. The transformer housing is

streamlined and tapered to permit it to pass freely over obstructions, and the water-proofing of the housing and electric connections permits the cord to function properly even when in contact with water, snow, steam or other forms of moisture. Moreover, the provision of a one-piece unitary voltage reducing drop cord eliminates the danger of making wrong connections and prevents tampering with the parts and electrical connections.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claim.

The invention is hereby claimed as follows:

A single unitary one-piece drop cord adapted to be moved from one position to another as a single unit and comprising conductors of appreciable length, a connector connected to each of the ends of the conductors, a transformer interposed intermediate the ends of the conductors and electrically connected thereto whereby one connector may be electrically connected to a source of supply of high voltage and the other connector to an element to provide low voltage thereto, and a flexible rubber casing extending from one connector to the other and surrounding the conductors and transformer to provide a water-tight covering therefor, said casing being integral from one end to the other.

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