July 15, 1930. H. BECK ET AL 1,770,454

REEL FOR ELECTRIC EXTENSION CORDS

Filed March 13, 1929

Fig. 1.

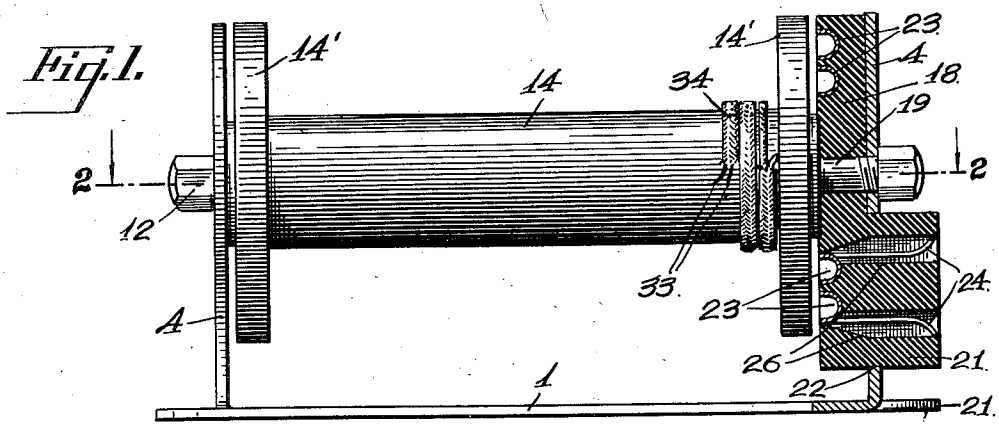


Fig. 2.

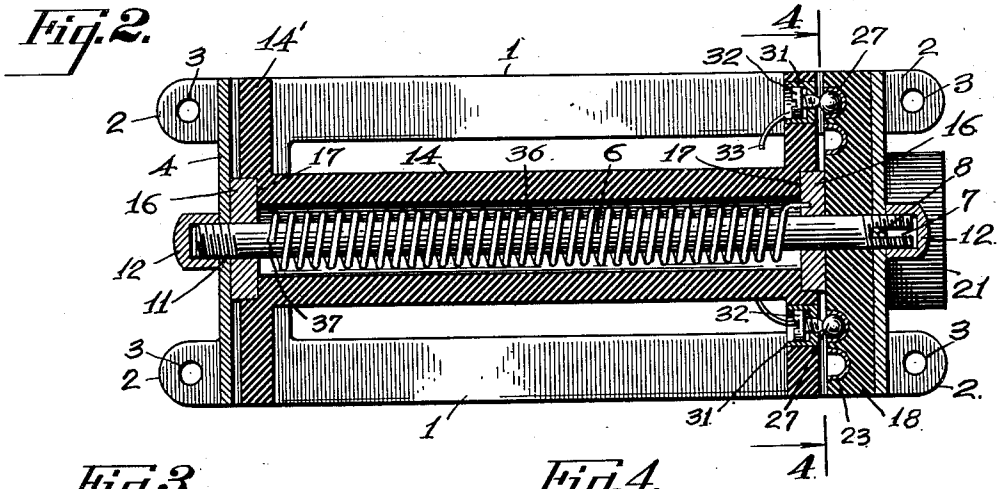


Fig. 3.

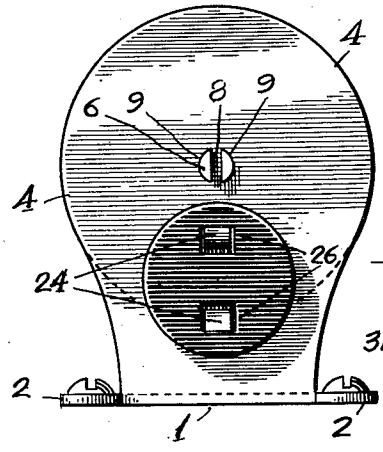


Fig. 4.

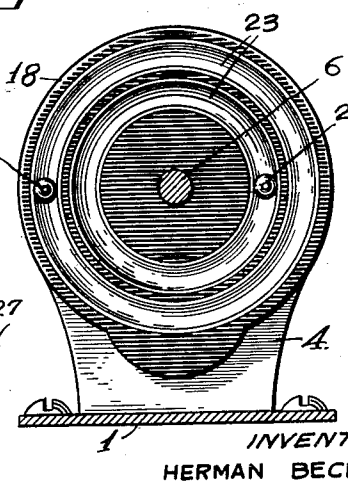
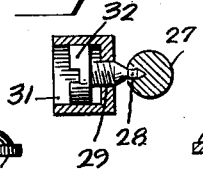


Fig. 5.



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UNITED STATES PATENT OFFICE

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REEL FOR ELECTRIC EXTENSION CORDS

Application filed March 13, 1929. Serial No. 346,730.

Our invention relates to improvements in reels for electric extension cords such as used with electric flat irons and other electrical equipment, said reel being arranged to be normally rotated in a cord winding direction and provided with contact forming means adapted to prevent interruption of an electric current to and through the cord when the reel is rotated to wind or unwind the cord upon the reel.

The primary object of our invention is to provide an improved reel for electric extension cords whereby the cord may be paid out or rewound without interrupting the electrical connection between said cord and a source of electrical energy.

Another object is to provide an improved device wherein the reel is normally rotated in a winding direction to rewind the cord and to take up all slack when in use.

A further object is to provide an improved device of the character described provided with improved contact forming means adapted to maintain an efficient electrical contact.

Another object is to provide an improved contact forming means wherein a sliding contact is maintained and provided with means for regulating the pressure of said contact.

A further object is to provide an improved device which is simple in construction and operation and which may be easily installed.

A still further object is to provide an improved construction which can be economically manufactured and assembled and which is rugged, durable, and efficient.

We accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present application wherein like characters of reference are used to designate similar parts throughout the specification and drawings and in which—

Fig. 1 is a side elevation, partly in section, of our improved electric extension cord reel;

Fig. 2 is a longitudinal section taken upon the line 2—2 of Fig. 1, in the direction indicated;

Fig. 3 is an end elevation of the device;

Fig. 4 is a vertical section taken upon the line 4—4 of Fig. 2 in the direction indicated; and

Fig. 5 is a sectional detail of a contact member, the figure being drawn upon an enlarged scale.

Referring to the drawings, the numeral 1 is used to designate in general a mounting base member, preferably stamped from suitable sheet metal. The base is rectangular in shape and provided with lugs 2 adjacent the corners thereof to receive suitable securing means, not shown, through apertures 3 formed therein whereby the base may be rigidly secured upon a wall or other support.

Supporting arms 4 are formed upon the ends of the base member 1 and turned outwardly into substantially parallel relation at right angles to the base 1. A shaft 6 is mounted upon the arms 4, one end of said shaft being slotted as at 7 to engage a portion 8 of one of said arms 4 and to extend outwardly through spaced openings 9. The opposite end of the shaft extends outwardly through an opening 11. Caps 12 are threaded onto the outwardly extending ends of the shaft.

A reel designated in general by the numeral 14 is rotatably mounted upon the shaft 6 between the arms 4, said reel consisting of a hollow drum portion provided with flanges 14′ at the ends thereof. The reel is made from suitable insulating material. Suitable bearings 16 are mounted within recesses 17 at the ends of the drum portion of the reel 14, said bearings rotatably engaging the shaft 6 and supporting the reel thereon.

An insulating block 18 is mounted upon one of the arms 4 between said arm and the adjacent end of the reel 14. An opening 19 is formed in the block 18 to receive the shaft 6, and an extension 21 is arranged to extend outwardly through an opening 22 formed in the arm 4. A pair of concentric annular conductors 23 are mounted upon the inner face of the block 18 adjacent the end of the reel 14, said conductors being provided with concave bearing surfaces facing the end of the reel. A pair of resilient terminal conductors 24 are connected to the conductors 23, said terminals 24 being mounted within openings 26 formed

in the extension 21 and arranged to receive the terminals of any suitable connecting plug, not shown, in the ordinary manner. The conductors 23 with their terminals 24 are insulated from each other.

A pair of contacts 27 are mounted upon the end of the reel 14 adjacent the conductors 23, said contacts preferably being mounted at diametrically opposite points upon the reel and each engaging one of said conductors 23. The contacts 27 preferably consist of a spherical conductor adapted to form a sliding contact with the concave contact surface of the adjacent conductor 23. The contacts 27 are held in operative position by means of bearing portions 28 formed upon the ends of the stems 29 tapped into the bottoms of cups 31 seated within the flange 14′ of the reel, said bearing portions 28 being rotatably engaged by the spherical contact members 27 and operating to hold said contact members in sliding engagement with the conductors 23. The stems 29 and cups 31 are made of conductive material, and the stems 29 are provided with slotted heads 32 whereby said stems operate as binding posts to secure the ends of the conductors 33 of an electric extension cord 34.

A coil torsion spring 36 is mounted around the shaft 6 within the hollow drum portion of the reel 14. One end of the spring 36 is secured to the shaft 6 as at 37 while the opposite end is secured to the bearing member 16 at the opposite end of the reel, said bearing member being held against rotation relative to the reel 14 in any suitable manner.

In operation, our improved reel is secured upon a wall or other convenient supporting surface by means of screws or other securing elements applied through the openings in the lugs 2. Connection is made to a source of power by means of an ordinary plug connection inserted into engagement with the terminal conductors 24. The ends of the extension cord wires 33 are connected to the contacts 27 and the cord 34 is wound upon the reel, the reel being assembled onto the shaft 6 and base 1 with a sufficient tension in the spring 36 to normally rotate the reel in a cord winding direction so that normally the cord will be fully wound onto the reel. The cord 34 is provided with the ordinary connecting plug, not shown, at its outer or free end whereby the cord may be connected to a flat-iron or other electrical apparatus. The connection between the terminal 23 and the source of electrical energy may be kept permanently connected, or may be broken when not in use in any desired or convenient manner.

The cord 34 when in use is pulled outwardly and unwound from the reel 14 to provide the required length of cord, the rotation of said reel as the cord is unwound therefrom causing the spring 36 to be subjected to increased tension. The spring tends to rotate the reel in the cord winding direction so that all slack is taken up while the cord is in use, and when the cord is disconnected from the apparatus to which it has been applied, the reel is rotated to entirely rewind the cord.

Our device is particularly useful in connection with the operation of electric flat-irons. In this connection the cord is paid out from the reel and automatically rewound thereon as the iron is moved back and forth in the ordinary manner. In this way, the slack is taken up at all times and the surplus length of cord ordinarily interfering with the free manipulation of the iron will be taken up by the reel and kept out of the way of the operator. At the same time, the cord may be unwound at will to permit the iron to be moved to any desired point within the range of the cord. In any case, the cord is automatically rewound upon the reel as soon as disengaged from an apparatus to which it has been applied, and the cord will thus be kept stored in an accessible position until again required.

Electrical contact is maintained between the contact member 27 and the conductors 23 and is not interrupted in any manner by the rotation of the reel in paying out or rewinding the cord. The rolling contact causes the spherical conductors 27 to be rotated by the concave surfaces of the conductors, thereby reducing wear and friction and insuring a durable and efficient contacting means. The pressure with which the contacts 27 are held against the conductors 23 may be readily regulated by means of the caps 12 threaded onto the ends of the shaft 6. By tightening the caps against the outer faces of the supporting arms 4, said arms may be pressed together to exert the desired tension against the reel 14 and the block 18.

While we have illustrated and described the preferred embodiment of our invention, specific details of construction may be modified in various ways without departing from the spirit of our invention. We therefore desire to avail ourselves of all such modifications as may fall within the scope of the appended claims.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is—

1. A reel for electric extension cords comprising a base provided with reel supporting arms; a reel rotatably mounted between said arms and adapted to receive an extension cord wound thereon; a pair of concave annular conductors mounted adjacent one end of the reel and insulated from said reel and from the support; spring conductors connected to said annular conductors and adapted to receive connections to a source of electrical energy; a pair of contacts rotatably mounted upon the reel and having spherical

surfaces engaging the concavities of the annular conductors, said contacts being connected to the cord and adapted to maintain continuous contact with the annular conductors when the reel is rotated to wind or unwind the cord therefrom; and means for automatically rotating the reel to the cord thereon.

2. A reel for electric extension cords comprising a sheet metal base having the ends turned to substantially parallel outwardly extending relation to form supporting arms; a shaft mounted between the arms; a reel rotatably mounted upon the shaft and adapted to receive an extension cord wound thereon; an insulating block mounted upon the inner side of one of the arms adjacent one end of the reel, said block being provided with an extension extending outwardly through the arm and having openings formed therein to receive the terminals of a connecting plug from a source of electrical energy; a pair of annular conductors mounted upon the inner face of the block adjacent the reel; terminals mounted within the openings of the extension and connected to the conductors; a pair of contacts mounted upon the end of the reel and forming sliding contact with the conductors and connected to the cord to maintain electrical connection therebetween when the reel is rotated to wind or unwind the cord; means for adjusting the pressure between the contacts and the annular conductors; and means for normally rotating the reel in a cord winding direction.

3. A reel for electric extension cords comprising a rectangular mounting base struck from sheet metal and provided with mounting lugs formed at the corners and also provided with reel supporting arms bent outwardly at substantially right angles to the base; a shaft mounted upon the arms and extending outwardly therethrough at both ends; a reel rotatably mounted upon the shaft and adapted to receive an electric extension cord wound thereon; contacting means mounted upon one of the arms and the adjacent end of the reel and adapted to maintain electric connection therethrough between the cord and a source of electrical energy; nuts threaded onto the ends of the shaft to press the arms toward the reel and thereby regulate the pressure of the contacting means; and means for normally rotating the reel in a cord winding direction.

In witness whereof, we hereunto set our signatures.

HERMAN BECK.
WILLIAM HOHNDORF.