

March 25, 1924.

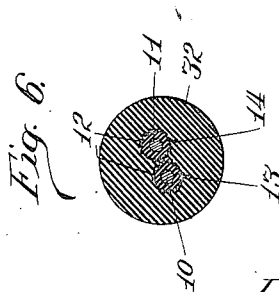
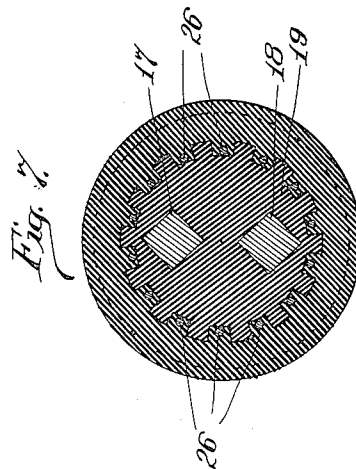
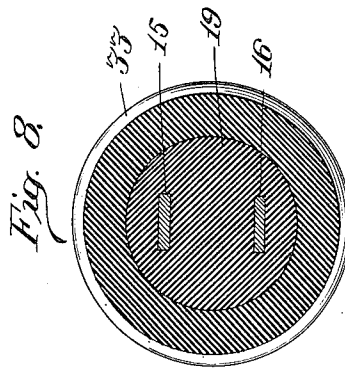
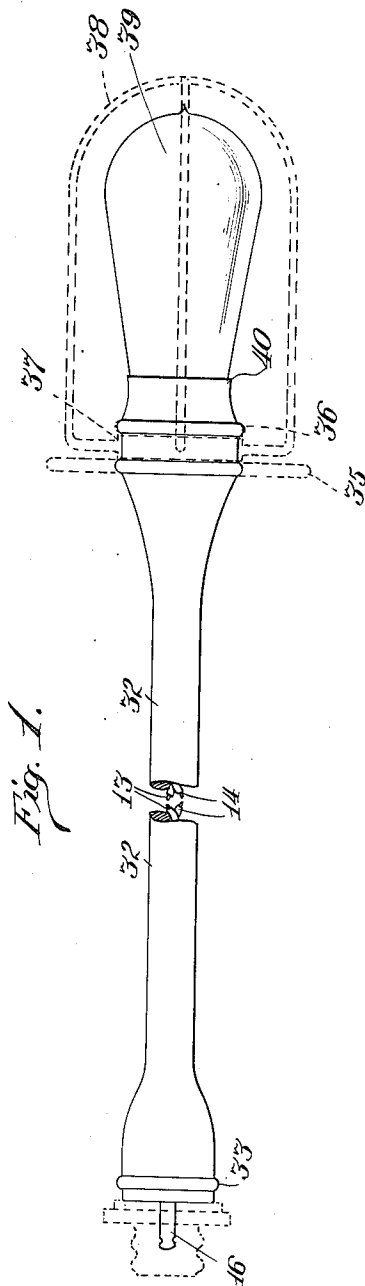
L. A. GRIFFIN

1,487,937

EXTENSION CORD

Filed Dec. 10, 1921

2 Sheets-Sheet 1



Inventor
Lorne A. Griffin
By *William Bradbury*
McCall & Pierce
Attorneys

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EXTENSION CORD

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2 Sheets-Sheet 2

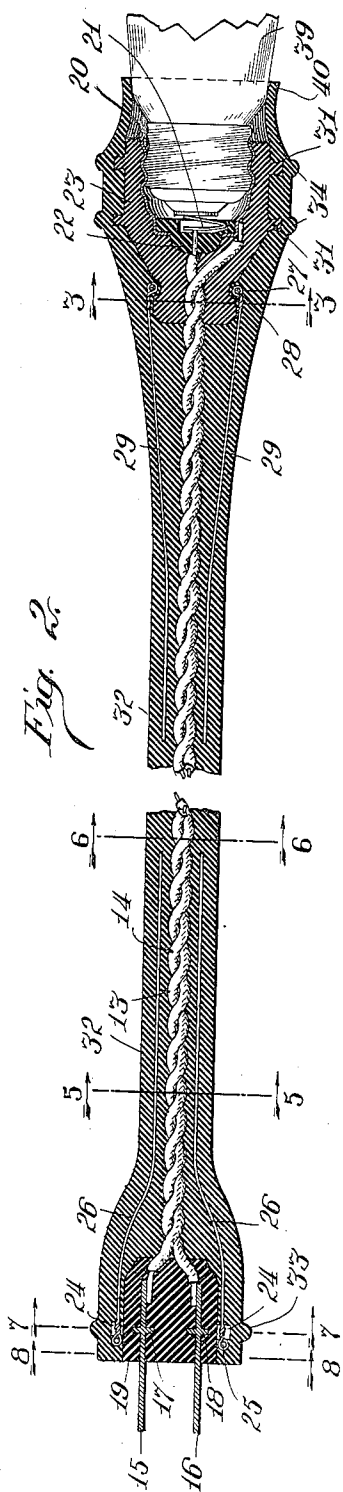


Fig. 2.

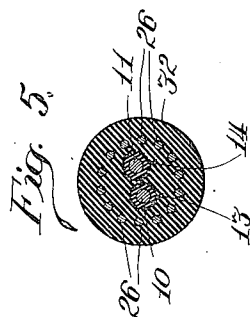


Fig. 5.

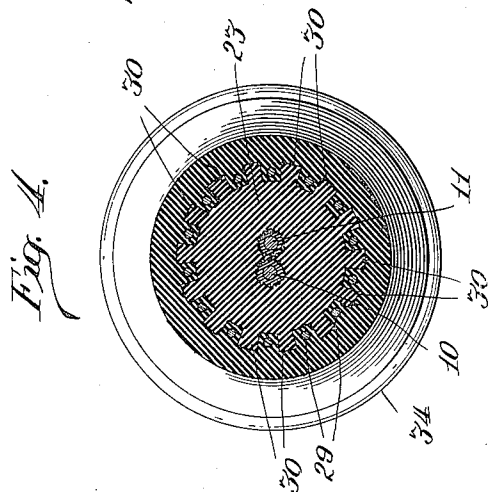


Fig. 4.

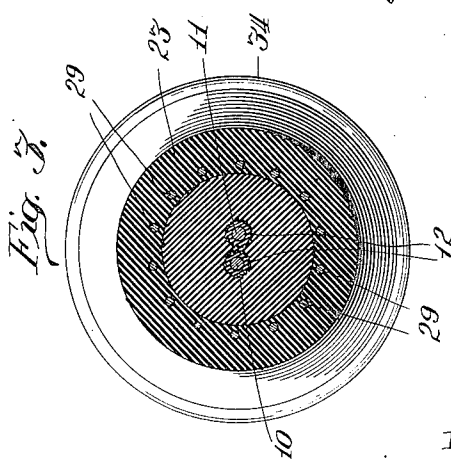


Fig. 3.

Inventor
Lorne A Griffin
By Williams Bradbury
McLachlan & Pierce
Attorneys

UNITED STATES PATENT OFFICE.

LORNE A. GRIFFIN, OF EVANSTON, ILLINOIS.

EXTENSION CORD.

Application filed December 10, 1921. Serial No. 521,424.

To all whom it may concern:

Be it known that I, LORNE A. GRIFFIN, a citizen of the United States, and resident of Evanston, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Extension Cords, of which the following is a full, clear, concise, and exact description, reference being made to the accompanying drawing, forming a part of this specification.

This invention relates to extension cords for electric circuits. The object of the invention is the provision of an extension cord which shall be capable of standing severe or long continued usage, and one which is adapted to be used in damp or wet places.

One of the features of the present invention is the provision of a waterproof covering about the conductors of the cord which also extends about the terminal contact block, so as to provide a water tight joint at the point where the conductors enter the terminal block.

Another feature of the invention is the provision of a rim extending from the edge of the waterproof covering beyond the terminal block which may be employed to provide a water tight connection between the terminal block and some article associated therewith, as, an electric light bulb.

Another feature of the invention is the provision of anchor wires or cords, each of which has one end joined to the terminal block, the remaining portion of the anchor strip being imbedded in the insulating material and extending substantially parallel to the conductors of the cord, whereby substantially all strain is removed from the conductors and the waterproof sheathing at the point where the conductors enter the terminal block.

A further feature of the invention is the provision in a device of this character of a terminal contact block in which the conductors are permanently attached to the contacts and the block is molded or cast about the ends of the conductors and contacts.

A still further feature of the invention is the provision of resilient ridges surrounding the contact blocks which tend to absorb jars which would otherwise be transmitted to the contact member.

Other features and advantages will appear from time to time as the description of the invention progresses.

In the drawings—

Figure 1 represents one embodiment of the invention with a section of the cord removed;

Figure 2 is a longitudinal section through the arrangement of Figure 1; but omitting the guard about the lamp and part of the extended resilient flange about the socket member;

Figure 3 is a transverse sectional view substantially on the line 3—3 of Figure 2;

Figure 4 illustrates a section substantially like that of Figure 3, but showing a modified arrangement by means of which the anchor strips are attached to the terminal contact block;

Figure 5 is a section on the line 5—5 of Figure 2;

Figure 6 is a section on the line 6—6 of Figure 2;

Figure 7 is a section on the line 7—7 of Figure 2; and

Figure 8 is a section on the line 8—8 of Figure 2.

Referring now to the drawings, 10 and 11 represent the conductors of the cord. Each of the conductors 10 and 11 is surrounded by insulating material 12 of any desired kind, but preferably of the type in which the wire is immediately surrounded by insulating material as of rubber, or rubber composition, over which is laid a covering of braided cotton or silk. The two insulated conductors 13 and 14 thus formed are then twisted together to form a twisted pair, as indicated in Figure 2.

To the ends of the conductors 10 and 11 are rigidly secured the plug contacts 15 and 16. The conductors are preferably rigidly secured to the plug contacts as by a soldered or similar connection. The plug contacts 15 and 16 are provided intermediate their ends with enlarged portions 17 and 18 respectively. The terminal contact block 19 may be of any suitable insulating material, and is formed by being cast about the ends of the insulated conductors 13, and 14, and the plug contacts 15 and 16.

At their opposite ends, the conductors are joined to the socket contacts 20 and 21 respectively. The contact 20 is formed as a screw threaded ring, and contact 21 as a rebar or V-shaped strip of conducting material mounted in the block 22 of insulating material in any desired manner. Block 22

as shown in Figure 2 rests against the in-turned edges of the ring forming contact 20. As in the case of the plug contacts shown at the left in Figure 2, the wires 10 and 11 are rigidly secured to the contacts 20 and 21, as by soldering or some similar manner. The contact block 23 is formed of suitable insulating material, and as in the case of the plug contact block 19, it is preferably formed by being cast about the ends of the insulated conductors 13—14, the contact ring 20, and the insulating block 22.

Formed about the circumference of the plug block 19 is a plurality of projections 24. About the block 19 immediately in front of the lugs 24 is a band 25 of wire, strong cord, or other suitable material. To the band 25 is secured one end of each of a plurality of anchor members 26. These anchor members, which may be formed of cord, wire or other suitable material, extend from the band 25 through the spaces between the lugs 24 and then substantially parallel to the twisted pair 13—14.

In the socket block 23, a circumferential groove 27 is formed, in which is a ring 28 of wire, cord, or other suitable material. A plurality of anchor members 29 is provided. Each of the members 29 has one end secured to the ring 28, the other end being arranged substantially parallel to the twisted pair 13—14, as shown in Figure 2.

Instead of the grooved arrangement 28 shown in Figure 2, the block 23 may be provided with a plurality of lugs 30, back of which the ring 28 may be placed in a manner similar to that employed in connection with the plug block 19. The terminal contact blocks 19 and 23 being attached to the opposite ends of the twisted pair 13, and 14, and the anchor strips 26 and 29 being in place, there is molded about the entire structure a continuous waterproof covering 32 of rubber or other similar material. The anchor strips 26 and 29 will thus be imbedded in the waterproof covering, and will reduce to the minimum any strain which might otherwise be brought on the twisted pair at the point where they enter the terminal block. These anchor strips will also tend to reduce the strain which might otherwise be brought on the waterproof covering where it joins the terminal blocks.

In the process of molding the cover 32 about the twisted pair and the terminal blocks, the rubber or other material used will form closely about the lugs 24, and the circumferential ridges 31 about block 23. Thus, the insulating covering will be caused to closely adhere to the blocks and prevent ingress of water or moisture between the covering and the blocks.

It will thus be seen that in the structure

provided, it is practically impossible for water to get to the conductors of the twisted pair. Also due to the heavy covering of insulating material, at the point where the twisted pair enters the terminal blocks, and further due to the anchor strips 26 and 29, any sharp bending of the cord at this point is practically prevented, and the danger of the conductor being broken is almost negligible.

The covering 32 may be formed about the contact blocks with circumferential ridges such as 33 about the block 19, and the ridges 34 about the block 23. These ridges being of resilient material, tend to absorb any shock in case the block is accidentally dropped. If desired, the ridges such as 33 and 34 may be formed to extend out farther than shown in Figure 2.

In Figure 1, a modification of this arrangement is shown in which ridge 35 is shown extending outwardly a considerable distance from the block 23. The space between the ridge 35 and the smaller ridge 36 forms a groove in which may be secured the clamping member 37 of a guard 38. In Figure 1, 39 indicates the usual incandescent light bulb representing merely one of the devices which may be employed with the socket member of the invention.

If desired, the protective covering 32 may be extended beyond the end of the block 23 to form a ring 40 so that when an electric light bulb or other device is inserted in the socket member, a water tight joint will be provided between the socket and the device. The ring 40 may also be arranged to engage the covering of a plug block 19 so as to form a water tight connection in case it was desired to use two or more of the extension cords in series by means of the usual screw-in plug sockets. With the enlarged flange as 35, shown in Figure 1, the danger of the bulb 39 or its filament being broken in case the device is dropped will be greatly reduced.

Although in the accompanying disclosure the cord is shown as provided at each end with a contact device, its application obviously is not limited to a cord provided with a plurality of contact devices, but either one of those shown may be advantageously employed under certain circumstances.

I prefer to form the continuous waterproof insulating covering 32 of a good grade of rubber, such as is used in the treads of high class automobile tires, the covering being vulcanized after application.

While in the drawings and above description certain specific details are disclosed, it is to be understood that modifications of these details are contemplated, and the invention is to be limited merely by the scope of the appended claims.

What I claim is:

1. In an extension cord, conductors, a terminal block, contacts in said block, means for connecting said conductors to said contacts, flexible anchor members, each having one end secured to said terminal block and extending parallel with said conductors, and a covering of flexible, waterproof material molded about and closely adhering to said conductors, terminal block and anchor members to form an integral whole.

2. An extension cord comprising conductors insulated from each other and formed into a twisted pair, a contact block, socket contacts in said block, means joining the adjacent ends of said conductors to said contacts respectively, another contact block, plug contacts in said block, means joining the opposite ends of said conductors to said plug contacts respectively, and a covering of flexible waterproof material integrally molded about and closely adhering to said twisted pair of conductors and the adja-

cent end and outer surface of each of said blocks.

3. An extension cord comprising conductors insulated from each other and formed into a twisted pair, a contact block, socket contacts in said block, means joining the adjacent ends of said conductors to said contacts respectively, another contact block, plug contacts in said block, means joining the opposite ends of said conductors to said plug contacts respectively, flexible anchor members extending from each of said blocks parallel with the said conductors, and a covering of flexible waterproof material molded about and closely adhering to said conductors, blocks and anchor members to form an integral whole.

In witness whereof, I hereunto subscribe my name this 7th day of December, 1921.

LORNE A. GRIFFIN.

Witnesses:

EDNA V. GUSTAFSON,
EMILE J. BOURGEOIS.