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H. BONAT

2,090,860

PLUG AND CORD RETAINER

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Fig. 1.

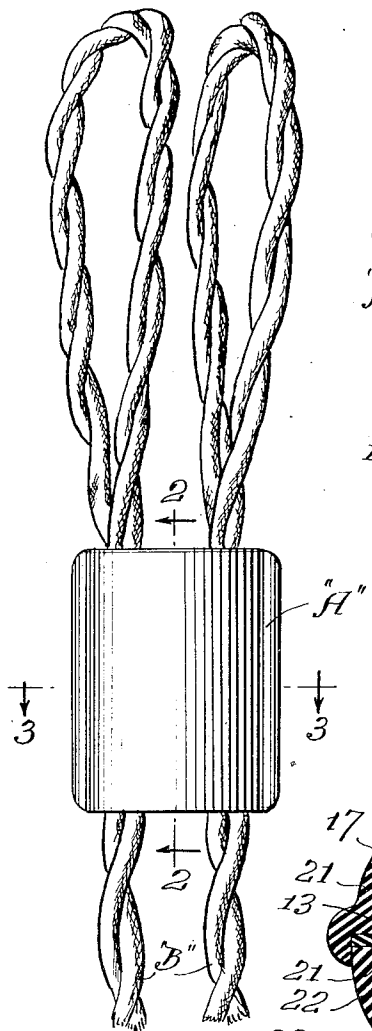


Fig. 2.

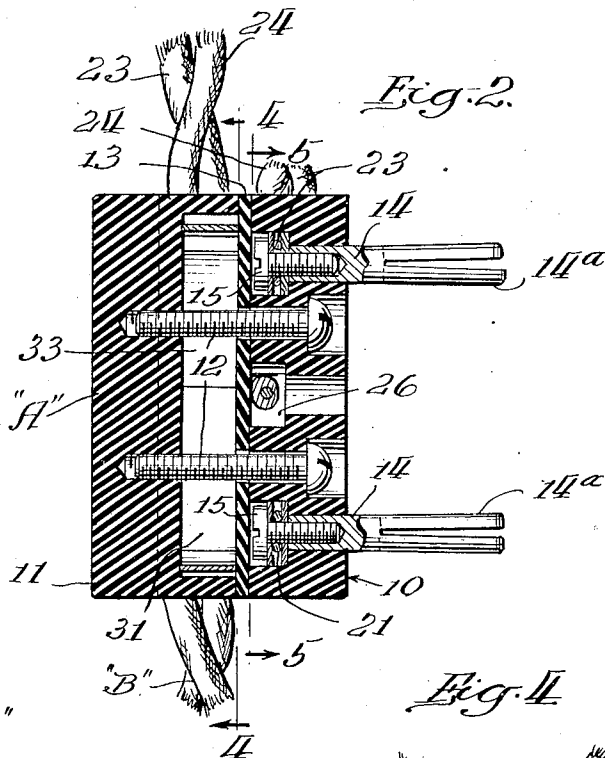


Fig. 4.

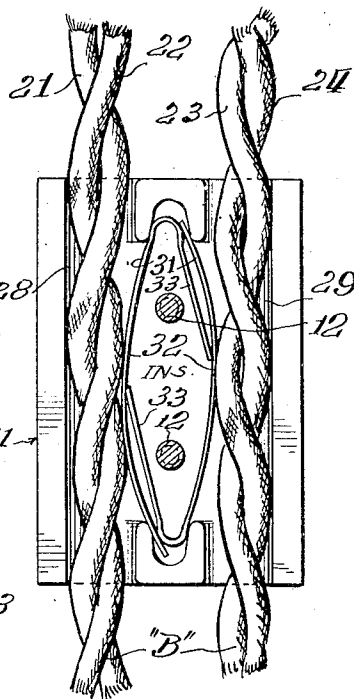


Fig. 3.

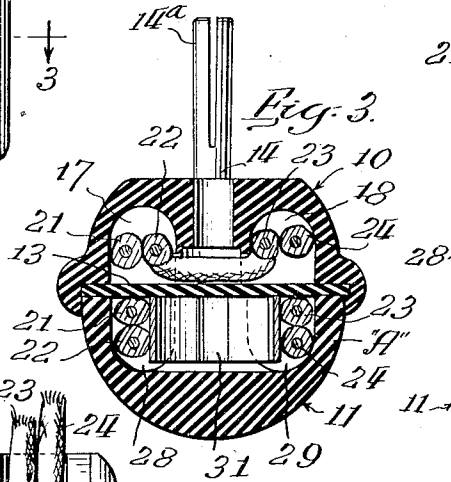


Fig. 5.

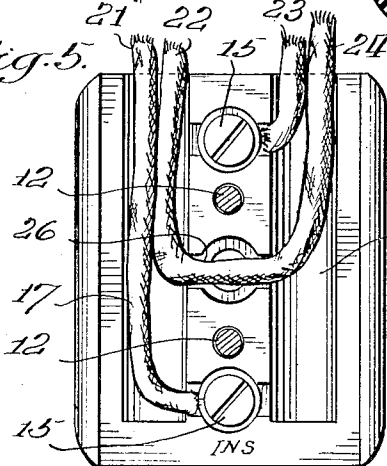
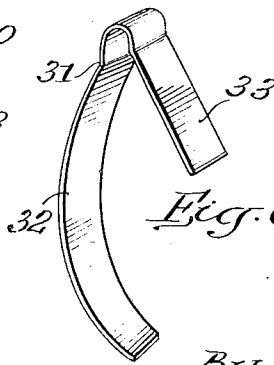


Fig. 6.



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## UNITED STATES PATENT OFFICE

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## PLUG AND CORD RETAINER

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4 Claims. (Cl. 173—361)

This invention relates to electrical plug and cord constructions used for supplying electrical current from a source to electrically operated apparatus or devices, and more particularly my invention is directed to plug and cord constructions of the type which are provided with means for varying the effective length of the cord to suit particular requirements. In using certain types of electrical apparatus or devices, it is often very desirable to shorten or increase the effective length of the current supply cord, for convenience in manipulating such apparatus or devices. Such adjustment of the cord length is also highly desired in connection with certain types of devices or apparatus that are partially or entirely supported by the cord, since it permits disposing such devices or apparatus at a position most satisfactory and convenient for use.

Several constructions and arrangements of a plug having an adjustable length current supplying cord have been suggested and employed, some of which are objectionable due to the fact that the means for taking up or paying out extra length of the cord usually are located at a place intermediate the plug and the electrically operated device, so that said excess length of cord is suspended in a position that hampers free, unobstructed use of the device. In other constructions the type of means provided for adjusting the length of the cord is cumbersome and does not permit quick and easy adjustment of the length of the cord.

One of the objects of my invention is to provide an improved construction and arrangement of the plug, and cord take-up and pay-out means which permits quick and easy adjustment for varying the effective length of the cord.

Another object resides in the provision of a simple compact unitary plug structure including means for quickly and easily varying the effective length of the cord.

A further object of the invention is to provide an improved construction and arrangement of a plug having cord take-up and pay-out means directly associated therewith, and which is responsive to tension exerted on the cord for varying its effective length.

A still further object is to provide a plug and cord construction and arrangement with cord take-up and pay-out means located so that the excessive length of the cord is disposed beyond the plug.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists in certain novel features

of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawing, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawing, a preferred embodiment thereof, from an inspection of which when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawing in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawing:

Figure 1 is an elevational view of an electrical plug and cord constructed in accordance with the present invention;

Fig. 2 is a vertical section through the plug taken at line 2—2 on Fig. 1;

Fig. 3 is a transverse section through the plug taken at line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken at line 4—4 on Fig. 2;

Fig. 5 is a vertical section taken at line 5—5 on Fig. 2; and

Fig. 6 is a perspective view of a spring member for securing the cord in adjusted position.

The plug and cord construction embodying the present invention is adapted for use with a wide variety of electrical apparatus and devices, and for purposes of illustration, I have selected a plug and cord construction that is especially suitable for use in connection with "permanent" hair waving apparatus. Hair waving apparatus of this type usually includes a head on a pedestal which may be fixed or movable adjacent to or over the head of the person to be operated upon. Said fixed or movable head is provided with a plurality of electrical current supply sockets to which may be connected plugs, such as of the type herein indicated at A, having current conducting cords B which may be understood as being connected to electrically energized heater devices (not shown) adapted to be applied to strands of hair for forming waves therein. In order that such heater devices may be disposed in proper relation to the head of the person being

operated upon, and for supporting said heater devices in a manner so that they do not rest with their entire weight upon the head of the person, means is provided to take up or pay out  
5 extra length of the current conducting cord B, as conditions require it, and desirably two sets of heater devices are associated with each plug which is constructed to accommodate two pairs of conductor wires for connection to said heater  
10 devices.

As shown in the drawing, the plug A, which is adapted for connection to a socket of a source of electrical energy, is composed of two body elements 10 and 11 formed of suitable insulating  
15 material, such as "Bakelite", which are connected together by screws 12, with a partition member 13 of insulating material interposed therebetween.

The body element 10 is provided with a pair of fixed substantially centrally located spaced  
20 apart terminals 14 having resilient socket engaging portions 14<sup>a</sup> extending laterally therefrom, and the other ends of said terminals being provided with clamping screws 15, the heads of  
25 which engage the ends of the conductor cords B. As above mentioned, plugs for use with permanent hair waving apparatus desirably are constructed to provide for connection of conductor wires for energizing two heater devices. There-  
30 fore, the body element 10 is formed with two longitudinally extending passageways 17 and 18 on opposite sides of the terminals in each of which extends a pair of current conductor wires, indicated at 21, 22 and 23, 24, respectively, the wire  
35 21, being connected to one of the terminals while conductor wire 23 is connected to the other terminal. The other conductor wires 22 and 24 of the respective pairs constitute a single continuous conductor wire, and the portion connect-  
40 ing said wires in their respective passageways 17 and 18 is seated in a recess 26 opening into said passageways. Thus, all of said conductor wires are compactly housed in the body element 10 with the partition member 13 disposed in place  
45 serving as a cover, as seen in the drawing. Such an arrangement of the conductor wires thus produces a series circuit, and the electrically energized devices that are connected to said wires will, therefore, be in series.

The respective pairs of conductor wires B extend upwardly from the body element 10, as seen in Fig. 5, and thence downwardly through longitudinally extending passageways 28 and 29 in the other body element 11 forming loops extend-  
55 ing above said plug, as seen in Fig. 1. The respective pairs of conductor wires are releasably secured in an adjusted position in said passageways 28 and 29 of body element 11 by a pair of oppositely arranged flat spring members 31 disposed and anchored in said body element 11 and having bowed portions 32 extending into the re-  
60 spective passageways 28 and 29 for yieldingly engaging said pairs of conductor wires 21, 22 and 23, 24. Each spring member is formed with a resilient leg portion 33 positioned for engaging the inner surface of the bowed portion 32, of the opposite spring member for yieldingly urging said bowed portions away from each other.

When it is desired to vary the effective length of a pair of conductor wires intermediate the  
70 plug A to the electrically energized device, it is merely necessary to apply tension on the pair of conductor wires for adjusting them in the body element 11. The spring members 31 thus  
75 permit quick and easy movement of the respec-

tive pairs of conductor wires independently of each other in the body element 11, while providing adequate frictional pressure thereon for maintaining said wires in a desired position of adjustment. The looped portions of the con-  
5 ductor wires thus serve as storage of the excess length of said conductor wires which may be paid in or paid out as the requirements dictate by pulling on the proper pair of wires extending from body element 11 above or below the plug, 10  
respectively.

By directly associating with the plug the means which permits varying the effective length of the conductor wires, it is possible to obtain a simple, compact unitary construction which permits dis-  
15 posing the excess length of conductor cord out of the way so as not to hamper or in any way obstruct the free operation or use of the electrically energized devices or apparatus, while at the same time providing a construction wherein the  
20 effective length of the conductor wires may be quickly and easily varied as desired.

Although I have herein shown and described a specific embodiment and use of my invention wherein two pairs of conductor wires are con-  
25 nected to a single plug, manifestly my invention is equally applicable to a construction wherein a single pair of conductor wires are employed for operation of various types of electrically energized devices and apparatus. I do not, there-  
30 fore, wish to be understood as limiting my invention to the specific form and use herein shown and described, except as so limited in the appended claims.

What I claim and desire to secure by Letters  
35 Patent of the United States is:

1. In combination, a plug adapted to be connected to a source of electrical energy, comprising a body element, and a pair of spaced apart  
40 terminals carried by said body, a pair of conductor wires having their respective ends connected to the terminals, the portion of the conductor wires immediately adjacent said body being looped, and means carried by said body for en-  
45 gaging said conductor wires intermediate their length for securing said portion of the wires in loop formation, said means being releasable in response to tension exerted on such wires for varying the length of said looped portions of the  
50 wires.

2. In combination, a plug adapted to be connected to a source of electrical energy including two body elements connected together, and a pair of spaced apart terminals carried by one of the  
55 body elements, a pair of conductor wires having their respective ends connected to the terminals, the portion of the conductor wires immediately adjacent said body element being looped and extended through the other body element, and means carried in said other body element for en-  
60 gaging said conductor wires intermediate their length for securing said portion of the wires in loop formation, said means being releasable in response to tension exerted on the wires for vary-  
65 ing the length of said looped portion of the wires.

3. In combination, a plug adapted to be connected to a source of electrical energy including two body elements connected together, and a pair of spaced apart terminals carried by one of the  
70 body elements, two separated pairs of conductor wires connected in said body element in series circuit, one wire of each pair being connected to the respective terminals, and a continuous conductor wire constituting the other wire of said  
75 pairs, the portion of said pairs of conductor wires

immediately adjacent said body element being looped and said pairs of wires being extended through parallel passageways formed in the other body element, and flat spring means carried in said other body element and having bowed portions extending into the respective passageways for yieldingly engaging said pairs of conductor wires intermediate their length for releasably securing said portions of the conductor wires in looped formation, said spring means including two oppositely disposed members each having a resilient leg portion engaging the bowed portion of the other member.

4. In combination, a plug adapted for connection to a source of electrical energy including two connected body elements and a pair of spaced apart terminals carried by one of the body elements, said last mentioned body element having

two passageways on opposite sides of the terminals, two pairs of conductor wires extending into the respective passageways, one wire of each pair being connected to the respective terminals and a continuous conductor wire constituting the other wire of each pair disposed in a transverse passageway connecting the above mentioned passageways, the portions of said pairs of conductor wires immediately adjacent the body element being looped and extended respectively through two passageways formed in the other body element, and means carried in said other body element including portions extending in said passageways for engaging said pairs of conductor wires intermediate their length for releasably securing said portions of the conductor wires in looped formation.

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