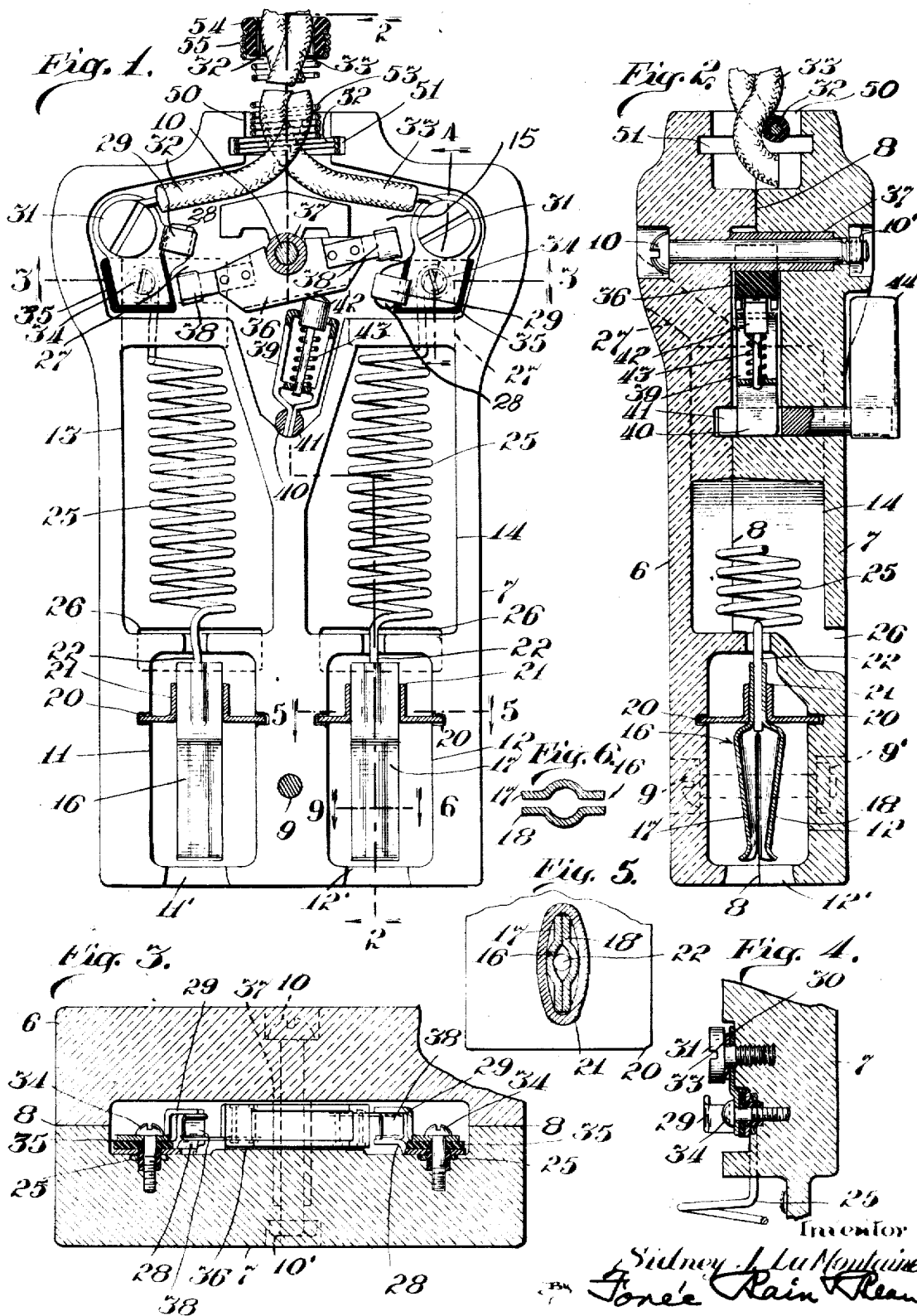


S. J. LA MONTAINE.
CONNECTING PLUG.
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CONNECTING-PLUG.

1,343,676.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SIDNEY J. LA MONTAINE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Connecting-Plugs, of which the following is a specification.

My invention relates to connecting plugs for connecting electrical translating devices with a source of electric current supply.

One of the objects of my invention is to generally improve devices of this character.

Another object of my invention is to provide a plug having relatively large heat-radiating surfaces to disperse heat that may be imparted thereto from a thermo-electric device to which the plug may be attached.

Another object is to provide a plug having conductors of relatively low electric resistance but large heat radiating surfaces and having passage ways through the body part of the plug to induce air draft through the plug, in contact with said conductors, to carry away the heat that may be imparted to the conductors by conduction, convection or radiation, so that the plug may be manually manipulated without injury to the operator's fingers.

A further feature of my invention resides in the provision of a switch of improved form in the plug in such position that the switch may be easily and conveniently operated, and that the heat from the thermo-electric device will not affect the switch contact or operating parts.

Other, further and more specific objects of my invention will become readily apparent, to persons skilled in the art, from a consideration of the following description when taken in conjunction with the drawings, wherein—

Figure 1 is an elevation of one half of the two piece plug showing the interior parts hereof.

Fig. 2 is a section taken on line 2—2 of Fig. 1.

Fig. 3 is a transverse section taken on line —3 of Fig. 1.

Fig. 4 is a fragmentary section taken on line 4—4 of Fig. 1.

Fig. 5 is a transverse section taken on line 5—5 of Fig. 1.

Fig. 6 is a section taken on line 6—6 of Fig. 1.

In all the views the same reference characters are employed to indicate similar parts.

The body part of the plug is composed of two members of insulating material 6 and 7, divided preferably along the line 8, and secured together by suitable means, such as by the screws 9 and 10. In the particular embodiment illustrated the interior of the plug is divided into five receptacles 11, 12, 13, 14 and 15.

Receptacles 11 and 12 contain like spring clips 16, each composed of members 17 and 18. These clips confront the openings 11' and 12', respectively, in the body part of the plug through which round or flat connecting plugs may be inserted to engage the members 17 and 18 of the clips. The clips are held in place by a plate 20 having an oval like sleeve 21 as an integral part thereof and which surrounds the upper parts of the members 17 and 18. The plate, with its sleeve, is preferably driven firmly upon the members in order to clamp the conducting terminal 22 of the coil 25 therebetween. The edges of the plates 20 are passed into grooves made in the boundary walls of the receptacles 11 and 12, respectively. The plate 20 is substantially square in outline, so that the clips 16 and the plate 20 may be turned at right angles from the positions they occupy in Figs. 1 and 2, to accommodate terminals that may be so placed on translating devices, such as flat irons or the like. By this means the clips 16 may be made to engage terminal blades on flat irons or the like, in which blades their greater width is in the same plane, or in planes at right angles thereto, or the clips are adapted to receive substantially round plugs, and since the sleeve 21 is a little nearer one end of the plate 20 than the other, some adjustment may be made in the separation of the clips to accommodate themselves to flat iron terminals separated various distances apart.

Secured in the upper ends of the clips are terminals 22 of coils of wire 25, with a relatively large surface with an attendant

low resistance in order that relatively large quantities of heat may be carried away by the air that will pass through the compartments 13 and 14 when the coils 25 are heated by the heat that is conducted through the clips 16 to the coils of wires, from the hot iron to which the clips are connected. Near the lower ends of the compartments 13 and 14 and in each of them, is an air admitting opening 26, and near the upper end of each of the compartments is an air exit opening 27. The relatively cool air will enter the openings 26 and contact the coils 25 and, due to the rising temperature of the air it will pass through the compartments 13 and 14 with considerable velocity and out of the upper opening 27 of the plug. The location of the upper openings is shown on Fig. 1 by the dotted lines 27, although it is to be understood that the upper openings extend through the portion 6 and not through the portion 7. This will be understood from a study of Fig. 2. The upper end of the heat radiating wires 25 are connected to switch terminals 28, one on each side of the plug. The connections and parts all being duplicates in character, I shall only describe one set and apply the like reference letters to the other set. Another terminal of the switch 29 is prolonged into a part 30, which cooperates with a screw 31 for connecting the flexible wires 32 and 33 to the plug. The screw 34 holds the clips 28, 29, and the wire 25 in contact; the switch terminals 28 and 29 being separated by an insulating washer 35. An oscillating switch arm 36 of insulating material is mounted on a metal sleeve 37, which has bearing on the screw 10. The switch arm carries on either end a connecting blade 38, which connects the switch terminals or switch blades 28 and 29, together, when the blade is located between them. The switch blades or terminals 28 and 29 on the left hand side of Fig. 1, are located at a higher altitude than the like terminals on the right hand side, so that they will be in proper positions to make electrical connection with the respective oscillating blade when the switch arm 36 is oscillated. Located immediately below the screw 10, the axis of the switch arm 36, is an oscillating arm or cage 39 having one end 40 secured in an oscillatable shaft 41, and carrying a spring pressed button 42 held yieldingly in contact with the under surface of the arm 36 by the spring 43. On the outer end of the shaft 41 is a lever 44 which operates the switch. When this lever is turned to the right, the arm or cage 39, is turned to the same position which moves the switch arm 36 to the position shown in Fig. 1, with a quick snap action, when the button 42 is made to pass a vertical plane in which the axis of the switch arm 36 is located. Now

when the lever 44 is moved to the left, with respect to Fig. 1, then the button 42 will be again carried beyond the vertical plane containing the axis of the lever 36 and the switch will be quickly moved to circuit closing position, the switch blades 38 being thereby moved into contact with the switch blades 28 and 29, thereby closing the circuit between the service wires 32 and 33, with the respective coils 25.

The upper end of the insulating body part of the plug is provided with an opening 50 within which to insert the service wires 32 and 33. Near the mouth of the opening is an annular enlargement 51. Within the annular opening 51 I insert a conductor-protector, comprising a spirally coiled wire having relatively large convolutions 52 for insertion in the annular groove 51 and relatively smaller convolutions 53 to more closely encompass the wires 32 and 33, terminating in contact with an insulating block or button 54, around the lower end 55 of which the wires 53 are coiled. This provides a means to prevent sharp bending of the wires 32 and 33 and protects them in their association with the plug, and the larger convolutions 52 in the groove 51, provides a very convenient means for holding the coiled wire protector in place.

It will be apparent, to persons skilled in the art, from a consideration of the structure shown, that the parts are easily and quickly assembled, being placed in position in one part of the plug body, after which the other part is placed in position and the screws 9 and 10 are passed through the two members of the plug body, and held together by the respective nuts 9' and 10'.

The coils may be made of different material without departing from the invention. I believe that I am the first to interpose between the terminals of the service wires and the terminals of the implement or heating device, an electrical conductor so constructed as to prevent the heat conducted from the heating device from reaching the terminals of the service conductors. I am aware that early in the art it was common practice in battery circuits and the like to coil the ends of a service wire where it is attached to a terminal. This, however, was for a totally different purpose, in that the coil was there to supply sufficient slack so that if the wire were broken off a new connection might be made, or if the terminal were to be moved, there would be sufficient slack to permit such action.

While I have herein shown a single embodiment of my invention, for the purpose of clear disclosure, it is manifest to persons skilled in the art, that many changes may be made in the general arrangement and configuration of the parts, within the scope of the appended claims.

Having described my invention, what I claim is:—

1. A connecting plug comprising an insulating hollow body part having an air-draft passage-way therethrough and a continuous electric conductor within the air path adapted to be cooled by the draft in said passageway.
2. A connecting plug comprising two insulating, separable members containing therebetween clip receptacles having plate holding grooves; clips in the receptacles, said clips comprising two like spring members, held together at one end; a plate, carrying a sleeve adapted to be forced over the ends of said members to hold said members together, and to engage a wire therebetween, said plates adapted to be retained in place in said grooves.
3. A connecting plug comprising two insulating, separable members containing therebetween a pair of clip receptacles, each having plate holding grooves; a pair of clips in each of the receptacles, said clips comprising two like spring members held together at one end; a substantially square plate, carrying a sleeve nearer one of its edges than another, said sleeve adapted to be forced over the ends of the respective clip members to hold said members together, and in engagement with a wire therebetween; said plates adapted to be retained in place in the grooves of said receptacles whereby to separate the pairs of clips to a greater or less extent when the plates are changed in their positions in the grooves.
4. A connecting plug having in combination two insulating separable members having therebetween two clip receiving receptacles and two conductor receiving receptacles, the latter receptacles having openings in each end to permit passage of air therethrough.
5. A connecting plug having in combination a chamber; an enlarged relatively low-resistance, coiled conductor therein; a clip engaging the lower ends of the conductor, said chamber having openings to induce air to pass therethrough to cool the conductor.
6. A connecting plug having in combination two insulating separable members having therebetween two clip receiving receptacles; two conductor receiving receptacles thereabove, the latter receptacles having openings at each end to permit the passage of air therethrough and a switch receiving receptacle above the conductor receiving receptacle and separated therefrom.
7. A connecting plug for a heating iron having in combination an insulating member provided with connecting clips near its lower ends and having conductor containers, said containers having air openings near their lower ends on the side farthest removed from the iron to which the plug is connected to receive relatively cool air and openings near their upper ends to permit the air to escape.
8. A connecting plug having in combination an insulating supporting member having connecting clips at one end and a switch at the other end; conductors connecting said clips and switch and means for dispersing the heat from said conductors.
9. A connecting plug having in combination an insulating supporting member having connecting clips at one end and a switch at the other end; conductors intermediate the clip and switch and means associated with said supporting member to disperse the heat from said plug.
10. A connecting plug for heating appliances having in combination an insulating supporting member having connecting clips for attachment to said appliance and terminals for supply of electric current and a means for carrying current and dispersing heat located between said clips and terminals.
11. A connecting plug comprising a body member, a conductor leading into said body member, a switch in said body member, a contact terminal at one end of the plug and an open coil of wire for lessening the transfer of heat from the contact terminal, said wire connecting the switch and the terminal.
12. A connecting plug including a body of insulation, a cord leading into the body, a contact terminal at one end of the plug and an open coil of wire of relatively low resistance connecting the contact terminal and the cord, said open coil of wire being out of contact with the walls of the plug.
13. In combination, an insulated conductor, a heating element and a bare conductor forming a circuitous path for the conduction of heat, said bare conductor forming an electrical connection between the heating element and the insulated conductor.
14. In combination, a plug member, a stranded conductor at one end of the member, a terminal clip adapted to engage the contact of a heating element at the other end, and a solid conductor in the plug member between the stranded conductor and the terminal clip, said solid conductor having means for reducing the transmission of heat between the clip and the stranded conductor.
15. In a connecting plug, a body of insulating material, comprising a terminal portion and a portion adapted to be attached to a flexible conductor, said portions being joined by an integral portion of reduced cross section to retard the flow of heat from the one portion to the other.
16. A connecting plug comprising a body of insulating material having contact at one end for making connection with a heating appliance and having means at the other

end for attaching a suitable conductor, said plug having parts thereof with openings which reduce the cross section of the insulating material to retard the flow of heat from said one end to the other.

17. In a device of the class described, an insulated conductor, a heating element, and

a conductor between the insulated conductor and the heating element, said latter conductor having a relatively large heat radiating area for dissipating heat.

In testimony whereof I hereunto subscribe my name.

SIDNEY J. LA MONTAINE.