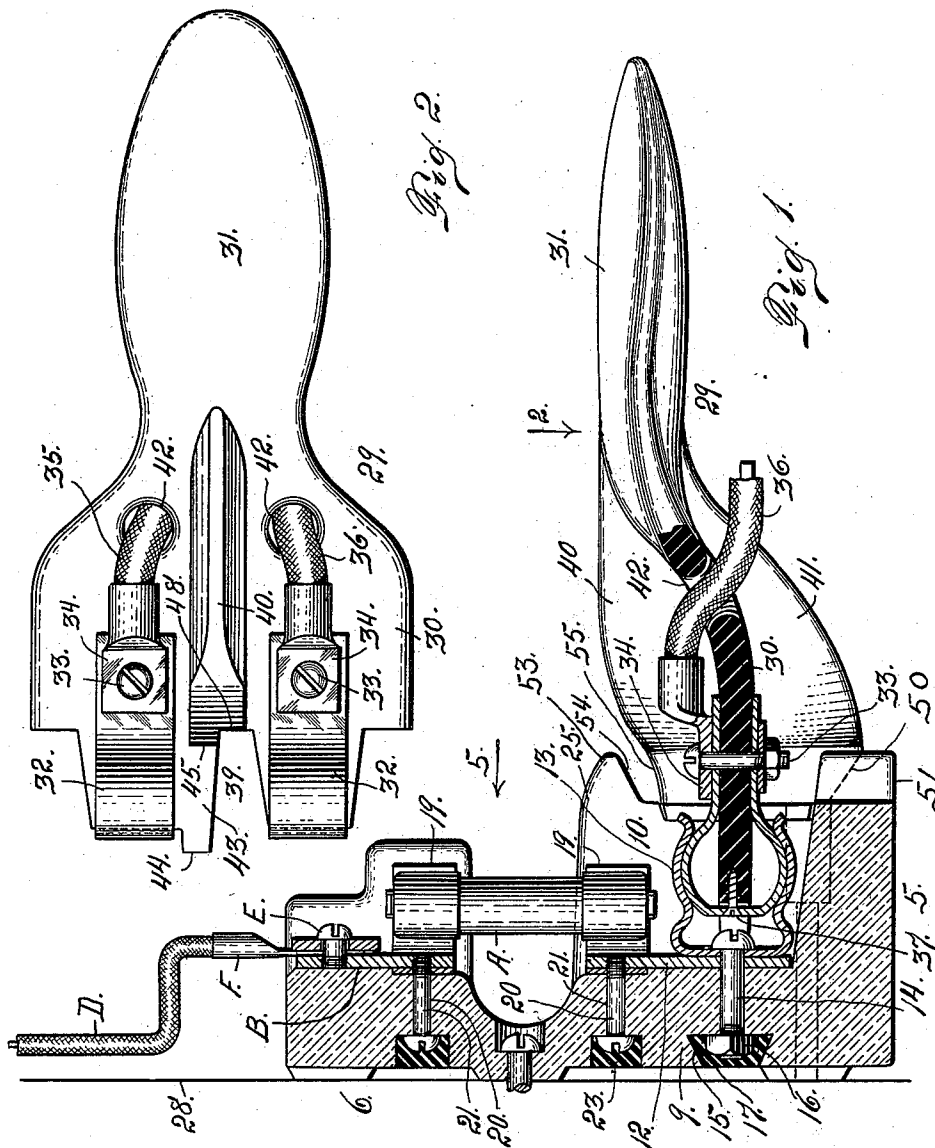


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ELECTRIC VEHICLE CHARGING WALL SOCKET AND PLUG.
APPLICATION FILED JUNE 1, 1909.

981,622.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.



Witnesses
Otto E. Haddick
Harry T. Simmons

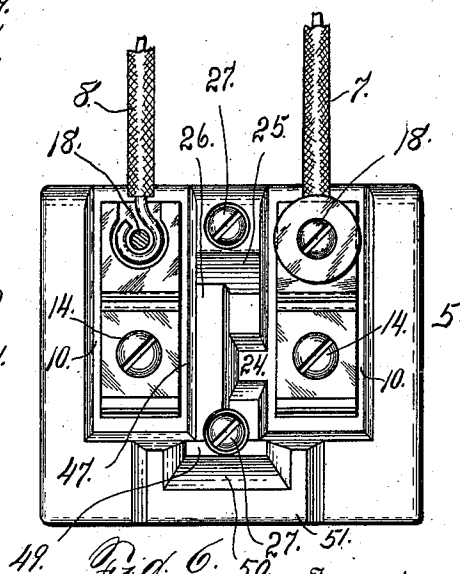
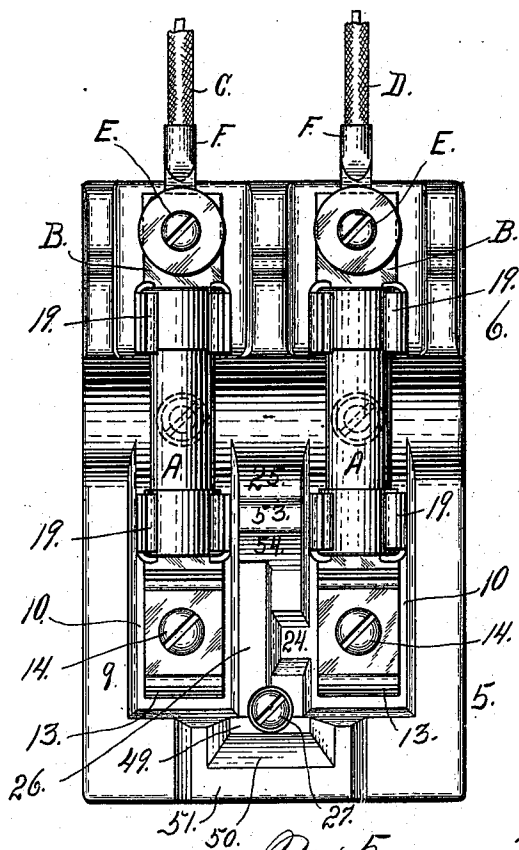
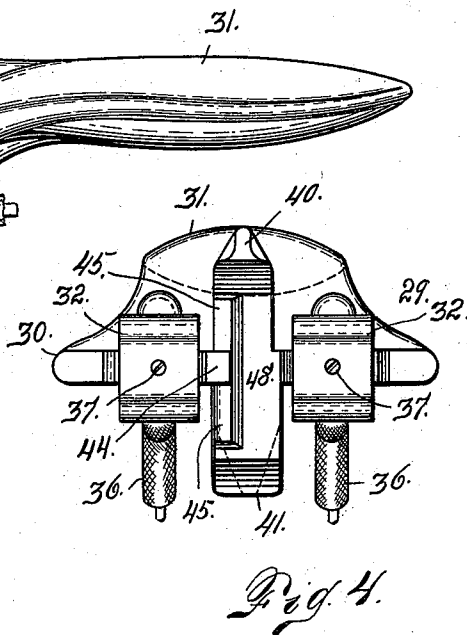
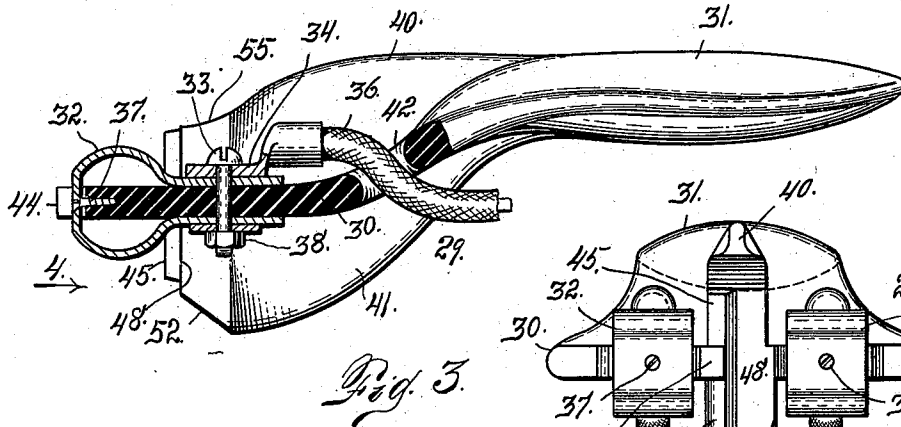
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UNITED STATES PATENT OFFICE.

JASPER NEWTON DAVIS, OF DENVER, COLORADO.

ELECTRIC-VEHICLE-CHARGING WALL-SOCKET AND PLUG.

981,622.

Specification of Letters Patent.

Patented Jan. 17, 1911.

Application filed June 1, 1909. Serial No. 499,384.

To all whom it may concern:

Be it known that I, JASPER NEWTON DAVIS, citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Electric-Vehicle-Charging Wall-Sockets and Plugs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in wall-sockets and plugs, adapted for use in charging the storage batteries of electrically operated vehicles.

My present invention relates to certain improvements over the construction disclosed in Letters Patent No. 921,959 issued to me May 18, 1909, and consists of certain novel features of construction, relating both to the block and the removable plug, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a side view, partly in section, showing my improved non-conducting block, combined with a fuse block, a removable non-conducting plug being shown connected therewith in operative relation. Fig. 2 is a top plane view of the removable non-conducting socket plug, shown in connection with electrical conductors. This is also a view looking in the direction of arrow 2, Fig. 1. Fig. 3 a side view of the same, shown partly in section. Fig. 4 is an end view of the socket plug, looking in the direction of arrow 4, Fig. 3. Fig. 5 is a front view of a combined socket and fuse block. Fig. 6 is a similar view of the socket block shown in detail.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a socket block of my improved construction, shown in detail, and as manufactured independently of a fuse block. In Fig. 5 the same socket block is shown, formed integral, with a fuse block 6. It is preferred to manufacture a combined socket block and fuse block, where the invention is desired for new installa-

tions, but where the socket block is placed in garages already equipped with fuse blocks, the simple form of block shown in Fig. 6 is employed and circuit wires 7 and 8, connected therewith, may lead to the fuse block in any desired location.

The body 9 of the block member 5 is composed of suitable insulating material, as porcelain, and in its opposite sides are formed cavities or sockets 10 in the bottom of which are located contact plates 12. In each of these sockets and engaging the plates 12, is a U-shaped spring socket contact 13. The contacts and the plates are secured in place by screws 14, which are passed through registering perforations, formed in the bottom of the socket contacts and in the plates. The screw head is outermost, and its threaded extremity enters a dove-tailed recess 15, formed in the rear surface of the block. The screw is secured in place by a nut 16, applied to its threaded end and located within the recess. The nut is locked against turning by filling the recess with some suitable material 17, which, when hard, will lock the nut against turning. This construction is exceedingly convenient when it becomes necessary to remove the socket contact 13, since it is only necessary to insert a screw driver in the socket contact and turn the screw in the proper direction to release the contact, the nut being locked against turning by the filling 17, and held in place, ready to receive the screw when a new socket contact is substituted.

The plates 12 extend beyond the socket contacts 13 within the cavities 10, and may be connected with electrical conductors 7 and 8 by screws 18 (see Fig. 6) or with contacts 19 of the fuse block 6, when the socket block and fuse block are formed as an integral construction, as shown in Fig. 1. In the construction shown in the last named figure, the fuse block contacts are held in place by screws 20, passed through perforations 21, formed in the body of the block, their outer extremities being threaded in the plates 12, while their heads are located in recesses 22 formed in the rear surface of the block, the said recesses being provided with a suitable filling 23, which conceals the screw heads.

One of the cavities 10 has an auxiliary cavity 24, formed adjacent to one side there-

of and connected therewith. By virtue of this auxiliary cavity member, the inner extremity of the socket plug, hereinafter described, must be so constructed that the plug can only be placed in the circuit in one way, namely, in a proper manner for the performance of the battery charging function, since the positive and negative electrodes of the socket plug must be so located as to coincide with the corresponding spring contacts of the socket plug. Between the two cavities 10, is located a partition 25, which is provided with a recess 26, forming a cavity in the partition, and adapted to receive a counterpart member formed on the socket plug, as hereinafter explained, thus forming a joint in the partition, to prevent the arcing and consequent short-circuiting of the current between the spring contacts of the socket block and the electrodes of the socket plug.

As shown in the drawing, the socket block 5 (see Fig. 6) is secured in place by fastening screws 27 inserted in perforations extending through the base of the block and adapted to enter a suitable stationary support, which may be represented by the line 28 at the left of Fig. 1.

Let the numeral 29 designate my improved socket plug, constructed in its entirety. The body of this plug is made of suitable insulating or non-conducting material, preferably ebony asbestos wood. It may, of course, be made of hard rubber or other suitable insulating material, sufficiently tough and durable for the purpose. This plug will be referred to for convenience of description, as composed of two members, namely a main part 30 and a hand piece 31. These two parts are formed integral, the one with the other, so far as the body of the device is concerned, the part 31 being fashioned to be conveniently grasped by the hand of the user, while the part 30 is made somewhat greater in width, and to its opposite sides are secured electrodes 32, each of which is composed of a metallic part bent around the inner extremity of the part 30, these two extremities embracing the said part on opposite sides and secured in place by screws 33, which also serve to secure contacts 34, forming the terminals of electrical conductors 35 and 36, which lead to the car-plug, not shown. The inner portions of the electrodes 32, are shaped to enter and fit closely within the socket contacts 13 of the socket block, whereby a good electrical connection is made when the plug is connected with the block. In order to better secure the electrodes to the body of the plug, fastening screws 37 are inserted in perforations formed in their extremities, the screws entering the inner adjacent edge of the body of the plug (see Figs. 1 and 3). The screws

33 are held in place by nuts 38, applied to their threaded extremities, which are lowermost. The inner end of the body of the plug is provided with a recess 39, separating the extremities of the plug, to which the electrodes 32 are applied.

In order to prevent possible arcing between the electrodes 32 and their respective contacts 34 applied to the opposite sides of the main part 30 of the plug, upper and lower webs 40 and 41 are formed upon the block, constituting barriers for the aforesaid purpose. In the rear of the contacts 34, perforations 42 are formed in the part 30 of the plug, on opposite sides of the barriers 40 and 41, through which perforations the electrical conductors 35 and 36 are passed, thus completely separating the two conductors leading to the car-plug.

At one side of the recess 39, formed in the inner or forward extremity of the part 30 of the plug, is formed an extension 43, provided with a protruding extremity 44. This part 43 is adapted to enter the auxiliary socket part 24, formed in the socket block, when the socket plug is connected in operative relation with said block. This feature of the plug in connection with the auxiliary socket part 24, makes it impossible to connect the plug with the block in such a way that the corresponding positive and negative wires shall not coincide in the block and plug and, for this reason, is an important feature.

The forward extremity of the part 30 of the plug is provided with a tongue 45, adapted to enter the recess 26, formed in the socket block, the adjacent part 47 of the block engaging the bottom 48 of the recess 39 in the plug. This tongue 45 extends both above and below the body of the plug and forms a continuation of the barriers 40 and 41. From this it will be understood that when the plug is connected with the block, a sort of offset or angle joint is formed between the plug and socket members, to prevent possible arcing, when the said members are connected in operative relation for battery charging purposes.

In order to avoid possible breaking of the plug or socket by either upward or downward pressure, upon the plug 29, the adjacent parts of the two members are shaped to allow them to be disconnected by either upward or downward pressure, without injury to the mechanism. For this purpose, the lower part of the block is provided with a recess 49 having its lower surface downwardly beveled from the bottom of the socket as shown at 50. This recess 49 is formed in a lug 51, with which the lower part of the face of the socket block is equipped. The forward extremity of the lower barrier 41 is increased in thickness

and is adapted to enter said recess, the lower part of the barrier being cut away on an incline, as shown at 52, to harmonize with the inclination of the bottom 50 of the said recess. The upper part of the partition 25, between the cavities 10, is provided with a protruding lug 53, which projects above the forward extremity of the barrier 40, the lug being cut away as shown at 54, and the said barrier, as shown at 55, leaving space between these parts, to permit the upward movement of the block sufficiently to disconnect the plug from the socket without injury to the parts. The forward extremity of the barrier 40 is also increased in thickness, to harmonize with the corresponding extremity of the barrier 41, and in order to increase the efficiency of the non-conducting body of the plug, and cause the same to harmonize approximately in thickness with the partition 25 of the socket block.

When the socket block is constructed in connection with the fuse block 6 as an integral device (see Figs. 1 and 5), the fuse block simply forms an extension of the socket block and in this event one set of contacts 19 of the two fuses A is connected with the plates 12, while the other set is connected with the fuse block extension 6, the latter being provided with contact plates B, with which the electrical conductors C and D are connected by binding screws E, the said conductors being equipped with contact terminals or electrodes F.

From the foregoing description the use of my improved apparatus will be readily understood. Whether the combined socket block and fuse block are employed or the simple form of socket block, these devices are arranged upon the wall or any suitable support of the garage at a convenient height from the floor, and when it is desired to charge the battery of an automobile, my improved socket plug is then inserted in the socket block, whereby an electrical connection is made between the socket contacts 13 of the block and the electrodes 32 of the plug. As the wires or conductors 35, connected with the plug, lead to the car-plug (not shown, as heretofore explained) a car-plug must be connected with the battery of the machine. As one side of the socket plug is equipped with an extension 43, adapted to enter the auxiliary socket part 24 of the block, it is impossible to insert the socket plug except in such a manner as to properly connect the respective positive and negative wires of the two devices. Inasmuch as the tongue 45 of the socket plug enters the recess 26 of the socket block, a sort of offset or angle joint is formed, which prevents the jumping or arcing of the current between the spring contacts 13, when the plug is connected in operative relation

with the block, as heretofore explained. The webs 40 and 41 also constitute barriers against the arcing of the current between the two pairs of contacts and electrodes carried by the socket plug. These barriers also completely separate the conductors 35 and 36, which are passed through separate orifices formed in the body of the plug, as heretofore explained.

Having thus described my invention, what I claim is:

1. In an apparatus of the class described the combination of a socket block whose body portion is composed of insulating material, said block being equipped with socket contacts and a cooperating socket plug provided with electrodes adapted to engage the contacts of the block, and electrical conductors connected with the respective electrodes, the body of the plug being composed of insulating material and having a handle offset therefrom, the body portion having separated perforations formed at a point below the angle of the handle through which the said conductors pass, the plug being also equipped with upper and lower webs forming barriers between the conductors, and their respective contacts and electrodes, the said webs being interposed between the perforations, substantially as described.

2. A socket plug equipped with separated electrodes contacts connected with the electrodes, and electrical conductors connected with the contacts, the said plug being provided with a body portion, a handle extending at an angle from said body portion, and a centrally located web extending laterally on either side of the body portion, the said web forming a barrier between the contacts, substantially as described.

3. A socket block whose body portion is formed of a relatively flat horizontally disposed non-conducting material, the said plug being equipped with electrodes and electrical conductors connected with the electrodes, the plug being provided with centrally located upper and lower non-conducting webs extending laterally from the flat body portion on the opposite sides, and the said plug having perforations on either side of the said web through which the conductors pass, the said web forming barriers between the electrical conductors, substantially as described.

4. A socket plug composed of a hand-piece and a main portion extending longitudinally at a downward angle from the hand-piece, the latter being equipped at its forward extremity with separated electrodes, and electrical conductors connected with the respective electrodes, the main part of the plug being provided with perforations distinct and separate from each other, and located within the angle of the two members

through which the respective conductors pass.

5 5. A socket plug, whose body portion is composed of a relatively flat non-conducting material, the forward extremity of the plug being equipped with separated electrodes, the plug having upper and lower webs extending laterally therefrom, the said webs forming barriers between the elec-

trodes, the forward extremity of the plug 10 being provided with a tongue protruding therefrom for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JASPER NEWTON DAVIS.

Witnesses:

JESSIE F. HOBART,

A. EBERT O'BRIEN.